

AS/400e



# AS/400e server 600, 620, 720, S10 and S20 Problem Analysis, Repair and Parts

*Version 4*



AS/400e



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**Note**

Before using this information and the product it supports, be sure to read the information in “Appendix G. Notices” on page 1067.

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# Safety and Environmental Notices

---

## Danger Notices

A danger notice calls attention to a situation that is potentially lethal or extremely hazardous to people.

Use the following danger notices throughout this book:

### DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

### DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)

### DANGER

To prevent a possible electrical shock when installing the system, ensure that the power cords for all devices are unplugged before installing signal cables. (RSFTD202)

### DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

### DANGER

Use caution when installing or modifying telephone lines. Disconnect the lines at the network interface before working with telephone wires that are not insulated. Never install telephone jacks that are not waterproof in wet locations. Do not install or modify telephone lines or use a telephone (other than a cordless type) during an electrical storm. Do not use a telephone to report a gas leak in the area of the leak. (RSFTD213)

### DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

## **DANGER**

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

## **DANGER**

To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)

---

## **Caution Notices**

A caution notice calls attention to a situation that is potentially hazardous to people because of some existing condition.

### **CAUTION:**

Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)

### **CAUTION:**

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

### **CAUTION:**

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

### **CAUTION:**

The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

### **CAUTION:**

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

### **CAUTION:**

The optical link card contains a laser. To avoid the release of toxic substances into the environment, do not burn. Discard the optical link as instructed by local regulations. (RSFTC236)

### **CAUTION:**

The battery is a lithium battery. To avoid possible explosion, do not burn or charge the battery. Exchange only with the IBM-approved part. Discard the battery as instructed by local regulations. (RSFTC227)



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## Attention Notices

An attention notice indicates the possibility of damage to a program, device, system, or data.

---

## Laser Safety Information

### CAUTION:

**This product may contain a CD-ROM which is a class 1 laser product.**  
(RSFTC240)

---

## Product Recycling and Disposal

Components of the system, such as structural parts and circuit cards, can be recycled where recycling facilities exist. IBM does not currently collect and recycle used IBM products from customers in the United States other than those products that are involved in trade-in programs. Companies are available to disassemble, reutilize, recycle, or dispose of electronic products. Contact an IBM account representative for more information.

The system unit contains batteries and circuit boards with lead solder. Before you dispose of this unit, these batteries and circuit boards must be removed and discarded according to local regulations or recycled where facilities exist. This book contains specific information on each battery type where applicable.

---

## Battery Return Program

In the United States, IBM has established a collection process for reuse, recycling, or proper disposal of used IBM batteries and battery packs. For information on proper disposal of the batteries in this unit, please contact IBM at 1-800-426-4333. Please have the IBM part number that is listed on the battery available when you make your call. For information on battery disposal outside the United States, contact your local waste disposal facility.

---

## Environmental Design

The environmental efforts that have gone into the design of the system signify IBM's commitment to improve the quality of its products and processes. Some of these accomplishments include the elimination of the use of Class I ozone-depleting chemicals in the manufacturing process, reductions in manufacturing wastes, and increased product energy efficiency. For more information, contact an IBM account representative.



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## **Part 1. Problem Analysis**



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# Chapter 1. Starting Problem Analysis

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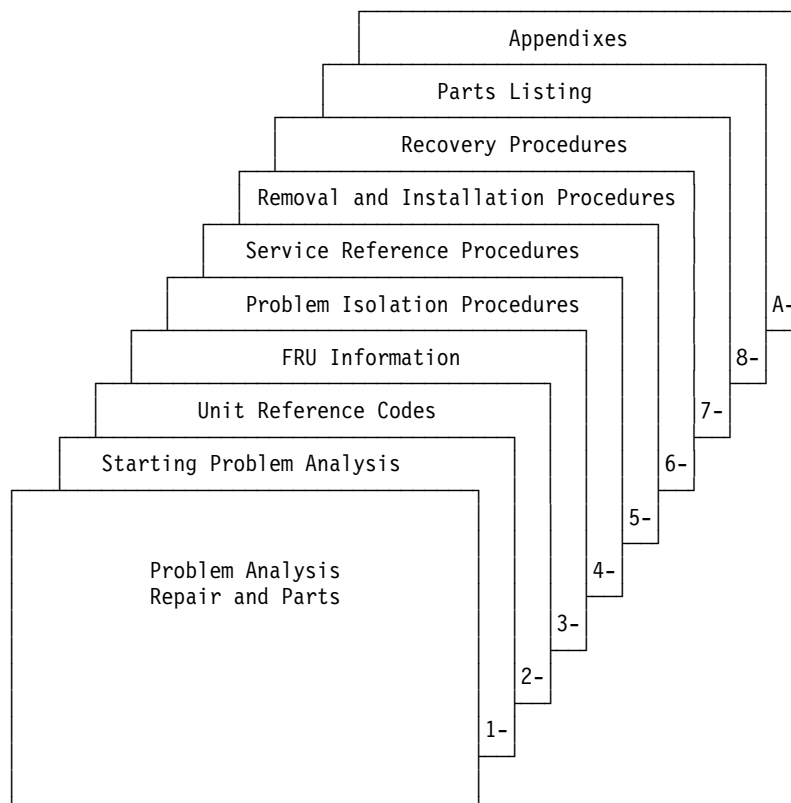
## Starting Problem Analysis

### System Service Library Structure

#### Problem Analysis, Repair, and Parts

The purpose of this book is to provide complete instructions for the task of locating and repairing system problems. It uses directed procedures in a specific logical order to accomplish this task. This book is **not** meant to teach theory of operations. Therefore, there is no index to information that could cause further problems with the system if it was not used correctly. References within the directed procedures point to other sources of information, such as the *AS/400 Service Functions*, for more information about common tasks.

The following figure shows the structure of the Problem Analysis, Repair, and Parts book.



- Section 1 is the starting point for all service actions.
- Section 2 contains information about system reference codes (SRCs) and the unit reference code (URC) information that is contained within the SRCs.
- Section 3 contains:
  - Failing item information

## Start

- FRU part numbers
- Symbolic FRU information
- Section 4 contains problem isolation procedures for specific types of problems.
- Section 5 contains common information that includes system addressing and FRU locations.
- Section 6 contains FRU removal and installation procedures.
- Section 7 contains disk unit recovery procedures and information.
- Section 8 contains the parts catalog information.
- The appendixes contain information such as Problem Summary Forms, System Safety Inspection information, and Preventive Maintenance Checklist.

## Starting Point for All Problems

Before you start problem analysis, review the “System Service Library Structure” on page 3 and how the system and its devices connect together (see “System Architecture and Configuration” in the *AS/400 Service Functions* information). Also review the SRC definition and formats and how they appear (see “System Reference Code (SRC) Record” in the *AS/400 Service Functions* information). Also understand how the control panel works (see “Control Panel Functions” in the *AS/400 Service Functions* information). Also, review any supplemental RPQ pages in this guide.

### Note:

- For instructions on displaying SRCs, see “System Reference Code (SRC) Record” in the *AS/400 Service Functions* information.
  - Use the *Help Key* text that is available through these procedures for additional information.
  - If the Verification of System Password Failed display appears during IPL, see “System Password” in the *AS/400 Service Functions* information for instructions.
1. Has the system operator completed the problem determination procedures for the reported problem?
    - Problem Summary Form information available.
    - Related Main Store Dumps copied.
    - Related APAR data copied.

<b>Yes</b>	<b>No</b>
------------	-----------

↓	Work with the system operator to complete the problem handling procedures:
---	--

- *Basic System Operation, Administration, and Problem Handling*

Then, continue with the next step of this procedure.

2. Record the IPL type and mode before starting this service call.

**Note:** When you complete this service call, return the system to this IPL type and mode or to the IPL type and mode specified by the customer.

**DANGER**

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

3. **You must** determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.
4. Can you get to SST or DST for the logical partition with the problem?

**No      Yes**



Many system problems occur after changing the system configuration or installing or changing a program. If the configuration has been changed or if a program has been installed or changed, verify that all is correct before continuing with this procedure.

**Check the system configuration:**

Use the display hardware configuration service function to check for any missing or failed hardware.

To display missing or failed hardware perform the following:

- a. On the command line, enter  
STRSST

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions*).

**Note:** Do not IPL the system to get to DST.

- b. Select *Start a service tool*.
  - c. On the Start a Service Tool display, select the *Hardware service manager*.
  - d. On the Hardware Service Manager display, select *Logical hardware resources*.
  - e. On the Logical Hardware Resources display, select *System bus resources*.
  - f. Select the function keys for *failed* or *non-reporting* resources.
5. Use the *Symptom* column of Table 1 and find the best description of the reason for this service action. Then follow the instructions in the *What You Should Do* column.

**Attention:** It is not always necessary to power off the system to exchange a field replaceable unit (FRU). You will be directed through a concurrent exchange, if possible, for disk, bulk power supplies, batteries, battery chargers, AMDs, or removable media storage units. For other FRU types, see “Expansion Tower Power Procedure” on page 794.

**This ends the procedure.**

Table 1. Start Table

Symptom	What You Should Do
Intermittent Problems	

## Start

Table 1. Start Table (continued)

Symptom	What You Should Do
You suspect an intermittent problem.	Go to "Analyzing Intermittent Problems" on page 13.
<b>DST/SST functions are available on the Primary system console and the symptom is:</b>	
<ul style="list-style-type: none"> <li>• There is a system reference code or message.</li> <li>• The customer reports reduced system function.</li> <li>• There is a system performance problem.</li> <li>• There are Failing, Missing, or Inoperable system resources.</li> </ul>	Go to "Using the Service Action Log" on page 8. <b>Note:</b> On most systems with multiple partitions, it is common to have one or more "Missing or Non-reporting" system bus resource/s under Hardware Service Manager. See "Missing or Non-reporting System Bus Resources" on page 816 for details.
The system attention light is on but there is no SRC displayed in function 11-3 on the control panel.	Go to "Analyzing Power Problems" on page 36.
<b>The system is not operational and the symptom is:</b>	
You have a power problem, the system or an attached unit will not power on or will not power off, or there is an SRC in function 5 (05-1xxx-xxxx).	Go to "Analyzing Power Problems" on page 36.
There is an SRC and the system attention light is on.	Go to "Chapter 2. Unit Reference Codes" on page 59.
There is an IPL problem (the system attention light is off)	Go to "Analyzing IPL Problems" on page 21.
There is a "Device Not Found" message during an install from an alternate installation device	Go to "TU-PIP6" on page 685.
System operations have stopped or the system is in a loop (the system attention light is off).	Go to "System Hangs or Loops (No SRC)" on page 30.
<b>On a system that has logical partitions, there is a problem with a secondary partition and the symptom is:</b>	
There is a B2xx xxxx SRC on the <i>Work with Partition Status</i> screen of the Primary console.	Go to "Chapter 2. Unit Reference Codes" on page 59.



Table 1. Start Table (continued)

Symptom	What You Should Do
<p>One or more of the following was reported:</p> <ul style="list-style-type: none"> <li>• The console of a secondary partition was lost or is <b>not</b> functioning.</li> <li>• There is an SRC on the panel of an I/O expansion tower owned by a secondary partition.</li> <li>• You suspect a power problem with resources owned by a secondary partition.</li> <li>• There is an IPL problem with a <i>secondary partition</i> and there is an SRC on the <i>Work with Partition Status</i> screen of the Primary or secondary partition.</li> <li>• The <i>secondary partition's</i> operations have stopped or the partition is in a loop and there is an SRC on the <i>Work with Partition Status</i> screen of the Primary or secondary console.</li> </ul>	<ul style="list-style-type: none"> <li>• Search the Primary partition's Service Action Log. Go to "Using the Service Action Log" on page 8.</li> <li>• If you don't find an entry in the Service Action Log of the Primary partition then record the partition's SRC from the <i>Work with Partition Status</i> screen of the Primary partition's console. See "Accessing a Logical Partition's Panel Functions" on page 815. Use that SRC and go to "Chapter 2. Unit Reference Codes" on page 59.</li> </ul> <p>Perform service from the secondary partition unless instructed to move to another partition.</p>
<p>The partition's console is functioning <b>and</b> in the <i>Work with partition status</i> screen in the Primary partition or secondary partition, the state of the partition is "Failed" or "Unit Attn" and there is a system reference code. See "Accessing a Logical Partition's Panel Functions" on page 815.</p>	<p>Use the partition's SRC. From the partition's console search for that SRC in the partition's Service Action Log. Go to "Using the Service Action Log" on page 8.</p>
<p>One or more of the following was reported:</p> <ul style="list-style-type: none"> <li>• There is an IPL problem with the secondary partition and there is <b>no</b> SRC displayed in the <i>Work with Partition Status</i> screen.</li> <li>• The partition's operations have stopped or the partition is in a loop and there is <b>no</b> SRC displayed in the <i>Work with Partition Status</i> screen.</li> </ul>	<ul style="list-style-type: none"> <li>• Go to "Logical Partition Hangs or Loops (No SRC)" on page 33.</li> </ul>
<p>One or more of the following was reported:</p> <ul style="list-style-type: none"> <li>• There is a system reference code or message on the partition's console.</li> <li>• The customer reports reduced function in the partition.</li> <li>• There is a partition performance problem.</li> <li>• There are Failing, Missing, or Inoperable resources.</li> </ul>	<p>From the partition's console search the partition's Service Action Log. Go to "Using the Service Action Log" on page 8.</p> <p><b>Note:</b> On most systems with multiple partitions, it is common to have one or more "Missing or Non-reporting" system bus resource/s under Hardware Service Manager. See "Missing or Non-reporting System Bus Resources" on page 816 for details.</p>
<p>There is a "Device Not Found" message during an install from an alternate installation device.</p>	<p>Go to "TU-PIP6" on page 685.</p>
<p><b>There is a Time of Day Problem and this symptom is:</b></p>	
<p>System clock loses or gains more than 1 sec/day when the system is connected to utility power.</p>	<p>Replace the MFIOP (see "Chapter 6. Removal and Installation Procedures" on page 821).</p>

## Start

Table 1. Start Table (continued)

Symptom	What You Should Do
System clock loses or gains more than 1 sec/day when the system is disconnected from utility power.	Replace the Time of Day Battery on the MFIOP (see "Chapter 6. Removal and Installation Procedures" on page 821).
<b>There is an obvious physical symptom</b>	
A light or display on the system unit control panel or on a FC 507x System Unit Expansion, a FC 508x Storage Expansion Unit, or a FC 506x PCI Expansion Tower control panel is <b>not</b> working correctly.	Perform "SPCN-PIP20" on page 653.
A light or display on the control panel of the FC 504x System Unit Expansion is not working correctly.	Perform SPCN-PIP4 in System Power Control Network (SPCN) Problem Isolation Procedures in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.
The System <b>Remote</b> Control Panel is <b>not</b> working properly.	Perform "SPCN-PIP21" on page 654.
The Remote Control Panel is no longer available.	<ul style="list-style-type: none"> <li>• Verify the configuration.</li> <li>• Check all cable connections.</li> <li>• Perform "ROC-PIP7" on page 597.</li> </ul>
The Operations Console session display is blank.	Perform "ROC-PIP3" on page 592.
One or more of the following was reported: <ul style="list-style-type: none"> <li>• Noise</li> <li>• Smoke</li> <li>• Odor</li> </ul>	Go to "Appendix B. System Safety Inspection" on page 1053.
A part is broken or damaged.	Go to "Chapter 8. Parts Listing" on page 949 to get the part number.  Then go to "Chapter 6. Removal and Installation Procedures" on page 821 to exchange the part.
<b>You cannot find the symptom in this table</b>	
You cannot find the symptom in this table. <b>Note:</b> Information about a 940x frame and devices in the frame can be found in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.	Go to "Using the Service Action Log".

## Using the Service Action Log

- Search for an entry in the Service Action Log that matches the time, SRC, or resource of the reported problem.
  - On the command line, enter  
STRSST  
  
(the Start System Service Tools) command.  
  
If you cannot get to SST, use function 21 to get to DST (see "Accessing Dedicated Service Tools" in the *AS/400 Service Functions*). **Do not IPL the system to get to DST.**
  - Select *Start a Service Tool*.

- c. On the Start a Service Tool display, select the *Hardware Service Manager* (see the *AS/400 Service Functions*).
- d. Select the *Work with service action log* option on the Hardware Service Manager display.
- e. On the *Select Timeframe* display, change the From: Date and Time to a date and time prior to when the customer reported having the problem.
- f. Search for an entry that matches one or more conditions of the problem:
  - 1) SRC
  - 2) Resource
  - 3) Time
  - 4) FRU list (choose the *Display the failing item information* option to display the FRU list).

**Notes:**

- a. All new entries in the Service Action Log represent problems that require a service action. It may be necessary to handle any problem in the log even if it does not match the original problem symptom.
- b. The information displayed in the date and time fields are the date and time for the first occurrence of the specific system reference code (SRC) for the resource displayed during the time range selected.

Did you find an entry in the Service Action Log?

**No      Yes**

↓      Go to step 4 of this procedure.

2. Is the OS/400 operating system available?

**Yes      No**

↓      Go to "Handling Problems for Non-critical Resources" on page 12.

**This ends the procedure.**

3. Go to "Using the Problem Log" on page 10.

**This ends the procedure.**

4. Was the entry isolated (does the letter Y appear in the Isolated column)?

**Yes      No**

↓      Go to "Chapter 2. Unit Reference Codes" on page 59. Using the SRC that is indicated in the log, find the correct SRC table and unit reference code. Perform all actions in the "Description/Action" column before exchanging failing items.

**Note:** When exchanging failing items, the part numbers and locations found in the Service Action Log entry should be used.

**This ends the procedure.**

5. Display the failing item information for the Service Action Log entry. Items at the top of the failing item list are more likely to fix the problem than items at the bottom of the list.

Exchange the failing items one at a time until the problem is repaired. After exchanging each one of the items, verify that the item that is exchanged repaired the problem.

### Notes:

- a. For Failing Items (FIs) and symbolic FRUs, go to "Chapter 3. Failing Items, Part Numbers, and Symbolic FRU Isolation" on page 359.
- b. When exchanging FRUs, go to "Chapter 6. Removal and Installation Procedures" on page 821. If you are exchanging a disk unit, go to "Chapter 7. Recovery Procedures" on page 919. If location information is available, use it to locate the failing item in "Chapter 5. Locations, Addresses, and Service Reference Information" on page 709.
- c. If the failing item is Licensed Internal Code, contact your next level of support for the correct PTF to apply.
- d. After exchanging an item, go to Verifying the Repair in "Chapter 5. Locations, Addresses, and Service Reference Information" on page 709.

Once the problem has been resolved, close the log entry by selecting *Close a NEW entry* on the Service Actions Log Report display.

**This ends the procedure.**

## Using the Problem Log

Find and analyze a Problem Log entry that relates to the problem reported.

**Note:** For online problem analysis (WRKPRB), ensure that you are logged on as QSRV. During problem isolation, this will allow access to test procedures that are not available under any other log-on.

1. Enter WRKPRB (the Work with Problems command) on the command line.

**Note:** Use F4 to change the WRKPRB parameters to select and sort on specific problem log entries that match the problem. Also, F11 displays the dates and times the problems were logged by the system.

Was an entry that relates to the problem found?

**Note:** If the WRKPRB function was not available answer NO.

**Yes      No**

↓      Go to "Handling Problems for Non-critical Resources" on page 12.

**This ends the procedure.**

2. Select the problem entry by moving the cursor to the problem entry option field and entering option 8 to work with the problem.

Is Analyze Problem (option 1) available on the *Work with Problem* display?

**Yes      No**

↓      Go to step 5 of this procedure.

3. Run Analyze Problem (option 1) from the *Work with Problem* display.

### Notes:

- a. For SRCs starting with 6112 or 9337, use the SRC and go to "Chapter 2. Unit Reference Codes" on page 59.
- b. If the message on the display directs you to use SST (System Service Tools), go to "COMM-PIP1" on page 500.

Was the problem corrected by the analysis procedure?

**No      Yes**

↓ **This ends the procedure.**

4. Go to step 6 of this procedure.
5. Analyze Problem (option 1) is not available on the *Work with Problem* display. Perform the following:
  - a. Return to the initial problem log display (F12).
  - b. Select the problem entry by moving the cursor to the problem entry option field and entering option 5 to display details.
  - c. Select F5 to display possible causes.

**Note:** If F5 is not available, use the customer reported symptom string for customer perceived information about this problem. Then, go to “Using the Product Activity Log”.

- d. Use the list of possible causes as the FRU list and go to step 8 of this procedure.
6. Did problem analysis send you to another entry point in the service information?

**No      Yes**

↓ Go to the entry point indicated by problem analysis.

**This ends the procedure.**

7. Was the problem isolated to a list of failing items?

**Yes      No**

↓ Go to “Handling Problems for Non-critical Resources” on page 12.

**This ends the procedure.**

8. Exchange the failing items one at a time until the problem is repaired. After exchanging each one of the items, verify that the item exchanged repaired the problem.

**Notes:**

- a. For Failing Items (FIs) and symbolic FRUs, go to “Chapter 3. Failing Items, Part Numbers, and Symbolic FRU Isolation” on page 359.
  - b. When exchanging FRUs, go to “Chapter 6. Removal and Installation Procedures” on page 821. If you are exchanging a disk unit, go to “Chapter 7. Recovery Procedures” on page 919.
  - c. After exchanging an item, go to “Verifying the Repair” on page 806.
9. Has the problem been resolved?

**No      Yes**

↓ **This ends the procedure.**

10. Contact your next level of support.

**This ends the procedure.**

## Using the Product Activity Log

1. Find an entry in the Product Activity Log for the symptom you are using to locate the problem.

- a. On the command line, enter

STRSST

(the Start System Service Tools) command.

## Using Problem Log

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions* ).

**Note:** Do not IPL the system to get to DST.

- b. On the System Service Tools display, select the *Start a Service Tool* option (see the *AS/400 Service Functions*).
- c. Select the *Product Activity Log* option on the Start a Service Tool display.
- d. Select the *Analyze log* option on the Product Activity Log display.
- e. On the Select Subsystem Data display, select the option to view All Logs.

**Note:** You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.

- f. Use the defaults on the Select Analysis Report Options display by pressing the Enter key.
- g. Search the entries on the Log Analysis Report display.

**Note:** For example, a 6380 Tape Unit error would be identified as follows:

**System Reference Code:**

6380CC5F

**Class:** Perm

**Resource Name:**

TAP01

2. Find an SRC from the Product Activity Log that best matches the time and type of problem the customer reported.

Did you find an SRC that matches the time and type of problem the customer reported?

**Yes      No**

↓      Contact your next level of support.

**This ends the procedure.**

3. Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

**This ends the procedure.**

## Handling Problems for Non-critical Resources

1. Is there an SRC in an 8 character format available on the Problem Summary form?

**Note:** If the operator has not filled out the Problem Summary form, go to the problem reporting procedure in the Operator’s Guide for the operating system in use.

**No      Yes**

↓      Go to “Chapter 2. Unit Reference Codes” on page 59.

**This ends the procedure.**

2. Does the problem involve a workstation resource?

**No      Yes**

↓      Check the following:

- The workstation is operational.
- The cabling/addressing for the workstation is correct.
- Perform any actions indicated in the system operator message.

If you need further assistance, contact your next level of support.

**This ends the procedure.**

3. Does the problem involve a removable media resource?

**No      Yes**

↓ Go to “Using the Product Activity Log” on page 11 to resolve the problem.

**This ends the procedure.**

4. Does the problem involve a communications resource?

**No      Yes**

↓

- Are there any system operator messages that indicate a communications-related problem has occurred?

**No      Yes**

↓ Perform any actions indicated in the system operator message.

- If you need further assistance, contact your next level of support.

**This ends the procedure.**

5. Contact your next level of support.

**This ends the procedure.**

---

## Analyzing Intermittent Problems

The information in this section helps you correct intermittent problems on the AS/400 system.

### Safety

The following danger notice always applies in this intermittent section:

#### DANGER

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

### Special Tools and Equipment

You must make all ac voltage measurements with a meter that measures true root mean square (RMS) voltage. The Fluke\*\* multimeter present in most IBM tool kits measures true RMS voltage. You can also use Fluke 8060A, 8600A, or equal meters.

You can get equipment for the following conditions from your branch office or installation planning representative:

- If you suspect that the air at the system site is too hot or too cold, you need a thermometer to check the temperature.

## Intermittent Problems

- If you suspect the moisture content of the air at the system site is too low or too high, use a wet/dry bulb to check the humidity. See “General Intermittent Problem Checklist” on page 15 for more information.
- If you need to check ac receptacles for correct wiring, you need an ECOS\*\* tester, Model 1023-100, or equivalent tester. The tester lets you quickly check the receptacles. If you cannot find a tester, use an analog multimeter instead. Do not use a digital multimeter.
- To send data with a Licensed Internal Code Trouble Report (LICTR), you need a blank tape for a storage dump. Since you cannot predict when you might need a blank tape, you should always keep a blank tape available.

## How to Use This Intermittent Problem Section

You are here because of intermittent problems.

Follow the steps in this procedure to correct an intermittent problem.

1. Read all of the information in “Correcting Intermittent Problems” before you attempt to correct an intermittent problem. Then continue with the next step of this procedure.
2. Perform ALL steps in the “General Intermittent Problem Checklist” on page 15. Then return to this step of this procedure and answer the following question.  
Did you correct the intermittent problem?

**No      Yes**

↓      **This ends the procedure.**

3. Is a twinaxial workstation cable causing the problem?

**No      Yes**

↓      See *Twinaxial Cable Troubleshooting Guide* , SY31-0703.

**This ends the procedure.**

4. Go to “How to Analyze the Intermittent Problem” on page 19.

**This ends the procedure.**

## Correcting Intermittent Problems

### What Is an Intermittent Problem?

An intermittent problem is a problem that occurs for a short time, and then goes away. The problem may not occur again until some time in the future, if at all. Intermittent problems cannot be made to appear again easily.

Some examples of intermittent problems are:

- An system reference code (SRC) occurs on the control panel (the System Attention light is on) but disappears when you power off, then power on the system. An entry does not appear in the Product Activity Log.
- An entry appears in the problem log when you use the Work with Problems (WRKPRB) command. For example, the FC 5032 I/O Card Unit becomes powered off, but starts working again when you power it on.
- The workstation I/O processor is in a hang condition but starts working normally when you enter Vary Configuration command (VRYCFG \*CTL RESET(\*YES)).



## Hints for Correcting Intermittent Problems

An intermittent problem can show many different symptoms, so it may be difficult for you to determine the real cause without completely analyzing the failure. To help with this analysis, you should determine as many symptoms as possible.

- The complete SRC and unit reference code (URC) information is necessary to determine the exact failing area and the probable cause.
- Product Activity Log information can provide time and device relationships.
- Information on environmental conditions when the failure occurred can be helpful (for example, an electrical storm occurring when the failure occurred).

## Types of Intermittent Problems

There are four major types of intermittent problems:

- Code (PTFs)
  - Licensed Internal Code
  - OS/400 (operating system)
  - Licensed program products
  - Other application software
- Configuration
  - Non-supported hardware that is used on the system
  - Non-supported system configurations
  - Non-supported communication networks
  - Model and feature upgrades that are not performed correctly
  - Moving of down-level hardware from other systems to the AS/400 system
  - Incorrectly configured or incorrectly cabled devices
- Environment
  - Power line disturbance—for example, reduced voltage (sag), a pulse, a surge, or total loss of voltage on the incoming ac voltage line
  - Power line transient—for example, a lightning strike
  - Electrical noise (constant or intermittent)
  - Defective grounding or a ground potential difference
  - Mechanical vibration
- Intermittent hardware failure

**Note:** If you suspect that an intermittent problem is occurring, increase the log sizes to the largest sizes possible. Select the *Product activity log* option on the Start a Service Tool display (see “Product Activity Log” in the *AS/400 Service Functions* information).

## General Intermittent Problem Checklist

The following steps have been successful in correcting intermittent problems on the AS/400 system. Performing these steps removes the known causes of most intermittent problems. Therefore, *it is important that you perform all of these steps*. Some customers have a high availability requirement for the AS/400 system (such as 24 hours a day, 7 days a week). It is very important that you perform all the steps in this checklist to ensure that the system can meet this availability requirement.

1. Discuss the problem with the customer. Look for the following symptoms:
  - An SRC or reference code that goes away when you power off the system, then power on the system.

## Intermittent Problems

- Repeated failure patterns that you cannot explain. For example, the problem occurs at the same time of day or on the same day of the week. Look for some type of pattern.
  - Failures that started after system installation
  - Failures that occurred during customer usage.
  - Failures that started after recent service or customer actions, system upgrade, addition of I/O devices, new software, or program temporary fix (PTF) installation.
  - Failures occurring only during high system usage.
  - Failures occur when people are close to the system or machines are attached to the system.
2. Recommend that the customer install the latest cumulative PTF package, since code PTFs have corrected many problems that seem to be hardware failures. The customer can order the latest cumulative PTF package electronically through Electronic Customer Support or by calling the IBM Software Support Center.  
  
Review the Service Recommendations in the Preventive Service Planning (PSP) listing for any additional HIPER (high impact pervasive) PTFs. This information is available from the IBM Software Support Center and are ordered electronically through Electronic Customer Support using the Send PTF Order command (SNDPTFORD). The *AS/400 Basic System Operation, Administration, and Problem Handling* information contains a chapter on "Working with PTFs".
  3. Review the latest hardware service information for symptoms that are related to the problem.  
  
Ask your next level of support for the latest information available.
  4. If you have not already done so, use the maintenance package to see the indicated actions for the symptom described by the customer. Attempt to perform the online problem analysis procedure first. If this is not possible, such as when the system is down, go to "Starting Point for All Problems" on page 4.  
  
Use additional diagnostic tools, if necessary, and attempt to cause the problem to occur again.

**Note:** Ensure that the service information you are using is at the same level as the operating system. For example, do not use Version 3 Release 1 manuals when servicing a system with software at Version 3 Release 6 level.

5. Check the site for causes of electrical noise that match the start of the intermittent problems. Ask the customer such questions as:
  - Have any external changes or additions, such as building wiring, air conditioning, or elevators been made to the site?
  - Has any arc welding occurred in the area?
  - Has any heavy industrial equipment, such as cranes, been operating in the area?
  - Have there been any thunderstorms in the area?
  - Have the building lights become dim?
  - Has any equipment been relocated, especially computer equipment?

Find the source of the electrical noise and prevent the noise from getting into the system.

6. Ensure that site temperature and humidity are compatible with system specifications (see the *Physical Planning Reference* information).

Acceptable operating conditions are:

- Temperature: 10° C to 37.8° C (50° F to 100° F)
- Humidity: 8% to 80% relative humidity

The best operating conditions are:

- Temperature: 23° C (73° F)
- Humidity: 40% to 60% relative humidity

7. Check the air quality in the computer room:

- Look for dust on top of objects. Dust particles in the air cause poor electrical connections and may cause DASD failures.
- Smell for unusual odors in the air. Some gases can corrode electrical connections.

8. Ask the customer if any large vibration (caused by thunder, an earthquake, an explosion, or road construction) occurred in the area at the time of the failure.

**Note:** A failure that is caused by vibration is more probable if the AS/400 system is on a raised floor.

9. Ensure that all ground connections are tight. These items reduce the effects of electrical noise.

Check the ground connections by doing the following:

- a. Look in the system installation information for instructions on how to connect the ground straps to the frame bar and the correct hardware to use. The hardware is part of the ship group kit.
- b. Ensure that a star washer is between the head of the screw and the ground strap.
- c. Hold the ground strap and attempt to turn it counter-clockwise around the screw.

Does the screw loosen?

<b>No</b>	<b>Yes</b>
-----------	------------

↓	Tighten the screw more, then repeat this step.
---	--

- d. Measure the resistance between a conductive place on the frame to building ground or to earth ground. The resistance **must** be 1.0 ohm or less.
10. All cables that leave each frame **must** be fastened to the bottom bar of each frame with a cable tie or clamp.
    - Ensure that you pull the cable ties tight enough to fasten the cable to the frame bar tightly.

A loose cable can be accidentally pulled with enough force to unseat the logic card in the frame to which the cable is attached. If the system is powered on, the logic card could be destroyed.

11. Where required, ensure that ferrite cores and their covers are installed on both ends of all IPI-3 signal cables (DFCI cables) that leave the frame. The ferrite core can be installed up to 15 cm (6 inches) from the connector; the recommended distance is 8.5 cm (3.4 inches).

The ferrite core is part 62X1146. The cover for the ferrite core is part 6495272.

## Intermittent Problems

**Note:** If the IPI-3 signal cables do not leave the frame, ensure that they do not hang below the bottom of the frame. If they do, tie them up inside the frame.

12. Ensure that all workstation and communications cables meet IBM specifications:
  - All connections are tight.
  - Any twinaxial cables that are not attached to devices must be removed.
  - The lengths and numbers of connections in the cables must be correct.
  - Ensure that lightning protection is installed on any twinaxial cables that enter or leave the building.
13. Review the service entries to determine what service actions were performed on the system (see the "Appendix A. Problem Summary Form" on page 1049).
14. Review the entries in the problem log (WRKPRB) and look for problems that were reported to the user.
15. Review the entries in the Product Activity Log and look for a pattern:
  - SRCs on multiple input-output processors (IOP) occurring at the same time
  - SRCs that have a common "time of day" or "day of week" pattern
  - Log is wrapping (hundreds of recent entries and no older entries)

Check the Product Activity Log sizes and increase them if they are smaller than recommended.
16. Review the entries in the history log (Display Log (DSPL0G)) and look for a change that matches the start of the intermittent problems.
17. Check your records and the service log to ensure that the latest engineering changes are installed on the system and on all system I/O devices.
18. Ensure that the hardware configuration is correct and that the model configuration rules have been followed
  - Use the display hardware configuration service function (under SST or DST) to check for any missing or failed hardware.
19. Was a manufacturing engineering service (MES), system upgrade, feature, or any other field bill of material or feature field bill of material installed just before the intermittent problems started occurring?

**No      Yes**

- ↓      Review the installation instructions to ensure that each step was performed correctly. Then continue with the next step of this procedure.

20. Is the problem associated with a storage device?

**No      Yes**

- ↓      Ensure that the customer is using the correct storage device cleaning procedures and good storage media. Then continue with the next step of this procedure.

21. Ensure that all the items in "Appendix C. Preventive Maintenance (PM) Checklist" on page 1057 are being performed regularly.

Performing the following helps prevent intermittent thermal checks:

  - Ensuring that the AMDs on all disk units, tape units, and power supplies are working
  - Exchanging all air filters as recommended
22. If necessary, review the intermittent problems with your next level of support and installation planning representative.

Ensure that all installation planning checks were made on the system. Because external conditions are constantly changing, the site may need to be checked again.

**This ends the procedure.**

## How to Analyze the Intermittent Problem

1. Is a reference code associated with the intermittent problem?

**No      Yes**

↓ Go to “Chapter 2. Unit Reference Codes” on page 59 and find the reference code. If the actions in the unit reference code tables do not correct the intermittent problem, return here and continue with the next step of this procedure.

2. Is a symptom associated with the intermittent problem?

**No      Yes**

↓ Go to “Intermittent Symptom Table”. If the Intermittent Symptom Table does not correct the intermittent problem, return here and continue with the next step of this procedure.

3. Go to “Failing Area INT-PIP Table” on page 20. If the Failing Area INT-PIP Table does not correct the intermittent problem, return here and continue with the next step of this procedure.
4. Send the data you have collected to your next level of support so that an Authorized Program Analysis Report (APAR) or a Licensed Internal Code Trouble Report (LICTR) can be written.

**This ends the procedure.**

## Intermittent Symptom Table

1. In the *Symptom* column, find the failure symptom.
2. In the *Description* column, read the description of the failure.
3. In the *INT-PIPs* column, perform the INT-PIPs shown for that symptom beginning at “Intermittent Problem Isolation Procedures” on page 509.

Although an INT-PIP may correct the intermittent problem, use your best judgment to determine if you should perform the remainder of the INT-PIPs shown for the symptom.

If the symptom for the intermittent problem you have is not listed, go to “Failing Area INT-PIP Table” on page 20.

Symptom	Description	INT-PIPs
System becomes powered off.	<p>The system was operating correctly, then the system became powered off. SRC 0000 111x may occur when this happens, but the SRC information is lost if the customer performs an IPL after the failure and does not record the SRC.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. If the system has no workstation I/O processor cards, omit INT-PIP5.</li> <li>2. If the system has an uninterruptible power supply (UPS), perform “INT-PIP9 Utility Power and Battery Power Units” on page 514.</li> </ol>	5, 9

## Intermittent Problems

Symptom	Description	INT-PIPs
System stops.	The system is powered on but is not operating correctly. No SRC or error code is displayed. The System Attention light is off. The Processor Activity lights may be on or off. Noise on the power-on reset line can cause the processor to stop. <b>Note:</b> Ensure that the latest service processor PTF for your release is installed.	18
System or subsystem runs slow.	The system or the subsystem is not processing at its normal speed (for example, QBATCH).	20

If the symptom for the intermittent problem you have is not listed, go to “Failing Area INT-PIP Table”.

### Failing Area INT-PIP Table

Use this table only if you do not have an SRC or cannot find your symptom in the “Intermittent Symptom Table” on page 19.

**Note:** Before performing any INT-PIPs in Table 2, first perform all of the steps in “General Intermittent Problem Checklist” on page 15 for all failing areas.

1. Under *Failing Area*, find the area of failure.
2. Look down the column for the area of failure until you find an X. Look across to the *INT-PIP* column and perform the INT-PIP indicated.
3. If the INT-PIP does not correct the intermittent problem, continue down the column for the area of failure until you have performed all of the INT-PIPs shown for the failing area.

Although an INT-PIP may correct the intermittent problem, use your best judgment to determine if you should perform the remainder of the INT-PIPs shown for the failing area.

Table 2. Failing Area INT-PIPs

Failing Area						INT-PIP
Power	WSIOP	DASD MSIOP	Comm	Processor Bus	Tape/Optical	
X	X	X	X	X	X	“General Intermittent Problem Checklist” on page 15
X	X			X		“INT-PIP5 External Noise on Twinaxial Cables” on page 511
	X	X	X	X	X	“INT-PIP7 Electromagnetic Interference (EMI)” on page 511
X						“INT-PIP9 Utility Power and Battery Power Units” on page 514
X						“INT-PIP14 Station Protectors” on page 516
		X				“INT-PIP16 Licensed Internal Code” on page 517

Table 2. Failing Area INT-PIPs (continued)

X	X	X	X	X	X	"INT-PIP18 PTFs Not Installed" on page 517
	X	X	X	X	X	"INT-PIP20 Performance Problems" on page 517

## Analyzing IPL Problems

### Start Analyzing IPL Problems Here

Table 3. Start Table

Symptom	What You Should Do
You cannot perform an IPL from the system control panel (no system reference code (SRC)).	Go to "Cannot Perform IPL from the Control Panel (No SRC)"
You cannot perform an IPL at a specified time (no SRC).	Go to "Cannot Perform IPL at a Specified Time (No SRC)" on page 22
You cannot start an IPL from a remote location (no SRC).	Go to "Cannot Perform IPL from a Remote Location (No SRC)" on page 26
The IPL did not complete.	Go to "System Hangs or Loops (No SRC)" on page 30
The system cannot automatically perform an IPL after a local power failure occurred.	Go to "Cannot Automatically Perform an IPL after a Power Failure" on page 36
After a system power loss, the IPL function takes longer than usual.	Check the system product activity log for battery power unit problems.

### Cannot Perform IPL from the Control Panel (No SRC)

1. Perform the following:
  - a. Verify that the power cable is plugged into the power outlet.
  - b. Verify that power is available at the customer's power outlet.
2. Start an IPL by doing the following:
  - a. Select Manual mode. Choose ipl type A or B on the control panel (see "Selecting IPL Type, Mode, and Speed" on page 793).
  - b. Power on the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).

Does the IPL complete successfully?

**No      Yes**

↓      **This ends the procedure.**

3. Have all the units in the system become powered on that you expected to become powered on?

**Yes      No**

↓      Go to "Starting Point for All Problems" on page 4 and find the symptom that matches the problem.

**This ends the procedure.**

4. Is an SRC displayed on the control panel?

**Yes      No**

## IPL Problems

- ↓ Perform the following before exchanging any FRUs:
  - a. **Attention:** Read “Important Continuously Powered Main Storage (CPM) Information” on page 785.  
Perform “SPCN-PIP5” on page 644. Then return here and continue with this procedure.

Exchange the following FRUs one at a time (see “Chapter 6. Removal and Installation Procedures” on page 821):

- a. System control panel
- b. SPCN Panel Card (SPNLCRD)
- c. Power Supply

**This ends the procedure.**

- 5. Go to “Chapter 2. Unit Reference Codes” on page 59 and use the displayed SRC to correct the problem.

**This ends the procedure.**

### Cannot Perform IPL at a Specified Time (No SRC)

To correct the IPL problem, perform this procedure until you determine the problem and can perform an IPL at a specified time.

- 1. Perform the following:
  - a. Verify that the power cable is plugged into the power outlet.
  - b. Verify that power is available at the customer’s power outlet.
- 2. Power on the system in normal mode, (see “Powering Off and Powering On the System or Expansion Tower” on page 789).

Does the IPL complete successfully?

**Yes      No**

- ↓ Go to “Starting Point for All Problems” on page 4.

**This ends the procedure.**

- 3. Have all the units in the system become powered on that you expected to become powered on?

**Yes      No**

- ↓ Go to “Starting Point for All Problems” on page 4 and find the symptom that matches the problem.

**This ends the procedure.**

- 4. Verify the system date and time by doing the following:
  - a. Enter DSPSYSVAL QIPLDATTIM (the Display System Value command) on the command line.  
Observe the system value parameters.

**Note:** The system value parameters are the date and time the system operator requested a timed IPL.



```

Display System Value
System: S0000000
System value . . . . . : QIPLDATTIM

Description . . . . . : Date and time to automatically IPL

IPL date      . . . . . : MM/DD/YY
IPL time      . . . . . : HH:MM:SS

```

Figure 1. Display for QIPLDATTIM

- b. Enter DSPSYSVAL QDATE (the Display System Value command) on the command line.

Check the system values for the date.

```

Display System Value
System: S0000000
System value . . . . . : QDATE

Description . . . . . : System date

Date        . . . . . : MM/DD/YY

```

Figure 2. Display for QDATE

- c. Enter DSPSYSVAL QTIME (the Display System Value command) on the command line.

Check the system values for the time.

```

Display System Value
System: S0000000
System value . . . . . : QTIME

Description . . . . . : Time of day

Time        . . . . . : HH:MM:SS

```

Figure 3. Display for QTIME

Does the operating system have the correct present date and time?

**No      Yes**

↓      Go to step 6 of this procedure.

5. Change the system values to the correct date and time by doing the following:
  - a. To set the correct date, do the following:
    - 1) Enter CHGSYSVAL QDATE VALUE('mmddyy') (the Change System Value command) on the command line.
    - 2) Set the date by entering
 

```
mm=month
dd=day
yy=year
```
    - 3) Press the Enter key.
  - b. To set the correct time, do the following:

## IPL Problems

- 1) Enter CHGSYSVAL QTIME VALUE('hhmmss') (the Change System Value command) on the command line.
  - 2) Set the time by entering  
hh=24 hour time clock  
mm=minutes  
ss=seconds
  - 3) Press the Enter key.
6. Verify that the system can perform an IPL at a specified time by doing the following:
- a. Set the time to 5 minutes past the present time by entering CHGSYSVAL SYSVAL(QIPLDATTIM) VALUE('mmddyy hhmmss') (the Change System Value command) on the command line.

mm = month to power on  
dd = day to power on  
yy = year to power on

hh = hour to power on  
mm = minute to power on  
ss = second to power on

- b. Power off the system by entering  
PWRDWSYS \*IMMED

(the Power Down System Immediate command) on the command line.

- c. Wait 5 minutes.

Does the IPL start at the time you specified?

**No**      **Yes**

↓      **This ends the procedure.**

7. Power on the system in normal mode, (see "Powering Off and Powering On the System or Expansion Tower" on page 789).

Does the IPL complete successfully?

**Yes**      **No**

↓      Go to "Starting Point for All Problems" on page 4.

**This ends the procedure.**

8. Find an entry in the Service Action Log that matches the time, SRC, and resource that compares to the reported problem.

- a. On the command line, enter  
STRSST

(the Start System Service Tools) command.

If you cannot get to SST, select DST (see "Accessing Dedicated Service Tools" in the *AS/400 Service Functions*).

**Note:** Do not IPL the system to get to DST.

- b. Select *Start a Service Tool*.
- c. On the Service Tools display, select the *Hardware Service Manager* (see the *AS/400 Service Functions*).

- d. Select the *Work with service action log* option on the Hardware Service Manager display.
- e. On the *Select Timeframe* display, change the From: Date and Time to a date and time prior to when the customer reported having the problem.
- f. Find an entry that matches one or more conditions of the problem:
  - 1) SRC
  - 2) Resource
  - 3) Time
  - 4) FRU list (choose the *Display the failing item information* option to display the FRU list).

**Notes:**

- a. All entries in the service action log represent problems that require a service action. It may be necessary to handle any problem in the log even if it does not match the original problem symptom.
- b. The information displayed in the time and date fields are the time and date for the first occurrence of the specific system reference code (SRC). This SRC refers to the resource that is displayed during the time range selected.

Did you find an entry in the Service Action Log?

No      Yes

↓      Go to step 11 of this procedure.

9. **DANGER**

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

Exchange the following parts one at a time (see “Chapter 6. Removal and Installation Procedures” on page 821).

After exchanging each part, go to step 6 of this procedure to verify that the system can perform an IPL at a specified time.

**Attention:** Before exchanging any part, power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).

- MFIOF card (FI00120)
- System control panel
- System control panel cable

Then continue with the next step of this procedure.

**Notes:**

- a. Attempt to perform an IPL after exchanging each part.
  - b. If you exchange the control panel or the MFIOF card, you must set the correct date and time (perform step 5 of this procedure).
10. If the IPL does not complete successfully after you exchange all of the parts listed in step 9 of this procedure, ask your next level of support for assistance.

**This ends the procedure.**

11. Was the entry isolated (is the letter Y in the Isolated column)?

Yes      No

## IPL Problems

- ↓ Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC that is indicated in the log.

**This ends the procedure.**

12. Display the failing item information for the Service Action Log entry. Items at the top of the failing item list are more likely to fix the problem than items at the bottom of the list.

Exchange the failing items one at a time until the problem is repaired. After exchanging each one of the items, verify that the item that is exchanged repaired the problem.

**Notes:**

- For Failing Items (FIs) and symbolic FRUs, go to “Chapter 3. Failing Items, Part Numbers, and Symbolic FRU Isolation” on page 359.
- When exchanging FRUs, go to “Chapter 6. Removal and Installation Procedures” on page 821. If you are exchanging a disk unit, go to “Chapter 7. Recovery Procedures” on page 919.
- After exchanging an item, go to “Verifying the Repair” on page 806.

Once the problem has been resolved, close the log entry by selecting *Close a NEW entry* on the Service Actions Log Report display.

**This ends the procedure.**

## Cannot Perform IPL from a Remote Location (No SRC)

To correct the IPL problem, perform this procedure until you determine the problem and can perform a remote IPL.

1. Is the system powered on and operating?

**Yes      No**

↓ Go to step 4 of this procedure.

2. Enter DSPSYSVAL QRMTIPL (the Display System Value command) on the command line.

Does the operating system have the correct value of 1 for the remote power-on function?

```
Display System Value
System: S0000000
System value . . . . . : QRMTIPL
Description . . . . . : Remote power on and IPL
Value . . . . . : 0 = Not allowed
1 = Allowed
```

Figure 4. Example of Remote Power-on Configuration Display for QRMTIPL

**Yes      No**

↓ Perform the following:

- Change the value to 1 by entering CHGSYSVAL QRMTIPL (the Change System Value command) on the command line.
- Power off the system by entering PWRDWN SYS \*IMMED (the Power Down System Immediate command) on the command line.
- Select Normal mode on the control panel.

- d. Verify that an IPL from a remote location completes successfully by going to step 8 of this procedure.
3. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
4. Verify that all external communications functions are operational, such as:
  - The customer is using the correct telephone number.
  - The telephone line is operating (dial tone).
  - The telephone line is connected or plugged into the connector.
  - The modem is powered on.
  - The modem cable is connected or plugged into the connector.
  - The modem switches are set or jumper wires are installed for the type of communications network being used.
5. Is Normal mode on the control panel selected (see “Selecting IPL Type, Mode, and Speed” on page 793)?
 

<b>No</b>	<b>Yes</b>
↓	Go to step 7 of this procedure.
6. Select Normal mode on the control panel.
7. Verify that the cable that connects the modem to the communications adapter card is fastened correctly.
8. Perform the following:
  - a. Dial the telephone number for the system.
  - b. Wait at least 40 seconds for the system to answer.

**Note:** The Ring Indicator signal is used to start the remote IPL. If the caller hangs up the telephone before the system disconnects the line (indicated by the return of the dial tone), the IPL will not complete. The caller may hear other tones before the dial tone.

Was the telephone answered in 40 seconds?

- |            |                                  |
|------------|----------------------------------|
| <b>Yes</b> | <b>No</b>                        |
| ↓          | Go to step 10 of this procedure. |
9. Does the IPL complete successfully?
 

<b>No</b>	<b>Yes</b>
↓	<b>This ends the procedure.</b>
  10. The IPL from a remote location was not successful. The following steps show you how to start a manual IPL and how to analyze the remote IPL problem. Select Manual or Normal mode on the control panel.
 

**Note:** If you want the Use Dedicated Service Tools (DST) display shown after the IPL, select Manual mode on the control panel.
  11. Start an IPL by powering on the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
 

Does the IPL complete successfully?

<b>Yes</b>	<b>No</b>
↓	Go to “Starting Point for All Problems” on page 4.

**This ends the procedure.**

## IPL Problems

12. Did you verify that the operating system has the correct value of 1 for the remote power-on function in step 2 of this procedure?

**No      Yes**

↓      Go to step 14 of this procedure.

13. Enter DSPSYSVAL QRMTIPL (the Display System Value command) on the command line.

Does the operating system have the correct value of 1 for the remote power-on function?

```
Display System Value
System: S0000000
System value . . . . . : QRMTIPL
Description . . . . . : Remote power on and IPL
Value . . . . . : 0 = Not allowed
1 = Allowed
```

Figure 5. Example of Remote Power-on Configuration Display for QRMTIPL

**Yes      No**

↓      Perform the following:

- a. Change the value to 1 by entering CHGSYSVAL QRMTIPL (the Change System Value command) on the command line.
  - b. Power off the system by entering PWRDWN SYS \*IMMED (the Power Down System Immediate command) on the command line.
  - c. Select Normal mode on the control panel.
  - d. Verify that an IPL from a remote location completes successfully by going to step 8 of this procedure.
14. Start the communications verification function and run a cable wrap test on the suspected cable by doing the following:
- a. Enter VFYCMN (the Verify Communications command) on the command line to show the communications verification display.

**Note:** For more information on VFYCMN (the Verify Communications command), see “Verification Procedures” in the *AS/400 Service Functions* information.

- b. On the next display, enter the line description name for the communications line that has the remote power-on cable attached.
- c. Select the *Cable test* option from the display that shows a list of tests that can be performed on a communications line.
- d. Follow all instructions (such as run problem analysis or attach the wrap connector).

Did you find the communications problem by using the above procedure?

**No      Yes**

↓      Perform the following:

- a. Exchange the failing item indicated (see “Chapter 6. Removal and Installation Procedures” on page 821).
- b. Verify that an IPL from a remote location completes successfully by going to step 8 of this procedure.

15. Find an entry in the Service Action Log that matches the time, SRC, and resource that compares to the reported problem.

a. On the command line, enter

STRSST

(the Start System Service Tools) command.

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions* ).

**Note:** Do not IPL the system to get to DST.

- b. Select *Start a Service Tool*.
- c. On the Service Tools display, select the *Hardware Service Manager* (see the *AS/400 Service Functions*).
- d. Select the *Work with service action log* option on the Hardware Service Manager display.
- e. On the *Select Timeframe* display, change the From: Date and Time to a date and time prior to when the customer reported having the problem.
- f. Find an entry that matches one or more conditions of the problem:
- 1) SRC
  - 2) Resource
  - 3) Time
  - 4) FRU list (choose the *Display the failing item information* option to display the FRU list).

**Notes:**

- a. All entries in the service action log represent problems that require a service action. It may be necessary to handle any problem in the log even if it does not match the original problem symptom.
- b. The information displayed in the date and time fields are the time and date for the first occurrence of the specific system reference code (SRC). This SRC refers to the resource that is displayed during the time range selected.

Did you find an entry in the Service Action Log?

**No      Yes**

↓      Go to step 18 of this procedure.

16. Find an entry in the Product Activity Log that matches the time, SRC, and resource that compares to the reported problem (see “Using the Product Activity Log” on page 11).

Did you find an entry in the Product Activity Log?

**No      Yes**

↓      Go to step 19 of this procedure.

17. **DANGER**

**To prevent the system from powering on automatically during service procedures, select Manual or Secure mode on the system unit control panel. (RSFTD214)**

Exchange the following parts one at a time (see “Chapter 6. Removal and Installation Procedures” on page 821):

## IPL Problems

**Attention:** Before exchanging any part, power off the system.

**Attention:** Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read “Important Cryptographic I/O Processor Information” on page 785 before disconnecting or removing the cryptographic I/O processor.

- Communications cable
- Communications adapter card
- Modem
- Multiple Function IOP (MFIOP)

**Notes:**

- a. Attempt to perform an IPL from a remote location after exchanging each part.
- b. If you exchange the MFIOP card, you must set the correct date and time. To set the correct date and time, perform Cannot Perform IPL at a Specified Time (No SRC), step 4 on page 22

If the remote IPL does not complete successfully after you exchange all the parts listed, ask your next level of support for assistance.

**This ends the procedure.**

18. Was the entry isolated (is there a Y in the Isolated column)?

**Yes      No**

- ↓      Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC indicated in the log.

**This ends the procedure.**

19. Display the failing item information for the log entry. Items at the top of the failing item list are more likely to fix the problem than items at the bottom of the list.

Exchange the failing items one at a time until the problem is repaired. After exchanging each one of the items, verify that the item exchanged repaired the problem.

**Notes:**

- a. For Failing Items (FIs) and symbolic FRUs, go to “Chapter 3. Failing Items, Part Numbers, and Symbolic FRU Isolation” on page 359.
- b. When exchanging FRUs, go to “Chapter 6. Removal and Installation Procedures” on page 821. If you are exchanging a disk unit, go to “Chapter 7. Recovery Procedures” on page 919.
- c. After exchanging an item, go to “Verifying the Repair” on page 806

Once the problem has been resolved, close the log entry.

**This ends the procedure.**

### System Hangs or Loops (No SRC)

You are here because:

- System operation is hung (very low processor activity indicated on the control panel with workstation(s) input inhibited).
- System operation is in a loop (very high processor activity indicated on the control panel with workstation(s) input inhibited).

A system hang or loop is the result of either:



- A software failure.
- Software improperly handling a hardware failure.

This procedure assumes that the system completed an IPL and that at least one user had successfully signed on before the condition occurred.

The purpose of this procedure is to:

1. Help you report the problem with enough error data to permit an APAR investigation to resolve the software problem.
2. Provide you with direction to identify any possible hardware failure.

Perform the following:

1. Is the system operational from **any** workstation?

No	Yes
----	-----

↓	Work with the system operator to complete the appropriate problem handling procedures. See:
---	---

- *Basic System Operation, Administration, and Problem Handling*
- *System Problem Determination-SSP*

**This ends the procedure.**

2. Perform the following to collect and record the failure data (see the *AS/400 Service Functions*).

**Note:** If any of the data collection steps fail, go to step 3 of this procedure.

- a. Select Manual mode (see “Selecting IPL Type, Mode, and Speed” on page 793).
- b. Select Function 25 on the control panel and press the Enter key.
- c. Select Function 26 on the control panel and press the Enter key.
- d. Select Function 50 on the control panel and press the Enter key to stop the system. After a short time, SRC D141900F displays and indicates the system is stopped.
- e. Select Function 51 on the control panel and press the Enter key. The display shows 51\*\*.
- f. Select 5100 on the control panel and press the Enter key. Record the value displayed on the control panel (first part of the address for the instruction to be executed next on processor 0).
- g. Select 5101 on the control panel and press the Enter key. Record the value displayed on the control panel (second part of the address for the instruction to be executed next on processor 0).
- h. Select 5102 on the control panel and press the Enter key. Record the value displayed on the control panel (first part of the address for the instruction being executed on processor 0).
- i. Select 5103 on the control panel and press the Enter key. Record the value displayed on the control panel (second part of the address for the instruction being executed on processor 0).

**Notes:**

- 1) If the system has multiple processors, the preceding steps can be repeated for each processor by continuing the sequence with the selection of 5104 for the next processor.

## IPL Problems

- 2) When you have completed the data collection, exit the 51xx extended functions by rolling back to the 51\*\* display and pressing the Enter key.
  - j. Include the information recorded above in the APAR data
3. Perform the following to initiate a Main Store Dump (see the *AS/400 Service Functions*).
  - a. Select Function 22 on the control panel and press the Enter key.
  - b. Select Function 22 on the control panel and press the Enter key again.
  - c. Wait for the dump to disk to complete (this may take several minutes).

Is 0000 0000 displayed on the control panel for more than 30 seconds?

**No      Yes**

↓      The Main Store Dump cannot complete successfully. The MFIOp is in a hang condition.

Go to step 6 of this procedure.
4. Does the Main Store Dump complete successfully (A1xx 300x displayed)?

**Yes      No**

↓      Go to step 7 of this procedure.
5. Work with the customer and your next level of support to collect the Main Store Dump and APAR information. See:
  - *Basic System Operation, Administration, and Problem Handling*
  - *System Problem Determination-SSP*
  - a. Record the SRC information available in the Main Store Dump Summary.
  - b. Copy the main storage dump to media (see *AS/400 Service Functions*).

Copy the main storage dump to removable media or disk. Copying to disk is faster than copying to most types of tape devices. To successfully copy to disk, you must have enough space available in auxiliary storage to hold the main storage dump.
  - c. Go to step 7 of this procedure.
6. Perform an MFIOp dump (see *AS/400 Service Functions*, “Performing an IOP Storage Dump to Disk”). Select Function 70 on the control panel and press the Enter key.
7. Perform the following:
  - a. Power off the system.
  - b. Power on the system in Manual mode.

Does the system IPL complete to DST?

**No      Yes**

↓      Go to “Using the Service Action Log” on page 8.

**This ends the procedure.**
8. Does the system stop with a reference code displayed on the control panel?

**No      Yes**

↓      Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

**This ends the procedure.**
9. Did a “Missing Disk Units” display appear?

No      Yes

↓      Go to “Using the Service Action Log” on page 8.

**This ends the procedure.**

10. Did the “Main Store Dump Manager” display appear?

No      Yes

↓      Record the SRC information available in the Main Store Dump Summary (see *AS/400 Service Functions*).

Then, go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

**This ends the procedure.**

11. Contact your next level of support.

**This ends the procedure.**

### Logical Partition Hangs or Loops (No SRC)

This procedure is for the case where the hanging or looping partition does not display an SRC in the Primary partition’s *Work with Partition Status* screen.

You are here because:

- Logical partition operation is hung (very low processor activity indicated on the control panel with workstation(s) input inhibited).
- Logical partition operation is in a loop (very high processor activity indicated on the control panel with workstation(s) input inhibited).

A logical partition hang or loop is the result of either:

- A software failure.
- Software improperly handling a hardware failure.

This procedure assumes that the logical partition completed an IPL and that at least one user had successfully signed on before the condition occurred.

The purpose of this procedure is to:

1. Help you report the problem with enough error data to permit an APAR investigation to resolve the software problem.
2. Provide you with direction to identify any possible hardware failure.

Perform the following:

1. Is the logical partition operational from **any** workstation?

No      Yes

↓      Work with the system operator to complete the appropriate problem handling procedures. See:

- *Basic System Operation, Administration, and Problem Handling*
- *System Problem Determination-SSP*

**This ends the procedure.**

2. Perform steps 2a on page 34 through 2i on page 34 on the system’s physical panel and **NOT** on the *Partition Status* screen in the Primary partition. Collect and record the failure data (see the *AS/400 Service Functions*).

**Note:** If any of the data collection steps fail, go to step 4 of this procedure.

## IPL Problems

- a. Select Manual mode (see “Selecting IPL Type, Mode, and Speed” on page 793 ).
- b. Select Function 25 on the control panel and press the Enter key.
- c. Select Function 26 on the control panel and press the Enter key.
- d. Select Function 50 on the control panel and press the Enter key to stop the system. After a short time, SRC D141900F displays and indicates the system is stopped.
- e. Select Function 51 on the control panel and press the Enter key. The display shows 51\*\*.
- f. Select 5100 on the control panel and press the Enter key. Record the value displayed on the control panel (first part of the address for the instruction to be executed next on processor 0).
- g. Select 5101 on the control panel and press the Enter key. Record the value displayed on the control panel (second part of the address for the instruction to be executed next on processor 0).
- h. Select 5102 on the control panel and press the Enter key. Record the value displayed on the control panel (first part of the address for the instruction being executed on processor 0).
- i. Select 5103 on the control panel and press the Enter key. Record the value displayed on the control panel (second part of the address for the instruction being executed on processor 0).

### Notes:

- 1) If the system has multiple processors, the preceding steps can be repeated for each processor by continuing the sequence with the selection of 5104 for the next processor.
  - 2) When you have completed the data collection, exit the 51xx extended functions by rolling back to the 51\*\* display and pressing the Enter key.
3. Go to the Primary partition's main menu.
    - a. Select *Work with Partitions*.
    - b. Select *Display Partition Information*.
    - c. Select *Display Partition Processing Configuration*.
    - d. Select option 10 and continue selecting option 10 until you determine which processor or processors failed. Record the failing processor numbers as part of the data collected for the APAR.
    - e. Record this information with the APAR data that you recorded in step 2 on page 33 of this procedure.
  4. Perform the following to initiate a Main Store Dump (see the *AS/400 Service Functions*).
    - a. Go to the Primary partition's SST/DST screen.
    - b. Select *Work with Partitions*.
    - c. Select *Work with Partition Status*.
    - d. Select *More Options*.
    - e. Select *Force Main Store Dump*.
    - f. Wait for the dump to disk to complete (this may take several minutes).

Is 0000 0000 displayed on the partition status screen for more than 30 seconds?

**No      Yes**

- ↓ The Main Store Dump cannot complete successfully. The MFIOP is in a hang condition.

Go to step 7 of this procedure.

5. Does the Main Store Dump complete successfully (A1xx 300x displayed on the Monitor Partition Status screen)?

**Yes      No**

- ↓ Go to step 8 of this procedure.

6. Work with the customer and your next level of support to collect the Main Store Dump and APAR information. See:

- *Basic System Operation, Administration, and Problem Handling*
- *System Problem Determination-SSP*

- a. Record the SRC information available in the Main Store Dump Summary.

- b. Copy the main storage dump to media (see *AS/400 Service Functions*).

Copy the main storage dump to removable media or disk. Copying to disk is faster than copying to most types of tape devices. To successfully copy to disk, you must have enough space available in auxiliary storage to hold the main storage dump.

- c. Go to step 8 of this procedure.

7. Perform an MFIOP dump (see *AS/400 Service Functions*, “Performing an IOP Storage Dump to Disk”). Select Function 70 on the control panel and press the Enter key.

8. Perform the following:

- a. Power off the logical partition.

- b. Power on the logical partition in Manual mode.

Does the logical partition IPL complete to DST?

**No      Yes**

- ↓ Go to “Using the Service Action Log” on page 8.

**This ends the procedure.**

9. Does the logical partition stop with a reference code displayed on the *Partition Status* screen?

**No      Yes**

- ↓ Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

**This ends the procedure.**

10. Did a “Missing Disk Units” display appear?

**No      Yes**

- ↓ Go to “Using the Service Action Log” on page 8.

**This ends the procedure.**

11. Did the “Main Store Dump Manager” display appear?

**No      Yes**

- ↓ Record the SRC information available in the Main Store Dump Summary (see *AS/400 Service Functions*).

Then, go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

## IPL Problems

**This ends the procedure.**

12. Contact your next level of support.

**This ends the procedure.**

### Cannot Automatically Perform an IPL after a Power Failure

1. Normal mode or Auto mode on the control panel must be selected when power is returned to the system.

Is Normal or Auto mode on the control panel selected (see “Selecting IPL Type, Mode, and Speed” on page 793)?

**Yes      No**

↓      Select Normal mode or Auto mode on the control panel.

**This ends the procedure.**

2. Use DSPSYSVAL (the Display System Value command) to verify that the system value under QPWRRSTIPL on the Display System Value display is equal to 1.

Is QPWRRSTIPL equal to 1?

**Yes      No**

↓      Use CHGSYSVAL (the Change System Value command) to set QPWRRSTIPL equal to 1.

**This ends the procedure.**

3. **Attention:** Before exchanging any part, power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).

Exchange the following parts one at a time (see “Chapter 6. Removal and Installation Procedures” on page 821):

**Attention:** Before exchanging the following FRUs, perform the following:

- a. **Attention:** Read “Important Continuously Powered Main Storage (CPM) Information” on page 785.  
Perform “SPCN-PIP5” on page 644. Then return here and continue with this procedure.
- a. System control panel
- b. SPCN panel card (when installed)
- c. MFIOP card
- d. Power supply

**Note:** If you exchange the control panel or the MFIOP card, you must set the system date (**QDATE**) and time (**QTIME**).

**This ends the procedure.**

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## Analyzing Power Problems

### Start Analyzing Power Problems Here

Table 4. Start Table

Symptom	What You Should Do
Power Problems	

Table 4. Start Table (continued)

Symptom	What You Should Do
A power reference code (1xxx xxxx) is displayed on the control panel of the FC 504x System Unit Expansion or of a 9337 Disk Array Subsystem.	Look at the 4 rightmost characters on the FC 504x or 9337 control panel. These 4 characters are the unit reference code. Go to “(1xxx) System Power Control Network (SPCN) Reference Codes” on page 69 of this manual and find the reference code.
A system operator message indicates a power problem, and a power reference code (1xxx xxxx) is displayed on the control panel of the FC 504x System Unit Expansion or of a 9337 Disk Array Subsystem.	Look at the 4 rightmost characters on the FC 504x or 9337 control panel. These 4 characters are the unit reference code. Go to “(1xxx) System Power Control Network (SPCN) Reference Codes” on page 69 of this manual and find the reference code.
A power reference code (1xxx xxxx) is displayed on the control panel of a FC 507x System Unit Expansion, a FC 508x Storage Expansion Unit or a FC 5065 or 5066 expansion tower.	Look at the 4 rightmost characters on the FC 507x, FC 508x or FC 5065 or 5066 control panel. These 4 characters are the unit reference code. Go to “(1xxx) System Power Control Network (SPCN) Reference Codes” on page 69 of this manual and find the reference code.
A system operator message indicates a power problem, and a power reference code (1xxx xxxx) is displayed on the control panel of a FC 507x System Unit Expansion, a FC 508x Storage Expansion Unit or a FC 5065 or 5066 expansion tower.	Look at the 4 rightmost characters on the FC 507x, FC 508x or FC 5065 or 5066 control panel. These 4 characters are the unit reference code. Go to “(1xxx) System Power Control Network (SPCN) Reference Codes” on page 69 of this manual and find the reference code.
The system attention light is on, there may or may not be an system reference code (SRC) displayed on the control panel.	In addition to function 11, SRCs can also appear in function 5. Look at function 5 and record the SRC shown. Go to “(1xxx) System Power Control Network (SPCN) Reference Codes” on page 69 of this manual and find the reference code.
System unit does not become powered on (Frame Power Ready light is not on).	Go to “Cannot Power On System Unit (No SRC)”.
Secondary frame or frames do not become powered on (Frame Power Ready light is not on).	Go to “Cannot Power On Secondary Frame (No SRC)” on page 42.
Frames became powered on, but one or more frame-mounted units do not become powered on.	Go to “Rack Becomes Powered On, but a Rack-Mounted Unit Does Not Become Powered On” in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.
The system or a frame does not become powered off.	Go to “System or Frame Cannot Become Powered Off” on page 56.
A frame-mounted unit does not become powered off.	Go to “Rack-Mounted Unit Cannot Become Powered Off” in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.
The system does not remain powered on during a loss of incoming ac voltage.	Go to “POW-PIP3” on page 590.

## Cannot Power On System Unit (No SRC)

To correct the power-on problem, perform this procedure until you correct the problem and you can power on the system.

The following steps are for the system unit, unless other instructions are given.

### DANGER

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

1. Attempt to power on the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).

Does the system power on?

**No      Yes**

↓      Go to step 15 of this procedure.

2. Is the background light for the Data display on the control panel on?

**Note:** The background light is a dim (yellow) light in the Data area on the control panel.

**No      Yes**

↓      Go to step 11 of this procedure.

3. **DANGER**

**Dangerous voltage being measured. (RSFTD005)**

Perform the following:

- a. Disconnect the mainline ac power cable from the customer’s ac power outlet.
- b. Use a multimeter to measure the ac voltage at the customer’s ac power outlet.

**Note:** Some system models have more than one mainline ac power cable. For these models, disconnect all the mainline ac power cables and measure the ac voltage at all ac power outlets before answering the following question.

Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?

**Note:** The voltage must be 200V ac to 240V ac if you are working on a Model 620, 720, or S20 system.

**Yes      No**

↓      Perform the following:

- a. Inform the customer that the ac voltage at the power outlet is not correct.
- b. Reconnect the mainline ac power cables to the power outlet when the ac voltage at the power outlet is correct.

**This ends the procedure.**

4. Are the mainline ac power cables from the system unit to the customer’s ac power outlet connected and seated correctly at both ends?

**Yes      No**

↓      Perform the following:

- a. Connect the mainline ac power cables correctly at both ends.
- b. Go to step 1 of this procedure.



## 5. DANGER

**Dangerous voltage being measured. (RSFTD005)**

Perform the following:

- a. Disconnect the mainline ac power cables from the power supply or internal uninterruptible power supply if installed.
- b. Use a multimeter to measure the ac voltage at the power supply or internal uninterruptible power supply end of the mainline ac power cables.

## 6.

Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?

**Note:** The voltage must be 200V ac to 240V ac if you are working on a Model 620, 720, or S20 system.

**Yes      No**

↓ Perform the following:

- a. Exchange the mainline ac power cable.
- b. Go to step 1 of this procedure.

## 7. Does the system have an internal uninterruptible power supply installed?

**Yes      No**

↓ Go to step 10.

## 8. Perform the following:

- a. Use a multimeter to measure the ac voltage at the internal uninterruptible power supply outlets to the power supplies.

Is the ac voltage from 200 V ac to 240 V ac?

**No      Yes**

↓ Go to step 10.

## 9. Perform the following:

- a. Check the uninterruptible power supply breakers to ensure that they are in the On position.
- b. Check the battery connectors to ensure that they are seated correctly.
- c. Check the transformer connector to ensure that it is seated correctly.
- d. Use a multimeter to measure the ac voltage at the internal uninterruptible power supply outlets to the power supplies.

Is the ac voltage from 200 V ac to 240 V ac?

**Yes      No**

↓ Exchange the following parts one at a time.

- Uninterruptible power supply battery unit, part 44H7785 (minimum voltage 12.5V each tray/pack of two measured at unit connector.)
- Uninterruptible power supply base unit, part 44H7784
- Uninterruptible power supply unit signal cable SIG7, part 44H8027
- Uninterruptible power supply transformer unit, part 44H7786

## 10. Perform the following:

- a. **Attention:** Read "Important Continuously Powered Main Storage (CPM) Information" on page 785.
- b. Perform "SPCN-PIP5" on page 644. Then return to this step and continue.

## Power

- c. Disconnect the mainline ac power cable from the customer's ac power outlet.
- d. Exchange one of the following FRUs:  
**Attention:** Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor *for any reason* causes the loss of the master encryption key.  
Read "Important Cryptographic I/O Processor Information" on page 785 before disconnecting or removing the cryptographic I/O processor.
  - 1) System unit control panel card
  - 2) SPCN panel card (when installed)
  - 3) Power supply
  - 4) System unit control panel cable
  - 5) System unit card enclosure
- e. Reconnect the mainline ac power cables to the power outlet.
- f. Attempt to power on the system.
- g. If the system powers on, the FRU you exchanged is the failing item.  
If the system does not power on, repeat steps 10c through 10g of this procedure and exchange the next FRU in the list.
- h. If the system does not power on after exchanging all the FRUs in the list, ask your next level of support for assistance.

**This ends the procedure.**

11. Perform the following:
  - a. Power off the system.
  - b. Select Manual mode on the system unit control panel (see "Selecting IPL Type, Mode, and Speed" on page 793).
  - c. Attempt to power on the system.

Does the system power on?

**Yes      No**

↓      Go to step 10 of this procedure.

12. Perform the following:
  - a. Power off the system.
  - b. Display the selected IPL mode on the system unit control panel.

Is the selected mode the same mode the customer was using when the power-on failure occurred?

**No      Yes**

↓      Go to step 17 of this procedure.

13. Perform the following:
  - a. Power off the system.
  - b. Select the mode on the system unit control panel the customer was using when the power-on failure occurred.
  - c. Attempt to power on the system.

Does the system power on?

**Yes      No**

↓      Go to step 17 of this procedure.

14. Exchange system unit control panel card (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system).

**This ends the procedure.**

15. Perform the following:
- Power off the system.
  - Display the selected IPL mode on the system unit control panel (see "Selecting IPL Type, Mode, and Speed" on page 793).

Is the selected mode the same mode the customer was using when the power-on failure occurred?

**No      Yes**

↓      Go to step 17 of this procedure.

16. Perform the following:
- Power off the system.
  - Select the mode on the system unit control panel the customer was using when the power-on failure occurred.
  - Attempt to power on the system.

Does the system power on?

**Yes      No**

↓      Exchange the system unit control panel card (see "Chapter 6. Removal and Installation Procedures" on page 821).

**This ends the procedure.**

17. Is a function 11 SRC displayed on the system unit control panel?

**No      Yes**

↓      Go to "Starting Point for All Problems" on page 4.

**This ends the procedure.**

18. Is the Power Ready light on continuously?

**Note:** The Power Ready light blinks during a normal power-on sequence. It should not blink for more than 1 minute.

**No      Yes**

↓      Go to step 20 of this procedure.

19. Perform the following:
- Attention:** Read "Important Continuously Powered Main Storage (CPM) Information" on page 785.
  - Perform "SPCN-PIP5" on page 644.
  - Return here and continue with the next step of this procedure.
  - Disconnect the mainline ac power cable from the customer's ac power outlet.
  - Exchange one of the following FRUs:
    - Power supply
    - System unit control panel card
  - Reconnect the mainline ac power cable to the power outlet.
  - Attempt to power on the system.
  - If the system powers on, the FRU you exchanged is the failing item.

## Power

If the system does not power on, repeat steps 19d through 19h of this procedure and exchange the next FRU in the list.

- i. If the system does not power on after exchanging all the FRUs in the list, ask your next level of support for assistance.

**This ends the procedure.**

20. Is there more than one frame on the system?

**Yes      No**

↓      Go to step 22 of this procedure.

21. Do all of the frames on the system become powered on?

**Yes      No**

↓      Go to "Cannot Power On Secondary Frame (No SRC)".

**This ends the procedure.**

22. Continue the IPL.

Does the IPL complete successfully?

**No      Yes**

↓      **This ends the procedure.**

23. Go to "Starting Point for All Problems" on page 4.

**This ends the procedure.**

## Cannot Power On Secondary Frame (No SRC)

You are here because of a secondary frame that cannot become powered on and may be displaying a 1xxx-C62E.

1. Does the frame that cannot become powered on contain a 3490 or a 3590 Tape Unit?

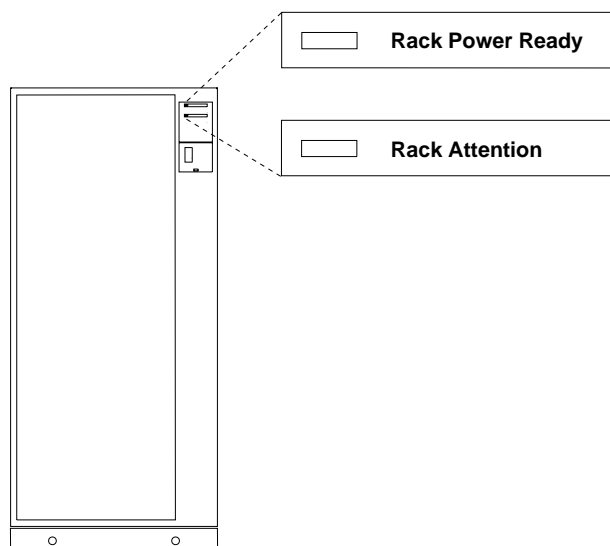
**No      Yes**

↓      Go to the service information for the specific tape unit to analyze the problem.

**This ends the procedure.**

2. Is the secondary frame a Stage 2 frame?

**Note:** Stage 2 frames have a Rack Attention light on the frame control panel.



RV2A176-2

**Yes      No**

↓ Go to step 33 of this procedure.

3. Starting from J15 or J16 on the system unit, go to the first frame in the frame interconnect cable sequence. One of the following conditions should be present:
- The Power Ready light is off.
  - The Power Ready light is blinking.
  - A frame-mounted unit displays a power reference code of 1xxx xx2E.

Is the Power Ready light blinking?

**No      Yes**

↓ A normal power-on sequence may be in process. If any Power Ready light is blinking for more than 1 minute, exchange the power control compartment (PCC) on the frame with the blinking light (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system).

**This ends the procedure.**

4. Is the Attention light on or blinking?

**No      Yes**

↓ Go to step 18 of this procedure.

5. Does a frame-mounted unit display a power reference code of 1xxx xx2E?

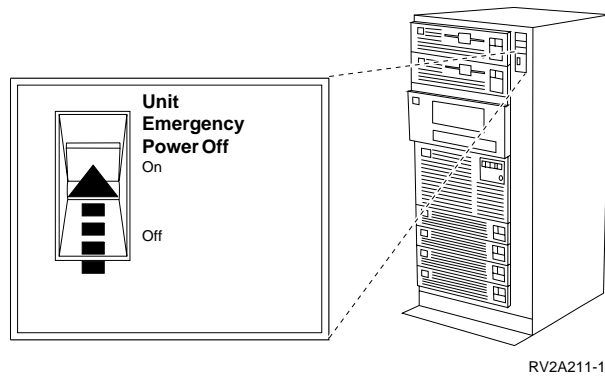
**No      Yes**

↓ Exchange the PCC in the failing frame (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system).

**This ends the procedure.**

6. Is the Unit Emergency Power Off (UEPO) switch on the secondary frame set to the On position?

## Power



**No      Yes**

↓      Go to step 8 of this procedure.

7. Perform the following:

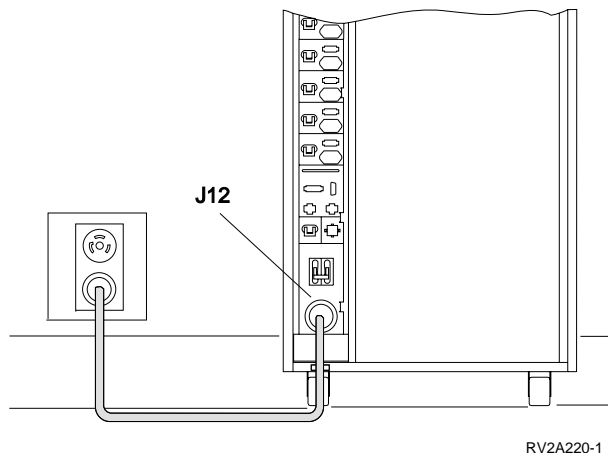
- a. Check with the customer to determine why the UEPO switch is set to the Off position.
- b. Set the UEPO switch to the On position.
- c. Go to step 30 of this procedure.

8. Is the mainline ac power cable from J12 on the PCC to the customer's ac power outlet connected and seated correctly at both ends?

**Note:** J12 may not be present on machines in some countries.

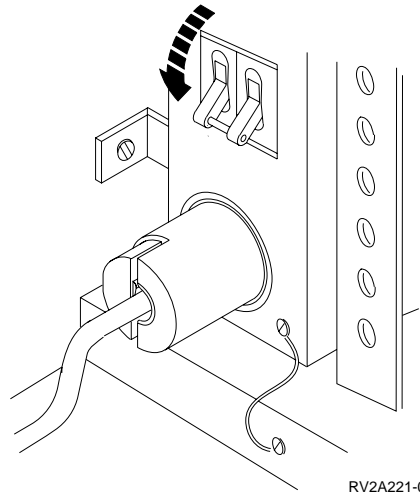
**No      Yes**

↓      Go to step 13 of this procedure.



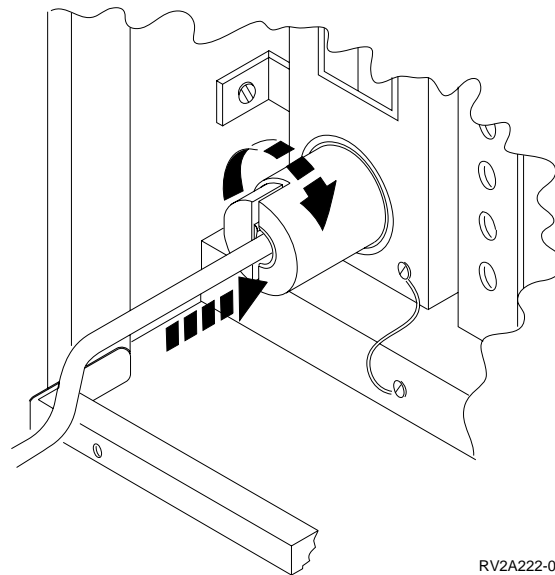
9. Perform the following:

- a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
- b. Set circuit breaker CB1 on the PCC to the O (off) position.

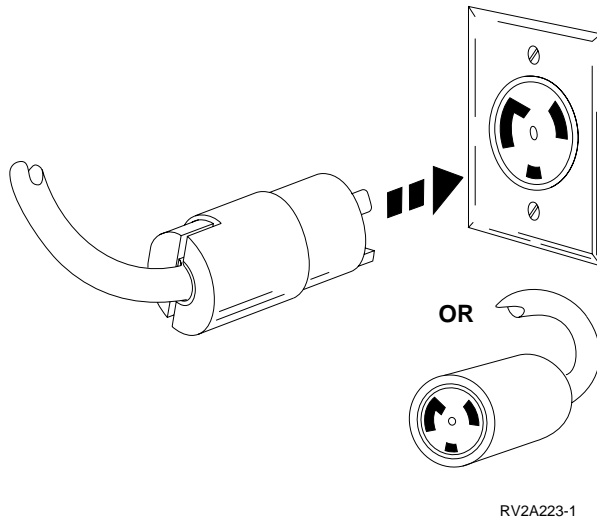


10. Connect the mainline ac power cable correctly at both ends.

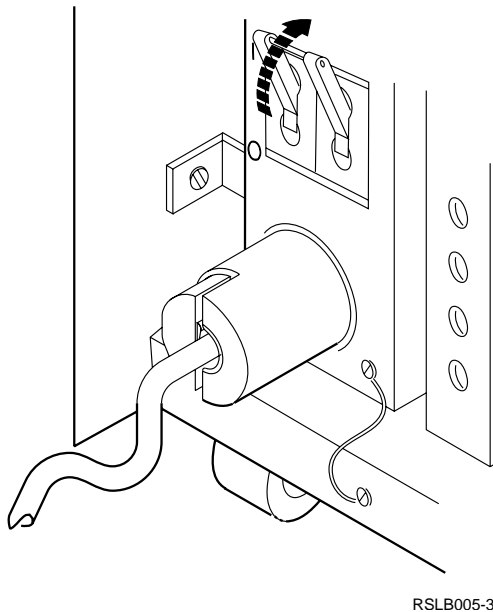
**Note:** The connectors that are shown may not be present on machines in some countries.



## Power



11. Set circuit breaker CB1 to the I (on) position.



12. Power on the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).

Does the failing frame become powered on?

No      Yes

↓      Go to step 23 of this procedure.

13. **DANGER**

**Dangerous voltage being measured. (RSFTD005)**

- a. Power off the system.
- b. Use a multimeter to measure the ac voltage at the customer’s ac power outlet.

Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?

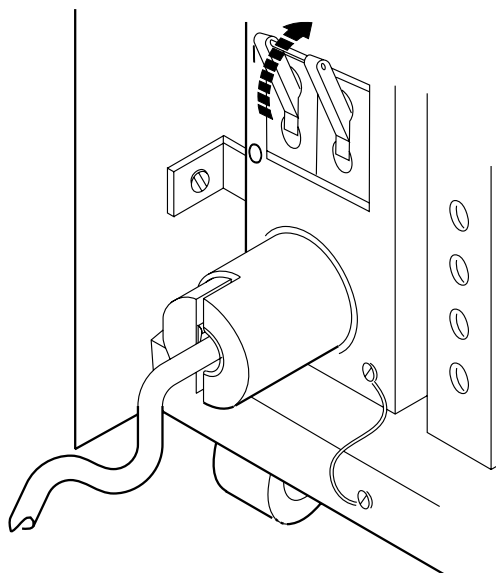


**Yes      No**

- ↓ Inform the customer that the ac voltage at the power outlet is not correct.

**This ends the procedure.**

14. Is circuit breaker CB1 on the PCC of the failing frame set to the I (on) position?



RSLB005-3

**No      Yes**

- ↓ Exchange the following FRUs, one at a time (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system):
- a. PCC
  - b. Frame control panel
  - c. Frame control panel cable

**This ends the procedure.**

15. Set circuit breaker CB1 on the PCC to the I (on) position.

16. Power on the system.

Does CB1 remain in the I (on) position?

**Yes      No**

- ↓ Exchange the power control compartment (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system).

**This ends the procedure.**

17. Does the failing frame become powered on?

**No      Yes**

- ↓ **This ends the procedure.**

18. Is the Attention light blinking?

**Note:** This may be a normal condition during a power-on sequence.

## Power

Yes No

↓ Go to step 21 of this procedure.

19. Does the Attention light continue to blink for more than 1 minute?

Yes No

↓ **This ends the procedure.**

20. Go to step 23 of this procedure.

21. The Attention light is on. This may be a normal condition.

Does the Attention light remain on for more than 1 minute?

Yes No

↓ **This ends the procedure.**

22. Exchange the following FRUs, one at a time (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system):

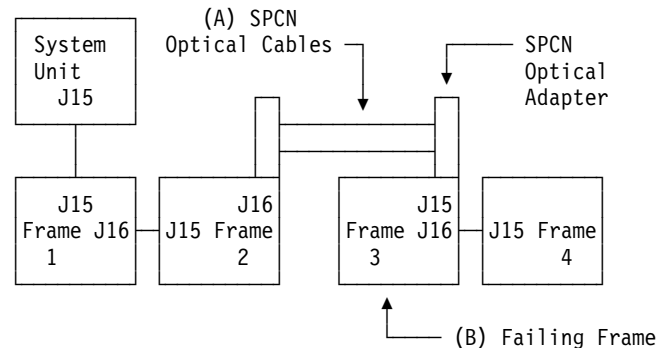
- PCC
- AC module
- Frame control panel
- SPCN frame-to-frame cable

**This ends the procedure.**

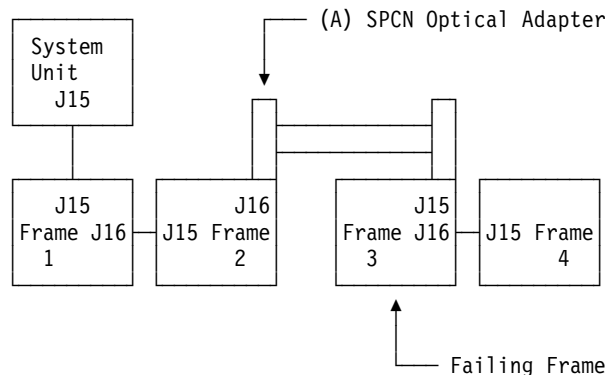
23. Do SPCN optical cables **A** connect the failing frame **B** to the preceding frame in the string?

Yes No

↓ Go to step 27 on page 50.



24. Remove the SPCN optical adapter **A** from the preceding frame in the string that cannot become powered on (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system).



25. Perform the following:

- Connect the negative lead of a multimeter to the system frame ground.

- b. Connect the positive lead of a multimeter to pin 2 of J16 on the PCC in the frame from which you removed the SPCN optical adapter in step 24 of this procedure.

**Notes:**

- 1) If you are working on a system unit, the cable may be connected to either J15 or J16.
  - 2) Use an insulated probe or jumper when performing the voltage readings.
- c. Note the voltage reading on pin 2.
  - d. Move the positive lead of the multimeter to pin 3 of J16 on the PCC.
  - e. Note the voltage reading on pin 3.

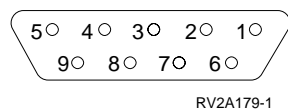


Figure 6. J16 on PCC, AC module, or SPCN card

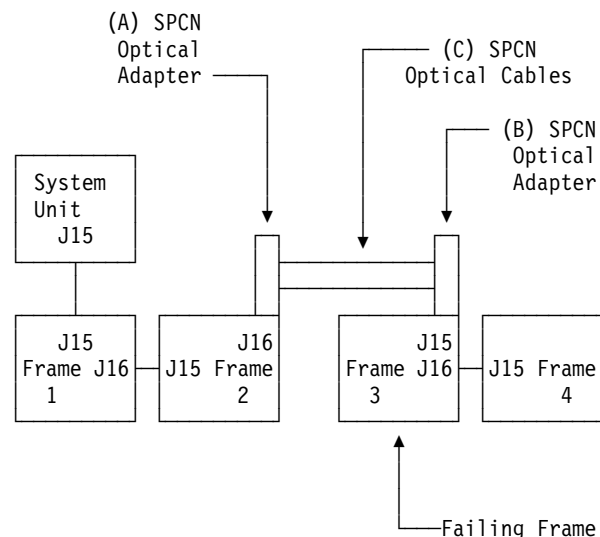
Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

**Yes      No**

- ↓ Exchange the power control compartment, AC module, or SPCN panel card in the frame from which you removed the SPCN optical adapter (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system).

**This ends the procedure.**

26. Exchange the following FRUs, one at a time (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system):
  - a. PCC in the failing frame (first frame with a failure indication)
  - b. PCC, AC module, or SPCN panel card in the preceding frame in the string
  - c. SPCN optical adapter **A** in the preceding frame in the string
  - d. SPCN optical adapter **B** in the failing frame
  - e. SPCN optical cables **C** between the preceding frame in the string and the failing frame



## Power

**This ends the procedure.**

27. Perform the following:
  - a. Power off the system.
  - b. Disconnect the SPCN frame-to-frame cable from J15 on the PCC of the first secondary frame that cannot become powered on.
  - c. Connect the negative lead of a multimeter to the system frame ground.
  - d. Connect the positive lead of the multimeter to pin 2 of the SPCN cable.

**Note:** Use an insulated probe or jumper when performing the voltage readings.

- e. Note the voltage reading on pin 2.
  - f. Move the positive lead of the multimeter to pin 3 of the SPCN cable.
  - g. Note the voltage reading on pin 3.

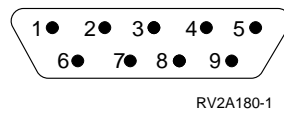


Figure 7. SPCN cable connector

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

**No**      **Yes**

- ↓ Exchange the following FRUs, one at a time (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system):
- a. PCC in the failing frame
  - b. PCC, AC module, or SPCN panel card in the preceding frame in the frame string
  - c. SPCN frame-to-frame cable

**This ends the procedure.**

28. Perform the following:
  - a. Follow the SPCN frame-to-frame cable back to the preceding frame in the string.
  - b. Disconnect the SPCN cable from J16 on the PCC, AC module, or SPCN card.
  - c. Connect the negative lead of a multimeter to the system frame ground.
  - d. Connect the positive lead of a multimeter to pin 2 of J16.

**Note:** Use an insulated probe or jumper when performing the voltage readings.

- e. Note the voltage reading on pin 2.
  - f. Move the positive lead of the multimeter to pin 3 of J16.
  - g. Note the voltage reading on pin 3.

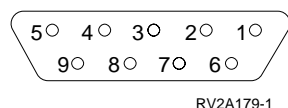


Figure 8. J16 on PCC, AC module, or SPCN card

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

**No      Yes**

↓ Exchange the SPCN frame-to-frame cable (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system).

**This ends the procedure.**

29. Exchange the power control compartment, AC module, or SPCN card from which you disconnected the SPCN cable in step 28 of this procedure (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system).

**This ends the procedure.**

30. Power on the system.

Do all of the frames on the system become powered on?

**Yes      No**

↓ Go to “Starting Point for All Problems” on page 4 to analyze problems for frames that do not become powered on.

**This ends the procedure.**

31. Continue the IPL (see “Initial Program Load (IPL) Information” in the *AS/400 Service Functions* information).

Does the IPL complete successfully?

**Yes      No**

↓ Go to “Starting Point for All Problems” on page 4.

**This ends the procedure.**

32. You have corrected the problem.

Select the mode on the control panel the customer wants.

**This ends the procedure.**

33. Power on the system.

34. Starting from J15 or J16 on the system unit, go to the first frame in the frame interconnect cable sequence that does not power on.

35. Is the background light for the Data display on the control panel on, or are there any characters displayed on the control panel?

**Note:** The background light is a dim (yellow) light in the Data area on the control panel.

**No      Yes**

↓ Go to step 45 of this procedure.

36. **DANGER**

**Dangerous voltage being measured. (RSFTD005)**

Use a multimeter to measure the ac voltage at the customer’s ac power outlet.

## Power

Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?

**Yes     No**

↓ Inform the customer that the ac voltage at the power outlet is not correct.

**This ends the procedure.**

37. Is the mainline ac power cable from the ac module to the customer's ac power outlet connected and seated correctly at both ends?

**Yes     No**

↓ Connect the mainline ac power cable correctly at both ends.

**This ends the procedure.**

38. **DANGER**

<b>Dangerous voltage being measured. (RSFTD005)</b>
---

Perform the following:

- a. Disconnect the mainline ac power cable from the ac module or battery unit.
- b. Use a multimeter to measure the ac voltage at the ac module or battery unit end of the mainline ac power cable.
- c. AC modules (part 87G6300 and 21H7697) must have 200 V to power on.

Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?

**Yes     No**

↓ Exchange the mainline ac power cable.

**This ends the procedure.**

39. Does the frame you are working on have an ac module installed?

**Yes     No**

↓ Go to step 42.

40. Is the ac module leadscrew seated correctly (clockwise) (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system)?

**Yes     No**

↓ Perform the following:

- a. Seat the ac module leadscrew correctly (clockwise).
- b. Reconnect the mainline ac power cable to the ac module.

**This ends the procedure.**

41. Exchange the ac module (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system).

**This ends the procedure.**

42. Use a multimeter to measure the ac voltage at the battery power supply outlets to the power supplies. Is the ac voltage from 200V ac to 240V ac?

**Yes     No**

↓ Replace the battery power supply charging unit (BATCHGR).

**This ends the procedure.**

43. Is the failing unit a FC 5065 or 5066 expansion tower?

**No      Yes**

↓ Exchange the following parts one at a time:

- Display unit (CTPNL)
- SPCN card unit (BKSPCN)
- Power Board - part 24L0891

44. Exchange the following parts one at a time:

- SPCN card unit (BKSPCN).
- Display unit (CTLPNL).
- Power supply (PWRSPLY), with a new unit, replace 1 of the power supplies 1,2, or 3 until failing unit is found.
- cables.

**This ends the procedure.**

45. Is an SRC displayed on the control panel of the frame that doesn't power on?

**Yes      No**

↓ Replace the SPCN card (BKSPCN).

**This ends the procedure.**

46. Is the SRC 1xxx xx2E?

**Yes      No**

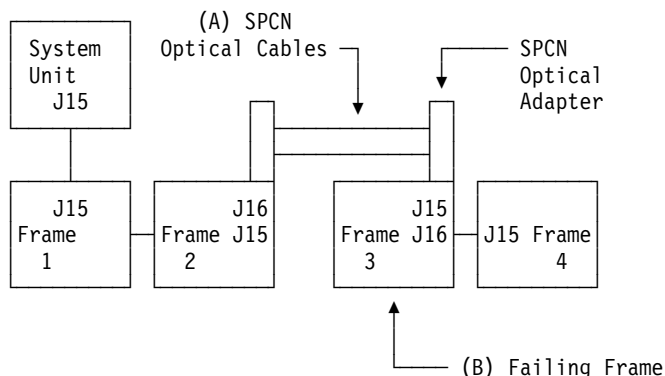
↓ Go to "Starting Point for All Problems" on page 4.

**This ends the procedure.**

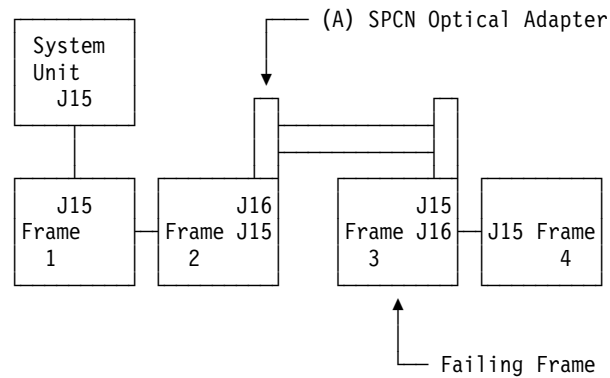
47. Do SPCN optical cables **A** connect the failing frame **B** to the preceding frame in the string?

**Yes      No**

↓ Go to step 51 of this procedure.



48. Remove the SPCN optical adapter **A** from the preceding frame in the string that cannot become powered on (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system).



49. Perform the following:

- Connect the negative lead of a multimeter to the system frame ground.
- Connect the positive lead of a multimeter to pin 2 of J16 on the ac module or SPCN card in the frame from which you removed the SPCN optical adapter in step 48 of this procedure.

**Notes:**

- If you are working on a system unit, the cable may be connected to either J15 or J16.
  - Use an insulated probe or jumper when performing the voltage readings.
- Note the voltage reading on pin 2.
  - Move the positive lead of the multimeter to pin 3 of J16 on the ac module or SPCN card.
  - Note the voltage reading on pin 3.

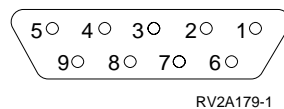


Figure 9. J16 on ac module

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

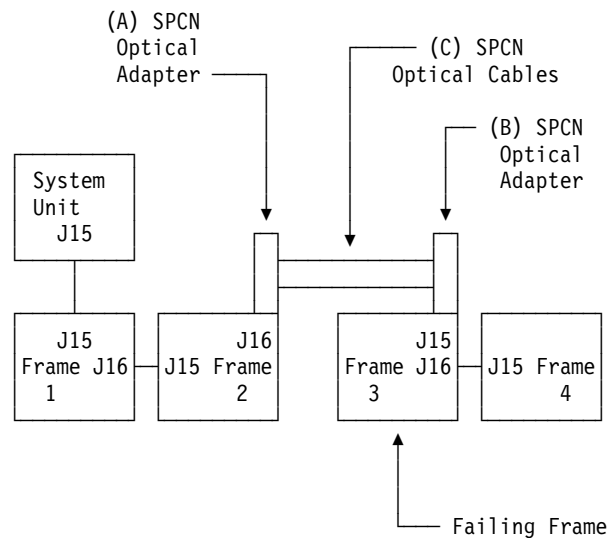
**Yes      No**

- ↓ Exchange the AC module or SPCN card in the frame from which you removed the SPCN optical adapter (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system).

**This ends the procedure.**

50. Exchange the following FRUs, one at a time (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system):
- AC module or SPCN card in the failing frame (first frame with a failure indication)
  - AC module or SPCN card in the preceding frame in the string
  - SPCN optical adapter **A** in the preceding frame in the string
  - SPCN optical adapter **B** in the failing frame
  - SPCN optical cables **C** between the preceding frame in the string and the failing frame





**This ends the procedure.**

51. Does the SPCN frame-to-frame cable coming from the system unit connect to J15 on the secondary frame (where the power on light is off or the frame control panel displays a power reference code of 1xxx xxxx)?

Yes No

- ↓ Correct the connection by connecting the SPCN frame-to-frame cable coming from the system unit to J15 of the secondary frame.

**This ends the procedure.**

52. Perform the following:

- Power off the system.
- Disconnect the SPCN frame-to-frame cable from J15 on the ac module or SPCN card of the first frame that cannot become powered on.
- Connect the negative lead of a multimeter to the system frame ground.
- Connect the positive lead of the multimeter to pin 2 of the SPCN cable.

**Note:** Use an insulated probe or jumper when performing the voltage readings.

- Note the voltage reading on pin 2.
- Move the positive lead of the multimeter to pin 3 of the SPCN cable.
- Note the voltage reading on pin 3.

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

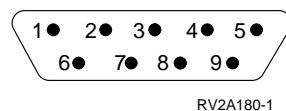


Figure 10. SPCN cable connector

No Yes

- ↓ Exchange the following FRUs, one at a time (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system):

- AC module or SPCN card in the failing frame

## Power

- 2) AC module or SPCN card in the preceding frame in the frame string
- 3) SPCN frame-to-frame cable

**This ends the procedure.**

53. Perform the following:

- a. Follow the SPCN frame-to-frame cable back to the preceding frame in the string.
- b. Disconnect the SPCN cable from J16 on the ac module or SPCN card.
- c. Connect the negative lead of a multimeter to the system frame ground.
- d. Connect the positive lead of a multimeter to pin 2 of J16 on the AC module or SPCN card.

**Note:** Use an insulated probe or jumper when performing the voltage readings.

- e. Note the voltage reading on pin 2.
- f. Move the positive lead of the multimeter to pin 3 of J16 on the AC module or SPCN card.
- g. Note the voltage reading on pin 3.

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

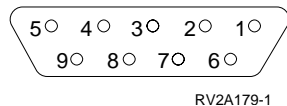


Figure 11. J16 on ac module

No	Yes
----	-----

↓

Exchange the following FRUs, one at a time (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system):

- 1) SPCN frame-to-frame cable
- 2) AC module or SPCN card in the failing frame
- 3) AC module or SPCN card in the preceding frame of the frame string

**This ends the procedure.**

54. Exchange the ac module or SPCN card from which you disconnected the SPCN cable in step 53 of this procedure (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system).

**This ends the procedure.**

## System or Frame Cannot Become Powered Off

This procedure analyzes a failure of the normal command and control panel procedures to power off the system unit or a secondary frame.

**Attention:** To prevent loss of data, ask the customer to verify that no interactive jobs are running before you perform this procedure.

1. Is the power-off problem on a 504x secondary frame?

No	Yes
----	-----

↓

Go to “System or Rack Cannot Become Powered Off” in the *FC 504x Problem Analysis and Repair and Parts* information.

2. Is the power off problem on the system unit?

No      Yes

↓      Go to step 5 of this procedure.

3. Ensure that the SPCN cables that connect the frames are connected and seated correctly at both ends.

Does the frame power off, and is the Power On light off?

No      Yes

↓      **This ends the procedure.**

4. Go to step 6 of this procedure.

5. Perform "Powering Off the System" on page 789. Then return here and answer the following question.

Does the system unit or frame power off, and is the Power On light off?

No      Yes

↓      The system is not responding to normal power off procedures, which could indicate a Licensed Internal Code problem.

Ask your next level of support for assistance.

**This ends the procedure.**

6. Perform the following:

- a. Verify that the battery power unit or internal uninterruptible power supply is not powering the system unit or frame.
- b. Remove the battery power unit or internal uninterruptible power supply (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system).

- c. **Be sure there are no jobs running on the system. After removing the battery power unit, CPM is not available.**

Disconnect the mainline ac power cable.

- d. Exchange the following FRUs in the system unit or frame, one at a time (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system):

If the system unit is failing:

- 1) Control panel (CTLPNL)
- 2) SPCN panel card (SPNLCRD)
- 3) Power supply (PWRSPPLY)
- 4) Control panel cable

If a secondary frame is failing:

- 1) The ac module or SPCN card in the frame that will not power off.
- 2) The ac module or SPCN card in the frame that precedes the frame that will not power off.
- 3) The SPCN frame-to-frame cable.

**This ends the procedure.**

## Power

---

## Chapter 2. Unit Reference Codes

---

### How to Use This Section

This procedure uses an SRC (System Reference Code) on the problem summary form to:

- Find a list of possible failing items.
- Point to additional isolation procedures (if available).

An SRC reported through a message to the system operator may be used when a Service Action log or Problem log entry is not available.

1. Were you directed here from another procedure, including Starting Point for All Problems?

**Yes      No**

↓      Go to “Starting Point for All Problems” on page 4.

2. Use Figure 12 to:

- a. Determine which SRC table to use.

The SRC table name is the same as the SRC type. The tables in this section are arranged in hexadecimal sequence.

The reference code tables only support 8-character SRC formats. If the SRC provided is in a 4-character format, contact your next level of support for assistance.

- b. Determine the URC (Unit Reference Code) from the SRC reported.

The URCs are listed within the SRC tables. The URCs are arranged in hexadecimal sequence, with numeric characters listed before alphabetic characters. For example, URCs 0001 through 0009 are listed before URCs 000A through 000F.

System Control Panel Display or Problem Summary Form Information

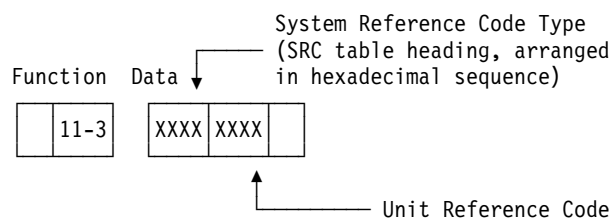


Figure 12. Determining the SRC and URC

3. You will be directed to find the appropriate SRC table for your SRC.

To correct the problem, perform the action indicated for the URC in the *Description/Action* column of the table. If this does not correct the problem, exchange the failing items or parts listed in *Failing Item* column in the order that they are listed.

If no action is indicated in the SRC table, exchange the failing items or parts listed in the table.

## Reference Code Tables

### Notes:

- When exchanging the failing items, use the “Chapter 6. Removal and Installation Procedures” on page 821.
- When instructed to perform problem isolation procedures, go to “Chapter 4. Problem Isolation Procedures (PIPs)” on page 441.
- Any additional information you need to complete the procedure may be found in “Chapter 5. Locations, Addresses, and Service Reference Information” on page 709.

The failing item listed first should be exchanged first. If exchanging the first failing item does not correct the problem, reinstall the original item and exchange the next failing item listed. Continue to exchange and reinstall the failing items, one at a time, until the problem is corrected. If exchanging the failing items does not correct the problem, ask your next level of support for assistance.

Now, go to “List of SRC Tables” and find the SRC table.

Follow the instructions in the SRC table. The list contains all SRC tables for critical resources available at the time this edition was published. If you cannot find the SRC table, return here and continue with step 4.

### This ends the procedure.

- You are at this step because you did not find the reference code table for your SRC in the “List of SRC Tables”. Refer to “SRC Exception Table” on page 62 to find the SRC.

### Note:

- If the 4 leftmost characters of the SRC are listed in SRC Exception Table, follow the instructions listed.
- If the 4 leftmost characters of the SRC are **not** listed in “SRC Exception Table” on page 62, additional information may be available by doing the following:
  - Look for the SRC information on-line.
  - Find any supplemental information for the system and look for the SRC table in that information. In some cases the supplemental information may have been inserted into the pages of the SRC tables.

If you do not find any information for the SRC, ask your next level of support for assistance.

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## Reference Code Tables

### SRC Exception Table

Table 5. SRC exception table

First 4 characters of SRC	What You Should Do
2718, 2726–2729, 2741	Go to “(2629, 2718, 2726 - 2729, 2741, 2809, 2810, 2824, 6532 - 6534, 9164) Reference Codes” on page 132 and follow the instructions in the SRC table.
2748	Go to “(2740, 2748) Reference Codes” on page 151 and follow the instructions in the SRC table.
2809, 2810, 2824	Go to “(2629, 2718, 2726 - 2729, 2741, 2809, 2810, 2824, 6532 - 6534, 9164) Reference Codes” on page 132 and follow the instructions in the SRC table.
283D	Go to “(283C, 283D) Device Backplane Reference Codes” on page 155 and follow the instructions in the SRC table.
6180	Go to “(2722, 2746) Twinaxial Workstation Reference Codes” on page 150 and follow the instructions in the SRC table.
6366, 6368, 6369, 6379, 6380	Go to “(6335, 636x, 637x, 6380) Tape Unit Reference Codes” on page 220 and follow the instructions in the SRC table.
6381, 6382	Go to “(63A0) Tape Unit Reference Codes” on page 236 and follow the instructions in the SRC table.
6530	Go to “(6513, 6530) Tape I/O Processor and MSIOP Reference Codes” on page 251 and follow the instructions in the SRC table.
6532, 6533, 6534	Go to “(2629, 2718, 2726 - 2729, 2741, 2809, 2810, 2824, 6532 - 6534, 9164) Reference Codes” on page 132 and follow the instructions in the SRC table.
671x, 673x	Go to “(660x, 671x, 673x) Disk Unit Reference Codes” on page 256 and follow the instructions in the SRC table.
9164	Go to “(2629, 2718, 2726 - 2729, 2741, 2809, 2810, 2824, 6532 - 6534, 9164) Reference Codes” on page 132 and follow the instructions in the SRC table.
B1xx	<p>Service Processor terminating SRC</p> <p>Go to “(A1xx, B1xx) Service Processor Reference Codes” on page 279 and follow the instructions in the SRC table.</p> <p>If the problem is not resolved, perform “SP-PIP40” on page 639.</p>
B6xx	Go to “(A6xx, B6xx) LIC Reference Codes” on page 281 and follow the instructions in the SRC table.
B9xx	Go to “(A9xx, B9xx) OS/400 Reference Codes” on page 302.
C9xx	For information about these SRCs, see “Status SRCs” in the <i>AS/400 Service Functions</i> .
C1xx	<p>Service Processor IPL status</p> <p>This is a normal reference code during the IPL of the system. You may suspect that the IPL is not advancing correctly when the 6 rightmost characters do not change for 2 minutes. The IPL may take longer with more I/O units and main storage. Perform the following procedure if you suspect a problem:</p> <ol style="list-style-type: none"> <li>1. See “IPL Status SRCs” in the <i>AS/400 Service Functions</i>.</li> <li>2. If there is still a problem, ask your next level of support for assistance.</li> </ol>
C6xx, D6xx	For information about these SRCs, see “Status SRCs” in the <i>AS/400 Service Functions</i> .



Table 5. SRC exception table (continued)

First 4 characters of SRC	What You Should Do
D1xx 3xxx	Service Processor Main Storage Dump Status  This is a normal reference code showing the status of the system when performing a main storage dump. You may suspect that the system is not operating correctly when the rightmost characters do not change for 2 minutes. <b>Note:</b> It takes approximately 1 minute to dump each 20MB of main storage. For more information on main storage dumps, see <i>Working with Storage Dumps</i> in the <i>AS/400 Service Functions</i> information.
D1xx xxxx	Service Processor General Status SRCs  If you suspect a problem, ask your next level of support for assistance.
EE60, F000	Go to “(0000) SPCN Control Panel Reference Codes” on page 67 and follow the instructions in the SRC table.

**Notes:**

1. In the SRC tables, x can be any number 0 through 9 or letter A through F.
2. Machine check is a condition that is indicated when the System Attention light is on and SRC data for functions 11-3 through 20-3 is displayed on the system control panel. When the SRC indicates a machine check, the leftmost character in the Data display for function 11-3 is 0 through 9, A, B, or F.
3. Non-SPCN systems are models 600, S10, and 620, S20, 720 using the 480 watt power supply.

**(0000) Non-SPCN Control Panel Reference Codes**

The control panel detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

**Notes:**

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0003	Power Supply over current fault  The system unit power supply has detected an overcurrent problem.  Perform “POW-PIP1” on page 579.	21H9364 PWRDIS1
0009	Air Moving Device Panel Fault	44H7756 21H9364

# 0000

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
000B	Power supply failure  The system unit power supply has detected a fault.  Exchange the system unit power supply.	21H9364 44H7756
0040	Power Supply over current fault  The expansion unit power supply has detected an overcurrent problem.  Perform "POW-PIP2" on page 585.	44H7779 PWRDIS2
0043	Power Supply over current fault  The system unit and the expansion unit power supplies have detected an overcurrent problem.  Perform "POW-PIP1" on page 579 and "POW-PIP2" on page 585.	PWRSPLY PWRDIS1 PWRDIS2
0049	Power supply failure  The system unit has detected an air moving device fault and the expansion unit power supply has detected an overcurrent problem.  Exchange the system unit air moving device panel and Perform "POW-PIP2" on page 585.	PWRSPLY PWRDIS2
004B	Power supply failure  The system unit power supply has detected a fault and the expansion unit power supply has detected an overcurrent problem.  Exchange the system unit power supply and perform "POW-PIP2" on page 585 for the expansion unit power supply.	PWRSPLY PWRDIS2
0050	Power supply failure  The expansion unit power supply has detected an overcurrent problem.  Perform "POW-PIP2" on page 585.	44H7777 PWRDIS2
0053	Power Supply over current fault  The system unit and the expansion unit power supplies have detected an overcurrent problem.  Perform "POW-PIP1" on page 579 and "POW-PIP2" on page 585.	PWRSPLY PWRDIS1 PWRDIS2
0059	Power supply failure  The system unit has detected an air moving device fault and the expansion unit power supply has detected an overcurrent problem.  Exchange the system unit air moving device panel and Perform "POW-PIP2" on page 585.	PWRSPLY PWRDIS2
005B	Power supply failure  The system unit power supply has detected a fault and the expansion unit power supply has detected an overcurrent problem.  Exchange the system unit power supply and Perform "POW-PIP2" on page 585 for the expansion unit power supply.	PWRSPLY PWRDIS2
00C0	Power supply failure  The expansion unit power supply has detected a fault.	44H7779

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00C3	<p>Power supply failure</p> <p>The system unit power supply has detected an overcurrent problem and the expansion unit power supply has detected a fault.</p> <p>Perform "POW-PIP1" on page 579 for the system unit power supply and exchange the expansion unit power supply.</p>	PWRSPLY PWRDIS1
00C9	<p>Power supply failure</p> <p>The system unit has detected an air moving device problem and the expansion unit power supply has detected a fault.</p> <p>Exchange the system unit air moving device panel and exchange the expansion unit power supply.</p>	PWRSPLY
00CB	<p>Power supply failure</p> <p>The system unit power supply and the expansion unit power supply has detected a fault.</p> <p>Exchange the system unit power supply and the expansion unit power supply.</p>	PWRSPLY
00D0	<p>Power supply failure</p> <p>The expansion unit power supply has detected a fault.</p>	44H7777
00D3	<p>Power supply failure</p> <p>The system unit power supply has detected an overcurrent problem and the expansion unit power supply has detected a fault.</p> <p>Perform "POW-PIP1" on page 579 for the system unit power supply and exchange the expansion unit power supply.</p>	PWRSPLY PWRDIS1
00D9	<p>Power supply failure</p> <p>The system unit has detected an air moving device problem and the expansion unit power supply has detected a fault.</p> <p>Exchange the system unit air moving device panel and exchange the expansion unit power supply.</p>	PWRSPLY
00DB	<p>Power supply failure</p> <p>The system unit power supply and the expansion unit power supply has detected a fault.</p> <p>Exchange the system unit power supply and the expansion unit power supply.</p>	PWRSPLY
2222	<p>Service processor failure caused machine check interrupt.</p> <p>Before exchanging the MFIO, remove the adapter cards from the MFIO and perform an IPL. If the IPL completes successfully, one of the adapter cards you removed is defective.</p>	IOP CTLPNL ANYBUS
4444	<p>Power on request failure</p> <p>A power-on request was not completed successfully. A control panel-detected power-on failure occurred.</p>	CTLPNL PWRSPLY CBLALL

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
AABB	Remote power-on failure  An attempt was made to power on the system by a remote power-on operation with the keylock mode on the control panel set to Secure or Manual. To correct the problem, select Normal or Auto mode on the control panel and perform the remote power-on operation again, if necessary.	FI00132 IOP CTLPNL
AACC	Service processor power-on failure  An attempt was made to power on the system from the service processor with Secure or Manual mode selected on the control panel. To correct the problem, select Normal or Auto mode on the control panel and perform the service processor power-on operation again, if necessary. <b>Note:</b> This reference code may occur if the service processor card was exchanged and Manual mode was selected. Select Normal mode on the control panel.	IOP CTLPNL
BBBB	Battery not working correctly  A problem was detected with the battery supplying power to the time-of-day clock. The battery is either weak or is not connected securely. <b>Note:</b> This is not a critical failure. However, if there is a power failure, the time of day will be lost.	PNLBAT CTLPNL
CCCC	Service processor error to or from control panel  An attempt to communicate between the service processor and the control panel failed.	IOP FI00132 CTLPNL CBLALL ANYBUS
DDDD	Interface error.  A service and manufacturing interface error to or from the control panel occurred.  Verify that the external interface device is connected correctly and attempt the power-on operation again. If the SRC is still displayed after a power-on operation go to "ROC-PIP7" on page 597 before replacing the failing items.	CTLPNL CBLALL
EEEE	IPL1 failed in the service processor  Before exchanging the MFIOPI, remove the adapter cards from the MFIOPI and perform an IPL. If the IPL completes successfully, one of the adapter cards you removed is defective.  Any card connected to the system bus can also cause this reference code. If exchanging the failing items does not correct the problem, perform "BUS-PIP1" on page 451.	IOP PWRSPY CTLPNL CBLALL ANYBUS
FFF0 to FFFF	Control panel self-test failed	CTLPNL

## Control Panel Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
21H9364	Power Supply	Repair and Parts; removal and installation procedures
44H7756	Fan assembly.	Repair and Parts; removal and installation procedures
44H7777	Power Supply	Repair and Parts; removal and installation procedures
44H7779	Power Supply	Repair and Parts; removal and installation procedures
CBLALL	Cable Unit Part	Problem Analysis; Symbolic FRU Isolation
CTLPNL	Control Panel	Problem Analysis; Symbolic FRU Isolation
IOP	Multiple function I/O processor card	Problem Analysis; Symbolic FRU Isolation
PNLBAT	Control Panel Battery	Problem Analysis; Symbolic FRU Isolation
PWRDIS1	Card or device in System unit	Repair and Parts; removal and installation procedures
PWRDIS2	Card or device in Expansion unit	Repair and Parts; removal and installation procedures
PWRSPLY	Power Supply	Problem Analysis; Symbolic FRU Isolation

## (0000) SPCN Control Panel Reference Codes

The control panel detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.
4. SPCN systems are models 620, S20, and 720 with the 845/950 watt power supply and SPCN panel card (SPNLCARD) installed.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1110 to 111F	Failure of CEC power supply not identified by SPCN.  This reference code can be caused by something holding the system Power On Reset (POR) line active.	SPNLCRD ANYBUS
2222	Service processor failure caused machine check interrupt.  Before exchanging the MFIOIP, remove the adapter cards from the MFIOIP and perform an IPL. If the IPL completes successfully, one of the adapter cards you removed is defective.	SPNLCRD 44H8021 IOP ANYBUS

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3333	SPCN - control panel interface error.  An attempt to communicate between the SPCN and the control panel failed.	SPNLCRD CTLPNL
4444	Power on request failure  A power-on request was not completed successfully. A control panel-detected power-on failure occurred.	SPNLCRD
5550 to 555F	Incorrect key used or the key is not completely inserted  The key inserted is not the correct key or is not completely inserted.	SPNLCRD CTLPNL
AABB	Remote power-on failure  An attempt was made to power on the system by a remote power-on operation with the keylock mode on the control panel set to Secure or Manual. To correct the problem, select Normal or Auto mode on the control panel and perform the remote power-on operation again, if necessary.	SPNLCRD
AACC	Service processor power-on failure  An attempt was made to power on the system from the service processor with Secure or Manual mode selected on the control panel. To correct the problem, select Normal or Auto mode on the control panel and perform the service processor power-on operation again, if necessary. <b>Note:</b> This reference code may occur if the service processor card was exchanged and Manual mode was selected. Select Normal mode on the control panel.	SPNLCRD
AADD	Manual power-on failure  An attempt was made to power on the system manually with Secure or Auto mode selected on the control panel. To correct the problem, select Manual or Normal mode on the control panel and manually power on the system again.	SPNLCRD
AAEE	SPCN - control panel interface error.  An attempt was made to power on the system from the SPCN with Secure or Manual mode selected on the control panel. To correct the problem, select Normal or Auto mode and attempt the remote power-on operation again. If this does not correct the problem, exchange the failing items.	SPNLCRD
BBBB	Battery not working correctly  A problem was detected with the battery supplying power to the time-of-day clock. The battery is either weak or is not connected securely. <b>Note:</b> This is not a critical failure. However, if there is a power failure, the time of day will be lost.	PNLBAT IOP SPNLCRD 44H8021
CCCC	Service processor error to or from control panel  An attempt to communicate between the service processor and the control panel failed.	SPNLCRD IOP 44H8021 ANYBUS
DDDD	Interface error.  A service and manufacturing interface error to or from the control panel occurred.  Verify that the external interface device is connected correctly and attempt the power-on operation again. If the SRC is still displayed after a power-on operation go to "ROC-PIP7" on page 597 before replacing the failing items.	SPNLCRD CBLALL

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
EEEE	<p>IPL1 failed in the service processor</p> <p>Before exchanging the MFIOP, remove the adapter cards from the MFIOP and perform an IPL. If the IPL completes successfully, one of the adapter cards you removed is defective.</p> <p>Any card connected to the system bus can also cause this reference code. If exchanging the failing items does not correct the problem, perform "BUS-PIP1" on page 451.</p>	SPNLCRD IOP 44H8021 ANYBUS
FFF0 to FFFF	Control panel self-test failed	SPNLCRD CTLPNL

## Control Panel Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
44H8021	Contol Panel cable	Repair and Parts; removal and installation procedures
CBLALL	Cable Unit Part	Problem Analysis; Symbolic FRU Isolation
CTLPNL	Control Panel	Problem Analysis; Symbolic FRU Isolation
IOP	Multiple function I/O processor card	Problem Analysis; Symbolic FRU Isolation
PNLBAT	Control Panel Battery	Problem Analysis; Symbolic FRU Isolation
SPNLCRD	SPCN panel card	Problem Analysis; Symbolic FRU Isolation

## (1xxx) System Power Control Network (SPCN) Reference Codes

The system power control network (SPCN) detected a failure.

**Note:** On Models 600, 620, 720, S10 and S20 the first 4 characters of the SRC indicate the frame address location of the failing system unit or expansion unit. The second and third character from the left indicate the frame and the fourth character indicates the unit. For example: SRC 1023, 02 is the frame and 3 is the unit.

1. Look at the 4 rightmost characters of the Data display for function 11-3 or 5-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the

Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.

3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00A0	SPCN BATs in process  No action required. This reference code is logged for information only. If this reference code is present for more than 1 minute, exchange the failing items.	TWRCARD
00A1	Regulator 1 has been turned off by system  No action required. This reference code is logged for information only.	
00A2	Regulator 2 has been turned off by system  No action required. This reference code is logged for information only.	
00A3	Regulator 3 has been turned off by system  No action required. This reference code is logged for information only.	
00A4	Regulator 4 has been turned off by system  No action required. This reference code is logged for information only.	
00A5	Regulator 5 has been turned off by system  No action required. This reference code is logged for information only.	
00A6	Regulator 6 has been turned off by system  No action required. This reference code is logged for information only.	
00A7	The system is running on the Battery Power Unit.  No action required. This reference code is logged for information only.	
00A8	The Battery Power Unit is not fully charged.  No action required. This reference code is logged for information only.	
00A9	Battery Power Unit test is in process.  No action required. This reference code is logged for information only.	
00AA	Download in process  No action required. This reference code is logged for information only.	
00AB	Rack UEPO switch is OFF.  Informational reference code.  The UEPO switch must be returned to the On position to power on the rack.	TWRCARD CTLPNL 6462417
00AC	Detected AC loss  If system powers on normally or stays powered on after AC power failure, no replacement of parts may be needed.	ACMODUL
00BA	The system is running on the Battery Power Unit.  No action required. This reference code is displayed for information only.	



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00BC	Battery Power Unit test is in process. No action required. This reference code is displayed for information only.	
00CA	CPM power down is complete. No action required. This reference code is displayed for information only.	
00EF	Remote EPO switch is OFF	
0100	Install Disk Unit 1 Concurrent maintenance informational reference code.	
0101	Install Disk Unit 2 Concurrent maintenance informational reference code.	
0102	Install Disk Unit 3 Concurrent maintenance informational reference code.	
0103	Install Disk Unit 4 Concurrent maintenance informational reference code.	
0104	Install Disk Unit 5 Concurrent maintenance informational reference code.	
0105	Install Disk Unit 6 Concurrent maintenance informational reference code.	
0106	Install Disk Unit 7 Concurrent maintenance informational reference code.	
0107	Install Disk Unit 8 Concurrent maintenance informational reference code.	
0108	Install Disk Unit K1 Concurrent maintenance informational reference code.	
0109	Install Disk Unit K2 Concurrent maintenance informational reference code.	
010A	Install Disk Unit K3 Concurrent maintenance informational reference code.	
010B	Install Disk Unit K4 Concurrent maintenance informational reference code.	
010C	Install Disk Unit K5 Concurrent maintenance informational reference code.	
010D	Install Disk Unit K6 Concurrent maintenance informational reference code.	
010E	Install Disk Unit K7 Concurrent maintenance informational reference code.	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
010F	Install Disk Unit K8 Concurrent maintenance informational reference code.	
0110	Install Disk Unit K9 Concurrent maintenance informational reference code.	
0111	Install Disk Unit K10 Concurrent maintenance informational reference code.	
0112	Install Disk Unit K11 Concurrent maintenance informational reference code.	
0113	Install Disk Unit K12 Concurrent maintenance informational reference code.	
0114	Install Disk Unit K13 Concurrent maintenance informational reference code.	
0115	Install Disk Unit K14 Concurrent maintenance informational reference code.	
0116	Install device 1 Concurrent maintenance informational reference code.	
0117	Install device 2 Concurrent maintenance informational reference code.	
0118	Install Disk Unit 9 Concurrent maintenance informational reference code.	
0119	Install Disk Unit 10 Concurrent maintenance informational reference code.	
011A	Install Disk Unit 11 Concurrent maintenance informational reference code.	
011B	Install Disk Unit 12 Concurrent maintenance informational reference code.	
011C	Install device 3 Concurrent maintenance informational reference code.	
011D	Install Disk Unit K15 Concurrent maintenance informational reference code.	
011E	Install Disk Unit K16 Concurrent maintenance informational reference code.	
011F	Install Device 4 Concurrent maintenance informational reference code.	
0120	Install Disk Unit K17 Concurrent maintenance informational reference code.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0121	Install Disk Unit K18 Concurrent maintenance informational reference code.	
0122	Install Disk Unit K19 Concurrent maintenance informational reference code.	
0123	Install Disk Unit K20 Concurrent maintenance informational reference code.	
0124	Install Disk Unit K21 Concurrent maintenance informational reference code.	
0125	Install Disk Unit K22 Concurrent maintenance informational reference code.	
0126	Install Disk Unit K23 Concurrent maintenance informational reference code.	
0127	Install Disk Unit K24 Concurrent maintenance informational reference code.	
0128	Install Disk Unit K25 Concurrent maintenance informational reference code.	
0129	Install Disk Unit K26 Concurrent maintenance informational reference code.	
012A	Install Disk Unit K27 Concurrent maintenance informational reference code.	
012B	Install Disk Unit K28 Concurrent maintenance informational reference code.	
012C	Install Disk Unit K29 Concurrent maintenance informational reference code.	
012D	Install Disk Unit K30 Concurrent maintenance informational reference code.	
012E	Install Disk Unit K31 Concurrent maintenance informational reference code.	
012F	Install Disk Unit K32 Concurrent maintenance informational reference code.	
0200	Remove Disk Unit 1 Concurrent maintenance informational reference code.	
0201	Remove Disk Unit 2 Concurrent maintenance informational reference code.	
0202	Remove Disk Unit 3 Concurrent maintenance informational reference code.	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0203	Remove Disk Unit 4 Concurrent maintenance informational reference code.	
0204	Remove Disk Unit 5 Concurrent maintenance informational reference code.	
0205	Remove Disk Unit 6 Concurrent maintenance informational reference code.	
0206	Remove Disk Unit 7 Concurrent maintenance informational reference code.	
0207	Remove Disk Unit 8 Concurrent maintenance informational reference code.	
0208	Remove Disk Unit K1 Concurrent maintenance informational reference code.	
0209	Remove Disk Unit K2 Concurrent maintenance informational reference code.	
020A	Remove Disk Unit K3 Concurrent maintenance informational reference code.	
020B	Remove Disk Unit K4 Concurrent maintenance informational reference code.	
020C	Remove Disk Unit K5 Concurrent maintenance informational reference code.	
020D	Remove Disk Unit K6 Concurrent maintenance informational reference code.	
020E	Remove Disk Unit K7 Concurrent maintenance informational reference code.	
020F	Remove Disk Unit K8 Concurrent maintenance informational reference code.	
0210	Remove Disk Unit K9 Concurrent maintenance informational reference code.	
0211	Remove Disk Unit K10 Concurrent maintenance informational reference code.	
0212	Remove Disk Unit K11 Concurrent maintenance informational reference code.	
0213	Remove Disk unit K12 Concurrent maintenance informational reference code.	
0214	Remove Disk Unit K13 Concurrent maintenance informational reference code.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0215	Remove Disk Unit K14 Concurrent maintenance informational reference code.	
0216	Remove device 1 Concurrent maintenance informational reference code.	
0217	Remove device 2 Concurrent maintenance informational reference code.	
0218	Remove Disk Unit 9 Concurrent maintenance informational reference code.	
0219	Remove Disk Unit 10 Concurrent maintenance informational reference code.	
021A	Remove Disk Unit 11 Concurrent maintenance informational reference code.	
021B	Remove Disk Unit 12 Concurrent maintenance informational reference code.	
021C	Remove device 3 Concurrent maintenance informational reference code.	
021D	Remove Disk Unit K15 Concurrent maintenance informational reference code.	
021E	Remove Disk Unit K16 Concurrent maintenance informational reference code.	
021F	Remove device 4 Concurrent maintenance informational reference code.	
0220	Remove Disk Unit K17 Concurrent maintenance informational reference code.	
0221	Remove Disk Unit K18 Concurrent maintenance informational reference code.	
0222	Remove Disk Unit K19 Concurrent maintenance informational reference code.	
0223	Remove Disk Unit K20 Concurrent maintenance informational reference code.	
0224	Remove Disk Unit K21 Concurrent maintenance informational reference code.	
0225	Remove Disk Unit K22 Concurrent maintenance informational reference code.	
0226	Remove Disk Unit K23 Concurrent maintenance informational reference code.	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0227	Remove Disk Unit K24 Concurrent maintenance informational reference code.	
0228	Remove Disk Unit K25 Concurrent maintenance informational reference code.	
0229	Remove Disk Unit K26 Concurrent maintenance informational reference code.	
022A	Remove Disk Unit K27 Concurrent maintenance informational reference code.	
022B	Remove Disk Unit K28 Concurrent maintenance informational reference code.	
022C	Remove Disk Unit K29 Concurrent maintenance informational reference code.	
022D	Remove Disk Unit K30 Concurrent maintenance informational reference code.	
022E	Remove Disk Unit K31 Concurrent maintenance informational reference code.	
022F	Remove Disk Unit K32 Concurrent maintenance informational reference code.	
0300	Disk Unit 1 regulator has been turned on Installation of disk unit 1 is complete, and the regulator is turned on.	
0301	Disk Unit 2 regulator has been turned on Installation of disk unit 2 is complete, and the regulator is turned on.	
0302	Disk Unit 3 regulator has been turned on Installation of disk unit 3 is complete, and the regulator is turned on.	
0303	Disk Unit 4 regulator has been turned on Installation of disk unit 4 is complete, and the regulator is turned on.	
0304	Disk Unit 5 regulator has been turned on Installation of disk unit 5 is complete, and the regulator is turned on.	
0305	Disk Unit 6 regulator has been turned on Installation of disk unit 6 is complete, and the regulator is turned on.	
0306	Disk Unit 7 regulator has been turned on Installation of disk unit 7 is complete, and the regulator is turned on.	
0307	Disk Unit 8 regulator has been turned on Installation of disk unit 8 is complete, and the regulator is turned on.	
0308	Disk Unit K1 regulator has been turned on Installation of disk unit K1 is complete, and the regulator is turned on.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0309	Disk Unit K2 regulator has been turned on Installation of disk unit K2 is complete, and the regulator is turned on.	
030A	Disk Unit K3 regulator has been turned on Installation of disk unit K3 is complete, and the regulator is turned on.	
030B	Disk Unit K4 regulator has been turned on Installation of disk unit K4 is complete, and the regulator is turned on.	
030C	Disk Unit K5 regulator has been turned on Installation of disk unit K5 is complete, and the regulator is turned on.	
030D	Disk Unit K6 regulator has been turned on Installation of disk unit K6 is complete, and the regulator is turned on.	
030E	Disk Unit K7 regulator has been turned on Installation of disk unit K7 is complete, and the regulator is turned on.	
030F	Disk Unit K8 regulator has been turned on Installation of disk unit K8 is complete, and the regulator is turned on.	
0310	Disk Unit K9 regulator has been turned on Installation of disk unit K9 is complete, and the regulator is turned on.	
0311	Disk Unit K10 regulator has been turned on Installation of disk unit K10 is complete, and the regulator is turned on.	
0312	Disk Unit K11 regulator has been turned on Installation of disk unit K11 is complete, and the regulator is turned on.	
0313	Disk Unit K12 regulator has been turned on Installation of disk unit K12 is complete, and the regulator is turned on.	
0314	Disk Unit K13 regulator has been turned on Installation of disk unit K13 is complete, and the regulator is turned on.	
0315	Disk Unit K14 regulator has been turned on Installation of disk unit K14 is complete, and the regulator is turned on.	
0316	Device 1 regulator has been turned on Installation of device 1 is complete, and the regulator is turned on.	
0317	Device 2 regulator has been turned on Installation of device 2 is complete, and the regulator is turned on.	
0318	Disk Unit 9 regulator has been turned on Installation of disk unit 9 is complete, and the regulator is turned on.	
0319	Disk Unit 10 regulator has been turned on Installation of disk unit 10 is complete, and the regulator is turned on.	
031A	Disk Unit 11 regulator has been turned on Installation of disk unit 11 is complete, and the regulator is turned on.	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
031B	Disk Unit 12 regulator has been turned on Installation of disk unit 12 is complete, and the regulator is turned on.	
031C	Device 3 regulator has been turned on Installation of device 3 is complete, and the regulator is turned on.	
031D	Disk Unit K15 regulator has been turned on Installation of disk unit K15 is complete, and the regulator is turned on.	
031E	Disk Unit K16 regulator has been turned on Installation of disk unit K16 is complete, and the regulator is turned on.	
031F	Device 4 regulator has been turned on Installation of device 4 is complete, and the regulator is turned on.	
0320	Disk Unit K17 regulator has been turned on Installation of disk unit K17 is complete, and the regulator is turned on.	
0321	Disk Unit K18 regulator has been turned on Installation of disk unit K18 is complete, and the regulator is turned on.	
0322	Disk Unit K19 regulator has been turned on Installation of disk unit K19 is complete, and the regulator is turned on.	
0323	Disk Unit K20 regulator has been turned on Installation of disk unit K20 is complete, and the regulator is turned on.	
0324	Disk Unit K21 regulator has been turned on Installation of disk unit K21 is complete, and the regulator is turned on.	
0325	Disk Unit K22 regulator has been turned on Installation of disk unit K22 is complete, and the regulator is turned on.	
0326	Disk Unit K23 regulator has been turned on Installation of disk unit K23 is complete, and the regulator is turned on.	
0327	Disk Unit K24 regulator has been turned on Installation of disk unit K24 is complete, and the regulator is turned on.	
0328	Disk Unit K25 regulator has been turned on Installation of disk unit K25 is complete, and the regulator is turned on.	
0329	Disk Unit K26 regulator has been turned on Installation of disk unit K26 is complete, and the regulator is turned on.	
032A	Disk Unit K27 regulator has been turned on Installation of disk unit K27 is complete, and the regulator is turned on.	
032B	Disk Unit K28 regulator has been turned on Installation of disk unit K28 is complete, and the regulator is turned on.	
032C	Disk Unit K29 regulator has been turned on Installation of disk unit K29 is complete, and the regulator is turned on.	



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
032D	Disk Unit K30 regulator has been turned on Installation of disk unit K30 is complete, and the regulator is turned on.	
032E	Disk Unit K31 regulator has been turned on Installation of disk unit K31 is complete, and the regulator is turned on.	
032F	Disk Unit K32 regulator has been turned on Installation of disk unit K32 is complete, and the regulator is turned on.	
0400	Removal of Disk Unit 1 is complete	
0401	Removal of Disk Unit 2 is complete	
0402	Removal of Disk Unit 3 is complete	
0403	Removal of Disk Unit 4 is complete	
0404	Removal of Disk Unit 5 is complete	
0405	Removal of Disk Unit 6 is complete	
0406	Removal of Disk Unit 7 is complete	
0407	Removal of Disk Unit 8 is complete	
0408	Removal of Disk Unit K1 is complete	
0409	Removal of Disk Unit K2 is complete	
040A	Removal of Disk Unit K3 is complete	
040B	Removal of Disk Unit K4 is complete	
040C	Removal of Disk Unit K5 is complete	
040D	Removal of Disk Unit K6 is complete	
040E	Removal of Disk Unit K7 is complete	
040F	Removal of Disk Unit K8 is complete	
0410	Removal of Disk Unit K9 is complete	
0411	Removal of Disk Unit K10 is complete	
0412	Removal of Disk Unit K11 is complete	
0413	Removal of Disk Unit K12 is complete	
0414	Removal of Disk Unit K13 is complete	
0415	Removal of Disk Unit K14 is complete	
0416	Removal of device 1 is complete	
0417	Removal of device 2 is complete	
0418	Removal of Disk Unit 9 is complete	
0419	Removal of Disk Unit 10 is complete	
041A	Removal of Disk Unit 11 is complete	
041B	Removal of Disk Unit 12 is complete	
041C	Removal of device 3 is complete	
041D	Removal of Disk Unit K15 is complete	
041E	Removal of Disk Unit K16 is complete	
041F	Removal of device 4 is complete	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0500	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit 1, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0501	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit 2, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0502	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit 3, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0503	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 4, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0504	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 5, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0505	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 6, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0506	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 7, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0507	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 8, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0508	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K1, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0509	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K2, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
050A	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K3, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
050B	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K4, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
050C	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K5, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
050D	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K6, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
050E	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K7, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
050F	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K8, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0510	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K9, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0511	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K10, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0512	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K11, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0513	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K12, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0514	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K13, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0515	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K14, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0516	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of device 1, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0517	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of device 2, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0518	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 9, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0519	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 10, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
051A	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 11, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
051B	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>No action was detected for the installation or removal of disk unit 12, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
051C	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of device 3, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
051D	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K15, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
051E	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of disk unit K16, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
051F	<p>Timeout, no action detected. Reinitialize the operation</p> <p>No action was detected for the installation or removal of device 4, and the bus was released.</p> <p>You must reinitialize the operation to continue.</p>	
0700	<p>Timeout, no action detected. Reinitialize the operation</p> <p>Disk unit 1 was powered off but not removed.</p> <p>Concurrent maintenance informational reference code.</p>	
0701	<p>Timeout, no action detected. Reinitialize the operation</p> <p>Disk unit 2 was powered off but not removed.</p> <p>Concurrent maintenance informational reference code.</p>	
0702	<p>Timeout, no action detected. Reinitialize the operation</p> <p>Disk unit 3 was powered off but not removed.</p> <p>Concurrent maintenance informational reference code.</p> <p>You must reinitialize the operation to continue.</p>	
0703	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>Disk unit 4 was powered off but not removed.</p> <p>Concurrent maintenance informational reference code.</p>	
0704	<p>Timeout, no action detected. Reinitialize the operation.</p> <p>Disk unit 5 was powered off but not removed.</p> <p>Concurrent maintenance informational reference code.</p>	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0705	Timeout, no action detected. Reinitialize the operation. Disk unit 6 was powered off but not removed. Concurrent maintenance informational reference code.	
0706	Timeout, no action detected. Reinitialize the operation. Disk unit 7 was powered off but not removed. Concurrent maintenance informational reference code.	
0707	Timeout, no action detected. Reinitialize the operation. Disk unit 8 was powered off but not removed. Concurrent maintenance informational reference code.	
0708	Timeout, no action detected. Reinitialize the operation Disk unit K1 was powered off but not removed. Concurrent maintenance informational reference code.	
0709	Timeout, no action detected. Reinitialize the operation Disk unit K2 was powered off but not removed. Concurrent maintenance informational reference code.	
070A	Timeout, no action detected. Reinitialize the operation Disk unit K3 was powered off but not removed. Concurrent maintenance informational reference code.	
070B	Timeout, no action detected. Reinitialize the operation Disk unit K4 was powered off but not removed. Concurrent maintenance informational reference code.	
070C	Timeout, no action detected. Reinitialize the operation Disk unit K5 was powered off but not removed. Concurrent maintenance informational reference code.	
070D	Timeout, no action detected. Reinitialize the operation Disk unit K6 was powered off but not removed. Concurrent maintenance informational reference code.	
070E	Timeout, no action detected. Reinitialize the operation Disk unit K7 was powered off but not removed. Concurrent maintenance informational reference code.	
070F	Timeout, no action detected. Reinitialize the operation Disk unit K8 was powered off but not removed. Concurrent maintenance informational reference code.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0710	Timeout, no action detected. Reinitialize the operation Disk unit K9 was powered off but not removed. Concurrent maintenance informational reference code.	
0711	Timeout, no action detected. Reinitialize the operation Disk unit K10 was powered off but not removed. Concurrent maintenance informational reference code.	
0712	Timeout, no action detected. Reinitialize the operation Disk unit K11 was powered off but not removed. Concurrent maintenance informational reference code.	
0713	Timeout, no action detected. Reinitialize the operation Disk unit K12 was powered off but not removed. Concurrent maintenance informational reference code.	
0714	Timeout, no action detected. Reinitialize the operation Disk unit K13 was powered off but not removed. Concurrent maintenance informational reference code.	
0715	Timeout, no action detected. Reinitialize the operation Disk unit K14 was powered off but not removed. Concurrent maintenance informational reference code.	
0716	Timeout, no action detected. Reinitialize the operation Device 1 was powered off but not removed. Concurrent maintenance informational reference code.	
0717	Timeout, no action detected. Reinitialize the operation Device 2 was powered off but not removed. Concurrent maintenance informational reference code.	
0718	Timeout, no action detected. Reinitialize the operation. Disk unit 9 was powered off but not removed. Concurrent maintenance informational reference code.	
0719	Timeout, no action detected. Reinitialize the operation. Disk unit 10 was powered off but not removed. Concurrent maintenance informational reference code.	
071A	Timeout, no action detected. Reinitialize the operation. Disk unit 11 was powered off but not removed. Concurrent maintenance informational reference code.	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
071B	Timeout, no action detected. Reinitialize the operation.  Disk unit 12 was powered off but not removed.  Concurrent maintenance informational reference code.	
071C	Timeout, no action detected. Reinitialize the operation  Device 3 was powered off but not removed.  Concurrent maintenance informational reference code.	
071D	Timeout, no action detected. Reinitialize the operation  Disk unit K15 was powered off but not removed.  Concurrent maintenance informational reference code.	
071E	Timeout, no action detected. Reinitialize the operation  Disk unit K16 was powered off but not removed.  Concurrent maintenance informational reference code.	
071F	Timeout, no action detected. Reinitialize the operation  Device 4 was powered off but not removed.  Concurrent maintenance informational reference code.	
0F0F	AC Module Failure  The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F12	Undefined box ID, EEPROM test failed  The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F13	Undefined box ID, Code type mismatch  The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F1F	Undefined box ID, LCD test failed  The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F2C	Unknown box ID  The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F2D	Unknown box ID, Code level mismatch.  The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F2E	SPCN Network Fault  The box ID is not defined. A network communications failure occurred.	TWRCARD BACKPLN 21F9429
1001	Device 1 regulator fault.  The regulator for the save/restore device installed in position 1 of the FC 5032 Removable Storage Unit reported a fault.	FI00239 21F5680 21F8872



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1002	Device 2 regulator fault.  The regulator for the save/restore device installed in position 2 of the FC 5032 Removable Storage Unit reported a fault.	FI00239 21F5680 21F8872
1003	Device 3 regulator fault.  The regulator for the save/restore device installed in position 3 of the FC 5032 Removable Storage Unit reported a fault.	FI00239 21F5680 21F8872
1004	Device 4 regulator fault.  The regulator for the save/restore device installed in position 4 of the FC 5032 Removable Storage Unit reported a fault.	FI00239 21F5680 21F8872
1005	D-SE regulator fault.  The regulator that powers the DSE converter module in the FC 5032 Removable Storage Unit reported a fault.	21F8890 FI00239 21F8872 21F5680
1008	DC Bulk Module over-current.  The dc bulk module installed in the FC 5032 Removable Storage Unit detected an over current condition.  Perform SPCN-PIP9 in “System Power Control Network Problem Isolation Procedures” on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.	FI00256 21F9530 21F5680 21F8872
100B	DC Bulk Module fault.  The dc bulk module installed in the FC 5032 Removable Storage Unit reported a fault.	21F9530 21F5680 21F8872
100F	AC Module Failure  The ac module installed in the FC 5032 Removable Storage Unit detected a failure during its BATs.	21F5680
1012	AC Module fault (EEPROM)  The SPCN EEPROM test of the ac module in the FC 5032 Removable Storage Unit failed.	21F5680
1013	SPCN Licensed Internal Code Type not valid.  The Licensed Internal Code loaded into the ac module installed in the FC 5032 Removable Storage Unit is the wrong type.  A reload of the Licensed Internal Code is attempted automatically. The reload operation failed to correct the problem.	21F5680 AJDG301
1014	Power Control Line Test Failed  The Power Control Line Test failed in the ac module installed in the FC 5032 Removable Storage Unit.	21F5680 FI00256 21F9530 21F8872
1018	Cooling problem in the 5032.  The SPCN node installed in the FC 5032 Removable Storage Unit detected a problem with the fans. This fault also occurs if the fans are not installed.	21F5680 21F5793
101F	LCD Test Failed  The FC 5032 Removable Storage Unit control panel test failed.	21F8888 21F5680 21F8872

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1025	D-SE regulator not present.  The DSE module and its regulator (regulator 5) are not installed in the FC 5032 Removable Storage Unit.  If the DSE module is installed, exchange the failing items.	21F8890 21F5680 21F8872
1028 to 1029	AC Module Failure  The ac module in the FC 5032 Removable Storage Unit detected a fault.	21F5680 21F8872
102A	No DC Bulk Module installed.  The FC 5032 Removable Storage Unit does not have a dc bulk module installed. If the dc bulk module is installed, exchange the failing items.	21F5680 21F9530 21F8872
102B	PCC Overcurrent  The power control compartment is causing an over current condition in the FC 5032 Removable Storage Unit power system.  The ac module and the SPCN port cable should be exchanged together.	TWRCARD 21F5680 21F5793 21F9362
102D	SPCN Licensed Internal Code Reload Required.  An error occurred in the SPCN Licensed Internal Code (LIC) installed in the FC 5032 Removable Storage Unit. The LIC was not correct for this hardware. The SPCN Licensed Internal Code was reloaded.  The reload operation failed to correct the problem.	21F5680 AJDG301
102E	SPCN Network Fault  An SPCN communications failure was detected by the FC 5032 Removable Storage Unit.  Perform SPCN-PIP8 in "System Power Control Network Problem Isolation Procedures" on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.	21F5680 TWRCARD 21F9362 AJDG301
102F	AC Module Fault Failure.  A fault detection failure occurred in the ac module installed in the FC 5032 Removable Storage Unit.	21F5680 21F9530 21F8872
1510	AC Loss to Power Supply 1 or Power Supply 1 Failure  Before replacing any parts, verify that the voltage is correct at the AC outlet and the power supply input connector.	PWRSPLY TWRCARD
1511	Power Supply P01 Fault  A fault has been detected for Power Supply 1.	PWRSPLY TWRCARD
1512	Power Supply P01 Fault  A fault has been detected for Power Supply 1.	PWRSPLY TWRCARD CBLALL
1513	Power Supply P01 Fault  A fault has been detected for Power Supply 1.	PWRSPLY TWRCARD
1520	AC Loss to Power Supply 2 or Power Supply 2 Failure  Before replacing any parts, verify that the voltage is correct at the AC outlet and the power supply input connector.	PWRSPLY TWRCARD

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1521	Power Supply P02 Fault A fault has been detected for Power Supply 2.	PWRSPLY TWRCARD
1522	Power Supply P02 Fault A fault has been detected for Power Supply 2.	PWRSPLY TWRCARD CBLALL
1523	Power Supply P02 Fault A fault has been detected for Power Supply 2.	PWRSPLY TWRCARD
1530	AC Loss to Power Supply 3 or Power Supply 3 Failure Before replacing any parts, verify that the voltage is correct at the AC outlet and the power supply input connector.	PWRSPLY TWRCARD
1531	Power Supply P03 Fault A fault has been detected for Power Supply 3.	PWRSPLY TWRCARD
1532	Power Supply P03 Fault A fault has been detected for Power Supply 3.	PWRSPLY TWRCARD CBLALL
1533	Power Supply P03 Fault A fault has been detected for Power Supply 3.	PWRSPLY TWRCARD
1810	Domain 1 Fault An overcurrent has been detected. A POW-PIP is required for identifying which load is at fault.	PWROC TWRCARD
1820	Domain 2 Fault An overcurrent has been detected. A POW-PIP is required for identifying which load is at fault.	PWROC TWRCARD
1830	Domain 3 Fault An overcurrent has been detected. A POW-PIP is required for identifying which load is at fault.	PWROC TWRCARD
1840	Domain 4 Fault An overcurrent has been detected. A POW-PIP is required for identifying which load is at fault.	PWROC TWRCARD
2131	Power Supply P01 Fault A fault has been detected for Power Supply P01.	PWRSPLY SPNLCDR
2132	Power Supply P02 Fault A fault has been detected for Power Supply P02.	PWRSPLY SPNLCDR
2133	Power Supply P03 Fault A fault has been detected for Power Supply P03.	PWRSPLY SPNLCDR
2134	Power Supply P04 Fault A fault has been detected for Power Supply P04.	PWRSPLY SPNLCDR

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2141	Power Supply P01 Fault A fault has been detected for Power Supply P01.	PWRSPLY SPNLCDR
2142	Power Supply P02 Fault A fault has been detected for Power Supply P02.	PWRSPLY SPNLCDR
2143	Power Supply P03 Fault A fault has been detected for Power Supply P03.	PWRSPLY SPNLCDR
2144	Power Supply P04 Fault A fault has been detected for Power Supply P04.	PWRSPLY SPNLCDR
2151	Power Supply P01 Fault A fault has been detected for Power Supply P01.	PWRSPLY SPNLCDR
2152	Power Supply P02 Fault A fault has been detected for Power Supply P02.	PWRSPLY SPNLCDR
2153	Power Supply P03 Fault A fault has been detected for Power Supply P03.	PWRSPLY SPNLCDR
2154	Power Supply P04 Fault A fault has been detected for Power Supply P04.	PWRSPLY SPNLCDR
2201	Power Supply P01 or P02 Overcurrent Fault A POW-PIP is required for identifying which load is at fault.	PWROC SPNLCDR CBLALL
2202	Power Supply P03 or P04 Overcurrent Fault A POW-PIP is required for identifying which load is at fault.	PWROC SPNLCDR CBLALL
2210	One of the CPM regulators has reported a fault	PWRSPLY SPNLCDR
2211	CPM Regulator 1 Fault	PWRSPLY SPNLCDR
2212	CPM Regulator 2 Fault	PWRSPLY SPNLCDR
2213	CPM Regulator 3 Fault	PWRSPLY SPNLCDR
2221	Power Good Fault A MFIOF power good fault occurred.	SPNLCDR PGDPART CBLALL
2222	Power Good Type M Fault A Memory power good fault occurred.	SPNLCDR PGDPART CBLALL
2223	Power Good Type P Fault A Processor power good fault occurred.	SPNLCDR PGDPART CBLALL
2224	Power Good Type I Fault A Internal expansion power good fault occurred.	SPNLCDR PGDPART CBLALL

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2231	System Unit Interlock Failure	INTRLCK SPNLCRD CBLALL
2232	Secondary Frame Interlock Failure	INTRLCK SPNLCRD CBLALL
2240	Air Moving Device Panel Fault	AIRMOVR PWRSPLY
2241	Air Moving Device 1 Fault  A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR SPNLCRD
2242	Air Moving Device 2 Fault  A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR SPNLCRD
2244	Air Moving Device 4 Fault  A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR SPNLCRD
2245	Air Moving Device 5 Fault  A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR SPNLCRD
2246	Air Moving Device 6 Fault  A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR SPNLCRD
2249	Air Moving Device 9 Fault  A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR SPNLCRD
2260	Timeout on Panel for Request of VPD	CTLPNL
2301	Power Supply P01 or P02 Overcurrent error  A POW-PIP is required for identifying which load is at fault.	PWROC SPNLCRD CBLALL
2302	Power Supply P03 or P04 Overcurrent error  A POW-PIP is required for identifying which load is at fault.	PWROC SPNLCRD CBLALL
2311	Power Supply P01 error  A fault detection failure occurred for Power Supply P01.	PWRSPLY SPNLCRD CBLALL
2312	Power Supply P02 error  A fault detection failure occurred for Power Supply P02.	PWRSPLY SPNLCRD CBLALL
2313	Power Supply P03 error  A fault detection failure occurred for Power Supply P03.	PWRSPLY SPNLCRD CBLALL

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2314	Power Supply P04 error A fault detection failure occurred for Power Supply P04.	PWRSPLY SPNLCRD CBLALL
2321	Power Good Fault A MFIOP power good error was detected.	SPNLCRD CBLALL PGDPART
2322	Power Good Type M error A Memory power good error was detected.	SPNLCRD CBLALL PGDPART
2323	Power Good Type P error A Processor power good error was detected.	SPNLCRD CBLALL PGDPART
2324	Power Good Type I error A Internal expansion power good error was detected.	SPNLCRD CBLALL PGDPART
2330	Power Supply P01 not installed	PWRSPLY SPNLCRD
2331	Power Supply P01 ID is Invalid	PWRSPLY SPNLCRD
2332	Power Supply P02 ID is Invalid	PWRSPLY SPNLCRD
2333	Power Supply P03 ID is Invalid	PWRSPLY SPNLCRD
2334	Power Supply P04 ID is Invalid	PWRSPLY SPNLCRD
2400 to 2402	UPS Enable/Disable Failure	UPSUNIT SPNLCRD
2403	UPS CPM Failure	UPSUNIT SPNLCRD
2404	UPS Battery Failure	BATRY UPSUNIT
2405	UPS Unit Failure	UPSUNIT SPNLCRD
2406 to 2407	UPS Enable/Disable Failure	UPSUNIT SPNLCRD
2410 to 2411	UPS Test Failure	UPSUNIT SPNLCRD
2413	UPS Interface Failure	UPSUNIT SPNLCRD
2551	Power Supply P01 Fault A fault has been detected for Power Supply P01. A POW-PIP is required for identifying which load is at fault.	PWRSPLY CTLPNL
2552	Power supply failure A fault has been detected for Power Supply P02. A POW-PIP is required for identifying which load is at fault.	PWRSPLY CTLPNL

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2553	Power supply failure A fault has been detected for Power Supply P03. A POW-PIP is required for identifying which load is at fault.	PWRSPLY CTLPNL
2554	Power Supply P04 Fault A fault has been detected for Power Supply P04. A POW-PIP is required for identifying which load is at fault.	PWRSPLY CTLPNL
2561	Power Supply P01 Fault A fault has been detected for Power Supply P01. A POW-PIP is required for identifying which load is at fault.	PWRSPLY CTLPNL
2562	Power supply failure A fault has been detected for Power Supply P02. A POW-PIP is required for identifying which load is at fault.	PWRSPLY CTLPNL
2563	Power supply failure A fault has been detected for Power Supply P03. A POW-PIP is required for identifying which load is at fault.	PWRSPLY CTLPNL
2564	Power Supply P04 Fault A fault has been detected for Power Supply P04. A POW-PIP is required for identifying which load is at fault.	PWRSPLY CTLPNL
2600	Power Good Fault	PGDPART TWRCARD PWRSPLY
2612	Optical Converter 5V Fault The SPCN detected a fault on the SPCN card optical converter 5V.	CBLALL TWRCARD
3001	Regulator 1 Fault I/O regulator 1 (slots 19-20) in the 9309 Frame-Mounted Expansion Unit (504x) reported a fault.  Perform SPCN-PIP2 in “System Power Control Network Problem Isolation Procedures” on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.	21F9215 FI00237 21F5680 21F9429 FI00248
3002	Regulator 2 Fault I/O regulator 2 (slots 17-18) in the 9406 Expansion Unit (FC 504x) reported a fault.  Perform SPCN-PIP2 in “System Power Control Network Problem Isolation Procedures” on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.	21F9215 FI00238 21F5680 21F9429 FI00248

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3008	<p>DC Bulk Module 1 Overcurrent</p> <p>DC bulk module 1 detected an over current condition in the 9406 Expansion Unit (FC 504x). This is usually caused by one of the regulators.</p> <p>Perform SPCN-PIP5 in “System Power Control Network Problem Isolation Procedures” on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.</p>	<p>21F9215 21F9530 21F5680 FI00248 21F9429</p>
3009	<p>DC Bulk Module 2 Overcurrent</p> <p>DC bulk module 2 detected an over current condition in the 9406 Expansion Unit (FC 504x). This is usually caused by one of the regulators.</p> <p>Perform SPCN-PIP5 in “System Power Control Network Problem Isolation Procedures” on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.</p>	<p>21F9215 21F9530 21F5680 FI00248 21F9429</p>
300A	<p>DC Bulk Module 3 Overcurrent</p> <p>DC bulk module 3 detected an over current condition in the 9406 Expansion Unit (FC 504x). This is usually caused by one of the regulators.</p> <p>Perform SPCN-PIP5 in “System Power Control Network Problem Isolation Procedures” on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.</p>	<p>21F9215 21F9530 21F5680 FI00248 21F9429</p>
300B	<p>DC Bulk Module 1 Fault</p> <p>DC bulk module 1 installed in a FC 504x Expansion Unit reported a fault. Bulk module 2 or bulk module 3 also can cause this fault.</p>	<p>21F9530 21F5680 21F9429</p>
300C	<p>DC Bulk Module 2 Fault</p> <p>DC bulk module 2 installed in a FC 504x Expansion Unit reported a fault. Bulk module 1 or bulk module 3 also can cause this fault.</p>	<p>21F9530 21F5680 21F9429</p>
300D	<p>DC Bulk Module 3 Fault</p> <p>DC bulk module 3 installed in a FC 504x Expansion Unit reported a fault. Bulk module 1 or bulk module 2 also can cause this fault.</p>	<p>21F9530 21F5680 21F9429</p>
300E	<p>EPO Circuit Fault</p> <p>The ac module installed in the 9406 Expansion Unit (FC 504x) detected a fault in the UEPO signal. The signal was active and the incoming ac voltage was still present.</p>	<p>TWRCARD 21F9362 21F5680</p>
300F	<p>AC Module Failure</p> <p>A 9406 Expansion Unit ac module detected a failure during its BATs.</p>	<p>21F5680 21F9215 21F9429 FI00248</p>
3010	<p>Battery Power Unit.</p> <p>The battery power unit in the 9406 Expansion Unit (FC 504x) reported a fault.</p>	<p>21F9380 21F5680 21F9429</p>
3011	<p>Battery Power Unit Failed</p> <p>The battery power unit in the 9406 Expansion Unit (FC 504x) failed.</p>	<p>21F9380 21F5680 21F9429</p>



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3012	<p>AC Module fault (EEPROM)</p> <p>The SPCN EEPROM test of the ac module in the 9406 Expansion Unit (FC 504x) failed.</p> <p>This may be a temporary error. Allow the system to complete the IPL. If the fault is not corrected, exchange the failing items.</p>	<p>21F5680</p> <p>21F9215</p>
3013	<p>SPCN Licensed Internal Code Type not valid.</p> <p>The Licensed Internal Code loaded into the 9406 Expansion Unit (FC 504x) ac module is the wrong type.</p> <p>A reload of the Licensed Internal Code is attempted automatically. The reload operation failed.</p>	<p>21F5680</p> <p>AJDG301</p>
3014	<p>Power Control Line Test Failed</p> <p>The Power Control Line test failed in the ac module installed in the 9406 Expansion Unit (FC 504x).</p>	<p>21F5680</p> <p>21F9215</p> <p>21F9530</p> <p>21F9429</p>
3015	<p>Battery Power Unit missing</p> <p>The battery power unit is not installed in the 9406 Expansion Unit (FC 504x).</p>	<p>21F9380</p> <p>21F5680</p> <p>21F9429</p>
3018	<p>Cooling Problem.</p> <p>The SPCN node installed in the 9406 Expansion Unit (FC 504x) detected a cooling problem. This can be caused by the blower operating at the wrong speed or by fans not being installed on the back of the Support Box.</p> <p><b>Note:</b> This error may occur if all empty card slots are not filled with an airflow card, part 74F1604.</p>	<p>21F5521</p> <p>21F5680</p> <p>21F9631</p> <p>21F9429</p>
301A	<p>Battery Power Unit discharge life has been exceeded.</p> <p>The discharge cycle life of the battery power unit in the 9406 Expansion Unit (FC 504x) power supply was exceeded.</p>	<p>21F9380</p> <p>21F5680</p> <p>21F9429</p>
301B	<p>Battery Power Unit install life exceeded.</p> <p>The install life of the battery power unit in the 9406 Expansion Unit (FC 504x) power supply was exceeded.</p>	<p>21F9380</p> <p>21F5680</p> <p>21F9429</p>
301F	<p>LCD Test Failed</p> <p>The 9406 Expansion Unit (FC 504x) control panel test failed.</p>	<p>21F8888</p> <p>21F5680</p> <p>21F9429</p>
3021	<p>Regulator 1 Not Present</p> <p>9406 Expansion I/O regulator 1 (slots 19-20) is not installed.</p> <p>If the regulator is installed, exchange the failing items.</p> <p>Ensure that the cable carrier drive rod is tight.</p>	<p>21F5680</p> <p>21F9215</p> <p>21F9429</p> <p>FI00248</p>
3022	<p>Regulator 2 Not Present</p> <p>9406 Expansion unit I/O regulator 2 (slots 17-18) is not installed.</p> <p>If the regulator is installed, exchange the failing items.</p> <p>Ensure that the cable carrier drive rod is tight.</p>	<p>21F5680</p> <p>21F9215</p> <p>21F9429</p> <p>FI00248</p>

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3028	Overload on the +28 V line from regulator 1.  9406 Expansion Unit I/O regulator 1 detected a fault.	FI00244 21F9215 21F5680 FI00248
3029	Overload on the +28V line from regulator 2.  9406 Expansion Unit I/O regulator 2 detected a fault.	FI00246 21F9215 21F5680 FI00248
302A	No DC Bulk Module installed.  No dc bulk modules are installed in the 9406 Expansion Unit.	21F5680 21F9530 21F9429
302B	PCC Overcurrent  The power control compartment is causing an over current condition in the 9406 Expansion Unit power system.  Exchange the ac module and the SPCN port cable at the same time.	TWRCARD 21F5680 21F9631 21F9362
302D	SPCN Licensed Internal Code Reload Required.  A 9406 Expansion Unit SPCN Licensed Internal Code error occurred. The SPCN Licensed Internal Code was reloaded.  The reload operation failed. Exchange the failing items.	21F5680 AJDG301
302E	SPCN Network Fault  The 504x Expansion Unit detected an SPCN communications failure.  Perform SPCN-PIP8 in “System Power Control Network Problem Isolation Procedures” on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.	21F5680 TWRCARD CBLALL
302F	AC Module Fault Failure.  A 504x Expansion Unit ac module fault detection failure occurred.  Any of the dc bulk modules also could cause this fault.	21F5680 21F9530 21F9429
3031	DC Bulk Module 1 is not installed.  DC bulk module 1 is not installed in the or 504x Expansion Unit.  If dc bulk module 1 is installed, exchange the failing items.	21F5680 21F9530 21F9429
3032	DC Bulk Module 2 is not installed.  DC bulk module 2 is not installed in the 504x Expansion Unit.  If dc bulk module 2 is installed, exchange the failing items.	21F5680 21F9530 21F9429
3033	DC Bulk Module 3 is not installed.  DC bulk module 3 is not installed in the 504x Expansion Unit.  If dc bulk module 3 is installed, exchange the failing items.	21F5680 21F9530 21F9429
4410	Internal Battery Power Unit Fault  Internal Battery Power Unit in the system has failed.	BATRY BATCHGR TWRCARD CBLALL

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4411	Internal Battery Power Unit Charger Fault Internal Battery Power Unit Charger in the system has failed.	BATCHGR TWRCARD CBLALL
4412	Internal Battery Power Unit Charger Fault Internal Battery Power Unit Charger in the system has failed.	BATCHGR BATRY TWRCARD CBLALL
4413	Internal Battery Power Unit Charger Fault Internal Battery Power Unit Charger in the system has failed.	BATCHGR TWRCARD CBLALL
4414	Internal Battery Power Unit Charger Fault Internal Battery Power Unit Charger in the system has failed.	PWROC BATRY TWRCARD CBLALL
6018	One of the regulators has reported a fault A regulator fault was detected.	PWRREG BKSPCN
601A	One of the CPM regulators has reported a fault A CPM regulator fault was detected.	PWRREG BKSPCN FI00030
6118	Regulator over current fault One of the regulators detected an over current condition. This may be caused by the regulator or one of cards powered by the regulator.	PWRREG BKSPCN
6218	Regulator over current fault Regulator 1 detected an over current condition. This may be caused by the regulator or one of cards powered by the regulator.	PWRREG BKSPCN
6238	Regulator over current fault Regulator 2 detected an over current condition. This may be caused by the regulator or one of cards powered by the regulator.	PWRREG BKSPCN
6258	Regulator over current fault Regulator 3 detected an over current condition. This may be caused by the regulator or one of cards powered by the regulator.	PWRREG ACMODUL
6318	Regulator Fault Regulator 1 has reported a fault.	PWRREG BKSPCN
631A	Regulator Fault Regulator 1 has reported a fault.	PWRREG ACMODUL FI00030
6338	Regulator Fault Regulator 2 reported a fault.	PWRREG BKSPCN
633A	Regulator Fault Regulator 2 reported a fault.	PWRREG ACMODUL FI00030
6358	Regulator Fault A regulator 3 reported a fault.	PWRREG ACMODUL

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6518	One of the regulators has reported a fault  An over current sensor failure occurred for a regulator. The ac module or one of the regulators can cause this fault.	PWRREG BKSPCN
6618	Regulator over current fault  Regulator 1 reported a false over current condition.  Fault tolerance may allow continued system operation.	PWRREG BKSPCN
6638	Regulator over current fault  Regulator 2 reported a false over current condition.  Fault tolerance may allow continued system operation.	PWRREG BKSPCN
6658	Regulator over current fault  Regulator 3 reported a false over current condition.  Fault tolerance may allow continued system operation.	PWRREG ACMODUL
6718	Regulator fault  Regulator 1 reported a fault.  Fault tolerance may allow continued system operation.	PWRREG BKSPCN
671A	Regulator fault  Regulator 17 has reported a fault.  Fault tolerance may allow continued system operation.	PWRREG BKSPCN FI00030
6738	Regulator fault  Regulator 2 reported a fault.  Fault tolerance may allow continued system operation.	PWRREG BKSPCN
673A	Regulator fault  Regulator 18 reported a fault.  Fault tolerance may allow continued system operation.	PWRREG BKSPCN FI00030
6758	Regulator fault  Regulator 3 reported a fault.  Fault tolerance may allow continued system operation.	PWRREG ACMODUL
6818	One of the regulators has reported a fault  A fault detection failure occurred for a regulator. The regulator or the ac module/SPCN card can cause this fault.	PWRREG BKSPCN
6918	One of the regulators has reported a fault  An over current fault detection failure occurred for a regulator. The regulator or the ac module/SPCN card can cause this fault.	PWRREG BKSPCN
6A18	Regulator Fault  A regulator fault detection failure occurred for regulator 1. The ac module or the regulator can cause this fault.	PWRREG BKSPCN BACKPLN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6A38	Regulator Fault A regulator fault detection failure occurred for regulator 2. The regulator or the ac module/SPCN card can cause this fault.	PWRREG BKSPCN BACKPLN
6A58	Regulator Fault A regulator fault detection failure occurred for regulator 3. The regulator or the ac module/SPCN card can cause this fault.	PWRREG ACMODUL BACKPLN
6B00	Disk Unit 1 regulator fault The regulator that powers disk unit 1 reported a fault.	DISKTRY DISKDRV BKSPCN
6B01	Disk Unit 2 regulator fault The regulator that powers disk unit 2 reported a fault.	DISKTRY DISKDRV BKSPCN
6B02	Disk Unit 3 regulator fault The regulator that powers disk unit 3 reported a fault.	DISKTRY DISKDRV BKSPCN
6B03	Disk Unit 4 regulator fault The regulator that powers disk unit 4 reported a fault.	DISKTRY DISKDRV BKSPCN
6B04	Disk Unit 5 regulator fault The regulator that powers disk unit 5 reported a fault.	DISKTRY DISKDRV BKSPCN
6B05	Disk Unit 6 regulator fault The regulator that powers disk unit 6 reported a fault.	DISKTRY DISKDRV BKSPCN
6B06	Disk Unit 7 regulator fault The regulator that powers disk unit 7 reported a fault.	DISKTRY DISKDRV BKSPCN
6B07	Disk Unit 8 regulator fault The regulator that powers disk unit 8 reported a fault.	DISKTRY DISKDRV BKSPCN
6B08	Disk Unit K1 regulator fault The regulator that powers disk unit K1, located in slot K1 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B09	Disk Unit K2 regulator fault The regulator that powers disk unit K2, located in slot K2 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0A	Disk Unit K3 regulator fault The regulator that powers disk unit K3, located in slot K3 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0B	Disk Unit K4 regulator fault The regulator that powers disk unit K4, located in slot K4 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0C	Disk Unit K5 regulator fault The regulator that powers disk unit K5, located in slot 5 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6B0D	Disk Unit K6 regulator fault  The regulator that powers disk unit K6, located in slot K6 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0E	Disk Unit K7 regulator fault  The regulator that powers disk unit K7, located in slot K7 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0F	Disk Unit K8 regulator fault  The regulator that powers disk unit K8, located in slot K8 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B10	Disk Unit K9 regulator fault  The regulator that powers disk unit K9, located in slot K9 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B11	Disk Unit K10 regulator fault  The regulator that powers disk unit K10, located in slot K10 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B12	Disk Unit K11 regulator fault  The regulator that powers disk unit K11, located in slot K11 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B13	Disk Unit K12 regulator fault  The regulator that powers disk unit K12, located in slot K12 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B14	Disk Unit K13 regulator fault  The regulator that powers disk unit K13, located in slot K13 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B15	Disk Unit K14 regulator fault  The regulator that powers disk unit K14, located in slot K14 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B16	Device 1 regulator fault  The regulator for device 1 or D01 reported a fault.	RMDEV BKSPCN
6B17	Device 2 regulator fault  The regulator for device 2 or D02 reported a fault.	RMDEV BKSPCN
6B18	Disk Unit 9 regulator fault  The regulator that powers disk unit 9 reported a fault.	DISKTRY DISKDRV BKSPCN
6B19	Disk Unit 10 regulator fault  The regulator that powers disk unit 10 reported a fault.	DISKTRY DISKDRV BKSPCN
6B1A	Disk Unit 11 regulator fault  The regulator that powers disk unit 11 reported a fault.	DISKTRY DISKDRV BKSPCN
6B1B	Disk Unit 12 regulator fault  The regulator that powers disk unit 12 reported a fault.	DISKTRY DISKDRV BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6B1C	Device 3 regulator fault The regulator for device 3 reported a fault.	RMDEV BKSPCN
6B1D	Disk Unit K15 regulator fault The regulator that powers disk unit K15, located in slot K15 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B1E	Disk Unit K16 regulator fault The regulator that powers disk unit K16, located in slot K16 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B1F	Device 4 regulator fault The regulator for device 4 reported a fault.	RMDEV BKSPCN
6B20	Disk Unit K17 regulator fault The regulator that powers disk unit K17 reported a fault.	DISKTRY DISKDRV BKSPCN
6B21	Disk Unit K18 regulator fault The regulator that powers disk unit K18 reported a fault.	DISKTRY DISKDRV BKSPCN
6B22	Disk Unit K19 regulator fault The regulator that powers disk unit K19 reported a fault.	DISKTRY DISKDRV BKSPCN
6B23	Disk Unit K20 regulator fault The regulator that powers disk unit K20 reported a fault.	DISKTRY DISKDRV BKSPCN
6B24	Disk Unit K21 regulator fault The regulator that powers disk unit K21 reported a fault.	DISKTRY DISKDRV BKSPCN
6B25	Disk Unit K22 regulator fault The regulator that powers disk unit K22 reported a fault.	DISKTRY DISKDRV BKSPCN
6B26	Disk Unit K23 regulator fault The regulator that powers disk unit K23 reported a fault.	DISKTRY DISKDRV BKSPCN
6B27	Disk Unit K24 regulator fault The regulator that powers disk unit K24 reported a fault.	DISKTRY DISKDRV BKSPCN
6B28	Disk Unit K25 regulator fault The regulator that powers disk unit K25 reported a fault.	DISKTRY DISKDRV BKSPCN
6B29	Disk Unit K26 regulator fault The regulator that powers disk unit K26 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2A	Disk Unit K27 regulator fault The regulator that powers disk unit K27 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2B	Disk Unit K28 regulator fault The regulator that powers disk unit K28 reported a fault.	DISKTRY DISKDRV BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6B2C	Disk Unit K29 regulator fault The regulator that powers disk unit K29 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2D	Disk Unit K30 regulator fault The regulator that powers disk unit K30 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2E	Disk Unit K31 regulator fault The regulator that powers disk unit K31 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2F	Disk Unit K32 regulator fault The regulator that powers disk unit K32 reported a fault.	DISKTRY DISKDRV BKSPCN
6C00	Disk Unit 1 regulator fault A fault detection failure occurred for the regulator that powers disk unit 1 or F01. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C01	Disk Unit 2 regulator fault A fault detection failure occurred for the regulator that powers disk unit 2 or F02. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C02	Disk Unit 3 regulator fault A fault detection failure occurred for the regulator that powers disk unit 3 or F03. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C03	Disk Unit 4 regulator fault A fault detection failure occurred for the regulator that powers disk unit 4 or F04. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C04	Disk Unit 5 regulator fault A fault detection failure occurred for the regulator that powers disk unit 5 or F05. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C05	Disk Unit 6 regulator fault A fault detection failure occurred for the regulator that powers disk unit 6 or F06. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C06	Disk Unit 7 regulator fault A fault detection failure occurred for the regulator that powers disk unit 7 or F07. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C07	Disk Unit 8 regulator fault A fault detection failure occurred for the regulator that powers disk unit 8 or F08. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C08	Disk Unit K1 regulator fault A fault detection failure occurred for the regulator that powers disk unit K1, located in slot 1 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C09	Disk Unit K2 regulator fault A fault detection failure occurred for the regulator that powers disk unit K2, located in slot 2 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6C0A	Disk Unit K3 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K3, located in slot 3 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0B	Disk Unit K4 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K4, located in slot 4 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0C	Disk Unit K5 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K5, located in slot 5 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0D	Disk Unit K6 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K6, located in slot 6 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0E	Disk Unit K7 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K7, located in slot 7 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0F	Disk Unit K8 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K8, located in slot 8 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C10	Disk Unit K9 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K9, located in slot 9 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C11	Disk Unit K10 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K10, located in slot 10 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C12	Disk Unit K11 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K11, located in slot 11 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C13	Disk Unit K12 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K12, located in slot 12 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C14	Disk Unit K13 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K13, located in slot 13 of the disk expansion unit. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6C15	Disk Unit K14 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K14, located in slot 14 of the disk expansion unit. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C16	Device 1 regulator fault  A fault detection failure occurred for the regulator that powers device 1 or D01. The regulator or the ac module can cause this fault.	RMDEV BKSPCN
6C17	Device 2 regulator fault  A fault detection failure occurred for the regulator that powers device 2 or D02. The regulator or the ac module can cause this fault.	RMDEV BKSPCN
6C18	Disk Unit 9 regulator fault  A fault detection failure occurred for the regulator that powers disk unit 9. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C19	Disk Unit 10 regulator fault  A fault detection failure occurred for the regulator that powers disk unit 10. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1A	Disk Unit 11 regulator fault  A fault detection failure occurred for the regulator that powers disk unit 11. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1B	Disk Unit 12 regulator fault  A fault detection failure occurred for the regulator that powers disk unit 12. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1C	Device 3 regulator fault  A fault detection failure occurred for the regulator that powers device 3. The regulator or the ac module can cause this fault.	RMDEV BKSPCN
6C1D	Disk Unit K15 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K15, located in slot 15 of the disk expansion unit. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1E	Disk Unit K16 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K16, located in slot 16 of the disk expansion unit. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1F	Device 4 regulator fault  A fault detection failure occurred for the regulator that powers device 4. The regulator or the ac module can cause this fault.	RMDEV BKSPCN
6C20	Disk Unit K17 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K17.	DISKTRY BKSPCN
6C21	Disk Unit K18 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K18.	DISKTRY BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6C22	Disk Unit K19 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K19.	DISKTRY BKSPCN
6C23	Disk Unit K20 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K20.	DISKTRY BKSPCN
6C24	Disk Unit K21 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K21.	DISKTRY BKSPCN
6C25	Disk Unit K22 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K22.	DISKTRY BKSPCN
6C26	Disk Unit K23 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K23.	DISKTRY BKSPCN
6C27	Disk Unit K24 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K24.	DISKTRY BKSPCN
6C28	Disk Unit K25 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K25.	DISKTRY BKSPCN
6C29	Disk Unit K26 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K26.	DISKTRY BKSPCN
6C2A	Disk Unit K27 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K27.	DISKTRY BKSPCN
6C2B	Disk Unit K28 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K28.	DISKTRY BKSPCN
6C2C	Disk Unit K29 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K29.	DISKTRY BKSPCN
6C2D	Disk Unit K30 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K30.	DISKTRY BKSPCN
6C2E	Disk Unit K31 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K31.	DISKTRY BKSPCN

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6C2F	Disk Unit K32 regulator fault  A fault detection failure occurred for the regulator that powers disk unit K32.	DISKTRY BKSPCN
7000 to 7004	Air Moving Device Fault  A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR BKSPCN
7101	Power supply failure  The ac power supply module reported a fault. One of the other power supplies may also cause this error.	PWRSPLY
7102	Power supply failure  Feature power supply 2 reported a fault. An ac module or one of the other feature power supplies may also cause this error.	PWRSPLY ACMODUL
7103	Power supply failure  Feature power supply 1 reported a fault. The ac module or one of the other feature power supplies may also cause this error.	PWRSPLY ACMODUL
7201	Power Supply over current fault  The ac module reported an over current condition. This is usually caused by one of the regulators.  Perform "SPCN-PIP10" on page 646.	PWRREG PWRSPLY ACMODUL
7202	Power Supply over current fault  Feature power supply 2 reported an over current condition. This is usually caused by one of the regulators.  Perform "SPCN-PIP10" on page 646.	PWRREG PWRSPLY ACMODUL
7203	Power Supply over current fault  Feature power supply 1 reported an over current condition. This is usually caused by one of the regulators.  Perform "SPCN-PIP10" on page 646.	PWRREG PWRSPLY ACMODUL
7300	AC Module Over current  The ac module or one of the feature power supplies reported an over current condition.  Perform "SPCN-PIP10" on page 646.	ACMODUL PWRSPLY
7400	Control Supply fault  A control supply fault was reported in the ac module.	ACMODUL BKSPCN
7401	Control Supply over current  A control supply over current condition was detected in the ac module.	ACMODUL PWRREG BKSPCN
7402	Control Supply 5V regulator fault  The SPCN detected a fault in the +5 V dc regulator of the control supply in the ac module.	ACMODUL BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
7403	Control Supply 12V regulator fault  The SPCN detected a fault in the +12 V dc regulator of the control supply in the ac module.	ACMODUL
7404	Control Supply 12V regulator over current  An over current condition was detected in the +12 V dc regulator of the control supply in the ac module.  Perform "SPCN-PIP10" on page 646.	ACMODUL PWRSPLY BATCHGR
7610	Air Moving Device 1 Fault  The Air Moving Device is operating at the wrong speed.	AIRMOVR TWRCARD
7620	Air Moving Device 2 Fault  The Air Moving Device is operating at the wrong speed.	AIRMOVR TWRCARD
8001	A Battery Power Unit 1 Failed  A response was received from battery power unit 1 charger that was not valid.	46G3890 ACMODUL BACKPLN
8002	Battery Power Unit 2 Failed  A response was received from battery power unit 2 charger that was not valid.	46G3890 ACMODUL BACKPLN
8101	A Battery Power Unit 1 Failed  Battery power unit 1 capacity test failed.	46G3890
8102	Battery Power Unit 2 Failed  Battery power unit 2 capacity test failed.	46G3890
8110	Battery Power Unit 1 and 2 Failed  Replace both batteries.	BATRY
8201	A Battery Power Unit 1 Failed  Battery power unit 1 charging fault was detected.	46G3890
8202	Battery Power Unit 2 Failed  Battery power unit 2 charging fault was detected.	46G3890
8301	A Battery Power Unit 1 Failed  Battery power unit 1 load test fault occurred.	46G3890
8302	Battery Power Unit 2 Failed  Battery power unit 2 load test fault occurred.	46G3890
8610, 8620	Air Moving Device missing error	AIRMOVR TWRCARD
8810	Battery Power Unit missing	BATRY
8811	Battery Power Unit missing  Battery Charger Not Present	BATCHGR

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9012	Address not valid.  LIC command had a frame address that was not valid.  Exchange the SPCN frame-to-frame cables to the failing frame.	TWRCARD CBLALL
9013	Invalid Node Address.  The address in the SPCN command does not match the secondary nodes assigned address.  Exchange the failing items for the SPCN node reporting the error.	TWRCARD CBLALL
9014	A command has an invalid address mode.  A command from the system unit specified a unit address of D or E or had a frame address of 00.  Exchange the failing items in the system unit.	AJDG301 TWRCARD
9021	A command to an SPCN node was rejected.  No action required. This reference code is logged for information only.	
9022	Addressed Unit not in frame.  The addressed unit does not exist in the addressed frame.  No action required. This reference code is logged for information only.	
9023	Addressed Unit exists, but the frame is powered off.  The addressed unit is in a frame that is powered off.  No action required. This reference code is logged for information only.	
9024	SPCN Licensed Internal Code not valid.  The Licensed Internal Code in one of the secondary nodes is not valid. The code will be reloaded.  No action required. This reference code is logged for error analysis only.	
9025	SPCN Licensed Internal Code is not valid.  The Licensed Internal Code in one of the frames is not valid. The code will be reloaded.  No action required. This reference code is logged for error analysis only.	
9026	Battery Power Unit is reporting a low charge.  The battery power unit is not charged enough to run a test.  No action required. This reference code is logged for information only.	
9027	Battery Power Unit is defective.  No action required. This reference code is logged for information only.	
9028	SPCN Licensed Internal Code is not valid.  The Licensed Internal Code in the primary node is not valid. The code will be reloaded.  No action required. This reference code is logged for error analysis only.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9029	<p>SPCN VPD Damaged</p> <p>The VPD record in the EEPROM has bad data.</p> <p>Exchange the failing items for the node reporting the failure.</p>	TWRCARD
902C	<p>Battery Power Unit test was aborted.</p> <p>The battery power unit test was aborted.</p> <p>No action required. This reference code is logged for information only.</p>	
902D	<p>Addressed frame is not in SPCN configuration table.</p> <p>The addressed frame is not in the SPCN configuration table.</p> <p>No action required. This reference code is logged for information only.</p>	
9031	<p>Frame-to-Frame Communications Failure</p> <p>The SPCN detected a BCC error on a transmission from another frame. The transmission is attempted again.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
9032	<p>SPCN Communications Failure, unit to rack.</p> <p>The frame detected a BCC error on a transmission from a secondary node to the frame. The transmission is attempted again.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
9033	<p>SPCN Communications Failure, rack to unit.</p> <p>A secondary node detected a BCC error on a transmission from the frame. The transmission is attempted again.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
9034	<p>Unsupported Packet Size</p> <p>The receiving node detected a packet exceeding 70 bytes. The frame can also return this code if a secondary node returns more than 10 bytes to a PAS command.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
9035	<p>Secondary SPCN node timeout.</p> <p>A secondary SPCN node did not respond to a command. The command was attempted again and failed.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
9036	<p>Frame Timeout</p> <p>One or more frames did not respond to a command. The command is attempted again.</p> <p>No action required. This reference code is logged for error analysis only.</p>	
903B	<p>Invalid Packet Length for data sent.</p> <p>The number of bytes sent or received does not match the number of bytes specified in the command.</p> <p>No action required. This reference code is logged for error analysis only.</p>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9041	Invalid Load Type  The down load was successful, but the wrong type of Licensed Internal Code was loaded. The operation was attempted again but was not successful. Exchange the failing items for the node reporting the fault.	AJDG301 TWRCARD
9042	EEPROM Failure  The EEPROM in an SPCN node cannot be written successfully.  Exchange the SPCN node reported in the failure.	TWRCARD
9043	Download Failure  The Licensed Internal Code download to an SPCN node was completed but was not successful.  Exchange the failing SPCN node.	TWRCARD
9046	QDS Packet Sequence Error  The Packet Sequence number is wrong. The download was stopped.	TWRCARD
9047	QDS Block Sequence Error  The Block Sequence number is wrong. The download was stopped.	TWRCARD
9048	The SPCN ROS and EEPROM LIC is not compatable.  The LIC levels in the nodes ROS and EEPROM are not compatible.  Exchange the failing items for the failing node.	TWRCARD AJDG301
9080	Undefined Status Code  An SPCN node returned an unknown status code.  Exchange the failing SPCN node.	TWRCARD BACKPLN
90F0	A frame was dropped from the SPCN configuration.  A frame was dropped from the SPCN configuration. This is usually caused by a loss of ac power or a problem with the frame-to-frame cable.	TWRCARD CBLALL
90F1	A frame was added to the SPCN configuration.  No action required. This reference code is logged for information only.	
9100	Battery capacity test completed.  No action required. This reference code is logged for information only.	
9101	VLIC-SPCN Timeout  A Licensed Internal Code timeout occurred. The SPCN failed to respond to a Licensed Internal Code command.	TWRCARD CTLPNL SVCPROC
9102	Assign Permanent Address command failure  A node failed to perform an Assign Permanent Address command.	TWRCARD
9103	Download Initialize Timeout  An SPCN node failed to enter the download state after an Initialize for Download command.  Exchange the failing SPCN node.	TWRCARD



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9104	Download Completion Timeout  An SPCN node failed to leave the download state.  Exchange the failing SPCN node.	TWRCARD
9105	Load Damaged Timeout  An SPCN node failed to enter the operational state.  Exchange the failing SPCN node.	TWRCARD
9106	An SPCN LID was not found.  No action required. This reference code is logged for information only.	
9107	An SPCN microcode download is required.  No action required. This reference code is logged for error analysis only.	
9108	A status change occurred in one of the SPCN nodes.  No action required. This reference code is logged for information only.	
9109	Licensed Internal Code part number is not correct.  The AROS part number field was not updated to the correct level after the system attempted to load new Licensed Internal Code.	TWRCARD
9110	Battery Power Unit capacity test failed.  The battery power unit was not able to pass the capacity test.	BATRY
9111	SPCN is too large for VLIC.  There are more nodes in the network than VLIC can service.	AJDG301
9112	Primary SPCN node is reporting load damaged.  The Licensed Internal Code for the primary SPCN node is damaged. The reload failed because the code could not be found.	TWRCARD
9113	Secondary SPCN node is reporting load damaged.  The Licensed Internal Code for the secondary SPCN node is damaged. The reload failed because the code could not be found.	TWRCARD
9114	Frame SPCN node is reporting load damaged.  The Licensed Internal Code for a SPCN node is damaged. The reload failed because the code could not be found.	TWRCARD
9115	SPCN Command rejected by the Service Processor.  The service processor rejected an SPCN command from the Licensed Internal Code.  No action required. This reference code is logged for information only.	
9116	SPCN - Control Panel interface failure.  The SPCN to control panel interface is not working.	
9117	SPCN - Control Panel interface is now working.  The SPCN to control panel interface is now working.  No action required. This reference code is logged for information only.	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9212	Frame Address field not valid.  A Licensed Internal Code command had a frame address that is not valid.  Exchange the failing items for the failing node.	TWRCARD
9213	Invalid Address status, secondary node.  The address in the SPCN command does not match the assigned address of the secondary node.  Exchange the failing items for the failing node.	TWRCARD
9214	Invalid Address Mode status  Invalid Address Mode occurred during Frame Command processing.	TWRCARD AJDG301
9215	Invalid Frame Command status  Invalid Frame Command occurred during Frame Command processing.	TWRCARD AJDG301
921B	System Unit SPCN Port Fault status.  System Unit Port Fault occurred during Command processing.	TWRCARD AJDG301
922B	Address Unassigned status  A secondary node has no address assigned during Command processing.	TWRCARD AJDG301
9231	Frame-to-Frame Communications Failure  A frame-to-frame communications failure occurred during STF processing.	TWRCARD CBLALL
9232	Intrarack Communications Failure  An SPCN secondary node to frame communications failure occurred during Command processing.	TWRCARD CBLALL
9233	Intrarack Communications Failure  An SPCN frame to secondary node communications failure occurred during Command processing.	TWRCARD CBLALL
9234	Unsupported Packet Size status  Unsupported Packet Size occurred during STF and Secondary Node Command processing.	TWRCARD CTLPNL SVCPROC
9235	SPCN Secondary Node Timeout status  An SPCN Secondary Node Timeout occurred during Command processing.  If the failing secondary node is in a 9337, go to the "Analyzing Problems" section in the 9337 <i>Disk Array Service Information</i> manual.	TWRCARD AJDG301 CBLALL
9236	Frame Timeout status  An SPCN Frame Node Timeout occurred during Network post processing.	TWRCARD CBLALL
9238	Secondary Node Fault  An SPCN Secondary Node Fault occurred during Command processing.	TWRCARD AJDG301
9239	Frame Node Fault  An internal error in the SPCN frame node prevents the running of a Frame command.	TWRCARD AJDG301

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
923A	ASA Failure  The frame address returned by a secondary node does not match the address of the frame.	TWRCARD AJDG301
923B	Invalid Packet Length for data sent.  An Invalid Packet Length occurred for data exchanged.	AJDG301 TWRCARD
9280	Response Stack Overflow  Too many responses were received during System Frame command processing.	CBLALL AJDG301 TWRCARD
9281	Response Overrun  Response Overrun occurred during System Frame processing.	CBLALL AJDG301 TWRCARD
9282	No Free Entries  No free entries were found during System Frame processing.	CBLALL AJDG301 TWRCARD
9283	ARA Failure  An Assign Frame Address Failure occurred during ARA Preprocessing.	TWRCARD AJDG301
9284	Undefined status  Undefined Status occurred during Frame or STF processing.	TWRCARD AJDG301
9285	BCC Fault  A BCC Error was detected during Network post processing.	TWRCARD
9286	Length Check Error.  Length Check occurred during SPCN post processing.	TWRCARD AJDG301
9287	Undefined status  Undefined Status occurred during Command processing.	TWRCARD AJDG301
9288	Configuration Error  A configuration error was detected during System Frame processing.	TWRCARD AJDG301
9289	Invalid Packet Length for data sent.  Invalid Packet Length occurred for data exchanged.	AJDG301 TWRCARD
A100	Battery Power Unit capacity test failure  The battery power unit capacity test time exceeds the installed battery capacity. The battery power may not be enough to provide a controlled stop during a loss of incoming ac voltage.  This reference code is logged for information only.	
A201	A Battery Power Unit 1 Failed  Battery power unit 1 capacity test failed.	BATRY BATCHGR
A202	Battery Power Unit 2 Failed  Battery power unit 2 capacity test failed.	BATRY BATCHGR

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
A300	Battery Power Unit missing  The existing number of battery power units installed may not be adequate for the current configuration. If the battery power units are installed, insure that they are properly connected before replacing any FRUs.	BATCHGR BATRY
A301	A Battery Power Unit 1 Failed  The installed SPCN Licensed Internal Code does not give support to the type of battery power unit installed. Install the latest SPCN code.	AJDG301 BATCHGR
A302	Battery Power Unit 2 Failed  The installed SPCN Licensed Internal Code does not give support to the type of battery power unit installed. Install the latest SPCN code.	AJDG301 BATCHGR
B101	A Battery Power Unit 1 Failed  Battery power unit reported an over current condition on the +29 V dc bus.	PWRREG BATCHGR BACKPLN
B102	Battery Power Unit 2 Failed  Battery power unit 2 reported an over current condition on the +29 V dc bus.	PWRREG BATCHGR BACKPLN
B201	A Battery Power Unit 1 Failed  Battery power unit 1 reported an over current condition on the +31 V dc bus.	PWRREG BATCHGR BACKPLN
B202	Battery Power Unit 2 Failed  Battery power unit 2 reported an over current condition on the +31 V dc bus.	PWRREG BATCHGR BACKPLN
C510	A Battery Power Unit 1 Failed  SPCN-to-battery power unit 1 or 3 communications fault occurred.	BATCHGR ACMODUL BACKPLN
C511	Battery Power Unit 2 Failed  SPCN-to-battery power unit 2 communications fault occurred.	BATCHGR ACMODUL BACKPLN
C512	AC Module Failure  SPCN serial port communications fault occurred.	ACMODUL
C600	AC Module Failure  The AC module control supply failed to turn off.	ACMODUL
C601	AC Module Failure  AC module bus voltage control test fault occurred.	ACMODUL
C602	AC Module Failure  AC module fault detection failure occurred.	ACMODUL
C62E	SPCN Network Fault  An SPCN frame-to-frame communication failure was detected.  "Cannot Power On Secondary Frame (No SRC)" on page 42 or "System or Frame Cannot Become Powered Off" on page 56.	TWRCARD CBLALL
C701	AC Module Failure  An SPCN frame-to-frame communication failure was detected.	TWRCARD CBLALL

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
C702	AC Module Failure An SPCN frame-to-frame communication failure was detected. This reference code indicates that an AC loss was detected. “Cannot Power On Secondary Frame (No SRC)” on page 42.	TWRCARD CBLALL
C703	AC Module Failure An SPCN frame-to-frame communication failure was detected. “Cannot Power On Secondary Frame (No SRC)” on page 42.	TWRCARD CBLALL
C900	Power Problem in the 9337. A failure occurred in the 9337 Disk Array operator panel.	
C901	Power Problem in the 9337. Fan 1 in the 9337 Disk Array failed.	
C902	Power Problem in the 9337. Fan 2 in the 9337 Disk Array failed.	
C903	Power Problem in the 9337. Both fans in the 9337 Disk Array failed.	
C906	Power Problem in the 9337. Watchdog timeout 1 occurred.	
C907	Power Problem in the 9337. Watchdog timeout 2 occurred.	
C908	Power Problem in the 9337. Communication with all modules in the 9337 Disk Array failed.	
C909	Power Problem in the 9337. All controllers in the 9337 Disk Array failed.	
C90A	Power Problem in the 9337. Communications with power module 1 in the 9337 Disk Array failed.	
C90B	Power Problem in the 9337. Communications with power module 2 in the 9337 Disk Array failed.	
C90C	Power Problem in the 9337. Communications with power module 3 in the 9337 Disk Array failed.	
C90D	Power Problem in the 9337. Controller 1 in a 9337 Disk Array reported a communications timeout.	
C90E	Power Problem in the 9337. Controller 2 in a 9337 Disk Array reported a communications timeout.	
C90F	Power Problem in the 9337. SPCN communications failure in a 9337 Disk Array.	

# 1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
C990	Power Problem in the 9337. More than one power module failed in a 9337 Disk Array.	
C991	Power Problem in the 9337. +5 V dc failed on more than one power module in a 9337 Disk Array.	
C992	Power Problem in the 9337. +12 V dc failed on more than one power module in a 9337 Disk Array.	
C9A0	Power Problem in the 9337. Power module 1 in a 9337 Disk Array reported a failure.	
C9A1	Power Problem in the 9337. Power module 1 in a 9337 Disk Array reported a failure with the +5 V dc.	
C9A2	Power Problem in the 9337. Power module 1 in a 9337 Disk Array reported a failure with the +12 V dc.	
C9A3	Power Problem in the 9337. Power module 1 in a 9337 Disk Array reported a failure in its power envelope.	
C9B0	Power Problem in the 9337. Power module 2 in a 9337 Disk Array reported a failure.	
C9B1	Power Problem in the 9337. Power module 2 in a 9337 Disk Array reported a failure with the +5 V dc.	
C9B2	Power Problem in the 9337. Power module 2 in a 9337 Disk Array reported a failure with the +12 V dc.	
C9B3	Power Problem in the 9337. Power module 2 in a 9337 Disk Array reported a failure in its power envelope.	
C9C0	Power Problem in the 9337. Power module 3 in a 9337 Disk Array reported a failure.	
C9C1	Power Problem in the 9337. Power module 3 in a 9337 Disk Array reported a failure with the +5 V dc.	
C9C2	Power Problem in the 9337. Power module 3 in a 9337 Disk Array reported a failure with the +12 V dc.	
C9C3	Power Problem in the 9337. Power module 3 in a 9337 Disk Array reported a failure in its power envelope.	
CB00	Unknown box ID The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN
CB05 to CB06	AC Module Failure The SPCN ROS and EPROMs test failed.	ACMODUL

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
CB1D	AC Module Failure The LCD test failure was detected on an Extension/Expansion Unit.	ACMODUL 17G0573
CC00	AC Module Failure An unknown fault was detected. The machine failed to power up.	ACMODUL FI00065 BKSPCN
CD00	No Power Supplies Present SPCN cannot detect any power supplies installed.	BKSPCN PWRSPPLY
CE18	Regulator Not Present No regulators can be found. If the regulators are installed, exchange the failing items.	PWRREG ACMODUL
D001	A Battery Power Unit 1 Failed A response was received from battery power unit 1 charger that was not valid.	86G8020 ACMODUL BACKPLN
D002	Battery Power Unit 2 Failed A response was received from battery power unit 2 charger that was not valid.	86G8020 ACMODUL BACKPLN
D101	A Battery Power Unit 1 Failed Battery power unit 1 capacity test failed.	86G8040 86G8020
D102	Battery Power Unit 2 Failed Battery power unit 2 capacity test failed.	86G8040 86G8020
D110	Battery Power Unit 1 and 2 Failed Replace both batteries.	BATRY
D201	A Battery Power Unit 1 Failed Battery power unit 1 charging fault was detected.	86G8020 86G8040
D202	Battery Power Unit 2 Failed Battery power unit 2 charging fault was detected.	86G8020 86G8040
D301	A Battery Power Unit 1 Failed Battery power unit 1 load test fault occurred.	86G8020 86G8040
D302	Battery Power Unit 2 Failed Battery power unit 2 load test fault occurred.	86G8020 86G8040
E002	Battery Power Unit 2 Failed A response was received from battery power unit 2 charger that was not valid.	86G7750 ACMODUL BACKPLN
E102	Battery Power Unit 2 Failed External battery power unit 2 capacity test failed.	86G7714 86G7750
E202	Battery Power Unit 2 Failed External battery power unit 2 charging fault was detected.	86G7750 86G7714

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
E302	Battery Power Unit 2 Failed  External battery power unit 2 load test fault occurred.	86G7750 86G7714

## System Power Control Network Failing Items

### Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 359.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
17G0573	Expansion Unit Control Panel	Repair and Parts
17G1150	Power Supply	Repair and Parts
21F5521	Blower Assembly	Repair and Parts
21F5680	AC Module, SPCN Secondary node.	Repair and Parts
21F5793	Fan assembly.	Repair and Parts
21F8872	5032 Cable Carrier.	Repair and Parts
21F8888	Expansion Unit/Extension Unit Control Panel	Repair and Parts
21F8890	D-SE Converter Module.	Repair and Parts
21F9215	I/O Regulator.	Repair and Parts
21F9362	SPCN Port Cable	Repair and Parts
21F9380	Battery Power Unit	Repair and Parts
21F9429	Cable Carrier, 504x feature.	Repair and Parts
21F9530	DC Bulk Module.	Repair and Parts
21F9631	Fan assembly.	Repair and Parts
46G3890	Internal Battery Power Unit	Repair and Parts
6462417	Rack Control Panel cable.	Repair and Parts
86G7714	External Battery Power Unit	Repair and Parts
86G7750	Battery Power Unit Charger	Repair and Parts
86G8020	Battery Power Unit Charger	Repair and Parts
86G8040	Battery Power Unit	Repair and Parts
87G6110	Power Supply	Repair and Parts
87G6235	SPCN Frame-to-Frame or PCC port cable.	Repair and Parts
87G6300	AC Module	Repair and Parts
90H6287	Optical Converter	Repair and Parts
ACMODUL	AC Module	Problem Analysis; Symbolic FRU Isolation
AIRMOVR	Fan and Blower assemblies	Problem Analysis; Symbolic FRU Isolation
AJDG301	Vertical Licensed Internal Code.	Service Functions; APAR or LICTR
AJSDJ01	Secondary SPCN node Licensed Internal Code.	Service Functions; APAR or LICTR
AJSDJ01	Primary SPCN node Licensed Internal Code.	Service Functions; APAR or LICTR



Failing Item	Description	Document Description
BACKPLN	Back Plane Unit	Problem Analysis; Symbolic FRU Isolation
BATCHGR	Battery Power Unit Charger	Problem Analysis; Symbolic FRU Isolation
BATRY	Battery Power Unit	Problem Analysis; Symbolic FRU Isolation
BKSPCN	SPCN card	Problem Analysis; Symbolic FRU Isolation
DISKDRV	Disk Unit Power regulator	Problem Analysis; Symbolic FRU Isolation
DISKTRY	Disk unit tray	Problem Analysis; Symbolic FRU Isolation
DMREG	Domain Regulator	Problem Analysis; Symbolic FRU Isolation
PGDPART	Power Good Parts	Problem Analysis; Symbolic FRU Isolation
PWRREG	Regulator.	Problem Analysis; Symbolic FRU Isolation
PWRSPLY	Power Supply	Problem Analysis; Symbolic FRU Isolation
RMDEV	Disk Unit or Removable Media Device	Problem Analysis; Symbolic FRU Isolation
TWRCARD	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation

## (2440) Magnetic Tape Subsystem Reference Codes

A tape or a 2440 Tape Unit failure occurred.

**Note:** For tape device and IOP reset procedures, see “TU-PIP4” on page 680.

1. Is the operating system available and can you enter commands from the command line?

**Yes      No**

↓      Go to step 3 of this procedure.

2. Is OS/400 available on the system (see “Determining the Dominant Operating System” in the *AS/400 Service Functions*)?

**No      Yes**

↓      Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 2440 is powered on.
4. Clean the tape path as described in the 2440 service information.
5. Load the first tape.
6. Start a type D IPL from the system unit control panel.
7. Does the IPL complete successfully?

**No      Yes**

↓      The problem has been corrected.

**This ends the procedure.**

8. Obtain another copy of the tape. Repeat steps 5 and 6 using the new tape. If the problem continues, continue with step 9.
9. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
10. If the tape unit indicator panel shows an error condition, see the tape unit maintenance manual for more information.
11. Find the reference code in the following table.

**Notes:**

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2001	<p>Tape path dirty or write data error</p> <p>Clean the tape path using the cleaning procedures in the <i>2440 Magnetic Tape Subsystem Operator's Manual</i>, G571-0149.</p> <p>If this does not correct the problem, exchange the failing items.</p>	MH50001 DH50002
2003	<p>Tape path dirty or write identification record error</p> <p>Clean the tape path using the cleaning procedures in the <i>2440 Magnetic Tape Subsystem Operator's Manual</i>, G571-0149.</p> <p>If this does not correct the problem, exchange the failing items.</p>	MH50001 DH50002
2008	<p>Tape path dirty or more than one channel drop error</p> <p>Clean the tape path using the cleaning procedures in the <i>2440 Magnetic Tape Subsystem Operator's Manual</i>, G571-0149.</p> <p>If this does not correct the problem, exchange the failing items.</p>	MH50001 DH50002
2009	<p>Tape path dirty or read identification record error</p> <p>Clean the tape path using the cleaning procedures in the <i>2440 Magnetic Tape Subsystem Operator's Manual</i>, G571-0149.</p> <p>If this does not correct the problem, exchange the failing items.</p>	MH50001 DH50002
2015	<p>Tape unit failure</p> <p>Clean the tape path using the cleaning procedures in the <i>2440 Magnetic Tape Subsystem Operator's Manual</i>, G571-0149.</p> <p>If this does not correct the problem, exchange the failing items.</p>	MH50001 DH50002
2016	<p>Tape unit ready status lost during read or write operation</p> <p>Clean the tape path using the cleaning procedures in the <i>2440 Magnetic Tape Subsystem Operator's Manual</i>, G571-0149.</p> <p>If this does not correct the problem, exchange the failing items.</p>	MH50001 DH50002
FFD5	<p>Tape unit error reported by 2440 tape unit IOP</p> <p>Perform the “Powering Up the System” procedures in the <i>2440 Magnetic Tape Subsystem Service Guide</i>, G571-0166.</p>	UH50003 DH50002 FI00830 FI00856
FFF6	Volume statistics; logged only	

## Magnetic Tape Subsystem Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
DH50002	Tape unit	2440 Magnetic Tape Subsystem Operator's Manual, G571-0149
MH50001	Tape	2440 Magnetic Tape Subsystem Operator's Manual, G571-0149
UH50003	Tape unit not communicating	2440 Magnetic Tape Subsystem Operator's Manual, G571-0149

## (2621) SCSI I/O Processor Reference Codes

The SCSI I/O processor detected a failure.

1. Verify that the tape unit is powered on.
2. Clean the tape path as described in the service information for the specific tape unit.
3. Load the first tape.
4. Start a type D IPL from the system unit control panel.
5. Does the IPL complete successfully?

**No      Yes**

↓      The problem has been corrected.

**This ends the procedure.**

6. Obtain another copy of the tape. Repeat steps 3 and 4 using the new tape. If this does not correct the problem, continue with step 7.
7. If the tape unit indicator panel shows an error condition, see the service information for the specific tape unit.
8. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

## 2621

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00A1	I/O processor detected a buffer allocation error	AJEDA00 2621
09A2	I/O processor detected a recoverable system bus error  No action required. This reference code is logged for information only.	
0A17	A permanent I/O processor failure occurred	2621 AJEDA00
0A18	I/O processor detected a random interrupt	2621 FI00884
0A20	I/O processor resource not available	FI00882 2621 AJEDA00
0A21	I/O processor detected a storage transfer error	2621 FI00884
0A22	I/O processor detected a storage transfer error	2621 AJEDA00
0A41	I/O processor parity error	2621
0AA3	A permanent I/O processor failure occurred	AJEDA00 2621
0AC9	I/O processor detected a buffer allocation error	AJEDA00 2621 ANYBUS
0AD0	I/O processor detected a storage sequence error	AJEDA00 2621 ANYBUS
0AD1	A permanent I/O processor failure occurred	2621
1070	I/O processor memory error	2621 AJEDA00
1071	Problem with removable media, possibly a user error  See the service information for the specific tape device.	MDMMEDA AJEDA00 FI00882
1072	I/O processor Licensed Internal Code error	AJEDA00
1073	I/O processor memory error  No action required. This reference code is logged for information only.	
1074	Problem with removable media, possibly a user error  See the service information for the specific tape device. If this does not correct the problem, ask your next level of support for assistance.	MDMMEDA
1075	I/O processor detected a buffer allocation error  See the service information for the specific tape device.	AJEDA00 MDMMEDA
1076	I/O processor Licensed Internal Code error	AJEDA00
1077	EEPROM update occurred  No action required. This reference code is logged for information only.	
107F	I/O processor Licensed Internal Code error	AJEDA00
1A03	I/O processor resource not available	AJEDA00 AJDG301

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1A10	I/O processor resource not available  The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	2621 FI00884 DEVTERM EXTSCSI AJEDA00 BACKPLN
2800	I/O processor Licensed Internal Code error	AJEDA00
2806	A permanent I/O processor failure occurred	FI00120 2621
2808	I/O processor Licensed Internal Code error	AJEDA00
280A	A permanent I/O processor failure occurred	2621
2810	Device not ready during IPL	FI00882 AJEDA00 EXTSCSI 2621
2816	I/O processor Licensed Internal Code error	AJEDA00
281A	Removable media error during IPL	MDMMEDA 2621 FI00882
281E	Removable media error during IPL	MDMMEDA FI00882 2621
2820, 2900, 2904	I/O processor Licensed Internal Code error	AJEDA00
2906	I/O processor Licensed Internal Code error	MDMMEDA FI00884 AJEDA00 2621
290A, 2A00, 2A02	I/O processor Licensed Internal Code error	AJEDA00
2B00	System I/O bus error	FI00120 ANYBUS AJEDA00
2B02	System I/O bus error	FI00120 2621 ANYBUS AJEDA00
3000	A permanent I/O processor failure occurred	2621
3002	Tape/CD or disk device failed to respond to selection	FI00882 2621 FI01141 EXTSCSI
3005	Storage unit detected a media problem  A blank tape was found, or the physical limits of the tape were reached because of a device error.	FI00882 2621 AJEDA00
3006	A permanent I/O processor failure occurred	2621 ANYBUS
300C to 300D	A tape/CD or disk device reported a failure	FI00882 2621
3010	A tape/CD or disk device reported a failure	FI00882 AJEDA00

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3020	I/O processor detected a SCSI bus configuration error  Use the FI codes to find failing devices. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP18" on page 614.	UDMUSER FI00882 FI00883 2621
3030	A tape/CD or disk device reported a failure	FI00882 2621
3031	Type of tape/CD or disk unit not known	FI00882 AJEDA00
3100	Tape/CD or disk bus interface error occurred	2621 FI00882 DEVTERM EXTSCSI FI00883
3110	A tape/CD or disk device reported a failure	FI00882 2621 EXTSCSI DEVTERM
3200	A tape/CD or disk device reported a failure	FI00882 MDMMEDA
3300	Storage unit detected a media problem  See the service information for the specific tape device.	MDMMEDA FI00882 FI01141
3400	Failure in initialization of a device task  Perform "SDIOP-PIP18" on page 614.	FI00882 2621
3500	I/O processor Licensed Internal Code error	AJEDA00 2621
3501	I/O processor Licensed Internal Code error	AJEDA00
4003 to 4006	I/O processor Licensed Internal Code error	AJEDA00 2621
4030	Data decompression failure, I/O processor operational  See the service information for the specific tape device.	MDMMEDA 2621
B300 to B301	A permanent I/O processor failure occurred	2621
B701	Read only storage failed, I/O processor is operational  No action required. This reference code is logged for information only.	
B711	Control storage failed, I/O processor is operational  No action required. This reference code is logged for information only.	
B720	A permanent I/O processor failure occurred	2621
B740	Reset of the I/O processor header failed	2621
B780	A permanent I/O processor failure occurred	2621 EXTSCSI
B783	Data compression failure, I/O processor operational	2621
B787	I/O processor detected an internal error	2621
B790	A permanent I/O processor failure occurred	2621
B791	I/O processor detected a recoverable device error  No action required. This reference code is logged for information only.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B7A2	Read only storage failed, I/O processor is operational  No action required. This reference code is logged for information only.	
B980	Tape/CD or disk bus interface error occurred	2621 EXTSCSI FI00884 FI01141 DEVTERM
B981	Tape/CD or disk bus interface error occurred	EXTSCSI FI00884 2621 FI01141 DEVTERM
B982	I/O processor detected a storage device failure	FI00882 2621 EXTSCSI FI01141 DEVTERM
B983	Storage unit detected a media problem  See the service information for the specific tape device.	MDMMEDA FI00882 FI00883 2621 EXTSCSI DEVTERM
B986	Tape/CD or disk bus interface error occurred	FI00882 EXTSCSI 2621 FI01141 DEVTERM
B98F	Type of tape/CD or disk unit not known  See the specific device service information for details.	FI00882 AJEDA00
BB00	System bus error	2621 ANYBUS BACKPLN
BE01	I/O processor was not ready for interrupt that occurred	AJEDA00 2621
BE04	I/O processor Licensed Internal Code error	AJEDA00 2621
BE18	I/O processor detected a random interrupt	2621
BE1A	I/O processor was not ready for interrupt that occurred	2621 AJEDA00
BE1B	I/O processor was not ready for interrupt that occurred	AJEDA00 DEVTERM 2621 EXTSCSI FI00884
BE1C to BE1E	I/O processor was not ready for interrupt that occurred	AJEDA00 2621
BE40, BE48	A permanent I/O processor failure occurred	2621 AJEDA00
BE50	I/O processor detected a random interrupt	2621

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
BE51	I/O processor memory error	2621
BE52	I/O processor card or Licensed Internal Code error	2621 AJEDA00
BE53 to BE54	I/O processor Licensed Internal Code error	AJEDA00 2621
BE55	I/O processor memory error	2621
BE57	A permanent I/O processor failure occurred	2621
BE58	I/O processor detected a random interrupt	2621 AJEDA00
BE60	I/O processor detected a random interrupt	2621
FF3D	I/O processor detected an internal error	2621
FF4D, FF5D	I/O processor detected a recoverable SCSI bus error No action required. This reference code is logged for information only.	
FF6D	I/O processor detected a recoverable system bus error	2621 ANYBUS

### SCSI I/O Processor Failing Items

#### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
2621	I/O processor card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
EXTSCSI	Cable assembly	Problem Analysis; Symbolic FRU Isolation
MDMMEDA	Defective removable media	Refer to I/O device service information
UDMUSER	Operator/User Error	System operation information

### (2624) Magnetic Storage I/O Processor Reference Codes

The magnetic storage I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.



**Notes:**

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00A1	I/O processor detected a buffer allocation error	AJEDA00 2624
09A2	I/O processor detected a recoverable system bus error  No action required. This reference code is logged for information only.	
0A17	A permanent I/O processor failure occurred	2624 AJEDA00
0A18	I/O processor detected a random interrupt  Perform “SDIOP-PIP13” on page 605.	2624 FI01107
0A20	I/O processor resource not available	FI01105 2624 AJEDA00
0A21	I/O processor detected a storage transfer error  Perform “SDIOP-PIP13” on page 605.	2624 FI01107
0A22	I/O processor detected a storage transfer error	2624 AJEDA00
0A41	I/O processor parity error	2624 FI01104
0AA3	A permanent I/O processor failure occurred	AJEDA00 2624
0AC9	I/O processor detected a buffer allocation error  Perform “BUS-PIP1” on page 451.	AJEDA00 2624 FI00010 FI01104
0AD0	I/O processor detected a storage sequence error  Perform “BUS-PIP1” on page 451.	AJEDA00 2624 FI00010 FI01104
0AD1	A permanent I/O processor failure occurred	2624 FI01104
1070	I/O processor memory error	2624 AJEDA00
1071	Problem with removable media, possibly a user error  Perform “SDIOP-PIP1” on page 599.	MDNMEDA AJEDA00 FI01105
1072	I/O processor Licensed Internal Code error	AJEDA00

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1073	I/O processor memory error  No action required. This reference code is logged for information only.	
1074	Problem with removable media, possibly a user error  Perform "SDIOP-PIP1" on page 599. If this does not correct the problem, ask your next level of support for assistance.	MDNMEDA
1075	I/O processor detected a buffer allocation error  Perform "SDIOP-PIP1" on page 599.	AJEDA00 MDNMEDA
1076	I/O processor Licensed Internal Code error	AJEDA00
1077	EEPROM update occurred  No action required. This reference code is logged for information only.	
107F	I/O processor Licensed Internal Code error	AJEDA00
1A03	I/O processor resource not available	AJEDA00 AJDG301
1A10	I/O processor resource not available  The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	2624 FI01104 FI01107 DEVTERM FI01140 AJEDA00 BACKPLN
3000	A permanent I/O processor failure occurred	2624
3002	Tape/CD or disk device failed to respond to selection  Perform "SDIOP-PIP16" on page 608.	FI01105 2624 FI01106 FI01141 FI01140
3006	A permanent I/O processor failure occurred  Perform "BUS-PIP1" on page 451.	2624 FI00010
3020	I/O processor detected a SCSI bus configuration error  Use the failing item (FI) codes to find failing devices. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 611.	UDNUSER FI01105 FI01106 2624
3030	A tape/CD or disk device reported a failure	FI01105 2624
3031	Type of tape/CD or disk unit not known  Ensure that the device indicated by FI01105 is supported by the system. If it is, exchange the FRUs, one at a time.	FI01105 AJEDA00
3100	Tape/CD or disk bus interface error occurred  Perform "SDIOP-PIP13" on page 605.	2624 FI01105 DEVTERM FI01140 FI01106
3200	A tape/CD or disk device reported a failure	FI01105 MDNMEDA

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3300	Storage unit detected a media problem Perform "SDIOP-PIP1" on page 599.	MDNMEDA FI00121 FI01141
3400	Failure in initialization of a device task Perform "SDIOP-PIP17" on page 611.	FI01105 2624
3500	I/O processor Licensed Internal Code error	AJEDA00 2624
3501	I/O processor Licensed Internal Code error	AJEDA00
4002 to 4003, 4006	I/O processor Licensed Internal Code error	AJEDA00 2624
4030	Data decompression failure, I/O processor operational Perform "SDIOP-PIP1" on page 599.	MDNMEDA 2624
B300 to B301	A permanent I/O processor failure occurred	2624 FI01104
B701	Read only storage failed, I/O processor is operational No action required. This reference code is logged for information only.	
B711	Control storage failed, I/O processor is operational No action required. This reference code is logged for information only.	
B720	A permanent I/O processor failure occurred	2624
B740	Reset of the I/O processor header failed	2624
B780	A permanent I/O processor failure occurred	2624 FI01140
B783	Data compression failure, I/O processor operational	2624
B787	I/O processor detected an internal error	2624
B790	A permanent I/O processor failure occurred	2624
B791	I/O processor detected a recoverable device error No action required. This reference code is logged for information only.	
B7A2	Read only storage failed, I/O processor is operational	
B940	Adapter card storage failure	FI01104 2624
B950	Adapter card storage or vital product data (VPD) failure	FI01104 2624
B960	Type of adapter card not known Ensure that the adapter card is supported by the system. If it is, exchange the FRUs, one at a time.	AJEDA00 FI01104
B980	Tape/CD or disk bus interface error occurred Perform "SDIOP-PIP13" on page 605.	2624 FI01140 FI01107 FI01141 DEVTERM

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B981	Tape/CD or disk bus interface error occurred  Perform “SDIOP-PIP16” on page 608.	FI01140 FI01107 2624 FI01141 DEVTERM
B982	I/O processor detected a storage device failure	FI01105 2624 FI01140 FI01141 DEVTERM
B983	Storage unit detected a media problem  Perform “SDIOP-PIP1” on page 599.	MDNMEDA FI01105 FI01106 2624 FI01140 DEVTERM
B986	Tape/CD or disk bus interface error occurred	FI01105 FI01140 2624 FI01141 DEVTERM
B98F	Type of tape/CD or disk unit not known  Ensure that the device indicated by FI01105 is supported by the system. If it is, exchange the FRUs, one at a time.	FI01105 AJEDA00
B9C5	Diskette automatic write/read wrap test failure	FI00122 2624
B9C7	I/O processor detected error in diskette control register	FI00122
B9C9	Diskette automatic write/read wrap test failure	FI01110 2624 FI00122 FI00142
BB00	System bus error  Perform “BUS-PIP1” on page 451.	2624 FI00010 BACKPLN
BE01	I/O processor was not ready for interrupt that occurred	AJEDA00 2624 FI01104
BE04	I/O processor Licensed Internal Code error	AJEDA00 2624
BE18	I/O processor detected a random interrupt	FI01104 2624
BE1A	I/O processor was not ready for interrupt that occurred	2624 AJEDA00 FI00122
BE1B	I/O processor was not ready for interrupt that occurred  Ask your next level of support if PTFs are available for the I/O processor licensed internal code. If so, apply them to the system. If this does not correct the problem, the I/O processor, its device interface, or an attached device may be causing the problem.  If you suspect a hardware problem, perform “SDIOP-PIP13” on page 605.	AJEDA00 DEVTERM 2624 FI01140 FI01107

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
BE1C to BE1E	I/O processor was not ready for interrupt that occurred	AJEDA00 2624
BE40	A permanent I/O processor failure occurred	2624 AJEDA00
BE45 to BE46	Adapter card not communicating to I/O processor	FI01104 2624 AJEDA00
BE47	Adapter card not communicating to I/O processor Perform "BUS-PIP1" on page 451.	FI00122 2624 AJEDA00
BE48	A permanent I/O processor failure occurred	2624 AJEDA00
BE50	I/O processor detected a random interrupt	2624
BE51	I/O processor memory error	2624
BE52	I/O processor card or Licensed Internal Code error	AJEDA00 2624 FI01104
BE53 to BE54	I/O processor Licensed Internal Code error	AJEDA00 2624
BE55	I/O processor memory error	2624
BE56 to BE57	A permanent I/O processor failure occurred	2624
BE58	I/O processor detected a random interrupt	2624 AJEDA00
BE60	I/O processor detected a random interrupt	2624
FF3D	I/O processor detected an internal error	2624
FF6D	I/O processor detected a recoverable system bus error	2624 FI00010

## Magnetic Storage I/O Processor Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
2624	I/O processor card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
BACKPLN	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
MDNMEDA	Defective removable media	System operation information
UDNUSER	Operator/User Error	System operation information

2629, 2718, 2726-2729, 2741, 2809, 2810, 2824, 6532 - 6534, 9164

## (2629, 2718, 2726 - 2729, 2741, 2809, 2810, 2824, 6532 - 6534, 9164) Reference Codes

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.
4. The 673x is a read cache. Perform all actions required for 673x as a disk drive and logic card except where separate 673x cache instructions are provided.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0A17	A permanent I/O processor failure occurred	IOP AJDGP01 STORIOA
0A22	I/O processor detected a storage transfer error	IOP AJDGP01 STORIOA
102E	Out of alternate sectors for disk storage	FI01105
1307	I/O processor resource not available	AJDGP01 AJDG301
1310	I/O processor resource not available  The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	IOP STORIOA FI01107 FI01104 AJDGP01 FI01140 ANYBUS CACHE
2200	I/O processor Licensed Internal Code error	AJDGP01
2201	Removable media error during IPL	USER FI01105
2202	Removable media error during IPL	FI00022 FI01105
3000	A permanent I/O processor failure occurred	STORIOA IOP
3002	Addressed device failed to respond to selection  Perform "SDIOP-PIP16" on page 608.	FI01105 STORIOA FI01140 FI01141 FI01106

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3006	System bus error	IOP ANYBUS STORIOA
3020	I/O processor detected a SCSI bus configuration error  Error occurred on SCSI bus 0. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 611. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3021	I/O processor detected a SCSI bus configuration error  Error occurred on SCSI bus 1. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 611. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3022	I/O processor detected a SCSI bus configuration error  Error occurred on SCSI bus 2. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 611. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3080	I/O processor Licensed Internal Code error	AJDGP01 IOP STORIOA
3100	I/O processor card detected interface error  Error occurred on SCSI bus 0.  Perform "SDIOP-PIP13" on page 605.	STORIOA FI01107 FI01140 BACKPLN
3101	I/O processor card detected interface error  Error occurred on SCSI bus 1.  Perform "SDIOP-PIP13" on page 605.	STORIOA FI01107 FI01140 BACKPLN
3102	I/O processor card detected interface error  Error occurred on SCSI bus 2.  Perform "SDIOP-PIP13" on page 605.	STORIOA FI01107 FI01140 BACKPLN
3109	I/O processor timed out a device command  Perform "SDIOP-PIP16" on page 608.	FI01105 STORIOA FI01140 BACKPLN FI01106
3110	I/O processor card detected interface error  Perform "SDIOP-PIP16" on page 608.	FI01105 STORIOA FI01140 BACKPLN FI01106
3136	The removable media device is assigned elsewhere	USER FI01105
3200	A tape/CD or disk device reported a failure	FI01105 STORIOA IOP MEDIA
3203	Disk media format bad	FI01105

## 2629, 2718, 2726-2729, 2741, 2809, 2810, 2824, 6532 - 6534, 9164

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3205, 3215	Disk sector read error  Disk unit data may need to be reloaded, but the disk unit does not need to be replaced.	FI01105
3250	Disk unit requires initialization before use.  Perform a D-IPL and work on errors found in the log.	USER
3300	Storage unit detected a media problem  Perform "SDIOP-PIP1" on page 599.	MEDIA FI00121 FI01141
3400	I/O processor card detected device error  NOTE: If external devices are attached check EXTSCSI and DEVTERM first.	FI02112 STORIOA FI01106 DEVTERM FI01140
3401	Device backplane problem	DEVBPLN
3501	I/O processor Licensed Internal Code error	AJDGP01 IOP
3600 to 3601	System log entry only, no service action required	
6010	Any device attached to Bus 1	ANYBUS STORIOA
6070	A permanent I/O processor failure occurred	IOP
6071	I/O processor Licensed Internal Code error	AJDGP01
6072	I/O processor Licensed Internal Code error	AJDGP01 IOP
6073	I/O processor Licensed Internal Code error	MEDIA FI01105 USER
6075	I/O processor resource not available	AJDGP01
6076	I/O processor Licensed Internal Code error	AJDGP01 FI01105
6081 to 6083, 6085	I/O processor Licensed Internal Code error	AJDGP01 IOP
6602	An I/O processor Licensed Internal Code error occurred.	AJDGP01
8000	A permanent IOP or cache adaptor card failure occurred.  <b>Note:</b> DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	STORIOA CACHE
8002	A permanent cache adaptor card failure occurred.  <b>Note:</b> DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	CACHE STORIOA
8004	Voltage drop detected on I/O processor 5 volt power supply.	FI01141 STORIOA
8005	A recoverable IOP or cache adaptor card error occurred.  <b>Note:</b> DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	STORIOA CACHE



**2629, 2718, 2726-2729, 2741, 2809, 2810, 2824, 6532 - 6534, 9164**

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
8007	A recoverable cache adaptor card error occurred.  <b>Note:</b> DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	CACHE STORIOA
8010 to 8011	A permanent cache adaptor card failure occurred.  The cache adaptor card may be missing, broken or incompatible. <b>Note:</b> DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	CACHE STORIOA
8100	I/O processor Licensed Internal Code error	AJDGP01 IOP
8140	Temporary disk bus error  A service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	STORIOA FI01107 FI01140 BACKPLN
8141	Disk device detected recoverable error  No action required. This reference code is logged for information only.	
8145	A recoverable I/O processor error occurred.	STORIOA
8146	Disk device detected recoverable error	FI01105
8150	A permanent I/O processor failure occurred	STORIOA IOP FI01107 ANYBUS
8151	I/O processor Licensed Internal Code error	AJDGP01 STORIOA
8155 to 8156	A permanent I/O processor failure occurred	AJDGP01 STORIOA
8200	I/O processor Licensed Internal Code error	AJDGP01 IOP
8300	I/O processor card or Licensed Internal Code error  A microprocessor exception occurred on the I/O processor.	STORIOA IOP AJDGP01
8301	Not valid condition in I/O Processor Licensed Internal Code  The Licensed Internal Code found a condition that should not have occurred.	STORIOA AJDGP01 IOP
8400	I/O processor Licensed Internal Code error	AJDGP01
8ABF	System log entry only, no service action required	
9000 to 9001	I/O processor card detected device error	FI01105 STORIOA
9002	I/O processor card detected device error  Perform "SDIOP-PIP16" on page 608.	FI01105 STORIOA FI01140 BACKPLN FI01106
9008	I/O card does not support functions expected by devices  Perform "SDIOP-PIP25" on page 626.	SVCDOS

**2629, 2718, 2726-2729, 2741, 2809, 2810, 2824, 6532 - 6534, 9164**

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9010	Cache data associated with attached devices cannot be found Perform "SDIOP-PIP19" on page 616.	SVCDOS
9011	Cache data belongs to devices other than those attached Perform "SDIOP-PIP19" on page 616.	SVCDOS
9012	IOP requires a cache adaptor card but cannot find it. The cache adapter card is missing or broken. Perform "SDIOP-PIP29" on page 633.	CACHE
9013	The IOP and attached cache adaptor card are not compatible. Perform "SDIOP-PIP19" on page 616.	SVCDOS
9020 to 9021	Array not functional due to present hardware configuration. Perform "SDIOP-PIP20" on page 618.	SVCDOS
9022 to 9024	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 622.	SVCDOS
9025	Disk unit is not supported at its physical location. Perform "SDIOP-PIP21" on page 621.	SVCDOS
9026 to 9027	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 622.	SVCDOS
9028	Incorrect hardware configuration change has been detected. Reduce the number of arrays on IOP. Either move all devices in an array to another IOP that supports arrays, or stop an array on this IOP.	SVCDOS
9029	Incorrect hardware configuration change has been detected. Contact your next level of support.	SVCDOS
9030	Array no longer protected due to missing or failed disk unit Perform "SDIOP-PIP21" on page 621.	SVCDOS
9031, 9040	Array protection temporarily suspended No action required. Protection will be automatically restarted.	
9041	Array protection temporarily suspended Protection will be automatically restarted. Call your next level of support to report the problem.	AJDGP01
9050	Required cache data cannot be located for a disk unit. Perform "SDIOP-PIP23" on page 623.	SVCDOS
9051	IOP cache data exists for a missing or failed device. If all configured units are missing, a 9054 reference code may appear in the product activity log. If so, perform the action indicated for the 9054 reference code. Otherwise, perform "SDIOP-PIP27" on page 630.	SVCDOS

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9052	Cache data exists for device that has been modified.  Perform "SDIOP-PIP28" on page 632.	SVCDOS
9053	IOP resources not available due to previous problems.  Take action on other IOP reference codes which have surfaced.  If you cannot get to SST or DST, and cannot perform a type A or B IPL, perform a type D IPL from removable media. Look for Product Activity Log entries for other IOP reference codes and take action on them.	SVCDOS
9054	IOP resources not available due to previous problems.  Power off the system and remove all new or replacement disk units. IPL the system to DST. If you cannot perform a type A or B IPL, perform a type D IPL from removable media.  Look for Product Activity Log entries for other IOP reference codes and take action on them.	SVCDOS
9081	I/O processor card detected device error	FI01105 STORIOA
9082	I/O processor card detected device error  Perform "SDIOP-PIP16" on page 608.	FI01105 STORIOA FI01140 BACKPLN FI01106
9090	Disk unit has been modified after the last known status.  Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem.  If you cannot resolve the problem, contact your next level of support.	SVCDOS
9091	Incorrect hardware configuration change has been detected.  Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem.  If you cannot resolve the problem, contact your next level of support.	SVCDOS
9092	Disk unit requires initialization before use.  Perform "SDIOP-PIP26" on page 628.	SVCDOS
B300	A permanent I/O processor failure occurred	IOP
B3B1 to B3B6	A permanent I/O processor failure occurred  The only information available for this reference code is in function 11-3. The Direct Select Address of the MFIOP is 0001-01-00. Find the MFIOP for this system in "System Unit and Expansion Unit Locations and Addresses" on page 712 and go to "Chapter 6. Removal and Installation Procedures" on page 821 to exchange the failing item.	IOP

## 2629, 2718, 2726-2729, 2741, 2809, 2810, 2824, 6532 - 6534, 9164

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B3B7 to B3B8	A permanent I/O processor failure occurred  The only information available for this reference code is in function 11-3. The Direct Select Address of the MFIOp is 0001-01-00. Find the MFIOp for this system in "System Unit and Expansion Unit Locations and Addresses" on page 712 and go to "Chapter 6. Removal and Installation Procedures" on page 821 to exchange the failing item.	IOP STORIOA PCIBUS
B3B9	A permanent I/O processor failure occurred  The only information available for this reference code is in function 11-3. The Direct Select Address of the MFIOp is 0001-01-00. Find the MFIOp for this system in "System Unit and Expansion Unit Locations and Addresses" on page 712 and go to "Chapter 6. Removal and Installation Procedures" on page 821 to exchange the failing item.	IOP
B3E0	I/O processor detected a fault condition.  The only information available for this reference code is in function 11-3. The Direct Select Address of the MFIOp is 0001-01-00. Find the MFIOp for this system in "System Unit and Expansion Unit Locations and Addresses" on page 712 and go to "Chapter 6. Removal and Installation Procedures" on page 821 to exchange the failing item.	IOP
B3E1	I/O processor detected a fault condition.  The only information available for this reference code is in function 11-3. The Direct Select Address of the MFIOp is 0001-01-00. Find the MFIOp for this system in "System Unit and Expansion Unit Locations and Addresses" on page 712 and go to "Chapter 6. Removal and Installation Procedures" on page 821 to exchange the failing item.	IOP STORIOA PCIBUS
B410 to B411	A permanent I/O processor failure occurred	STORIOA
B412	Tape/CD or disk bus interface error occurred  Perform "SDIOP-PIP16" on page 608.	FI01107 FI01140 STORIOA DEVTERM
B6D1	Service processor is in incorrect state during IPL  The only information available for this reference code is in function 11-3. The Direct Select Address of the MFIOp is 0001-01-00. Find the MFIOp for this system in "System Unit and Expansion Unit Locations and Addresses" on page 712 and go to "Chapter 6. Removal and Installation Procedures" on page 821 to exchange the failing item.	IOP
B6EF	System log entry only, no service action required	
B7E4 to B7E6	I/O processor detected errors in control panel interface	CTLPNL IOP
B7E8	Service processor time-of-day hardware failed	IOP
B900 to B901	A permanent I/O processor failure occurred	IOP AJDGP01
B902 to B903	A permanent communications or workstation IOA error occurred	FI01101 IOP AJDGP01
B904	A permanent I/O processor failure occurred	IOP AJDGP01
B934	Incompatible hardware detected.	STORIOA

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B935	Unknown hardware detected	FI01101 AJDGP01 IOP BACKPLN
B9E8	Service processor time-of-day hardware failed	IOP
BE00	I/O processor detected a fault condition.	FI01104 AJDGP01 IOP
FF3D	I/O processor card	STORIOA IOP
FF6D	I/O processor detected a recoverable system bus error	IOP ANYBUS

## Failing Items

### Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 359.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJDGP01	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
CACHBAT	Cache battery pack	Problem Analysis; Symbolic FRU Isolation
CACHE	Cache adaptor card	Problem Analysis; Symbolic FRU Isolation
CMPRES1	Compressed device and compression IOA are not compatible	Problem Analysis; Symbolic FRU Isolation
CTLPNL	Control panel, or the interface to the Control panel	Problem Analysis; Symbolic FRU Isolation
DEVBPLN	Device backplane	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
IOP	I/O processor card	Problem Analysis; Symbolic FRU Isolation
MEDIA	Defective media	Problem Analysis; Symbolic FRU Isolation
PCIBUS	Any PCI card on the PCI bus	Problem Analysis; Symbolic FRU Isolation
STORIOA	Storage I/O adapter	Problem Analysis; Symbolic FRU Isolation
SVCDOS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation
USER	Operator/User Error	Problem Analysis; Symbolic FRU Isolation

## (2644) Tape I/O Processor Reference Codes

The tape I/O processor detected a failure.

1. Verify that the tape unit is powered on.
2. Clean the tape path as described in the service information for the specific tape unit.
3. Load the first tape.
4. Start a type D IPL from the system unit control panel.
5. Does the IPL complete successfully?

**No      Yes**

↓      The problem has been corrected.

**This ends the procedure.**

6. Obtain another copy of the tape. Repeat steps 3 and 4 using the new tape. If this does not correct the problem, continue with step 7.
7. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
8. If the tape unit indicator panel shows an error condition, see the service information for the specific tape unit.
9. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00A1	I/O processor detected a buffer allocation error	AJEDA00 21F6085
09A2	I/O processor detected a recoverable system bus error	
0A17	I/O processor was not ready for interrupt that occurred	21F6085 AJEDA00
0A18	I/O processor detected a random interrupt	21F6085 FI00851 FI00850 FI00852
0A20	Tape I/O processor card, tape drive, or Lic Int Code error	FI00851 21F6085 AJEDA00
0A21	I/O processor detected a storage transfer error	21F6085 FI00851
0A22	I/O processor detected a storage transfer error	21F6085 AJEDA00

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0A41	I/O processor parity error	21F6085
0AC9	I/O processor detected a buffer allocation error	AJEDA00 21F6085 FI00010
0AD0	I/O processor detected a storage sequence error	AJEDA00 21F6085 FI00010
0AD1	A permanent I/O processor failure occurred	21F6085
1070	I/O processor memory error	21F6085 AJEDA00
1071	Problem with removable media, possibly a user error	MDDTMED FI00851 AJEDA00
1072	I/O processor Licensed Internal Code error	AJEDA00
1073	I/O processor memory error	
1074	Problem with removable media, possibly a user error	MDDTMED
1075	I/O processor detected a buffer allocation error	AJEDA00 MDDTMED
1076	I/O processor Licensed Internal Code error	AJEDA00
1077	EEPROM update occurred	
107F	I/O processor Licensed Internal Code error	AJEDA00
1A03	I/O processor resource not available	AJEDA00 AJDG301
1A06	I/O processor card or Licensed Internal Code error	AJEDA00 21F6085
1A10	I/O processor resource not available  The I/O processor error log has been filled. If it is possible to view the error log via DST or other system level methods, correct those errors in the error log before correcting this reference code and continuing. If there are no error log messages, exchange the failing items.	21F6085 FI00851 AJEDA00 FI00850 FI00852 FI00010 FI00853
2800	I/O processor detected an internal error	AJEDA00 21F6085
2806	System processor card or tape I/O processor card error	FI00120 21F6085
2808	I/O processor Licensed Internal Code error	AJEDA00
280A	Tape I/O processor card error	21F6085
2810	Device not ready during IPL  Perform "TIOP-PIP1" on page 655.  Use the tape device service information to continue isolating the failure on the device attached to this tape I/O processor.	FI00851 AJEDA00 21F6085 FI00850 FI00852
2816	I/O processor Licensed Internal Code error	AJEDA00
281A	Tape too short	MDDTMED 21F6085 FI00851

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
281E	Wrong tape loaded or tape media error.	MDDTMED FI00851
2820, 2900, 2904, 2906, 290A, 2A00, 2A02	I/O processor Licensed Internal Code error	AJEDA00
2B00	System processor card or tape I/O processor card error	FI00120 FI00010 AJEDA00
2B02	System processor card or tape I/O processor card error	FI00120 21F6085 FI00010 AJEDA00
3000 to 3001, 3006, 3010	Tape I/O processor card error	21F6085
3090	Tape I/O Processor diagnostic detected S/370 interface error  Perform "TIOP-PIP1" on page 655. <b>Note:</b> If a channel wrap block is installed on the System/370 channel cable string and I/O processor basic assurance tests (BATS) were run, this SRC indicates that the diagnostic tests detected a failure.	FI00851 21F6085 FI00850 FI00852 FI00853
3100	I/O processor detected S/370 interface error  Perform "TIOP-PIP1" on page 655. <b>Note:</b> If a channel wrap block is installed on the System/370 channel cable string and I/O processor basic assurance tests (BATS) were run, this SRC indicates that the I/O processor and the System/370 channel cable string are not failing. This is a normal end indication that the diagnostic tests ran without error.	FI00851 FI00850 21F6085 FI00852 FI00853



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3110	<p>Device is not responding</p> <p>3422/3430 Tape Units:</p> <ul style="list-style-type: none"> <li>• Verify that the control unit and the tape units attached to this tape I/O processor are powered on and that no error conditions are present.</li> <li>• Verify that the Channel Interface switches on the I/O device are set to the Enable position (for 3422) or to the On-line position (for 3430).</li> <li>• Verify that the CE mode switches on the I/O device and I/O device control unit are set to the Off position.</li> </ul> <p>3480/3490 Tape Units:</p> <ul style="list-style-type: none"> <li>• Verify that the control unit and the tape units attached to this tape I/O processor are powered on and that no error conditions are present: <ul style="list-style-type: none"> <li>– For 3480 Tape Units: <ul style="list-style-type: none"> <li>- The Local/Remote switch on the 3480 Control Unit is set to the Local position and the Power switch is set to the On position.</li> </ul> </li> <li>– For 3490 Tape Units: <ul style="list-style-type: none"> <li>- The 3490 Rack Unit Emergency Power Off switch is set to the On position.</li> <li>- Ensure that the 3490 Rack Enable/Off switch is set to the Enable position.</li> <li>- Press the 3490 Rack Power On button.</li> </ul> </li> </ul> </li> <li>• The Channel Enable/Disable switches are set to the Enable position.</li> <li>• The Normal/Test switch is set to the Normal position.</li> <li>• The control unit Online/Offline switch is set to the Online position.</li> <li>• The Drive Address Online/Offline switches are set to the Online position.</li> <li>• The Drive DC Power switches are set to the On position.</li> </ul> <p>Use the tape device service information to continue isolating the failure on the device attached to this tape I/O processor.</p>	FI00851 UDDUSER
3120	<p>Disconnect-In active on S/370 interface; I/O error alert</p> <p>Perform “TIOP-PIP1” on page 655.</p> <p>Use the tape device service information to continue isolating the failure on the device attached to this tape I/O processor.</p>	FI00851 21F6085 FI00850 FI00852 FI00853
3130	<p>I/O processor detected Bus-in parity check</p> <p>Perform “TIOP-PIP1” on page 655.</p> <p>Use the tape device service information to continue isolating the failure on the device attached to this tape I/O processor.</p>	FI00851 21F6085 FI00850 FI00852 FI00853
3135	<p>Device busy condition could not be cleared</p> <p>If the control unit that is attached to this tape I/O processor has multiple channels attached to it, verify that the tape device is not being used by another system or I/O processor.</p> <p>Use the tape device service information to continue isolating the failure on the device attached to this tape I/O processor.</p>	UDDUSER FI00851 21F6085
3136	<p>The removable media device is assigned elsewhere</p> <p>Perform “TIOP-PIP5” on page 657.</p>	UDDUSER FI00851 21F6085

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3140	Tape I/O processor card error	21F6085
3150	Device address-in/system address-out; mismatch  Perform "TIOP-PIP1" on page 655.  Use the tape device service information to continue isolating the failure on the device attached to this tape I/O processor.	FI00851 21F6085 FI00850 FI00852
3170	Tape I/O processor card error	21F6085
3180	S/370 interface time-out error  Use the tape device service information to continue isolating the failure on the device attached to this tape I/O processor.  Perform "TIOP-PIP1" on page 655.	FI00851 FI00850 FI00852 AJEDA00 FI00853 21F6085
3195	I/O configuration is not supported by this I/O processor  Use the specific device service information to correct the problem.  If this does not correct the problem, exchange the failing items.	FI00855 FI00851 21F6085
3196 to 3197	I/O configuration is not supported by this I/O processor	FI00855 FI00851 21F6085
3198	Tape Control Unit Channel type not supported on this IOP.	UDDUSR1
3199	User switched device type or model without IOP reset	UDDUSR2
3200	Device status; not permitted  Not valid ending status, unexpected sense data, or an interrupt condition from the tape device that cannot be cleared was received.  Perform "TIOP-PIP1" on page 655.	FI00851 AJEDA00 21F6085
3202	I/O device detected word-count-0 error  Perform "TIOP-PIP1" on page 655.	FI00851 FI00850 FI00852 FI00853
3211	I/O device detected even parity on bus-out  Perform "TIOP-PIP1" on page 655.	21F6085 FI00851 FI00850 FI00852 FI00853
3212	I/O device rejected command  Perform "TIOP-PIP1" on page 655.	AJEDA00 FI00851
3214	I/O device detected overrun error  Perform "TIOP-PIP1" on page 655.	21F6085 FI00851 FI00850 FI00852 FI00853
4002, 4011 to 4012	Tape I/O Processor licensed internal code error.	AJEDA00
4013	Tape I/O Processor licensed internal code error.	AJEDA00 21F6085
4014	Tape I/O Processor licensed internal code error.	AJEDA00
4015	Tape I/O Processor licensed internal code error.	AJEDA00 21F6085

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4016	Tape I/O Processor licensed internal code error.	AJEHL00
B300 to B301	A permanent I/O processor failure occurred	21F6085
B701	Read only storage failed, I/O processor is operational No action required. This reference code is logged for information only.	
B711	Control storage failed, I/O processor is operational No action required. This reference code is logged for information only.	
B720	A permanent I/O processor failure occurred	21F6085
B740	Reset of the I/O processor header failed	21F6085
B7A2	Read only storage failed, I/O processor is operational	
BB00	Undetermined data error	21F6085 FI00010 FI00040
BE01	I/O processor was not ready for interrupt that occurred	AJEDA00 21F6085
BE04	I/O processor Licensed Internal Code error	AJEDA00 21F6085
BE18	I/O processor detected a random interrupt	21F6085
BE1A	I/O processor was not ready for interrupt that occurred	21F6085 AJEDA00
BE1B to BE1E	I/O processor was not ready for interrupt that occurred	AJEDA00 21F6085
BE40	A permanent I/O processor failure occurred	21F6085 AJEDA00
BE48	A permanent I/O processor failure occurred	21F6085
BE50	I/O processor detected a random interrupt	21F6085
BE51	I/O processor memory error	21F6085
BE52 to BE54	I/O processor Licensed Internal Code error	AJEDA00 21F6085
BE55	I/O processor memory error	21F6085
BE57	A permanent I/O processor failure occurred	21F6085
BE58	I/O processor detected a random interrupt	21F6085 AJEDA00
BE60	I/O processor detected a random interrupt	21F6085

## Tape I/O Processor Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
21F6085	Tape I/O processor card	Repair and Parts; removal and installation procedures
AJDG301	Vertical Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	Tape I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	Tape I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	Tape I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	Tape I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
AJEHL00	Tape I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
MDDTMED	Tape	Magnetic tape subsystem operator's information
UDDUSER	Operator action required	Magnetic tape subsystem operator's information
UDDUSR1	Channel type set incorrectly	Magnetic tape subsystem operator's information
UDDUSR2	Operator action required	System operation information

## (266A) Workstation Adapter Reference Codes

A workstation adapter failure occurred.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0101	WS IOP detected error when transmitting data	FI00601 GAG7777 FI00631 AJLAG01
0103	WS IOP detected parity error from device	FI00601 GAG7777 FI00631 AJLAG01
0104	Device detected parity error from WS IOP	FI00601 GAG7777 FI00631 AJLAG01

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0105	WS IOP detected error when transmitting data	FI00601 GAG7777 FI00631 AJLAG01
0106	WS IOP detected wrong data from device	FI00601 FI00631 GAG7777 AJLAG01
0107	WS IOP detected wrong address from device	FI00601 GAG7777 AJLAG01
0108	WS IOP detected device power turned off, and then on	GAGEEEE FI00601
0109	WS IOP detected wrong device response to start command	FI00601 AJLAG01
0111	WS IOP detected wrong keyboard scan code from display	FI00601 AJLAG01
0120	Device detected wrong command or device ID from WS IOP	FI00601 AJLAG01
0121	Device detected not valid value from WS IOP	FI00601 AJLAG01
0122	Device detected storage or data overrun	FI00601 AJLAG01
0123	Device detected null or attribute exception error	FI00601 AJLAG01
0124	Device detected wrong start command from WS IOP	FI00601 AJLAG01
0125	WS IOP detected wrong exception response from device	FI00601 AJLAG01
0126	WS IOP detected not valid pass-through command	GAG9999 AJLAG01
0149	WS IOP detected wrong request or response from device	FI00601 AJLAG01
0190	WS IOP detected no status change from device	FI00601 GAG7777 AJLAG01
0191	WS IOP detected busy time-out from device	FI00601 AJLAG01
0201	WS IOP detected error when transmitting data	FI00604 GAG7777 FI00631 AJLAG01
0203	WS IOP detected parity error from device	FI00604 GAG7777 FI00631 AJLAG01
0204	Device detected parity error from WS IOP	FI00604 GAG7777 FI00631 AJLAG01

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0205	WS IOP detected error when transmitting data	FI00604 GAG7777 FI00631 AJLAG01
0206	WS IOP detected wrong data from device	FI00604 FI00631 AJLAG01
0207	WS IOP detected wrong address from device	FI00604 GAG7777 AJLAG01
0208	WS IOP detected device power turned off, and then on	GAGEEEE FI00604
0209	WS IOP detected wrong device response to start command	FI00604 AJLAG01
0210	Printer detected equipment error	FI00604
0211	Printer detected equipment error	FI00604 AJLAG01
0212	Printer detected equipment error	FI00604
0220	Device detected wrong command or device ID from WS IOP	FI00604 AJLAG01
0221	Device detected not valid value from WS IOP	FI00604 AJLAG01
0222	Device detected storage or data overrun	FI00604 AJLAG01
0223	WS IOP detected start command to printer was lost	FI00604 FI00631 AJLAG01
0224	Device detected wrong start command from WS IOP	FI00604 AJLAG01
0225	WS IOP detected wrong exception response from device	FI00604 AJLAG01
0230 to 0239, 0240 to 0248	Printer detected equipment error	FI00604
0249	WS IOP detected wrong request or response from device	FI00604 AJLAG01
0281, 0283 to 0289	Printer detected equipment error	FI00604
0290	WS IOP detected no status change from device	FI00604 AJLAG01
0291	WS IOP detected busy time-out from device	FI00604 AJLAG01
A000	Too many devices active on the workstation IOP	GAGBBBB
C000, D000	WS IOP error not known	AJLAG01
F000	WS IOP or IOA operating system program error	AJLAG01
F003	WS IOA buffer utilization threshold exceeded temporarily	AJLAG01
FFFF	<p>User believes there is a problem</p> <p>Reference code FFFF is assigned by the ANZPRB (Analyze Problems) for user-detected errors. Run ANZPRB again if the problem still exists or look in the problem log (WRKPRB) for possible failing FRUs.</p>	UAGFF00

## Workstation Adapter Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
AJLAG01	Work Station IOP or IOA system Licensed Internal Code	Service Functions; APAR or LICTR
GAG7777	Electrical interference	
GAG9999	Error occurred with pass-through command	
GAGBBBB	Too many work stations are active on the workstation IOP	
GAGEEEE	Active device turned off	
UAGFF00	User believes there is a problem	

## (2720) Communications and Workstation Combined Function Reference Codes

A communications or workstation failure occurred.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B904	I/O adapter Licensed Internal Code failed.	AJDGP01 FI00719
B934	Incompatible hardware detected.	FI00719 FI00718
B940	I/O adapter hardware error detected	FI00719 FI00718 AJDGP01

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B941 to B942	One half of I/O adapter failed.	FI00719 FI00718 AJDGP01

### Communication or Workstation Failing Items

#### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
AJDGP01	Licensed Internal Code	Service Functions; APAR or LICTR

### (2722, 2746) Twinaxial Workstation Reference Codes

A workstation failure occurred.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

#### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B904	I/O adapter Licensed Internal Code failed.	AJDGP01 FI00719
B940	I/O adapter hardware error detected	FI00719 FI00718 AJDGP01
B941 to B942	One half of I/O adapter failed.	FI00719 FI00718 AJDGP01

### Workstation Failing Items

#### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.



2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
AJDGP01	Licensed Internal Code	Service Functions; APAR or LICTR

## (2740, 2748) Reference Codes

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.
4. The 673x is a read cache. Perform all actions required for 673x as a disk drive and logic card except where separate 673x cache instructions are provided.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3006	System bus error	IOP ANYBUS STORIOA
3020	I/O processor detected a SCSI bus configuration error  Error occurred on SCSI bus 0. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 611. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3021	I/O processor detected a SCSI bus configuration error  Error occurred on SCSI bus 1. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 611. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3022	I/O processor detected a SCSI bus configuration error  Error occurred on SCSI bus 2. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 611. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3100	I/O processor card detected interface error  Error occurred on SCSI bus 0.  Perform "SDIOP-PIP13" on page 605.	STORIOA FI01107 FI01140 BACKPLN

## 2740, 2748

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3101	I/O processor card detected interface error  Error occurred on SCSI bus 1.  Perform "SDIOP-PIP13" on page 605.	STORIOA FI01107 FI01140 BACKPLN
3102	I/O processor card detected interface error  Error occurred on SCSI bus 2.  Perform "SDIOP-PIP13" on page 605.	STORIOA FI01107 FI01140 BACKPLN
3400	I/O processor card detected device error	FI02112 STORIOA FI01106 DEVTERM FI01140
3401	Device backplane problem	DEVBPLN
3501	I/O processor Licensed Internal Code error	AJDGP01 IOP
3600 to 3601	System log entry only, no service action required	
8008	A permanent cache battery pack failure occurred	CACHBAT STORIOA
8009	Impending cache battery pack failure	CACHBAT
8012	Attached read cache devices exceed capacity supported by IOA  Reduce the number of read caches on the IOA.	SVCDOCS
8100	I/O processor Licensed Internal Code error	AJDGP01 IOP
8140	Temporary disk bus error  A service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	STORIOA FI01107 FI01140 BACKPLN
8141	Disk device detected recoverable error  No action required. This reference code is logged for information only.	
8145	A recoverable I/O processor error occurred.	STORIOA
8146	Disk device detected recoverable error	FI01105
8150	A permanent I/O processor failure occurred	STORIOA IOP FI01107 ANYBUS
8151	I/O processor Licensed Internal Code error	AJDGP01 STORIOA
8155 to 8156	A permanent I/O processor failure occurred	AJDGP01 STORIOA
8200	I/O processor Licensed Internal Code error	AJDGP01 IOP
9000 to 9001	I/O processor card detected device error	FI01105 STORIOA

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9002	I/O processor card detected device error Perform "SDIOP-PIP16" on page 608.	FI01105 STORIOA FI01140 BACKPLN FI01106
9008	I/O card does not support functions expected by devices Perform "SDIOP-PIP25" on page 626.	SVCDOSCS
9010	Cache data associated with attached devices cannot be found Perform "SDIOP-PIP31" on page 636.	SVCDOSCS
9011	Cache data belongs to devices other than those attached Perform "SDIOP-PIP32" on page 637.	SVCDOSCS
9014	Mode jumper overridden due to cache data in conflicting mode See "Mode Jumper has been Overridden" on page 775.	SVCDOSCS
9015	Mode jumper missing See "Mode Jumper is Missing" on page 776.	SVCDOSCS
9020 to 9021	Array not functional due to present hardware configuration. Perform "SDIOP-PIP20" on page 618.	SVCDOSCS
9022 to 9024	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 622.	SVCDOSCS
9025	Disk unit is not supported at its physical location. Perform "SDIOP-PIP21" on page 621.	SVCDOSCS
9026 to 9027	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 622.	SVCDOSCS
9028	Incorrect hardware configuration change has been detected. Reduce the number of arrays on IOP. Either move all devices in an array to another IOP that supports arrays, or stop an array on this IOP.	SVCDOSCS
9029	Incorrect hardware configuration change has been detected. Contact your next level of support.	SVCDOSCS
9030	Array no longer protected due to missing or failed disk unit Perform "SDIOP-PIP21" on page 621.	SVCDOSCS
9031, 9040	Array protection temporarily suspended No action required. Protection will be automatically restarted.	
9041	Array protection temporarily suspended Protection will be automatically restarted. Call your next level of support to report the problem.	AJDGP01
9050	Required cache data cannot be located for a disk unit. Perform "SDIOP-PIP30" on page 635.	SVCDOSCS

## 2740, 2748

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9051	<p>IOP cache data exists for a missing or failed device.</p> <p>If all configured units are missing, a 9054 reference code may appear in the product activity log. If so, perform the action indicated for the 9054 reference code.</p> <p>Otherwise, perform "SDIOP-PIP27" on page 630.</p>	SVCDPCS
9052	<p>Cache data exists for device that has been modified.</p> <p>Contact your next level of support.</p>	SVCDPCS
9053	<p>IOP resources not available due to previous problems.</p> <p>Take action on other IOP reference codes which have surfaced.</p> <p>If you cannot get to SST or DST, and cannot perform a type A or B IPL, perform a type D IPL from removable media. Look for Product Activity Log entries for other IOP reference codes and take action on them.</p>	SVCDPCS
9054	<p>IOP resources not available due to previous problems.</p> <p>Power off the system and remove all new or replacement disk units. IPL the system to DST. If you cannot perform a type A or B IPL, perform a type D IPL from removable media.</p> <p>Look for Product Activity Log entries for other IOP reference codes and take action on them.</p>	SVCDPCS
9081	I/O processor card detected device error	FI01105 STORIOA
9082	<p>I/O processor card detected device error</p> <p>Perform "SDIOP-PIP16" on page 608.</p>	FI01105 STORIOA FI01140 BACKPLN FI01106
9090	<p>Disk unit has been modified after the last known status.</p> <p>Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem.</p> <p>If you cannot resolve the problem, contact your next level of support.</p>	SVCDPCS
9091	<p>Incorrect hardware configuration change has been detected.</p> <p>Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem.</p> <p>If you cannot resolve the problem, contact your next level of support.</p>	SVCDPCS
9092	<p>Disk unit requires initialization before use.</p> <p>Perform "SDIOP-PIP26" on page 628.</p>	SVCDPCS
9093	<p>Read cache device not in correct format</p> <p>Contact your next level of support.</p>	SVCDPCS
B934	Incompatible hardware detected.	STORIOA
FF3D	I/O processor card	STORIOA IOP

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FF6D	I/O processor detected a recoverable system bus error	IOP ANYBUS

## Failing Items

### Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 359.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
AJDGP01	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
CACHBAT	Cache battery pack	Problem Analysis; Symbolic FRU Isolation
DEVBPLN	Device backplane	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
IOP	I/O processor card	Problem Analysis; Symbolic FRU Isolation
PCIBUS	Any PCI card on the PCI bus	Problem Analysis; Symbolic FRU Isolation
STORIOA	Storage I/O adapter	Problem Analysis; Symbolic FRU Isolation
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation
USER	Operator/User Error	Problem Analysis; Symbolic FRU Isolation

## (283C, 283D) Device Backplane Reference Codes

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

- a. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
- b. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3002	Addressed device backplane failed to respond to selection	DEVBPLN STORIOA FI01140 FI01106
3109	I/O adapter timed out a device backplane command	DEVBPLN STORIOA FI01140 FI01106

## 283C, 283D

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
8401	Removable media power fault	DEVBPLN
FFF4	Device backplane problem	DEVBPLN STORIOA FI01140 FI01106

### Failing Items

#### Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 359.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
BACKPLN	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
COMPRES1	Compressed device and compression IOA are not compatible	Problem Analysis; Symbolic FRU Isolation
DEVBPLN	Device backplane	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Device terminator	Problem Analysis; Symbolic FRU Isolation
DISKDRV	Disk drive and logic card	Problem Analysis; Symbolic FRU Isolation
STORIOA	Storage I/O adapter	Problem Analysis; Symbolic FRU Isolation
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation

## (3422) Tape Unit Reference Codes

A tape or a 3422 Tape Unit failure occurred.

**Note:** For tape device and IOP reset procedures, see “TU-PIP4” on page 680.

1. Is the operating system available and can you enter commands from the command line?

**Yes      No**

↓ Go to step 3 of this procedure.

2. Is OS/400 available on the system (see “Determining the Dominant Operating System” in the *AS/400 Service Functions*)?

**No      Yes**

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 3422 is powered on.
4. Verify that the Enable/Disable switches are set to the Enable position.
5. Clean the tape path as described in the 3422 service information.
6. Load the first tape.

7. Start a type D IPL from the system unit control panel.

Does the IPL complete successfully?

**No      Yes**

↓      The problem has been corrected.

**This ends the procedure.**

8. Obtain another copy of the tape. Repeat steps 6 and 7 using the new tape. If this does not correct the problem, continue with step 9.
9. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
10. If the 3422 indicator panel shows an error condition, see the 3422 service information.
11. Look at the Data display for function 19-3:
  - The 3 leftmost characters are the fault system code (FSC) from the sense bytes of the failing device. The device FSCs are in the 3422 service information.
12. Look at the Data display for function 13-3:
  - The 4 rightmost characters are the direct select address.
13. Look at the Data display for function 14-3:
  - The second character is the 3422 control unit address.
  - The fourth character is the 3422 drive address that has the error.
14. See the 3422 service information with the FSC.
15. Find the unit reference code in the following table.

**Notes:**

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2001	<p>Tape path dirty or write data check error</p> <p>Clean the tape path using the cleaning procedures in the <i>3422 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0090.</p> <p>Use the 3422 Tape Unit service information to continue analyzing the problem.</p>	MH30001 FI00851
2003	<p>Tape path dirty or write identification record error</p> <p>Clean the tape path using the cleaning procedures in the <i>3422 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0090.</p> <p>Use the 3422 Tape Unit service information to continue analyzing the problem.</p>	MH30001 FI00851

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2008	<p>Tape path dirty or read data check error</p> <p>Clean the tape path using the cleaning procedures in the <i>3422 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0090.</p> <p>Use the 3422 Tape Unit service information to continue analyzing the problem.</p>	MH30001 FI00851
2009	<p>Tape path dirty or read identification record error</p> <p>Clean the tape path using the cleaning procedures in the <i>3422 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0090.</p> <p>Use the 3422 Tape Unit service information to continue analyzing the problem.</p>	MH30001 FI00851
2014	<p>Recoverable tape unit failure; logged only</p> <p>No action required. This reference code is logged for information only.</p>	
2015	<p>Tape unit failure</p> <p>Clean the tape path using the cleaning procedures in the <i>3422 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0090.</p> <p>Use the 3422 Tape Unit service information to continue analyzing the problem.</p>	FI00851 21F6085 FI00850 62X3421
2017	<p>Write Protect violation reported by tape unit; logged only</p> <p>No action required. This reference code is logged for information only.</p>	
FFD5	<p>Device error reported; tape I/O processor</p> <p>Verify that the CE mode switch in the device control unit is set to the Off position.</p> <p>Verify that power is switched on in the 3422 A01 Tape Unit and that the Enable/Disable switch on the tape unit is set to the Enable position.</p> <p>If you are attempting to perform an IPL from the device that had the error, verify that the device has an address of hexadecimal 70.</p> <p>Use the 3422 Tape Unit service information to continue analyzing the problem.</p>	UH30003 FI00851
FFF6	<p>Volume statistics; logged only</p> <p>No action required. This reference code is logged for information only.</p>	

## Tape Unit Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.



Failing Item	Description	Document Description
21F6085	Tape I/O processor card	Repair and Parts; removal and installation procedures
62X3421	External signal cable	Repair and Parts; removal and installation procedures
MH30001	Tape	Magnetic tape subsystem operator's information
UH30003	I/O device not communicating	Magnetic tape subsystem operator's information

### (3430) Tape Unit Reference Codes

A tape or a 3430 Tape Unit failure occurred.

**Note:** For tape device and IOP reset procedures, see "TU-PIP4" on page 680.

1. Is the operating system available and can you enter commands from the command line?

**Yes      No**

↓      Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

**No      Yes**

↓      Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 3430 is powered on.
4. Verify that the 3430 Online/Offline switch is set to the Online position.
5. Clean the tape path as described in the 3430 service information.
6. Load the first tape.
7. Start a type D IPL from the system unit control panel.

Does the IPL complete successfully?

**No      Yes**

↓      The problem has been corrected.

**This ends the procedure.**

8. Obtain another copy of the tape. Repeat steps 6 and 7 using the new tape. If this does not correct the problem, continue with step 9.
9. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
10. If the 3430 indicator panel shows an error condition, see the 3430 service information.
11. Look at the Data display for function 19-3:
  - The 2 leftmost characters are the fault symptom code (FSC) and the third character is the FSC pointer from the sense bytes of the failing device. The device FSCs are in the 3430 service information.
12. Look at the Data display for function 13-3:
  - The 4 rightmost characters are the direct select address.
13. Look at the Data display for function 14-3:

- The second character is the 3430 control unit address.
- The fourth character is the 3430 drive address that has the error.

14. See the 3430 service information with the FSC.

15. Find the unit reference code in the following table.

**Notes:**

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2001	<p>Tape path dirty or write data check error</p> <p>Clean the tape path using the cleaning procedures in the <i>3430 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0079.</p> <p>Use the 3430 Tape Unit service information to continue analyzing the problem.</p>	MH40001 FI00851
2003	<p>Tape path dirty or write identification record error</p> <p>Clean the tape path using the cleaning procedures in the <i>3430 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0079.</p> <p>Use the 3430 Tape Unit service information to continue analyzing the problem.</p>	MH40001 FI00851
2008	<p>Tape path dirty or read data check error</p> <p>Clean the tape path using the cleaning procedures in the <i>3430 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0079.</p> <p>Use the 3430 Tape Unit service information to continue analyzing the problem.</p>	MH40001 FI00851
2009	<p>Tape path dirty or read identification record error</p> <p>Clean the tape path using the cleaning procedures in the <i>3430 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0079.</p> <p>Use the 3430 Tape Unit service information to continue analyzing the problem.</p>	MH40001 FI00851
2014	<p>Recoverable tape unit failure; logged only</p> <p>No action required. This reference code is logged for information only.</p>	
2015	<p>Tape unit failure</p> <p>Clean the tape path using the cleaning procedures in the <i>3430 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0079.</p> <p>Use the 3430 Tape Unit service information to continue analyzing the problem.</p>	FI00851 21F6085 FI00850 62X3421

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2017	Write Protect violation reported by tape unit; logged only  No action required. This reference code is logged for information only.	
FFD5	Device error reported; tape I/O processor  Verify that the CE mode switches in both device control units in the device are set to the Off position.  Verify that power is switched on in the 3430 A01 Tape Unit and that the On-line/Off-line switch on the tape unit is set to the On-line position.  If you are attempting to perform an IPL from the device that had the error, verify that the device has an address of hexadecimal 70.  Use the 3430 Tape Unit service information to continue analyzing the problem.	UH40003 FI00851
FFF6	Volume statistics; logged only  No action required. This reference code is logged for information only.	

## Tape Unit Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
21F6085	Tape I/O processor card	Repair and Parts; removal and installation procedures
62X3421	External signal cable	Repair and Parts; removal and installation procedures
MH40001	Tape	Magnetic tape subsystem operator's information
UH40003	I/O device not communicating	Magnetic tape subsystem operator's information

## (3480) Tape Unit Reference Codes

A tape or a 3480 Tape Unit failure occurred.

**Note:** For tape device and IOP reset procedures, see "TU-PIP4" on page 680.

1. Is the operating system available and can you enter commands from the command line?

**Yes      No**

↓      Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

**No      Yes**

↓      Use the online problem analysis procedures to isolate the problem.

Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 3480 is powered on.
  4. Verify that the channel Enable/Disable switches are set to the Enable position.
  5. Verify that the 3480 Online/Offline switches are set to the Online position.
  6. Clean the tape path as described in the 3480 service information.
  7. Load the first tape.
  8. Start a type D IPL from the system unit control panel.
- Does the IPL complete successfully?

**No      Yes**

↓      The problem has been corrected.

**This ends the procedure.**

9. Obtain another copy of the tape. Repeat steps 7 and 8 using the new tape. If this does not correct the problem, continue with step 10.
10. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
11. If the 3480 indicator panel shows a check (CHK) code, see the "Start" section of the 3480 service information.
12. Look at the Data display for function 13-3:
  - The 4 rightmost characters are the direct select address.
13. Look at the Data display for function 14-3:
  - The second character is the 3480 control unit address.
  - The fourth character is the 3480 drive address that has the error.
14. Find the unit reference code in the following table.
15. See the "Start" section of the 3480 service information.

**Notes:**

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2001	<p>Tape path dirty or write data check error</p> <p>Clean the tape path using the cleaning procedures in the <i>3480 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0066.</p> <p>Use the 3480 Tape Unit service information to continue analyzing the problem.</p>	<p>MHD0001</p> <p>FI00851</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2003	<p>Tape path dirty or write identification record error</p> <p>Clean the tape path using the cleaning procedures in the <i>3480 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0066.</p> <p>Use the 3480 Tape Unit service information to continue analyzing the problem.</p>	MHD0001 FI00851
2008	<p>Tape path dirty or read data check error</p> <p>Clean the tape path using the cleaning procedures in the <i>3480 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0066.</p> <p>Use the 3480 Tape Unit service information to continue analyzing the problem.</p>	MHD0001 FI00851
2009	<p>Tape path dirty or read identification record error</p> <p>Clean the tape path using the cleaning procedures in the <i>3480 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0066.</p> <p>Use the 3480 Tape Unit service information to continue analyzing the problem.</p>	MHD0001 FI00851
2014	<p>Recoverable tape unit failure; logged only</p> <p>No action required. This reference code is logged for information only.</p>	
2015	<p>Tape unit failure</p> <p>Clean the tape path using the cleaning procedures in the <i>3480 Magnetic Tape Subsystem Operator's Guide</i>, GA32-0066.</p> <p>Use the 3480 Tape Unit service information to continue analyzing the problem.</p>	FI00851 21F6085 FI00850 62X3421
2017	<p>Write Protect violation reported by tape unit; logged only</p> <p>No action required. This reference code is logged for information only.</p>	

## 3480

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFD5	<p>Device error reported; tape I/O processor</p> <p>Verify the following:</p> <ol style="list-style-type: none"><li>1. The Local/Remote switch on the 3480 Control Unit is set to the Local position.</li><li>2. The 3480 Control Unit Emergency Power Off switch is set to the Power Enable position.</li><li>3. The Channel Enable/Disable switches on the 3480 Control Unit are set to the Enable position.</li><li>4. The Normal/Test switch on the 3480 Control Unit is set to the Normal position.</li><li>5. The CU Online/CU Offline switch on the 3480 Control Unit is set to the CU Online position.</li><li>6. The Drive Online/Offline switches on the 3480 Tape Unit are set to the Online position.</li><li>7. The Drive DC Power switches on the 3480 Tape Unit are set to the On position.</li></ol> <p>If you are attempting to perform an IPL from the device that had the error, verify that the 3480 Control Unit has an address of hexadecimal 7 and the 3480 Tape Unit has an address of 0.</p> <p>Use the 3480 Tape Unit service information to continue analyzing the problem.</p>	UHD0003 FI00851
FFF6	<p>Volume statistics; logged only</p> <p>No action required. This reference code is logged for information only.</p>	

### Tape Unit Failing Items

#### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
21F6085	Tape I/O processor card	Repair and Parts; removal and installation procedures
62X3421	External signal cable	Repair and Parts; removal and installation procedures
MHD0001	Tape	Magnetic tape subsystem operator's information
UHD0003	I/O device not communicating	Magnetic tape subsystem operator's information

### (3490) Tape Unit Reference Codes

A tape or a 3490 Tape Unit failure occurred.

**Note:** For tape device and IOP reset procedures, see "TU-PIP4" on page 680.

1. Is the operating system available and can you enter commands from the command line?

**Yes      No**

↓      Go to step 3 of this procedure.

2. Is OS/400 available on the system (see “Determining the Dominant Operating System” in the *AS/400 Service Functions*)?

**No      Yes**

↓      Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 3490 is powered on.
4. Verify that the channel Enable/Disable switches are set to the Enable position.
5. Verify that the 3490 Online/Offline switches are set to the Online position.
6. Load the first tape.
7. Start a type D IPL from the system unit control panel.  
Does the IPL complete successfully?

**No      Yes**

↓      The problem has been corrected.

**This ends the procedure.**

8. Obtain another copy of the tape. Repeat steps 6 and 7 using the new tape. If this does not correct the problem, continue with step 9.
9. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
10. If the 3490 indicator panel shows a check (CHK) code or an error code, see the “Start” section of the 3490 service information.
11. Look at the Data display for function 13-3:
  - The 4 rightmost characters are the direct select address.
12. Look at the Data display for function 14-3:
  - The second character is the 3490 control unit address.
  - The fourth character is the 3490 drive address that has the error.
13. Find the unit reference code in the following table.
14. See the “Start” section of the 3490 service information.

**Notes:**

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0xxx, 1xxx, 2000	Tape unit failure  Use online problem analysis and the 3490 Tape Unit service information to analyze the problem.	
2001	Tape path dirty or write data check error  Clean the tape path using the cleaning procedures in the <i>3490 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0124.  Use the 3490 Tape Unit service information to continue analyzing the problem.	MHK0001 DHK0002
2003	Tape path dirty or write identification record error  Clean the tape path using the cleaning procedures in the <i>3490 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0124.  Use the 3490 Tape Unit service information to continue analyzing the problem.	MHK0001 DHK0002
2008	Tape path dirty or read data check error  Clean the tape path using the cleaning procedures in the <i>3490 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0124.  Use the 3490 Tape Unit service information to continue analyzing the problem.	MHK0001 DHK0002
2009	Tape path dirty or read identification record error  Clean the tape path using the cleaning procedures in the <i>3490 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0124.  Use the 3490 Tape Unit service information to continue analyzing the problem.	MHK0001 DHK0002
2010	Tape unit failure  Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.	
2014	Recoverable tape unit failure; logged only  No action required. This reference code is logged for information only.	
2015	Tape unit failure  Clean the tape path using the cleaning procedures in the <i>3490 Magnetic Tape Subsystem Operator's Guide</i> , GA32-0124.  Use the 3490 Tape Unit service information to continue analyzing the problem.	DHK0002 FI00856 FI00845
2017	Write Protect violation reported by tape unit; logged only  No action required. This reference code is logged for information only.	
202x, 205x, 206x, 21xx, 22xx	Tape unit failure  Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.	



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
23xx	Tape Library failure  Use the 3494 Tape Library Dataserver Maintenance Information to analyze the problem.	
26xx, 27xx, 3xxx, 4xxx, 5xxx, 6xxx, 7xxx, 8xxx	Tape unit failure  Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.	
9020	I/O processor detected a SCSI bus configuration error  Before exchanging any parts, verify that the following conditions are not present: <ul style="list-style-type: none"> <li>• Tape and DASD devices attached to the same type 6501 I/O processor</li> <li>• A device type or model that is not given support</li> </ul>	UHKCNFG FI00851 FI00130
9100	Interface error detected by I/O processor or by tape unit  Before exchanging any parts, do the following: <ol style="list-style-type: none"> <li>1. Ensure that an interposer is connected between the I/O processor and the SCSI cable.</li> <li>2. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>3. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	FI00851 FI00856 05H3834 EXTSCSI 61G8324
9200	I/O processor addressed the tape unit; no response  Before exchanging any parts, do the following: <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that an interposer is connected between the I/O processor and the SCSI cable.</li> <li>3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>4. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	FI00851 FI00856 05H3834 EXTSCSI 61G8324
9201	Tape unit command timeout  Before exchanging any parts, do the following: <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that an interposer is connected between the I/O processor and the SCSI cable.</li> <li>3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>4. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	FI00851 FI00856 05H3834 EXTSCSI 61G8324
9210	Illegal or unsupported tape unit response	FI00851 FI00856 FI00130
9300	Tape unit failure	DHK0002

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9301	<p>Tape device failure, redundancy lost</p> <p>The tape unit detected a hardware failure that does not prevent the tape unit from completing the present operation.</p> <p>See the 3490 Tape Unit service information to determine the failing item.</p>	DHK0002
9302	<p>I/O processor Licensed Internal Code error</p> <p>If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.</p>	FI00130
9310	Licensed Internal Code for the tape unit is not correct	FI00851 FI00130
9320	<p>Tape device Licensed Internal Code failure</p> <p>Do the following:</p> <ol style="list-style-type: none"> <li>1. Take a dump of the tape device Licensed Internal Code (see the 3490 Tape Drive service information).</li> <li>2. Power off the tape unit. Then power on the tape unit to resume operation.</li> </ol>	FI00851
9350	<p>Tape unit detected a read or write error on tape medium</p> <p>A permanent read or write error occurred, and the tape unit determined that the tape cartridge is defective. Exchange the tape cartridge.</p>	MHKTMED UHKCLN FI00851
9351	<p>I/O processor Licensed Internal Code error</p> <p>If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.</p>	FI00130
9355	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape device does not give support to the data format on the tape cartridge. Re-initialize the tape cartridge or use a different tape cartridge.</p>	MHKTMED UHKCLN FI00851
9500	<p>I/O processor Licensed Internal Code error</p> <p>If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.</p>	FI00130
96xx	<p>Tape unit failure</p> <p>Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.</p>	
9800 to 9803	<p>I/O processor successfully recovered from temporary error</p> <p>No action required. This reference code is logged for information only.</p>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9810	<p>Problem analysis has determined a part should be replaced.</p> <p>This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)</p>	
9899	<p>Problem analysis completed, the problem has been corrected.</p> <p>This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.</p>	UHKFIXD
9900	<p>Licensed Internal Code for tape unit was not upgraded</p> <p>The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed.</p> <p>The tape unit will continue to operate with the previous LIC. You may do either of the following:</p> <ul style="list-style-type: none"> <li>• Wait for next IPL when the system will attempt to load the LIC for the tape unit again.</li> <li>• Perform "TU-PIP4" on page 680 to reset the IOP and the tape unit. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.</li> </ul>	
Axxx, Bxxx, Cxxx, Dxxx, Exxx, F00x	<p>Tape unit failure</p> <p>Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.</p>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFD5	<p>Device error reported; tape I/O processor</p> <p>Verify the following:</p> <ol style="list-style-type: none"> <li>1. That power is switched on in the 3490 Tape Unit Rack: <ul style="list-style-type: none"> <li>• Set the 3490 Rack Unit Emergency Power Off switch to the On position.</li> <li>• Ensure that the 3490 Rack Enable/Off switch is set to the Enable position.</li> <li>• Press the 3490 Rack Power On button.</li> </ul> </li> <li>2. Verify the following on 3490 Tape Unit: <ul style="list-style-type: none"> <li>• The Channel Enable/Disable switches are set to the Enable position.</li> <li>• The Normal/Test switch is set to the Normal position.</li> <li>• The CU Online/Offline switch is set to the Online position.</li> <li>• The Drive Address Online/Offline switches are set to the Online position.</li> <li>• The Drive DC Power switches are set to the On position.</li> </ul> </li> </ol> <p>If you are attempting to perform an IPL from the device that had the error, verify that the drive control unit address switch has an address of hexadecimal 7 and the drive unit address switch has an address of 0.</p> <p>Use the 3490 Tape Unit service information to continue analyzing the problem.</p>	UHK0003 DHK0002
FFF6	<p>Volume statistics; logged only</p> <p>No action required. This reference code is logged for information only.</p>	

## Tape Unit Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
05H3834	Interposer	Magnetic tape subsystem service information
61G8324	Terminating plug	Magnetic tape subsystem service information
DHK0002	I/O device	Use the sense bytes and 3490 MI to find the failing items
EXTSCSI	External signal cable	Problem Analysis; Symbolic FRU Isolation

Failing Item	Description	Document Description
MHK0001	Tape	Magnetic tape subsystem operator's information
MHKTMED	Defective removable media	Magnetic tape subsystem operator's information
UHK0003	I/O device not communicating	Magnetic tape subsystem operator's information
UHKCLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
UHKCNFG	Tape configuration detected by I/O processor; not valid	Installation

## (3494) Tape Library Reference Codes

A tape or a tape library failure occurred.

**Note:** For tape device and IOP reset procedures, see "TU-PIP4" on page 680.

1. Is the operating system available and can you enter commands from the command line?

**Yes      No**

↓      Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

**No      Yes**

↓      Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2301	Library device failure  Library attachment facility equipment check.  Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	3494

## 3494

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2303	Library device failure  Device control unit and library manager Licensed Internal Code are incompatible.  Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	DHALIBC DHADEV
2306 to 2307	Library device failure  Library vision failure.  Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	3494
2308	Library device failure  Library manager equipment check.  Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY MANAGER HARDWARE PROBLEM"	3494
2309	Library device failure  Library equipment check.  Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	3494
2310 to 2311	Library device requires operator intervention  Put the library into pause mode and perform the intervention indicated on the library manager console.	
2319	Tape unit failure  Use the tape unit service information to analyze the failure.	FI00851
2321	Library enclosure environmental alert was detected.  Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	3494

### Tape Library Failing Items

#### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
3494	Library device	IBM 3494 Maintenance Information, SA37-0270
DHADEV	3490 Control Unit Licensed Internal Code	Refer to I/O device service information

Failing Item	Description	Document Description
DHALIBC	3494 Library Manager Licensed Internal Code	IBM 3494 Maintenance Information, SA37-0270

## (3570) Tape Unit Reference Codes

A tape or a 3570 Tape Unit failure occurred.

**Note:** For tape device and IOP reset procedures, see "TU-PIP4" on page 680.

1. Is the operating system available and can you enter commands from the command line?

**Yes      No**

↓      Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

**No      Yes**

↓      Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 3570 is powered on.
4. Ensure that the 3570 SCSI address is set to 0.
5. Load the first tape.
6. Start a type D IPL from the system unit control panel.
7. Does the IPL complete successfully?

**No      Yes**

↓      The problem has been corrected.

**This ends the procedure.**

8. Obtain another copy of the tape. Repeat steps 6 and 7 using the new tape. If this does not correct the problem, continue with step 10.
9. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
10. If the amber light on the 3570 indicator panel is on continuously, see the "Start" section of the 3570 service information.
11. Look at the Data display for function 13-3:
  - The 4 rightmost characters are the direct select address.
12. Look at the Data display for function 14-3:
  - The second character is the 3570 control unit address.
  - The fourth character is the 3570 drive address that has the error.
13. Find the unit reference code in the following table.
14. See the "Start" section of the 3570 service information.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the

Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.

3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9020	<p>I/O processor detected a SCSI bus configuration error</p> <p>Before exchanging any parts, verify that the following conditions are not present:</p> <ul style="list-style-type: none"> <li>• Tape and DASD devices attached to an I/O processor that does not support tape and DASD devices at the same time.</li> <li>• A device type or model that is not given support.</li> </ul>	UHZCNFG DHZDEV FI00130
9100	<p>Interface error detected by I/O processor or by tape unit</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> <li>1. Ensure that an interposer is connected between the I/O processor and the SCSI cable.</li> <li>2. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>3. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	DHZDEV FI00131 05H3834 EXTSCSI 61G8324
9200	<p>I/O processor addressed the tape unit; no response</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that an interposer is connected between the I/O processor and the SCSI cable.</li> <li>3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>4. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	DHZDEV FI00131 05H3834 EXTSCSI 61G8324
9201	<p>Tape unit command timeout</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that an interposer is connected between the I/O processor and the SCSI cable.</li> <li>3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>4. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	DHZDEV FI00131 05H3834 EXTSCSI 61G8324



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9202	<p>Tape unit failed after Licensed Internal Code was loaded</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that an interposer is connected between the I/O processor and the SCSI cable.</li> <li>3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>4. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	DHZDEV FI00131 05H3834 EXTSCSI 61G8324
9210	Illegal or unsupported tape unit response	DHZDEV FI00131 FI00130
9300	Tape unit failure	DHZDEV
9301	<p>Tape device failure, redundancy lost</p> <p>The tape unit detected a hardware failure that does not prevent the tape unit from completing the current operation.</p> <p>Refer to the 3570 Tape Unit service information to determine the failing item.</p>	DHZDEV
9302	<p>I/O processor Licensed Internal Code error</p> <p>If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.</p>	FI00130
9310	Licensed Internal Code for the tape unit is not correct	DHZDEV FI00130
9320	<p>Tape device Licensed Internal Code failure</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Take a dump of the tape unit Licensed Internal Code (see the 3570 Tape Unit service information).</li> <li>2. Power off the tape unit. Then power on the tape unit to resume operation.</li> <li>3. Ask your next level of support for assistance.</li> </ol>	FI00130 DHZDEV
9350	<p>Tape unit detected a read or write error on tape medium</p> <p>A permanent read or write error occurred, and the tape unit determined that the tape cartridge is defective. Exchange the tape cartridge.</p>	MHZTMED UHZCLN DHZDEV
9351	<p>Tape with excessive error rate was mounted in tape device.</p> <p>The tape unit detected that the mounted tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.</p>	MHZTMED UHZCLN DHZDEV
9355	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape unit does not give support to the data format on the tape cartridge. Use a different tape cartridge.</p>	UHZUSER MHZTMED UHZCLN DHZDEV

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9500	I/O processor Licensed Internal Code error  If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.	FI00130
9800 to 9803	I/O processor successfully recovered from temporary error  No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced.  This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)	
9899	Problem analysis completed, the problem has been corrected.  This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	UHZFIXD
9900	Licensed Internal Code for tape unit was not upgraded  The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed.  The tape unit will continue to operate with the previous LIC. You may do either of the following: <ul style="list-style-type: none"> <li>• Wait for next IPL when the system will attempt to load the LIC for the tape drive again.</li> <li>• Perform "TU-PIP4" on page 680 to reset the IOP and the tape unit. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.</li> </ul>	UHZUSER
FFF6	Tape volume statistics logged (no action required)	

## Tape Unit Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
05H3834	Interposer	IBM 3570 Tape Drive Service Guide
61G8324	Terminating plug	IBM 3570 Tape Drive Service Guide
DHZDEV	Tape unit failure	IBM 3570 Tape Drive Service Guide
EXTSCSI	External signal cable	Problem Analysis; Symbolic FRU Isolation
MHZTMED	Defective removable media	Magnetic tape subsystem service information
UHZCLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
UHZCNFG	Tape configuration detected by I/O processor; not valid	Installation
UHZUSER	Operator action required	System operation information

## (3590) Tape Unit Reference Codes

A tape or a 3590 Tape Unit failure occurred.

**Note:** For tape device and IOP reset procedures, see "TU-PIP4" on page 680.

1. Is the operating system available and can you enter commands from the command line?

**Yes      No**

↓      Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

**No      Yes**

↓      Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 3590 is powered on.
4. Ensure that the 3590 SCSI address is set to 0.
5. Verify that the 3590 Online/Offline switches are set to the Online position.
6. Load the first tape.
7. Start a type D IPL from the system unit control panel.
8. Does the IPL complete successfully?

**No      Yes**

↓      The problem has been corrected.

**This ends the procedure.**

9. Obtain another copy of the tape. Repeat steps 6 and 7 using the new tape. If this does not correct the problem, continue with step 10.
10. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
11. If the 3590 indicator panel shows a FRU identifier (FID) code, see the "Start" section of the 3590 service information.
12. Look at the Data display for function 13-3:
  - The 4 rightmost characters are the direct select address.
13. Look at the Data display for function 14-3:
  - The second character is the 3590 control unit address.
  - The fourth character is the 3590 drive address that has the error.
14. Find the unit reference code in the following table.
15. See the "Start" section of the 3590 service information.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the

address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.

3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9020	<p>I/O processor detected a SCSI bus configuration error</p> <p>Before exchanging any parts, verify that the following conditions are <i>not</i> present:</p> <ul style="list-style-type: none"> <li>• Tape and DASD devices attached to an I/O processor that does not support tape and DASD devices at the same time.</li> <li>• A device type or model that is not given support</li> </ul>	UHQCENFG FI00851 FI00130
9100	<p>Interface error detected by I/O processor or by tape unit</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> <li>1. Ensure that an interposer is connected between the I/O processor and the SCSI cable.</li> <li>2. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>3. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	FI00851 FI00131 05H3834 EXTSCSI 61G8324
9200	<p>I/O processor addressed the tape unit; no response</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that an interposer is connected between the I/O processor and the SCSI cable.</li> <li>3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>4. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	FI00851 FI00131 05H3834 EXTSCSI 61G8324
9201	<p>Tape unit command timeout</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that an interposer is connected between the I/O processor and the SCSI cable.</li> <li>3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>4. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	FI00851 FI00131 05H3834 EXTSCSI 61G8324

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9202	<p>Tape unit failed after Licensed Internal Code was loaded</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that an interposer is connected between the I/O processor and the SCSI cable.</li> <li>3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>4. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	FI00851 FI00131 05H3834 EXTSCSI 61G8324
9210	Illegal or unsupported tape unit response	FI00851 FI00131 FI00130
9300	Tape unit failure	FI00851
9301	<p>Tape device failure, redundancy lost</p> <p>The tape unit detected a hardware failure that does not prevent the tape unit from completing the present operation.</p> <p>See the 3590 Tape Unit service information to determine the failing item.</p>	FI00851
9302	<p>I/O processor Licensed Internal Code error</p> <p>If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.</p>	FI00130
9310	Licensed Internal Code for the tape unit is not correct	FI00851 FI00130
9320	<p>Tape device Licensed Internal Code failure</p> <p>Do the following:</p> <ol style="list-style-type: none"> <li>1. Take a dump of the tape device Licensed Internal Code (see the 3590 Tape Unit service information).</li> <li>2. Power off the tape unit. Then power on the tape unit to resume operation.</li> </ol>	FI00130 FI00851
9350	<p>Tape unit detected a read or write error on tape medium</p> <p>A permanent read or write error occurred, and the tape unit determined that the tape cartridge is defective. Exchange the tape cartridge.</p>	MHQTMED UHQCLN FI00851
9351	<p>Tape with excessive error rate was mounted in tape device.</p> <p>The tape unit detected that the installed tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.</p>	MHQTMED UHQCLN FI00851
9355	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape device does not give support to the data format on the tape cartridge. Format the tape cartridge again or use a different tape cartridge.</p> <p>See the <i>3590 Tape Drive Operator's Guide</i> for instructions on formatting a tape cartridge.</p>	MHQTMED UHQCLN FI00851

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9500	I/O processor Licensed Internal Code error  If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.	FI00130
9800 to 9803	I/O processor successfully recovered from temporary error  No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced.  This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)	
9899	Problem analysis completed, the problem has been corrected.  This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	UHQFIXD
9900	Licensed Internal Code for tape unit was not upgraded  The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed.  The tape unit will continue to operate with the previous LIC. You may do either of the following: <ul style="list-style-type: none"> <li>• Wait for next IPL when the system will attempt to load the LIC for the tape unit again.</li> <li>• Perform "TU-PIP4" on page 680 to reset the IOP and the tape unit. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.</li> </ul>	
FFF6	Tape volume statistics logged (no action required)	

## Tape Unit Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
05H3834	Interposer	IBM 3590 Tape Drive Service Guide
61G8324	Terminating plug	IBM 3590 Tape Drive Service Guide
EXTSCSI	External signal cable	Problem Analysis; Symbolic FRU Isolation
MHQT MED	Defective removable media	Magnetic tape subsystem service information
UHQCLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
UHQCNFG	Tape configuration detected by I/O processor; not valid	Installation

## (3995) AS/400 Optical Library Dataserver Reference Codes

A 3995 AS/400 Optical Library Dataserver failure occurred.

### Note:

- If the system is available, use online diagnostic tests when possible.
  - Search the problem log (WRKPRB) for a recent 3995 entry that may assist in analyzing the problem. The WRKPRB entry will provide a unit reference code. This reference code can be found in the *3995 Optical Library Dataserver Maintenance Information Manual* for the 3995 model installed on the system.
1. Verify that the 3995 is powered on.
  2. Verify that the interface cable connections are correct for each 3995.
  3. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
  4. Go to the *3995 AS/400 Optical Library Dataserver Maintenance Information Manual* for the 3995 model installed on the system and find the unit reference code.

## (6050) Twinaxial Workstation I/O Processor Reference Codes

The twinaxial workstation I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Look at the 8 characters of the Data display for function 13-3. These 8 characters are the direct select address of the workstation I/O processor card (BBBBCCbb). See "System Unit and Expansion Unit Locations and Addresses" on page 712 and the system configuration list to find the failing part.
3. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0000	Device no response time-out; temporary error	FI00601 FI00602 FI00610

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0001	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00602 FI00601 GX27777 GX28888 FI00610 22F0097 FI00615</p>
0003	<p>WS IOP detected parity error from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00602 FI00601 GX27777 FI00610</p>
0004	<p>Device detected parity error from WS IOP</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00602 FI00601 GX27777 FI00610</p>
0005	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00602 FI00601 GX28888 FI00610 FI00615 22F0097</p>
0006	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 FI00602 GX28888 FI00610</p>



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0007	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 GX28888 GX27777 FI00610</p>
0008	WS IOP detected device power turned off, and then on	<p>GX2EEEE FI00601</p>
0009	<p>WS IOP detected wrong device response to start command</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 FI00610</p>
0020	<p>Device detected wrong command or device ID from WS IOP</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 AJLYD01 FI00610</p>
0021	<p>Device detected not valid value from WS IOP</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 AJLYD01 FI00610</p>
0022	<p>Device detected storage or data overrun</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 FI00610 AJLYD01</p>
0023	<p>Device detected null or attribute exception error</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 FI00610</p>
0024	<p>Device detected wrong start command from WS IOP</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 AJLYD01 FI00610</p>
0025	<p>WS IOP detected wrong exception response from device</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 FI00610</p>
0026	WS IOP detected not valid pass-through command	<p>GX29999 FI00610</p>
0049	<p>WS IOP detected wrong request or response from device</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 FI00610</p>
0082	<p>WS IOP detected wrong device type from device</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601</p>
0090	<p>WS IOP detected no status change from device</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 FI00610</p>
0091	<p>WS IOP detected busy time-out from device</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 FI00610</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0100	<p>Device no response time-out; temporary error</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Exchange the failing item.</p>	FI00601 FI00602 FI00610
0101	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693.</p>	FI00602 FI00601 GX27777 GX28888 FI00610 FI00615
0103	<p>WS IOP detected parity error from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	FI00602 FI00601 GX27777 FI00610
0104	<p>Device detected parity error from WS IOP</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	FI00602 FI00601 GX27777 FI00610
0105	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	FI00602 GX28888 FI00601 FI00610 FI00615 22F0097

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0106	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 FI00602 GX28888 FI00610</p>
0107	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 GX28888 GX27777 FI00610</p>
0108	<p>WS IOP detected device power turned off, and then on</p>	<p>GX2EEEE FI00601</p>
0109	<p>WS IOP detected wrong device response to start command</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 FI00610</p>
0111	<p>WS IOP detected wrong keyboard scan code from display</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 AJLYD01 FI00610</p>
0120	<p>Device detected wrong command or device ID from WS IOP</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 AJLYD01 FI00610</p>
0121	<p>Device detected not valid value from WS IOP</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 AJLYD01 FI00610</p>
0122	<p>Device detected storage or data overrun</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 FI00610 AJLYD01</p>
0123	<p>Device detected null or attribute exception error</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 FI00610</p>
0124	<p>Device detected wrong start command from WS IOP</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 AJLYD01 FI00610</p>
0125	<p>WS IOP detected wrong exception response from device</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 FI00610</p>
0126	<p>WS IOP detected not valid pass-through command</p>	<p>GX29999 FI00610</p>
0149	<p>WS IOP detected wrong request or response from device</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00601 FI00610</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0170	WS IOP detected error downloading printer definition table	AJDG301 FI00601
0171	WS IOP detected error downloading printer definition table	FI00601 AJLYD01
0172	WS IOP detected error downloading printer definition table	CX2PDT AJDG301 FI00601
0173	WS IOP detected error downloading printer definition table	CX2PDT FI00601
0174	WS IOP detected error unloading printer definition table	FI00601 AJLYD01
0175	WS IOP detected device configuration error	FI00601 AJLYD01
0176 to 0177	WS IOP detected error downloading LIC to device	GX2DMCC FI00601
0181	Wrong magnetic stripe reader response	FI00605 MX2FFFF FI00601 FI00610
0182	WS IOP detected wrong device type from device  Perform "TWSC-PIP1" on page 693 .	FI00601
0183	WS IOP detected wrong display size value  Perform "TWSC-PIP1" on page 693 .	FI00601
0184	WS IOP detected wrong keyboard identification  Verify that the correct keyboard is attached correctly to the workstation.  If the correct keyboard is attached correctly to the workstation perform "TWSC-PIP1" on page 693 .	FI00601
0189	Wrong magnetic stripe reader or light pen status	FI00601 FI00605 FI00607 FI00610
0190	WS IOP detected no status change from device  Is the problem intermittent?  <b>No      Yes</b>  ↓      Perform the following intermittent problem isolation procedures in the sequence listed: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511 2. "INT-PIP14 Station Protectors" on page 516  Perform "TWSC-PIP1" on page 693 .	FI00601 FI00610 GX27777
0191	WS IOP detected busy time-out from device  Perform "TWSC-PIP1" on page 693 .	FI00601 FI00610
0200	Device no response time-out; temporary error	FI00604 FI00602 FI00610

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0201	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00602 FI00604 GX27777 GX28888 FI00610 22F0097 FI00615</p>
0203	<p>WS IOP detected parity error from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00602 FI00604 GX27777 FI00610</p>
0204	<p>Device detected parity error from WS IOP</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00602 FI00604 GX27777 FI00610</p>
0205	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00602 GX27777 FI00604 FI00610 FI00615 22F0097</p>
0206	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following intermittent problem isolation procedures in the sequence listed:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00604 FI00602 GX28888 FI00610</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0207	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following intermittent problem isolation procedures in the sequence listed:</p> <p>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</p> <p>2. "INT-PIP14 Station Protectors" on page 516</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	<p>FI00604</p> <p>GX28888</p> <p>GX27777</p> <p>FI00610</p>
0208	WS IOP detected device power turned off, and then on	<p>GX2EEEE</p> <p>FI00604</p>
0209	WS IOP detected wrong device response to start command	<p>FI00604</p> <p>FI00610</p>
0210	Printer detected equipment error	FI00604
0211	Printer detected equipment error	<p>FI00604</p> <p>AJLYD01</p> <p>FI00610</p>
0212	Printer detected equipment error	FI00604
0220	Device detected wrong command or device ID from WS IOP	<p>FI00604</p> <p>AJLYD01</p> <p>FI00610</p>
0221	Device detected not valid value from WS IOP	<p>FI00604</p> <p>AJLYD01</p> <p>FI00610</p>
0222	Device detected storage or data overrun	<p>FI00604</p> <p>AJLYD01</p> <p>FI00610</p>
0223	WS IOP detected start command to printer was lost	<p>FI00604</p> <p>FI00602</p> <p>FI00610</p>
0224	Device detected wrong start command from WS IOP	<p>FI00604</p> <p>AJLYD01</p> <p>FI00610</p>
0225	WS IOP detected wrong exception response from device	<p>FI00604</p> <p>FI00610</p>
0230 to 0239, 0240 to 0248	Printer detected equipment error	FI00604
0249	WS IOP detected wrong request or response from device	<p>FI00604</p> <p>FI00610</p>
0258	Printer detected end of ribbon check	FI00604
0260 to 0269	Printer detected equipment error	<p>AJDG301</p> <p>GX2DMCC</p>
0281, 0283 to 0289	Printer detected equipment error	FI00604
0290	WS IOP detected no status change from device	<p>FI00604</p> <p>FI00610</p>
0291	WS IOP detected busy time-out from device	<p>FI00604</p> <p>FI00610</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
A000	<p>Too many devices active on the workstation IOP</p> <p>There are too many devices attached (powered on) to the workstation I/O processor that the console is attached to than are allowed on the workstation I/O processor.</p> <p>Switch off power (or remove) one or more of the devices (except for the console) that are attached to this workstation I/O processor. Perform an initial program load (IPL) from the control panel to correct the problem.</p> <p>Refer to the local workstation diagrams for the location of the workstations if necessary.</p>	GX2BBBB
B000	WS IOP fails to report part, model and serial number	FI00610
C000	WS IOP error not known	AJLYD01 FI00610
D000	<p>Work Station IOA start-up test error</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following intermittent problem isolation procedures in the sequence listed:</p> <p>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</p> <p>2. "INT-PIP7 Electromagnetic Interference (EMI)" on page 511</p> <p>Exchange the first workstation I/O processor card</p>	FI00610
D010	WS IOP storage failure corrected	FI00610
D011	WS IOP card storage failure	FI00610
D021	WS IOP detected errors on all cables	FI00602 FI00601 FI00610 FI00615 22F0097
D022	WS IOP parity errors detected on all cables	FI00602 FI00601 FI00610 FI00615 22F0097
D023	<p>WS IOP detected errors on some, but not all cables</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following intermittent problem isolation procedures in the sequence listed:</p> <p>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</p> <p>2. "INT-PIP7 Electromagnetic Interference (EMI)" on page 511</p> <p>Perform "TWSC-PIP1" on page 693 .</p>	FI00602 FI00601 FI00610
E000	WS IOP or IOA error during working operation	AJLYD01 FI00610
F000	WS IOP or IOA operating system program error	AJLYD01

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFFF	User-detected workstation problem  Reference code FFFF is assigned by the ANZPRB (Analyze Problems) for user-detected errors. Run ANZPRB again if the problem still exists or look in the problem log (WRKPRB) for possible failing FRUs.	UX2FF00

### Twinaxial Workstation I/O Processor Failing Items

**Notes:**

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 359.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
22F0097	Work station attachment conversion cable	Repair Guide; removal and installation procedures
AJDG301	Licensed program	Service Functions; APAR or LICTR
AJLYD01	Work Station IOP or IOA system Licensed Internal Code	Service Functions; APAR or LICTR
CX2PDT	Printer definition table	
GX27777	Electrical interference	
GX28888	Other work station on port is failing	
GX29999	Error occurred with pass-through command	
GX2BBBB	Too many work stations are active on the workstation IOP	
GX2DMCC	Device Licensed Internal Code change	
GX2EEEE	Active device turned off	
MX2FFFF	Magnetic stripe	Refer to I/O device service information
UX2FF00	User believes there is a problem	

### (6055) Workstation Adapter Reference Codes

A workstation adapter failure occurred.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

**Notes:**

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.



3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0101	WS IOP detected error when transmitting data	FI00601 GAG7777 FI00631 AJLAG01
0103	WS IOP detected parity error from device	FI00601 GAG7777 FI00631 AJLAG01
0104	Device detected parity error from WS IOP	FI00601 GAG7777 FI00631 AJLAG01
0105	WS IOP detected error when transmitting data	FI00601 GAG7777 FI00631 AJLAG01
0106	WS IOP detected wrong data from device	FI00601 FI00631 GAG7777 AJLAG01
0107	WS IOP detected wrong address from device	FI00601 GAG7777 AJLAG01
0108	WS IOP detected device power turned off, and then on	GAGEEEE FI00601
0109	WS IOP detected wrong device response to start command	FI00601 AJLAG01
0111	WS IOP detected wrong keyboard scan code from display	FI00601 AJLAG01
0120	Device detected wrong command or device ID from WS IOP	FI00601 AJLAG01
0121	Device detected not valid value from WS IOP	FI00601 AJLAG01
0122	Device detected storage or data overrun	FI00601 AJLAG01
0123	Device detected null or attribute exception error	FI00601 AJLAG01
0124	Device detected wrong start command from WS IOP	FI00601 AJLAG01
0125	WS IOP detected wrong exception response from device	FI00601 AJLAG01
0126	WS IOP detected not valid pass-through command	GAG9999 AJLAG01
0149	WS IOP detected wrong request or response from device	FI00601 AJLAG01
0190	WS IOP detected no status change from device	FI00601 GAG7777 AJLAG01

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0191	WS IOP detected busy time-out from device	FI00601 AJLAG01
0201	WS IOP detected error when transmitting data	FI00604 GAG7777 FI00631 AJLAG01
0203	WS IOP detected parity error from device	FI00604 GAG7777 FI00631 AJLAG01
0204	Device detected parity error from WS IOP	FI00604 GAG7777 FI00631 AJLAG01
0205	WS IOP detected error when transmitting data	FI00604 GAG7777 FI00631 AJLAG01
0206	WS IOP detected wrong data from device	FI00604 FI00631 AJLAG01
0207	WS IOP detected wrong address from device	FI00604 GAG7777 AJLAG01
0208	WS IOP detected device power turned off, and then on	GAGEEEE FI00604
0209	WS IOP detected wrong device response to start command	FI00604 AJLAG01
0210	Printer detected equipment error	FI00604
0211	Printer detected equipment error	FI00604 AJLAG01
0212	Printer detected equipment error	FI00604
0220	Device detected wrong command or device ID from WS IOP	FI00604 AJLAG01
0221	Device detected not valid value from WS IOP	FI00604 AJLAG01
0222	Device detected storage or data overrun	FI00604 AJLAG01
0223	WS IOP detected start command to printer was lost	FI00604 FI00631 AJLAG01
0224	Device detected wrong start command from WS IOP	FI00604 AJLAG01
0225	WS IOP detected wrong exception response from device	FI00604 AJLAG01
0230 to 0239, 0240 to 0248	Printer detected equipment error	FI00604
0249	WS IOP detected wrong request or response from device	FI00604 AJLAG01
0281, 0283 to 0289	Printer detected equipment error	FI00604

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0290	WS IOP detected no status change from device	FI00604 AJLAG01
0291	WS IOP detected busy time-out from device	FI00604 AJLAG01
A000	Too many devices active on the workstation IOP	GAGBBBB
C000, D000	WS IOP error not known	AJLAG01
F000	WS IOP or IOA operating system program error	AJLAG01
F003	WS IOA buffer utilization threshold exceeded temporarily	AJLAG01
FFFF	User believes there is a problem  Reference code FFFF is assigned by the ANZPRB (Analyze Problems) for user-detected errors. Run ANZPRB again if the problem still exists or look in the problem log (WRKPRB) for possible failing FRUs.	UAGFF00

## Workstation Adapter Failing Items

### Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 359.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
AJLAG01	Work Station IOP or IOA system Licensed Internal Code	Service Functions; APAR or LICTR
GAG7777	Electrical interference	
GAG9999	Error occurred with pass-through command	
GAGBBBB	Too many work stations are active on the workstation IOP	
GAGEEEE	Active device turned off	
UAGFF00	User believes there is a problem	

## (6056) Workstation Adapter Reference Codes

A workstation adapter failure occurred.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the

address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.

3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0101	WS IOP detected error when transmitting data	FI00601 GAG7777 FI00631 AJLAG01
0103	WS IOP detected parity error from device	FI00601 GAG7777 FI00631 AJLAG01
0104	Device detected parity error from WS IOP	FI00601 GAG7777 FI00631 AJLAG01
0105	WS IOP detected error when transmitting data	FI00601 GAG7777 FI00631 AJLAG01
0106	WS IOP detected wrong data from device	FI00601 FI00631 GAG7777 AJLAG01
0107	WS IOP detected wrong address from device	FI00601 GAG7777 AJLAG01
0108	WS IOP detected device power turned off, and then on	GAGEEEE FI00601
0109	WS IOP detected wrong device response to start command	FI00601 AJLAG01
0111	WS IOP detected wrong keyboard scan code from display	FI00601 AJLAG01
0120	Device detected wrong command or device ID from WS IOP	FI00601 AJLAG01
0121	Device detected not valid value from WS IOP	FI00601 AJLAG01
0122	Device detected storage or data overrun	FI00601 AJLAG01
0123	Device detected null or attribute exception error	FI00601 AJLAG01
0124	Device detected wrong start command from WS IOP	FI00601 AJLAG01
0125	WS IOP detected wrong exception response from device	FI00601 AJLAG01
0126	WS IOP detected not valid pass-through command	GAG9999 AJLAG01
0149	WS IOP detected wrong request or response from device	FI00601 AJLAG01

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0190	WS IOP detected no status change from device	FI00601 GAG7777 AJLAG01
0191	WS IOP detected busy time-out from device	FI00601 AJLAG01
0201	WS IOP detected error when transmitting data	FI00604 GAG7777 FI00631 AJLAG01
0203	WS IOP detected parity error from device	FI00604 GAG7777 FI00631 AJLAG01
0204	Device detected parity error from WS IOP	FI00604 GAG7777 FI00631 AJLAG01
0205	WS IOP detected error when transmitting data	FI00604 GAG7777 FI00631 AJLAG01
0206	WS IOP detected wrong data from device	FI00604 FI00631 AJLAG01
0207	WS IOP detected wrong address from device	FI00604 GAG7777 AJLAG01
0208	WS IOP detected device power turned off, and then on	GAGEEEE FI00604
0209	WS IOP detected wrong device response to start command	FI00604 AJLAG01
0210	Printer detected equipment error	FI00604
0211	Printer detected equipment error	FI00604 AJLAG01
0212	Printer detected equipment error	FI00604
0220	Device detected wrong command or device ID from WS IOP	FI00604 AJLAG01
0221	Device detected not valid value from WS IOP	FI00604 AJLAG01
0222	Device detected storage or data overrun	FI00604 AJLAG01
0223	WS IOP detected start command to printer was lost	FI00604 FI00631 AJLAG01
0224	Device detected wrong start command from WS IOP	FI00604 AJLAG01
0225	WS IOP detected wrong exception response from device	FI00604 AJLAG01
0230 to 0239, 0240 to 0248	Printer detected equipment error	FI00604

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0249	WS IOP detected wrong request or response from device	FI00604 AJLAG01
0281, 0283 to 0289	Printer detected equipment error	FI00604
0290	WS IOP detected no status change from device	FI00604 AJLAG01
0291	WS IOP detected busy time-out from device	FI00604 AJLAG01
A000	Too many devices active on the workstation IOP	GAGBBBB
C000, D000	WS IOP error not known	AJLAG01
F000	WS IOP or IOA operating system program error	AJLAG01
F003	WS IOA buffer utilization threshold exceeded temporarily	AJLAG01
FFFF	User believes there is a problem  Reference code FFFF is assigned by the ANZPRB (Analyze Problems) for user-detected errors. Run ANZPRB again if the problem still exists or look in the problem log (WRKPRB) for possible failing FRUs.	UAGFF00

### Workstation Adapter Failing Items

#### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
AJLAG01	Work Station IOP or IOA system Licensed Internal Code	Service Functions; APAR or LICTR
GAG7777	Electrical interference	
GAG9999	Error occurred with pass-through command	
GAGBBBB	Too many work stations are active on the workstation IOP	
GAGEEEE	Active device turned off	
UAGFF00	User believes there is a problem	

### (6112) Magnetic Storage I/O Processor Reference Codes

The magnetic storage I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

#### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.

2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1000	Storage device IOP card failed Perform "MSIOP Parts Location" on page 574.	6112
1001	Storage device IOP communications to system failed Perform "MSIOP-PIP1" on page 552.	6112 AJER101 FI00580
1010, 1020, 1030, 1050	Storage device IOP statistics have been logged No action required. This reference code is logged for information only.	
2000	Open circuit was detected on device cable Perform "MSIOP-PIP2" on page 552.	FI00580 FI00500 6112 6495246
2010	Shorted circuit was detected on device cable Perform "MSIOP-PIP2" on page 552.	FI00580 FI00500 6112 6495246
2020	Storage device IOP card failed Perform "MSIOP Parts Location" on page 574.	6112
2030	Write and Read test to the device failed Perform "MSIOP-PIP3" on page 554.	FI00581
2040	Storage device IOP detected error on device cable Perform "MSIOP-PIP4" on page 555.	FI00580 6112
2050	Storage device IOP detected error on device cable Perform "MSIOP-PIP5" on page 557.	FI00580 FI00500 6112 6495246
3000	Storage device IOP card failed Perform "MSIOP-PIP11" on page 562.	6112
3001	Storage device IOP card failed Perform "MSIOP Parts Location" on page 574.	6112 AJER101

## 6112

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3002	Storage device IOP communications to device failed  The MSIOP cannot select the device because the device is not responding.  Is the problem intermittent?  <b>No      Yes</b>  ↓      Perform the following procedures: 1. "INT-PIP7 Electromagnetic Interference (EMI)" on page 511 2. "MSIOP-PIP12" on page 563  Perform "MSIOP-PIP1" on page 552.	FI00581 6112
3003	Storage device IOP card failed  Perform "MSIOP-PIP11" on page 562.	6112
3004	Storage device IOP communications to device failed  The MSIOP detected an error during a packet transfer from the device controller.  Perform "MSIOP-PIP8" on page 560.	FI00581 6112
3005	Storage device IOP communications to device failed  The MSIOP licensed internal code detected a device controller status that was not valid.  Perform "MSIOP-PIP1" on page 552.	FI00581 6112
3006	Storage device IOP communications to system failed  The system attempted to send the MSIOP a bus command that was not valid.  Perform "MSIOP Parts Location" on page 574.	6112 AJER101
3007	Storage device IOP communications to system failed  The system detected a failure while the MSIOP was attempting to communicate on the system bus.  Perform "MSIOP Parts Location" on page 574.	6112 AJER101
300C	Storage device IOP communications to device failed  The device controller reported that an interface protocol error occurred while communicating with the MSIOP.  Perform "MSIOP-PIP1" on page 552.	FI00581 6112
300D	Storage device IOP communications to device failed  Perform "MSIOP-PIP10" on page 561.	FI00581 6112
300E	Storage device IOP communications to device failed  The device controller detected a protocol error while communicating with the MSIOP.  Perform "MSIOP-PIP10" on page 561.	FI00581 6112
3010	Storage device IOP detected error in device response  Perform "MSIOP-PIP6" on page 558.	FI00581 AJER101



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3011 to 3012, 3014 to 3015	Storage device IOP card failed  Perform "MSIOP Parts Location" on page 574.	6112
3100	Storage device IOP communications to device failed  The MSIOP detected a parity error on the device interface. Retry attempts failed.  Perform "MSIOP-PIP1" on page 552.	FI00581 FI00500 6112 6495246
3101	Storage device IOP communications to device failed  The MSIOP detected a sequence error on the device interface. Retry attempts failed.  Perform "MSIOP-PIP1" on page 552.	FI00581 6112 6495246 FI00500
3104	Storage device IOP communications to device failed  The MSIOP detected a ending sequence error on the device interface. Retry attempts failed.  Perform "MSIOP-PIP1" on page 552.	FI00581 6112 AJER101
3106	Storage device IOP communications to device failed  The MSIOP detected a synchronization error on the device interface. Retry attempts failed.  Perform "MSIOP-PIP1" on page 552.	FI00581 6112 FI00500 6495246
3107	Storage device IOP card failed  Perform "MSIOP Parts Location" on page 574.	6112
3108	Storage device IOP statistics have been logged  No action required. This reference code is logged for information only.	
3109	Storage device IOP communications to device failed  Perform "MSIOP-PIP1" on page 552.	FI00581 6112 6495246 FI00500
3110	Attached storage device stopped working  Is the problem intermittent?  <b>No      Yes</b>  ↓      Perform the following procedures: <ol style="list-style-type: none"> <li>1. "INT-PIP18 PTFs Not Installed" on page 517</li> <li>2. "INT-PIP7 Electromagnetic Interference (EMI)" on page 511</li> <li>3. "MSIOP-PIP12" on page 563</li> </ol> Perform "MSIOP-PIP7" on page 559.	FI00581
3200	Error occurred in device starting sequence  Perform "MSIOP-PIP9" on page 561.	FI00581 AJER101
3300	Data Block was assigned to a new location on a disk unit  No action required. This reference code is logged for information only.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4000	Storage device IOP Licensed Internal Code failed  Is the problem intermittent? <b>No      Yes</b> ↓      Perform the following procedures: 1. "INT-PIP18 PTFs Not Installed" on page 517 2. "INT-PIP7 Electromagnetic Interference (EMI)" on page 511 3. "INT-PIP16 Licensed Internal Code" on page 517 4. "MSIOP-PIP12" on page 563  Perform "MSIOP-PIP13" on page 565.	AJER101 6112 FI00580
4001	IOP Licensed Internal Code failed and recovered  No action required. This reference code is logged for information only.	
4002	Storage device IOP Licensed Internal Code failed	AJER101
6000	Storage device IOP statistics have been logged  No action required. This reference code is logged for information only.	
6001	Device format not set to 520 byte blocks  Perform "MSIOP-PIP6" on page 558.	FI00581 AJER101
6002	Storage device IOP Licensed Internal Code failed	AJER101
6003 to 6004	Storage device IOP or Licensed Internal Code failed	AJDG301 AJER101
6005	Configuration not valid; too many devices attached  Perform "MSIOP-PIP6" on page 558.	FI00580 AJER101
6006	Device is down level or not supported  Perform "MSIOP-PIP6" on page 558.	FI00581 AJER101
6007	Command time-out occurred; reset sent to device  Is the problem intermittent? <b>No      Yes</b> ↓      Perform the following procedures: 1. "INT-PIP18 PTFs Not Installed" on page 517 2. "INT-PIP7 Electromagnetic Interference (EMI)" on page 511 3. "MSIOP-PIP12" on page 563  Perform "MSIOP-PIP12" on page 563.	FI00581 AJER101 6112 6495246 FI00500 AJDG301
6008	Storage device IOP statistics have been logged  No action required. This reference code is logged for information only.	

## Magnetic Storage I/O Processor Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.

3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
6112	Magnetic storage device IOP card	Repair and Parts; removal and installation procedures
6495246	Terminating plug	Repair and Parts; parts listing
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJER101	Magnetic storage device IOP Licensed Internal Code	Service Functions; APAR or LICTR

## (6135) Diskette Unit Reference Codes

A 6135 Diskette Unit failure occurred.

**Note:** The 6135 Diskette Unit emulates a 9331 Diskette Unit.

- Verify that the 6135 Diskette Unit is powered on.
- Verify that the interface cable connections for the 6135 Diskette Unit are correct.
- Is the system available?  
**Yes      No**  
 ↓      Go to step 5 of this procedure.
- Attempt the failing operation again using a known good diskette.  
 Does the operation complete successfully?  
**No      Yes**  
 ↓      The problem was probably caused by a defective diskette.
- Look at the 4 rightmost characters on the Data display for function 11-3 or from the system message. These 4 characters are the unit reference code.
- Find the unit reference code in the following table.
- After you correct the problem, if you want to verify the diskette unit operation, go to "DSKT-PIP1" on page 502.

### Notes:

- If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
- If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
- If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0AAA	Physical Transfer Error	FI01101 FI01110 FI01112

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1010	Diskette read error	MFEDMED FI01112 FI01110 FI00142 FI01101 74G8570
1020	Diskette write error	MFEDMED FI01112 FI01110 FI00142 FI01101 74G8570
2010	Diskette unit control error	FI01110 FI01112 MFEDMED FI01101 FI00142 74G8570
2020	Drive error; wrong diskette type reported	FI01110 FI01112 MFEDMED FI00142 74G8570
2030	Diskette unit error	FI01110 FI01112 MFEDMED FI01101 FI00142 74G8570
3010	Diskette interface error occurred	FI01101 FI01112 FI01110 FI00142 74G8570
4002	I/O processor Licensed Internal Code error	FI00130 FI01112
5010	Major error recovery performed; possible diskette failure  Copy the data to a new diskette.	
5020, 5030	Part of diskette cannot be used; diskette still OK  No action required. This reference code is logged for information only. Continue with normal operation.	
9000	Online problem analysis entered	MFEDMED FI01110 FI01112 FI01101 FI00142 74G8570 74G8535 74G8572 87G1463

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFF5	Diskette error data logged  No action required. This reference code is logged for information only. Continue with normal operation.	
FFF6	Diskette volume statistics logged  No action required. This reference code is logged for information only. Continue with normal operation.	

### Diskette Unit Failing Items

#### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
74G8535	Power Supply Assembly	External Diskette Unit Service Manual
74G8570	Internal Cable Assembly	External Diskette Unit Service Manual
74G8572	LED/Switch cable assembly	External Diskette Unit Service Manual
87G1463	Internal power cable	External Diskette Unit Service Manual
MFEDMED	Defective diskette	System operation information

## (6140) Twinaxial Workstation I/O Processor Reference Codes

The twinaxial workstation I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Look at the 8 characters of the Data display for function 13-3. These 8 characters are the direct select address of the workstation I/O processor card (BBBBCCbb). See "System Unit and Expansion Unit Locations and Addresses" on page 712 and the system configuration list to find the failing part.
3. Find the unit reference code in the following table.

#### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0000	Device no response time-out; temporary error	FI00601 FI00602 FI00610
0001	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <ol style="list-style-type: none"> <li>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</li> <li>2. “INT-PIP14 Station Protectors” on page 516.</li> </ol> <p>Perform “TWSC-PIP1” on page 693.</p>	FI00602 FI00601 GLM7777 GLM8888 FI00610 FI00615 22F0097
0003	<p>WS IOP detected parity error from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <ol style="list-style-type: none"> <li>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</li> <li>2. “INT-PIP14 Station Protectors” on page 516.</li> </ol> <p>Perform “TWSC-PIP1” on page 693.</p>	FI00602 FI00601 GLM7777 FI00610
0004	<p>Device detected parity error from WS IOP</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <ol style="list-style-type: none"> <li>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</li> <li>2. “INT-PIP14 Station Protectors” on page 516.</li> </ol> <p>Perform “TWSC-PIP1” on page 693.</p>	FI00602 FI00601 GLM7777 FI00610
0005	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <ol style="list-style-type: none"> <li>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</li> <li>2. “INT-PIP14 Station Protectors” on page 516.</li> </ol> <p>Perform “TWSC-PIP1” on page 693.</p>	FI00602 FI00601 GLM8888 FI00610 FI00615 22F0097

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0006	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509 :</p> <p>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</p> <p>2. INT-PIP14 Station Protectors</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601</p> <p>FI00602</p> <p>GLM8888</p> <p>FI00610</p>
0007	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <p>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</p> <p>2. “INT-PIP14 Station Protectors” on page 516.</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601</p> <p>GLM8888</p> <p>GLM7777</p> <p>FI00610</p>
0008	<p>WS IOP detected device power turned off, and then on</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>GLMEEEE</p> <p>FI00601</p>
0009	<p>WS IOP detected wrong device response to start command</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601</p> <p>FI00610</p>
0020	<p>Device detected wrong command or device ID from WS IOP</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601</p> <p>AJLYD01</p> <p>FI00610</p>
0021	<p>Device detected not valid value from WS IOP</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601</p> <p>AJLYD01</p> <p>FI00610</p>
0022	<p>Device detected storage or data overrun</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601</p> <p>AJLYD01</p> <p>FI00610</p>
0023	<p>Device detected null or attribute exception error</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601</p> <p>FI00610</p>
0024	<p>Device detected wrong start command from WS IOP</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601</p> <p>AJLYD01</p> <p>FI00610</p>
0025	<p>WS IOP detected wrong exception response from device</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601</p> <p>FI00610</p>
0026	<p>WS IOP detected not valid pass-through command</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>GLM9999</p> <p>FI00610</p>
0049	<p>WS IOP detected wrong request or response from device</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601</p> <p>FI00610</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0082	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 693.	FI00601
0090	WS IOP detected no status change from device Perform "TWSC-PIP1" on page 693.	FI00601 FI00610
0091	WS IOP detected busy time-out from device Perform "TWSC-PIP1" on page 693.	FI00601 FI00610
0100	Device no response time-out; temporary error	FI00601 FI00602 FI00610
0101	WS IOP detected error when transmitting data  Is the problem intermittent? <b>No      Yes</b> ↓      Perform the following procedures in "Intermittent Problem Isolation Procedures" on page 509: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511. 2. "INT-PIP14 Station Protectors" on page 516.  Perform "TWSC-PIP1" on page 693.	FI00602 FI00601 GLM7777 GLM8888 FI00610 FI00615
0103	WS IOP detected parity error from device  Is the problem intermittent? <b>No      Yes</b> ↓      Perform the following procedures in "Intermittent Problem Isolation Procedures" on page 509: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511. 2. INT-PIP14 Station Protectors  Perform "TWSC-PIP1" on page 693.	FI00602 FI00601 GLM7777 FI00610
0104	Device detected parity error from WS IOP  Is the problem intermittent? <b>No      Yes</b> ↓      Perform the following procedures in "Intermittent Problem Isolation Procedures" on page 509: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511. 2. INT-PIP14 Station Protectors  Perform "TWSC-PIP1" on page 693.	FI00602 FI00601 GLM7777 FI00610



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0105	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <ol style="list-style-type: none"> <li>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</li> <li>2. INT-PIP14 Station Protectors</li> </ol> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00602 FI00601 GLM8888 FI00610 FI00615 22F0097</p>
0106	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <ol style="list-style-type: none"> <li>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</li> <li>2. INT-PIP14 Station Protectors</li> </ol> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601 FI00602 GLM8888 FI00610</p>
0107	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <ol style="list-style-type: none"> <li>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</li> <li>2. INT-PIP14 Station Protectors</li> </ol> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601 GLM8888 GLM7777 FI00610</p>
0108	<p>WS IOP detected device power turned off, and then on</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>GLMEEEE FI00601</p>
0109	<p>WS IOP detected wrong device response to start command</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601 FI00610</p>
0111	<p>WS IOP detected wrong keyboard scan code from display</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601 AJLYD01 FI00610</p>
0120	<p>Device detected wrong command or device ID from WS IOP</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601 AJLYD01 FI00610</p>
0121	<p>Device detected not valid value from WS IOP</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601 AJLYD01 FI00610</p>
0122	<p>Device detected storage or data overrun</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601 AJLYD01 FI00610</p>
0123	<p>Device detected null or attribute exception error</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601 FI00610</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0124	Device detected wrong start command from WS IOP Perform "TWSC-PIP1" on page 693.	FI00601 AJLYD01 FI00610
0125	WS IOP detected wrong exception response from device Perform "TWSC-PIP1" on page 693.	FI00601 FI00610
0126	WS IOP detected not valid pass-through command Perform "TWSC-PIP1" on page 693.	GLM9999 FI00610
0149	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 693.	FI00601 FI00610
0170	WS IOP detected error downloading printer definition table	AJDG301 FI00601
0171	WS IOP detected error downloading printer definition table	FI00601 AJLYD01
0172	WS IOP detected error downloading printer definition table	CLMPDT AJDG301 FI00601
0173	WS IOP detected error downloading printer definition table	CLMPDT FI00601
0174	WS IOP detected error unloading printer definition table	FI00601 AJLYD01
0175	WS IOP detected device configuration error	FI00601 AJLYD01
0176 to 0177	WS IOP detected error downloading LIC to device	GLMDMCC FI00601
0181	Wrong magnetic stripe reader response Perform "TWSC-PIP1" on page 693.	FI00605 MLMFFFF FI00601 FI00610
0182	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 693.	FI00601
0183	WS IOP detected wrong display size value Perform "TWSC-PIP1" on page 693.	FI00601
0184	WS IOP detected wrong keyboard identification  Verify that the correct keyboard is attached correctly to the workstation.  If the correct keyboard is attached correctly to the workstation, perform "TWSC-PIP1" on page 693.	FI00601
0189	Wrong magnetic stripe reader or light pen status Perform "TWSC-PIP1" on page 693.	FI00601 FI00605 FI00607 FI00610

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0190	<p>WS IOP detected no status change from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <ol style="list-style-type: none"> <li>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</li> <li>2. “INT-PIP14 Station Protectors” on page 516.</li> </ol> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601 FI00610 GLM7777</p>
0191	<p>WS IOP detected busy time-out from device</p> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00601 FI00610</p>
0200	<p>Device no response time-out; temporary error</p>	<p>FI00604 FI00602 FI00610</p>
0201	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <ol style="list-style-type: none"> <li>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</li> <li>2. “INT-PIP14 Station Protectors” on page 516.</li> </ol> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00602 FI00604 GLM7777 GLM8888 FI00610 FI00615 22F0097</p>
0203	<p>WS IOP detected parity error from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <ol style="list-style-type: none"> <li>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</li> <li>2. “INT-PIP14 Station Protectors” on page 516.</li> </ol> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00602 FI00604 GLM7777 FI00610</p>
0204	<p>Device detected parity error from WS IOP</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <ol style="list-style-type: none"> <li>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</li> <li>2. INT-PIP14 Station Protectors</li> </ol> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00602 FI00604 GLM7777 FI00610</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0205	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <ol style="list-style-type: none"> <li>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</li> <li>2. “INT-PIP14 Station Protectors” on page 516.</li> </ol> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00602 FI00604 GLM7777 FI00610 FI00615 22F0097</p>
0206	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <ol style="list-style-type: none"> <li>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</li> <li>2. “INT-PIP14 Station Protectors” on page 516.</li> </ol> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00604 FI00602 GLM8888 FI00610</p>
0207	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓ Perform the following procedures in “Intermittent Problem Isolation Procedures” on page 509:</p> <ol style="list-style-type: none"> <li>1. “INT-PIP5 External Noise on Twinaxial Cables” on page 511.</li> <li>2. INT-PIP14 Station Protectors</li> </ol> <p>Perform “TWSC-PIP1” on page 693.</p>	<p>FI00604 GLM8888 GLM7777 FI00610</p>
0208	WS IOP detected device power turned off, and then on	<p>GLMEEEE FI00604</p>
0209	WS IOP detected wrong device response to start command	<p>FI00604 FI00610</p>
0210	Printer detected equipment error	FI00604
0211	Printer detected equipment error	<p>FI00604 AJLYD01 FI00610</p>
0212	Printer detected equipment error	FI00604
0220	Device detected wrong command or device ID from WS IOP	<p>FI00604 AJLYD01 FI00610</p>
0221	Device detected not valid value from WS IOP	<p>FI00604 AJLYD01 FI00610</p>
0222	Device detected storage or data overrun	<p>FI00604 AJLYD01 FI00610</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0223	WS IOP detected start command to printer was lost	FI00604 FI00602 FI00610
0224	Device detected wrong start command from WS IOP	FI00604 AJLYD01 FI00610
0225	WS IOP detected wrong exception response from device	FI00604 FI00610
0230 to 0239, 0240 to 0248	Printer detected equipment error	FI00604
0249	WS IOP detected wrong request or response from device	FI00604 FI00610
0258	Printer detected end of ribbon check	FI00604
0281, 0283 to 0289	Printer detected equipment error	FI00604
0290	WS IOP detected no status change from device	FI00604 FI00610
0291	WS IOP detected busy time-out from device	FI00604 FI00610
A000	Too many devices active on the workstation IOP  This error occurs if you attempted to activate more workstations than allowed.  Switch off power to (or remove) one or more of the display stations (except for the console) that are attached to this workstation I/O processor. Perform an initial program load (IPL) from the control panel to correct the problem.  Refer to the local workstation diagrams for the location of workstations if necessary.	GLMBBBB
B000	WS IOP fails to report part, model and serial number  Perform "TWSC-PIP1" on page 693.	FI00610
C000	WS IOP error not known	AJLYD01 FI00610
D000	Work Station IOA start-up test error	FI00610
D010	WS IOP storage failure corrected  Perform TWSC-PIP1 in "Twinaxial Workstation I/O Processor Problem Isolation Procedures" on page 692.	FI00610
D011	WS IOP card storage failure	FI00610
D021	WS IOP detected errors on all cables	FI00602 FI00601 FI00610 FI00615 22F0097
D022	WS IOP parity errors detected on all cables	FI00602 FI00601 FI00610 FI00615 22F0097

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
D023	WS IOP detected errors on some, but not all cables Perform "TWSC-PIP1" on page 693.	FI00602 FI00601 FI00610
E000	WS IOP or IOA error during working operation	AJLYD01 FI00610
F000	WS IOP or IOA operating system program error	AJLYD01
FFFF	User believes there is a problem	ULMFF00

## Twinaxial Workstation I/O Processor Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
22F0097	Work station attachment conversion cable	Cable Attachment
AJDG301	Licensed program	Service Functions; APAR or LICTR
AJLYD01	Work Station IOP or IOA system Licensed Internal Code	Service Functions; APAR or LICTR
CLMPDT	Printer definition table	Communications Configuration
GLM7777	Electrical interference	
GLM8888	Other work station on port is failing	
GLM9999	Error occurred with pass-through command	
GLMBBBB	Too many work stations are active on the workstation IOP	
GLMDMCC	Device Licensed Internal Code change	
GLMEEEE	Active device turned off	
MLMFFFF	Magnetic stripe	Refer to I/O device service information
ULMFF00	User believes there is a problem	

## (6141) ASCII Workstation I/O Processor Reference Codes

The ASCII workstation I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Look at the 8 characters of the Data display for function 13-3. These 8 characters are the direct select address of the workstation I/O processor card (BBBBCCbb). See "System Unit and Expansion Unit Locations and Addresses" on page 712 and the system configuration list to find the failing part.
3. Find the unit reference code in the following table.

**Notes:**

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0101	WS IOP detected a transmit complete time-out Perform “ASCII-PIP2” on page 449.	73F9267 59X3816 AJLYC01
0103	Workstation IOP detected parity error from display Perform “ASCII-PIP1” on page 443.	FI00700 CLN000C FI00612 GLN000A 73F9267 59X3816 21F5097
0104	No response received from workstation; idle time-out  Please reference “Finding and Correcting Problems” in the <i>ASCII Workstation Reference and Examples</i> , (SA41-9922) manual before attempting further analysis.  Before you exchange part 73F9267 or 59X3816, perform “ASCII-PIP2” on page 449.	GLN000D CLN000C GLN000A AJLYC01 73F9267 59X3816 FI00612
0105	Workstation IOP detected overrun error  Exchange the first workstation I/O processor card.  If this does not correct the problem, ask your next level of support for assistance.	73F9267 59X3816 AJLYC01
0106	Workstation IOP detected framing error from display Perform “ASCII-PIP1” on page 443.	FI00700 CLN000C FI00612 73F9267 59X3816 21F5097
0107	Data sent by WSC not received by workstation  Please reference “Finding and Correcting Problems” in the <i>ASCII Workstation Reference and Examples</i> , (SA41-9922) manual before attempting further analysis.	73F9267 GLN000D AJLYC01 GLN000A
0108	Workstation IOP detected Xoff-Xon time-out	GLN000D 73F9267 FI00612

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0109	Data sent by workstation not received by WSC  Please reference "Finding and Correcting Problems" in the <i>ASCII Workstation Reference and Examples</i> , (SA41-9922) manual before attempting further analysis.	GLN000D CLN000C GLN000A AJLYC01
0111	Workstation IOP detected wrong scan code	AJLYC01 73F9267
0120	WS IOP detected OS/400 licensed program error; device ID	AJLYC01 73F9267
0121	WS IOP detect OS/400 licensed program error; register value	AJLYC01 73F9267
0122	Workstation IOP detected storage overrun	AJLYC01 73F9267
0123	WS IOP detected null or attribute exception error	AJLYC01 73F9267
0124	Workstation IOP detected a frame error	GLN000D CLN000C GLN000A AJLYC01 73F9267 59X3816
0125	Workstation IOP detected not valid exception status	AJLYC01 73F9267
0126	WS IOP received a frame reject command from workstation	73F9267 GLN000D AJLYC01
0149	WS IOP received unexpected data from workstation  Please reference "Finding and Correcting Problems" in the <i>ASCII Workstation Reference and Examples</i> , (SA41-9922) manual before attempting further analysis.	GLN000D
0181	WS IOP DMA receive buffer overrun; SDLC data	CLN000C 73F9267 AJLYC01 GLN000D
0182	WS IOP detect OS/400 licensed program error; bad device type	AJLYC01 73F9267
0183	WS IOP DMA receive buffer overrun; not valid data	CLN000C GLN000D GLN000A 73F9267 59X3816 AJLYC01
0184	WS IOP DMA receive buffer overrun; not valid data	GLN000D GLN000A CLN000C AJLYC01 73F9267 59X3816



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0189	WS IOP frame buffer overrun of valid data	CLN000C GLN000D GLN000A 73F9267 59X3816 AJLYC01
0190	Start-up failure  Please reference “Finding and Correcting Problems” in the <i>ASCII Workstation Reference and Examples</i> , (SA41-9922) manual before attempting further analysis.	CLN000C GLN000D GLN000A 73F9267 59X3816 AJLYC01
0192	WS IOP failed automatic line speed detection  Please reference “Finding and Correcting Problems” in the <i>ASCII Workstation Reference and Examples</i> , (SA41-9922) manual before attempting further analysis.	CLN000C FI00700 GLN000A AJLYC01 73F9267 59X3816
0193	WS IOP failed automatic device type detection  Please reference “Finding and Correcting Problems” in the <i>ASCII Workstation Reference and Examples</i> , (SA41-9922) manual before attempting further analysis.	FI00700 CLN000C GLN000A AJLYC01 73F9267 59X3816
0203	Workstation IOP detected parity error from printer  Before you exchange part 73F9267 or 59X3816, perform “ASCII-PIP2” on page 449.	FI00700 CLN000C FI00612 GLN000A 59X3816 73F9267 21F5097
0205	Workstation IOP detected overrun error  Perform “ASCII-PIP2” on page 449.	73F9267 59X3816 AJLYC01
0206	Workstation IOP detected framing error from printer  Before you exchange part 73F9267 or 59X3816, perform “ASCII-PIP2” on page 449.	FI00700 CLN000C FI00612 59X3816 73F9267 21F5097
0220	WS IOP detected system program error; device identification	AJLYC01 73F9267
0225	Workstation IOP detected not valid exception status	AJLYC01 73F9267
A000	WS IOP detected more than 18 devices varied on; limit 18  There is no failing item.  This error occurs if you attempted to activate more workstations than allowed.	GLN000B

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
A100	WS IOP detected device configuration mismatch  There is no failing item.  Ensure that the device configuration values for the display and for the auxiliary printer match.	CLN000C
B000	WS IOP fails to report part, model and serial number  Perform "ASCII-PIP1" on page 443.	73F9267
C000	WS IOP error not known	73F9267 AJLYC01
D000	Work Station IOA start-up test error	73F9267
D010	WS IOP storage failure corrected  Perform "ASCII-PIP1" on page 443.	73F9267
D011	WS IOP card storage failure	73F9267
D050	WS IOP asynchronous port errors on all ports	73F9267
D051	WS IOP asynchronous port errors on some ports	73F9267
D060	WS IOP asynchronous errors on all ports  Perform "ASCII-PIP2" on page 449.	59X3816 73F9267
D061	WS IOP asynchronous port errors on 12 port attachment only	59X3816
D062	WS IOP asynchronous errors on some ports  Both the 12-port ASCII workstation attachment and the first workstation I/O processor card are failing.  Exchange the ASCII workstation attachment and the first workstation I/O processor card.	FI00611
D063	WS IOP asynchronous errors on all ports	FI00611
E000	WS IOP or IOA error during working operation  Perform "ASCII-PIP2" on page 449.	73F9267 59X3816
F000	WS IOP or IOA operating system program error  Before you exchange part 73F9267 or 59X3816, perform "ASCII-PIP2" on page 449.  If this does not correct the problem, ask your next level of support for assistance.	AJLYC01 73F9267 59X3816
FFFF	User believes there is a problem	ULNFF00

## ASCII Workstation I/O Processor Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
21F5097	6 port ASCII workstation attachment	ASCII workstation reference information
59X3816	12-port ASCII work station attachment	ASCII workstation reference information
73F9267	ASCII work station IOP card	Repair and Parts; removal and installation procedures
AJLYC01	ASCII work station IOP system Licensed Internal Code	Service Functions; APAR or LICTR
CLN000C	Configuration	Communications Configuration
GLN000A	Electrical interference	
GLN000B	More than 18 attempts to vary on device; limit 18	
GLN000D	Programmed workstation with PC Support installed	
ULNFF00	User believes there is a problem	

## (632x, 6330) Optical Storage Unit Reference Codes

An optical storage unit failure occurred.

Do not replace any failing items until verification of the following:

- If this is an external optical device and has a power switch, ensure that it is set to the ON position.

### Note:

- If the system is available, use online diagnostic tests when possible.
  - Search the problem log (WRKPRB) for a recent optical storage entry that may assist in analyzing the problem. The WRKPRB entry will provide a unit reference code that can be found in the following table.
  - Use the verify optical (VFYOPT) command to check that the unit is operating correctly.
1. If the system is available, attempt the failing operation again with an optical media that is known to be good.

Does the operation complete successfully?

**No      Yes**

↓      The original optical media may be defective, or the problem may be intermittent.

Attempt the failing operation again with the original optical media to verify.

**This ends the procedure.**

2. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
3. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the

## 632x, 6330

Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.

3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
C002	SCSI selection or reselection timeout occurred	FI00870 FI01106 FI01112 MMVMEDA FI01140 FI01141 DEVTERM CDTRAY
C010	Undefined sense key returned by device	FI00870
C020	Device internal configuration error	FI00870
C100	SCSI bus command error occurred	FI00870 FI01106 FI01112 MMVMEDA FI01140 FI01141 DEVTERM CDTRAY
C110	SCSI command timeout occurred	FI00870 FI01106 FI01112 MMVMEDA FI01140 FI01141 DEVTERM CDTRAY
C210	Unexpected device condition recovered  The device successfully recovered from a temporary error.  No action is required. This reference code is logged for information only.	
C300	Media or device error occurred  Perform the following for <b>CD-ROM</b> : 1. Clean the disk. 2. Attempt the failing operation again. 3. If this does not correct the problem, exchange the failing items.  Perform the following for <b>DVD</b> : 1. Exchange the failing items.	MMVMEDA FI00870

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
C333	<p>Incompatible media was detected</p> <p>Perform the following for <b>CD-ROM</b>:</p> <ol style="list-style-type: none"> <li>1. Verify that the disk has a format that is given support.</li> <li>2. If the format is given support, clean the disk and attempt the failing operation again.</li> <li>3. If the operation fails again with the same reference code, ask your media source for a replacement disk.</li> </ol> <p>Perform the following for <b>DVD</b>:</p> <ol style="list-style-type: none"> <li>1. Verify that the disk has a format that is given support.</li> <li>2. Exchange the failing items.</li> </ol>	MMVMEDA FI00870
C400	Interface error detected by device	FI00870 FI01106 FI01112 FI01140 FI01141 DEVTERM CDTRAY
C402	<p>I/O processor internal program error occurred</p> <p>Ask your next level of support for assistance.</p>	FI00130
CFF2	<p>Recovered from device not ready - Start Unit issued</p> <p>The device successfully recovered from a temporary error.</p> <p>No action is required. This reference code is logged for information only.</p>	
CFF4	Internal device error occurred	FI00870
CFF6	<p>Device recovered from error after retries</p> <p>The device successfully recovered from a temporary error.</p> <p>No action is required. This reference code is logged for information only.</p>	
CFF7	<p>Recovered device error</p> <p>The device successfully recovered from a temporary error.</p> <p>No action is required. This reference code is logged for information only.</p>	
CFFE	<p>Recovered SCSI bus error</p> <p>The device successfully recovered from a temporary error.</p> <p>No action is required. This reference code is logged for information only.</p>	
FF3D	<p>Recovered I/O processor error</p> <p>The device successfully recovered from a temporary error.</p> <p>No action is required. This reference code is logged for information only.</p>	
FF6D	<p>Recovered System bus error</p> <p>The device successfully recovered from a temporary error.</p> <p>No action is required. This reference code is logged for information only.</p>	

## Optical Storage Unit Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
CDTRAY	Flex cable	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Device terminator	Problem Analysis; Symbolic FRU Isolation
MMVMEDA	Optical media	System operation information

## (6335, 636x, 637x, 6380) Tape Unit Reference Codes

A 1/4-inch tape unit failure occurred.

**Note:** For tape device and IOP reset procedures, see "TU-PIP4" on page 680.

1. Is the operating system available and can you enter commands from the command line?

**Yes      No**

↓      Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

**No      Yes**

↓      Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit:

- For 6335 in all countries, use part 16G8583.
- For 6366 and 6378 Tape Units, use part 16G8572.
- For 6368, 6369, 6379, and 6380 Tape Units:
  - In Canada, the United States, and in all other countries use part 46G2674.

4. Attempt the failing operation again.

Does the operation complete successfully?

**No      Yes**

↓      The original data cartridge is defective. The problem has been corrected.

**This ends the procedure.**

5. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
6. Find the unit reference code in the following table.

**Notes:**

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0003	The data format is incorrect; the tape cannot be read  For information about data cartridges and tape units, refer to operator information manuals for using tapes. Attempt the operation again.	MHPTFOR
3002 to 3003	IOP card addressed 1/4-inch tape unit; no response  Perform “TU-PIP1” on page 672.	FI00870 FI01112 FI01106 FI01140 BACKPLN FI01141 DEVTERM
3004	Tape unit failed after Licensed Internal Code was loaded  When this error is detected, the system is available and reference code 3004 is not displayed in the control panel.  Perform the following: <ol style="list-style-type: none"> <li>1. Enter the WRKPRB command.</li> <li>2. Move the cursor to the message “Interface error detected by IOP or by tape unit”. This is the message in the problem log associated with reference code 3004. To display the reference code, use the option <i>Display details</i>.</li> <li>3. Select the <i>Work with problem</i> option.</li> <li>4. Select the <i>Analyze problem</i> option to run problem analysis.</li> </ol> If you cannot run online problem analysis, exchange the failing items.	FI00870 FI01112 FI01106 FI01140 BACKPLN FI01141 DEVTERM
3010	IOP detected incorrect response from the tape unit.	FI00870
3100	Interface error detected by I/O processor or by tape unit  Perform “TU-PIP1” on page 672.	FI00870 FI01112 FI01106 FI01140 BACKPLN FI01141 DEVTERM
3111	Interface error detected by I/O processor or by tape unit  Perform “TU-PIP1” on page 672.	FI01112 FI00870 FI01106 FI01140 BACKPLN FI01141 DEVTERM

**6335, 636x, 637x, 6380**

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9020	I/O processor detected a SCSI bus configuration error	UHPCNFG FI00870 FI00130
9100	Interface error detected by I/O processor or by tape unit	FI00870 FI01112 FI01106 DEVTERM FI01140 FI01141
9200	I/O processor addressed the tape unit; no response	FI00870 FI01112 FI01106 DEVTERM FI01140 FI01141
9201	Tape unit command timeout	FI00870 MHPTMED FI01112 FI01106 DEVTERM FI01141 FI01140
9202	Tape unit failed after Licensed Internal Code was loaded  The tape device does not respond to IOP commands after new Licensed Internal Code was transferred to the tape device.  Perform "TU-PIP4" on page 680.	FI00870 FI01112 FI01106 FI01141 DEVTERM FI01140
9210	Illegal or unsupported tape unit response	FI00870 FI01112 FI00130
9300	Tape unit failure	FI00870 MHPTMED
9301	Tape device failure, redundancy lost  The tape unit detected a hardware failure that does not prevent the tape unit from completing the present operation.  See the Tape Unit service information to determine the failing item.	FI00870 MHPTMED
9302	Tape device failure or media error	FI00870 MHPTMED
9310	Licensed Internal Code for the tape unit is not correct	FI00870 FI00130
9320	Tape device Licensed Internal Code failure	FI00130 FI00870
9350	Tape unit detected a read or write error on tape medium	MHPTMED FI00870
9351	Tape with excessive error rate was mounted in tape device.  The tape unit detected that the installed tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.	MHPTMED FI00870



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9355	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape format is not known or not compatible. The data cartridge may not have been recorded on an AS/400 system.</p> <p>Get another copy of the data cartridge recorded in a format and density given support by the AS/400 system. For more information, see the <i>System Operation</i> information.</p>	MHPTMED FI00870
9500	<p>I/O processor Licensed Internal Code error</p> <p>If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.</p>	FI00130
9800 to 9803	<p>I/O processor successfully recovered from temporary error</p> <p>No action required. This reference code is logged for information only.</p>	
9810	<p>Problem analysis has determined a part should be replaced.</p> <p>This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)</p>	
9899	<p>Problem analysis completed, the problem has been corrected.</p> <p>This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.</p>	UHPFIXD
9900	<p>Licensed Internal Code for tape unit was not upgraded</p> <p>The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed.</p> <p>The tape unit will continue to operate with the previous LIC.</p> <p>Wait for next IPL when the system will attempt to load the LIC for the tape unit again.</p>	
CC04	<p>Interface error detected by I/O processor or by tape unit</p> <p>Perform "TU-PIP1" on page 672.</p>	FI00870 FI01112 FI01106 FI01140 FI01141 DEVTERM BACKPLN
CC06	<p>Damaged cartridge detected or the tape unit failed</p> <ol style="list-style-type: none"> <li>Remove the data cartridge and inspect it for the following conditions: <ul style="list-style-type: none"> <li>The tape has run off one of the spools (the tape does not pass in front of the mirror).</li> <li>The mirror is broken or skewed out of its normal position.</li> <li>The data cartridge belt is broken or damaged.</li> <li>The tape is not wound correctly on both spools.</li> <li>The tape is broken.</li> </ul> </li> <li>Exchange the data cartridge if it has one of the above conditions. <b>Note:</b> If the tape unit has damaged more than one cartridge, also exchange the tape unit.</li> </ol>	MHPTCAR FI00870
CC0C	<p>1/4-inch tape unit failed</p> <p>Perform "TU-PIP1" on page 672.</p>	FI00870

## 6335, 636x, 637x, 6380

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
CC18	Unexpected end-of-media detected  The tape being used was not written correctly. <ul style="list-style-type: none"> <li>If the tape was not written by an AS/400 system, it may not be readable.</li> <li>If the tape was written by an AS/400 system, refer to operator information manuals for using tapes.</li> </ul>	MHPTFOR
CC1A to CC1B	Damaged cartridge detected or the tape unit failed 1. Remove the data cartridge and inspect it for the following conditions: <ul style="list-style-type: none"> <li>The tape has run off one of the spools (the tape does not pass in front of the mirror).</li> <li>The mirror is broken or skewed out of its normal position.</li> <li>The data cartridge belt is broken or damaged.</li> <li>The tape is not wound correctly on both spools.</li> <li>The tape is broken.</li> </ul> 2. Exchange the data cartridge if it has one of the above conditions. <b>Note:</b> If the tape unit has damaged more than one cartridge, also exchange the tape unit.	MHPTCAR FI00870
CC1E	Unexpected end-of-media detected  Ensure that you are using an IBM-approved data cartridge (see the <i>System Operation</i> information). If the cartridge is approved, ask your next level of support for assistance.	MHPTFOR
CC20, CC22	Tape unit detected a read or write error on tape medium  Perform "TU-PIP3" on page 677.	MHPTCAR FI00870
CC36	1/4-inch tape unit failed	FI00870
CC38	1/4-inch tape unit failed  Perform "TU-PIP1" on page 672.	FI00870
CC45	Tape unit detected a read or write error on tape medium	MHPTCAR FI00870
CC54	Damaged cartridge detected or the tape unit failed	FI00870 MHPTCAR
CC5F	1/4-inch tape unit failed	FI00870
CC65	Licensed Internal Code for the tape unit is not correct	AJEDA00
CD02 to CD03, CD0D, CD42, CD53	Tape unit detected incorrect request from the IOP.  Ask your next level of support for assistance.	FI00130
CF01, CF16	Tape unit detected incorrect request from Vertical LIC.  Ask your next level of support for assistance.	AJDG301
CF51	The data format is incorrect; the tape cannot be read	MHPTFOR
CF60	The data format is incorrect; the tape cannot be read  For information on the IBM-recommended data cartridges, see "Using Tapes and Diskettes", <i>QIC Formats, Data Cartridges, and Tape Unit Compatibility</i> in the <i>System Operation</i> information.	MHPTFOR

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FF03	<p>Cartridge removed; end-of-tape processing did not complete</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Insert the cartridge again.</li> <li>2. Send a DSPTAP command to the drive and read through all the files recorded on the tape.</li> <li>3. If an error occurs, run the job again. If an error does not occur, the tape is good.</li> </ol>	UHPUSER
FF04	<p>Cartridge removed; end-of-tape processing did not complete</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Insert the cartridge again.</li> <li>2. Wait until the tape status light goes off. If the light does not go off, enter the check tape (CHKTAP) command and change the end-of-tape option (ENDOPT) to *REWIND or *UNLOAD.</li> <li>3. After the status light goes off, remove the cartridge. The tape is now ready for storage.</li> </ol>	UHPUSER
FF05	<p>Cartridge changed or device reset; processing not complete</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. If a new cartridge was inserted, remove it and insert the last cartridge used. Otherwise, keep the cartridge in the drive.</li> <li>2. Wait until the tape status light goes off. If the light does not go off, enter the check tape (CHKTAP) command and change the end-of-tape option (ENDOPT) to *REWIND or *UNLOAD.</li> <li>3. After the status light goes off, remove the cartridge. The tape is now ready for storage.</li> </ol>	UHPUSER
FF06	<p>Cartridge changed or device reset; processing not complete</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. If a new cartridge was inserted, remove it and insert the last cartridge used. Otherwise, keep the cartridge in the drive.</li> <li>2. Wait until the tape status light goes off. If the light does not go off, enter the check tape (CHKTAP) command and change the end-of-tape option (ENDOPT) to *REWIND or *UNLOAD.</li> <li>3. After the status light goes off, remove the cartridge. The tape is now ready for storage.</li> </ol>	UHPUSER
FF07 to FF08	<p>Device powered off; end-of-tape processing not complete</p> <p>If the device is now powered on, perform the following:</p> <ol style="list-style-type: none"> <li>1. If the cartridge was removed, insert it again.</li> <li>2. Wait until the tape status light goes off. If the light does not go off, enter the check tape (CHKTAP) command and change the end-of-tape option (ENDOPT) to *REWIND or *UNLOAD.</li> <li>3. After the status light goes off, remove the cartridge. The tape is now ready for storage.</li> </ol> <p>If the device is not powered on, perform "TU-PIP1" on page 672, then perform the steps above when power returns to the tape unit.</p>	FI00870 FI01112 FI01106 FI01140 FI01141 BACKPLN

## 6335, 636x, 637x, 6380

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FF09	Licensed Internal Code for tape unit was not upgraded  The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed.  The tape unit will continue to operate with the previous LIC.  Wait for next IPL when the system will attempt to load the LIC for the tape unit again.	
FF4D, FF4F, FF5D, FF7D, FF8D	I/O processor successfully recovered from temporary error  No action required. This reference code is logged for information only.	
FFF6	Tape volume statistics logged (no action required)  This reference code is logged for information only.	

### Tape Unit Failing Items

#### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	Licensed Internal Code for programmable tape unit	Service Functions; APAR or LICTR
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
MHPTCAR	Defective tape or damaged cartridge	System operation information
MHPTFOR	The data format is incorrect; the tape cannot be read	System operation information
UHPCNFG	Tape configuration detected by I/O processor; not valid	Installation
UHPFIXD	Problem no longer exists	Magnetic tape subsystem service information
UHPUSER	Operator/User Error	System operation information

### (6385) Tape Unit Reference Codes

A 1/4-inch tape unit failure occurred.

**Note:** For tape device and IOP reset procedures, see "TU-PIP4" on page 680.

1. Is the operating system available and can you enter commands from the command line?

**Yes      No**

↓      Go to step 3 of this procedure.

2. Is OS/400 available on the system (see “Determining the Dominant Operating System” in the *AS/400 Service Functions*)?

**No      Yes**

- ↓      Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit:

- In Canada, the United States, and all other countries use part 46G2674.

4. Attempt the failing operation again.

Does the operation complete successfully?

**No      Yes**

- ↓      The original data cartridge is defective. The problem has been corrected.

**This ends the procedure.**

5. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
6. Find the unit reference code in the following table.

**Notes:**

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9020	I/O processor detected a SCSI bus configuration error  Before exchanging any parts, verify the following are not present: <ul style="list-style-type: none"> <li>• Tape and DASD devices attached to the same type I/O processor.</li> <li>• A device type or model that is not given support.</li> </ul>	UH1CNFG FI00870 FI00130
9100	Interface error detected by I/O processor or by tape unit  Perform “TU-PIP1” on page 672.	FI00870 FI01112 FI01140 FI01106 DEVTERM FI01141
9200	I/O processor addressed the tape unit; no response  Perform “TU-PIP1” on page 672.	FI00870 FI01112 FI01106 FI01140 DEVTERM FI01141

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9201	Tape unit command timeout  Perform "TU-PIP1" on page 672.	FI00870 MH1TMED FI01112 FI01106 FI01140 DEVTERM FI01141
9202	Tape unit failed after Licensed Internal Code was loaded  The tape device does not respond to IOP commands after new Licensed Internal Code was transferred to the tape device.  Perform "TU-PIP4" on page 680.	FI00870 FI01112 FI01106 FI01141 DEVTERM FI01140
9210	Illegal or unsupported tape unit response	FI00870 FI00130
9300	Tape unit failure  Perform "TU-PIP1" on page 672.	FI00870 MH1TMED
9301	Tape device failure, redundancy lost  The tape unit detected a hardware failure that does not prevent the tape unit from completing the current operation.  Replace the tape unit	FI00870 MH1TMED
9302	Tape device failure or media error	MH1TMED FI00870
9310	Licensed Internal Code for the tape unit is not correct	FI00870 FI00130
9320	Tape device Licensed Internal Code failure	FI00130
9350	Tape unit detected a read or write error on tape medium  A permanent read or write error occurred, and the tape unit determined the tape cartridge is defective.  Do the following: <ul style="list-style-type: none"> <li>• Clean the tape drive.</li> <li>• Attempt the operation again.</li> <li>• If this does not correct the problem, exchange the failing items.</li> </ul>	MH1TMED FI00870
9351	Tape with excessive error rate was mounted in tape device.  The tape unit detected that the mounted tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.	MH1TMED FI00870
9355	The data format is incorrect; the tape cannot be read  The tape device does not give support to the data format on the tape cartridge. Format the tape cartridge again or use a different tape cartridge.	MH1TMED FI00870
9500	I/O processor Licensed Internal Code error  If the system is operational, take a dump of the I/O processor data. For more information call your next level of support or see the service functions manual.	FI00130

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9800 to 9803	I/O processor successfully recovered from temporary error  No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced.  This reference code is use for ending Online Problem Analysis with a list of failing items. (Information only)	
9899	Problem analysis completed, the problem has been corrected.  This reference code is used for ending Online Problem Analysis when there is no problem found or the problem has been fixed.	UH1FIXD
9900	Licensed Internal Code for tape unit was not upgraded  The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed.  The tape unit will continue to operate with the previous LIC. You may do either of the following: <ul style="list-style-type: none"> <li>• Wait for next IPL when the system will attempt to load the LIC for the tape unit again.</li> <li>• Perform “TU-PIP4” on page 680 to reset the IOP and the tape unit. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.</li> </ul>	
FFF6	Tape volume statistics logged (no action required)	

## Tape Unit Failing Items

### Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 359.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
MH1TMED	Defective removable media	Magnetic tape subsystem service information
UH1CNFG	Tape configuration detected by I/O processor; not valid	Installation
UH1FIXD	Problem no longer exists	Repair and Parts; removal and installation procedures

## (6390) Tape Unit Reference Codes

An 8-mm tape unit failure occurred.

**Note:** For tape device and IOP reset procedures, see “TU-PIP4” on page 680.

1. Is the operating system available and can you enter commands from the command line?

Yes      No

- ↓ Go to step 3 of this procedure.
2. Is OS/400 available on the system (see “Determining the Dominant Operating System” in the *AS/400 Service Functions*)?
- No      Yes**
- ↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.
3. Clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit:
- In Canada, the United States, and all other countries use part 16G8467.
4. Attempt the failing operation again.
- Does the operation complete successfully?
- No      Yes**
- ↓ The original data cartridge is defective. The problem has been corrected.

**This ends the procedure.**

5. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
6. Find the unit reference code in the following table.

**Notes:**

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0001	<p>Tape unit failure</p> <p>The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking.</p> <p>Perform “TU-PIP2” on page 675.</p>	<p>FI00870</p> <p>MFCTMED</p>



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
030B	<p>Tape unit detected a read error on the tape medium</p> <p>Read (or write) errors may be caused by:</p> <ul style="list-style-type: none"> <li>• Poor or damaged tape</li> <li>• Dirty read/write heads</li> <li>• Damaged data cartridges</li> <li>• Using a data cartridge previously recorded in a format or density that is not correct</li> <li>• Using the wrong data cartridge (for example, one in a different format or density from another set of data cartridges)</li> </ul> <p>If the data on the tape was not written by an AS/400 system, the format or the density may not be correct. Get or make a new copy of the data cartridge.</p> <p>If you are performing a write or a save operation, initialize the tape. See the note below.</p> <p>If you are performing a read or a restore operation, the tape may be worn or the device that wrote the tape may be the cause of the problem.</p> <p>Perform "TU-PIP2" on page 675.</p> <p>When the system is available, verify the operation of the tape drive. Use the VFYTAP system command.</p> <p><b>Note:</b> When a tape is initialized, a new label is recorded at the beginning of the tape, and any data recorded previously is erased and overwritten. To initialize used tapes, use the INZTAP system command with a "Check for active files" option of *NO.</p> <p>Use of the INZTAP "Clear" (security erase) option is not recommended. The 6390 Tape Drive performs a write operation to erase all of the tape; writing (erasing) a full-size tape takes up to 3.5 hours.</p>	MFCTMED FI00870
0311, 0316	<p>Tape unit detected a read error on the tape medium</p> <p>Perform the action for reference code 030B.</p>	MFCTMED FI00870
031C, 0336	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape format is not known or not compatible. The data cartridge may not have been recorded on an AS/400 system.</p> <p>Get another copy of the data cartridge recorded in a format and density given support by the AS/400 system. For more information, see the <i>System Operation</i> information.</p>	MFCTMED FI00870
0337 to 0338, 033D	<p>Tape unit detected a read error on the tape medium</p> <p>Perform the action for reference code 030B.</p>	MFCTMED FI00870
0395 to 0397, 039D to 039F	<p>Tape unit detected a write error on tape medium</p> <p>Perform the action for reference code 030B.</p>	MFCTMED FI00870
03AE, 03B0	<p>Tape unit detected a read or write error on tape medium</p> <p>Perform the action for reference code 030B.</p>	MFCTMED FI00870
03B3 to 03B4	<p>Tape unit detected a write error on tape medium</p> <p>Perform the action for reference code 030B.</p>	MFCTMED FI00870

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
03B5	Tape unit detected a read error on the tape medium  Perform the action for reference code 030B.	MFCTMED FI00870
0417 to 0418	Tape unit failure  The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking.  Perform "TU-PIP2" on page 675.	FI00870 MFCTMED
0419	Tape unit failure  The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking.  Perform "TU-PIP2" on page 675.	FI00870 MFCTMED FI01141
0458, 045A, 0467 to 0468, 046D, 0498 to 049A, 049C, 04A1 to 04A8, 04AB to 04AD, 04FA, 04FC to 04FD	Tape unit failure  The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking.  Perform "TU-PIP2" on page 675.	FI00870 MFCTMED
3002	I/O processor addressed the tape unit; no response  The tape drive did not respond to commands from the IOP.  Perform the following: 1. "TU-PIP1" on page 672 2. "TU-PIP3" on page 677	FI00870 FI01112 FI01106 FI01140 FI01119 FI01141 DEVTERM
3004	Tape unit failed after Licensed Internal Code was loaded  The tape drive does not respond to IOP commands after new Licensed Internal Code was transferred to the tape drive.  Perform "TU-PIP4" on page 680.	FI00870 FI01112 FI01106 FI01140 FI01119 FI01141 DEVTERM
3005	Blank tape or BOT encountered  The tape drive has found a blank tape or BOT.  When using a new data cartridge, the tape must first be initialized.  This error can also occur when reading a tape if that tape was removed from the tape drive before writing was complete.  Also see the action for reference code 030B.	MFCTMED FI00870 FI00130
3010	Illegal or unsupported tape unit response  The tape drive returned a response to the IOP that is illegal or is not given support.  Perform the following: 1. "TU-PIP1" on page 672 2. "TU-PIP3" on page 677	FI00870 FI00130

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3100	Interface error detected by I/O processor or by tape unit  The IOP or the device detected a permanent error on the interface to the system.  Perform the following: 1. "TU-PIP1" on page 672 2. "TU-PIP3" on page 677	FI00870 FI01112 FI01106 FI01140 FI01119 FI01141 FI00130 DEVTERM
3110	Tape unit command timeout  The tape drive did not complete a command sent by the IOP in the time allowed.  Perform the following: 1. "TU-PIP1" on page 672 2. "TU-PIP2" on page 675	FI00870 FI01112 FI01106 MFCTMED FI01140 FI01119 FI01141 FI00130 DEVTERM
4016 to 4017	Licensed Internal Code for the tape unit is not correct	AJEDA00
9020	I/O processor detected a SCSI bus configuration error	UFCCNFG FI00870 FI00130
9100	Interface error detected by I/O processor or by tape unit	FI00870 FI01112 FI01106 DEVTERM FI01140 FI01141
9200	I/O processor addressed the tape unit; no response	FI00870 FI01112 FI01106 DEVTERM FI01140 FI01141
9201	Tape unit command timeout	FI00870 MFCTMED FI00130 FI01106 FI01112 DEVTERM FI01141 FI01140
9202	Tape unit failed after Licensed Internal Code was loaded  The tape device does not respond to IOP commands after new Licensed Internal Code was transferred to the tape device.  Perform "TU-PIP4" on page 680.	FI00870 FI01112 FI01106 FI01141 DEVTERM FI01140
9210	Illegal or unsupported tape unit response	FI00870 FI01112 FI00130
9300	Tape unit failure	FI00870 MFCTMED

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9301	<p>Tape device failure, redundancy lost</p> <p>The tape unit detected a hardware failure that does not prevent the tape unit from completing the present operation.</p> <p>See the Tape Unit service information to determine the failing item.</p>	FI00870 MFCTMED
9302	Tape device failure or media error	FI00870 MFCTMED
9310	Licensed Internal Code for the tape unit is not correct	FI00870 FI00130
9320	Tape device Licensed Internal Code failure	FI00130 FI00870
9350	Tape unit detected a read or write error on tape medium	MFCTMED FI00870
9351	<p>Tape with excessive error rate was mounted in tape device.</p> <p>The tape unit detected that the installed tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.</p>	MFCTMED FI00870
9355	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape format is not known or not compatible. The data cartridge may not have been recorded on an AS/400 system.</p> <p>Get another copy of the data cartridge recorded in a format and density given support by the AS/400 system. For more information, see the <i>System Operation</i> information.</p>	MFCTMED FI00870
9500	<p>I/O processor Licensed Internal Code error</p> <p>If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.</p>	FI00130
9800 to 9803	<p>I/O processor successfully recovered from temporary error</p> <p>No action required. This reference code is logged for information only.</p>	
9810	<p>Problem analysis has determined a part should be replaced.</p> <p>This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)</p>	
9899	<p>Problem analysis completed, the problem has been corrected.</p> <p>This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.</p>	UFCFIXD
9900, FF09	<p>Licensed Internal Code for tape unit was not upgraded</p> <p>The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape drive was not completed.</p> <p>The tape drive will continue to operate with the previous LIC. You may do either of the following:</p> <ul style="list-style-type: none"> <li>• Wait for next IPL when the system will attempt to load the LIC for the tape drive again.</li> <li>• Perform "TU-PIP4" on page 680 to reset the IOP and the tape drive. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.</li> </ul>	UFCWAIT

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FF4D	I/O processor successfully recovered from temporary error  No action required. This reference code is logged for information only.  When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshold has been exceeded.	FI00870 FI01112 FI01106 FI01140 DEVTERM FI01141 FI01119 FI00130
FF5D	I/O processor successfully recovered from temporary error  No action required. This reference code is logged for information only.  When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshold has been exceeded.	FI00870 FI01112 FI01106 FI01140 FI01141 DEVTERM FI01119
FFF6	Tape volume statistics logged (no action required)  No action required. This reference code is logged for information only.	
FFF8	Asynchronous device attached; synchronous device expected  The attached device is operational and working in the asynchronous mode of data transfer.  The IBM tape unit uses the synchronous mode of data transfer; if the attached device is an IBM tape unit, exchange the tape unit.	FI00870
FFFE	Tape unit detected a read error on the tape medium  Perform the action for reference code 030B.	MFCTMED FI00870 FI01141
FFFF	Tape unit detected a write error on tape medium  Perform the action for reference code 030B.	MFCTMED FI00870

## Tape Unit Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
AJEDA00	Licensed Internal Code for the programmable tape unit	Service Functions; APAR or LICTR
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
MFCTMED	Defective removable media	System operation information
UFCCNFG	Tape configuration detected by I/O processor; not valid	Installation
UFCFIXD	Problem no longer exists	Magnetic tape subsystem service information
UFCWAIT	Wait to next IPL or perform TU-PIP4	Problem Analysis

## (63A0) Tape Unit Reference Codes

A tape unit failure occurred.

**Note:** For tape device and IOP reset procedures, see "TU-PIP4" on page 680.

1. Is the operating system available and can you enter commands from the command line?

**Yes      No**

↓      Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

**No      Yes**

↓      Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Clean the recording head in the tape unit.

4. Attempt the failing operation again.

Does the operation complete successfully?

**No      Yes**

↓      The original data cartridge is defective. The problem has been corrected.

**This ends the procedure.**

5. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
6. Find the unit reference code in the following table.

**Notes:**

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9020	<p>I/O processor detected a SCSI bus configuration error</p> <p>Before exchanging any parts, verify that the following condition is not present:</p> <ul style="list-style-type: none"> <li>• Tape and DASD devices attached to an I/O Processor that does not support Tape and Dasd devices at the same time.</li> </ul>	<p>UH7CNFG</p> <p>FI00871</p> <p>FI00130</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9100	<p>Interface error detected by I/O processor or by tape unit</p> <p>If the attached device is an external device, do the following before exchanging any parts:</p> <ol style="list-style-type: none"> <li>1. If an interposer is required, make sure that it is connected between the I/O processor and the SCSI cable.</li> <li>2. Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>3. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	FI00871 FI01112 FI00872 DEVTERM
9200	<p>I/O processor addressed the tape unit; no response</p> <p>If the attached device is an external device, do the following before exchanging any parts:</p> <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. If an interposer is required, make sure that it is connected between the I/O processor and the SCSI cable.</li> <li>3. Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>4. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	FI00871 FI01112 FI00872 DEVTERM
9201	<p>Tape unit command timeout</p> <p>If the attached device is an external device, do the following before exchanging any parts:</p> <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. If an interposer is required, make sure that it is connected between the I/O processor and the SCSI cable.</li> <li>3. Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>4. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	FI00871 FI01112 FI00872 DEVTERM
9202	<p>Tape unit failed after Licensed Internal Code was loaded</p> <p>If the attached device is an external device, do the following before exchanging any parts:</p> <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. If an interposer is required, make sure that it is connected between the I/O processor and the SCSI cable.</li> <li>3. Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>4. Ensure that a terminating plug is attached to the device end of the SCSI cable.</li> </ol>	FI00871 FI01112 FI00872 DEVTERM
9210	Illegal or unsupported tape unit response	FI00871 FI01112 FI00130
9300	Tape unit failure	FI00871
9301	<p>Tape device failure, redundancy lost</p> <p>The tape unit detected a hardware failure that does not prevent the tape unit from completing the current operation.</p>	FI00871

## 63A0

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9302	<p>Tape device failure or media error</p> <p>The tape unit detected a failure that may be caused by a hardware failure or a media error.</p> <p>Refer to the tape unit service information for possible information on diagnostic tests that can be run to isolate between hardware and media failures.</p>	MH7TMED FI00871
9310	Licensed Internal Code for the tape unit is not correct	FI00130 FI00871
9320	Tape device Licensed Internal Code failure	FI00130 FI00871
9350	<p>Tape unit detected a read or write error on tape medium</p> <p>A permanent read or write error occurred. Clean the tape unit and retry the operation.</p> <p>If cleaning the tape unit does not correct the problem, exchange the tape media.</p>	MH7TMED UH7CLN FI00871
9351	<p>Tape with excessive error rate was mounted in tape device.</p> <p>The tape unit detected that the mounted tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.</p>	MH7TMED UH7CLN FI00871
9355	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape unit has detected that the data format on the tape media is not supported.</p> <p>Clean the tape unit and retry the operation.</p> <p>If the operation continues to fail, use a different tape cartridge.</p>	UH7USER MH7TMED UH7CLN FI00871
9500	<p>I/O processor Licensed Internal Code error</p> <p>If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.</p>	FI00130
9800 to 9803	<p>I/O processor successfully recovered from temporary error</p> <p>No action required. This reference code is logged for information only.</p>	
9810	<p>Problem analysis has determined a part should be replaced.</p> <p>This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)</p>	
9899	<p>Problem analysis completed, the problem has been corrected.</p> <p>This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.</p>	UH7FIXD



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9900	<p>Licensed Internal Code for tape unit was not upgraded</p> <p>The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed.</p> <p>The tape unit will continue to operate with the previous LIC. You may do either of the following:</p> <ul style="list-style-type: none"> <li>• Wait for next IPL when the system will attempt to load the LIC for the tape drive again.</li> <li>• Perform "TU-PIP4" on page 680 to reset the IOP and the tape unit. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.</li> </ul>	UH7USER
FFF6	Tape volume statistics logged (no action required)	

## Tape Unit Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
MH7TMED	Defective removable media	Magnetic tape subsystem service information
UH7CLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
UH7CNFG	Tape configuration detected by I/O processor; not valid	Installation
UH7USER	Operator action required	System operation information

## (6500) Magnetic Storage I/O Processor Reference Codes

The magnetic storage I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

## 6500

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00A1	I/O processor detected a buffer allocation error	AJEDA00 6500
09A2	I/O processor detected a recoverable system bus error  No action required. This reference code is logged for information only.	AJEDA00 6500
0A17	A permanent I/O processor failure occurred	6500 AJEDA00
0A18	I/O processor detected a random interrupt  Perform "MSIOP-PIP14" on page 566.	6500 FI00844
0A20	I/O processor resource not available  Perform "MSIOP-PIP14" on page 566.	FI00844 6500 AJEDA00
0A21	I/O processor detected a storage transfer error  Perform "MSIOP-PIP14" on page 566.	6500 FI00844
0A22	I/O processor detected a storage transfer error	6500 AJEDA00
0A41	I/O processor parity error	6500
0AC9	I/O processor detected a buffer allocation error	AJEDA00 6500 ANYBUS
0AD0	I/O processor detected a storage sequence error	AJEDA00 6500 ANYBUS
0AD1	A permanent I/O processor failure occurred	6500
1070	I/O processor memory error	6500 AJEDA00
1072	I/O processor Licensed Internal Code error	AJEDA00 6500
1073	I/O processor memory error  No action required. This reference code is logged for information only.	6500
1075	I/O processor detected a buffer allocation error  See the service information for the specific tape device.	AJEDA00
1076, 107F	I/O processor Licensed Internal Code error	AJEDA00
1A03	I/O processor resource not available	AJEDA00 AJDG301
1A10	I/O processor resource not available  The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	6500 FI00844 DEVTERM EXTSCSI AJEDA00 BACKPLN
3000	A permanent I/O processor failure occurred	6500
3002	Disk device returned wrong response to IOP  Perform "MSIOP-PIP14" on page 566.	FI00844 FI00581 6500 EXTSCSI

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3006	A permanent I/O processor failure occurred	6500 ANYBUS
300D	Disk device problem Perform "MSIOP-PIP14" on page 566.	FI00844 6500
3020	I/O processor detected a SCSI bus configuration error	UDRUSER 6500
3030	Disk bus interface error occurred Perform "MSIOP-PIP14" on page 566.	FI00844 6500
3100	Disk bus interface error occurred Perform "MSIOP-PIP14" on page 566.	6500 FI00844 DEVTERM EXTSCSI
3110	Disk bus interface error occurred Perform "MSIOP-PIP14" on page 566.	FI00844 6500 EXTSCSI DEVTERM
3200	Disk device problem Perform "MSIOP-PIP14" on page 566.	FI00844 FI00581
3400	Failure in initialization of a device task Perform "MSIOP-PIP14" on page 566.	FI00844 6500
3500	I/O processor Licensed Internal Code error	AJEDA00 6500
3501	I/O processor Licensed Internal Code error	AJEDA00
4002	I/O processor Licensed Internal Code error	AJEDA00 6500
B300 to B301	A permanent I/O processor failure occurred	6500
B701	Read only storage failed, I/O processor is operational No action required. This reference code is logged for information only.	6500
B711	Control storage failed, I/O processor is operational No action required. This reference code is logged for information only.	6500
B720	A permanent I/O processor failure occurred	6500
B740	Reset of the I/O processor header failed	6500
B780	A permanent I/O processor failure occurred	6500 EXTSCSI
B787	I/O processor detected an internal error	6500
B790	A permanent I/O processor failure occurred	6500
B791	I/O processor detected a recoverable device error No action required. This reference code is logged for information only.	
B7A2	Read only storage failed, I/O processor is operational No action required. This reference code is logged for information only.	

## 6500

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B980	Disk bus interface error occurred Perform "MSIOP-PIP14" on page 566.	6500 EXTSCSI FI00844 DEVTERM
B981	Disk bus interface error occurred Perform "MSIOP-PIP14" on page 566.	EXTSCSI FI00844 6500 DEVTERM
B982	I/O processor detected a storage device failure Perform "MSIOP-PIP14" on page 566.	FI00844 FI00581 6500 EXTSCSI DEVTERM
B986	Disk bus interface error occurred Perform "MSIOP-PIP14" on page 566.	FI00844 EXTSCSI 6500 DEVTERM
BB00	System bus error	6500 ANYBUS BACKPLN
BE01	I/O processor was not ready for interrupt that occurred	AJEDA00 6500
BE04	I/O processor Licensed Internal Code error	AJEDA00 6500
BE18	I/O processor detected a random interrupt	6500
BE1A	I/O processor was not ready for interrupt that occurred	6500 AJEDA00
BE1B	I/O processor was not ready for interrupt that occurred Perform "MSIOP-PIP14" on page 566.	AJEDA00 6500 EXTSCSI FI00844 DEVTERM
BE1C to BE1E	I/O processor was not ready for interrupt that occurred	AJEDA00 6500
BE40, BE48	A permanent I/O processor failure occurred	6500 AJEDA00
BE50	I/O processor detected a random interrupt	6500
BE51	I/O processor memory error	6500
BE52 to BE54	I/O processor Licensed Internal Code error	AJEDA00 6500
BE55	I/O processor memory error	6500
BE57	A permanent I/O processor failure occurred	6500
BE58	I/O processor detected a random interrupt	6500 AJEDA00
BE60	I/O processor detected a random interrupt	6500
FF3D	I/O processor detected an internal error	6500
FF6D	I/O processor detected a recoverable system bus error	6500 ANYBUS

## Magnetic Storage I/O Processor Failing Items

### Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 359.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
6500	I/O processor card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJEDA00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
EXTSCSI	Cable assembly	Problem Analysis; Symbolic FRU Isolation
UDRUSER	Operator/User Error	System operation information

## (6501) Magnetic Storage I/O Processor Reference Codes

The magnetic storage I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

**Note:** To determine the I/O bus (SCSI bus) number, see “System Unit and Expansion Unit Locations and Addresses” on page 712.

### Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0A17	A permanent I/O processor failure occurred	6501
0A22	I/O processor detected a storage transfer error	AJEQU00 6501
1207	I/O processor resource not available	AJEQU00 AJDG301

## 6501

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1210	I/O processor resource not available  The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	6501 FI00584 AJEQU00 EXTSCSI DEVTERM ANYBUS
2200	I/O processor Licensed Internal Code error	AJEQU00
2201	Removable media error during IPL	UQUUSER FI00882
2202	Removable media error during IPL	FI00022 FI00882
3000	A permanent I/O processor failure occurred	6501
3002	Addressed device failed to respond to selection  Perform "MSIOP-PIP15" on page 567.	FI00581 EXTSCSI 6501 DEVTERM
3006	System bus error	6501 ANYBUS
3020	I/O processor detected a SCSI bus configuration error  Error occurred on SCSI bus 0.	FI00584 UQUUSER 6501
3021	I/O processor detected a SCSI bus configuration error  Error occurred on SCSI bus 1.	FI00584 UQUUSER 6501
3030	I/O processor card detected device error  Perform "MSIOP-PIP16" on page 569.	FI00581
3080	I/O processor Licensed Internal Code error	AJEQU00 6501
3084	A permanent I/O processor failure occurred	6501 AJEQU00
3100	I/O processor card detected interface error  Error occurred on SCSI bus 0.  Perform "MSIOP-PIP15" on page 567.	FI00844 6501 EXTSCSI DEVTERM
3101	I/O processor card detected interface error  Error occurred on SCSI bus 1.  Perform "MSIOP-PIP15" on page 567.	FI00844 6501 EXTSCSI DEVTERM
3109, 3110	I/O processor card detected interface error  Perform "MSIOP-PIP15" on page 567.	FI00844 6501 EXTSCSI DEVTERM
3136	The removable media device is assigned elsewhere	UQUUSER FI00882 6501
3200	I/O processor card detected device error  Perform "MSIOP-PIP16" on page 569.	FI00581

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3300	I/O processor card detected media error Perform “MSIOP-PIP16” on page 569.	MQUMEDA FI00581
3400	I/O processor card detected device error Perform “MSIOP-PIP16” on page 569.	FI00581 6501 EXTSCSI DEVTERM
3500	I/O processor Licensed Internal Code error	AJEQU00 6501
3501	I/O processor Licensed Internal Code error	AJEQU00
4002	I/O processor Licensed Internal Code error	AJEQU00 6501
5000	I/O processor card error; logged only	
5100	I/O processor card detected interface error Perform “MSIOP-PIP15” on page 567.	
5500	I/O processor Licensed Internal Code error	
6070	A permanent I/O processor failure occurred	6501
6071 to 6072	I/O processor Licensed Internal Code error	AJEQU00
6073	I/O processor card detected device error	FI00581 UQUUSER
6075	I/O processor resource not available	AJEQU00
6076	I/O processor card detected media error	MQUMEDA FI00581
6081 to 6085	I/O processor Licensed Internal Code error	AJEQU00
B410, B414, B420, B424, B428, B430	A permanent I/O processor failure occurred	6501
B434	I/O processor card detected interface error	6501 FI00844 EXTSCSI DEVTERM
B440	A permanent I/O processor failure occurred	6501
B444	I/O processor card detected interface error	6501 FI00844 EXTSCSI DEVTERM
B450, B460	A permanent I/O processor failure occurred	6501
BE00	I/O processor was not ready for interrupt that occurred	6501 AJEQU00
BE10	I/O processor detected a random interrupt	6501 AJEQU00
BE40, BE70	A permanent I/O processor failure occurred	6501 AJEQU00
FF3D	I/O processor card	6501
FF6D	I/O processor detected a recoverable system bus error	6501 ANYBUS

## Magnetic Storage I/O Processor Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
6501	I/O processor card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJEQU00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
EXTSCSI	Cable assembly	Problem Analysis; Symbolic FRU Isolation
MQUMEDA	Defective media	Refer to I/O device service information
UQUUSER	Operator/User Error	System operation information

## (6502, 6512) Magnetic Storage I/O Processor Reference Codes

The magnetic storage I/O processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

**Note:** To determine the I/O bus (SCSI bus) number, see "System Unit and Expansion Unit Locations and Addresses" on page 712.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0A17	A permanent I/O processor failure occurred	65X2
0A22	I/O processor detected a storage transfer error	AJEQU00 65X2
1207	I/O processor resource not available	AJEQU00 AJDG301



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1210	I/O processor resource not available  The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	65X2 FI01107 AJEQU00 FI01140 ANYBUS BACKPLN CACHE
3000	A permanent I/O processor failure occurred	65X2
3002	Addressed device failed to respond to selection  Perform "SDIOP-PIP16" on page 608.	FI01105 65X2 FI01140 FI01141 FI01106
3006	System bus error	65X2 ANYBUS
3020	I/O processor detected a SCSI bus configuration error  Error occurred on SCSI bus 0. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 611. Use the failing item (FI) codes to find failing devices.	UAJUSER FI01107 65X2
3021	I/O processor detected a SCSI bus configuration error  Error occurred on SCSI bus 1. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 611. Use the failing item (FI) codes to find failing devices.	UAJUSER FI01107 65X2
3022	I/O processor detected a SCSI bus configuration error  Error occurred on SCSI bus 2. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 611. Use the failing item (FI) codes to find failing devices.	UAJUSER FI01107 65X2
3030	I/O processor card detected device error	FI01105
3080	I/O processor Licensed Internal Code error	AJEQU00 65X2
3084	A permanent I/O processor failure occurred	65X2 AJEQU00
3100	I/O processor card detected interface error  Error occurred on SCSI bus 0.  Perform "SDIOP-PIP13" on page 605.	65X2 FI01107 FI01140 BACKPLN
3101	I/O processor card detected interface error  Error occurred on SCSI bus 1.  Perform "SDIOP-PIP13" on page 605.	65X2 FI01107 FI01140 BACKPLN
3102	I/O processor card detected interface error  Error occurred on SCSI bus 2.  Perform "SDIOP-PIP13" on page 605.	65X2 FI01107 FI01140 BACKPLN
3109	IOP timed out a disk command  Perform "SDIOP-PIP16" on page 608.	FI01105 65X2 FI01140 BACKPLN FI01106

## 6502, 6512

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3110	I/O processor card detected interface error  Perform "SDIOP-PIP16" on page 608.	FI01105 65X2 FI01140 BACKPLN FI01106
3200	I/O processor card detected device error	FI01105
3300	I/O processor Licensed Internal Code error	AJEQU00 FI01105
3400	I/O processor card detected device error	FI02112 65X2
3500 to 3502	I/O processor Licensed Internal Code error	AJEQU00 65X2
3600	System log entry only, no service action required	
4002	I/O processor Licensed Internal Code error	AJEQU00 65X2
5000, 5100, 5500	I/O processor card error; logged only  No action required. This reference code is logged for information only.	
6070	A permanent I/O processor failure occurred	65X2
6071	I/O processor Licensed Internal Code error	AJEQU00
6072	I/O processor Licensed Internal Code error	AJEQU00 65X2
6073	I/O processor Licensed Internal Code error	AJEQU00 FI01105
6075	I/O processor resource not available	AJEQU00
6076	I/O processor Licensed Internal Code error	AJEQU00 FI01105
6081 to 6085	I/O processor Licensed Internal Code error	AJEQU00 65X2
8000	A permanent IOP or cache adaptor card failure occurred.  <b>Note:</b> DO NOT replace the IOP and the cache adaptor card at the same time. Exchange the FRUs one at a time in the order shown.	65X2 CACHE
8001	A permanent I/O processor failure occurred	65X2
8002	A permanent cache adaptor card failure occurred.  <b>Note:</b> DO NOT replace the IOP and the cache adaptor card at the same time. Exchange the FRUs one at a time in the order shown.	CACHE 65X2
8003	I/O processor Licensed Internal Code error	AJEQU00
8004	Voltage drop detected on I/O processor 5 volt power supply.	FI01141 65X2
8005	A recoverable IOP or cache adaptor card error occurred.  <b>Note:</b> DO NOT replace the IOP and the cache adaptor card at the same time. Exchange the FRUs one at a time in the order shown.	65X2 CACHE
8006	A recoverable I/O processor error occurred.	65X2
8007	A recoverable cache adaptor card error occurred.  <b>Note:</b> DO NOT replace the IOP and the cache adaptor card at the same time. Exchange the FRUs one at a time in the order shown.	CACHE 65X2

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
8010 to 8011	A permanent cache adaptor card failure occurred.  The cache adaptor card may be missing, broken or incompatible. <b>Note:</b> DO NOT replace the IOP and the cache adaptor card at the same time. Exchange the FRUs one at a time in the order shown.	CACHE 65X2
9000 to 9001	I/O processor card detected device error	FI01105 65X2
9002	I/O processor card detected device error  Perform "SDIOP-PIP16" on page 608.	FI01105 65X2 FI01140 BACKPLN FI01106
9008	Disk unit requires initialization before use.  Perform "SDIOP-PIP25" on page 626.	UAJUSER
9010 to 9011	The IOP and attached cache adaptor card are not compatible.  Perform "SDIOP-PIP19" on page 616.	SVCDOS
9012	IOP requires a cache adaptor card but cannot find it.  The cache adapter card is missing or broken.  Perform "SDIOP-PIP29" on page 633.	CACHE
9013	The IOP and attached cache adaptor card are not compatible.  Perform "SDIOP-PIP19" on page 616.	SVCDOS
9020 to 9021	Array not functional due to present hardware configuration.  Perform "SDIOP-PIP20" on page 618.	SVCDOS
9022 to 9024	Array not functional due to present hardware configuration.  Perform "SDIOP-PIP22" on page 622.	SVCDOS
9025	Disk unit is not supported at its physical location.  Perform "SDIOP-PIP21" on page 621.	SVCDOS
9026 to 9027	Array not functional due to present hardware configuration.  Perform "SDIOP-PIP22" on page 622.	SVCDOS
9028	Incorrect hardware configuration change has been detected.  Reduce the number of arrays on IOP. Either move all devices in an array to another IOP that supports arrays, or stop an array on this IOP.	SVCDOS
9030	Array no longer protected due to missing or failed disk unit  Perform "SDIOP-PIP21" on page 621.	SVCDOS
9031, 9040	Array protection temporarily suspended  No action required. Protection will be automatically restarted.	
9041	Array protection temporarily suspended  Protection will be automatically restarted. Call your next level of support to report the problem.	AJEQU00
9050	Required cache data cannot be located for a disk unit.  Perform "SDIOP-PIP23" on page 623.	SVCDOS

## 6502, 6512

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9051	IOP cache data exists for a missing or failed device.  If all configured units are missing, a 9054 reference code may appear in the product activity log. If so, perform the action indicated for the 9054 reference code.  Otherwise, perform "SDIOP-PIP27" on page 630.	SVCDOS
9052	Cache data exists for device that has been modified.  Perform "SDIOP-PIP28" on page 632.	SVCDOS
9053	IOP resources not available due to previous problems.  Take action on other IOP reference codes which have surfaced.	SVCDOS
9054	IOP resources not available due to previous problems.  Power off the system and remove all new or replacement disk units. IPL the system to DST. Take action on other IOP reference codes which have surfaced.	SVCDOS
9060	A permanent I/O processor failure occurred	65X2
9081	I/O processor card detected device error	FI01105 65X2
9082	I/O processor card detected device error  Perform "SDIOP-PIP16" on page 608.	FI01105 65X2 FI01140 BACKPLN FI01106
9090	Disk unit has been modified after the last known status.  Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem.  If you cannot resolve the problem, contact your next level of support.	SVCDOS
9091	Incorrect hardware configuration change has been detected.  Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem.  If you cannot resolve the problem, contact your next level of support.	SVCDOS
9092	Disk unit requires initialization before use.  Perform "SDIOP-PIP26" on page 628.	SVCDOS
9500	I/O processor Licensed Internal Code error	AJEQU00 65X2
B410, B414, B420, B424, B428, B430	A permanent I/O processor failure occurred	65X2
B434	I/O processor card detected interface error	65X2 FI01105 FI01140
B440	A permanent I/O processor failure occurred	65X2
B444	I/O processor card detected interface error	65X2 FI01105 FI01140

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B450, B460, B470	A permanent I/O processor failure occurred	65X2
B474	I/O processor card detected interface error	65X2 FI01105 FI01140
B480, B484	A permanent I/O processor failure occurred	65X2
B490, B494, B498	A permanent cache adaptor card failure occurred.	CACHE
BE00	I/O processor detected a fault condition.	65X2 AJEQU00
BE10	I/O processor was not ready for interrupt that occurred	65X2 AJEQU00
BE40	A permanent I/O processor failure occurred	65X2 AJEQU00
BE70	A permanent I/O processor failure occurred	AJEQU00 65X2
FF3D	I/O processor card	65X2
FF6D	I/O processor detected a recoverable system bus error	65X2 ANYBUS

### Magnetic Storage I/O Processor Failing Items

#### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
65X2	Magnetic storage device IOP card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJEQU00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
CACHE	Cache adaptor card	Problem Analysis; Symbolic FRU Isolation
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation
UAJUSER	Operator/User Error	System operation information

### (6513, 6530) Tape I/O Processor and MSIOP Reference Codes

The tape I/O processor or the MSIOP detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

**Note:** To determine the I/O bus (SCSI bus) number, see “System Unit and Expansion Unit Locations and Addresses” on page 712.

**Notes:**

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0A17	A permanent I/O processor failure occurred	65XX
0A22	I/O processor detected a storage transfer error	AJEQU00 65XX
1207	I/O processor resource not available	AJEQU00 AJDG301
1210	I/O processor resource not available  The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	65XX FI01107 AJEQU00 FI01140 ANYBUS BACKPLN
2200	I/O processor Licensed Internal Code error	AJEQU00
2201	Removable media error during IPL	UATUSER FI01105
2202	Removable media error during IPL	FI00022 FI01105
3000	A permanent I/O processor failure occurred	65XX
3002	Addressed device failed to respond to selection  Perform “SDIOP-PIP16” on page 608.	FI01105 65XX FI01140 FI01141 FI01106
3006	System bus error	65XX ANYBUS
3020	I/O processor detected a SCSI bus configuration error  Error occurred on SCSI bus 0. To correct or isolate a possible user error or configuration error, perform “SDIOP-PIP17” on page 611. Use the failing item (FI) codes to find failing devices.	UATUSER FI01107 65XX
3021	I/O processor detected a SCSI bus configuration error  Error occurred on SCSI bus 1. To correct or isolate a possible user error or configuration error, perform “SDIOP-PIP17” on page 611. Use the failing item (FI) codes to find failing devices.	UATUSER FI01107 65XX

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3022	I/O processor detected a SCSI bus configuration error  Error occurred on SCSI bus 2. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 611. Use the failing item (FI) codes to find failing devices.	UATUSER FI01107 65XX
3030	I/O processor card detected device error	FI01105
3080	I/O processor Licensed Internal Code error	AJ EQU00 65XX
3084	A permanent I/O processor failure occurred	65XX AJ EQU00
3100	I/O processor card detected interface error  Error occurred on SCSI bus 0.  Perform "SDIOP-PIP13" on page 605.	65XX FI01107 FI01140 BACKPLN
3101	I/O processor card detected interface error  Error occurred on SCSI bus 1.  Perform "SDIOP-PIP13" on page 605.	65XX FI01107 FI01140 BACKPLN
3102	I/O processor card detected interface error  Error occurred on SCSI bus 2.  Perform "SDIOP-PIP13" on page 605.	65XX FI01107 FI01140 BACKPLN
3109, 3110	I/O processor card detected interface error  Perform "SDIOP-PIP16" on page 608.	FI01105 65XX FI01140 BACKPLN FI01106
3136	The removable media device is assigned elsewhere	UATUSER FI01105 65XX
3200	I/O processor card detected device error	FI01105
3300	I/O processor card detected media error	MATMEDA FI01105
3400	I/O processor card detected device error	FI02112 65XX
3500 to 3502	I/O processor Licensed Internal Code error	AJ EQU00 65XX
3600	System log entry only, no service action required	
4002	I/O processor Licensed Internal Code error	AJ EQU00 65XX
5000, 5100, 5500	I/O processor card error; logged only  No action required. This reference code is logged for information only.	
6070	A permanent I/O processor failure occurred	65XX
6071	I/O processor Licensed Internal Code error	AJ EQU00
6072	I/O processor Licensed Internal Code error	AJ EQU00 65XX

## 6513, 6530

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6073	I/O processor card detected device error	FI01105 UATUSER
6075	I/O processor resource not available	AJEQU00
6076	I/O processor card detected media error	MATMEDA FI01105
6081 to 6085	I/O processor Licensed Internal Code error	AJEQU00 65XX
8000 to 8007, 8010 to 8011	I/O processor Licensed Internal Code error	AJEQU00
9000 to 9001	I/O processor card detected device error	FI01105 65XX
9002	I/O processor card detected device error  Perform "SDIOP-PIP16" on page 608.	FI01105 65XX FI01140 BACKPLN FI01106
9008	Disk unit requires initialization before use.  Perform "SDIOP-PIP25" on page 626.	UATUSER
9010 to 9012, 9020 to 9028, 9030, 9040, 9050 to 9054	I/O processor Licensed Internal Code error	AJEQU00
9060	A permanent I/O processor failure occurred	65XX
9081	I/O processor card detected device error	FI01105 65XX
9082	I/O processor card detected device error  Perform "SDIOP-PIP16" on page 608.	FI01105 65XX FI01140 BACKPLN FI01106
9090	Disk unit has been modified after the last known status.  Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem.  If you cannot resolve the problem, contact your next level of support.	SVCDOCS
9091	Incorrect hardware configuration change has been detected.  Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem.  If you cannot resolve the problem, contact your next level of support.	SVCDOCS
9092	Disk unit requires initialization before use.  Perform "SDIOP-PIP26" on page 628.	SVCDOCS
9500	I/O processor Licensed Internal Code error	AJEQU00
B410, B414, B420, B424, B428, B430	A permanent I/O processor failure occurred	65XX



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B434	I/O processor card detected interface error	65XX FI01105 FI01140
B440	A permanent I/O processor failure occurred	65XX
B444	I/O processor card detected interface error	65XX FI01105 FI01140
B450, B460, B470	A permanent I/O processor failure occurred	65XX
B474	I/O processor card detected interface error	65XX FI01105 FI01140
BE00	I/O processor detected a fault condition.	65XX AJEQU00
BE10	I/O processor was not ready for interrupt that occurred	65XX AJEQU00
BE40	A permanent I/O processor failure occurred	65XX AJEQU00
BE70	A permanent I/O processor failure occurred	AJEQU00 65XX
FF3D	I/O processor card	65XX
FF6D	I/O processor detected a recoverable system bus error	65XX ANYBUS

### Tape I/O Processor and MSIOP Failing Items

#### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
65XX	I/O processor card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJEQU00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	System bus	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
MATMEDA	Defective media	System operation information
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis
UATUSER	Operator/User Error	

**(660x, 671x, 673x) Disk Unit Reference Codes**

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.  
If the failing item is a disk unit, go to Start Disk Service Here in "Chapter 7. Recovery Procedures" on page 919.

**Notes:**

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.
4. The 673x is a read cache. Perform all actions required for 673x as a disk drive and logic card except where separate 673x cache instructions are provided.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
102E	Out of alternate sectors for disk storage	DISKDRV
3002	Addressed device failed to respond to selection	DISKDRV STORIOA DISKTRY FI01106 FI01141 FI01140 BACKPLN DEVTERM
3010	Disk device returned wrong response to IOP	DISKDRV DISKTRY BACKPLN STORIOA FI01141 FI01140 DEVTERM
3020	Storage subsystem configuration error  If an MES is being installed, verify the configuration.	DISKDRV DISKTRY FI01106 STORIOA BACKPLN FI01141 FI01140 DEVTERM
3029	A device replacement has occurred  No action required. This reference code is logged for information only.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3100	Tape/CD or disk bus interface error occurred  Perform "DU-PIP3" on page 506.	STORIOA DISKDRV FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM
3109	IOP timed out a disk command	DISKDRV STORIOA FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM
3110	Disk bus interface error occurred  Perform "DU-PIP3" on page 506.	STORIOA DISKDRV FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM
3130	Device Licensed Internal Code  The device is not supported with the level of code currently on the system. Contact your next level of support.	SVCDOS
7000	Disk sector read error  No action required. This reference code is logged for information only.	DISKDRV
7001	Temporary disk data error  A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	DISKDRV
7003	Device format error  If the disk has not been formatted by the system, initialize and format the disk. See "Work with disk unit recovery" in the <i>AS/400 Service Functions</i> .	
7004	System log entry only, no service action required	
7050	Data compression failure  Contact your next level of support.	SVCDOS
7051	Compressed device and compression IOA are not compatible  The customer should perform the "Recovering From 6xxx7051 SRC" procedure in the <i>Backup and Recovery</i> , SC41-5304-04.	COMPRES1
7052	Data compression warning  The customer should perform the "Recovering From 6xxx7052 SRC" procedure in the <i>Backup and Recovery</i> , SC41-5304-04.	SVCDOS
FFF2	Disk motor problem	DISKDRV
FFF3	Disk media format bad	DISKDRV

## 660x, 671x, 673x

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFF4	Disk device problem	DISKDRV STORIOA
FFF5	Disk sector read error  A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	DISKDRV
FFF6	Disk device detected recoverable error  A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	DISKDRV
FFF7	Temporary disk data error  No action required. This reference code is logged for information only.	DISKDRV
FFF8 to FFF9	Temporary disk data error  A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	DISKDRV
FFFA	Temporary disk bus error  A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	DISKDRV STORIOA BACKPLN FI01141 FI01140 DEVTERM
FFFE	Temporary disk bus error  A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> .	DISKDRV STORIOA FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM

### Disk Unit Failing Items

#### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
BACKPLN	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
CMPRES1	Compressed device and compression IOA are not compatible	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Device terminator	Problem Analysis; Symbolic FRU Isolation

Failing Item	Description	Document Description
DISKDRV	Disk drive and logic card	Problem Analysis; Symbolic FRU Isolation
STORIOA	Active I/O processor	Problem Analysis; Symbolic FRU Isolation
SVCDPCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation

## (6A58,6A59) Workstation Adapter Console Reference Codes

The workstation adapter console detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0AD2 to 0AD3	Communications adapter card test failed	FI00718
0B25	Communications adapter card test failed	FI00719 FI00718 FI00727
0BA0, 0BAB, 0BB0, 0BD0 to 0BD1	Communications adapter card test failed	FI00719 FI00718
0BEE	I/O card Licensed Internal Code ended abnormally	FI00719 FI00718
0C10	Communications adapter card test failed	FI00719 FI00718 FI00727
0C20	Communications adapter card test failed	FI00719 FI00718
0C30	Adapter card failed modem interface test	FI00719 FI00718
0C40, 0C43	Synchronous-data-link-control send-receive test failed	FI00719 FI00718
0C50, 0C53	Binary synchronous control send-receive test failed	FI00719 FI00718
0C60, 0C63	Asynchronous send-receive test failed	FI00719 FI00718
0C70, 0C80	Communications adapter card test failed	FI00719 FI00718

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0C90	Communications adapter card X.21 test failed	FI00719 FI00718
0CA1, 0CC0	Communications adapter card test failed	FI00719 FI00718
5007	Diagnostic wrap test completed; no errors detected	
5008	Diagnostic wrap test completed; error was detected	FI00719 DPAC FI00718
FFFF	User suspected communications problem.	UNAUPPR

### Workstation Adapter Console Failing Items

#### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
DPAC	Communications two-port adapter cable	Problem Analysis; Symbolic FRU Isolation
UNAUPPR	User suspected communications problem.	

### (7208) Tape Drive Reference Codes

An 8-mm tape drive failure occurred.

**Note:** For tape device and IOP reset procedures, see "TU-PIP4" on page 680.

1. Is the operating system available and can you enter commands from the command line?

**Yes      No**

↓ Go to step 5 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *AS/400 Service Functions*)?

**No      Yes**

↓ Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit:

- In Canada, the United States, and all other countries use part 16G8467.

4. Attempt the failing operation again.

Does the operation complete successfully?

**No      Yes**

- ↓ The original data cartridge is defective. The problem has been corrected.

**This ends the procedure.**

5. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.

6. Is the failing tape unit located in a type 9427 Tape Library device?

**Yes      No**

- ↓ Go to step 8.

7. Go to "(9427) Tape Library Reference Codes" on page 274.

8. Does the label on the front of the 7208 Tape Drive show 7208-002?

**No      Yes**

- ↓ See "(7208) Model 002 Tape Drive Reference Codes" and find the unit reference code.

9. The label shows 7208-012. See "(7208) Model 012 Tape Drive Reference Codes" on page 265 and find the unit reference code.

### **(7208) Model 002 Tape Drive Reference Codes**

#### **Notes:**

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0001	<p>Tape unit failure</p> <ol style="list-style-type: none"> <li>1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition.</li> <li>2. Switch off power to the tape unit.</li> <li>3. Switch on power to the tape unit.</li> <li>4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593).</li> <li>5. Use a new data cartridge if saving data.</li> </ol> <p>Also see the procedure for reference code FFFF.</p>	MLVTMED 91F0914

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0002	<p>Tape unit formatter failure</p> <ol style="list-style-type: none"> <li>1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition.</li> <li>2. Switch off power to the tape unit.</li> <li>3. Switch on power to the tape unit.</li> <li>4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593).</li> <li>5. Use a new data cartridge if saving data.</li> </ol> <p>Also see the procedure for reference code FFFF.</p>	91F0914 MLVTMED
0003	<p>Tape unit servo failure</p> <ol style="list-style-type: none"> <li>1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition.</li> <li>2. Switch off power to the tape unit.</li> <li>3. Switch on power to the tape unit.</li> <li>4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593).</li> <li>5. Use a new data cartridge if saving data.</li> </ol> <p>Also see the procedure for reference code FFFF.</p>	91F0914 MLVTMED
0004	<p>Tape unit motion failure</p> <ol style="list-style-type: none"> <li>1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition.</li> <li>2. Switch off power to the tape unit.</li> <li>3. Switch on power to the tape unit.</li> <li>4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593).</li> <li>5. Use a new data cartridge if saving data.</li> </ol> <p>Also see the procedure for reference code FFFF.</p>	MLVTMED 91F0914
3002	<p>I/O processor addressed the tape unit; no response</p> <p>The tape unit did not respond to a command sent by the IOP.</p> <ol style="list-style-type: none"> <li>1. Ensure that the tape unit is powered on. If the tape unit does not become powered on, refer to the "Maintenance Analysis Procedures" in the <i>7208 Model 2 8 mm Tape Drive Service Guide, SA23-2640</i>, to analyze the problem.</li> <li>2. Switch off power to the tape unit.</li> <li>3. Reseat the signal cable to the tape unit.</li> <li>4. Reseat the signal cable to the IOP.</li> <li>5. Switch on power to the tape unit.</li> </ol>	91F0914 81F9128 FI00830 FI00141 91F0721 53F3861 42F7300
3005	<p>Blank tape or BOT encountered</p> <p>The tape unit has found blank tape or BOT.</p> <p>When using a new data cartridge, the tape must first be initialized.</p> <p>This error can also occur when reading a tape if the tape was removed from the tape unit before writing was complete.</p> <p>Also see the procedure for reference code FFFF.</p>	MLVTMED 91F0914 AJEDA00



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3010	<p>Illegal or unsupported tape unit response</p> <ol style="list-style-type: none"> <li>1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition.</li> <li>2. Switch off power to the tape unit.</li> <li>3. Switch on power to the tape unit.</li> <li>4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593).</li> <li>5. Use a new data cartridge if saving data.</li> </ol> <p>Also see the procedure for reference code FFFF.</p>	91F0914 AJEDA00
3100	<p>IOP to tape unit interface error</p> <ol style="list-style-type: none"> <li>1. Ensure that the tape unit is powered on. If the tape unit does not become powered on, refer to the "Maintenance Analysis Procedures" in the <i>7208 Model 2 8 mm Tape Drive Service Guide</i>, SA23-2640, to analyze the problem.</li> <li>2. Switch off power to the tape unit.</li> <li>3. Reseat the signal cable to the tape unit.</li> <li>4. Reseat the signal cable to the IOP.</li> <li>5. Switch on power to the tape unit.</li> </ol>	91F0914 FI00141 FI00830 91F0721 42F7300 53F3861 81F9128 AJEDA00
3110	<p>Tape unit command timeout</p> <p>The tape unit did not complete a command sent by the IOP in the time allowed.</p> <ol style="list-style-type: none"> <li>1. Ensure that the tape unit is powered on. If the tape unit does not become powered on, refer to the "Maintenance Analysis Procedures" in the <i>7208 Model 2 8 mm Tape Drive Service Guide</i>, SA23-2640, to analyze the problem.</li> <li>2. Switch off power to the tape unit.</li> <li>3. Reseat the signal cable to the tape unit.</li> <li>4. Reseat the signal cable to the IOP.</li> <li>5. Switch on power to the tape unit.</li> </ol>	91F0914 FI00141 FI00830 91F0721 42F7300 53F3861 81F9128 AJEDA00
FF4D	<p>IOP to tape unit interface error; logged only</p> <p>No action required. This reference code is logged for information only.</p>	
FF5D	<p>Tape unit response error; logged only</p> <p>No action required. This reference code is logged for information only.</p>	
FFF6	<p>Volume statistics; logged only</p> <p>No action required. This reference code is logged for information only.</p>	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFFE	<p>Read data error: tape path dirty</p> <p>This error may be caused by a dirty recording head, poor or damaged tapes, worn or damaged data cartridges, or using a format that is not correct.</p> <ol style="list-style-type: none"> <li>1. Switch off power to the tape unit.</li> <li>2. Switch on power to the tape unit.</li> <li>3. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593).</li> <li>4. Visually inspect the data cartridge. If it is damaged, discard it.</li> <li>5. Check the lifetime statistics on the system for this tape volume ID (see the <i>System Operation</i> information). If the cartridge has a history of tape errors, discard it.</li> </ol> <p>If the data on the tape was not written by an AS/400 system, the format may not be correct.</p> <p>Do not use the cleaning cartridge more than 12 times.</p> <p>Each data cartridge must have a unique volume ID label. The user must assign a volume ID when the tape is initialized (INZTAP).</p>	MLVTMED 91F0914
FFFF	<p>Write data error: tape path dirty</p> <p>This error may be caused by a dirty recording head, poor or damaged tapes, worn or damaged data cartridges, or using a format that is not correct.</p> <ol style="list-style-type: none"> <li>1. Switch off power to the tape unit.</li> <li>2. Switch on power to the tape unit.</li> <li>3. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593).</li> <li>4. Visually inspect the data cartridge. If it is damaged, discard it.</li> <li>5. Check the lifetime statistics on the system for this tape volume ID (see the <i>System Operation</i> information). If the cartridge has a history of tape errors, discard it.</li> </ol> <p>If the data on the tape was not written by an AS/400 system, the format may not be correct.</p> <p>Do not use the cleaning cartridge more than 12 times.</p> <p>Each data cartridge must have a unique volume ID label. The user must assign a volume ID when the tape is initialized (INZTAP).</p>	MLVTMED 91F0914

## Model 002 Tape Drive Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
42F7300	Fan	7208 8mm Tape Drive service information

Failing Item	Description	Document Description
53F3861	Internal signal cable	7208 8mm Tape Drive service information
81F9128	Power supply	7208 8mm Tape Drive service information
91F0721	Terminating plug	7208 8mm Tape Drive service information
91F0914	Tape drive	7208 8mm Tape Drive service information
AJEDA00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
MLVTMED	Defective removable media	7208 8mm Tape Drive service information

## (7208) Model 012 Tape Drive Reference Codes

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0001	<p>Tape unit failure</p> <p>The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking.</p> <p>Perform "TU-PIP2" on page 675.</p>	<p>46G2227</p> <p>ML2TMED</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
030B	<p>Tape unit detected a read error on the tape medium</p> <p>Read (or write) errors may be caused by:</p> <ul style="list-style-type: none"> <li>• Poor or damaged tape</li> <li>• Dirty read/write heads</li> <li>• Damaged data cartridges</li> <li>• Using a data cartridge previously recorded in a format or density that is not correct</li> <li>• Using the wrong data cartridge (for example, one in a different format or density from another set of data cartridges)</li> </ul> <p>If the data on the tape was not written by an AS/400 system, the format or the density may not be correct. Get or make a new copy of the data cartridge.</p> <p>If you are performing a write or a save operation, initialize the tape. See the note below.</p> <p>If you are performing a read or a restore operation, the tape may be worn or the device that wrote the tape may be the cause of the problem.</p> <p>Perform "TU-PIP2" on page 675.</p> <p>When the system is available, perform the following:</p> <ul style="list-style-type: none"> <li>• Verify the operation of the tape drive. Use the VFYTAP system command.</li> </ul> <p><b>Note:</b> When a tape is initialized, a new label is recorded at the beginning of the tape, and any data recorded previously is erased and overwritten. To initialize used tapes, use the INZTAP system command with "Check for active files" option of *NO.</p> <p>Use of the INZTAP "Clear" (security erase) option is not recommended. The 7208 Tape Drive performs a write operation to erase all of the tape; writing (erasing) a full-size tape takes up to 3.5 hours.</p>	ML2TMED 46G2227 46G3934 42F7300
0311, 0316	<p>Tape unit detected a read error on the tape medium</p> <p>Perform the Action for reference code 030B.</p>	ML2TMED 46G2227 46G3934 42F7300
031C	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape format is not known or not compatible. The data cartridge may not have been recorded on an AS/400 system.</p> <p>Get another copy of the data cartridge recorded in a format and density given support by the AS/400 system (see the <i>System Operation</i> information).</p>	ML2TMED 46G2227
0336	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape format is not known or not compatible. The data cartridge may not have been recorded on an AS/400 system.</p> <p>Get another copy of the data cartridge recorded in a format and density given support by the AS/400 system (see the <i>System Operation</i> information).</p>	ML2TMED 46G2227 46G3934 42F7300
0337 to 0338, 033D	<p>Tape unit detected a read error on the tape medium</p> <p>Perform the Action for reference code 030B.</p>	ML2TMED 46G2227 46G3934 42F7300

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0395 to 0397, 039D to 039F	Tape unit detected a write error on tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227
03AE, 03B0	Tape unit detected a read or write error on tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227
03B3 to 03B4	Tape unit detected a write error on tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227
03B5	Tape unit detected a read error on the tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227
0417 to 0419, 0458, 045A, 0467 to 0468, 046D, 0498 to 049A, 049C, 04A1 to 04A8, 04AB to 04AD, 04FA, 04FC to 04FD	Tape unit failure The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking. Perform "TU-PIP2" on page 675.	46G2227 ML2TMED 46G3934 42F7300
3002	I/O processor addressed the tape unit; no response  The tape drive did not respond to commands from the IOP. Perform the following: 1. Ensure that the system interface cable is connected. 2. Ensure that power is on.  If the above items are correct, perform the following: 1. "TU-PIP1" on page 672. 2. "TU-PIP3" on page 677.	46G2227 46G3934 FI00830 FI00141 46G2599 17G1500 42F7300
3004	Tape unit failed after Licensed Internal Code was loaded  The tape drive does not respond to IOP commands after new Licensed Internal Code was transferred to the tape drive. Perform "TU-PIP4" on page 680.	46G2227
3005	Blank tape or BOT encountered  The tape drive has found a blank tape or BOT.  When using a new data cartridge, the tape must first be initialized.  This error can also occur when reading a tape if that tape was removed from the tape drive before writing was complete.  Also see the Action for reference code 030B.	ML2TMED 46G2227 AJEDA00
3010	Illegal or unsupported tape unit response  The tape drive returned a response to the IOP that is illegal or is not given support.  Perform the following: 1. "TU-PIP1" on page 672. 2. TU-PIP3 in "Tape Unit Problem Isolation Procedures" on page 672	46G2227 AJEDA00

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3100	<p>Interface error detected by I/O processor or by tape unit</p> <p>The IOP or the device detected a permanent error on the interface to the system.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. "TU-PIP1" on page 672.</li> <li>2. "TU-PIP3" on page 677.</li> </ol>	<p>46G2227 FI00141 FI00830 46G2599 42F7300 17G1500 46G3934 AJEDA00</p>
3110	<p>Tape unit command timeout</p> <p>The tape drive did not complete a command sent by the IOP in the time allowed.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. "TU-PIP1" on page 672.</li> <li>2. TU-PIP2 in "Tape Unit Problem Isolation Procedures" on page 672</li> </ol>	<p>46G2227 FI00141 FI00830 46G2599 42F7300 17G1500 46G3934 AJEDA00</p>
4016 to 4017	Licensed Internal Code for the tape unit is not correct	AJEDA00
9020	<p>I/O processor detected a SCSI bus configuration error</p> <p>Before exchanging any parts, verify that the following conditions are not present:</p> <ul style="list-style-type: none"> <li>• Tape and DASD devices attached to an I/O Processor that does not support attachment of both tape and DASD devices at the same time.</li> <li>• A device type or model that is not given support.</li> </ul>	<p>UL2CNFG 46G2227 FI00130</p>
9100	<p>Interface error detected by I/O processor or by tape unit</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>3. Ensure that a terminating plug is attached to the device.</li> </ol>	<p>46G2227 FI00131 46G3934 FI00830 46G2599 17G1500</p>
9200	<p>I/O processor addressed the tape unit; no response</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable.</li> <li>3. Ensure that the terminating plug is attached to the device.</li> </ol>	<p>46G2227 46G3934 FI00830 FI00131 46G2599 17G1500 42F7300</p>
9201	<p>Tape unit command timeout</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable.</li> <li>3. Ensure that the terminating plug is attached to the device.</li> </ol>	<p>46G2227 46G3934 FI00830 FI00131 46G2599 17G1500 42F7300</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9202	<p>Tape unit failed after Licensed Internal Code was loaded</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable.</li> <li>3. Ensure that the terminating plug is attached to the device.</li> </ol>	<p>46G2227 46G3934 FI00830 FI00131 46G2599 17G1500 42F7300</p>
9210	Illegal or unsupported tape unit response	<p>46G2227 FI00130 FI00131</p>
9300	<p>Tape unit failure</p> <p>The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking.</p> <p>Perform "TU-PIP2" on page 675.</p>	<p>46G2227 ML2TMED 46G3934 42F7300</p>
9301	<p>Tape device failure, redundancy lost</p> <p>The tape device detected a hardware failure that does not prevent the tape unit from completed the current operation.</p> <p>Refer to the Tape unit service information to determine the failing item.</p>	<p>46G2227 ML2TMED 46G3934 42F7300</p>
9302	<p>Tape device failure or media error</p> <p>The tape unit detected a failure that may be caused by a hardware failure or a media error.</p> <p>Refer to the tape unit service information for possible information on diagnostic tests that can be run to isolate between hardware and media failures.</p>	<p>ML2TMED 46G2227 46G3934 42F7300</p>
9310	Licensed Internal Code for the tape unit is not correct	<p>46G2227 FI00130</p>
9320	Tape device Licensed Internal Code failure	<p>FI00130 46G2227</p>
9350	<p>Tape unit detected a read or write error on tape medium</p> <p>A permanent read or write error occurred. Clean the tape unit and retry the operation.</p> <p>If cleaning the tape unit does not correct the problem, exchange the tape media.</p>	<p>ML2TMED 46G2227 46G3934 42F7300</p>
9351	<p>Tape with excessive error rate was mounted in tape device.</p> <p>The tape unit detected that the mounted tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.</p>	<p>ML2TMED UL2CLN 46G2227</p>
9355	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape unit has detected that the data format on the tape media is not supported.</p> <p>Clean the tape unit and retry the operation.</p> <p>If the operation continues to fail, use a different tape cartridge.</p>	<p>UL2USR1 ML2TMED UL2CLN 46G2227</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9500	I/O processor Licensed Internal Code error  If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.	FI00130
9800 to 9803	I/O processor successfully recovered from temporary error  No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced.  This reference code is used for ending Online Problem Analysis with a list of failing items. (Information only)	
9899	Problem analysis completed, the problem has been corrected.  This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	UL2FIXD
9900, FF09	Licensed Internal Code for tape unit was not upgraded  The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape drive was not completed.  The tape drive will continue to operate with the previous LIC. You may do either of the following: <ul style="list-style-type: none"> <li>• Wait for next IPL when the system will attempt to load the LIC for the tape drive again.</li> <li>• Perform "TU-PIP4" on page 680 to reset the IOP and the tape drive. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.</li> </ul>	UL2WAIT
FF4D	I/O processor successfully recovered from temporary error  No action required. This reference code is logged for information only.  When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshold has been exceeded.	46G2227 FI00141 FI00830 46G2599 46G3934 17G1500 42F7300 AJEDA00
FF5D	I/O processor successfully recovered from temporary error  No action required. This reference code is logged for information only.  When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshold has been exceeded.	46G2227 46G3934 FI00830 FI00141 46G2599 17G1500 42F7300
FFF6	Tape volume statistics logged (no action required)  No action required. This reference code is logged for information only.	
FFF8	Asynchronous device attached; synchronous device expected  The attached device is operational and working in the asynchronous mode of data transfer.  The IBM tape unit uses the synchronous mode of data transfer; if the attached device is an IBM tape unit, exchange the tape unit.	46G2227



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFFE	Tape unit detected a read error on the tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227 46G3934 42F7300
FFFF	Tape unit detected a write error on tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227

## Model 012 Tape Drive Failing Items

### Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 359.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
17G1500	Internal signal cable	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
42F7300	Fan	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
46G2227	Tape drive	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
46G2599	Terminating plug	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
46G3934	Power supply	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
AJEDA00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
ML2TMED	Defective removable media	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
UL2CLN	Tape unit needs cleaning	Magnetic tape subsystem operator’s information
UL2CNFG	Tape configuration detected by I/O processor; not valid	Magnetic tape subsystem operator’s information
UL2USR1	Operator action required	Magnetic tape subsystem operator’s information
UL2WAIT	Wait to next IPL or perform TU-PIP4	Problem Analysis

## (9331) Diskette Unit Reference Codes

A 9331 Diskette Unit failure occurred.

1. Power off the unit, then power on the unit.

**Note:** If the unit does not have a Power switch, power off, then power on the system.

2. Verify that the 9331 is powered on.
3. Verify that the interface cable connections are correct for each 9331.

4. If this does not correct the problem, look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
5. See the *9331 Diskette Unit Service Information: Service Guide and Reference Code Guide* and find the unit reference code.

## (9337) Disk Unit Reference Codes

A 9337 Disk Unit failure occurred.

Before exchanging a FRU containing a disk drive, go to “Start Disk Service Here” in the “Recovery Procedures” chapter of the *FC 504x Problem Analysis and Repair and Parts* to save customer data.

1. Verify that the 9337 is powered on.
2. Verify that the interface cable connections are correct for each 9337.
3. If the problem is displayed on the control panel or is filled out on the problem summary form, the 4 rightmost characters of the Data display for function 11-3 is the unit reference code. If the problem is displayed using WRKPRB, the four rightmost characters of the “System reference code” field is the unit reference code.
4. If these 4 characters are 0000, no unit reference code is available. This condition occurs when a 9337 error is detected, but the 9337 is not responding. See the *9337 Disk Array Service Information* for problem analysis.
5. If these 4 characters are **not** 0000, see the *9337 Disk Array Service Information* for the specific reference code.
  - If the “9337 Problem Recovery Procedures” in the “9337 Unit Reference Code” section of the *9337 Disk Array Service Information* need system support functions to perform a problem recovery procedure, see the “Recovery Procedures” chapter of the *FC 504x Problem Analysis and Repair and Parts* for the correct procedure.
  - The 4 rightmost characters in the Data display for function 15-3 consist of a 1-character level code and a 3-character model number.
  - The Data display for function 18-3 is the serial number of the 9337.
  - The Data display for function 16-3 is the controller.
  - The Data display for function 13-3 is the direct select address.

**Note:** See “System Addressing Schemes” in the “Service Reference Procedures and Information” chapter of the *FC 504x Problem Analysis and Repair and Parts* to help find the failing disk unit.

- The fourth character of the Data display for function 14-3 is the 9337 actuator address.
- If the problem is displayed using WRKPRB, the following fields are useful:
  - “Model” field
  - “Serial number” field
  - Address information (see SRC Address Formats in “Chapter 5. Locations, Addresses, and Service Reference Information” on page 709 for more information about addresses).

**Note:** For 9337, the “actuator address” is equivalent to the “device address”.

## (9347) Tape Unit Reference Codes

A tape or a 9347 Tape Unit failure occurred.

**Note:** If the system is available, use the online diagnostic tests when possible. Use WRKPRB (the Work with Problem command) to determine if a recent problem has been entered in the problem log, or use VFYTAP (the Verify Tape command). Other helpful commands are WRKHDWRSC \*STG (Work with Hardware Resources) and WRKCFGSTS \*DEV \*TAP (Work with Configuration Status). For tape device and IOP reset procedures, see "TU-PIP4" on page 680.

1. Verify that the 9347 Tape Unit is powered on.
2. Verify that the address switch setting and the interface cable connections are correct for each 9347 Tape Unit.
3. Clean the tape path as described in the *9347 Tape Unit Service Guide*
4. Load the first tape.
5. Start a type D IPL from the system unit control panel.
6. Does the IPL complete successfully?

**No      Yes**

↓      The problem has been corrected.

**This ends the procedure.**

7. Obtain another copy of the tape. Repeat steps 4 and 5 using the new tape. If this does not correct the problem, continue with step 8.
8. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
9. If the tape unit indicator panel shows an error condition, see the *9347 Tape Unit Service Guide* for more information.
10. See the *9347 Tape Unit Service Guide* and find the unit reference code.

## (9348) Tape Unit Reference Codes

A tape or a 9348 Tape Unit failure occurred.

**Note:** If the system is available, use the online diagnostic tests when possible. Use WRKPRB (the Work with Problem command) to determine if a recent problem has been entered in the problem log, or use VFYTAP (the Verify Tape command). Other helpful commands are WRKHDWRSC \*STG (Work with Hardware Resources) and WRKCFGSTS \*DEV \*TAP (Work with Configuration Status). For tape device and IOP reset procedures, see "TU-PIP4" on page 680.

1. Verify that the 9348 Tape Unit is powered on.
2. Verify that the interface cable connections are correct for each 9348 Tape Unit.
3. Clean the tape path as described in the *9348 Tape Unit Service Information*
4. Load the first tape.
5. Start a type D IPL from the system unit control panel.

Does the IPL complete successfully?

**No      Yes**

↓      The problem has been corrected.

**This ends the procedure.**

6. Obtain another copy of the tape. Repeat steps 4 and 5 using the new tape. If this does not correct the problem, continue with step 7.
7. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.

8. If the tape unit indicator panel shows an error condition, see the *9348 Tape Unit Service Information* and find the unit reference code.

## (9427) Tape Library Reference Codes

The tape library detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0001	Tape unit failure  Refer to the 9427 8mm Tape Cartridge Library Service Guide.	
03xx	Tape unit detected a read error on the tape medium  Read (or write) errors may be caused by: <ul style="list-style-type: none"> <li>• Poor or damaged tape</li> <li>• Dirty read/write heads</li> <li>• Damaged data cartridges</li> <li>• Using a data cartridge previously recorded in a format or density that is not correct</li> <li>• Using the wrong data cartridge (for example, one in a different format or density from another set of data cartridges)</li> </ul> Do the following: <ol style="list-style-type: none"> <li>1. Clean the tape unit and retry the operation.</li> <li>2. If cleaning the tape unit does not correct the problem, exchange the tape media.</li> </ol> Refer to the 9427 8mm Tape Cartridge Library Service Guide for additional information.	
04xx	Tape unit failure  The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking.  Refer to the 9427 8mm Tape Cartridge Library Service Guide.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3xxx	Device or interface error.  Refer to the 9427 8mm Tape Cartridge Library Service Guide.	
4016 to 4017	Licensed Internal Code for the tape unit is not correct	AJEDA00
9020	I/O processor detected a SCSI bus configuration error  Before exchanging any parts, verify that the following conditions are not present: <ul style="list-style-type: none"> <li>• Tape and DASD devices attached to an I/O Processor that does not support attachment of both tape and DASD devices at the same time.</li> <li>• A device type or model that is not given support.</li> </ul>	ULYCNFG 86G9251 FI00130 86G9254
9100	Interface error detected by I/O processor or by tape unit  Before exchanging any parts, do the following: <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are no bent or damaged pins on the SCSI cable.</li> <li>3. Ensure that a terminating plug is attached to the device.</li> </ol>	86G9251 FI00131 86G9254 EXTSCSI 86G9255 86G9274 17G1934 FI00130
9200	I/O processor addressed the tape unit; no response  Before exchanging any parts, do the following: <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable.</li> <li>3. Ensure that the terminating plug is attached to the device.</li> </ol>	86G9251 86G9274 86G9254 FI00131 EXTSCSI 17G1934 87G1531 86G9255
9201	Tape unit command timeout  Before exchanging any parts, do the following: <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable.</li> <li>3. Ensure that the terminating plug is attached to the device.</li> </ol>	86G9251 FI00131 86G9254 EXTSCSI 17G1934 86G9255 86G9274 FI00130

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9202	<p>Tape unit failed after Licensed Internal Code was loaded</p> <p>Before exchanging any parts, do the following:</p> <ol style="list-style-type: none"> <li>1. Ensure that the device is powered on.</li> <li>2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable.</li> <li>3. Ensure that the terminating plug is attached to the device.</li> </ol>	<p>86G9251 86G9274 86G9254</p>
9210	Illegal or unsupported tape unit response	<p>86G9251 FI00130 FI00131</p>
9300	<p>Tape unit failure</p> <p>The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking.</p> <p>Perform "TU-PIP2" on page 675.</p>	<p>86G9251 LIBDEV MLYTMED 86G9274 86G9255</p>
9301	<p>Tape device failure, redundancy lost</p> <p>The tape device detected a hardware failure that does not prevent the tape unit from completed the current operation.</p> <p>Refer to the Tape unit service information to determine the failing item.</p>	<p>86G9251 LIBDEV MLYTMED 86G9274 86G9255</p>
9302	<p>Tape device failure or media error</p> <p>The tape unit detected a failure that may be caused by a hardware failure or a media error.</p> <p>Refer to the tape unit service information for possible information on diagnostic tests that can be run to isolate between hardware and media failures.</p>	<p>MLYTMED 86G9251</p>
9310	Licensed Internal Code for the tape unit is not correct	<p>86G9251 FI00130</p>
9320	Tape device Licensed Internal Code failure	<p>FI00130 86G9251</p>
9350	<p>Tape unit detected a read or write error on tape medium</p> <p>A permanent read or write error occurred. Clean the tape unit and retry the operation.</p> <p>If cleaning the tape unit does not correct the problem, exchange the tape media.</p>	<p>MLYTMED 86G9251</p>
9351	<p>Tape with excessive error rate was mounted in tape device.</p> <p>The tape unit detected that the mounted tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.</p>	<p>MLYTMED ULYCLN 86G9251</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9355	<p>The data format is incorrect; the tape cannot be read</p> <p>The tape unit has detected that the data format on the tape media is not supported.</p> <p>Clean the tape unit and retry the operation.</p> <p>If the operation continues to fail, use a different tape cartridge.</p>	ULYUSR1 MLYTMED ULYCLN 86G9251
9500	<p>I/O processor Licensed Internal Code error</p> <p>If the system is operational, take a dump of the I/O processor data. For more information, see the <i>AS/400 Service Functions</i> information or ask your next level of support for assistance.</p>	FI00130
9600	<p>Equipment Check Failure on Library Device.</p> <p>See library device service information to resolve the error.</p>	LIBDEV
9800 to 9803	<p>I/O processor successfully recovered from temporary error</p> <p>No action required. This reference code is logged for information only.</p>	
9810	<p>Problem analysis has determined a part should be replaced.</p> <p>This reference code is used for ending Online Problem Analysis with a list of failing items. (Information only)</p>	
9899	<p>Problem analysis completed, the problem has been corrected.</p> <p>This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.</p>	ULYFIXD
9900	<p>Licensed Internal Code for tape unit was not upgraded</p> <p>The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape drive was not completed.</p> <p>The tape drive will continue to operate with the previous LIC. You may do either of the following:</p> <ul style="list-style-type: none"> <li>• Wait for next IPL when the system will attempt to load the LIC for the tape drive again.</li> <li>• Perform "TU-PIP4" on page 680 to reset the IOP and the tape drive. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.</li> </ul>	ULYWAIT

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FF09	<p>Licensed Internal Code for tape unit was not upgraded</p> <p>The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape drive was not completed.</p> <p>The tape drive will continue to operate with the previous LIC. You may do either of the following:</p> <ul style="list-style-type: none"> <li>• Wait for next IPL when the system will attempt to load the LIC for the tape drive again.</li> <li>• See the system service documentation to reset the IOP and the tape drive. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.</li> </ul>	ULYWAIT
FF4D	<p>I/O processor successfully recovered from temporary error</p> <p>No action required. This reference code is logged for information only.</p> <p>When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshold has been exceeded.</p>	86G9251 FI00141 EXTSCSI 17G1934 86G9274 86G9255 AJSLC01
FF5D	<p>I/O processor successfully recovered from temporary error</p> <p>No action required. This reference code is logged for information only.</p> <p>When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshold has been exceeded.</p>	86G9251 86G9274 EXTSCSI FI00141 17G1934 86G9255
FFF6	<p>Tape volume statistics logged (no action required)</p> <p>No action required. This reference code is logged for information only.</p>	
FFF8	<p>Asynchronous device attached; synchronous device expected</p> <p>The attached device is operational and working in the asynchronous mode of data transfer. The IBM tape unit uses the synchronous mode of data transfer; if the attached device is an IBM tape unit, exchange the tape unit.</p>	86G9251
FFFE	<p>Tape unit detected a read error on the tape medium</p> <p>Perform the Action for reference code 030B.</p>	MLYTMED 86G9251 86G9274
FFFF	<p>Tape unit detected a write error on tape medium</p> <p>Perform the Action for reference code 030B.</p>	MLYTMED 86G9251

## Tape Library Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.



2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
17G1934	Terminating plug	Magnetic tape subsystem service information
86G9251	Tape drive	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
86G9251	Tape drive	Magnetic tape subsystem service information
86G9254	Controller logic card	Magnetic tape subsystem service information
86G9255	Internal signal cable	Magnetic tape subsystem service information
86G9274	Power supply	Magnetic tape subsystem service information
87G1531	Operator Panel/LCD Assembly	Magnetic tape subsystem service information
AJSLC01	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
EXTSCSI	Cable assembly	Problem Analysis; Symbolic FRU isolation
LIBDEV	Media Library Device	Magnetic tape subsystem service information
MLYTMED	Defective removable media	System operation information
ULYCLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
ULYCNFG	Tape configuration detected by I/O processor; not valid	Magnetic tape subsystem operator's information
ULYUSR1	Operator action required	Magnetic tape subsystem operator's information
ULYWAIT	Wait to next IPL or perform TU-PIP4	Problem Analysis

## (A1xx, B1xx) Service Processor Reference Codes

If the SRC is A1xx 3xxx, see *Working with Storage Dumps* in the *AS/400 Service Functions* information.

If the SRC is A1xx 8xxx, go to “Powering Off the System” on page 789.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the

## A1xx, B1xx

address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.

3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1933	IPL command rejected; bus 1 load-source unit not ready  Make the load source device ready. If load source device is ready and error still exists, replace the failing item. If the load source device is a tape or CD storage unit use FI02092.	FI00098 FI00096
4500	Problem detected with MFIOP	FI00020
4501	System processor card failure	PROCARD
4502	Any device attached to Bus 1  Follow bus isolation procedures to diagnose the problem.	FI00050
4503	Any device attached to Bus 1 or the Load Source IOP	FI00050 FI00096
4504	IPL command rejected; load-source device failed or not found	FI00098 FI00096 STORIOA FI00071 FI00121
4505	Problem with load source device media  <b>Note:</b> If the system has undergone a recent hardware upgrade, please check the installation procedures for required corresponding software upgrades.  If the failing system is going through an IMPI to PowerPC AS upgrade and the original IMPI load source disk unit is still associated with the MFIOP, do the following:  Change the address of the original IMPI load source disk unit so that 1) the DSA is different than used on IMPI and 2) the PowerPC AS load source has a lower DSA than the original IMPI load source.	FI00072
4506	Problem detected with control panel	FI00124
4507	Tape or CD storage unit failure  Before replacing any FRU verify the load source device is ready and the correct IPL media is loaded properly. To determine the alternate load source device (see “Determining the Load-Source Disk and Alternate IPL Device” on page 786)	FI00092 FI00072 FI00050
4509	Service Processor Problem Isolation Procedure  Please refer to and follow the procedures defined in SP-PIP40.	UCAPIP
4511	Multiple function IOP or system processor failure	FI00020 PROCARD
4512	Clock card  This reference code will only appear on models 530 and 53S.	CLKCARD
4998	Operator/User Error	UCAUSER
4999	Service processor LIC problem	FI00099

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6010	Any device attached to Bus 1	FI00050
8FF0	<p>Information only, no service action required</p> <p>Service processor error log entry.</p> <p>If the secondary refcode is 806A, a successful download of control panel code has occurred.</p> <p>If the secondary refcode is 8EEE, one of the following conditions may have occurred.</p> <p>Operation was successful but current keylock position was not in Auto or normal.</p> <p>The Time-of-Day (TOD) chip had to be reset due to an invalid power-up state. TOD requests will not work successfully until a write TOD is done (CHGSYSVAL QDATE).</p> <p>Timed-Power-On request has been acknowledged. Power on sequences must be set for valid months, days, hours, minutes, and seconds, for future times, and for times when the system will be powered off.</p>	
8FF1	System down, condition reported	

## Service Processor Failing Items

### Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 359.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
CLKCARD	Clock card	Problem Analysis; Symbolic FRU Isolation
PROCARD	System processor card	Problem Analysis; Symbolic FRU Isolation
STORIOA	Storage I/O adapter	Problem Analysis; Symbolic FRU Isolation
UCAPIP	Service Processor Problem Isolation Procedure	
UCAUSER	Option not valid at this time	Service Functions; Working with Storage Dumps

## (A6xx, B6xx) LIC Reference Codes

Perform the following:

1. Find the SRC in the SRC column of the following table.
2. Perform the actions in the *What You Should Do* column.

## A6xx, B6xx

SRC	What You Should Do
11-3 A6xx xxxx	Licensed Internal Code intervention is needed. <ol style="list-style-type: none"><li>1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.</li><li>2. See “Licensed Internal Code (LIC) Reference Codes” and find the unit reference code.</li></ol>
11-3 B6xx xxxx	The Licensed Internal Code detected a failure. <ol style="list-style-type: none"><li>1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.</li><li>2. See “Licensed Internal Code (LIC) Reference Codes” and find the unit reference code.</li><li>3. When working with the product activity log, system LIC entries often occur as a secondary effect of other hardware related entries. The following list is a suggested method of isolating these kinds of problems.<ol style="list-style-type: none"><li>a. Examine the date and time of the informational reference codes.</li><li>b. Determine if any other reference codes were logged at or before the same date and time.</li><li>c. Start the service approach based on these other logged errors.</li></ol></li></ol>

## Licensed Internal Code (LIC) Reference Codes

### Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0000	<p>Operating system status code</p> <p>This reference code is for information only. It is shown in the Product activity log as a side effect of a condition that was detected by LIC.</p> <p>Normally, no action should be taken as a result of information reference codes. However, to isolate the root cause, use these suggestions:</p> <ol style="list-style-type: none"> <li>1. Examine the date and time of the informational reference code.</li> <li>2. Determine if any other reference codes have been logged at or before the same date and time.</li> <li>3. Begin the service approach based on these other logged errors.</li> </ol>		
0102	<p>A machine check occurred during IPL</p> <p>Words 2 to 9 of this SRC contain additional diagnostic information. Record SRC words 1 through 9 before attempting to IPL again and report the problem to your Software Service Provider.</p>		
0103	<p>Main storage dump must be copied for service.</p> <p>Perform "LIC-PIP1" on page 519.</p>		
0104	<p>Terminate Immediate reference code is bad</p> <p>Perform "LIC-PIP8" on page 527.</p>	AJDG301	
0105	<p>More than one request to terminate the system was issued</p> <p>Perform "LIC-PIP8" on page 527.</p>	AJDG301	
0106	<p>Terminate Immediate data is not valid</p> <p>Perform "LIC-PIP8" on page 527.</p>	AJDG301	
0202	<p>Unrecoverable read error</p> <p>Restore the Licensed Internal Code using "Licensed Internal Code Install and Restore" in the <i>AS/400 Service Functions</i> information.</p>		
0244, 0255, 0266	<p>Contact was lost with the device indicated</p> <p>Do not power off the system.</p> <p>Perform "LIC-PIP13" on page 540.</p>	FI00580 FI00500 FI00302 FI00301 AJDG301	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0277	<p>A compression disk unit cannot complete an operation.</p> <p><b>Note:</b> Do not power off the system when performing this procedure.</p> <p>Look at the 4 leftmost characters of the Data display for word 7. These four characters indicate the type of problem that exists and the recovery action to perform.</p> <p>If these characters are 8402 or 2002, the compression disk unit is temporarily full of data. The command to the compression disk is being held. When the storage subsystem controller has created sufficient space on the compression disk unit to contain the data, the command which is being held will be released and the system will resume normal processing. If the system does not resume normal processing within 20 minutes, contact your next level of support.</p> <p>If these characters are 8400 or 2000, the compression disk unit is full of data. The command to the compression disk is being held. Ask the customer to perform the recovery actions in the "Disk Unit Full Considerations" section of the Backup and Recovery Guide, SC41-5304.</p>		
0302	<p>Recursion in exception handler</p> <p>Perform "LIC-PIP8" on page 527.</p>	AJDG301	
0304	<p>Component specific exception handler return code not valid</p> <p>Perform "LIC-PIP8" on page 527.</p>	AJDG301	
0305	<p>Exception while storage management lock is held</p> <p>Perform "LIC-PIP8" on page 527.</p>	AJDG301	
0308	<p>LIC exception code detected a problem</p> <p>Component Specific Exception Handler recursion is detected in an OS/400 process.</p> <p>Perform "LIC-PIP8" on page 527.</p>	AJDG301	
0317	<p>Traceback for code not found</p> <p>Perform "LIC-PIP8" on page 527.</p>	AJDG301	
0323 to 0329	<p>LIC exception code detected a problem</p> <p>Perform "LIC-PIP8" on page 527.</p>	AJDG301	
0333	<p>A branch to a bad address was attempted</p> <p>Perform "LIC-PIP8" on page 527.</p>	AJDG301	
0334	<p>Exception Handler could not be removed</p> <p>Perform "LIC-PIP8" on page 527.</p>	AJDG301	
0335	<p>Code resumed to not valid address following exception</p> <p>Perform "LIC-PIP8" on page 527.</p>	AJDG301	
0401	<p>A machine check occurred during IPL</p> <p>Perform "LIC-PIP8" on page 527.</p>	AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0402	A machine check occurred during authority initialization Perform "LIC-PIP8" on page 527.	AJDG301	
0403	Unhandled exception during IPL or install Perform "LIC-PIP8" on page 527.	AJDG301	
0405	Unhandled exception in authority recovery Perform "LIC-PIP8" on page 527.	AJDG301	
0406	Unhandled exception in data base recovery Perform "LIC-PIP8" on page 527.	AJDG301	
0407	Unhandled exception in data base initialization Perform "LIC-PIP8" on page 527.	AJDG301	
0408	Unhandled exception in journal recovery Perform "LIC-PIP8" on page 527.	AJDG301	
0409	Unhandled exception in journal synchronization Perform "LIC-PIP8" on page 527.	AJDG301	
0410	Unhandled exception in journal clean up Perform "LIC-PIP8" on page 527.	AJDG301	
0411	Unhandled exception in commit recovery Perform "LIC-PIP8" on page 527.	AJDG301	
0412	Unhandled exception in commit initialization Perform "LIC-PIP8" on page 527.	AJDG301	
0413	Rebuild of recovery object index failed Perform "LIC-PIP8" on page 527.	AJDG301	
0414	Install of operating system failed on read from media Perform "LIC-PIP8" on page 527.	FI00300	
0415	Create user profile failed Perform "LIC-PIP8" on page 527.	AJDG301	
0417	Initiating the initial process failed Perform "LIC-PIP8" on page 527.	AJDG301	
0418 to 0419, 0420	The information loaded from the install media is not valid Perform "LIC-PIP8" on page 527.	AJDG301	
0421	Bad return code creating a queue or message Perform "LIC-PIP8" on page 527.	AJDG301	
0422	The Load/Dump command failed Perform "LIC-PIP8" on page 527.	AJDG301	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0439	Opening the IPCF connection failed Perform "LIC-PIP8" on page 527.	AJDG301	
0440	Termination code is not valid Perform "LIC-PIP8" on page 527.	AJDG301	
0441	Power off system command failed Perform "LIC-PIP8" on page 527.	AJDG301	
0443	Programmed IPL command failure Perform "LIC-PIP8" on page 527.	AJDG301	
0446	Error during machine termination Perform "LIC-PIP8" on page 527.	AJDG301	
0447	Failure to reach MI boundary Perform "LIC-PIP8" on page 527.	AJDG301	
0449	Exception in MI boundary manager Perform "LIC-PIP8" on page 527.	AJDG301	
0506	Attempt to destroy a task with critical flag on Perform "LIC-PIP8" on page 527.	AJDG301	
0607	Maximum stack size exceeded in process or task Perform "LIC-PIP8" on page 527.	AJDG301	
0620	Event management index is not usable Perform "LIC-PIP8" on page 527.	AJDG301	
0650	Resource management segment could not be created or extended  A main store dump was initiated.  Words 2 to 9 of this SRC contain additional diagnostic information. Record SRC words 1 through 9.  Perform a system IPL and collect the Product activity log and mainstore dump and provide them along with the recorded SRC information to IBM Service Support.  The problem may also be that there is not enough auxiliary storage.	AJDG301	
0801	Invalid LID directory detected  During system IPL, the LIDMgr detected an I/O failure or media failure while trying to read the LID directory.  Perform "LIC-PIP8" on page 527.	FI00070 FI00300 AJDG301	



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0802	<p>LID directory unusable</p> <p>During system IPL, the LIDMgr detected that the LID directory and associated load source is not usable.</p> <p>Reinstall the Licensed Internal Code using “Licensed Internal Code Install and Restore” in the <i>AS/400 Service Functions</i> information.</p> <p>For more information, contact IBM Service Support.</p>	AJDG301	
0901	<p>The LinkLoader has found its bad flag ON</p> <p>This reference code is usually the result of a system termination while the LinkLoader is performing its work.</p> <p>Reinstall the Licensed Internal Code using “Licensed Internal Code Install and Restore” in the <i>AS/400 Service Functions</i> information.</p>		
0902	<p>Unable to perform programmed IPL</p> <p>The LinkLoader was not successful in performing a programmed IPL.</p> <p>Perform a system IPL. If the problem persists, examine the main storage dump and determine the reason for the failure of the programmed IPL.</p>		
1001	<p>Enqueueing a task to the TDQ which is already enqueued on TDQ</p> <p>Perform “LIC-PIP8” on page 527.</p>	AJDG301	
1103	<p>MISR not readable; must be readable for Normal Mode install</p> <p>MISR is not readable. Perform a manual install to reinitialize the system.</p>		
1104	<p>Failure reading media or not install media</p> <p>Determine that correct install media is loaded. If correct install media is installed, media could be corrupt. Obtain another copy of the install media and reattempt the install. If the install still fails, contact your service representative.</p>		
1201	<p>Critical database segment could not be created</p> <p>Perform “LIC-PIP8” on page 527.</p>	AJDG301	
1204	<p>Error in constraint enforcement</p> <p>Perform “LIC-PIP8” on page 527.</p>	AJDG301	
1210	<p>Object not found in the in-use table</p> <p>Perform “LIC-PIP8” on page 527.</p>	AJDG301	
1215	<p>Error in critical code sequence</p> <p>Perform “LIC-PIP8” on page 527.</p>	AJDG301	
1219	<p>A back leveled driver has been detected</p> <p>Perform “LIC-PIP8” on page 527.</p>	AJDG301	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
1604	<p>Not able to create APPN task</p> <p>An error occurred during task creation which requires a power off of the system.</p> <p>Perform "LIC-PIP8" on page 527.</p>	AJDG301	
1724	<p>An attempt to create a segment failed</p> <p>The create could fail for two reasons:</p> <ul style="list-style-type: none"> <li>• A code problem Perform "LIC-PIP8" on page 527.</li> <li>• No free auxiliary storage on the system Add additional DASD if the create failed because no auxiliary storage was available.</li> </ul>	AJDG301	
1730	<p>An IPL is needed to restore system performance</p> <p>Licensed Internal Code has detected a condition that is impacting system performance. System operation can continue, but system performance may be noticeably reduced until the next IPL.</p> <p>For more information, contact IBM Service Support.</p>	GG3PL01	
3000	<p>Logical partition service function Main Storage Dump.</p> <p>Copy the current main storage dump to media. For more information on how to copy a Main Storage Dump, refer to the AS/400 Service Functions Information (see "Copying a Main Storage Dump" under "Working with Storage Dumps").</p>	AJDG301	
4402	<p>Missing DASD units.</p> <p>Copy the current main storage dump to media. Then exit the Main Storage Dump Manager.</p> <p>For more information on how to perform a Main Storage Dump, refer to AS/400 Service Functions information (see "Copying a Main Storage Dump" under "Working with Storage Dumps").</p>		
4403	<p>Storage Management failed to reach full paging.</p> <p>Copy the current main storage dump to media.</p> <p>For more information on how to perform a Main Storage Dump, refer to AS/400 Service Functions information (see "Copying a Main Storage Dump" under "Working with Storage Dumps").</p>		
4404	<p>Auto copy failed or not attempted.</p> <p>Copy the current main storage dump. If copying to system ASP, existing copies may need to be deleted or renamed. Then exit the Main Storage Dump Manager.</p> <p>For more information on how to perform a Main Storage Dump, refer to AS/400 Service Functions information (see "Copying a Main Storage Dump" under "Working with Storage Dumps").</p>		

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4405	System ASP threshold exceeded after auto copy done.  Delete other system ASP copies or exit the Main Storage Dump Manager and then from DST copy the Auto Copy to media and then delete the Auto Copy in system ASP.		
5001	DST received no response from a work station controller  The workstation I/O processor for the system console did not respond.  Perform the following: 1. Power off the system from the operator panel. 2. Exchange the first workstation I/O processor card on bus 1 (see "Cards" on page 887 and "Chapter 6. Removal and Installation Procedures" on page 821. 3. Power on the system from the control panel to start the initial program load.	FI00380 AJDG301	
5002	DST problem attempting to use the system console  A code problem occurred during an attempt to use the system console.  Perform "LIC-PIP3" on page 521.	AJDG301 FI00380	
5003	Service program failed  The ASCII system console failed to respond.  Perform "ASCII-PIP1" on page 443.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5004	DST console failed to respond  The system console failed to respond.  Perform "TWSC-PIP1" on page 693.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5005	Service program failed  The workstation adapter system console failed to respond.  Perform "WSAC-PIP1" on page 705.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5007	Service program failed  The workstation adapter console failed to respond.  Perform "WSAC-PIP1" on page 705.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5010	IPL service function ended abnormally  Perform "LIC-PIP4" on page 522.	AJDG301	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5082	<p>DST lost contact with the console</p> <p>A service program lost contact with the system console.</p> <p>Do you have an ASCII terminal for the console?</p> <p><b>No      Yes</b></p> <p>↓      Perform “ASCII-PIP1” on page 443.</p> <p>Do you have a twinaxial terminal for the console?</p> <p><b>No      Yes</b></p> <p>↓      Perform “TWSC-PIP1” on page 693.</p> <p>Do you have a console on a 6054 or 917C adapter?</p> <p><b>No      Yes</b></p> <p>↓      Perform “WS-PIP1” on page 701.</p> <p>Perform “WSAC-PIP1” on page 705.</p>	AJDG301 UG3USR1	
5083	<p>IPL service function ended abnormally</p> <p>A service program lost contact with the system console.</p> <p>Perform “TWSC-PIP1” on page 693.</p>	AJDG301 UG3USR1	
5090	<p>System startup failed in unattended IPL mode</p> <p>Perform the following:</p> <ul style="list-style-type: none"> <li>• If reference code A6005090 is displayed on the control panel for more than 10 minutes, perform “LIC-PIP11” on page 527.</li> <li>• For reference code B6005090, perform “LIC-PIP11” on page 527.</li> </ul>	FI00580 FI00500 FI00301 FI00021 FI00065 AJDG301	
5092	<p>System is in DASD migration mode</p> <p>“Install Licensed Internal Code” and “Upgrade Load Source” was specified but the key is not in the manual position. Change the key position to manual and perform a system IPL.</p>		
50FF	<p>DST unrecoverable program error</p> <p>Perform “LIC-PIP3” on page 521.</p>	AJDG301 FI00380	
5120	<p>System LIC detected a program exception</p> <p>System LIC detected a programming problem. If performance or other system degradation is occurring, the system may be operating with reduced resources.</p> <p>Check the Product activity log for related entries. If this reference code is logged with a <i>Class</i> of Informational, then no action is required.</p> <p>Otherwise, perform “LIC-PIP1” on page 519 in “Licensed Internal Code (LIC) Problem Isolation Procedures” on page 519.</p>	AJDG301 FI00130	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5121	System LIC program exception occurred  System LIC detected a programming problem for which a main storage dump may have been initiated.  A problem log entry may be generated for this ref code.  Perform "LIC-PIP1" on page 519.	AJDG301	
5122	System LIC program exception occurred  System LIC detected an IOP programming problem for which an IOP dump may have been initiated.  Perform "LIC-PIP1" on page 519.	FI00130 AJDG301 FI00131	
5123	System LIC program exception occurred  System LIC detected an interface problem with the IOP or an IOP programming problem for which an IOP and main storage dump may have been initiated.  Perform "LIC-PIP1" on page 519.	FI00130 AJDG301 FI00131	
5126	Addressed device failed to respond to selection	DISKDRV STORIOA DISKTRY FI01106 FI01140 FI01141 DEVTERM BACKPLN	
5127	IOP timed out a disk command	DISKDRV STORIOA FI01106 DISKTRY FI01140 FI01141 DEVTERM BACKPLN	
5128	I/O processor failure	FI01112 FI01107	
512D	An IOP dump was initiated  Copy the IOP dump entry and any related entries from the Product Activity Log to suitable media, and give to an IBM service representative.		
512E	System LIC program exception occurred  The system was in a D IPL mode when the problem was detected. A main storage dump was not taken.  Perform "LIC-PIP1" on page 519.	AJDG301 FI00130	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5206	<p>System LIC detected a missing IOP LIC code load</p> <p>System LIC detected a missing IOP LIC code load during IPL of the IOP. This indicates that either the IOP code load is not installed on the system load source device or that system LIC was unable to successfully read that load from the load source device.</p> <p>Perform "LIC-PIP1" on page 519.</p>	UG3USR1	
5209	<p>System LIC detected an IOP timeout during IOP IPL</p> <p>Verify that all IOP cable connections are secure, and check tape and other non-disk devices and media to verify that they are in a ready state.</p> <p>Perform "LIC-PIP1" on page 519.</p>	UG3USR1 FI00130 AJDG301	
5219	<p>System LIC program exception occurred</p> <p>An IOP signalled to system LIC that it had entered a critical internal state. LIC automatically attempted to restart the IOP.</p> <p>This reference code is logged for information only. No action is required.</p>	FI00310 FI00318 FI00065 FI00130 AJDG301	
5275	<p>The system issued a reset/reload to the IOP.</p> <p>System Licensed Internal Code detected that an IOP Reset/Reload has occurred, and that the IOP successfully recovered.</p> <p>Users who were signed on to a Workstation device under the IOP will need to sign back on. Any LAN/WAN communications lines under the IOP will need to be restarted. Tape/Optical devices under the IOP may need to be varied back on.</p> <p>To determine the cause of the IOP Reset/Reload, check the Product Activity Log for additional entries logged with the same System Log ID, and perform any actions indicated for those errors.</p>		
5276	<p>IOP Reset was issued</p> <p>LIC has detected a problem with the Service Processor IOP and has reset it but has not initiated reload of the Service Processor.</p> <p>If the load source is mirrored, some system operations may be able to continue normally. However, some system service operations have been suspended and the system should be scheduled for power down as soon as possible.</p> <p>Perform a system IPL. If the IPL is successful, then perform "LIC-PIP1" on page 519 to determine the cause of the problem.</p> <p>If the system IPL is not successful, perform the action described in the new SRC.</p>	AJGLD01 AJDG301 FI00021	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5310	System LIC program exception occurred  System LIC detected a logical partition configuration data consistency error. Copy the Product Activity Log data for this error and any related entries and contact your next level of hardware service support.	LPARSUP	
5311	System LIC program exception occurred  LPAR configuration data does not match current system configuration. The system will not IPL past DST until the problem is corrected.  Following is a list of problems which may have caused this SRC to be reported: <ul style="list-style-type: none"> <li>• Non-configured disk unit which was previously a load source on a partitioned system.</li> <li>• Load source configuration data does not match partition for which it is being used.</li> <li>• Load source configuration data does not match system serial number for which it is being used.</li> <li>• Load source configuration data is newer than primary partition configuration data.</li> </ul> Perform "LPAR-PIP01" on page 547.	LPARSUP	
5312	System LIC program exception occurred  LPAR configuration data informational error.  The LPAR configuration data was found to be or inconsistent on a secondary partition's load source. The data was automatically updated to the current system level.		
5313	System LIC program exception occurred  LPAR configuration data informational error.  The LPAR configuration data was found to be inconsistent on a primary partition and could only be corrected with an older copy of the data.	LPARCFG	
5340	Secondary partition not running at optimum.  Check the Primary partition's Product Activity Log for system processor entries from approximately the same time. Perform the actions indicated for those entries. For more information on Logical Partitioning, see the Logical Partitioning Information in the <i>AS/400 Service Functions</i> .		
5341	Secondary partition not running at optimum.  Check the primary partition Product Activity Log for system memory entries from approximately the same time. Perform the actions indicated for those entries. For more information on Logical Partitioning, see the Logical Partitioning Information in the <i>AS/400 Service Functions</i> .		

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5342	<p>Secondary partition not running at optimum.</p> <p>Check the Primary partition's Product Activity Log for system processor entries from approximately the same time. Perform the actions indicated for those entries. For more information on Logical Partitioning, see the Logical Partitioning Information in the <i>AS/400 Service Functions</i>.</p>		
5343	<p>Secondary partition not running at optimum.</p> <p>Check the Primary partition's Product Activity Log for system memory errors from approximately the same time. Perform the actions indicated for those entries.</p> <p>For more information on Logical Partitioning see the Logical Partitioning Information in the <i>AS/400 Service Functions</i>.</p>		
5344	<p>Secondary partition not running at optimum.</p> <p>The interactive performance specified in the configuration data for this partition could not be met.</p> <p>Contact your next level of support.</p>	LPARSUP	
5350	<p>Secondary partition software release not supported.</p> <p>The logical partition software version is outside the supported release delta. Check the Release Delta from the Primary partition "Display Partition Release Level" screen.</p> <p>Check the LPAR documentation for the release level of the Primary partition and determine what the supported Release Delta is.</p>		
5380	<p>System LIC program exception occurred</p> <p>Record the Product Activity Log (PAL) hex data for this SRC or print the PAL entry.</p> <p>Contact your next level of support.</p>	LPARSUP	
5390	<p>System LIC program exception occurred</p> <p>Record the Product Activity Log (PAL) hex data for this SRC or print the PAL entry.</p> <p>Contact your next level of support.</p>	LPARSUP	
5555	SLIC I/O DASD subsystem error recovery in progress.		
6900	<p>System bus error</p> <p>The copper bus, bus 1 in the system unit, is inoperative due to a stuck line or a parity error. Any system bus-related hardware may have failed.</p> <p>Perform "BUS-PIP1" on page 451.</p>	FI00065 AJDG301	



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6901	<p>Bus Expansion Adapter card failed</p> <p>The copper bus, the first SPD bus in the system unit or migrated tower, has failed due to an internal chip error on the local bus adapter.</p> <p>Perform "BUS-PIP1" on page 451.</p> <p>For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed.</p> <p>If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code.</p> <p>If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed.</p>	LBUSADP AJDG301	
6902	<p>Bus Expansion Adapter card failed</p> <p>An optical bus has failed due to an internal chip error on one of the remote bus adapters.</p> <p>Perform "BUS-PIP1" on page 451.</p>	FI00203 AJDG301	
6905	<p>Optical bus failed</p> <p>An optical bus is inoperative due to a stuck line or an invalid bus command. Any bus-related hardware may have failed.</p> <p>Perform "BUS-PIP1" on page 451.</p> <p>For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed.</p> <p>If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code.</p> <p>If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed.</p>	FI00065 LBUSADP AJDG301	
6910	<p>I/O processor failure</p> <p>An I/O processor timed out, returned bad status, or is not following the system bus protocol.</p> <p>Perform "LIC-PIP7" on page 523.</p>	FI00310 FI00318 FI00065 FI00130 AJDG301	
6938	<p>Not valid system configuration detected</p> <p>This system model does not allow a configuration of more than three (non-OptiConnect) I/O Processors.</p> <p>Power down the system and remove the extra (non-OptiConnect) I/O Processor(s) so that there are three or less. Restart the system.</p>		

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6944	Missing or failed I/O processor cards  A system bus appears to be empty. If the bus is not empty, two I/O processors in consecutive slots may be missing or broken. If there are broken I/O processors, then another more serious SRC has occurred. Otherwise find the bus number for this failure from the Product activity log and use the system configuration list to verify the configuration of the I/O processors on that bus.	FI00317 FI00316 AJDG301	
699C	Wrap plug is installed on Bus Expansion Adapter card  This reference code is for information only. It indicates the presence of a wrap plug on the local optical link card.		
69A8	Informational bus reference code  This reference code is for information only and might include the following: <ul style="list-style-type: none"> <li>• Optical speed encode</li> <li>• Broken optical links now operational</li> <li>• Other information</li> </ul>		
69B8	Bus hardware configuration problem  The optical bus cabling is not connected correctly.  Perform "BUS-PIP1" on page 451.	FI00187 AJDG301	
69C1	A failure occurred on another system  Perform "BUS-PIP1" on page 451.	FI01040 FI00206 FI00182 AJDG301	
69C5	I/O processor failure  The OptiConnect/400 card which connects this system to another system has failed. The failing card is located in an I/O processor card slot.  Perform "BUS-PIP1" on page 451.	FI00206 FI01040 AJDG301	
69D0	Bus Expansion Adapter card failed  An internal error was detected on a local optical link card.  Perform "BUS-PIP1" on page 451.	FI00182 FI00055 AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
69D8	<p>Bus Expansion Adapter failed</p> <p>A primary optical link had a failure. Contact with the bus may still be possible through this link or through a redundant link.</p> <p>Perform "BUS-PIP1" on page 451.</p> <p>For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed.</p> <p>If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code.</p> <p>If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed.</p>	FI00182 FI00203 FI00055 LBUSADP AJDG301	
69E0	<p>Bus Expansion Adapter card failed</p> <p>An internal error was detected on a remote bus adapter card.</p> <p>Perform "BUS-PIP1" on page 451.</p>	FI00203 AJDG301	
69E8	<p>Bus Expansion Adapter failed</p> <p>Redundancy has been lost due to a secondary optical link failure. Contact with the bus may still be possible through the primary optical link.</p> <p>Perform "BUS-PIP1" on page 451.</p>	FI00203 FI00205 FI00057 AJDG301	
69F0	<p>Bus Expansion Adapter failed</p> <p>Contact has been lost to the bus.</p> <p>Perform "BUS-PIP1" on page 451.</p>	FI00180 FI00182 FI00203 FI00056 FI00205 LBUSADP AJDG301	
69F8	<p>Bus Expansion Adapter failed</p> <p>An optical link initialization failure occurred. The number and configuration of the system buses can not be determined.</p> <p>Perform "BUS-PIP1" on page 451.</p>	FI00180 FI00203 FI00182 FI00186 FI00057 AJDG301	
7001	ISDN call in rejected	GG3COMM	
7002	Lines not selected	GG3COMM	
7003	Network interfaces not selected	GG3COMM	

## A6xx, B6xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
7004	<p>TCP/IP informational error</p> <p>This reference code is logged when the TCP/IP Attribute “Log Protocol Errors” is set, and the TCP/IP System LIC “silently discards” an inbound datagram. “Silently discard” is defined to mean discard the received datagram without reporting an error to the originating host device. Examples of such datagrams are those with checksums or destination addresses which are not valid.</p> <p>This reference code is for information only. Normally no action should be taken as a result of this reference code. It is generated in order to assist with remote device or TCP/IP network problem determination.</p>		
7055	<p>Statistics were logged, no service action required</p> <p>This reference code is logged for information only.</p>		
7100	<p>APPN session initiation attempt has timed out</p> <p>This reference code is used to indicate that LIC timed out on a request to initiate a session.</p> <p>The user must run problem analysis for this reference code. If this indicates a software problem, the user should dial IBM Software Support for assistance.</p> <p>The Problem Determination Procedure (PDP) will indicate whether the original timeout condition still exists and what the corrective actions should be.</p>	<p>AJDG301 GG3PL03 GG3PL01 GG3PL02</p>	
7101	<p>APPN session initiation attempt has failed</p> <p>This reference code is used to indicate that LIC attempted to satisfy a session initiation request, but some failure condition was detected by LIC. The failure condition could be a configuration or operational problem in the network.</p> <p>The user must run problem analysis for this reference code. If this indicates a software problem, the user should dial IBM Software Support for assistance.</p> <p>The Problem Determination Procedure (PDP) will indicate whether the original timeout condition still exists and what the corrective actions should be.</p>	<p>GG3PL04 GG3PL05 GG3PL06 AJDG301</p>	
7102	APPN CP-CP session ended.		
7201	<p>A utility failure occurred.</p> <p>This reference code is for information only. The Uninterruptible Power System (UPS) is reporting a utility failure.</p>		
7202	<p>Utility power restored.</p> <p>This reference code is for information only. The Uninterruptible Power System (UPS) is reporting that utility power has been restored.</p>		
7203	<p>A battery low condition was detected.</p> <p>This reference code is for information only. The Uninterruptible Power System (UPS) is reporting a battery low condition.</p>		

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
7204	Uninterruptible Power System reported a bypass active  This reference code is for information only. The Uninterruptible Power System (UPS) is reporting a bypass is active.		
7205	Battery low condition was reset.  This reference code is for information only. The Uninterruptible Power System (UPS) is no longer reporting a battery low condition.		
7206	UPS reported bypass no longer active  This reference code is for information only. The Uninterruptible Power System (UPS) is no longer reporting a bypass active condition.		
7207	Battery Power Unit needs service  The replacement period for BPU 1, installed in the System Unit, has been exceeded.	FI00315	
7208	Battery Power Unit needs service  The replacement period for BPU 2, installed in the System Unit, has been exceeded.	FI00315	
7209	Battery Power Unit needs service  The replacement period for BPU 1, installed in the Expansion Unit, has been exceeded.	FI00315	
720A	Battery Power Unit replacement dates do not match  The replacement dates for one of the Battery Power Units do not match. Run "Display Hardware Configuration" and verify that the dates match the labels on the batteries.		
7701	SCSI jumper card was not detected.	21H7625 BACKPLN	
7702	Incorrect SCSI jumper card detected	21H7625	
7703	System LIC detected a program exception  Storage Management detected a DASD datacheck condition and the defective sector was reallocated.  Perform a system IPL to restart the system.		
7704	General failure detected by HRI component.	AJDG301	

**A6xx, B6xx**

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
7777	<p>Hardware configuration change detected</p> <p>A hardware resource is missing. The resource reported in to the system on a previous IPL, but has not reported in on the current IPL. This could occur for several different reasons.</p> <ol style="list-style-type: none"> <li>1. It could be a normal situation where the resource is currently powered off. In this case, when the resource is powered back on, it will no longer be missing.</li> <li>2. The hardware resource could also be missing if it has been removed from the system, for example, a tape drive that was replaced with a different tape drive. The service representative should use the Hardware service manager to remove the entry for this resource.</li> <li>3. The resource may not have reported in on this IPL because it is failing. Perform problem analysis to determine why the resource is failing.</li> </ol>		
CFFC	<p>Optical library device condition not expected</p> <p>The optical disk drive addressing within the optical library is incorrect. This error is likely to be the result of faulty cabling or switch setting following service to an optical library.</p> <p>Contact your hardware service provider.</p>	OPTLCBL DRVSWCH	
CFFD	Optical drive failure	OPTLDRV	
CFFF	Media determined to be bad in Optical library		
F103	<p>Main storage dump must be copied for service.</p> <p>Perform "LIC-PIP1" on page 519.</p>		
FDC0	<p>LIC program reported informational error</p> <p>This reference code is logged for information only. No action required.</p>		
FDC3	<p>Error detected in LIC and data was captured</p> <p>This reference code indicates first failure data capture (FFDC) data was collected for a problem reported by licensed internal code program #C3TSSIO.</p> <p>The user should dial IBM Software Support for assistance.</p>	GG3FFDC FI00330 AJGLD01	
FDC5	<p>LIC program failed and data was captured</p> <p>This reference code indicates first failure data capture (FFDC) data was collected for a problem reported by licensed internal code.</p> <p>The user should dial IBM Software Support for assistance.</p>	GG3FFDC	

**Licensed Internal Code (LIC) Failing Items**

Failing Item	Description	Document Description
21H7625	Incorrect, defective or missing SCSI jumper card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR

Failing Item	Description	Document Description
AJDGP01	Service processor Licensed Internal Code	Repair and Parts; removal and installation procedures
AJGLD01	I/O card Licensed Internal Code	Service Functions; APAR or LICTR
BACKPLN	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
BSTWRPL	I/O tower card	Problem Analysis; Symbolic FRU Isolation
CBLALL	Cable Unit Part	Problem Analysis; Symbolic FRU Isolation
CVTCARD	System Interconnect SPD migration card	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
DISKDRV	Disk drive and logic card	Problem Analysis; Symbolic FRU Isolation
DISKTRY	Disk unit tray	Problem Analysis; Symbolic FRU Isolation
DRVSWCH	Drive address switch	Problem Analysis; Symbolic FRU Isolation
GG3COMM	Communications failure	
GG3FFDC	LIC program failed and data was captured	
GG3PL01	System performance problem	
GG3PL02	Network performance problem	
GG3PL03	Switched link activation failure message not answered	
GG3PL04	Transmission groups in the network must be activated	
GG3PL05	Class-of-service specified does not provide a route	
GG3PL06	COS acceptable TGs and nodes do not exist for the route	
LBUSADP	System bus adapter failed	Problem Analysis; Symbolic FRU Isolation
LPARCFG	Configuration error	Problem Analysis; Symbolic FRU Isolation
LPARSUP	Call your next level of support for assistance	Problem Analysis; Symbolic FRU Isolation
MABRCFG	Multi-adapter bridge configuration change or error	Problem Analysis; Symbolic FRU Isolation
MASBUS	Multi-adapter bridge card slot or card bus	Problem Analysis; Symbolic FRU Isolation
MA_BRDG	Multi-adapter bridge	Problem Analysis; Symbolic FRU Isolation
OPTDRV	Optical Disk Drive	Problem Analysis; Symbolic FRU Isolation
OPTLCBL	Optical Library drive cabling	Problem Analysis; Symbolic FRU Isolation
OPTLDRV	Optical Library optical drive	Problem Analysis; Symbolic FRU Isolation
PIOCARD	PCI I/O processor or adapter card	Problem Analysis; Symbolic FRU Isolation
PPCIMIN	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
PPCISYS	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
PPCITWR	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
PRI_PCI	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
SIADPCD	System Interconnect I/O adapter	Problem Analysis; Symbolic FRU Isolation
SICNTRL	System Interconnect controller	Problem Analysis; Symbolic FRU Isolation
SIIOADP	System Interconnect I/O adapter	Problem Analysis; Symbolic FRU Isolation
SIRGCBL	System Interconnect cable, connection or interposer card	Problem Analysis; Symbolic FRU Isolation

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Failing Item	Description	Document Description
SIRGCFG	Configuration error	Problem Analysis; Symbolic FRU Isolation
SIRSTAT	System Interconnect cable, connection or interposer card	Problem Analysis; Symbolic FRU Isolation
SI_CARD	System Interconnect controller	Problem Analysis; Symbolic FRU Isolation
SI_PHB	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
SLOTERR	Multi-adapter bridge card slot error, do not use card slot	Problem Analysis; Symbolic FRU Isolation
STORIOA	Active I/O processor	Problem Analysis; Symbolic FRU Isolation
SVCPROC	Service Processor Card	Problem Analysis; Symbolic FRU Isolation
SYSBKPL	System unit backplane	Problem Analysis; Symbolic FRU Isolation
TWRBKPL	I/O tower card	Problem Analysis; Symbolic FRU Isolation
TWRCARD	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
TWRPLNR	I/O tower card	Problem Analysis; Symbolic FRU Isolation
UG3USR1	Operator response required	

## (A9xx, B9xx) OS/400 Reference Codes

This section informs service representatives that all A9xx and B9xxx SRCs and their associated unit reference codes give information about the user (customer) Operating System/400 (OS/400) program.

1. The service representative should have the user see “Problem Handling Tables and Procedures” in the *Basic System Operation, Administration, and Problem Handling* information for the descriptions and actions indicated by these reference codes. For additional help, the user should contact their next level of support.

**Note:** A brief description of some of the C9xx codes can be found in the *AS/400 Service Functions* information (see “IPL Status SRC Sequence” under “Initial Program Load Information”).

A complete description and definition of these codes are found in the *OS/400 Diagnostic Aids* information under OS/400 Unit Reference Codes. This information is used by the support representatives.

2. If a Licensed Internal Code error is suspected and the recovery action recommends an IPL, take a main storage dump to save the error conditions (see “Working with Storage Dumps” in the *AS/400 Service Functions* information) **before** the customer does an IPL. Support may need the information saved in this dump.
3. Have the customer continue with the recommended recovery action.

## (B003) Asynchronous Communications Reference Codes

Asynchronous communications detected an error.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.



**Notes:**

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2321	Procedure error in Licensed Internal Code	CNGTEMP
2322	Data-set-ready error on modem interface	CNGTEMP
2340	Data-set-ready changed to not active; for information only	FI00704 CNGTHRS FI00701 FI00719
3200	Clear-to-send state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
3201	Data-set-ready state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
3202	Clear-to-send state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
3203	Carrier-detect state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
3204	Call not completed; error limit per 256 reached	CNGTEL GNGLINK FI00705 FI00703
3205	Call completed with error; error limit per 256 reached	CNGTHRS
3206	Data-line-occupied error; error limit per 256 reached	FI00703 CNGTHRS GNGLINK FI00702
3207	Abandon-call-retry error; error limit per 256 reached	FI00703 CNGTHRS GNGLINK FI00702 CNGTEL

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3208	Present-next-digit error; error limit per 256 reached	FI00703 CNGTHRS FI00702 FI00719
3209	Distant-station-connected error; error limit per 256 reached	FI00703 CNGTHRS GNGLINK FI00702 CNGTEL
320B	Data-set-ready state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
320C	Incorrect number dialed; error limit per 256 reached	CNGTEL CNGTHRS
4200	Break character received; error limit per 256 reached	GNGLINK CNGTHRS
4202	Received storage overrun; error limit per 256 reached	FI00730 CNGTHRS
4203	Incorrect stop bit; error limit per 256 reached	GNGLINK CNGLBPS CNGTHRS
4204	Receive-time-out error; error limit per 256 reached	CNGTHRS GNGLINK
4205	Number of characters discarded; error limit per 256 reached	GNGLINK CNGLBPS CNGLOAD CNGTHRS
4206	Procedure error in Licensed Internal Code	FI00730 AJDG301
4209	Wrong data received; error limit per 256 reached	GNGLINK CNGTHRS
4220	Port already in use	AJDG301 FI00719 CNGSLPT
4240	Port not installed	AJDG301 FI00719 CNGSLPT
4340	Automatic call unit port is not installed	AJDG301 CNGASPT FI00719 FI00702
4376	Automatic call unit already in use	AJDG301 GNGRESC CNGASPT
4502	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
4503	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730 CNGDTRT

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4504	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGASPT CNGSLPT
4505 to 4506	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGASPT FI00730 CNGSLPT
4507	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730 CNGSTOP
4508	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
4509	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGTMOD FI00730
450A	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730 CNGCTYP
450B to 450C	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
450D	Wrong configuration value sent by Licensed Internal Code	CNGPRTY CNGBCHR FI00730 AJDG301
450E	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730 CNGMCFL
4549	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
4590	Wrong number specified in controller description	CNGTEL FI00703 FI00701 CNGCLBR FI00719
4592	No number specified in controller description	AJDG301 CNGTEL
4594	Wrong number specified in controller description	CNGTEL FI00730 AJDG301 CNGCLBR
5410	Switched line already in use	FI00704 CNGCMOD FI00701 FI00719
5472	Data-line-occupied error at time of starting	FI00703 GNGRESC FI00719 FI00702
5474	Automatic call unit line connection error	FI00702 FI00703 FI00719 GNGLINK

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5476	Present-next-digit error	FI00702 FI00703 FI00719
5501	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
5502	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGTMOD FI00730
5503	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGCMOD FI00730
5510	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGECHO FI00730
5511 to 5512	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
5513	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGEORT FI00730
5514	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
5515	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGFLOC FI00730
5549	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
5590	Wrong length for number dialed	AJDG301
5630	Automatic call unit distant-station-connected time out	FI00700 GNGLINK CNGRMTA FI00701 FI00719
5632	Automatic call unit had data-set-ready time out	FI00700 CNGTEL FI00703 CNGDRTY CNGRMTA FI00701 FI00719 GNGLINK
5684	Time-out on call-clear-request	FI00704 FI00701 AJDG301 FI00719
5886	Automatic call unit line connection error	FI00704 FI00719 FI00701
5A18	Clear-to-send signal failed to drop on modem interface	FI00704 FI00701 FI00719

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5A1C	Clear-to-send signal dropped on modem interface	GNGLINK CNGCTSV FI00704 FI00701 FI00719
5A20	Clear-to-send not active on modem interface	GNGLINK CNGCTSV FI00704 FI00701 FI00719
5A24	Carrier-detect dropped on modem interface	FI00701 FI00704 GNGLINK FI00719
5A54	Time-out; data-set-ready did not drop	FI00704 CNGDSRT FI00701 FI00719
5A58	Time-out; data-set-ready not received	FI00701 FI00704 FI00719 AJDG301
5C68	Procedure error in Licensed Internal Code	AJDG301 FI00730
5E00	Wrong or no external communications cable installed	FI00701 CNGASPT CNGSLPT FI00719
5E01	Call received during dialing procedure	GNGRES FI00704 FI00701 FI00719
6210	Resource or storage not available	CNGMAXI FI00730
6212, 6214	Communications controller error	FI00730 FI00718
6288	Port not operational	FI00719 AJDG301 CNGSLPT
6320	Abandon-call-retry	FI00700 CNGTEL FI00703 FI00719 FI00702
6322	Abandon-call-retry; not all numbers dialed	CNGTEL FI00703 FI00702 FI00719 FI00730
6870	Automatic call unit power turned off	FI00703 FI00702 FI00719

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6890	Data-set-ready dropped on modem interface  No action is required if Operations Console is attached.	GNGLINK FI00701 FI00704 FI00719
6C05	I/O card Licensed Internal Code error	FI00730 AJDG301
6C0A	Hardware detected failure	FI00719 FI00718
7200	Communications Configuration	CNGSLPT
7210	Resource or storage not available	CNGMAXI FI00730
7212	Procedure error in Licensed Internal Code	AJDG301 FI00730
7C00	Asynchronous server program ended abnormally	FI00730
7C02	Wrong command sent by Licensed Internal Code	FI00730
7C03	Resource or storage not available	CNGLOAD FI00730 CNGDTRT CNGECHO CNGEORT CNGPRTY
7C04	Wrong internal routing information	FI00730
7C05, 7C09	Error in I/O card Licensed Internal Code	FI00730
8011	IOP activation failed.  Modem Country ID parameter in Network Attributes is not set. Use the CHGNETA command to set MDMCNTRYID value to your country ID.	CNGCONF
8013	IOP activation failed.  Modem Country ID parameter in Network Attributes is not valid for this adapter. Use the CHGNETA command to change the MDMCNTRYID value to your country ID.	CNGCONF
8020	System log entry only, no service action required	
FFFF	User suspected communications problem.	UNGUPPR

### Asynchronous Communications Failing Items

#### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
CNGASPT	ACRSRCNAME value in CRTLINASC command	Communications Configuration
CNGBCHR	BITSCHAR value in CRTLINASC command	Communications Configuration

Failing Item	Description	Document Description
CNGCLBR	CALLNBR value in CRTLINASC command	Communications Configuration
CNGCMOD	CNN value in CRTLINASC command	Communications Configuration
CNGCTSV	CTSTMR value in CRTLINASC command	Communications Configuration
CNGCTYP	AUTOANS, AUTODIAL, DIALCMD, SWTCNN, CNN in CRTLINASC	Communications Configuration
CNGDRTY	DIALRTY value in CRTCTLASC command	Communications Configuration
CNGDSRT	DSRDRPTMR value in the CRTLINASC command	Communications Configuration
CNGDTRT	LINESPEED value in CRTLINASC command	Communications Configuration
CNGECHO	ECHO value in CRTLINASC command	Communications Configuration
CNGEORT	EORTBL value in CRTLINASC command	Communications Configuration
CNGFLOC	FLOWCNTL value in CRTLINASC command	Communications Configuration
CNGLBPS	LINESPEED, BITSCHAR, PARITY, STOPBITS values in CRTLINASC	Communications Configuration
CNGLOAD	System processor workload heavy	Communications Configuration
CNGMAXI	MAXBUFFER value in CRTLINASC command	Communications Configuration
CNGMCFL	DUPLEX, CNN, MODEMRATE values in CRTLINASC command	Communications Configuration
CNGPRTY	PARITY value in CRTLINASC command	Communications Configuration
CNGRMTA	RMTANSTMR value in CRTLINASC command	Communications Configuration
CNGSLPT	RSRCNAME value in CRTLINASC command	Communications Configuration
CNGSTOP	STOPBITS value in CRTLINASC command	Communications Configuration
CNGTEL	CNNNBR value in CRTCTLASC command	Communications Configuration
CNGTEMP	No failure found	Communications Configuration
CNGTHRS	THRESHOLD value in CRTLINASC command	Communications Configuration
CNGTMOD	DUPLEX, ECHO, FLOWCNTL value in CRTLINASC command	Communications Configuration
GNGLINK	External devices or network	
GNGRESC	Line or automatic call unit already in use	
UNGUPPR	User suspected communications problem.	

## (B006) Common Licensed Internal Code Reference Codes

The common Licensed Internal Code detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the

address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.

3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1201	I/O processor resource not available  A deactivation failed to get a resource controlled by Licensed Internal Code.	AJEQU00 AJDG301
1202	Not valid condition in I/O Processor Licensed Internal Code  An error in an activation or deactivation occurred.	AJEQU00 AJDG301 FI00131
1203	I/O processor resource not available  A resource needed to perform a requested function is not available in the Licensed Internal Code.	AJEQU00 AJDG301
1204	Not valid condition in I/O Processor Licensed Internal Code  The Licensed Internal Code has recovered from a condition that was not expected.	AJEQU00 AJDG301 FI00131
1205 to 1206	I/O processor card or Licensed Internal Code error  A microprocessor exception occurred on the I/O processor.	AJEQU00 FI00131 FI00132
1207	I/O processor resource not available  The Licensed Internal Code could not allocate memory resources on the I/O processor card.	AJEQU00 AJDG301
1208	Not valid condition in I/O Processor Licensed Internal Code  The Licensed Internal Code found a condition that should not have occurred.	AJEQU00 AJDG301 FI00131
1209	I/O processor was not ready for interrupt that occurred	AJEQU00 FI00131
1210	I/O processor resource not available  The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	
1211	System bus error	FI00131 ANYBUS AJEQU00 AJDG301
1212	A permanent I/O processor failure occurred	FI00131 AJEQU00
1213	System bus error	AJDG301 AJEQU00 FI00131
1214 to 1215	I/O processor card or Licensed Internal Code error	FI00131 AJEQU00
1301	I/O processor resource not available  An activation or deactivation failed to get a resource controlled by Licensed Internal Code.	CDAWKLD AJDGP01 AJDG301



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1302	Not valid condition in I/O Processor Licensed Internal Code An error in an activation or deactivation occurred.	AJDGP01 AJDG301 FI00131 FI00132
1303	I/O processor resource not available A resource needed to perform a requested function is not available in the Licensed Internal Code.	CDAWKLD AJDGP01 AJDG301
1304	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code has recovered from a condition that was not expected.	AJDGP01 AJDG301 FI00131 FI00132
1305 to 1306	I/O processor card or Licensed Internal Code error A microprocessor exception occurred on the I/O processor.	AJDGP01 FI00131 FI00132
1307	I/O processor resource not available The Licensed Internal Code could not allocate memory resources on the I/O processor card.	AJDGP01 AJDG301 CDAWKLD FI00132
1308	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code found a condition that should not have occurred.	AJDGP01 AJDG301 FI00131
1309	I/O processor was not ready for interrupt that occurred	AJDGP01 FI00131 FI00132 FI01117
1310	I/O processor resource not available The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	
1311	System bus error	FI00131 ANYBUS AJDGP01 AJDG301
1312	A permanent I/O processor failure occurred	FI00131 AJDGP01
1313	System bus error	AJDGP01 AJDG301 FI00131
1316	I/O processor card or Licensed Internal Code error	AJDGP01 FI00132 FI00131
1A01	I/O processor resource not available A deactivation failed to get a resource controlled by Licensed Internal Code.	CDAWKLD FI00130 AJDG301
1A02	Not valid condition in I/O Processor Licensed Internal Code An error in an activation or deactivation occurred.	FI00130 FI00131 FI00132

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1A03	I/O processor resource not available  A resource that is needed to perform a requested function is not available in the Licensed Internal Code.	FI00130 AJDG301 CDAWKLD
1A04	Recovered from condition in Licensed Internal Code.  The Licensed Internal Code has recovered from a condition that was not expected.	FI00130 AJDG301 FI00131 FI00132
1A05 to 1A06	I/O processor card or Licensed Internal Code error  A microprocessor exception occurred on the I/O processor.	FI00130 FI00131 FI00132
1A07	I/O processor resource not available  The Licensed Internal Code could not allocate memory resources on the I/O processor card.	CDAWKLD FI00132 FI00130 AJDG301
1A08	Not valid condition in I/O Processor Licensed Internal Code  The Licensed Internal Code found a condition that should not have occurred.	FI00130 FI00131 FI00132
1A09	Threshold overflow  The I/O processor card has detected a threshold of recoverable error conditions. The errors are either wrong interruptions or memory error corrections. If in communications, the line is still running. <b>Note:</b> If a large number of these errors occur during a short time, they may be caused by an electrically noisy environment, a defective communications I/O processor card or modem, or a communications I/O processor code problem.	FI00131 FI00132 FI01117 FI00130
1A10	Error reported to system  The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	

### Common Licensed Internal Code Failing Items

#### Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 359.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
AJDGP01	Licensed Internal Code	Service Functions; APAR or LICTR
AJDGP01	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
AJEQU00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	System bus	Problem Analysis; Symbolic FRU Isolation
CDAWKLD	Too many communications lines in use	

## (B070) Twinaxial Workstation Reference Codes

The workstation detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0000	Device no response time-out; temporary error	FI00601 FI00602 FI00610
0001	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <p>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</p> <p>2. "INT-PIP14 Station Protectors" on page 516</p> <p>Perform "TWSC-PIP1" on page 693.</p>	FI00602 FI00601 GAU7777 GAU8888 FI00610 FI00615
0003	<p>WS IOP detected parity error from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures in "Intermittent Problem Isolation Procedures" on page 509:</p> <p>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</p> <p>2. "INT-PIP14 Station Protectors" on page 516</p> <p>Perform "TWSC-PIP1" on page 693.</p>	FI00602 FI00601 GAU7777 FI00610
0004	<p>Device detected parity error from WS IOP</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <p>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</p> <p>2. "INT-PIP14 Station Protectors" on page 516</p> <p>Perform "TWSC-PIP1" on page 693.</p>	FI00602 FI00601 GAU7777 FI00610

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0005	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00602 FI00601 GAU8888 FI00610 FI00615</p>
0006	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 FI00602 GAU8888 FI00610</p>
0007	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 GAU8888 GAU7777 FI00610</p>
0008	<p>WS IOP detected device power turned off, and then on</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>GAUEEEE FI00601</p>
0009	<p>WS IOP detected wrong device response to start command</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 FI00610</p>
0020	<p>Device detected wrong command or device ID from WS IOP</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 AJLYD01 FI00610</p>
0021	<p>Device detected not valid value from WS IOP</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 AJLYD01 FI00610</p>
0022	<p>Device detected storage or data overrun</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 AJLYD01 FI00610</p>
0023	<p>Device detected null or attribute exception error</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 FI00610</p>
0024	<p>Device detected wrong start command from WS IOP</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 AJLYD01 FI00610</p>
0025	<p>WS IOP detected wrong exception response from device</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 FI00610</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0026	WS IOP detected not valid pass-through command Perform "TWSC-PIP1" on page 693.	GAU9999 FI00610
0049	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 693.	FI00601 FI00610
0082	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 693.	FI00601
0090	WS IOP detected no status change from device Perform "TWSC-PIP1" on page 693.	FI00601 FI00610
0091	WS IOP detected busy time-out from device Perform "TWSC-PIP1" on page 693.	FI00601 FI00610
0100	Device no response time-out; temporary error	FI00601 FI00602 FI00610
0101	WS IOP detected error when transmitting data  Is the problem intermittent? <b>No      Yes</b> ↓      Perform the following procedures: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511 2. "INT-PIP14 Station Protectors" on page 516  Perform "TWSC-PIP1" on page 693.	FI00602 FI00601 GAU7777 GAU8888 FI00610 FI00615
0103	WS IOP detected parity error from device  Is the problem intermittent? <b>No      Yes</b> ↓      Perform the following procedures: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511 2. "INT-PIP14 Station Protectors" on page 516  Perform "TWSC-PIP1" on page 693.	FI00602 FI00601 GAU7777 FI00610
0104	Device detected parity error from WS IOP  Is the problem intermittent? <b>No      Yes</b> ↓      Perform the following procedures: 1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511 2. "INT-PIP14 Station Protectors" on page 516  Perform "TWSC-PIP1" on page 693.	FI00602 FI00601 GAU7777 FI00610

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0105	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00602 FI00601 GAU8888 FI00610 FI00615</p>
0106	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 FI00602 GAU8888 FI00610</p>
0107	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 GAU8888 GAU7777 FI00610</p>
0108	<p>WS IOP detected device power turned off, and then on</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>GAUEEEE FI00601</p>
0109	<p>WS IOP detected wrong device response to start command</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 FI00610</p>
0111	<p>WS IOP detected wrong keyboard scan code from display</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 AJLYD01 FI00610</p>
0120	<p>Device detected wrong command or device ID from WS IOP</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 AJLYD01 FI00610</p>
0121	<p>Device detected not valid value from WS IOP</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 AJLYD01 FI00610</p>
0122	<p>Device detected storage or data overrun</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 AJLYD01 FI00610</p>
0123	<p>Device detected null or attribute exception error</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 FI00610</p>
0124	<p>Device detected wrong start command from WS IOP</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 AJLYD01 FI00610</p>

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0125	WS IOP detected wrong exception response from device Perform "TWSC-PIP1" on page 693.	FI00601 FI00610
0126	WS IOP detected not valid pass-through command Perform "TWSC-PIP1" on page 693.	GAU9999 FI00610
0149	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 693.	FI00601 FI00610
0170	WS IOP detected error downloading printer definition table	AJDG301 FI00601
0171	WS IOP detected error downloading printer definition table	FI00601 AJLYD01
0172	WS IOP detected error downloading printer definition table	CAUPDT AJDG301 FI00601
0173	WS IOP detected error downloading printer definition table	CAUPDT FI00601
0174	WS IOP detected error unloading printer definition table	FI00601 AJLYD01
0175	WS IOP detected device configuration error	FI00601 AJLYD01
0176 to 0177	WS IOP detected error downloading LIC to device	GAUDMCC FI00601
0181	Wrong magnetic stripe reader response Perform "TWSC-PIP1" on page 693.	FI00605 MAUFFFF FI00601 FI00610
0182	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 693.	FI00601
0183	WS IOP detected wrong display size value Perform "TWSC-PIP1" on page 693.	FI00601
0184	WS IOP detected wrong keyboard identification Verify that the correct keyboard is attached correctly to the workstation. If the correct keyboard is attached correctly to the workstation, perform "TWSC-PIP1" on page 693.	FI00601
0189	Wrong magnetic stripe reader or light pen status Perform "TWSC-PIP1" on page 693.	FI00601 FI00605 FI00607 FI00610

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0190	<p>WS IOP detected no status change from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 FI00610 GAU7777</p>
0191	<p>WS IOP detected busy time-out from device</p> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00601 FI00610</p>
0200	<p>Device no response time-out; temporary error</p>	<p>FI00604 FI00602 FI00610</p>
0201	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00602 FI00604 GAU7777 GAU8888 FI00610 FI00615</p>
0203	<p>WS IOP detected parity error from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00602 FI00604 GAU7777 FI00610</p>
0204	<p>Device detected parity error from WS IOP</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00602 FI00604 GAU7777 FI00610</p>



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0205	<p>WS IOP detected error when transmitting data</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00602 FI00604 GAU7777 FI00610 FI00615</p>
0206	<p>WS IOP detected wrong data from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00604 FI00602 GAU8888 FI00610</p>
0207	<p>WS IOP detected wrong address from device</p> <p>Is the problem intermittent?</p> <p><b>No      Yes</b></p> <p>↓      Perform the following procedures:</p> <ol style="list-style-type: none"> <li>1. "INT-PIP5 External Noise on Twinaxial Cables" on page 511</li> <li>2. "INT-PIP14 Station Protectors" on page 516</li> </ol> <p>Perform "TWSC-PIP1" on page 693.</p>	<p>FI00604 GAU8888 GAU7777 FI00610</p>
0208	WS IOP detected device power turned off, and then on	<p>GAUEEEE FI00604</p>
0209	WS IOP detected wrong device response to start command	<p>FI00604 FI00610</p>
0210	Printer detected equipment error	FI00604
0211	Printer detected equipment error	<p>FI00604 AJLYD01 FI00610</p>
0212	Printer detected equipment error	FI00604
0220	Device detected wrong command or device ID from WS IOP	<p>FI00604 AJLYD01 FI00610</p>
0221	Device detected not valid value from WS IOP	<p>FI00604 AJLYD01 FI00610</p>
0222	Device detected storage or data overrun	<p>FI00604 AJLYD01 FI00610</p>
0223	WS IOP detected start command to printer was lost	<p>FI00604 FI00602 FI00610</p>

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0224	Device detected wrong start command from WS IOP	FI00604 AJLYD01 FI00610
0225	WS IOP detected wrong exception response from device	FI00604 FI00610
0230 to 0239, 0240 to 0248	Printer detected equipment error	FI00604
0249	WS IOP detected wrong request or response from device	FI00604 FI00610
0290	WS IOP detected no status change from device	FI00604 FI00610
0291	WS IOP detected busy time-out from device	FI00604 FI00610
A000	<p>Too many devices active on the workstation IOP</p> <p>This error occurs if you attempted to activate more workstations than allowed.</p> <p>Switch off power to (or remove) one or more of the display stations (except for the console) that are attached to this workstation I/O processor. Perform an initial program load (IPL) from the control panel to correct the problem.</p> <p>Refer to the local workstation diagrams for the location of workstations if necessary.</p>	GAUBBBB
B000	<p>WS IOP fails to report part, model and serial number</p> <p>Perform "TWSC-PIP1" on page 693.</p>	FI00610
C000	WS IOP error not known	AJLYD01 FI00610
D000	Work Station IOA start-up test error	FI00610
D010	<p>WS IOP storage failure corrected</p> <p>Perform "TWSC-PIP1" on page 693.</p>	FI00610
D011	WS IOP card storage failure	FI00610
D021	WS IOP detected errors on all cables	FI00602 FI00601 FI00610 FI00615
D022	WS IOP parity errors detected on all cables	FI00602 FI00601 FI00610 FI00615
D023	<p>WS IOP detected errors on some, but not all cables</p> <p>Perform "TWSC-PIP1" on page 693.</p>	FI00602 FI00601 FI00610
E000	WS IOP or IOA error during working operation	AJLYD01 FI00610
F000	WS IOP or IOA operating system program error	AJLYD01

## Twinaxial Workstation Failing Items

### Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 359.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
AJDG301	Licensed program	Service Functions; APAR or LICTR
AJDGP01	Licensed Internal Code	Service Functions; APAR or LICTR
AJLYD01	Work Station IOP or IOA system Licensed Internal Code	Service Functions; APAR or LICTR
CAUPDT	Printer definition table	Communications Configuration
GAU7777	Electrical interference	
GAU8888	Other work station on port is failing	
GAU9999	Error occurred with pass-through command	
GAUBBBB	Too many work stations are active on the workstation IOP	
GAUDMCC	Device Licensed Internal Code change	
GAUEEEE	Active device turned off	
MAUFFFF	Magnetic stripe	Refer to I/O device service information
UAUFF00	User believes there is a problem	

## (B075) Workstation Adapter Console Reference Codes

The workstation adapter console detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

### Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0101	WS IOP detected error when transmitting data Perform “WSAC-PIP1” on page 705.	FI00601 GXC7777 FI00631 FI00730

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0103	WS IOP detected parity error from device Perform "WSAC-PIP1" on page 705.	FI00601 GXC7777 FI00631 FI00730
0104	Device detected parity error from WS IOP Perform "WSAC-PIP1" on page 705.	FI00601 GXC7777 FI00631 FI00730
0105	WS IOP detected error when transmitting data Perform "WSAC-PIP1" on page 705.	FI00601 GXC7777 FI00631 FI00730
0106	WS IOP detected wrong data from device Perform "WSAC-PIP1" on page 705.	FI00601 FI00631 GXC7777 FI00730
0107	WS IOP detected wrong address from device Perform "WSAC-PIP1" on page 705.	FI00601 GXC7777 FI00730
0108	WS IOP detected device power turned off, and then on Perform "WSAC-PIP1" on page 705.	GXCEEEE FI00601
0109	WS IOP detected wrong device response to start command Perform "WSAC-PIP1" on page 705.	FI00601 FI00615
0111	WS IOP detected wrong keyboard scan code from display Perform "WSAC-PIP1" on page 705.	FI00601 FI00730
0120	Device detected wrong command or device ID from WS IOP Perform "WSAC-PIP1" on page 705.	FI00601 FI00730
0121	Device detected not valid value from WS IOP Perform "WSAC-PIP1" on page 705.	FI00601 FI00730
0122	Device detected storage or data overrun Perform "WSAC-PIP1" on page 705.	FI00601 FI00730
0123	Device detected null or attribute exception error Perform "WSAC-PIP1" on page 705.	FI00601 FI00730
0124	Device detected wrong start command from WS IOP Perform "WSAC-PIP1" on page 705.	FI00601 FI00730
0125	WS IOP detected wrong exception response from device Perform "WSAC-PIP1" on page 705.	FI00601 FI00730
0126	WS IOP detected not valid pass-through command Perform "WSAC-PIP1" on page 705.	GXC9999 FI00730
0149	WS IOP detected wrong request or response from device Perform "WSAC-PIP1" on page 705.	FI00601 FI00730

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0190	WS IOP detected no status change from device Perform "WSAC-PIP1" on page 705.	FI00601 GXC7777 FI00730
0191	WS IOP detected busy time-out from device Perform "WSAC-PIP1" on page 705.	FI00601 FI00730
0201	WS IOP detected error when transmitting data Perform "WSAC-PIP1" on page 705.	FI00604 GXC7777 FI00631 FI00730
0203	WS IOP detected parity error from device Perform "WSAC-PIP1" on page 705.	FI00604 GXC7777 FI00631 FI00730
0204	Device detected parity error from WS IOP Perform "WSAC-PIP1" on page 705.	FI00604 GXC7777 FI00631 FI00730
0205	WS IOP detected error when transmitting data Perform "WSAC-PIP1" on page 705.	FI00604 GXC7777 FI00631 FI00730
0206	WS IOP detected wrong data from device Perform "WSAC-PIP1" on page 705.	FI00604 FI00631 FI00730
0207	WS IOP detected wrong address from device Perform "WSAC-PIP1" on page 705.	FI00604 GXC7777 FI00730
0208	WS IOP detected device power turned off, and then on	GXCEEEE FI00604
0209	WS IOP detected wrong device response to start command	FI00604 FI00730
0211	Printer detected equipment error	FI00604 FI00730
0221	Device detected not valid value from WS IOP	FI00604 FI00730
0224	Device detected wrong start command from WS IOP	FI00604 FI00730
0225	WS IOP detected wrong exception response from device	FI00604 FI00730
0290	WS IOP detected no status change from device	FI00604 FI00730
0291	WS IOP detected busy time-out from device	FI00604 FI00730
5000	Wrong command sent by Licensed Internal Code	AJDG301
5001	Procedure error in Licensed Internal Code	AJDG301
5002	Procedure error in Licensed Internal Code Procedure error in machine instructions	CXCTEMP AJDG301
5006	Procedure error in Licensed Internal Code	AJDG301

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5007	Procedure error in Licensed Internal Code	AJDG301 CXCMSTA
5009	Incorrect command value sent by Licensed Internal Code	AJDG301
500A	Procedure error in Licensed Internal Code	AJDG301
500D	Incorrect command value sent by Licensed Internal Code	AJDG301 CXCMAXI
5022	Procedure error in Licensed Internal Code	AJDG301
5206	Communications controller storage not available	CXCBUSY
56EA	Clear-to-send signal dropped on modem interface	GXCLINK FI00704 CXCCTSV FI00719 FI00701
56ED	Data-set-ready turn-on time-out on modem interface	FI00701 FI00704 FI00719 AJLAG01
56F1	Data-set-ready dropped on modem interface	FI00704 FI00701 GXCLINK FI00719
5710	Nonproductive receive time-out while receiving from remote	CXCNPRT FI00700 FI00705 FI00704 GXCLINK FI00701 FI00719
5712	No data received from remote equipment; time-out	AJLAG01 CXCENCD CXCINAT GXCLINK FI00704 FI00705 FI00700 CXCSTAD FI00701 CXCDTAR FI00719 CXCMRTY
5715	Remote equipment did not respond causing an idle-time-out	GXCLINK CXCRPTO FI00701 FI00704 CXCMRTY FI00705 CXCENCD FI00700 CXCDTAR FI00719

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5718	Retry limit reached for sending frames to remote equipment	GXCLINK FI00705 FI00704 FI00700 CXCMRTY FI00719 FI00701
5719	Retry limit reached for sending frames to remote equipment	FI00700
5720	Retry limit reached for sending poll frame to remote	FI00700 CXCMODU
5721	Could not send frame to remote equipment; local problem	FI00704 CXCDTAR FI00701 FI00719 FI00730
5722	Wrong command value sent by OS/400 licensed program	AJLAG01 CXCSTAD
A000	Too many devices active on the workstation IOP	GXCBBBB
B000	WS IOP fails to report part, model and serial number  Perform "WSAC-PIP1" on page 705.	FI00615
C000, D000	WS IOP error not known	AJLAG01
D001	Wrong or no external communications cable installed	FI00631 AJLAG01
F003	WS IOA buffer utilization threshold exceeded temporarily	AJLAG01
FFFF	User believes there is a problem  Reference code FFFF is assigned by the ANZPRB (Analyze Problems) for user-detected errors. Run ANZPRB again if the problem still exists or look in the problem log (WRKPRB) for possible failing FRUs.	UXCFF00

## Workstation Adapter Console Failing Items

### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJLAG01	I/O adapter Licensed Internal Code	Service Functions; APAR or LICTR
CXCBUSY	Too many communications lines in use	Communications Configuration
CXCCONF	Configuration or OS/400 licensed program	Communications Configuration
CXCCPTO	CNNPOLLTMR value in CRTLINSDLC command	Communications Configuration
CXCCTSV	CTSTMR value in CRTLINSDLC command	Communications Configuration
CXCDTAR	LINESPEED value in CRTLINSDLC command	Communications Configuration

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Failing Item	Description	Document Description
CXCENCD	NRZI value in CRTLNSDLC command	Communications Configuration
CXCINAT	INACTTMR value in CRTLNSDLC command	Communications Configuration
CXCMAXI	MAXFRAME value in CRTLNSDLC command	Communications Configuration
CXCMODU	MODULUS value in CRTLNSDLC command	Communications Configuration
CXCMRTY	FRAMERTY value in CRTLNSDLC command	Communications Configuration
CXCMSTA	MAXCTL value in CRTLNSDLC command	Communications Configuration
CXCNPRT	NPRDRCVTMR value in CRTLNSDLC command	Communications Configuration
CXCRPTO	IDLTM value in CRTLNSDLC command	Communications Configuration
CXCSNDT	SHMNODE value in CRTLNSDLC command	Communications Configuration
CXCSTAD	STNADR value in CRTCTL____command	Communications Configuration
CXCTEMP	No failure found	Communications Configuration
GXC7777	Electrical interference	
GXC8888	Other work station on port is failing	
GXC9999	Error occurred with pass-through command	
GXCBBBB	Too many work stations are active on the workstation IOP	
GXCEEEE	Active device turned off	
GXCLINK	Communications network equipment	
UXCFF00	User believes there is a problem	

### (B1xx) Service Processor Reference Codes

For (B1xx) Service Processor Reference Codes and Failing Items, see “(A1xx, B1xx) Service Processor Reference Codes” on page 279.

### (B2xx) Logical Partition Reference Codes

The code that partitions the system detected an error in the logical partition. These reference codes are posted in the *Partition Status* screens under the SST/DST “*Work with system partitions*” option.

1. Characters 3 and 4 of word 1 are the partition ID of the logical partition with the problem.
2. Find the unit reference code in the following table.

#### Notes:

1. If the failing item is a failing item (FI) code, go to “Failing Item (FI) Code Table” on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
3. If the failing item is a symbolic FRU, go to “Symbolic FRU Isolation” on page 392 to determine the part number.



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1210	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Look in the Primary partition's Service Action Log for a B6005090 during the secondary partition IPL. Use that SRC and go to "Chapter 2. Unit Reference Codes" on page 59.</p> <p>If you do not find a B6005090 in the Service Action Log of the Primary partition then look for any SRC which was logged during the IPL of the Primary partition. Search the Service Action Log first and if you do not find an SRC there then search the Product Activity Log. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59.</p>	FI00580
1220	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Initiate a Primary partition main storage dump then contact your next level of support.</p>	FI00099
1230	<p>A problem occurred during the IPL of a secondary partition</p> <p>See the <i>AS/400 Service Functions</i> information.</p> <p>This is a partitioning configuration problem. The partition is lacking the necessary resources to IPL. Refer the customer to their software support.</p>	FI00099 LPARCFG
1250	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>The primary partition's IPL mode does not allow the secondary partition to IPL in the mode the secondary partition attempted to IPL in. If the primary partition is IPL'd in 'C' mode then secondary partitions can only IPL in 'C' mode. Other modes are not allowed.</p> <p>IPL the primary partition in either 'A' mode or 'B'. Then retry the IPL of the secondary partition.</p>	LPARCFG
1310	<p>A problem occurred during the IPL of a secondary partition</p> <p>No alternate (D-mode) IPL IOP selected. The IPL will attempt to continue, but there may not be enough information to find the correct D-mode loadsource.</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Have the customer configure an alternate IPL IOP for the secondary partition. Then retry the secondary partition IPL.</p>	LPARCFG

## B2xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1320	<p>A problem occurred during the IPL of a secondary partition</p> <p>No default load source IOP selected for an A/B-mode IPL. The IPL will attempt to continue, but there may not be enough information to find the correct load-source.</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Have the customer configure a loadsource IOP for the secondary partition. Then retry the secondary partition IPL.</p>	LPARCFG
3110	<p>A problem occurred during the IPL of a secondary partition</p> <p>Contact your next level of support.</p>	LPARSUP
3113	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Look in the Service Action Log of the Primary partition for B600xxxx SRCs that were logged when the secondary partition was IPLing. Correct the B600xxxx problem, then retry the secondary partition IPL.</p> <p>If there are no B600xxxx SRCs in the Service Action Log of the Primary partition from the secondary partition's IPL then contact your next level of support.</p>	LPARSUP
3114	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Look in the Service Action Log of the Primary partition for B600xxxx SRCs with the same bus/board/card numbers identified in the B2xx xxxx SRC words. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59.</p> <p>The B2xx xxxx SRC Format is Word 1: B2xx3114, Word 3: Bus, Word 4: Board, Word 5: Card.</p>	FI00096
3120	<p>A problem occurred during the IPL of a secondary partition</p> <p>Retry count exceeded. Contact your next level of support.</p>	LPARSUP
3123	<p>A problem occurred during the IPL of a secondary partition</p> <p>Due to the multi-adapter bridge configuration the IOA with the load source device for the secondary partition does not belong to the IOP it was assigned to when the secondary partition was configured.</p> <p>Contact your next level of support.</p>	LPARSUP
3125	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information on logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Primary partition main store utilization problem. The Primary partition code could not obtain a segment of main storage within the Primary partition's main store to use for managing the creation of a secondary partition.</p>	LPARCFG

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3128	<p>A problem occurred during the IPL of a secondary partition</p> <p>An unexpected failure return code was returned when attempting to query the IOA slots that are assigned to an IOP.</p>	FI00099
3130	<p>A problem occurred during the IPL of a secondary partition</p> <p>If word 3 is zero, then this SRC is informational and can be ignored.</p> <p>Otherwise there is a problem in the Primary partition. A non-zero bus number has no associated bus object.</p> <p>Contact your next level of support.</p>	LPARSUP
3135	<p>A problem occurred during the IPL of a secondary partition</p> <p>An unknown bus type was detected.</p>	FI00099
3140	<p>A problem occurred during the IPL of a secondary partition</p> <p>The load-source IOP is not owned by the secondary partition. This is a configuration problem in the secondary partition. Have the customer re-configure the partition to have the intended load-source IOP.</p> <p>If there is not a configuration problem then contact your next level of support.</p>	LPARSUP
3200	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Look for an SRC in the Service Action Log of the Primary partition logged at the time the secondary partition was IPLing. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59.</p>	FI00098 FI00096
4310	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Initiate a Primary partition main storage dump and contact your next level of support.</p>	FI00099
4311	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Initiate a primary partition main storage dump and contact your next level of support.</p>	FI00099
4312	<p>A problem occurred during the IPL of a secondary partition</p> <p>Received an unexpected Direct Select Address.</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Initiate a Primary partition main storage dump and contact your next level of support.</p>	FI00099

**B2xx**

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4320	<p>A problem occurred during the IPL of a secondary partition</p> <p>Configuration error. Expected a disk unit and got some other kind of adapter or device.</p> <p>See the <i>AS/400 Service Functions</i> information.</p>	LPARSUP
4321	<p>A problem occurred during the IPL of a secondary partition</p> <p>Configuration error. Expected a tape or optical unit and received some other kind of adapter or device.</p> <p>See the <i>AS/400 Service Functions</i> information.</p>	LPARSUP
5106	<p>Problem detected during main storage dump</p> <p>Not enough space in the Primary partition's ASP to contain the dump.</p> <p>Contact your next level of support.</p>	LPARSUP
5114	<p>Problem detected during main storage dump</p> <p>There is not enough space on the secondary partition's load-source to contain the dump.</p>	FI00099
5115	<p>Problem detected during main storage dump</p> <p>There was an error reading the secondary partition's main storage dump from the secondary partition's load-source into the Primary partition's main storage.</p>	LPARSUP
5117	<p>Problem detected during main storage dump</p> <p>A main storage dump has occurred but cannot be written to the load source device because a valid dump already exists.</p> <p>Contact your next level of support.</p>	LPARSUP
5121, 5135, 5145	<p>Problem detected during main storage dump</p> <p>There was an error writing the secondary partition's main storage dump to the secondary partition's load-source.</p>	LPARSUP
5148	<p>Problem detected during main storage dump</p> <p>An error occurred while doing a main storage dump that would have caused another main storage dump.</p> <p>Contact your next level of support.</p>	LPARSUP
6012	<p>A problem occurred during the IPL of a secondary partition</p> <p>The secondary partition's LID failed to completely load into the the partition's mainstore area.</p> <p>Contact your next level of support.</p>	LPARSUP
6015	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>The load-source media is corrupted or invalid. A SLIP install of the secondary partition is required to recover.</p>	MEDIA FI00099

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6025	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>This is a problem with the load-source media being corrupt or invalid. A SLIP install of the secondary partition is required to recover.</p>	MEDIA FI00099
6027	<p>A problem occurred during the IPL of a secondary partition</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>A failure occurred when allocating memory for an internal object used for LID load operations.</p>	LPARCFG
6110	<p>A problem occurred during the IPL of a secondary partition</p> <p>Error on load-source device.</p> <p>See the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Record the SRC. The Direct Select Address of the device IOP in the SRC. Word 3: Bus, Word 4: Board, Word 5: Card.</p>	FI00098
7111	<p>A problem occurred during the IPL of a secondary partition</p> <p>Load-source device driver does not point to an IOP hardware driver.</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Initiate a Primary partition main storage dump, and contact your next level of support.</p>	FI00099
7115	<p>A problem occurred during the IPL of a secondary partition</p> <p>The IOP identified in word 5 is not reporting to the secondary partition. Removing an IOP hardware driver (not the loadsource for the current IPL) from the Primary partition failed. The IPL will continue, but the secondary partition will not be able to establish connections to this IOP.</p> <p>Word 3: Bus, Word 4: Board, Word 5: Card.</p>	FI00099 LPARSUP
7117	<p>A problem occurred during the IPL of a secondary partition</p> <p>The IOP identified in word 5 is not reporting to the secondary partition. Removing the IOP hardware driver that is associated with the current load-source has failed. The IPL will fail.</p> <p>Read and understand the information about logical partitions. See the <i>AS/400 Service Functions</i> information.</p> <p>Record the SRC. The location of the IOP is in SRC words 3, 4 and 5. Word 3: Bus, Word 4: Board, Word 5: Card.</p>	FI00099 LPARSUP
8105	<p>A problem occurred during the IPL of a secondary partition</p> <p>There was a failure loading the VPD areas of the secondary partition. The load-source media has been corrupted. A SLIP install of the partition is required.</p>	MEDIA FI00099

## B2xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
8107	A problem occurred during the IPL of a secondary partition  There was a problem getting a segment of main storage in the Primary partition's main store.	FI00099
8115	A problem occurred during the IPL of a secondary partition  There was a low level partition to partition communication failure. A secondary partition re-IPL is necessary to recover.  If this SRC appears again when the partition is re-IPLed contact your next level of support.	LPARSUP
F000	A problem occurred during the IPL of a secondary partition  An operation has timed out. Look in the Service Action Log of the Primary partition for a failure during the last IPL of the secondary partition. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59. If you do not find a failure in the Service Action Log from the last IPL of the partition then record all words of this SRC and call your next level of support. See the <i>AS/400 Service Functions</i> information.	LPARSUP
F001	A problem occurred during the IPL of a secondary partition  A bus time out occurred on a command to the loadsource IOP.	FI00098 FI00096
F002	A problem occurred during the IPL of a secondary partition  Timeout waiting for the load source hardware driver.  Initiate a main store dump of secondary partition.	LPARSUP
F003	A problem occurred during the IPL of a secondary partition  Partition processors did not start LIC within the timeout window.	FI00099
F004 to F005	A problem occurred during power off of secondary partition.  From the "Work with partition status screen" the primary partition issued a power down message to the secondary partition but the message response from the secondary timed out.  Initiate a main store dump of the secondary partition.	FI00099
F006	A problem occurred during the IPL of a secondary partition  The LID load operation for the secondary partition's IPL timed out.	FI00098 FI00096

### (B2xx) Logical Partition Failing Items

#### Notes:

1. To determine the failing items, go to "Failing Item (FI) Code Table" on page 359.
2. To determine the associated part numbers, go to "Type, Model, and Part Number List" on page 380.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRU Isolation" on page 392.

Failing Item	Description	Document Description
LPARCFG	Configuration error	Problem Analysis; Symbolic FRU Isolation
LPARSUP	Call your next level of support for assistance	Problem Analysis; Symbolic FRU Isolation

Failing Item	Description	Document Description
MEDIA	Attached storage device	Problem Analysis; Symbolic FRU Isolation

## (B315, B320) System Processor Reference Codes

The system processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

If the unit reference code table shows a main storage card (FI0003x) as a failing item and no replacement part is immediately available, performing an IPL may result in continued system operation with less performance.

### Model 600, S10 System Processor Reference Codes

#### Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4100	System processor or main storage error	FI00010 FI00033
4101	Main storage failure	FI00010
4102	Main storage failure	FI00030
4103	Main storage failure	FI00031
4104	Main storage failure	FI00032
4105	Main storage failure	FI00033
4106	Main storage failure	FI00034
4107	Main storage failure	FI00035
4108	Main storage failure	FI00036
4109	Main storage failure	FI00037
410A to 410D	System processor card failure	FI00010
410E	System processor diagnostic code	AJSGM01
410F	Optical link on Bus Expansion Adapter card failed	FI00120
4110	Multiple function input output processor card	FI00120
4111 to 4113	Optical link on Bus Expansion Adapter card failed	FI00120
4114	Optical link on Bus Expansion Adapter card failed	FI00120 FI00120 FI00120

## B315, B320

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4115 to 4117	Optical link on Bus Expansion Adapter card failed	FI00120
4118 to 4119	Bus expansion card	FI00120
411A	System processor or main storage error	FI00010 FI00031
411B	Main storage failure	FI00033 FI00010
411C	Main storage failure	FI00031 FI00032
411D to 411E	System processor card failure	FI00010
411F	System processor or main storage error	FI00010 FI00031 FI00033
4120	Optical link on Bus Expansion Adapter card failed	FI00120
4121	Licensed Internal Code error or system processor failure	FI00010 AJSGM01
4122	Licensed Internal Code error or system processor failure	AJDG301 FI00010
4123	Licensed Internal Code detected error	AJSGM01 AJSCB01
4124	Licensed Internal Code error or system processor failure	FI00010 AJSGM01 AJDG301
4125	Licensed Internal Code error	AJSCB01 AJSGM01
4126 to 4127	Optical link on Bus Expansion Adapter card failed	FI00120
4128	System bus error	FI00065
4129	Optical link on Bus Expansion Adapter card failed	FI00120 FI00010
412A	Main storage, system processor or Licensed Internal Code	FI00010 FI00037 AJSCB01
412B to 412C	System processor card failure	FI00010 FI00120
412D	Optical link on Bus Expansion Adapter card failed	FI00120 FI00010 FI00120
412E to 412F	Optical link on Bus Expansion Adapter card failed	FI00120 FI00010
4130	System processor card failure	FI00010 FI00120
4131	Optical link on Bus Expansion Adapter card failed	FI00120 FI00010 FI00120
4132	Optical link on Bus Expansion Adapter card failed	FI00120 FI00010
4133	System processor card failure	FI00010 FI00120



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4134	Optical link on Bus Expansion Adapter card failed	FI00120 FI00010 FI00120
4135	System processor card failure	FI00010 AJSCB01 FI00120 FI00120
4136	System processor card failure	FI00010 AJSCB01
4137	Bus extension adapter card	FI00120
4138 to 413A	System processor card failure	FI00010 FI00120
413B to 413F	Optical link on Bus Expansion Adapter card failed	FI00120 FI00120
4140	Optical link on Bus Expansion Adapter card failed	FI00120 FI00120 FI00120 FI00120
4141 to 4144	Optical link on Bus Expansion Adapter card failed	FI00120 FI00120
4145	Bus expansion card	FI00120 FI00010
4146 to 4148	Bus expansion card	FI00120 FI00120
4149	Bus expansion card	FI00120 FI00120 FI00120 FI00120
414A	System processor or multiple function IOP failure	FI00010 FI00120 AJSCB01 FI00120
414B	System processor or multiple function IOP failure	FI00010 FI00120
414C	Multiple function IOP or system processor failure	FI00120 FI00010
414D	Optical link on Bus Expansion Adapter card failed	FI00120 FI00120 FI00010
414E	Multiple function IOP or system processor failure	FI00120 FI00120 FI00010
414F	Multiple function IOP or system processor failure	FI00120 FI00010 FI00120
4150 to 4152	Optical link on Bus Expansion Adapter card failed	FI00120 FI00120 FI00120 FI00010
4153 to 4158	Failure detected on multiple function I/O processor card	FI00120 FI00120

## B315, B320

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4159 to 415B	Optical link on Bus Expansion Adapter card failed	FI00120 FI00120
415C	Bus expansion card	FI00120 FI00120
415D	Bus expansion card	FI00045
415E	Bus expansion card I/O Planar card	FI00015
4190	Service processor Licensed Internal Code	AJSCB01
41B0 to 41B1, 41BB	Licensed Internal Code error	AJSGM01
41C0	Control panel  The failing item associated with this reference code has a high probability of resolving the problem.	FI00124
41FF	System processor card failure	FI00010 FI00120 FI00120 FI00120 FI00120 FI00045

## Model 600, S10 System Processor Failing Items

### Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 359.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJSCB01	Service processor Licensed Internal Code	Service Functions; APAR or LICTR
AJSGM01	System processor diagnostic code	Service Functions; APAR or LICTR

## (B430, B434, B435) System Processor Reference Codes

The system processor detected a failure.

1. Look at the 4 rightmost characters of the Data display for function 11-3. These 4 characters are the unit reference code.
2. Look at functions 14-3 and 15-3 for more unit reference codes. Each is four characters in length. There may be from one to five unit reference codes contained in these words.

For example:

- Word 11 – B43x rrrr
- Word 14 – rrrr rrrr
- Word 15 – rrrr rrrr

This example shows a total of five reference codes for this failure. The **rrrr** signifies a single reference code. Each reference code has only one FRU associated with it.

For a given reference code, the first character is indicative of the FRU's priority level. A "4" signifies a high priority while a "6" indicates a low priority. For example, a reference code of type 4xxx has a high probability of solving the problem, whereas a reference code of type 6xxx has a lower probability of doing so.

3. Find the unit reference code in the following table.

If the unit reference code table shows a main storage card (FI0003x) or a system processor card (PROCARD) as a failing item and no replacement part is immediately available, performing an IPL may result in continued system operation with less performance.

See "System Unit and Expansion Unit Locations and Addresses" on page 712 for the physical mapping of the information in the *Location* column.

**Notes:**

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

If no slot number is given in the location column of the reference code table, perform an IPL and check for a new reference code. If there is a new reference code, continue the repair action using the new reference code. If the same reference code, with no location, appears, contact your next level of support.

## **Models 620, 720, and S20 System Processor Reference Codes**

**Notes:**

1. If the failing item is a failing item (FI) code, go to "Failing Item (FI) Code Table" on page 359 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number List" on page 380 to determine the part number. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
3. If the failing item is a symbolic FRU, go to "Symbolic FRU Isolation" on page 392 to determine the part number.

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4200	System processor card failure  The failing item associated with this reference code has a high probability of resolving the problem.	PROCARD	M01
4201	System processor card failure  The failing item associated with this reference code has a high probability of resolving the problem.	PROCARD	M02
4202	System processor card failure  The failing item associated with this reference code has a high probability of resolving the problem.	PROCARD	ANY
4210	Main storage expansion card  The failing item associated with this reference code has a high probability of resolving the problem.	FI00030	M03
4211	Main storage expansion card  The failing item associated with this reference code has a high probability of resolving the problem.	FI00030	M04
4212	Main storage expansion card  The failing item associated with this reference code has a high probability of resolving the problem.	FI00030	M05
4213	Main storage expansion card  The failing item associated with this reference code has a high probability of resolving the problem.	FI00030	ANY
4220	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-A
4221	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-B
4222	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-C
4223	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-D
4224	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-E
4225	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-F

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4226	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-G
4227	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-H
4228	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-J
4229	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-K
422A	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-L
422B	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-M
422C	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-N
422D	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-P
422E	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-Q
422F	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-R
4230	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-X
4240	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-A
4241	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-B

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4242	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-C
4243	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-D
4244	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-E
4245	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-F
4246	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-G
4247	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-H
4248	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-J
4249	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-K
424A	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-L
424B	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-M
424C	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-N
424D	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-P
424E	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-Q

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
424F	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-R
4250	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-X
4260	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-A
4261	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-B
4262	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-C
4263	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-D
4264	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-E
4265	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-F
4266	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-G
4267	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-H
4268	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-J
4269	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-K
426A	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-L

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
426B	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-M
426C	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-N
426D	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-P
426E	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-Q
426F	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-R
4270	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-X
4280	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-AB
4281	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-CD
4282	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-EF
4283	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-GH
4284	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-JK
4285	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-LM
4286	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-NP



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4287	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M05-QR
4290	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-AB
4291	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-CD
4292	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-EF
4293	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-GH
4294	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-JK
4295	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-LM
4296	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-NP
4297	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M04-QR
42A0	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-AB
42A1	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-CD
42A2	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-EF
42A3	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-GH

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
42A4	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-JK
42A5	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-LM
42A6	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-NP
42A7	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M03-QR
42A8	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	ANY
42B0	Card enclosure or backplane  The failing item associated with this reference code has a high probability of resolving the problem.	BACKPL8	M00
42B1	Card enclosure or backplane  The failing item associated with this reference code has a high probability of resolving the problem.	BACKPL6	S00
42B2	Card enclosure or backplane  The failing item associated with this reference code has a high probability of resolving the problem.	BACKPL2	C00
42B3	Card enclosure or backplane  The failing item associated with this reference code has a high probability of resolving the problem.	BACKPL7	E00
42B4	System processor or main storage error  The failing item associated with this reference code has a high probability of resolving the problem.	BACKPL8	M00
42B7	Local optical link card  The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	S07-A
42B8	Local optical link card  The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	S07-B
42B9	Local optical link card  The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	S07-C

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
42BA	Local optical link card  The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	E01-A
42BB	Local optical link card  The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	E01-B
42BC	Bus expansion card  The failing item associated with this reference code has a high probability of resolving the problem.	FI00015	S07
42BE	Clock Card Failure  The failing item associated with this reference code has a high probability of resolving the problem.	CLKCARD	
42C0	Service processor Licensed Internal Code  The failing item associated with this reference code has a high probability of resolving the problem.	AJDGP01	
42C1	Licensed Internal Code error  The failing item associated with this reference code has a high probability of resolving the problem.	AJDG301	
42C2	Service processor Licensed Internal Code  The failing item associated with this reference code has a high probability of resolving the problem.	AJDGP01	
42D0	Control panel  The failing item associated with this reference code has a high probability of resolving the problem.	CTLPNL	
42D1	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-A
42D2	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-B
42D3	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-C
42D4	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-D
42D5	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-E

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
42D6	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-F
42D7	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-G
42D8	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-H
42E0	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-A
42E1	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-B
42E2	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-C
42E3	Main storage failure  The failing item associated with this reference code has a high probability or resolving the problem.	FI00037	M00-D
42E4	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-E
42E5	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-F
42E6	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-G
42E7	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-H
42E8	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-J
42E9	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-K

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
42EA	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-L
42EB	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-M
42EC	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-N
42ED	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-P
42EE	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-Q
42EF	Main storage failure  The failing item associated with this reference code has a high probability of resolving the problem.	FI00037	M00-R
4A00	Call your next level of support for assistance  Save all data for your next level of support.	0000000	ANY
4A0C	Not valid system configuration detected  The failing item associated with this reference code has a high probability of resolving the problem.	PROCCFG	ANY
6200	System processor card failure  The failing item associated with this reference code has a low probability of resolving the problem.	PROCARD	M01
6201	System processor card failure  The failing item associated with this reference code has a low probability of resolving the problem.	PROCARD	M02
6202	System processor card failure  The failing item associated with this reference code has a low probability of resolving the problem.	PROCARD	ANY
6210	Main storage expansion card  The failing item associated with this reference code has a low probability of resolving the problem.	FI00030	M03
6211	Main storage expansion card  The failing item associated with this reference code has a low probability of resolving the problem.	FI00030	M04

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6212	Main storage expansion card  The failing item associated with this reference code has a low probability of resolving the problem.	FI00030	M05
6213	Main storage expansion card  The failing item associated with this reference code has a low probability of resolving the problem.	FI00030	ANY
6220	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-A
6221	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-B
6222	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-C
6223	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-D
6224	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-E
6225	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-F
6226	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-G
6227	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-H
6228	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-J
6229	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-K
622A	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-L

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
622B	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-M
622C	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-N
622D	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-P
622E	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-Q
622F	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-R
6230	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-X
6240	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-A
6241	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-B
6242	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-C
6243	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-D
6244	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-E
6245	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-F
6246	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-G

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6247	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-H
6248	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-J
6249	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-K
624A	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-L
624B	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-M
624C	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-N
624D	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-P
624E	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-Q
624F	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-R
6250	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-X
6260	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-A
6261	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-B
6262	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-C



Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6263	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-D
6264	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-E
6265	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-F
6266	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-G
6267	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-H
6268	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-J
6269	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-K
626A	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-L
626B	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-M
626C	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-N
626D	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-P
626E	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-Q
626F	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-R

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6270	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-X
6280	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-AB
6281	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-CD
6282	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-EF
6283	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-GH
6284	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-JK
6285	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-LM
6286	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-NP
6287	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M05-QR
6290	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-AB
6291	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-CD
6292	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-EF
6293	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-GH

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6294	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-JK
6295	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-LM
6296	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-NP
6297	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M04-QR
62A0	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-AB
62A1	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-CD
62A2	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-EF
62A3	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-GH
62A4	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-JK
62A5	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-LM
62A6	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-NP
62A7	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M03-QR
62A8	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	ANY

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
62B0	Card enclosure or backplane  The failing item associated with this reference code has a low probability of resolving the problem.	BACKPL8	M00
62B1	Card enclosure or backplane  The failing item associated with this reference code has a low probability of resolving the problem.	BACKPL6	S00
62B2	Card enclosure or backplane  The failing item associated with this reference code has a low probability of resolving the problem.	BACKPL2	C00
62B3	Card enclosure or backplane  The failing item associated with this reference code has a low probability of resolving the problem.	BACKPL7	E00
62B4	System processor or main storage error  The failing item associated with this reference code has a low probability of resolving the problem.	BACKPL8	M00
62B7	Local optical link card  The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	S07-A
62B8	Local optical link card  The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	S07-B
62B9	Local optical link card  The failing item associated with this reference code has a high probability of resolving the problem.	FI00017	S07-C
62BA	Local optical link card  The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	E01-A
62BB	Local optical link card  The failing item associated with this reference code has a low probability of resolving the problem.	FI00017	E01-B
62BC	Bus expansion card  The failing item associated with this reference code has a low probability of resolving the problem.	FI00015	S07
62BE	Clock Card Failure  The failing item associated with this reference code has a low probability of resolving the problem.	CLKCARD	
62C0	Service processor Licensed Internal Code  The failing item associated with this reference code has a low probability of resolving the problem.	AJDGP01	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
62C1	Licensed Internal Code error  The failing item associated with this reference code has a low probability of resolving the problem.	AJDG301	
62C2	Service processor Licensed Internal Code  The failing item associated with this reference code has a low probability of resolving the problem.	AJDGP01	
62D0	Control panel  The failing item associated with this reference code has a low probability of resolving the problem.	CTLPNL	
62D1	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-A
62D2	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-B
62D3	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-C
62D4	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-D
62D5	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-E
62D6	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-F
62D7	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-G
62D8	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-H
62E0	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-A
62E1	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-B

**B430, B434, B435**

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
62E2	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-C
62E3	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-D
62E4	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-E
62E5	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-F
62E6	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-G
62E7	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-H
62E8	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-J
62E9	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-K
62EA	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-L
62EB	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-M
62EC	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-N
62ED	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-P
62EE	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-Q

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
62EF	Main storage failure  The failing item associated with this reference code has a low probability of resolving the problem.	FI00037	M00-R
6A00	Call your next level of support for assistance  Save all data for your next level of support.	0000000	ANY

### Models 620, 720, and S20 System Processor Failing Items

#### Notes:

1. To determine the failing items, go to “Failing Item (FI) Code Table” on page 359.
2. To determine the associated part numbers, go to “Type, Model, and Part Number List” on page 380.
3. To determine the parts associated with symbolic FRUs, such as “ANYBUS”, or “DEVTERM”, go to “Symbolic FRU Isolation” on page 392.

Failing Item	Description	Document Description
0000000	Call your next level of support for assistance	Call your next level of support for assistance
AJDG301	Licensed Internal Code error	Repair and Parts; removal and installation procedures
AJDGP01	Licensed Internal Code error	Repair and Parts; removal and installation procedures
AJDGP01	Service processor Licensed Internal Code	Repair and Parts; removal and installation procedures
BACKPL2	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
BACKPL6	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
BACKPL7	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
BACKPL8	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
BACKPL8	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
CLKCARD	Clock Card Failure	Problem Analysis; Symbolic FRU Isolation
CTLPNL	Control panel	Problem Analysis; Symbolic FRU Isolation
PROCARD	System processor card	Problem Analysis; Symbolic FRU Isolation
PROCARD	System processor card	Problem Analysis; Symbolic FRU Isolation
PROCARD	System processor card	Problem Analysis; Symbolic FRU Isolation
PROCCFG	Not valid system configuration detected	Problem Analysis; Symbolic FRU Isolation

### (B6xx) LIC Reference Codes

For (B6xx) LIC Reference Codes and Failing Items, see “(A6xx, B6xx) LIC Reference Codes” on page 281.

### (B9xx) OS/400 Reference Codes

For (B9xx) OS/400 Reference Codes, see “(A9xx, B9xx) OS/400 Reference Codes” on page 302.

**B430, B434, B435**



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## Chapter 3. Failing Items, Part Numbers, and Symbolic FRU Isolation

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### Failing Item (FI) Code Table

This table is used to find field replaceable unit (FRU) part numbers identified by a failing item code. If only a type number is listed, go to the “Type, Model, and Part Number List” on page 380 to determine the part number.

Failing Item Code	Description/Action If only a type number is listed, go to the “Type, Model, and Part Number List” on page 380 to determine the part number.
FI00010	FI00010 indicates that a system processor card is the failing item.  See the symbolic fru “PROCARD” on page 417.
FI00015	FI00015 indicates that a bus expansion adapter card in the system unit is the failing item.  Read the slot number in the <i>Location</i> column of the reference code table. If no location is listed, the failing item may be any one of the bus expansion adapters.  See “System Unit and Expansion Unit Locations and Addresses” on page 712 for the bus expansion adapter card locations.  Use the bus expansion adapter type for all models: 2735
FI00017	FI00017 indicates that the optical link card is the failing item.  Read the slot number in the <i>Location</i> column of the reference code table. If no location is listed, the failing item may be any one of the optical link cards.  The failing item may be one of the following types: • 2684 • 2686 • 2688  See “System Unit and Expansion Unit Locations and Addresses” on page 712 for the optical link card locations.
FI00020	See FI00120
FI00021	FI00021 indicates that the multiple function I/O processor (MFIOP) is the failing item.  Use the MFIOP type to determine the part number. <ul style="list-style-type: none"><li>• 9164</li></ul>
FI00022	FI00022 indicates that the Licensed Internal Code for the service processor may be the failing item.  Ask your next level of support for assistance.

## Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI00030, FI00031, FI00032, FI00033, FI00034, FI00035, FI00036	<p>FI00030 through FI00036 indicate that a main storage expansion pair or quad on the system processor card is the failing item</p> <ol style="list-style-type: none"> <li>Were you sent here by a Power SRC (1xxx xxxx)?               <div style="margin-left: 40px;"> <b>No      Yes</b> </div> <div style="margin-left: 40px;"> ↓      Go to FI00037. </div> </li> <li>If the SRC is B43x, replace storage carrier card (FC 2830).</li> <li>If the SRC is B320, continue with the instructions below.</li> </ol> <p>Each failing item code identifies a main storage expansion pair or quad.</p> <p>Look at the rightmost four characters of function 20-3 in "Appendix A. Problem Summary Form" on page 1049 or use the system configuration list to determine the system processor type. Using the system processor type and the failing item code, find the location for the failing item in the following list (see "System Unit and Expansion Unit Locations and Addresses" on page 712):</p> <p>For System Processor Feature Codes 2118, 2129, 2134, and 2135:</p> <ul style="list-style-type: none"> <li>• FI00030 — failing locations A-N</li> <li>• FI00031 — failing locations B-P</li> <li>• FI00032 — failing locations C-Q</li> <li>• FI00033 — failing locations D-R</li> <li>• FI00034 — failing locations E-S</li> <li>• FI00035 — failing locations F-T</li> </ul> <p>For System Processor Feature Code 2119, 2136:</p> <ul style="list-style-type: none"> <li>• FI00031 — failing locations EFGH</li> <li>• FI00032 — failing locations ABCD</li> <li>• FI00035 — failing locations NPQR</li> <li>• FI00036 — failing locations JKLM</li> </ul> <p>Read "Important Continuously Powered Main Storage (CPM) Information" on page 785 before removing or replacing any main storage card.</p> <p>Refer to "System Unit and Expansion Unit Locations and Addresses" on page 712.</p>
FI00037	<p>FI00037 indicates that a main storage card in any slot or a main storage expansion pair is the failing item.</p> <p>If the first four digits of word 11 are B4xx, use the following information:</p> <ul style="list-style-type: none"> <li>• For all system processors, look in the in the <i>Location</i> column of the reference code table. The physical slot and letter of the card is given as M0X-S. The X represents the physical slot and the S represents the expansion card letter.</li> <li>• If the expansion card location is represented with an X, any one of the expansion cards in that slot could be the failing item.</li> </ul> <p>If the first four digits of word 11 are B320, a main storage card in any slot could be the failing item.</p> <p>The failing item may be of type 3001 or 3002.</p> <p>Use the system configuration list printout to indentify the faililng main storage card.</p> <p>Read "Important Continuously Powered Main Storage (CPM) Information" on page 785 before removing or replacing any main storage card.</p>
FI00040	See the symbolic FRU "BACKPLN" on page 394.

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI00045	<p>FI00045 indicates the backplane is the failing item.</p> <p>Read the slot number in the <i>Location</i> column of the reference code table.</p> <p>See "System Unit and Expansion Unit Locations and Addresses" on page 712 for the backplane locations.</p>
FI00047	<p>FI00047 indicates the clock card is the failing item.</p> <p>See the symbolic FRU "CLKCARD" on page 403.</p>
FI00050	See FI00060
FI00055	<p>FI00055 indicates that a primary optical link cable is the failing item.</p> <p>This is either the optical bus cable for the bus you are working with or its paired bus cable on the optical link card.</p>
FI00056	FI00056 indicates that any optical bus cable or a missing optical bus wrap connector is the failing item.
FI00057	<p>FI00057 indicates that the secondary optical link cable is the failing item.</p> <p>This is the optical cable that runs between the bus expansion adapter cards in two separate expansion units.</p>
FI00060, FI00062, FI00065	<p>FI00060, FI00062, and FI00065 indicate that any card, cable, or card enclosure connected to the failing bus may be the failing item.</p> <p>Perform "BUS-PIP1" on page 451 to determine the failing item. Use the following list to help in problem analysis. For details on the card type or part number, see "Type, Model, and Part Number List" on page 380.</p> <ul style="list-style-type: none"> <li>• Any I/O adapter</li> <li>• Any I/O processor</li> <li>• Parts on bus 1 only: <ul style="list-style-type: none"> <li>– MFIOF</li> <li>– Local bus expansion adapter or system processor—see FI00181</li> </ul> </li> <li>• Parts on the optically-connected unit only: <ul style="list-style-type: none"> <li>– Remote bus expansion adapter—see FI00203</li> </ul> </li> <li>• System bus parts: <ul style="list-style-type: none"> <li>– Card enclosure</li> <li>– Bus extension cables</li> <li>– Backplane</li> <li>– Power supply</li> <li>– Cable to expansion tower</li> </ul> </li> </ul>
FI00070	<p>FI00070 indicates that a storage device attached to the IPL device IOP is the failing item.</p> <p>Determine the IPL device that is failing by doing the following:</p> <ol style="list-style-type: none"> <li>1. For a failing logical partition, other than the Primary partition, on systems with multiple logical partitions, go to the "Work with partition status" screen and determine the active IPL type (source).</li> <li>2. For a failing Primary partition or for systems with only one partition select function 01 (Select IPL) on the control panel to display the active IPL type..</li> </ol> <p>If the IPL storage device is not the failing item, then any storage device attached to the IPL device IOP may be the failing item.</p>

## Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI00071	<p>FI00071 indicates that the cable from the magnetic storage IOP to the IPL device is the failing item.</p> <p>The following list shows the lengths and the part numbers of this cable:</p> <ul style="list-style-type: none"> <li>• 0.6 meter—part 6495253</li> <li>• 0.75 meter—part 6495249</li> <li>• 1.5 meters—part 6495254</li> <li>• 2.5 meters—part 6495250</li> <li>• 4.0 meters—part 6495252</li> <li>• 6.0 meters—part 6495251</li> <li>• 10.0 meters—part 6495255</li> <li>• 20.0 meters—part 6495256</li> <li>• 30.0 meters—part 6495257</li> <li>• 40.0 meters—part 6495258</li> <li>• 60.0 meters—part 6495264</li> </ul>
FI00072	<p>FI00072 indicates that the load-source media is the failing item.</p> <p>If the load source is tape, exchange the tape in the alternate IPL tape unit.</p> <p>If the load source is an optical storage unit, exchange the compact disk.</p> <p>If the load source is a disk unit, exchange the disk unit.</p> <p>If replacing the media does not solve the problem, try replacing the drive.</p>
FI00075	<p>FI00075 indicates that the system processor card is the failing item.</p> <p>After verifying that the main storage card indicated by the system message is not the failing item, exchange the system processor card to correct the problem (see FI00010).</p>
FI00090	<p>FI00090 indicates that the removable media device for an alternate IPL is the failing item.</p> <p><b>Note:</b> Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.</p> <p>Determine the device that is failing by doing the following:</p> <ol style="list-style-type: none"> <li>1. Select function 01 (Select IPL) on the control panel and press Enter to verify that the active IPL type is D.</li> </ol> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>a. The removable media unit for an alternate IPL has an address of 7 (see "Determining the Load-Source Disk and Alternate IPL Device" on page 786).</li> <li>b. Use the system configuration list to identify the device (see "Hardware Service Manager" in the <i>AS/400 Service Functions</i> information).</li> </ol> <p>The possible failing devices are the following type numbers: • 2440 • 3422 • 3430 • 3480 • 3490 • 3490E • 632x • 6378 • 6379 • 6380 • 6381 • 63A0 • 6385 • 6390 • 7208 • 9347 • 9348 • 9427</p> <ol style="list-style-type: none"> <li>2. Use the service information for the specific removable media unit for an alternate IPL to analyze the device failure.</li> </ol>

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI00092	<p>FI00092 indicates that the load-source for an alternate IPL or the interface to the load-source is the failing item.</p> <p><b>Note:</b> Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.</p> <p><b>Note:</b> If the load source is an optical unit, you may need to perform function 3 to IPL the system again. This will make the unit ready.</p> <p>To locate the alternate load-source for a system that does not have multiple partitions see "Determining the Load-Source Disk and Alternate IPL Device" on page 786. To locate the alternate load-source for the Primary partition on a system that has multiple partitions see "Determining the Load-Source Disk and Alternate IPL Device" on page 786. To locate the alternate IPL load-source for a secondary partition see "Locating a Secondary Partition's Load Source" on page 812.</p> <p>Use the device type to determine the part.</p>
FI00096	<p>FI00096 indicates that the IOP attached to the load-source device is the failing item.</p> <p><b>Note:</b> Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.</p> <ol style="list-style-type: none"> <li>1. Verify that the IPL type is correct: <ul style="list-style-type: none"> <li>• For a failing logical partition, other than the Primary partition, on systems with multiple logical partitions, go to the "Work with partition status" screen and determine the active IPL type (source).</li> <li>• For a failing Primary partition or for systems with only one partition select function 01 (Select IPL) on the control panel to display the active IPL type.</li> </ul> </li> <li>2. The failing MFIO or IOP may have a removable storage I/O adapter FRU. Replace the storage IOA first using the STORIOA symbolic FRU. To locate the load source for a system that does not have multiple partitions see "Determining the Load-Source Disk and Alternate IPL Device" on page 786. To locate the load source for the Primary partition on a system that has multiple partitions see "Determining the Load-Source Disk and Alternate IPL Device" on page 786. To locate the load-source for a secondary partition see "Locating a Secondary Partition's Load Source" on page 812.</li> </ol>
FI00098	<p>FI00098 indicates that the load-source disk device is the failing item.</p> <p><b>Note:</b> Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.</p> <p>Determine the disk unit 1 type number. It is printed on a label on the front of the system frame.</p> <p>If the system does not have a label that identifies the disk unit type, you can determine the part number of the disk unit by looking at a label located on the disk unit. You must remove the disk unit to see this label.</p> <p>Exchange the disk drive and logic card for the disk unit type you have (see "Type, Model, and Part Number List" on page 380).</p> <p>To locate the load source for a system that does not have multiple partitions see "Determining the Load-Source Disk and Alternate IPL Device" on page 786. To locate the load source for the Primary partition on a system that has multiple partitions see "Determining the Load-Source Disk and Alternate IPL Device" on page 786. To locate the load-source for a secondary partition see "Locating a Secondary Partition's Load Source" on page 812.</p>
FI00099	<p>FI00099 indicates that the Licensed Internal Code failed or responded in an unpredictable way.</p> <p>Ask your next level of support for assistance.</p>
FI00120	<p>FI00120 indicates that the multiple function I/O processor (MFIO) is the failing item.</p> <p>See the symbolic FRU "BACKPLx" on page 396 (particularly BACKPL2).</p>

## Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI00121	<p>FI00121 indicates that any tape or optical storage device attached to the I/O (SCSI) bus of this IOP may be the failing item.</p> <p>Use the device type to determine the part.</p>
FI00122	<p>FI00122 indicates that a reserved IOA port on the IOP is the failing item.</p> <p>If the IOP is type 2624, the failing item is type 6146 IOA.</p>
FI00123	See the symbolic FRU "DEVTERM" on page 404.
FI00124	<p>FI00124 indicates that the control panel is the failing item.</p> <p>For part number information, see "CTLPNL" on page 404.</p>
FI00130	<p>FI00130 indicates that the Licensed Internal Code for one of the IOPs or IOAs is the failing item.</p> <p>Determine the IOP or IOA type and location (see "SRC Address Formats" on page 767).</p> <p>Get the type from the card at that address.</p> <p>Look for PTFs associated with the reference code and the identified hardware type and have the customer apply them.</p> <p><b>Note:</b> If DASD is not attached to the IOP, using the VRYCFG RESET(*YES) command may correct the problem. If DASD is attached to the IOP, an IPL must be performed to restart the IOP.</p>
FI00131	<p>FI00131 indicates that one of the IOPs or IOAs, if active, is the failing item.</p> <p>Determine the IOP or IOA type and location (see "SRC Address Formats" on page 767).</p> <p>Get the type from the card at that address.</p> <p><b>Attention:</b> Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read "Important Cryptographic I/O Processor Information" on page 785 before disconnecting or removing the cryptographic I/O processor.</p> <p>Use the IOP or IOA type to determine the part.</p>
FI00132	<p>FI00132 indicates that one of the IOAs, if attached, is the failing item.</p> <ol style="list-style-type: none"> <li>Determine the IOP address (see "SRC Address Formats" on page 767).</li> <li>Identify the type of IOA cards installed in the IOP in the location you found in the preceding step.</li> </ol> <p><b>Attention:</b> Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read "Important Cryptographic I/O Processor Information" on page 785 before disconnecting or removing the cryptographic I/O processor.</p> <p>Use the IOA type to determine the part.</p> <p>You may need to use "BUS-PIP5" on page 468 to isolate the failing IOA.</p> <p>* Card type 6509, if attached to the type 6506 IOP, may also be the failing item.</p>
FI00140	<p>FI00140 indicates that the IOP for the type 636x Tape Unit is the failing item.</p> <p>The failing IOP is the type 2621 IOP.</p>
FI00141	<p>FI00141 indicates that the IOP for the 7208 Tape Drive is the failing item.</p> <p>The failing IOP is the type 2621 IOP.</p>

Failing Item Code	Description/Action If only a type number is listed, go to the “Type, Model, and Part Number List” on page 380 to determine the part number.
FI00142	<p>FI00142 indicates that the external cable for the diskette unit is the failing item.</p> <p>Use the IOP type to determine the cable part:</p> <ul style="list-style-type: none"> <li>• 2624 with 6146 IOA—part 46G3658</li> </ul> <p><b>Note:</b> When exchanging the external cable for the diskette unit, all subsystems attached to both sides of the cable must be made inactive. If not, all jobs will be stopped when the cable is disconnected.</p>
FI00180	<p>FI00180 indicates a loss of power to a secondary frame. The control panel of the secondary frame shows one of the following conditions:</p> <ul style="list-style-type: none"> <li>• A power SRC is displayed.</li> <li>• The Power light is not on.</li> </ul> <p>Perform “Cannot Power On Secondary Frame (No SRC)” on page 42 to correct the problem.</p>
FI00182	<p>FI00182 indicates that the local optical link card is the failing item.</p> <ul style="list-style-type: none"> <li>• If the fifth character of word 5 (xxxx <u>xxxx</u>) is 1, 5, 9, or D—2686 (266Mb/s)</li> <li>• If the fifth character of word 5 (xxxx <u>xxxx</u>) is 3, 7, B, or F—2688 (1062Mb/s)</li> </ul>
FI00185	FI00185 indicates that the 12-port ASCII workstation attachment cable is the failing item.
FI00186	FI00186 indicates that the optical cable in the top position (even bus) of the optical link card is the failing item.
FI00187	<p>FI00187 indicates that the optical cable configuration is the failing item.</p> <p>Perform “BUS-PIP1” on page 451 to correct the problem.</p>
FI00189	<p>FI00189 indicates that the bus extension card configuration is the failing item.</p> <p>Perform “BUS-PIP1” on page 451 to correct the problem.</p>
FI00200	<p>FI00200 indicates that the ac module or the removable power cable is the failing item.</p> <p><b>Attention:</b> Read “Important Continuously Powered Main Storage (CPM) Information” on page 785.</p> <p>Perform “SPCN-PIP5” on page 644. Then return here and continue.</p> <p>The following list shows the possible failing ac modules:</p> <ul style="list-style-type: none"> <li>• System unit SPCN panel card (SPNLCARD): <ul style="list-style-type: none"> <li>– Models 620, 720, and S20 SPCN/panel card without a keystick—part 44H8313</li> <li>– Models 620, 720, and S20 SPCN/panel card with a keystick—part 44H8141</li> </ul> </li> <li>• FC 5070, 5072, 5080, 5082—part 87G6300</li> <li>• FC 5071, 5073, 5081, 5083—part 21H7697</li> <li>• System Unit Expansion Tower Card (FC 5065 or 5066) —part 97H7532</li> </ul> <p>See “Power Cord Part Numbers and Receptacle Descriptions” on page 1034 to determine the power cable part number for systems in your country.</p>
FI00203	<p>FI00203 indicates that the remote bus expansion adapter card in the bus expansion unit is the failing item.</p> <p>Use the adapter card type in the bus expansion unit to determine the part.</p>
FI00204	FI00204 indicates that the bus cable between the system unit and the bus expansion unit is the failing item.
FI00205	<p>FI00205 indicates that the remote bus expansion adapter for the paired bus is the failing item.</p> <p>Use the adapter card type in the bus expansion unit to determine the part.</p>

## Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI00206	<p>FI00206 indicates that a type 2685 remote bus expansion adapter is the failing item.</p> <p>Perform "BUS-PIP1" on page 451.</p>
FI00230	<p>FI00230 indicates that the Licensed Internal Code for the failing node is the failing item and needs to be restored.</p> <p>Determine the type of node and select the Licensed Internal Code load.</p> <p><b>Primary node</b> AJSFDJ04</p> <p><b>Secondary node</b> AJSFDJ05</p>
FI00235	<p>FI00235 indicates that an SPCN cable that connects two frames or a frame to a node is the failing item.</p> <p>Perform "Cannot Power On Secondary Frame (No SRC)" on page 42.</p> <p>The following list shows the lengths and part numbers of the possible failing items:</p> <ul style="list-style-type: none"> <li>• 6.0 meters—part 21F9469</li> <li>• 15.0 meters—part 21F9358</li> <li>• 30.0 meters—part 21F9359</li> <li>• 60.0 meters—part 21F9360</li> <li>• 100.0 meters (SPCN optical cable)—part 21F9415</li> <li>• SPCN optical adapter—part 90H6287</li> <li>• SPCN port cable (frame-to-node)—part 21F9362</li> </ul>
FI00236	<p>FI00236 indicates that the frame control panel is the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> <li>• 9309 multi-purpose frame: <ul style="list-style-type: none"> <li>– Control panel—part 89X2895</li> </ul> </li> </ul>
FI00237	<p>FI00237 indicates that one of the cards powered by I/O regulator 1 is the failing item.</p> <p>Perform SPCN-PIP2 on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information to determine the failing item.</p>
FI00238	<p>FI00238 indicates that one of the cards powered by I/O regulator 2 is the failing item.</p> <p>Perform SPCN-PIP2 on page 4-SPCN-1 in the <i>FC 504x Problem Analysis and Repair and Parts</i> information to determine the failing item.</p>
FI00239	<p>FI00239 indicates that the support box tray is the failing item.</p> <p>One of the following parts may be installed:</p> <ul style="list-style-type: none"> <li>• 74F1649</li> <li>• 21F5861</li> <li>• 17G2504</li> </ul>



Failing Item Code	Description/Action If only a type number is listed, go to the “Type, Model, and Part Number List” on page 380 to determine the part number.
FI00240	<p>FI00240 indicates that an SPCN node is the failing item.</p> <p>The system cannot identify the type of node. Determine the failing node and exchange the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> <li>• System unit SPCN panel card (SPNLCARD) <ul style="list-style-type: none"> <li>– Models 620, 720, and S20 SPCN/panel card without a keystick—part 44H8313</li> <li>– Models 620, 720, and S20 SPCN/panel card with a keystick—part 44H8141</li> </ul> </li> <li>• Secondary frame SPCN node <ul style="list-style-type: none"> <li>– FC 5072 and 5082 frame ac module — part 87G6300</li> <li>– FC 5073 and 5083 frame ac module — part 21H7697</li> <li>– FC 9309 frame Power control compartment <ul style="list-style-type: none"> <li>- part 21F9008 for 1 Phase Domestic</li> <li>- part 21F9009 for 1 Phase World Trade</li> <li>- part 21F9019 for 2 Phase World Trade</li> <li>- part 21F9020 for 2 Phase World Trade</li> </ul> </li> <li>– FC 5065 or 5066 expansion tower card (TWRCARD)—part 97H7532</li> </ul> </li> </ul>
FI00244	<p>FI00244 indicates that one of the loads on the +28 V dc line in the FC 5043 or FC 5044 System Unit Expansion is the failing item.</p> <p>The following load on the +28 V dc line from I/O regulator 1 is causing an overcurrent condition:</p> <ul style="list-style-type: none"> <li>• A logic card in card slots 1 through 7</li> </ul>
FI00245	<p>FI00245 indicates that the card enclosure for an unknown unit type is the failing item.</p> <p>System Units and System Expansion Units—see Symbolic FRU “BACKPLN” on page 394.</p>
FI00246	<p>FI00246 indicates that one of the loads on the +28 V dc line in the FC 5043 or 5044 System Unit Expansion is the failing item.</p> <p>The following load on the +28 V dc line from I/O regulator 2 is causing an overcurrent condition:</p> <ul style="list-style-type: none"> <li>• A logic card in card slots 8 through 13</li> </ul>
FI00248	<p>FI00248 indicates that the card enclosure in the FC 5043 or FC 5044 System Unit Expansion is the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> <li>• 5044 System Unit Expansion Box—part 74F1543</li> <li>• 5043 Bus Extension Unit—part 74F1544</li> </ul>

## Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI00251	<p>FI00251 indicates that a battery power unit is the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> <li>• Bus Expansion Units and the Storage Expansion Units use the following: <ul style="list-style-type: none"> <li>– Internal Battery Power Unit 1 and 2 battery pack—part 86G8040</li> <li>– Internal Battery Power Unit 1 and 2 charger—part 86G8020</li> <li>– External Battery Power Unit 2 battery pack—part 86G7714</li> <li>– External Battery Power Unit 2 charger—part 86G7750</li> <li>– External Battery Power Unit 2 cable—part 86G7712</li> </ul> </li> <li>• 9309 general purpose I/O frame with SPCN (FC 9171)—part 21F9380</li> <li>• FC 5065 or 5066 expansion tower <ul style="list-style-type: none"> <li>– Battery unit assembly—part 97H7320 (4x)</li> <li>– Battery unit charger—part 97H7316</li> </ul> </li> </ul>
FI00253	<p>FI00253 indicates that a battery power unit charger is the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> <li>• Internal Battery Power Unit 1 or 2 charger—part 86G8020</li> <li>• External Battery Power Unit 2 charger—part 86G7750</li> <li>• 9309 general purpose I/O frame with SPCN (FC 9171)—part 21F9380</li> </ul>
FI00255	<p>FI00255 indicates that a regulator is the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> <li>• System Unit Expansion (FC 507x)—part 87G6049</li> <li>• Storage Expansion Tower (FC 508x)—part 17G1209</li> </ul>
FI00256	<p>FI00256 indicates that a regulator in the FC 5032 Removable Storage Unit is the failing item.</p> <p>Exchange the following items, one at a time, until the problem is corrected: • 636x • 6378 • 6379 • 6380 • 6390 • D/SE module—part 21F8890</p>
FI00300	<p>FI00300 indicates that media is the failing item.</p> <p>If the load source is:</p> <ul style="list-style-type: none"> <li>• Tape, exchange the tape in the alternate IPL tape unit.</li> <li>• An optical storage unit, exchange the compact disk.</li> <li>• DASD, exchange the DASD.</li> </ul> <p>If installing from:</p> <ul style="list-style-type: none"> <li>• Tape, exchange the tape in the alternate IPL tape unit.</li> <li>• An optical storage unit, exchange the compact disk.</li> </ul>
FI00301	<p>FI00301 indicates that the magnetic storage I/O processor (MSIOP) or the multiple function I/O processor (MFIOP) is the failing item.</p> <p>Use the IOP type to determine the part.</p>
FI00302	<p>FI00302 indicates that the Licensed Internal Code for the magnetic storage I/O processor (MSIOP) or the multiple function I/O processor (MFIOP) is the failing item.</p> <p>Ask your next level of support for assistance.</p>
FI00310	<p>FI00310 indicates that an I/O processor card or an I/O adapter card is the failing item.</p> <p>Perform "BUS-PIP1" on page 451.</p>
FI00315	<p>FI00315 indicates that the battery power unit install time life has been exceeded.</p>

Failing Item Code	Description/Action If only a type number is listed, go to the “Type, Model, and Part Number List” on page 380 to determine the part number.
FI00316	FI00316 indicates that no I/O processors were found on the bus.  Verify the configuration information for the system. If a bus is configured to be empty, there is no problem.
FI00317	FI00317 indicates that the I/O processor cards at consecutive direct select addresses appear to be failing.  The I/O processor cards or a damaged backplane could cause this problem.
FI00318	FI00318 indicates that an I/O adapter card attached to an I/O processor card on the failing bus is the failing item.
FI00319	FI00319 indicates that the Licensed Internal Code on an I/O processor is the failing item. Install a PTF to correct the problem.  Ask your next level of support for assistance.
FI00320	FI00320 indicates that the display station used as the console is the failing item.
FI00330	FI00330 indicates that cryptographic hardware is the failing item.  The following list shows the possible failing items: <ul style="list-style-type: none"> <li>• Cryptographic I/O processor</li> <li>• Security Interface Unit</li> <li>• AS/400 system to Security Interface Unit cable</li> </ul>
FI00350	FI00350 indicates that the alternate IPL device is the failing item.  See the service information for the specific device type and model installed on the system to determine the part.
FI00360	FI00360 indicates that the IPL disk device is the failing item.
FI00380	On the bus with the system console or the failing logical partition’s console the failing item is the first workstation IOP card or the workstation IOA card. The bus with the system console is bus 0001. For systems with multiple logical partitions the Primary partition’s console is on bus 0001 and the consoles for other logical partitions are determined by the LPAR configuration.
FI00500	FI00500 indicates that the cable from the storage device IOP to the storage device is the failing item.  The following list shows the lengths and part numbers of this cable: <ul style="list-style-type: none"> <li>• 0.6 meter—part 6495253</li> <li>• 0.75 meter—part 6495249</li> <li>• 1.5 meters—part 6495254</li> <li>• 2.5 meters—part 6495250</li> <li>• 4.0 meters—part 6495252</li> <li>• 6.0 meters—part 6495251</li> <li>• 10.0 meters—part 6495255</li> <li>• 20.0 meters—part 6495256</li> <li>• 30.0 meters—part 6495257</li> <li>• 40.0 meters—part 6495258</li> <li>• 60.0 meters—part 6495264</li> </ul>
FI00580	FI00580 indicates that any storage device may be the failing item.  The address of the failing storage device cannot be determined.

## Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI00581	FI00581 indicates that a storage device at the address identified by the problem isolation procedures for the reference code is the failing item.  Use the service information of the I/O device to continue analyzing the problem.
FI00584	FI00584 indicates that any storage device may be the failing item.  The address of the failing storage device cannot be determined.
FI00601	FI00601 indicates that the display station is the failing item.  If a link protocol converter is used to connect the console to the system, the protocol converter is the failing item.
FI00602	FI00602 indicates that the cable between the workstation attachment and the device is the failing item.
FI00603	FI00603 indicates that the 5299 Multiconnector is the failing item.
FI00604	FI00604 indicates that a printer is the failing item.  Use the printer device information to analyze the problem.
FI00605	FI00605 indicates that a magnetic stripe reader on a display station is the failing item.
FI00606	FI00606 indicates that the storage media is the failing item.
FI00607	FI00607 indicates that a selector light pen attached to a display station is the failing item.
FI00608	FI00608 indicates that the link protocol converter is the failing item.
FI00610	FI00610 indicates that the twinaxial workstation IOP card is the failing item.  Use the IOP type to determine the part. <b>Note:</b> * You may exchange a 2-connector card with a 1-connector card, but this needs an adapter cable (part 22F0097) to change from a 25-pin D-shell connector on the card end to two 9-pin D-shell connectors (4-port twinaxial workstation attachment ends).
FI00611	FI00611 indicates that:  Either the ASCII workstation IOP (6141) or the 12-port attachment (part 59X3816) or both are the failing items.
FI00612	FI00612 indicates that the cable between the 6-port attachment or the 12-port attachment and the device is the failing item.
FI00613	FI00613 indicates that the display station used as the console is the failing item.
FI00614	FI00614 indicates that a unit reference code of FFFF was indicated when the user entered the ANZPRB (Analyze Problem) command from a workstation.  The failing items for this error can be identified by running the complete ANZPRB command. The failing items are also in the problem log when the WRKPRB command is entered.
FI00615	FI00615 indicates that the twinaxial workstation attachment cable is the failing item.  Check the twinaxial workstation attachment cable for the part number.
FI00616	FI00616 indicates that the 5259 Migration Data Link is the failing item.  Exchange the 5259 Migration Data Link.
FI00626	FI00626 indicates that the modem on the failing port is the failing item.  Exchange the modem.
FI00630	FI00630 indicates that the multiline communications IOP is the failing item.  Use the IOP type to determine the part.

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI00631	FI00631 indicates that a cable other than the cable from the workstation IOA to the first device is the failing item.
FI00632	FI00632 indicates that the cable from the workstation IOA to the first device is the failing item.
FI00700	FI00700 indicates that the remote data terminal equipment (DTE) or an attached device is the failing item.  Report this problem to the operator of the remote equipment.
FI00701	FI00701 indicates that a local communications cable is the failing item.  Use the cable to determine the part.
FI00702	FI00702 indicates that the local cable for the automatic call unit is the failing item.  Check the automatic call unit interface cable for the part number.
FI00703	FI00703 indicates that the automatic call unit is the failing item.
FI00704	FI00704 indicates that the local data circuit-terminating equipment (DCE) is the failing item.
FI00705	FI00705 indicates that the remote data circuit-terminating equipment (DCE) is the failing item.  Report this problem to the operator of the remote equipment.
FI00708	FI00708 indicates that the local communications cable (X.21 interface) is the failing item.  Check the communications cable for the part number.
FI00709	FI00709 indicates that the local communications cable (V.35 interface) is the failing item.  Check the communications cable for the part number.
FI00710	FI00710 indicates that the local communications cable (V.24 interface with remote power on) is the failing item.  The remote power on feature is given support by using an available pin on the EIA-232/V.24 enhanced or EIA-232/V.24 non-enhanced cables. Check the communications cable for the part number.
FI00711	FI00711 indicates that the local communications cable (token-ring interface cable) is the failing item. <b>Note:</b> An "IBM Cabling System Patch Cable" or a comparable cable may have been supplied by the user to increase the length of this cable. Any cable attached to the token-ring interface cable may also be the failing item.
FI00712	FI00712 indicates that the token-ring access unit is the failing item.
FI00716	FI00716 indicates that the EIA-232/V.24 enhanced cable is the failing item.  Check the communications cable for the part number.
FI00717	FI00717 indicates that the EIA-232/V.24 non-enhanced cable is the failing item.  Check the communications cable for the part number.
FI00718	FI00718 indicates that an IOP card is the failing item.  Use the IOP type to determine the part.
FI00719	FI00719 indicates that an IOA card is the failing item.

## Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI00720	<p>FI00720 indicates that the Ethernet transceiver is the failing item.</p> <p>Verify that the signal quality error switch in the transceiver that the Ethernet is attached to is set to active.</p> <p>See the transceiver operator's guide for correct operation or correct removal and installation procedure.</p>
FI00721	<p>FI00721 indicates that the token-ring IOA card is the failing item.</p> <p>Use the IOA type to determine the part.</p>
FI00722	FI00722 indicates that the cable attached to the local area network IOA is the failing item.
FI00723	<p>FI00723 indicates that the communications two-port adapter cable for the communications IOA card is the failing item.</p> <p>Exchange the communications two-port adapter cable.</p> <p>If this does not correct the problem, use the IOA type to determine the part.</p>
FI00725	<p>FI00725 indicates that the Ethernet IOA card is the failing item.</p> <p>Use the IOA type to determine the part.</p>
FI00726	<p>FI00726 indicates that a communications IOA card is the failing item:</p> <p>Use the IOA type to determine the part.</p>
FI00727	<p>FI00727 indicates that one of the IOAs attached to either a combined function I/O processor (CFIOP), multiline communications IOP or an Integrated Netfinity Server for AS/400 is the failing item.</p> <p>Perform "BUS-PIP5" on page 468 to isolate the failing IOA.</p>
FI00728	<p>FI00728 indicates that the local communications cable (RS449/V.36 interface) is the failing item.</p> <p>Check the communications cable for the part number.</p>
FI00730	<p>FI00730 indicates that the Licensed Internal Code module for an I/O card may be the failing item.</p> <p>Ask your next level of support for assistance.</p>
FI00731	<p>FI00731 indicates that one of the distributed data interface IOAs is the failing item.</p> <p>Use the IOA type to determine the part.</p>
FI00732	<p>FI00732 indicates that the cryptographic IOP card is the failing item.</p> <p><b>Attention:</b> Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read "Important Cryptographic I/O Processor Information" on page 785 before disconnecting or removing the cryptographic I/O processor.</p> <p>Use the IOP type to determine the part.</p>
FI00733	<p>FI00733 indicates that one of the following personal security cards is the failing item:</p> <ul style="list-style-type: none"> <li>• Full function—part 41F9970</li> <li>• Limited function—part 82F5486</li> </ul>
FI00734	<p>FI00734 indicates that one of the following security interface units is the failing item:</p> <ul style="list-style-type: none"> <li>• 4754-001—82F0421</li> <li>• 4754-L01—82F0422</li> </ul>

Failing Item Code	Description/Action If only a type number is listed, go to the “Type, Model, and Part Number List” on page 380 to determine the part number.
FI00735	FI00735 indicates that the optical bypass switch is the failing item.  See the optical bypass switch information for correct operation, removal, and installation procedures for the optical bypass switch.
FI00741	FI00741 indicates that the telephone cable to the wall outlet is the failing item.  Check the cable for the part number.
FI00742	FI00742 indicates that the communications coupler is the failing item.  Check the coupler for the part number.
FI00750	FI00750 indicates that the wireless LAN IOA is the failing item.  Use the IOA type to determine the part.
FI00751	FI00751 indicates that the Licensed Internal Code module is the failing item.  Ask your next level of support for assistance.
FI00752	FI00752 indicates that the file server IOA card is the failing item.  Use the IOA type to determine the part.
FI00810	FI00810 indicates that the magnetic tape is the failing item.  Exchange the magnetic tape.
FI00820	FI00820 indicates that the 2440 Tape Unit or the 9348 Tape Unit is the failing item.  If the 2440 Tape Unit is the failing item, see “Diagnostic Information” in the <i>2440 Magnetic Tape Subsystem Service Guide</i> .  If the 9348 Tape Unit is the failing item, see “Analyzing Problems” in the <i>9348 Tape Unit Service Information</i> .
FI00830	FI00830 indicates that the external signal cable is the failing item.  See “EXTSCSI” on page 408 for cable part numbers.
FI00832	FI00832 indicates that the external signal cable is the failing item.  See “EXTSCSI” on page 408 for cable part numbers.
FI00840	FI00840 indicates that the device controller for the attached device is the failing item. <ul style="list-style-type: none"> <li>• Type 7208—see FI00882</li> <li>• Type 9337—see the <i>9337 Disk Array Service Information</i>.</li> <li>• Type 9427—see FI00882</li> </ul>
FI00841	FI00841 indicates that the terminating plug for the attached device is the failing item. <ul style="list-style-type: none"> <li>• For tape devices—see FI00880</li> <li>• Type 9337—part 85F7887</li> </ul>
FI00842	FI00842 indicates that the external signal cable for the attached device is the failing item. <ul style="list-style-type: none"> <li>• For tape devices—see FI00830.</li> <li>• Type 9337—see FI00832.</li> </ul>
FI00844	FI00844 indicates that the device controller for the attached device is the failing item. <ul style="list-style-type: none"> <li>• For tape devices—see FI00882</li> <li>• For type 9337, see “Analyzing Problems” in the service information for the specific 9337 model installed on the system.</li> </ul>

## Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI00845	<p>FI00845 indicates that the external signal cable is the failing item.</p> <p>Is the I/O processor type 2644?</p> <p><b>Yes      No</b></p> <p>↓          See EXTSCSI.</p> <p>The failing items may be:</p> <ul style="list-style-type: none"> <li>• Adapter cable—part 62X3421</li> </ul>
FI00850	FI00850 indicates that the interface cables attached to the tape IOP are the failing items.
FI00851	<p>FI00851 indicates that the I/O device attached to the tape IOP is the failing item.</p> <p>Use the service information of the I/O device to continue analyzing the problem.</p>
FI00852	<p>FI00852 indicates that the tape I/O processor (TIOP) adapter cable is the failing item.</p> <p>The following list shows the possible failing item and its part number:</p> <ul style="list-style-type: none"> <li>• TIOP type 2644 adapter cable—part 6472924</li> </ul>
FI00853	<p>FI00853 indicates that a terminating plug on the tape unit channel is the failing item.</p> <p>The following list shows the possible failing items and their part numbers:</p> <ul style="list-style-type: none"> <li>• Terminating plug for tape unit bus lines—part 2282675</li> <li>• Terminating plug for tape unit tag lines—part 2282676</li> <li>• 78-pin terminating plug—part 6473048</li> </ul>
FI00855	<p>FI00855 indicates that the type of tape unit attached to the tape IOP is not correct.</p> <p>One of the following tape unit types can be attached to the tape IOP: • 3422 • 3430 • 3480 • 3490 • 3494</p>
FI00856	<p>FI00856 indicates that an active tape IOP is the failing item.</p> <p>Use the IOP type to determine the part.</p>
FI00870	<p>FI00870 indicates that a storage device is the failing item.</p> <p>Use the device type to determine the part.</p> <p><b>Note:</b> The 636x Tape Unit is located in the FC 5032 Removable Storage Unit.</p>



Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI00871	<p>FI00871 indicates that the attached tape device is the failing item.</p> <ul style="list-style-type: none"> <li>• 6381 – Internal 1/4 inch cartridge drive with QIC-2GB (DC) on the door, P/N 59H2742.</li> <li>• 6382 – Internal 1/4 inch cartridge drive with QIC-4GB (DC) on the door, Use P/N 97H7331 if in a FC 5065 or 5066 expansion tower, otherwise use P/N 59H3745.</li> <li>• 6383 - Internal 1/4 Inch cartridge drive with MLR1-S on the front cover, Use P/N 24L1064 if in a FC 5065 or 5066 expansion tower, otherwise use P/N 59H4533.</li> <li>• 6386 – Internal 1/4 inch cartridge drive with MLR3 on the front cover, Use P/N 24L1065 if in a FC 5065 or 5066 expansion tower, otherwise use P/N 59H4130.</li> <li>• 7207 model 122 - External 1/4 inch cartridge drive with QIC-4GB-DC on the door, PN 59H4434.</li> <li>• 7208 model 342–External 8mm tape drive; refer to the device service information to determine the Part Number(s) to replace.</li> <li>• 9348 – External 1/2 inch reel tape unit.</li> </ul> <p>Is one of the following status codes displayed anywhere on the 9348 control panel? (x = any number)</p> <ul style="list-style-type: none"> <li>– Exxx</li> <li>– Fxxx</li> <li>– ***xx</li> <li>– *****</li> </ul> <p><b>No      Yes</b></p> <p>↓      Use the "Status Codes" section of the 9348 Service Information to determine the failing items.</p> <p>Refer to the 9348 Service Information and use the "Running Diagnostic Tests" procedure to run Diagnostic Test 1. If the test fails, use the 9348 Service Information to determine the failing items.</p> <ul style="list-style-type: none"> <li>• Other device type</li> </ul> <p>Refer to the device Service Information to determine the part number(s) that need to be replaced.</p>
FI00872	<p>FI00872 indicates that the interface is the failing item.</p> <ul style="list-style-type: none"> <li>• Internal Device See "FI01140" on page 379.</li> <li>• External device See "EXTSCSI" on page 408.</li> </ul>

## Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI00880	<p>FI00880 indicates that a terminating plug on the device bus to this IOP is the failing item.  <b>Note:</b> If the unit is a 9427, an internal terminating plug is used (see the service information for the specific device).</p> <p>The terminators for a 636x tape unit are located in the FC 5032 Removable Media Storage Unit.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> <li>• Terminating plug for 2440 Tape Unit—part 79X3795</li> <li>• Terminating plug for 3490, 3570, 3590, and 7208 Model 342 Tape Units—part 61G8324</li> <li>• SCSI differential terminating plug for 3995 AS/400 Optical Library Dataserver—part 79X3795</li> <li>• SCSI single-ended terminating plug for 3995 AS/400 Optical Library Dataserver C4x—part 34H5608</li> <li>• Terminator for 636x Tape Unit—part 21F8890 and part 72X5631</li> <li>• Terminator for 637x, 638x, and 6390 Tape Units—Terminator is part of the backplane or signal cable. Use the IOP type and see the symbolic FRU "DEVTERM" on page 404 to determine the correct part.</li> <li>• Terminating plug for 63A0 Tape Unit—see device documentation</li> <li>• Terminating plug for 7208 Model 002 Tape Drive—part 91F0721</li> <li>• Terminating plug for 7208 Model 012 Tape Drive—part 46G2599</li> <li>• Terminating plug for 7208 Model 222 Tape Drive—part 46G2599</li> <li>• Terminating plug for 7208 Model 232 Tape Unit—part 79X3795</li> <li>• Terminating plug for 7208 Model 234 Tape Unit—part 79X3795</li> <li>• Terminating plug for 9348 Tape Unit—part 79X3795</li> </ul>
FI00882	<p>FI00882 indicates that the addressed unit is the failing item.</p> <p>Determine the address and type of the failing unit (see "System Reference Code (SRC) Record" in the <i>AS/400 Service Functions</i> information).</p> <p>If one of the following device types is the failing item, see the service information for the device model installed on the system: • 2440 • 3490 • 3570 • 3590 • 3995 • 63A0 • 7208 • 9347 • 9348 • 9427</p> <p>If the tape unit being used is in the FC 5032 Removable Storage Unit, the failing item is the 636x Tape Unit.</p> <p>See "Removable Storage Unit (FC 5032)" in the <i>FC 504x Problem Analysis and Repair and Parts</i> information.</p> <p><b>Note:</b> The FC 5032 DSE module connects tape units as follows:</p> <ul style="list-style-type: none"> <li>• Tape units in the top 5032 locations (positions 1 and 2) use the top external cable connector.</li> <li>• Tape units in the bottom 5032 locations (positions 3 and 4) use the bottom external cable connector.</li> </ul> <p>A tape unit to the left or right of the tape unit being used (in position 1 or 2 or in position 3 or 4) may be causing the failure.</p> <p>A tape unit above or below the tape unit being used is <i>not</i> a probable cause of the failure because it is attached to a different internal FC 5032 DSE I/O bus and, as described above, uses the other external signal cable.</p>
FI00883	<p>FI00883 indicates that a unit attached to the same IOP, other than the addressed unit identified by FI00882, is the failing item.</p>
FI00884	<p>FI00884 indicates that any unit attached to the IOP may be the failing item.</p> <p>See FI00882 for the list of possible units.</p>

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI01040	FI01040 indicates that you have an OptiConnect/400 system, and the error is on an AS/400 system that is connected to it.
FI01101	<p>FI01101 indicates that the addressed IOA card on the I/O processor is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Determine the address of the IOA card (see "SRC Address Formats" on page 767).</li> <li>2. Determine the location of the IOA card (see "System Unit and Expansion Unit Locations and Addresses" on page 712).</li> <li>3. Exchange the failing device. Use the device type to determine the part.</li> </ol>
FI01103, FI01104	<p>FI01103 and FI01104 indicate that an attached IOA card is the failing item.</p> <ol style="list-style-type: none"> <li>1. Find the IOP address (see "SRC Address Formats" on page 767).</li> <li>2. To determine the location of the I/O processor card, see "System Unit and Expansion Unit Locations and Addresses" on page 712.</li> <li>3. The failing item may be any one of the IOA cards attached to the IOP card.</li> </ol>
FI01105	<p>FI01105 indicates that the addressed storage device is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Is the device location information available in the Service Action Log? <ul style="list-style-type: none"> <li><b>No</b>      <b>Yes</b></li> <li>↓      Exchange the failing item. See "Chapter 7. Recovery Procedures" on page 919. Use the device type to determine the part number to use in the "Type, Model, and Part Number List" on page 380.</li> <li><b>This ends the procedure.</b></li> </ul> </li> <li>2. Find the IOP address and the device address (see "SRC Address Formats" on page 767).</li> <li>3. To determine the location of the I/O processor card, see "System Unit and Expansion Unit Locations and Addresses" on page 712 and find the diagram of the system unit or the expansion unit. Then, find: <ul style="list-style-type: none"> <li>• The IOP card location identified by the direct select address.</li> <li>• The addressed storage device location identified by the device address.</li> </ul> </li> <li>4. Exchange the failing device. Use the device type to determine the part.</li> </ol>
FI01106	<p>FI01106 indicates that a storage device other than the addressed storage device is the failing item.</p> <p>See FI01105 to find the addressed device. The failing item could be any device with the same IOP address and I/O bus number but with a different device unit number.</p> <p>If the reference code that called out this FI does not have a problem analysis procedure, perform "SDIOP-PIP16" on page 608 to isolate the possible failing device.</p>

## Failing Items

Failing Item Code	<b>Description/Action</b> If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI01107	<p>FI01107 indicates that any storage device attached to the I/O bus of this IOP may be the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Find the IOP address (see "SRC Address Formats" on page 767).</li> <li>2. To determine the location of the I/O processor card, see "System Unit and Expansion Unit Locations and Addresses" on page 712. The unit reference code indicates the I/O bus that has the problem: <ul style="list-style-type: none"> <li>• URC 3020, 3100 —I/O Bus 0</li> <li>• URC 3021, 3101 —I/O Bus 1</li> <li>• URC 3022, 3102 —I/O Bus 2</li> <li>• Any Other URC—Any I/O bus on the I/O card</li> </ul> </li> <li>3. See "System Unit and Expansion Unit Locations and Addresses" on page 712 and find the diagram of the system unit or the expansion unit and find: <ul style="list-style-type: none"> <li>• The IOP card location identified by the direct select address.</li> <li>• All the storage devices on the same I/O bus. <b>Note:</b> The I/O bus number is the first character of the device unit address.</li> </ul> </li> <li>4. Exchange the failing device. Use the device type to determine the part: If the reference code that called out this FI does not have a problem analysis procedure, perform "SDIOP-PIP16" on page 608 to isolate the possible failing device.</li> </ol>
FI01108	<p>FI01108 indicates that the I/O (SCSI) bus or power cable is the failing item.</p> <p>See FI01140 and FI01141.</p>
FI01109	See the symbolic FRU "BACKPLN" on page 394.
FI01110	<p>FI01110 indicates that the diskette unit is the failing item.</p> <p>Use the diskette device type to determine the part.</p>
FI01112	<p>FI01112 indicates that the active IOP is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Find the IOP address (see "SRC Address Formats" on page 767).</li> <li>2. To determine the location of the I/O processor card, see "System Unit and Expansion Unit Locations and Addresses" on page 712.</li> <li>3. Use the IOP type to determine the part.</li> </ol>
FI01117	<p>FI01117 indicates that any IOA, card, cable, or device attached to the IOP may be the failing item.</p> <ol style="list-style-type: none"> <li>1. Find the IOP address (see "SRC Address Formats" on page 767).</li> <li>2. To determine the location of the I/O processor card, see "System Unit and Expansion Unit Locations and Addresses" on page 712.</li> <li>3. Identify the IOAs, cards, cables, and devices attached to the IOP found in the preceding steps.</li> <li>4. Exchange the IOAs, cards, cables, and devices attached to the IOP one at a time until you have corrected the problem.</li> </ol>
FI01119	See the symbolic FRU "BACKPLN" on page 394.

<b>Failing Item Code</b>	<b>Description/Action</b> If only a type number is listed, go to the "Type, Model, and Part Number List" on page 380 to determine the part number.
FI01121	<p>FI01121 indicates that the diskette unit power supply is the failing item.</p> <p>Use the diskette device type to determine the part(s):</p> <ul style="list-style-type: none"> <li>• 6135 External power supply—part 87G4523</li> <li>• 9331 Internal power supply—part 74G8535</li> </ul> <p>Power cable assembly—part 87G1463</p> <p>LED switch and cable assembly—part 74G8572</p>
FI01130	<p>FI01130 indicates that the disk drive and logic card is the failing item.</p> <p>Find the disk unit type number in the "Type, Model, and Part Number List" on page 380 to determine the part number.</p>
FI01131	<p>FI01131 indicates that the disk drive logic card is the failing item.</p> <p>Find the disk unit type number in the "Type, Model, and Part Number List" on page 380 to determine the part number.</p>
FI01132	<p>FI01132 indicates that the disk unit tray is the failing item.</p> <p>Use the symbolic FRU "DISKTRY" on page 406 to determine the part number.</p>
FI01140	<p>FI01140 indicates that the I/O bus cable is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Are there external devices attached? <ul style="list-style-type: none"> <li><b>No</b>      <b>Yes</b></li> <li>↓      See "EXTSCSI" on page 408.</li> </ul> </li> <li>2. Find the IOP address (see "SRC Address Formats" on page 767).</li> <li>3. To determine the location of the I/O processor card, see "System Unit and Expansion Unit Locations and Addresses" on page 712.</li> <li>4. Exchange the failing item associated with the IOP address.</li> </ol> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>a. To find the I/O bus cables, see "Cable Diagrams for Expansion Towers" on page 759.</li> <li>b. Any of the I/O cables or backplanes between the IOA and the device could be the failing item. See "Power and Signal Cables" on page 725.</li> </ol>
FI01141	<p>FI01141 indicates that a loss of power to an IOP, to an internal device, or to an external device may have occurred.</p> <ol style="list-style-type: none"> <li>1. Are 0000 xxxx, 1xxx xxxx, or A6xx 698x SRCs displayed on the control panel? <ul style="list-style-type: none"> <li><b>No</b>      <b>Yes</b></li> <li>↓      Go to "Chapter 2. Unit Reference Codes" on page 59 and use the SRC displayed on the control panel.</li> </ul> </li> <li>2. Did the SRC that directed you to this FI code involve an externally attached device or an IOP with an externally attached device? <ul style="list-style-type: none"> <li><b>No</b>      <b>Yes</b></li> <li>↓      Verify that there is no obvious problem with power to the device. If you suspect a power problem with the device, go to the service information for that external device.</li> </ul> </li> <li>3. The power supply cables or connections to internal disk units, tape units, diskette units, or optical storage units may be the failing item. <ul style="list-style-type: none"> <li>• For cable information, see "Cable Diagrams for Expansion Towers" on page 759.</li> <li>• For part numbers, see "Chapter 8. Parts Listing" on page 949.</li> </ul> </li> </ol>
FI02092	See FI00092

## Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to the "Type, Model, and Part Number List" to determine the part number.
FI02112	<p>FI02112 indicates that the addressed storage device is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>Is the device location information available in the Service Action Log? <ul style="list-style-type: none"> <li><b>No</b>      <b>Yes</b></li> <li>↓      Exchange the failing item. See "Chapter 7. Recovery Procedures" on page 919. Use the device type to determine the part number to use in the "Type, Model, and Part Number List".</li> <li><b>This ends the procedure.</b></li> </ul> </li> <li>Find the IOP address and the device address (see "SRC Address Formats" on page 767).</li> <li>To determine the location of the I/O processor card, see "System Unit and Expansion Unit Locations and Addresses" on page 712 and find the diagram of the system unit or the expansion unit. Then, find: <ul style="list-style-type: none"> <li>The IOP card location identified by the direct select address.</li> <li>The addressed storage device location identified by the device address.</li> </ul> </li> <li>Exchange the failing device. Use the device type to determine the part. <p><b>Note:</b> If the device is an external unit, see the device maintenance instructions for that external unit to resolve the problem.</p> </li> </ol>

## Type, Model, and Part Number List

Table 6. Type, Model, and Part Number List

Type	Description	System Unit Model	Part Number
206A	System Processor and Interactive Card	720	87G0737 and 91H3894
206B	System Processor and Interactive Card	720	87G0737 and 91H3896
206C	System Processor and Interactive Card	720	87G0737 and 91H3898
206D	System Processor and Interactive Card	720	97H6439 and 99H4062
206E	System Processor and Interactive Card	720	97H6439 and 99H4060
206F	System Processor and Interactive Card	720	97H6439 and 99H4058
207A	System Processor and Interactive Card	720	97H6439 and 99H4056
207B	System Processor and Interactive Card	720	97H6446 and 99H4054
207C	System Processor and Interactive Card	720	97H6446 and 99H4052
207D	System Processor and Interactive Card	720	97H6446 and 99H4050
207E	System Processor and Interactive Card	720	97H6446 and 99H4048
207F	System Processor and Interactive Card	720	97H6453 and 99H4046
208A	System Processor and Interactive Card	720	97H6453 and 99H4038
208B	System Processor and Interactive Card	720	97H6453 and 99H4040
208C	System Processor and Interactive Card	720	97H6453 and 99H4042
208D	System Processor and Interactive Card	720	97H6453 and 99H4044
2118	System Processor	S10	87G0735
2119	System Processor	S10	45H1103
2129	System Processor	600	87G0736
2134	System Processor	600	87G0733

Table 6. Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
2135	System Processor	600	87G0734
2136	System Processor	600	45H1082
2161	System Processor	S20	99H4201
2163	System Processor	S20	44H8608
2165	System Processor	S20	44H8616
2166	System Processor	S20	44H8619
2170	System Processor	S20	99H4155
2175	System Processor	620	99H4205
2177	System Processor	S20	44H8623
2178	System Processor	S20	44H8627
2179	System Processor	620	99H4209
2180	System Processor	620	99H4213
2181	System Processor	620	44H8605
2182	System Processor	620	44H8613
2392	System Processor and Interactive Card	720	44H4591 and 44H4549
242A	This is one of the components for a Dual-Piece Processor. It may not be ordered separately. See the symbolic FRU "PROCARD" on page 417 and order both part numbers.		
242B	This is one of the components for a Dual-Piece Processor. It may not be ordered separately. See the symbolic FRU "PROCARD" on page 417 and order both part numbers.		
242C	This is one of the components for a Dual-Piece Processor. It may not be ordered separately. See the symbolic FRU "PROCARD" on page 417 and order both part numbers.		
242D	This is one of the components for a Dual-Piece Processor. It may not be ordered separately. See the symbolic FRU "PROCARD" on page 417 and order both part numbers.		
243A	This is one of the components for a Dual-Piece Processor. It may not be ordered separately. See the symbolic FRU "PROCARD" on page 417 and order both part numbers.		
2440	Magnetic Tape Unit See <i>2440 Magnetic Tape Subsystem Service Guide</i>	All	
2605	ISDN Basic IOA	620, 720, S20	17G2570
2609	2-line EIA-232/V.24 Communications IOA	620, 720, S20	21F4867
2610	2-line X.21 Communications IOA	620, 720, S20	21F4868
2612	EIA-232/V.24 Communications IOA	620, 720, S20	86G8117
2613	V.35 Communications IOA	620, 720, S20	44H6464
2614	X.21 Communications IOA	620, 720, S20	86G8369
2617	Ethernet IOA	620, 720, S20	85F9107

## Type, Model, Part Number List

Table 6. Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
2618	Distributed Data Interface IOP	620, 720, S20	85F8977
2619	Token-Ring Network IOP	620, 720, S20	91H0010
2620	Cryptographic IOP	620, 720, S20	99G9709
2621	SCSI IOP	620, 720, S20	86G8303
2623	Multiline Communications IOP	620, 720, S20	85F7223
2624	Magnetic Storage IOP	620, 720, S20	86G8317
2626	Token-Ring Network IOA	620, 720, S20	85F9033
2628	Cryptographic IOP	620, 720, S20	99G9714
2629	Communications IOP	620, 720, S20	91H0465
2644	Tape IOP	620, 720, S20	21F6085
2663	I/O Attachment Processor	620, 720, S20	21H9149
2664	Integrated Fax IOP Not United Kingdom United Kingdom	620, 720, S20	85F9099 75G3874
2665	Distributed Data Interface IOP	620, 720, S20	17G2919
2666	High Speed Communications IOP	620, 720, S20	8193663
2668	Wireless LAN IOA Australia US and Canada Spain Japan European Telecommunications and Standards Institute (ETSI)	620, 720, S20	75G3949 75G6041 75G3911 75G3950 75G3906 or 75G3905
2680	SPD Optical Bus Receiver Card (266 MBPS receiver)	620, 720, S20	90H9443
2682	SPD Optical Bus Receiver Card (1063 MBPS receiver)	620, 720, S20	21H6573
2684	SPD Optical Bus Receiver Card (266 MBPS receiver)	620, 720, S20	16G5837
2685	SPD Optical Bus Receiver Card (1063 MBPS receiver)	620, 720, S20	21H6579
2686	SPD Optical Bus Driver Card (266 MBPS)	620, 720, S20	87G5316
2688	SPD Optical Bus Driver Card (1063 MBPS)	620, 720, S20	87G5560
2699	Multiline Communications IOA	620, 720, S20	21H5412
2718	Storage IOA (external removable media)	All	91H3974
2720	Twinaxial Workstation and Communications IOA	All	90H9192
2721	Multiline Communications IOA	All	21H5388
2722	Twinaxial Workstation IOA	All	21H5394
2723	Ethernet IOA	All	21H9201
2724	Token Ring IOA	All	44H7571
2726	Storage IOA	All	44H6303
2728	Storage IOA	All	21H9207



Table 6. Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
2729	Storage IOA (external media)	All	21H9249
2735	Local Bus Adapter Card	620, 720, S20	44H7791
2740	Storage IOA Card Card Cache Battery Pack Cache Battery Pack	All	44H6442 (Non-Japan) 23L2845 (Japan) 44L0305 (Non-Japan) 44L0304 (Japan)
2741	Storage IOA	All	91H0271
2745	Multiline Communications IOA	All	21H5490
2746	Twinaxial IOA	All	21H5497
2748	Storage IOA Card Card Cache Battery Pack Cache Battery Pack Mode Jumper	All	91H3987 (Non-Japan) 23L2841 (Japan) 44L0302 (Non-Japan) 44L0301 (Japan) 23L3442
2750	ISDN Communications IOA	All	97H7674
2751	ISDN Communications IOA	All	97H7675
2761	Integrated modem IOA United States Europe Germany Australia Spain Czechoslovakia	All	97H7678 97H7679 97H7680 97H7681 97H7682 97H7683
2809	Combined Function IOP	All	21H5312
2810	High speed communications IOP	620, 720, S20	91H0461
2811	ATM 25 Mb/sec IOA	All	21H7976
2812	ATM 45 Mb/sec IOA	All	21H7979
2815	ATM 155 Mb/sec IOA	All	21H7977
2816	ATM 155 Mb/sec IOA	All	21H7909
2818	ATM 155 Mb/sec IOA	All	21H7975
2819	ATM 34 Mb/sec IOA	All	91H4002
2824	Combined Function IOP	All	91H4023
2826	Local Bus Adapter Card	620, 720, S20,	45H1235
2830	Riser card for DIMMs	620, 720, S20	97H6086
2833	Clock card	620, 720, S20	97H6145
2834	Clock card	620, 720, S20	21H6645
2835	System Processor Backplane	620, S20	90H9475

## Type, Model, Part Number List

Table 6. Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
2836	System Processor Backplane	720	99H4265
2837	System Processor Backplane	720	99H4269
2838	Ethernet 100 Mb/sec IOA	All	21H5460
2850	Integrated Netfinity Server for AS/400 Model 001 Model 002 Model 011 Model 012	All	61H0115 61H0116 61H0127 23L4210
285A	Bridge Card (PCI to PCI) Model 001 Model 002 Model 003	All	90H8952 90H8994 90H9212
2860	16MB Integrated Netfinity Server for AS/400 memory module	All	44H7556
2861	32MB Integrated Netfinity Server for AS/400 memory module	All	44H7558
2862	128MB Integrated Netfinity Server for AS/400 memory module	All	90H9075
2867	256MB Integrated Netfinity Server for AS/400 memory module	All	97H7725
3001	DIMM - 32MB Main storage	620, 720, S20	21H6481
3002	DIMM - 128MB Main storage	All	21H6512
3004	DIMM - 256MB Main storage	All	90H9359
3110	SIMM - 64MB Main storage (2 x 32 MB)	600, S10	46G0296
3172	SIMM - 32MB Main storage (2 x 16 MB)	600, S10	8193231
3422	Magnetic Tape Unit See 3422 <i>Magnetic Tape Subsystem Maintenance Information</i>	All	
3430	Magnetic Tape Unit See 3430 <i>Magnetic Tape Subsystem Maintenance Information</i>	All	
3480	Magnetic Tape Unit See 3480 <i>Magnetic Tape Subsystem Maintenance Information</i>	All	
3490	Magnetic Tape Unit See 3490 <i>Magnetic Tape Subsystem Maintenance Information</i>	All	
3490E	Magnetic Tape Unit See 3490 <i>Magnetic Tape Subsystem Maintenance Information</i>	All	
3494	Magnetic Tape Library See 3494 <i>Magnetic Tape Library Maintenance Information</i>	All	
3570	Magnetic Tape Unit See 3570 <i>Magnetic Tape Subsystem Maintenance Information</i>	All	
3590	Magnetic Tape Unit See 3590 <i>Magnetic Tape Subsystem Maintenance Information</i>	All	
3995	AS/400 Optical Library Dataserver See 3995 <i>Optical Library Dataserver Maintenance Information Manual</i>	All	

*Table 6. Type, Model, and Part Number List (continued)*

Type	Description	System Unit Model	Part Number
4010	2726/2741 Storage IOA Cache Adapter	All	44H6330
4700	6512/6532/6533 IOP Cache Adapter	All	86G8149
4758	PCI Cryptographic Coprocessor	All	10J0053
6050	Twinaxial Workstation IOP	620, 720, S20	75G3719
6112	Magnetic Storage IOP	620, 720, S20	85F9041
6140	Twinaxial Workstation IOP	620, 720, S20	21F1888
6141	ASCII Workstation IOP	620, 720, S20	73F9267
6142	ASCII 12-Port Workstation Attachment 3-meter 6-meter	620, 720, S20	59X3816 59X3829
6146	Diskette IOA	620, 720, S20	46G0235
6149	Token Ring Communications IOA	All	99G9897
6153	V.35 Communications IOA	620, 720, S20	17G2940
6180	Twinaxial Workstation IOA	620, 720, S20	21H5406
6181	Ethernet Communications IOA	All	91H0435
6321	Optical Storage Unit (CD-ROM)  Optical Storage Unit (CD-ROM)  Optical Storage Unit (CD-ROM)	All (except FC 5065, 5066, or 507x)  FC 5065 or 5066 only  FC 507x only	93H8055  97H7330  86G7836
6330	Optical Storage Unit (DVD) Optical Storage Unit (DVD) Optical Storage Unit (DVD)	All FC 5065 or 5066 only FC 507x only	04N5272 04N5966 04N5968
6379	1/4-inch Magnetic Tape Unit, QIC 1000 Tape Unit Tape Unit Holder — models 620, S20, and 720 only	All	16G8491 44H9007
6380	1/4-inch Magnetic Tape Unit, QIC 2GB Tape Unit Tape Unit Holder — models 620, S20, and 720 only	All	16G8571 44H9007
6381	1/4-inch Magnetic Tape Unit, QIC 2GB (DC) Tape Unit Tape Unit Holder — models 620, S20, and 720 only	All	59H2742 44H9007
6382	1/4-inch Magnetic Tape Unit, QIC-4GB-DC Tape Unit Tape Unit Holder — models 620, S20, and 720 only Tape Unit and Holder for a FC 5065 or 5066 expansion tower	All	59H3745 44H9007 97H7331
6383	1/4-inch Magnetic Tape Unit, MLR1-S Tape Unit	All	59H4533

## Type, Model, Part Number List

Table 6. Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
	Tape Unit Holder — models 620, S20, and 720 only		44H9008
	Tape Unit and Holder for a FC 5065 or 5066 expansion tower		24L1064
6385	1/4-inch Magnetic Tape Unit, QIC 5010	All	
	Tape Unit		21F8828
	Tape Unit Holder — models 620, S20, and 720 only		44H9008
6386	1/4-inch Magnetic Tape Unit, MLR3	All	
	Tape Unit		59H4130
	Tape Unit Holder — models 620, S20, and 720 only		44H9008
	Tape Unit and Holder for a FC 5065 or 5066 expansion tower		24L1065
6390	8-mm Magnetic Tape Drive, FMT7GB	All	
	Tape Unit		16G8566
	Tape Unit Holder — models 620, S20, and 720 only		44H9009
63A0	Magnetic Tape Unit; see “FI00871” on page 375 to determine type.	All	Use the device type to determine the part
6500	Magnetic Storage IOP	620, 720, S20	85F8909
6501	Magnetic Storage IOP	620, 720, S20	85F8935
6502	Magnetic Storage IOP	620, 720, S20	17G2900
6503	6502 IOP Cache Adapter	620, 720, S20	85F7214
6506	File Server IOP	620, 720, S20	21H3909
6507	SCSI Adapter Card	All	90H9062
6509	File Server Storage Expansion	620, 720, S20	75G8362
6510	File Server IOA	620, 720, S20	8193654
6512	Magnetic Storage IOP	620, 720, S20	99G9473
6513	Tape IOP	620, 720, S20	17G1325
6520	File Server IOA	620, 720, S20	8193655
6530	Magnetic Storage IOP	620, 720, S20	46G3299
6532	Magnetic Storage IOP	620, 720, S20	91H0485
6533	Magnetic Storage IOP	All	21H9060
6534	Magnetic Media IOP	620, 720, S20	91H0470
6600	Disk unit		
6602	See “Disk Unit Type, Model, and Part Number List” on page 387.		
6603			
6605			
6606			
6607			
6616	Integrated Netfinity Server for AS/400 (IOP)	620, 720, S20	91H0353
6617	Integrated Netfinity Server for AS/400 (IOP)	620, 720, S20	

Table 6. Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
	Model 011 (200mhz) Model 012 (333mhz)		97H7627 23L4205
6713	Disk unit. See "Disk Unit Type, Model, and Part Number List".		
6714	Disk unit. See "Disk Unit Type, Model, and Part Number List".		
6716	Disk unit. See "Disk Unit Type, Model, and Part Number List".		
6717	Disk unit. See "Disk Unit Type, Model, and Part Number List".		
6731	Disk unit. See "Disk Unit Type, Model, and Part Number List".		
7207	External 1/4-inch Cartridge Drive with QIC-4GB-DC on the door	All	59H4434
7208	8-mm Magnetic Tape Drive See 7208 <i>Tape Drive Service Guide</i>	All	
7210	External Optical Storage Drive 7210 <i>Optical Storage Service Information</i>	All	
9164	Multiple Function IOP	All	45H1226
9331	Diskette Unit See 9331 <i>Diskette Unit Service Information</i>	All	
9347	Magnetic Tape Unit See 9347 <i>Tape Unit Service Guide</i>	All	
9348	Magnetic Tape Unit See 9348 <i>Tape Unit Service Information</i>	All	
9427	8-mm Tape Cartridge Library See 9427 <i>8-mm Tape Cartridge Library Service Guide</i>	All	

## Disk Unit Type, Model, and Part Number List

### Notes:

1. Disk unit part numbers 05G3988, 05G3989, and 05G3990 will be seen in multiple places within the following table, but with different level numbers. For disk units with these part numbers, the disk unit level can be found in the system information. It can also be found on the disk unit label following the FRU part number. For example, FRU P/N 05G3988-1 indicates a type 6605 disk unit with a level of 1.
2. When ordering a disk unit, use the part number that is followed by an asterisk (\*) for your particular type and level. This ensures that you receive the correct replacement part if a substitute is sent in place of the original part number.
3. When exchanging a logic card, use the part number that is indicated for that type and level disk unit.
  - A logic card with a part number of 27H0253 or 27H1830 cannot be used again once it has been installed on a disk unit that was powered on. The logic card customizes itself to that disk unit and cannot be reset in the field. Do not attempt to remove a logic card from another disk unit with the same part number because it will not function for that reason.

## Type, Model, Part Number List

- Once a logic card has been installed on a failed disk unit for data recovery, the disk unit and logic card should be removed from the system and then returned. The recovered, or system, data should be restored to a new disk unit assembly.

Table 7. Disk Unit Type, Model, and Part Number List

Type	Description	System Unit Model	Part Number
6600	Disk Unit. Remove the disk unit from the system to determine the part number of the failing item.		
6602	Disk Unit Level 0 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 1 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray, (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul>	All	Level 0 <ul style="list-style-type: none"> <li>• 45G9470</li> <li>• 45G9463</li> <li>• 86G7766</li> <li>• 44H8995</li> </ul> Level 1 <ul style="list-style-type: none"> <li>• 45G9509</li> <li>• 45G9501</li> <li>• 86G7768</li> <li>• 44H8974</li> </ul>
6603	Disk Unit Level 0 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 1 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul>	All	Level 0 <ul style="list-style-type: none"> <li>• 86F0110</li> <li>• 86F0100</li> <li>• 86G7762</li> <li>• 44H8996</li> </ul> Level 1 <ul style="list-style-type: none"> <li>• 86F0112</li> <li>• 86F0103</li> <li>• 86G7764</li> <li>• 44H8998</li> </ul>
6605	Disk Unit Level 1 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 4 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul>	All	Level 1 <ul style="list-style-type: none"> <li>• 74G7014</li> <li>• 74G6977*</li> <li>• 05G3988</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 4 <ul style="list-style-type: none"> <li>• 86G9130</li> <li>• 86G9123*</li> <li>• 05G3988</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul>

Table 7. Disk Unit Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
6606	Disk Unit Level 1 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 3 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 4 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 5 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul>	All	Level 1 <ul style="list-style-type: none"> <li>• 74G7014</li> <li>• 74G6978*</li> <li>• 05G3989</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 3 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 74G8821*</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 4 <ul style="list-style-type: none"> <li>• 86G9130</li> <li>• 86G9124*</li> <li>• 05G3989</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 5 <ul style="list-style-type: none"> <li>• 27H0253</li> <li>• 27H1712*</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul>
6607	<b>For system unit and expansion towers, except FC 506x</b> Disk Unit Level 1 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 3 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 4 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul>	All	Level 1 <ul style="list-style-type: none"> <li>• 74G7014</li> <li>• 74G6979*</li> <li>• 05G3990</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 3 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 74G8822*</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 4 <ul style="list-style-type: none"> <li>• 86G9130</li> <li>• 86G9125*</li> <li>• 05G3990</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul>

## Type, Model, Part Number List

Table 7. Disk Unit Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
	Disk Unit Level 5 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 6 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 7 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 8 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 9 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> <b>For FC 506x (All Disk Drive Levels)</b> <ul style="list-style-type: none"> <li>• Disk Unit and Carrier</li> </ul>		Level 5 <ul style="list-style-type: none"> <li>• 27H0253</li> <li>• 27H1711*</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 6 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 59H6612</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 7 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 74G8703</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 8 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 59H7001*</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 9 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 25L3130</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> All Levels <ul style="list-style-type: none"> <li>• 44L0061</li> </ul>
6713	<b>For system unit and expansion towers, except FC 506x</b> Disk Unit Level 2 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 3 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 4 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul>	All	Level 2 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 74G8823*</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 3 <ul style="list-style-type: none"> <li>• 27H1830</li> <li>• 27H1710*</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 4 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 59H6611</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul>



Table 7. Disk Unit Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
	Disk Unit Level 5 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 6 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 9 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> <b>For FC 506x (All Disk Drive Levels)</b> <ul style="list-style-type: none"> <li>• Disk Unit and Carrier</li> </ul>		Level 5 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 74G8704</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 6 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 25L3131</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 9 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 07N3681</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> All Levels <ul style="list-style-type: none"> <li>• 44L0062</li> </ul>
6714	<b>For system unit and expansion towers, except FC 506x</b> Disk Unit Level 1 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 2 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 3 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> <b>For FC 506x (All Disk Drive Levels)</b> <ul style="list-style-type: none"> <li>• Disk Unit and Carrier</li> </ul>	All	Level 1 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 59H6613</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 2 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 74G8705</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> Level 3 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 25L3132</li> <li>• 86G7888</li> <li>• 44H8999</li> </ul> All levels <ul style="list-style-type: none"> <li>• 44L0063</li> </ul>
6716	For system unit and expansion towers, except FC 506x Disk Unit Level 1 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> <b>For FC 506x (All Disk Drive Levels)</b> <ul style="list-style-type: none"> <li>• Disk Unit and Carrier</li> </ul>	All	Level 1 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 07N3690</li> <li>• 44H4637</li> <li>• 44H4644</li> </ul> All levels <ul style="list-style-type: none"> <li>• 04N2165</li> </ul>
6717	<b>For system unit and expansion towers, except FC 506x</b>	All	

## Type, Model, Part Number List

Table 7. Disk Unit Type, Model, and Part Number List (continued)

Type	Description	System Unit Model	Part Number
	Disk Unit Level 2 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 3 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 4 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> <b>For FC 506x (All Disk Drive Levels)</b> <ul style="list-style-type: none"> <li>• Disk Unit and Carrier</li> </ul>		Level 2 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 34L2279</li> <li>• 44H4637</li> <li>• 44H4644</li> </ul> Level 3 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 09L4044</li> <li>• 44H4637</li> <li>• 44H4644</li> </ul> Level 4 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 07N3685</li> <li>• 44H4637</li> <li>• 44H4644</li> </ul> All Levels <ul style="list-style-type: none"> <li>• 97H7332</li> </ul>
6718	<b>For system unit and expansion towers, except FC 506x</b> Disk Unit Level 2 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (tower only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> Disk Unit Level 3 <ul style="list-style-type: none"> <li>• Disk Drive Logic Card</li> <li>• Disk Drive and Logic Card</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> <b>For FC 506x (All Disk Drive Levels)</b> <ul style="list-style-type: none"> <li>• Disk Unit and Carrier</li> </ul>	All	Level 2 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 09L3932</li> <li>• 44H4637</li> <li>• 44H4644</li> </ul> Level 3 <ul style="list-style-type: none"> <li>• N/A</li> <li>• 07N3686</li> <li>• 44H4637</li> <li>• 44H4644</li> </ul> All Levels <ul style="list-style-type: none"> <li>• 04N2737</li> </ul>
6731	<b>For system unit and expansion towers, except FC 506x</b> Read Cache Level 1 <ul style="list-style-type: none"> <li>• Read Cache</li> <li>• Disk Unit Tray (towers only)</li> <li>• Disk Unit Holder (system unit only)</li> </ul> <b>For FC 506x (All Disk Drive Levels)</b> <ul style="list-style-type: none"> <li>• Read Cache and Carrier</li> </ul>	All	Level 1 <ul style="list-style-type: none"> <li>• 74G8715</li> <li>• 44H4637</li> <li>• 44H4644</li> </ul> All Levels <ul style="list-style-type: none"> <li>• 24L1095</li> </ul>

## Symbolic FRU Isolation

### ACMODUL

An ac module may be failing.

Perform the following to determine the part number for the failing ac module:

1. Read “Important Continuously Powered Main Storage (CPM) Information” on page 785 .
2. Perform SPCN-PIP5. Then return here and continue with the next step of this procedure.
3. The failing ac module is on a secondary expansion unit.
  - For FC 5072 and 5082–part 87G6300
  - For FC 5073 and 5083–part 21H7697

**This ends the procedure.**

## AIRMOVR

An air-moving device may be failing.

**Note:** When there is a location and part number displayed on the Control Panel of a FC 5065 or 5066 expansion tower, then you are to replace that FRU first.

Perform the following to determine the part number for the failing device.

**Note:** The third and fourth characters of the 4 left-most characters of the SRC show the address of the failing frame and unit. Example: 11-x xxFU-xxxx (F=frame and U=unit).

1. Is the failing air-moving device in a system unit?

**No      Yes**

↓

Find the unit reference code in the following table to determine the failing device and the part number. Then see “System Unit and Expansion Unit Locations and Addresses” on page 712 to determine the location of the failing item. Look for the section that covers the model number and processor type you are working on. See “Chapter 6. Removal and Installation Procedures” on page 821 for removal instructions.

Reference Code	FRU	Part Number
2240	Air Moving Device Panel (AMDP)	44H7756
2241	Air Moving Device 1 (AMD1)	44H8336
2242	Air Moving Device 2 (AMD2)	44H7889
2244	<ul style="list-style-type: none"> <li>• Air Moving Device 1 (AMD1) (If Air Moving Device 4 is <i>not</i> installed)</li> <li>• Distribution Cable</li> </ul>	<ul style="list-style-type: none"> <li>• 44H8336</li> <li>• 44H8337</li> </ul>
2245	Air Moving Device 5 (AMD5)	44H7904
2246	Air Moving Device 6 (SPD enclosure) (AMD6A)	44H8259
2246	Air Moving Device 6 (PCI enclosure) (AMD6B)	44H8336
2249	Air Moving Device 9 (AMD9)	44H4650

2. The failing device is in a secondary expansion unit.

Find the unit reference code in the following table to determine the failing device and the part number. Then see “System Unit and Expansion Unit Locations and Addresses” on page 712 to determine the location of the failing item. Look for the section that covers the feature code of the expansion tower

## Symbolic FRUs

that you are working on. See “Chapter 6. Removal and Installation Procedures” on page 821 for removal instructions.

Table 8. Expansion Tower except for FC 5065 or 5066

Reference Code	FRU	Part Number
7000	AC Module	ACMODUL
7001	AMD1	46G3510
7002	AMD2	46G3510
7003	AMD3	46G3587
7004	AMD4	46G3587

Table 9. Expansion Tower FC 5065 or 5066

Unit Reference Code	FRU	Part Number
7610, 8610	AMD1	44L0023
7620, 8620	AMD2	44L0023

This ends the procedure.

## ANYBUS

Any cable, card, or card enclosure may be causing an IOP-detected bus error. The IOP that reports the problem may not be causing the problem.

1. Is SRC 0000 xxxx displayed?

**No**      **Yes**

↓      Go to step “BUS-PIP2” on page 458.

2. Go to “BUS-PIP1” on page 451.

**Note:** To determine FRU part numbers, compare the labels on the cards with the “Type, Model, and Part Number List” on page 380. For cable information, see “Assembly 23: Internal Cable Assemblies” on page 1026.

This ends the procedure.

## AS4NTDD

The Windows NT Server Application Processor device driver may be causing the problem. Refer to *IBM AS/400 Integration for Windows Server -- Setup*, SC41-5439-03, or contact your next level of support for assistance.

This ends the procedure.

## BACKPLN

A backplane or a connection to the backplane may be failing. Before exchanging any parts, the connections to the backplane should be verified. The following steps identify which backplane may be failing. Part numbers are listed so that the backplane can be replaced in the event that reseating the connections does not solve the problem.

**Attention:** Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read “Important Cryptographic I/O Processor Information” on page 785 before disconnecting or removing the cryptographic I/O processor.

Perform the following:

1. Determine the location of the device. Use the location information in the Service Action Log if it is available. If no location information for the device is available, use the location information for the I/O card instead. If no location information is available for either the device or the I/O card, find the address of the device or I/O card. See "SRC Address Formats" on page 767. Use the address to find the location. See "System Unit and Expansion Unit Locations and Addresses" on page 712.
2. Is the device located in the system unit or expansion unit?

**No      Yes**

- ↓      Use "Power and Signal Cables" on page 725 to locate the device, cable, and backplane. Any backplane connection the device or I/O Processor may be the cause of the problem.

For backplane part numbers see "Type, Model, and Part Number List" on page 380.

Exchange the failing item (see "Chapter 6. Removal and Installation Procedures" on page 821).

**This ends the procedure.**

3. Is the device located in the FC 507x expansion tower?

**No      Yes**

- ↓      The following may be failing:
- System Unit Expansion Tower Backplane
    - FC 5072 — 86G7633
    - FC 5073 — 90H6425
  - Storage Expansion Unit Backplane
    - FC 5052 Locations K1 through K8 — 16G6496
    - FC 5052 Locations K9 through K16 — 86G7872
    - FC 5058 Locations K1 through K8 — 21H6938
    - FC 5058 Locations K9 through K16 — 21H6940

Exchange the failing item (see "Chapter 6. Removal and Installation Procedures" on page 821).

**This ends the procedure.**

4. Is the device located in the FC 508x expansion tower?

**No      Yes**

- ↓      The following may be failing:
- Storage Expansion Unit Backplane
    - FC 5082 — 87G4357
    - FC 5083 — 90H6426
  - Storage Expansion Unit Backplane (Locations K1 through K16 only)
    - FC 5052 Locations K1 through K8 — 16G6496
    - FC 5052 Locations K9 through K16 — 86G7872
    - FC 5058 Locations K1 through K8 — 21H6938
    - FC 5058 Locations K9 through K16 — 21H6940
  - Upper Backplane (Locations 09C, 11C, 13C, 15C only) — 87G4362

## Symbolic FRUs

Exchange the failing item (see “Chapter 6. Removal and Installation Procedures” on page 821).

**This ends the procedure.**

5. Is the device located in the FC 5065 or 5066 expansion tower?

**No      Yes**

↓      The following may be failing:

- Tower Card Assembly — CB1  
See “TWRCARD” on page 433.
- Device Board-DB1 (Locations D01 – D05, D11 – D15, D21 – D25)  
Use part number 24L1029. See “Device Boards – DB1 and DB2” on page 869 to replace the board.
- Device Board-DB2 (Locations D06 – D10, D16 – D20, D26 – D30)  
Use part number 24L1029. See “Device Boards – DB1 and DB2” on page 869 to replace the board.
- Device Board-DB3 (Locations D31 – D40, D41, D42, D46 – D50)  
Use part number 24L0892. See “Device Board – DB3” on page 870 to replace the board.

**This ends the procedure.**

6. If the device is located in a FC 504x System Unit Expansion Rack — 74F1543.

Exchange the failing item (see “Chapter 6. Removal and Installation Procedures” on page 821).

**This ends the procedure.**

## BACKPLx

Use the following table to determine the backplane part number.

See “Chapter 6. Removal and Installation Procedures” on page 821 before exchanging the backplane.

Type	Description	Part Number
BACKPL1A	Control panel backplane	45H1070
BACKPL1B	Control panel backplane	44H8310
BACKPL1C	Control panel backplane	44H8142
BACKPL2	MFIOF System unit backplane	45H1226
BACKPL3B	Backplane, System Power Control Network (SPCN)	44H8313
BACKPL3C	Backplane, System Power Control Network (SPCN)	44H8141
BACKPL4A	Backplane, Tape and Optical	44H8421
BACKPL4B	Backplane, Tape and Optical	45H1231
BACKPL5A	Backplane, Disk unit	91H3905
BACKPL5B	Backplane, Disk unit	91H3906
BACKPL6	SPD expansion unit backplane	44H7994
BACKPL7	PCI expansion unit backplane	45H1235
BACKPL8	See the Symbolic FRU “PROBACK” on page 416.	

Type	Description	Part Number
BACKPL9	See the Symbolic FRU "PROBACK" on page 416.	

**This ends the procedure.**

## BATCHGR

A battery power unit charger is the failing item.

- Perform "SPCN-PIP5" on page 644. Then return here and continue with this procedure.

**Note:** When there is a location and part number displayed on the Control Panel of a FC 5065 or 5066 expansion tower, then you are to replace that FRU first.

**Note:** See "Chapter 6. Removal and Installation Procedures" on page 821 before exchanging the battery charger.

1. The failing battery power unit charger is in an expansion unit. Is the failing battery power unit charger in a FC 5065 or 5066 expansion tower?

**Yes      No**

↓ Find the failing battery power unit charger and part number below.

- Internal Battery Power Unit 1 or 2 charger — part 86G8020
- External Battery Power Unit 2 charger — part 86G7750
- 9309 multi-purpose frame with SPCN — part 21F9380
- FC 5065 or 5066 expansion tower — part 97H7316

**This ends the procedure.**

2. Is the SRC 4414?

**Yes      No**

↓ Replace the battery power unit charger — part 97H7316.

**This ends the procedure.**

3. Power on the system. Does the failing FC 5065 or 5066 expansion tower power on?

**Yes      No**

↓ Go to "Starting Point for All Problems" on page 4.

4. Remove the AC line cord from the outlet. Does a battery power unit charger fault occur.

**No      Yes**

↓ Replace the battery power unit charger — part 97H7316.

**This ends the procedure.**

5. Go to "Starting Point for All Problems" on page 4 for all other problems that exist.

**This ends the procedure.**

## BATRY

The battery may be the failing item.

## Symbolic FRUs

**Note:** When there is a location and part number displayed on the Control Panel of a FC 5065 or 5066 expansion tower, then you are to replace that FRU first.

1. Read "Important Continuously Powered Main Storage (CPM) Information" on page 785.
2. Perform "SPCN-PIP5" on page 644. Then return here and continue with the next step of this procedure.
3. Exchange the failing battery unit as follows:

### **System Unit:**

Exchange both battery unit assemblies, part 44H7785, in the system unit (see "System Unit and Expansion Unit Locations and Addresses" on page 712).

**Note:** Uninterruptible power supply units have no ac power output with battery power removed or a defective battery.

### **Expansion Unit other than FC 5065 or 5066:**

Use one of the following batteries and parts:

- Internal battery power unit 1 and 2 battery pack--part 86G8040
- External battery power unit 2 battery pack--part 86G7714
- External battery power unit 2 cable--part 86G7712
- 9309 general purpose I/O tower with SPCN (FC 9171)--part 21F9380

### **Expansion Tower FC 5065 or 5066:**

Exchange the four expansion battery unit assemblies, part 97H7320 (see "FC 5065 and FC 5066 Expansion Towers" on page 752).

**This ends the procedure.**

## BKSPCN

An SPCN unit may be failing.

Perform the following to determine the part number for the failing SPCN unit:

**Note:** See "Chapter 6. Removal and Installation Procedures" on page 821 before exchanging the SPCN unit.

1. Read "Important Continuously Powered Main Storage (CPM) Information" on page 785.
2. Perform "SPCN-PIP5" on page 644. Then return here and continue with the next step of this procedure.
3. The failing SPCN unit is on a secondary expansion unit or base I/O unit. The SPCN unit is in the ACMODUL.
  - For FC 5072 and 5082--part 87G6300
  - For FC 5073 and 5083--part 21H7697
  - For FC 5065 or 5066 expansion tower the SPCN card is part of the TWRCARD. The part number is 97H7532.

**This ends the procedure.**

## CACHBAT

The cache battery pack may be failing. Use the cache battery pack location information in the Service Action Log if it is available. If the location is not available, find the address of the storage IOA. See "SRC Address Formats" on page 767



page 761 . Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712

Using the type number of the storage IOA, go to “Type, Model, and Part Number List” on page 380 to determine the cache battery pack part number.

Power the system down normally prior to replacing the cache battery pack.

To exchange the cache battery pack, see “Cache Battery Pack, For Type 2740, 2748” on page 829.

**This ends the procedure.**

## CACHE

The cache adapter card on the IOP may be failing.

- For the 2726/2741 IOA, the failing item is the 4010 cache adapter card (part number 44H6330).
- For the 6502 IOP, the failing item is the 6503 cache adapter card (part number 85F7214).
- For the 6512/6532/6533/6751/6754 IOP, the failing item is the 4700 cache adapter card (part number 86G8149).
- For the 2740 and 2748 IOAs, the cache adapter card is not a removable FRU. Return to the FRU list to exchange other items in the failing item list.

Exchange the failing item (see “Chapter 6. Removal and Installation Procedures” on page 821).

**This ends the procedure.**

## CBLALL

A power cable may be the failing item.

**Note:** When there is a location and part number displayed on the Control Panel of a FC 5065 or 5066 expansion tower, then you are to replace that FRU first.

Perform the following to determine the part number for the failing power supply:

1. Read “Important Continuously Powered Main Storage (CPM) Information” on page 785.
2. Perform “SPCN-PIP5” on page 644. Then return here and continue with the next step of this procedure.
3. Is the SRC 1xxx 2201 or 2301?

<b>No</b>	<b>Yes</b>
-----------	------------

- |   |  |
|---|--|
| ↓ | <p>The failing item is the power cables, exchange the following parts one at a time:</p> <ul style="list-style-type: none"> <li>• MFIOP power cable <ul style="list-style-type: none"> <li>– PWR3A if installed — part 44H7809</li> <li>– PWR3B if installed — part 44H7825</li> </ul> </li> <li>• Tape/Optical/Disk Unit power cable <ul style="list-style-type: none"> <li>– PWR1B if installed — part 44H7808</li> <li>– PWR1C if installed — part 44H8337</li> </ul> </li> <li>• Disk Unit BACKPL5B power cable</li> </ul> |
|---|--|

## Symbolic FRUs

- PWR8 if installed — part 44H7811
  - Disk Unit BACKPL5A to optical D02 cable
    - PWR9 if installed — part 44H8271
  - Power supply interposer back plane
    - PWRBUS1A if installed — part 44H8400
    - PWRBUS1B if installed — part 44H8401
- 4. Is the SRC 1xxx 2202 or 2302?

No	Yes
↓	The failing item is within the power cables. Exchange the following parts one at a time: <ul style="list-style-type: none"><li>• SPD backplane power cable<ul style="list-style-type: none"><li>– PWR23A if installed — part 44H7814</li></ul></li><li>• PCI backplane power cable<ul style="list-style-type: none"><li>– PWR23B if installed — part 44H7816</li></ul></li><li>• Tape BACKPL4B and Disk Unit BACKPL5B power cable<ul style="list-style-type: none"><li>– PWR21 if installed — part 44H7812</li></ul></li><li>• Disk Unit BACKPL4B power cable<ul style="list-style-type: none"><li>– PWR22 if installed — part 44H7815</li></ul></li><li>• Power supply interposer backplane<ul style="list-style-type: none"><li>– PWRBUS1C if installed — part 44H7910</li></ul></li></ul>
- 5. Is the SRC 1xxx 2221, 2222, 2223, 2224, 2321, 2322, 2323, or 2324?

No	Yes
↓	The failing item is the power cables, exchange the following parts one at a time: <ul style="list-style-type: none"><li>• Panel backplane to MFIOp cable<ul style="list-style-type: none"><li>– SIG5A if installed — part 44H8017</li><li>– SIG5B if installed — part 44H8021</li></ul></li><li>• Panel backplane to power supply<ul style="list-style-type: none"><li>– SIG9A if installed — part 44H8016</li><li>– SIG6B if installed — part 44H8035</li><li>– SIG6C if installed — part 44H8022</li></ul></li><li>• MFIOp to expansion PWRBUS1B cable<ul style="list-style-type: none"><li>– SIG8A<ul style="list-style-type: none"><li>- Part 44H8339 installed (with cover interlock) replace with -- part 44H4599 kit.</li><li>- Part 87G0785 installed (without cover interlock) replace with -- part 87G0785.</li></ul></li><li>– PWRBUS1B — part 44H8401</li></ul></li><li>• Disk Unit BACKPL4B power cable<ul style="list-style-type: none"><li>– PWR21 if installed — part 44H7812</li></ul></li></ul>
- 6. Is the SRC 1xxx 2231?

No	Yes
↓	The failing item is the signal cables, exchange the following parts one at a time: <ul style="list-style-type: none"><li>• Panel to RPO/MI/UPS signal/SPCN cover cable</li></ul>

- SIG9B
  - Part 44H8338 installed (with cover interlock) replace with -- part 44H4598 kit.
  - Part 87G0784 installed (without cover interlock) replace with --part 87G0784.
  - - Interlock jumper -- part 44H8340.
- 7. Is the SRC 1xxx 2232?
 

<b>No</b>	<b>Yes</b>
↓	<p>The failing item is the signal cables, exchange the following parts one at a time:</p> <ul style="list-style-type: none"> <li>• Panel to expansion cover cable               <ul style="list-style-type: none"> <li>– SIG8A</li> <li>– Part 44H8339 installed (with cover interlock) replace with --part 44H4599 kit.</li> <li>– Part 87G0785 installed (without cover interlock) replace with --part 87G0785.</li> <li>– - Interlock jumper -- part 44H8340.</li> </ul> </li> </ul>
- 8. Is the SRC 1xxx 2311?
 

<b>No</b>	<b>Yes</b>
↓	<p>The failing item is the signal cables, exchange the following parts one at a time:</p> <ul style="list-style-type: none"> <li>• Panel to power supply cable               <ul style="list-style-type: none"> <li>– SIG6B if installed — part 44H8035.</li> <li>– SIG6C if installed — part 44H8022.</li> </ul> </li> <li>• Power supply interposer backplane               <ul style="list-style-type: none"> <li>– PWRBUS1A — part 44H8400.</li> <li>– PWRBUS1B — part 44H8401.</li> </ul> </li> </ul>
- 9. Is the SRC 1xxx 2312, 2313, or 2314?
 

<b>No</b>	<b>Yes</b>
↓	<p>The failing item is the signal cables, exchange the following parts one at a time:</p> <ul style="list-style-type: none"> <li>• Panel to power supply cable               <ul style="list-style-type: none"> <li>– SIG8A if installed</li> <li>– Part 44H8339 installed (with cover interlock) replace with -- part 44H4599 kit.</li> <li>– Part 87G0785 installed (without cover interlock) replace with -- part 87G0785.</li> </ul> </li> <li>• Power supply interposer backplane               <ul style="list-style-type: none"> <li>– PWRBUS1B — part 44H8401.</li> </ul> </li> </ul>
- 10. Is the SRC 0000 4444, CCCC, DDDD, or EEEE?
 

<b>No</b>	<b>Yes</b>
↓	<p>The failing item is the signal cables, exchange the following parts one at a time:</p> <ul style="list-style-type: none"> <li>• Panel to power supply cable               <ul style="list-style-type: none"> <li>– SIG8A if installed</li> </ul> </li> </ul>

## Symbolic FRUs

- Part 44H8339 installed (with cover interlock) replace with -- part 44H4599 kit.
  - Part 87G0785 installed (without cover interlock) replace with -- part 87G0785.
  - Panel backplane to MFIOp cable
    - SIG5A if installed — part 44H8017.
    - SIG5B if installed — part 44H8021.
  - Panel backplane to power supply
    - SIG9A if installed — part 44H8016.
    - SIG6B if installed — part 44H8035.
    - SIG6C if installed — part 44H8022.
  - MFIOp to expansion PWRBUS1B cable
    - SIG8A
      - Part 44H8339 installed (with cover interlock) replace with -- part 44H4599 kit.
      - Part 87G0785 installed (without cover interlock) replace with -- part 87G0785.
11. Is the SRC 1xxx 1512, 1522, or 1532?
- | No | Yes  |
|----|--|
| ↓  | Exchange one of the following one at a time: <ul style="list-style-type: none"><li>• - The failing item is the SPCN cable, exchange the following - part 24L0843.</li><li>• - The failing item is the power distribution backplane, exchange the following - part 24L0891.</li></ul> |
12. Is the SRC 1xxx 2612?
- | No | Yes  |
|----|--|
| ↓  | The failing item is the SPCN frame to frame cable. The following list shows the lengths and part numbers of the possible failing items: <ul style="list-style-type: none"><li>• 6.0 meters—part 21F9469</li><li>• 15.0 meters—part 21F9358</li><li>• 30.0 meters—part 21F9359</li><li>• 60.0 meters—part 21F9360</li><li>• 100.0 meters (SPCN optical cable)—part 21F9415</li><li>• SPCN optical adapter—part 90H6287</li><li>• SPCN port cable (frame-to-node)—part 21F9362</li><li>• Frame-to-frame cable—part 87G6235</li><li>• SPCN optical adapter—part 90H6287</li></ul> |
13. Go to “Starting Point for All Problems” on page 4.
- This ends the procedure.**

## CDAWKLD

Too many communications lines are in use.

**This ends the procedure.**

## CDTRAY

This symbolic FRU is not supported.

**This ends the procedure.**

## CHECK

If the attached device is an external device, do the following before exchanging any parts:

- Ensure that the device is powered on.
- If an interposer is required, make sure that it is connected between the I/O processor and the SCSI cable.
- Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable.
- Ensure that a terminating plug is attached to the device end of the SCSI cable.

**This ends the procedure.**

## CLKCARD

The clock card in position M06 may be failing.

- Use the last four characters of function 20-3 to get the system processor feature code.
- 

Processor Feature Code	Clock Card Feature Code
206A, 206B, 206C	On Processor FRU (no separate clock card)
206D, 206E, 206F, 207A, 207B, 207C, 207D, 207E, 207F, 208A, 208B, 208C, 208D, 2392	2833
2161, 2175, 2179, 2180	2834
2163, 2165, 2166, 2170, 2177, 2178, 2181, 2182	2833

- Use the clock card feature code to get the part number from the “Type, Model, and Part Number List” on page 380.
- Go to “Clock Card” on page 837 for replacement instructions.

**This ends the procedure.**

## CMPRES1

The compressed device and the compression IOA are not compatible.

Ask the customer to perform “Recovering from SRC 6xxx7051” in the *Backup and Recovery*, SC41-5304-04.

**This ends the procedure.**

## CRYPBAT

The batteries for the IBM 4758 Cryptographic Adapter card need to be replaced.

## Symbolic FRUs

**Attention:** If you remove either of the batteries without first backing up the power with a fresh battery, the data in the card's protected memory could be lost, which would render the 4758 Adapter card useless and require replacement of the 4758 Adapter card. DO NOT attempt to remove/replace batteries unless you have a Battery Replacement Kit (PN 09J8199). Refer to "Cards-PCI Type 4758 Battery Replacement Procedure" on page 834 for additional information.

**This ends the procedure.**

## CTLPNL

A control panel or control panel cable may be failing.

Perform the following to determine the part number for the failing item:

1. Read "Important Continuously Powered Main Storage (CPM) Information" on page 785.
2. Perform "SPCN-PIP5" on page 644. Then return here and continue with the next step of this procedure.
3. Exchange the correct part.
  - Models 600 and S10 display card part—45H1070
  - Models 620, 720 and S20 control panel without keystick display card part—44H8310
  - Models 620, 720 and S20 control panel with keystick display card part—44H8142
  - FC 5065 or 5066 expansion tower Operations Panel — part 24L0946

If a problem still exists in the system unit, replace the appropriate control panel cable:

- Models 600 and S10
  - MFIOP to control panel — part 44H8017
  - Power supply/UPS to control panel — part 44H8016
- Models 620, 720 and S20
  - MFIOP to control panel — part 44H8021

## DEVBPLN

A device backplane in the FC 5065 or 5066 Expansion Tower may be failing.

Replace the device backplane. Use the device backplane information in the Service Action Log. See "FC 5065 and FC 5066 Expansion Towers" on page 752 for location information. To exchange the device backplane at location DB1 or DB2, use part number 24L1029 and go to "Device Boards – DB1 and DB2" on page 869. To exchange the device backplane at location DB3, use part number 24L0892 and go to "Device Board – DB3" on page 870.

## DEVICE

The device is located in the FC 5065 or 5066 expansion tower. See "FI01105" on page 377.

## DEVTERM

The device terminating plug may be failing.

Perform the following:

1. Find the IOP type:
  - a. Find the IOP location information in the Service Action Log if it is available. If the location is not available, find the address of the IOP. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
  - b. Find the IOP card in the system and read the type number of the card at that location.
2. Use the information in the following list to determine the failing terminating plug:

For IOPs and IOAs that attach external devices:	
IOP/IOA Type	Action
2621	See FI00880 in “Failing Item (FI) Code Table” on page 359.
2809/2824 with 2718 IOA	For device type 7207, use part 52G9907.
6500, 6501, 6534, 2809/2824 with 2729 IOA	For tape devices, tape libraries, or optical libraries, see FI00880 in “Failing Item (FI) Code Table” on page 359. For all other device types use part 85F7887.

For IOPs and IOAs that attach internal devices:	
Internal Device Location	Action
Device located in the system unit or an expansion unit.	The terminator is part of the backplane or cable. The exception is the PCI expansion with no BACKPL4B. If the BACKPL4B is not installed, the terminator for disk units F31 through F35 is cable SIG24C.
Device located in a feature code 507x or 508x tower.	Use part 90H6285. <b>Note:</b> See “Cable Diagrams for Expansion Towers” on page 759 to determine the terminating plug location.
Device located in a FC 5065 or 5066 expansion tower.	The terminator is integrated into the backplane.

3. Exchange the failing item.

**Note:** If the terminating plug is located on a backplane, go to “BACKPLN” on page 394. Follow the procedure until the terminating plug is accessible and then remove or exchange the plug.

**This ends the procedure.**

## DISKDRV

The disk drive and logic card may be failing.

Perform the following:

1. Were you sent here from a power SRC (1xxx xxxx)?
 

**No**     **Yes**  
 ↓     Go to step 7 of this procedure.
2. Is the device location information available in the Service Action Log?
 

**No**     **Yes**

## Symbolic FRUs

- ↓ To exchange the failing item, see “Chapter 7. Recovery Procedures” on page 919.

**This ends the procedure.**

3. Find the IOP address and the device address (see “SRC Address Formats” on page 767).
4. See “System Unit and Expansion Unit Locations and Addresses” on page 712 and find the diagram of the system unit or expansion unit and find:
  - The IOP card location that is identified by the direct select address.
  - The addressed disk location that is identified by the device address.
5. Is the SRC reported on the control panel?

**No      Yes**

- ↓ See “Hardware SRC Formats” in the *AS/400 Service Functions* information.

The 2 right-most characters of function 12–3 define the SRC format. Use the correct SRC format to locate the function that contains the characters tttt lmmm, where:

- tttt=Type number
- l=Level
- mmm=Model

Go to step 9 of this procedure.

6. Go to step 8 of this procedure.
7. Use the disk or device unit number that is called out in the reference code table for this SRC.

Physically locate the disk or device using “System Unit and Expansion Unit Locations and Addresses” on page 712.

8. Remove the disk unit to determine the part number.

To exchange the disk drive and logic card, see “Chapter 7. Recovery Procedures” on page 919.

**This ends the procedure.**

9. Using the type and level information, go to “Disk Unit Type, Model, and Part Number List” on page 387 to determine the part number. If you do not know the type and level, remove the disk unit to determine the part number.

To exchange the disk drive and logic card, see “Chapter 7. Recovery Procedures” on page 919.

**This ends the procedure.**

## DISKIMG

There may be a problem with the Network Server Description (NWSD). First, vary off and then vary back on the Network Server Description (NWSD).

If this does not correct the problem, delete and recreate the Network Server Description (NWSD), or call your next level of support.

## DISKTRY

A disk unit tray or a disk unit holder may be failing.



**Note:** A disk unit holder is used for disk units in the system unit. A disk unit tray is used for disk units in FC 507x and FC 508x towers. For FC 5065 or 5066 towers, the disk tray is not a separate FRU and this symbolic FRU does not apply.

Perform the following:

1. Were you sent here from a power SRC (1xxx xxxx)?

**No      Yes**

↓      Go to step 7 of this procedure.

2. Is the device location information available in the Service Action Log?

**No      Yes**

↓      To exchange the failing item, see “Chapter 7. Recovery Procedures” on page 919.

**This ends the procedure.**

3. Find the IOP address and the device address (see “SRC Address Formats” on page 767).
4. See “System Unit and Expansion Unit Locations and Addresses” on page 712, locate the diagram of the system unit or the expansion unit, and find:
  - The IOP card location that is identified by the direct select address.
  - The addressed disk location identified by the device address.
5. Is the SRC reported on the control panel?

**No      Yes**

↓      See “Hardware SRC Formats” in the *AS/400 Service Functions* information.

The 2 right-most characters of function 12–3 define the SRC format. Use the correct SRC format to locate the function containing the characters tttt lmmm, where:

- tttt=Type number
- l=Level
- mmm=Model

Go to step 9 of this procedure.

6. Go to step 8 of this procedure.
7. Use the disk/device unit number called out in the reference code table for this SRC.

Physically locate the disk/device using “System Unit and Expansion Unit Locations and Addresses” on page 712.

8. Remove the disk unit to determine the part number.

To exchange the failing item, see “Chapter 7. Recovery Procedures” on page 919.

**This ends the procedure.**

9. Using the type and level information, go to “Disk Unit Type, Model, and Part Number List” on page 387 to determine the part number. If you do not know the type and level, remove the disk unit to determine the part number.

To exchange the failing item, see “Chapter 7. Recovery Procedures” on page 919.

**This ends the procedure.**

## Symbolic FRUs

### DPAC

The two port adapter cable (P/N 21F9345) is the failing item.

**This ends the procedure.**

### DRVSWCH

The address switches on an Optical Disk Drive in the Optical Library need to be checked and verified. Refer to the *3995 Optical Library Dataserver Maintenance Information Manual* for more information.

### DSKUNIT

The disk drive is located in the FC 5065 or 5066 expansion tower. See "DISKDRV" on page 405.

### EACODE

An error occurred in the error analysis Licensed Internal Code.

Ask your next level of support for assistance.

**This ends the procedure.**

### EXTREMD

An external optical storage device may be failing.

See "CHECK" on page 403 for more information prior to removing or replacing any parts. Return here if "CHECK" doesn't reveal any problems.

Use the device type and refer to the appropriate service documentation for that device. This documentation will help you determine the FRU part numbers and replacement procedures that you are to use during this repair action. If you are unable to locate the documentation for your specific device, then contact your next level of support for assistance.

### EXTSCSI

If more than one device is attached, they may have duplicate addresses. See "External Devices" on page 744.

The external signal cable may be failing.

Perform the following:

1. Find the IOP type:
  - a. Find the IOP address (see "SRC Address Formats" on page 767).
  - b. See "System Unit and Expansion Unit Locations and Addresses" on page 712 and find the location of the IOP card at the IOP address (direct select address) you just read.
  - c. Find the IOP card in the system and read the type number of the card at that location.
2. Find the IOP type, the attached device, the cable length, and the cable part number in the following list.

**Note:** Verify that the part number in the list is the same as the part number on the cable.

## Symbolic FRUs

IOP Type	Device	Lengths	Part Number
2621	All except 9427	4.0 meters	6495268
		12.0 meters	6495269
		20.0 meters	21F4980
	9427	2.0 meters	21F9043
		4.0 meters	21F9044
		6.0 meters	56F0382
		20.0 meters	21F9045
6500	9337	2.0 meters	21F9043
		4.0 meters	21F9044
		6.0 meters	56F0382
		20.0 meters	21F9045
6501	9337	1.5 meters	21F9046
		4.0 meters	21F9047
		6.0 meters	56F0381
		24.0 meters	21F9048
	3490, 3490/Exx, 3590	2.8 meters	05H4647
		4.5 meters	05H4648
		12.0 meters	05H4649
		18.0 meters	05H4650
		25.0 meters	05H4651
	63A0		See device documentation to determine cable Part Number(s)
	3490/Fxx, 3570	0.5 meters	49G6456
		4.5 meters	49G6457
		12.0 meters	49G6458
		18.0 meters	49G6459

## Symbolic FRUs

IOP Type	Device	Lengths	Part Number
6534, 2809/2824 with 2729 IOA	3490, 3490/Exx, 3590	2.8 meters	05H4647
		4.5 meters	05H4648
		12.0 meters	05H4649
		18.0 meters	05H4650
		25.0 meters	05H4651
	3490/Fxx, 3570, 9427, 7208/342	0.5 meters	49G6456
		4.5 meters	49G6457
		12.0 meters	49G6458
		18.0 meters	49G6459
	63A0		See device documentation to determine cable Part Number(s)
	7208/012, 7208/222	1.5 meters	52G0174
		4.0 meters	59H3462
		12.0 meters	59H3463
	7208/232, 7208/234, 9348	0.5 meters	06H6037
		4.0 meters	59H3460
		12.0 meters	59H3461
	3995	12.0 meters	59H3461
2809/2824 with 2718 IOA	7207/122, 7210/020	2.4 meters	67G1260

### Notes:

- All cables for the type 6501 IOP, with the exception of 9337 cables, must include an interposer, part 05H3834 on the IOP end of the cable.
- All cables for the 9427 tape library must include an interposer, part 05H3834, on the device end of the cable.
- If the tape unit being used is in the FC 5032 Removable Storage Unit, the failing item may also be one of the following:
  - DSE module—part 21F8890
  - Cable carrier—part 21F8872

The DSE module internal to the FC 5032 Removable Storage Unit terminates each external signal cable. No terminating plug is required. The DSE module connects tape units as follows:

- Tape units in the top 5032 locations (positions 1 and 2) use the top external cable connector.
- Tape units in the bottom 5032 locations (positions 3 and 4) use the bottom external cable connector.

**This ends the procedure.**

## HLNY3

Refer to the following information for assistance:

- ASCII Work Station Reference:*  
Provides information on ASCII workstation controller configurations.
- Local Device Configuration* information

Explains configuration menus, commands, and parameters.

- *ASCII Workstation Planning and Configuration Guide*, SA21-9969.

Contains ASCII workstation diagrams, which provide system configurations and physical hardware layouts. This information is used when problem analysis or hardware changes are required and it should be kept current.

- Device service information:

Provides information on how to use, set-up, and service a device that may be attached to the ASCII workstation controller. PC Support or Dial 3/X program documentation should be used when programmable workstations are attached to ASCII workstation controllers.

**This ends the procedure.**

## INTRLOCK

An interlock failure may have occurred.

**Note:** Some system units do not have interlocks. To determine if the system unit has interlocks, see “Models 620, 720 or S20 System Unit” on page 968.

1. Read “Important Continuously Powered Main Storage (CPM) Information” on page 785.
2. Perform “SPCN-PIP5” on page 644. Then return here and continue with the next step of this procedure.
3. Refer to the message associated with the SRC to determine if the problem occurred on the system unit or the internal secondary frame.

Exchange the following parts by replacing the installed cable with a cable or appropriate cable kit:

- Part 44H8338 — replace with cable kit 44H4598
- Part 44H8339 — replace with cable kit 44H4599
- Part 87G0784 — replace with part 87G0784
- Part 87G0785 — replace with part 87G0785

If the problem still persists, replace the SPCN panel card. For the correct part, see “SPNLCRD” on page 431.

**This ends the procedure.**

## IOP

Replace the I/O Processor. Use the I/O Processor location information in the Service Action Log if it is available. If the location is not available, find the address of the I/O Processor. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.

For the MFIOp, see “BACKPL2–PCI Bus (System Unit)” on page 824.

For CFIOps, see “Cards–PCI” on page 833.

For book IOps, see “Cards–SPD (Book)” on page 836.

## LBSADP4

The failing item is the *Local Bus Adapter* card.

- The card position is E00 and the card type is 2826.

## Symbolic FRUs

- See the “Chapter 5. Locations, Addresses, and Service Reference Information” on page 709 of this document to determine the removal and installation procedure for the *Local Bus Adapter* card.

### LBSADP5

The failing item is the *Local Bus Adapter* card.

- The card position is S07 and the card type is 2735.
- See the “Chapter 5. Locations, Addresses, and Service Reference Information” on page 709 of this document to determine the removal and installation procedure for this *Local Bus Adapter* card.

### LBUSADP

The local bus adapter is the failing item. It is contained in either the BACKPL6 or BACKPL7 symbolic FRU. This FRU contains the card slots for the local SPD optical bus driver cards in the system unit.

For PCI expansion units the card position is E00 and the card type is 2826.

For SPD expansion units the failing item is a type 2735 in position S07.

### LPARCFG

There is a configuration problem with a logical partition.

Have the customer check processor and memory allocations to the secondary partitions. The customer must ensure there are enough functioning processor and memory resources in the system for all the partitions. Be aware that processor or memory resources that failed during system IPL could have caused the IPL problem in the secondary partition.

Have the customer check the bus and I/O processor allocations for the secondary partition. The customer must ensure that the partition has load source and console I/O resources.

Have the customer check the IPL mode of the Primary partition and the failing secondary partition. If the Primary partition is IPL'd in mode 'C' then secondary partitions can only be IPL'd in mode 'C'. If that is the problem, then re-IPL the Primary partition in either 'A' or 'B' mode. Then the secondary partition can IPL in any mode.

For further assistance the customer should contact their software service provider, or visit the IBM web page at <http://www.as400.ibm.com/lpar> for additional support direction.

**This ends the procedure.**

### LPARSUP

There is an IPL or MSD problem with a secondary partition.

During the IPL or mainstore dump of a secondary partition, a complex problem was detected. The Primary partition's SAL has to be searched or the secondary partition's SRC history list has to be analyzed in sequence. Contact your next level of hardware support.

This ends the procedure.

## MEDIA

Defective media. See the I/O device service information.

This ends the procedure.

## MEMORY

The memory module may be the failing item.

Feature	Size	Part Number
2860	16MB	44H7556
2861	32MB	44H7558
2862	128MB	90H9075
2867	256MB	97H7725

This ends the procedure.

## NOFRUS

No failing items are identified for the reference code.

This ends the procedure.

## NTDEVDR

The Windows NT Server device driver may be causing the problem. Refer to *IBM AS/400 Integration for Windows Server -- Setup*, SC41-5439-03, or contact your next level of support for assistance.

This ends the procedure.

## NTLANDD

The Windows NT Server Virtual LAN device driver may be causing the problem. Refer to *IBM AS/400 Integration for Windows Server -- Setup*, SC41-5439-03, or contact your next level of support for assistance.

This ends the procedure.

## NTOPSYS

The Windows NT Server Operating System may be causing the problem. Refer to *IBM AS/400 Integration for Windows Server -- Setup*, SC41-5439-03, or contact your next level of support for assistance.

This ends the procedure.

## NTUSER

The Windows NT Server problem may be caused by:

- User-initiated action.
- A Windows NT user application.
- No keyboard or mouse attached to the Integrated Netfinity Server for AS/400.

## Symbolic FRUs

Refer to *IBM AS/400 Integration for Windows Server -- Setup*, SC41-5439-03, or contact your next level of support for assistance.

**This ends the procedure.**

## NTVSCSI

The Windows NT Server Virtual SCSI device driver may be causing the problem. Refer to *IBM AS/400 Integration for Windows Server -- Setup*, SC41-5439-03, or contact your next level of support for assistance.

**This ends the procedure.**

## OPTLCBL

The cabling for an Optical Disk Drive in the Optical Library needs to be checked. The cabling may be incorrectly installed or defective.

Refer to the *3995 Optical Library Dataserver Maintenance Information Manual* for more information.

## OPTLDRV

An Optical Disk Drive in the Optical Library is failing.

Refer to the *3995 Optical Library Dataserver Maintenance Information Manual* for more information.

## PCIBUS

The failing item is any PCI adapter controlled by the I/O processor indicated either in the Direct Select Address of the SRC or in the location given by the SAL entry. Perform "BUS-PIP5" on page 468 to determine which IOA is the failing item.

**This ends the procedure.**

## PGDPART

**Perform any SPCN-PIPs before exchanging parts.**

1. Read "Important Continuously Powered Main Storage (CPM) Information" on page 785.
2. Perform "SPCN-PIP5" on page 644. Then return here and continue with the next step of this procedure.
3. Is the SRC 1xxx 2600 on a FC 5065 or 5066 expansion tower frame?

**No      Yes**

↓      Go to step 12.

4. Is the SRC 1xxx 2221 or 2321?

**No      Yes**

↓      The MFIOIP card may be the failing item. See "IOP" on page 411 to exchange the failing item (see "System Unit and Expansion Unit Locations and Addresses" on page 712).

If the error did not go away, exchange the cable between the panel and the card, part 44H8022 or 44H8017 (see "System Unit and Expansion Unit Locations and Addresses" on page 712).



**This ends the procedure.**

5. Is the SRC 1xxx 2222 or 2322?

**No      Yes**

- ↓      The backplane may be the failing item. Exchange the backplane (see “BACKPLN” on page 394).

**This ends the procedure.**

6. Is the SRC 1xxx 2223 or 2323?

**No      Yes**

- ↓      The processor may be the failing item. See the symbolic FRU “PROCARD” on page 417 to exchange the failing item.

**This ends the procedure.**

7. Is the SRC 1xxx 2224 or 2324?

**Yes      No**

- ↓      Go to step 10.

8. Are you working on a unit with a SPD card enclosure with the 2735 card installed correctly?

**No      Yes**

- ↓      Exchange the following parts one at a time:

- 2735 optical Bus IOP—part 44H7791
- SPD backplane—part 44H7994

**This ends the procedure.**

9. Exchange the following parts one at a time.

- PCI I/O card—part 45H1235 (see “System Unit and Expansion Unit Locations and Addresses” on page 712).
- The cable between the SP/PCI I/O card and the PCI I/O card—part 44H8038 (see “System Unit and Expansion Unit Locations and Addresses” on page 712).
- The SP/PCI I/O card—part 45H1226 (see “System Unit and Expansion Unit Locations and Addresses” on page 712).

**This ends the procedure.**

10. Is the SRC 1xxx 6400 or 6401?

**No      Yes**

- ↓      Exchange the failing secondary AC module:

- AC Module (except 9251, 5071, 5073, 5081, 5083) — part 87G6300
- AC Module 9251, 5071, 5073, 5081, 5083 — part 21H7697

11. Go to “Starting Point for All Problems” on page 4.

**This ends the procedure.**

12. Perform the following:

- a. Power off the expansion frame.
- b. Check that the Tower Card (TWRCARD) is connected and seated properly.
- c. Check that the power supplies (PWRSPPLY) are connected and seated properly.
- d. Power on the expansion frame.

## Symbolic FRUs

Is there a SRC 1xxx 2600?

**No      Yes**

↓      Exchange the following FRUs one at a time:

- a. TWRCARD (see "System Unit and Expansion Unit Locations and Addresses" on page 712).
- b. PWRSPY (see "System Unit and Expansion Unit Locations and Addresses" on page 712).

**This ends the procedure.**

## PLUS

The list of possible failing items displayed on-line is not complete. There is not enough space to display all of the failing items. See the complete list of possible failing items in the appropriate unit reference code table in "Chapter 2. Unit Reference Codes" on page 59.

**This ends the procedure.**

## PNLBAT

A control panel (time of day) battery may be failing.

Perform the following to determine the part number for the failing part:

1. Read "Important Continuously Powered Main Storage (CPM) Information" on page 785.
2. Perform "SPCN-PIP5" on page 644. Then return here and continue with the next step of this procedure.
3. Exchange the control panel battery —part 16G8095

## PROBACK

The System Processor Backplane is the failing item.

### Models 620 and S20

Match the last four characters of function 20-3 with the list below to obtain the backplane type and part number.

- 2161 — part 99H4201
- 2175 — part 99H4205
- 2179 — part 99H4209
- 2180 — part 99H4213

If the last four characters of Function 20-3 are *not* listed above, then the backplane is type 2835 (P/N 90H9475).

### Model 720

The failing backplane is type 2836 if the processor feature code is one of the following:

- 207F
- 208A
- 208B

- 208C
- 208D

The failing backplane is type 2837 if the processor feature code is one of the following:

- 206D
- 206E
- 206F
- 207A
- 207B
- 207C
- 207D
- 207E

If the feature code is 206A, 206B, or 206C, then the failing backplane has the same type number as this machine's feature code (for example a 720 with feature code 206B would have the failing backplane of type 206B.)

## PROCARD

The system processor card is the failing item.

Access function 20-3. The last four characters indicate the Processor Feature Code. The first four characters are of the form xmmm where mmm is the Model Number.

If the Model Number is 0720, see "Dual-Piece Processors" on page 418.

*Single-Piece Processors (Models 600 and S10)*

If the Model Number is 0600 or 0S10, the failing processor is in location M00. The failing item has a type number equal to the Processor Feature Code. Use function 20-3 to obtain this type number, then find the part number of that type in the "Type, Model, and Part Number List" on page 380. See "System Unit and Expansion Unit Locations and Addresses" on page 712 for the system processor card locations.

*Single-Piece Processors (Models 620 and S20)*

If the Model Number is 0620 or 0S20, the failing processor's location is dependent upon the Processor Feature Code.

If no location is available, replace the processor cards one at a time and re-IPL the system after each replacement.

Use the table below to obtain the failing processor's type number.

Table 10. Type Numbers for Single-Piece Processors

Processor Feature Code	Location M01 — Processor Type Number	Location M02 — Processor Type Number
2166	2165	2166
2170	2170	
2177	2165	2177
2178	2165	2178

## Symbolic FRUs

If the Processor Feature Code is not listed in the above table, then the failing processor has a type number equal to the Processor Feature Code and is in location M01.

### *Dual-Piece Processors (Model 720)*

1. Find the Processor Feature Code (PFC) in the table below.
2. When the Processor Feature Code has been found, go to the “Type, Model, and Part Number List” on page 380 to obtain the two orderable features that correspond to the PFC. Order **both** of them.

Table 11. Processor Cards for Dual-Piece Processors with Interactive Card Technology

Processor Feature Code	Model	Processor Card 0 (Location M01)	Processor Card 1 (Location M02)
206A	720	206A	
206B	720	206B	
206C	720	206C	
206D	720	206D	
206E	720	206E	
206F	720	206F	
207A	720	207A	
207B	720	207B	
207C	720	207C	
207D	720	207D	
207E	720	207E	
207F	720	207F	2392
208A	720	208A	2392
208B	720	208B	2392
208C	720	208C	2392
208D	720	208D	2392

3. See “System Unit and Expansion Unit Locations and Addresses” on page 712 for location information.
4. When you have obtained both the processor card and the Interactive card, DO NOT ASSEMBLE THEM. Go to “Interactive Card” on page 857.

**This ends the procedure.**

## PROCCFG

The system has encountered an invalid configuration.

Access function 20-3. The last four characters indicate the Processor Feature Code. The first four characters are of the form xmmm where mmm is the Model Number.

Access Function 16 and record the last four characters of the information.

Use the following table to identify the FRU to replace.

System Model	System Feature	Right half of Function 16	FRU Location	FRU Feature Code
620	2175, 2179, 2180	xx01	M06	2834
620	2181, 2182	xx01	M06	2833
620	2181, 2182	xx02	M00	2835
620	2175	xx03	M00	2175
620	2179	xx03	M00	2179
620	2180	xx03	M00	2180
620	2181	xx03	M01	2181
620	2182	xx03	M01	2182
S20	2161	xx01	M06	2834
S20	2163, 2165, 2166, 2170, 2177, 2178	xx01	M06	2833
S20	2163, 2165, 2166, 2170, 2177, 2178	xx02	M00	2835
S20	2161	xx03	M00	2161
S20	2163	xx03	M01	2163
S20	2165, 2166, 2177, 2178	xx03	M01	2165
S20	2166	xx04	M02	2166
S20	2170	xx03	M01	2170
S20	2177	xx04	M02	2177
S20	2178	xx04	M02	2178
720	All except 206A, 206B, 206C	xx01	M06	2833
720	207F, 208A, 208B, 208C, 208D	xx02	M00	2836
720	206D, 206E, 206F, 207A, 207B, 207C, 207D, 207E	xx02	M00	2837
720	206A	xxxx	M00	206A
720	206B	xxxx	M00	206B
720	206C	xxxx	M00	206C
720	206D	xx03	M01	206D
720	206E	xx03	M01	206E
720	206F	xx03	M01	206F
720	207A	xx03	M01	207A
720	207B	xx03	M01	207B
720	207C	xx03	M01	207C
720	207D	xx03	M01	207D
720	207E	xx03	M01	207E
720	207F	xx03	M01	207F

## Symbolic FRUs

System Model	System Feature	Right half of Function 16	FRU Location	FRU Feature Code
720	208A	xx03	M01	208A
720	208B	xx03	M01	208B
720	208C	xx03	M01	208C
720	208D	xx03	M01	208D
720	207F, 208A, 208B, 208C, 208D	xx04	M02	2392

## PWRDIS1

PWRDIS1 indicates that any device or part connected to the system unit power distribution may be the failing item.

Use the following list to assist in problem analysis. For details on the card type or part number, see “Type, Model, and Part Number List” on page 380.

- Disk units L01-L05, F01-F05 and F11-F15

- Disk drive and logic card

To determine the disk unit type number, look at the label on the front of the system frame.

If your system does not have a label that identifies the disk unit type, look at the label located on the disk unit. You must remove the disk unit to see this label.

- Tape or optical units D01 and D02
- System processor, Multiple function I/O processor

### CAUTION:

**This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)**

- Any I/O adapter (IOA), I/O processor (IOP), and control panel power cables. For cable part number information, see “Assembly 23: Internal Cable Assemblies” on page 1026.
  - MFIOP power (PWR3A, PWR3B)
  - BACKPL1— Card Enclosure
  - BACKPL4A — Tape/Optical D01-D02
  - BACKPL5A — Disks L01-L05 (attaches to PWR1C)
  - BACKPL5B — Disks F01-F05 and F11-F15 (attaches to PWR8)
  - BACKPL8— attaches to PWR2B
  - BACKPL9— attaches to PWRBUS1
- Signal cables. For cable part number information, see “Assembly 23: Internal Cable Assemblies” on page 1026.
  - Card enclosure to disk units (SIG1, SIG2, and SIG3)
  - Card enclosure to tape and optical units (SIG4B)
  - MFIOP to BACKPL9 (SIG11) - when installed, not on all models
  - Control panel cable (SIG6B or SIG6C)
- Air-moving devices
  - Air-moving device panel — attaches to PWR1B

- Air-moving device 2 — attaches to PWR1C
- Air-moving device 3
- Air-moving device 9

**This ends the procedure.**

## PWRDIS2

PWRDIS2 indicates that any device or part that is connected to the internal expansion unit power distribution may be the failing item.

Use the following list to assist in problem analysis. For details on the card type or part number, see “Type, Model, and Part Number List” on page 380.

- Disk units F31 through F55
  - Disk drive and logic card

To determine the disk unit type number, look at the label on the front of the system frame.

If your system does not have a label that identifies the disk unit type, look at the label located on the disk unit. You must remove the disk unit to see this label.

- Tape or optical units D11, D12, and D13
- Any I/O adapter (IOA), I/O processor (IOP), card enclosure backplane (BACKPL6 and BACKPL7), and power cables. For cable part number information, see “Assembly 23: Internal Cable Assemblies” on page 1026.
  - Card enclosure to power supply (PWR23A, PWR25-SPD, PWR23B, and PWR26-PCI)
  - BACKPL4B — Tape D11-D13
  - BACKPL5 — Disks F31-F35 (attaches to PWR21)
  - BACKPL5B — Disks F41-F55 (attaches to PWR22)
- Signal cables. For cable part number information, see “Assembly 23: Internal Cable Assemblies” on page 1026.
  - Card enclosure to disk units (SIG21, SIG22, and SIG23)
  - Card enclosure to tape and optical units (SIG24A)
  - Card enclosure to bus (SIG15)
- Air-moving devices
  - Air-moving device 5
  - Air-moving device 6 (attaches to PWR21)

**This ends the procedure.**

## PWROC

A power supply may be the failing item.

Perform the following to determine the part number for the failing power supply:

1. Read “Important Continuously Powered Main Storage (CPM) Information” on page 785.
2. Perform “SPCN-PIP5” on page 644. Then return here and continue with the next step of this procedure.
3. Is the SRC 1xxx 2201 or 2301?

**No      Yes**

## Symbolic FRUs

- ↓ Perform "POW-PIP1" on page 579 to isolate the failing item.

The failing item may be one of the following parts:

- Power Supply P01 - part 21H9364
- Power Supply P01 - part 44H7779
- Power Supply P02 - part 44H7779
- Any part on the system bus

**This ends the procedure.**

4. Is the SRC 1xxx 2202 or 2302?

**No      Yes**

- ↓ Perform "POW-PIP2" on page 585 to isolate the failing item.

The failing item may be one of the following parts:

- Power Supply P03 - part 44H7777
- Power Supply P04 - part 44H7777
- Any part on the system bus

**This ends the procedure.**

5. Is the SRC 1xxx 1810, 1820, 1830, or 1840 on a FC 5065 or FC 5066 expansion?

**No      Yes**

- ↓ Perform "SPCN-PIP10" on page 646 to isolate the failing item.

The failing item may be one of the following parts:

- Power Supply P01 – part 90H6629
- Power Supply P02 – part 90H6629
- Power Supply P03 – part 90H6629
- Any part on the system bus

6. Is the SRC 4414?

**Yes      No**

↓

**This ends the procedure.**

7. Power on the system. Does the expansion tower that was failing power on?

**Yes      No**

- ↓ Go to "Starting Point for All Problems" on page 4.

**This ends the procedure.**

8. Remove the AC line cord from the outlet. Does a battery power unit charger fault occur?

**Yes      No**

- ↓ **This ends the procedure.**

9. Replace the battery power unit charger – part 97H7316.

**This ends the procedure.**

## PWRREG

**Perform any SPCN-PIPs before exchanging parts.**

A power regulator card may be failing.



Perform the following to determine the part number for the failing power regulator:

1. Read "Important Continuously Powered Main Storage (CPM) Information" on page 785.
2. Perform "SPCN-PIP5" on page 644. Then return here and continue with the next step of this procedure.
3. Is the SRC 1xxx 6018, 1xxx 6118, or 1xxx CE18?

**No      Yes**

↓ Power regulator 1 or 2 is the failing item.

The following list shows the possible failing items:

- System Unit Expansion (FC 507x)–part 87G6049
- Storage Expansion Tower (FC 508x)–part 17G1209 (on FC 508x reg.1 only installed).

Perform "SPCN-PIP1" on page 642 to determine the failing item.

**This ends the procedure.**

4. Is the SRC 1xxx 6218?

**No      Yes**

↓ Power regulator 1 is the failing item.

The following list shows the possible failing item:

- System Unit Expansion (FC 507x)–part 87G6049
- Storage Expansion Tower (FC 508x)–part 17G1209 (on FC 508x reg.1 only installed).

Perform "SPCN-PIP1" on page 642 to determine the failing item.

**This ends the procedure.**

5. Is the SRC 1xxx 6238?

**No      Yes**

↓ Power regulator 2 is the failing item.

The following list shows the possible failing items:

- System Unit Expansion (FC 507x)–part 87G6049
- Storage Expansion Tower (FC 508x)–see the next FRU in the SRC list.

Perform "SPCN-PIP1" on page 642 to determine the failing item.

**This ends the procedure.**

6. Is the SRC 1xxx 6518?

**No      Yes**

↓ Power regulator 1 or 2 is the failing item.

The following list shows the possible failing item:

- System Unit Expansion (FC 507x)–part 87G6049
- Storage Expansion Tower (FC 508x) –part 17G1209 (on FC 508x only reg.1 installed)

Perform "SPCN-PIP1" on page 642 to determine the failing item.

## Symbolic FRUs

**This ends the procedure.**

7. Is the SRC 1xxx 6x18 or 1xxx 6x1A?

**No      Yes**

↓ Power regulator 1 is the failing item.

The following list shows the possible failing item:

- System Unit Expansion (FC 507x)–part 87G6049
- Storage Expansion Tower (FC 508x)–see the next FRU in the SRC list.

**This ends the procedure.**

8. Is the SRC 1xxx 6x38 or 1xxx 6x3A?

**No      Yes**

↓ Power regulator 2 is the failing item.

The following list shows the possible failing item:

- System Unit Expansion (FC 507x)–part 87G6049
- Storage Expansion Tower (FC 508x)–part 17G1209

**This ends the procedure.**

9. Is the SRC 1xxx 7401?

**No      Yes**

↓ Power Regulator not installed. See next FRU.

10. Is the SRC 1xxx B101 or B102?

**No      Yes**

↓ If the system can be powered on with this SRC, perform “FI00253” on page 368 before continuing.

Power regulator 1 or 2 may be the failing item.

The following list shows the possible failing item:

- System Unit Expansion (FC 507x)–part 87G6049
- Storage Expansion Tower (FC 508x)–part 17G1209

Perform “SPCN-PIP10” on page 646 to determine the failing item.

**This ends the procedure.**

11. Is the SRC 1xxx B201 or B202?

**No      Yes**

↓ Exchange the expansion battery charger unit (see “FI00253” on page 368).

**This ends the procedure.**

12. Go to “Starting Point for All Problems” on page 4.

**This ends the procedure.**

## PWRSPLY

A power supply may be the failing item.

**Note:** When there is a location and part number displayed on the Control Panel of a FC 5065 or 5066 expansion tower, then you are to replace that FRU first.

Perform the following:

1. Check the system tower and each of the expansion towers to see if they are powered down. Is the system tower or any of the expansion towers powered down?

**Yes      No**

↓      Go to step 5 of this procedure.

2. Power down all of the towers in the system. Then attempt to power on the system.

Check all of the towers in the system. Did the entire system power up without a power supply SRC? (Control panel SRCs can be power supply SRCs.)

**Yes      No**

↓      Go to step 5 to replace the power supply.

3. **DO NOT REPLACE THE POWER SUPPLY — IT IS NOT THE FAILING ITEM.**

Check all of the towers in the system. Is there an SRC displayed on any of the panels?

**Yes      No**

↓      The initial power problem may have been caused by the AC input. As this maybe an intermittent problem, track the frequency of occurrence. Prior to replacing the Power Supply after a reoccurrence, verify that the AC input is not the problem by monitoring the input power.

**This ends this procedure.**

4. Return to the reference code tables and follow the instructions for the specific SRC that is displayed on the panel. **IF THE SRC TABLE RETURNS YOU TO SYMBOLIC FRU PWSPLY RETURN HERE AND CONTINUE WITH THE NEXT STEP OF THIS PROCEDURE.**

**This ends this procedure.**

5. Read "Important Continuously Powered Main Storage (CPM) Information" on page 785.
6. Perform "SPCN-PIP5" on page 644. Then return here and continue with the next step of this procedure.
7. Is the SRC 1xxx 2551, 2552, 2561, 2562, 2553, 2554, 2563, or 2564?

**Note:** A LOAD ON THE BUS MAY BE CAUSING THE FAILURE. THE CORRECT POW-PIP FOR THE SRC MUST BE PERFORMED. THIS IS NECESSARY FOR ISOLATING THE LOAD ON THE BUS TO DETERMINE THE CORRECT FRU REPLACEMENT. DO NOT REPLACE THE POWER SUPPLIES UNLESS ALL COMPONENTS ON THE BUS HAVE BEEN ELIMINATED FROM THE LIST OF POSSIBLE REPLACEMENT FRUs AS DOCUMENTED IN THE POW-PIPs

**Yes      No**

↓      Go to step 10 on page 426.

8. Is the SRC 1xxx 2551, 2552, 2561, or 2562?

**No      Yes**

↓      Perform "POW-PIP1" on page 579 to isolate the failing item.

The failing item may be one of the following parts:

- Power Supply P01 - part 21H9364

## Symbolic FRUs

- Power Supply P01 - part 44H7779
- Power Supply P02 - part 44H7779
- Any part on the system bus

**This ends the procedure.**

9. Is the SRC 1xxx 2553, 2554, 2563, or 2564?

**No      Yes**

↓ Perform "POW-PIP2" on page 585 to isolate the failing item.

The failing item may be one of the following parts:

- Power Supply P03 - part 44H7777
- Power Supply P04 - part 44H7777
- Any part on the system bus

**This ends the procedure.**

10. Are you working on an expansion frame?

**No      Yes**

↓ Go to step 23 on page 428.

11. Is the SRC 0000 – 0003, 0009, 000B, 0040, 0043, 004B, 00C0, 00C3, 00CB, 4444, or EEEE?

**No      Yes**

↓ Perform the following:

- In the system unit, exchange power supply 1—part 21H9364.
- In the expansion unit, exchange power supply 2 (if installed)—part 44H7779.

If power supply 2 is not installed, exchange the following one at a time:

- control panel card (see "CTLPNL" on page 404)
- control panel cable

**This ends the procedure.**

12. Is the SRC 0000 0049 or 00C9?

**No      Yes**

↓ Perform the following:

- In the system unit, exchange the air— moving device panel—part 44H7756.
- In the expansion unit, exchange power supply 2 (if installed)—part 44H7779.

If power supply 2 is not installed, exchange the following one at a time:

- control panel card
- control panel cable

**This ends the procedure.**

13. Is the SRC 0000 – 0050, 0053, 005B, 00D0, 00D3, or 00DB?

**No      Yes**

↓ Perform the following:

- In the system unit, exchange power supply 1—part 21H9364.

- In the expansion unit, exchange power supply 3 —part 44H7777.

**This ends the procedure.**

14. Is the SRC 0000 0059 or 00D9?

**No      Yes**

↓ Perform the following:

- In the system unit, exchange the air— moving device panel—part 44H7756.
- In the expansion unit, exchange power supply 3 —part 44H7777.

**This ends the procedure.**

15. Is the SRC 1xxx 2131, 2240, or 2311?

**No      Yes**

↓ The failing item is power supply 1 on the system unit of a Model 620, 720, or S20 system, part 21H9364.

**Note:** Models 620, 720, and S20 may contain up to 4 power supplies. The reference code that sent you here refers to the power supply on the system unit (see “System Unit and Expansion Unit Locations and Addresses” on page 712)

**This ends the procedure.**

16. Is the SRC 1xxx 2132, 2142, 2152, 2212, 2312, or 2332?

**No      Yes**

↓ The failing item is power supply 2 on the expansion unit of a Model 620, 720, or S20 system, part 44H7779.

**Note:** Models 620, 720, and S20 may contain up to 4 power supplies. The reference code that sent you here refers to the power supply on the expansion unit (see “System Unit and Expansion Unit Locations and Addresses” on page 712)

**This ends the procedure.**

17. Is the SRC 1xxx 2133, 2143, 2153, 2313, or 2333?

**No      Yes**

↓ The failing item is power supply 3 on the expansion unit of a Model 620, 720, or S20 system, part 44H7777.

**Note:** Models 620, 720, and S20 may contain up to 4 power supplies. The reference code that sent you here refers to the power supply on the expansion unit (see “System Unit and Expansion Unit Locations and Addresses” on page 712)

**This ends the procedure.**

18. Is the SRC 1xxx 2134, 2144, 2154, 2314, or 2334?

**No      Yes**

↓ The failing item is power supply 4 on the expansion unit of a Model 620, 720, or S20 system, part 44H7777.

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**Note:** Models 620, 720, and S20 may contain up to 4 power supplies.  
The reference code that sent you here refers to the power supply on the expansion unit (see “System Unit and Expansion Unit Locations and Addresses” on page 712)

**This ends the procedure.**

19. Is the SRC 1xxx 2141, 2151, or 2211?

**No      Yes**

↓      The failing item is power supply 1 on the system unit of a Model 620, 720, or S20 system, part 44H7779.

**Note:** Models 620, 720, and S20 may contain up to 4 power supplies.  
The reference code that sent you here refers to the power supply on the system unit (see “System Unit and Expansion Unit Locations and Addresses” on page 712)

**This ends the procedure.**

20. Is the SRC 1xxx 2330 or 2331?

**No      Yes**

↓      The failing item is power supply 1 on the system unit of a Model 620, 720 or S20 system, part 21H9364 or 44H7779.

**Note:** Models 620, 720 and S20 may contain up to 4 power supplies.  
The reference code that sent you here refers to the power supply on the system unit (see “System Unit and Expansion Unit Locations and Addresses” on page 712)

**This ends the procedure.**

21. Is the SRC 1xxx 2213?

**No      Yes**

↓      The failing item is the CPM regulator on the backplane.

Exchange part — 44H8110 (see “System Unit and Expansion Unit Locations and Addresses” on page 712).

**This ends the procedure.**

22. Is the SRC 1xxx 2210?

**No      Yes**

↓      The failing item could be one of the CPM regulators.

- a. CPM regulator on the backplane—exchange Part Number 44H8110 (see “System Unit and Expansion Unit Locations and Addresses” on page 712).
- b. The failing item is Power Supply 1 on the system unit, or Power Supply 2 on the expansion unit of a Model 620, 720, or S20 system. Each has Part Number 44H7779.

**This ends the procedure.**

23. Is the SRC 1xxx 7xxx?

**No      Yes**

↓      The failing power supply is located in a secondary tower. The address

## Symbolic FRUs

of the failing tower and unit is shown in the third and fourth character of the 4 left-most characters of the SRC.

Find the unit reference code in the following table to determine the failing power supply and the part number. Then see “System Unit and Expansion Unit Locations and Addresses” on page 712 to determine the location of the failing item.

Reference Code	Power Supply	Part Number
7x01	AC Module (except 5071, 5073, 5081, 5083)	87G6300
	AC Module 5071, 5073, 5081, 5083	21H7697
7x02	Feature 2 (all except 5071, 5073, 5081, 5083)	87G6290
	5071, 5073, 5081, 5083	87G6110
7x03	Feature 1 (all except 5071, 5073, 5081, 5083)	87G6290
	5071, 5073, 5081, 5083	87G6110
7x04	Feature 1 or 2 (all except 5071, 5073, 5081, 5083)	87G6290
	5071, 5073, 5081, 5083	87G6110

**This ends the procedure.**

24. Is the SRC 1xxx15xx?

**No      Yes**

↓ The failing power supply is located in a secondary tower. For 1xxx-15xx SRCs in secondary FC 5065 or 5066 tower use this table:

Unit Reference Code	Power Supply	Part Number
1510, 1511, 1512, 1513	P01	90H6629
1520, 1521, 1522, 1523	P02	90H6629
1530, 1531, 1532, 1533	P03	90H6629

25. Is the SRC 1xxx 18xx or 2600?

**No      Yes**

↓ Go to “SPCN-PIP10” on page 646 to find failing unit. Replace the failing unit P01, P02, or P03 with part number 90H6629.

26. Is the SRC 1xxx CD00?

**No      Yes**

↓ The FC 5065 or 5066 expansion tower is not detecting any power supplies installed. If a power supply is installed replace the following one at a time:

- Power supply -- part 90H6629
- TWRCARD -- part 97H7532

**This ends the procedure.**

## Symbolic FRUs

27. Go to “Starting Point for All Problems” on page 4.

**This ends the procedure.**

## QSYSOPR

For more information, look in the System Operator message queue for a message with the same date/time. Perform any actions defined in the message.

**This ends the procedure.**

## REFER

Consult the appropriate *3995 Optical Library Dataserver Maintenance Information Manual* to assist in analyzing the URC.

**This ends the procedure.**

## RMDEV

A removable media power regulator or device is failing.

The last two digits of the reference code identify the failing device. Consult the table below.

Reference Code	Failing Device
xx16	D01
xx17	D02
xx1C	D03
xx1F	D04

1. See “System Unit and Expansion Unit Locations and Addresses” on page 712 to determine where the failing device is located and to identify what type of device it is.

2. Is the SRC 1xxx 6B16, 6B17, 6B1C, 6B1F, 6C16, 6C17, 6C1C or 6C1F?

**Yes      No**

↓      Go to “Starting Point for All Problems” on page 4.

3. Is the failing device a disk unit?

**No      Yes**

↓      Go to “DISKTRY” on page 406 to replace the failing device. Return to 6 of this procedure after exchanging the device.

4. Is the failing device an optical storage unit?

**No      Yes**

↓      The optical storage unit is the failing item. Assume a type number of 632x and go to the “Type, Model, and Part Number List” on page 380 to determine the part number. Return to 6 of this procedure after exchanging the device.

5. The failing device is a magnetic tape unit. Determine the device type by reading the QIC number from the front door of the device. Find the type number in the table below.

QIC or Tape Device	Type Number
QIC 3040	6335
QIC 1000	6379



QIC or Tape Device	Type Number
QIC 2GB	6380, 6381
QIC 4GB	6382
QIC 5010	6385
8mm Tape Device	6390
MLR1-S	6383
MLR3	6386

When you have located the Type Number in the above table, go to “Type, Model, and Part Number List” on page 380 to determine the part number. Return to 6 of this procedure after exchanging the device.

6. Is the SRC 1xxx 6B16, 6B17, 6B1C, 6B1F, 6C16, 6C17, 6C1C or 6C1F displayed?

Yes      No

↓      The regulator you replaced in this procedure is the failing item.

**This ends the procedure.**

7. Exchange the SPCN card (BKSPCN); see “Chapter 6. Removal and Installation Procedures” on page 821. After exchanging the part, return to this step and continue with the procedure.

Is the SRC 1xxx 6B16, 6B17, 6B1C, 6B1F, 6C16, 6C17, 6C1C or 6C1F displayed?

Yes      No

↓      The SPCN card you replaced in this step is the failing item.

**This ends the procedure.**

8. Exchange the backplane (BACKPLN).

**This ends the procedure.**

## SIGx

The failing item may be a signal cable. Check “System Unit and Expansion Unit Locations and Addresses” on page 712 for signal cable information. Check “Assembly 23: Internal Cable Assemblies” on page 1026 for part number information.

**This ends the procedure.**

## SNSDATA

This is a portion of the SCSI sense data associated with the URC; it is not a failing item in and of itself. This data is referenced by certain failure isolation procedures within the *3995 Optical Library Dataserver Maintenance Information Manuals*.

**This ends the procedure.**

## SPNLCRD

The control panel electronics card may be the failing item.

1. Read “Important Continuously Powered Main Storage (CPM) Information” on page 785.
2. Perform “SPCN-PIP5” on page 644. Then return here and continue with the next step of this procedure.
3. The part numbers for the failing cards are shown below:

## Symbolic FRUs

- Models 620, 720 and S20 SPCN/panel card without a keystick — part 44H8313
- Models 620, 720 and S20 SPCN/panel card with a keystick — part 44H8141

If a problem still exists in the system unit after FRUs in the list have been replaced, replace the appropriate control panel cable:

- MFIOP to SPNLCD cable — part 44H8021
- Power supply to SPNLCD cable — part 44H8022
- 4–9 pin D shell interface panel to SPNLCD cable
  - part 44H8338 installed, replace with part 44H4598 kit
  - part 87G0784 installed, replace with part 87G0784
- Internal UPS to SPNLCD cable — part 44H8035
- Internal expansion to SPNLCD cable
  - part 44H8338 installed, replace with part 44H4599 kit
  - part 87G0784 installed, replace with part 87G0785
- (Internal expansion jumper — part 44H8020)

See “System Unit and Expansion Unit Locations and Addresses” on page 712.

**This ends the procedure.**

## STORIOA

The storage IOA may be failing. For some IOPs, the storage IOA is not a separate FRU. In this instance, replace the whole IOP. Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.

The 9164, 2809, and 2824 IOPs have the following removable storage IOAs: 2718, 2726, 2728, 2729, 2740, 2741, and 2748. For these IOPs, replace the storage IOA.

For all other IOPs, replace the IOP.

**This ends the procedure.**

## SVCDOS

See the *Description/Action* column in the “Chapter 2. Unit Reference Codes” on page 59 for the Unit Reference Code you have.

**This ends the procedure.**

## TAPCLN

Clean the tape unit.

**This ends the procedure.**

## TAPCNFG

Tape and DASD devices are attached to an I/O Processor that can not support both Tape and DASD at the same time.

**This ends the procedure.**

## TWRCARD

The tower card assembly may be failing.

**Note:** When there is a location and part number displayed on the Control Panel of a FC 5065 or 5066 expansion tower, then you are to replace that FRU first.

The failing tower card assembly is located in the FC 5065 or 5066 expansion tower. The part number is 97H7532. See “System Unit and Expansion Unit Locations and Addresses” on page 712 to find the tower card assembly. See “Chapter 6. Removal and Installation Procedures” on page 821 to exchange the tower card assembly.

**This ends the procedure.**

## UAMR1

The LAN Server/400 configuration may be causing the problem.

See *OS/2 Warp Server for AS/400 Administration*, SC41-5423-00 for more information about the configuration.

**This ends the procedure.**

## UC235

The problem may be that the card (a resource) was removed from the card enclosure without updating the system configuration records.

**Note:** If the system has OptiConnect/400, verify that the remote system was powered on at the time of the failure.

Perform the following:

1. See the original system message and record the name of the resource.
2. Use the Work with Hardware Resources (WRKHWRSC) command to determine the location of the card. Be sure to note all other resources that appear on the bus.

**This ends the procedure.**

## UC236

The problem may be that the card (a resource) is not correctly plugged into the card enclosure.

Perform the following:

1. See the original system message and record the name of the resource.
2. Use the Work with Hardware Resources (WRKHWRSC) command to determine the location of the card.
3. Verify that the card is installed properly.

**This ends the procedure.**

## UG3AS

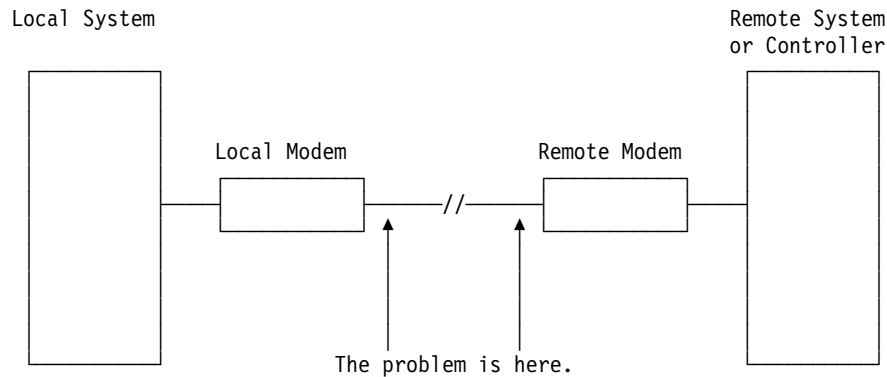
An error has been detected in AS/400 Licensed Internal Code.

Contact your next level of support for possible corrective actions.

## Symbolic FRUs

This ends the procedure.

### UJ0E7



The problem has been isolated to the telephone line equipment that links the local and the remote equipment.

This ends the procedure.

### UJ6P3

An error occurred in the IBM Facsimile Support/400 Licensed Program.

Please contact your next level of support for possible corrective actions.

You can find additional information on Facsimile Support/400 in the *Application System/400 Facsimile Support/400 User's Guide*.

This ends the procedure.

### UJE34

The error message may have been logged from a temporary error that is not caused by equipment failure. This type of error message sometimes contains information about system performance.

Perform the following:

- See the original system message for cause and recovery information about the error.

This ends the procedure.

### UJE40

The problem may be at the remote site or on the network media.

Perform the following:

1. Ask the remote site operator to verify the following:
  - The remote equipment is powered on and ready.
  - The configuration values are correct.
  - The local area network cables are securely connected and are not damaged.
2. If the problem continues, run all available diagnostic tests on the remote equipment and perform the repair action specified.

**This ends the procedure.**

## ULNZ2

A maximum of 18 devices can be varied on for one ASCII workstation controller.

Perform the following:

1. Use the work with device description (WRKDEVD) command to display the workstation controller information. Verify that only 18 devices on each ASCII workstation controller have \*YES in the device description field for the Online at IPL parameter.

If more than 18 devices are attached to the ASCII workstation controller, you must vary off a device that is not being used before you can vary on another device.

2. If possible, move some of the devices to another ASCII workstation controller.

**This ends the procedure.**

## ULNZ3

Communications line problems:

When a workstation is attached to the system through modems, it may fail or lose communication with the system for various lengths of time. This is due to a communications line problem.

Refer to the modem service information to determine how to test the modems and verify that the communications line between the modems is working correctly.

**This ends the procedure.**

## ULNZ4

Independent workstation and SDLC support:

The system considers an independent workstation to be an attached remote system when it is attached using PC Support asynchronous communications on an ASCII workstation controller.

Perform the following:

- See the *ASCII Work Station Reference* information for instructions on how to verify that the remote system (independent workstation) attached to the failing port is a supported device.
- See the device hardware maintenance and service information for instructions on how to verify that the device is working correctly.

**This ends the procedure.**

## UNP20

The internal code of the I/O card that detected the error may be defective.

Perform the following:

1. Replace the suspected card.
2. If the failure occurs again, contact your next level of support and report the problem.

**This ends the procedure.**

## Symbolic FRUs

### UPLF1

The system may not have been able to complete the APPN session initiation due to the number of jobs that were active when the timeout occurred.

The timeout condition could have been caused by a system performance problem. System performance could be impacted by the capacity of the system. System performance can also be impacted by processing requests from other systems in the network.

For capacity planning and system performance information, refer to *LPS: Performance Tools for AS/400*.

**This ends the procedure.**

### UPSUNIT

The UPS may be the failing item.

**Note:** The AMD in the UPS will be stopped when the UPS is not running on batteries or is charging the batteries.

Perform the following:

1. Verify that the SIG7 cable (part 44H8027) is installed.

Was the cable already installed?

**No      Yes**

↓      Go to step 3 of this procedure.

2. Install the SIG7 cable and wait 10 seconds.

Is the SRC still present?

**Yes      No**

↓      **This ends the procedure.**

3. Read "Important Continuously Powered Main Storage (CPM) Information" on page 785 and "Important UPS Information" on page 862.
4. Perform "SPCN-PIP5" on page 644. Then return here and continue with the next step of this procedure.
5. Do you have a SRC 1xxx 2400, 2401, 2402, 2407, or 2413?

**No      Yes**

↓      An incorrect status response was detected during normal operation. Before replacing the UPS, unplug and replug the UPS connector. If the fault clears, continue with the next step to replace the UPS. If the fault does not clear, the problem is in the system unit and you need to refer to "SPNLCRD" on page 431.

6. Do you have a SRC 1xxx 2406?

**No      Yes**

↓

**Note:** Check the UPS base unit and UPS transformer connectors for damage or pushed out contacts. Seat the pushed out contacts or replace the unit with the damaged connector. When damaged connectors or pushed out contacts are not found; replace as follows:

Replace the UPS base unit—part 44H7784 and the UPS Transformer unit—part 44H7786. Please be sure that both the Transformer and Base that you took out of the system are shipped together.

**Note:** Even though the UPS has been repaired, when the system is powered on, the old fault was displayed and reported. This fault is latched in the UPS and requires a successful UPS battery test to clear the fault. Refer to “Important UPS Information” on page 862 for further battery test instructions.

7. Exchange the following parts one at a time: (see “System Unit and Expansion Unit Locations and Addresses” on page 712).
  - UPS base unit — part 44H7784
  - UPS unit signal cable SIG7 — part 44H8027
  - UPS to power supply ac power cable — part 44H8388 (4x)
  - UPS transformer unit — part 44H7786

**Note:** Even though the UPS has been repaired, when the system is powered on, the old fault was displayed and reported. This fault is latched in the UPS and requires a successful UPS battery test to clear the fault. Refer to “Important UPS Information” on page 862 for further battery test instructions.

8. Do you have a SRC 1xxx 2410?

**No      Yes**

↓ The UPS did not respond to a test request. If replacing the UPS did not clear the fault, the problem may be in the system unit. Refer to “SPNLCRD” on page 431.

9. Were you sent to the UPSUNIT procedure by SRC 1xxx 2403, 2404, or 2405?

**No      Yes**

↓ **Even though the UPS has been repaired, when the system is powered on, the old fault was displayed and reported. This fault is latched in the UPS and requires a successful UPS battery test to clear the fault. Refer to “Important UPS Information” on page 862 for further battery test instructions.**

**This ends the procedure.**

## USER

System operator or user error. See the system operator information.

**This ends the procedure.**

## UX201

The printer definition table may be causing the problem.

Perform the following:

See the original system message for cause and recovery information about the error.

**This ends the procedure.**

## Symbolic FRUs

### UX202

A problem was detected while downloading a device Licensed Internal Code change to the device.

Perform the following:

See the original system message for cause and recovery information about the error.

**This ends the procedure.**

### UY1Z1

Cable problems:

See the *IBM Technical Information Manual* for information on how to correct cabling problems. Problems associated with noise can cause a workstation to fail or lose communication with the system for various lengths of time. Noise or electrical interference can be caused by a motor or any device that is a source of electrical radiation. The following are common causes for noise problems:

- Cables that are located near a source of electrical interference.
- Cables that are loose, damaged, or not correctly connected

**This ends the procedure.**

### UY1Z2

This error occurs if you attempted to activate more workstations than the amount allowed.

Perform one of the following to correct the problem:

- Turn off the power for the workstation that caused the error, or connect the workstation to a different controller.
- Turn off the power for a different workstation connected to the same workstation controller.

See the local workstation diagrams for the physical location of workstations.

**This ends the procedure.**

### UY1Z3

This error is caused by a workstation connected to the port.

Perform the following:

1. Turn off the power for one workstation on the port, then check if the other workstations operate correctly. Repeat this step for each workstation on the port. The workstation causing the problem is the one that is turned off when the others are working correctly.

If you did not find the problem, continue to step 2.

2. Turn off the power for all workstations on the port. Then turn on one workstation to check if it works when all other workstations are turned off. Repeat this step for each workstation on the port. The workstation causing the problem is the one that works when all other workstations are turned off.

**This ends the procedure.**



**UY1Z4**

An error occurred with the pass-through command between the workstation controller and the workstation.

This type of error is caused by a failure in the Licensed Internal Code in the workstation or the Licensed Internal Code in the workstation controller.

**This ends the procedure.**

**UY1Z5**

The communication between the workstation controller and a workstation was interrupted during an active session.

Possible causes:

- The power for the workstation was turned off, then on.
- A temporary loss of power to the workstation occurred.

**This ends the procedure.**

## Symbolic FRUs

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## Chapter 4. Problem Isolation Procedures (PIPs)

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## ASCII Workstation I/O Processor Problem Isolation Procedures

### Overview

This section contains the procedures necessary to isolate a failure that is detected by the ASCII workstation I/O processor. These procedures are used when no display is available with which to perform online problem analysis.

The workstation I/O processor detected an error while communicating with the workstation which is used as the primary console.

**Note:** If you are using a PC, you must install an emulation program.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see "Powering Off and Powering On the System or Expansion Tower" on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

**To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)**

**DANGER**

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

**DANGER**

To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)

**DANGER**

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

**DANGER**

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 789
- “Determining a Primary or Alternative Console” in the *AS/400 Service Functions* information

**ASCII-PIP1**

**Introduction:** This procedure isolates problems to the ASCII workstation I/O processor card, its interface to the consoles, the console and alternative console, and the console configuration.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 442 before continuing with this procedure.

1. Were the console and the alternative console powered on before starting the IPL (see “Determining a Primary or Alternative Console” in the *AS/400 Service Functions* information)?

**No      Yes**

↓      Go to step 3 of this procedure.

2. Power on the console and the alternative console.
3. Perform an IPL from disk (see “Initial Program Load (IPL) Information” in the *AS/400 Service Functions* information).  
Does the IPL complete successfully?

## ASCII Workstation PIPs

No      Yes

↓      **This ends the procedure.**

4. Ensure that the following conditions for the console are met. If you need additional information, see the *ASCII Work Station Reference* information.
  - The ASCII workstation that is used as the console must be an IBM 315x, an IBM 316x, or a display that is equal to these.
  - The console must be attached to port 0.

**Note:** If the system has logical partitions, this is true only for the Primary partition. To locate the console for a secondary partition see "Locating a Secondary Partition's Console" on page 811.

- The device settings for the console must be correct. See the example in the next step of this procedure.
5. Enter the correct device settings by doing the following:
    - a. Press and hold the Control (CTRL) key, then press the Setup key. A display that shows the device settings appears.
    - b. Enter the correct settings.

**Note:** See the device service information for the correct settings.

For example, the device settings for the 3161 are:

Device Settings	Enter
Machine Mode	3161
Operation Mode	echo
Interface	EIA 232-C
Line Control	IPRTS
Line Speed (bps)	19,200 bps
Parity	even
Stop Bit	1
Word Length (bits)	8

- c. The cable that connects the console to the system must be a *direct* (8-wire) cable.

**Note:** There are several different cable types available. Ensure that you are using a *direct* (8-wire) cable. This cable is described in the *Physical Planning Reference* information.

- d. All cable connections must be tight and have no visible damage.
6. Is the system powered off?

Yes      No

↓      Go to step 9 of this procedure.

7. Perform the following:
  - a. Select Manual mode on the control panel.
  - b. Power on the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
  - c. Wait for one of the following to appear:
    - A display on the console
    - The System Attention light and a reference code on the control panel

Does a display appear on the console?

**Yes      No**

↓      Go to step 10 of this procedure.

8. Select the *Perform an IPL* option to continue performing an IPL.

**This ends the procedure.**

9. Perform an IPL by doing the following:

- a. Select Manual mode on the control panel (see “Selecting IPL Type, Mode, and Speed” on page 793).
- b. Select function 03 (Start IPL) on the control panel and press Enter.
- c. Wait for one of the following to appear:
  - A display on the console or alternative console
  - The System Attention light and a reference code on the control panel

Does a display appear on the console?

**No      Yes**

↓      Select the *Perform an IPL* option to continue performing an IPL.

**This ends the procedure.**

10. Does the same reference code that sent you to this procedure occur?

**Yes      No**

↓      A different system reference code (SRC) or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

**This ends the procedure.**

11. Is there an alternative console?

**Note:** The alternative console is the workstation that is attached to port 0 of the second workstation I/O processor. (See “Determining a Primary or Alternative Console” in the *AS/400 Service Functions* information.)

**Note:** If the system has logical partitions, this is true only for the Primary partition. To locate the alternative console for a secondary partition see “Locating a Secondary Partition’s Console” on page 811.

**Yes      No**

↓      Go to step 24 of this procedure.

12. Make dedicated service tools (DST) available by doing the following (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information):

- a. Ensure that the alternative console is powered on.
- b. Ensure that the Manual mode on the control panel is selected.
- c. Select function 21 (Make DST Available) on the control panel and press Enter.

Does a display appear on the console or on the alternative console?

**No      Yes**

↓      Exit DST.

This appears to be a software problem. Ask your next level of support for assistance.

**This ends the procedure.**

13. Does the same reference code that sent you to this procedure occur?

## ASCII Workstation PIPs

**Yes      No**

- ↓      A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

**This ends the procedure.**

14. Is the alternative console an ASCII workstation?

**No      Yes**

- ↓      Go to step 20 of this procedure.

15. Is the alternative console a LocalTalk\*\* workstation?

**Yes      No**

- ↓      Go to step 18 of this procedure.

16. You must select the icon on the workstation to make it the console (if you have not already done this). You must also save the console selection. For more information see *Local Device Configuration* and *LAN, Frame-Relay and ATM Support* books.

Did you correct any of the items that are listed above?

**No      Yes**

- ↓      Go to step 26 of this procedure.

17. Go to step 29 of this procedure.

18. The alternative console is a twinaxial display. Ensure that the following conditions are met and if they are not, correct them:

- The workstation addresses of all workstations on the failing port must be correct.

Each workstation on the port must have a separate address from 0 through 6. The twinaxial alternative console address must be 0 on port 0 of the second workstation I/O processor. See the workstation service information if you need help with checking addresses.

- The last workstation on the failing port must be terminated. Any other workstations on that port must not be terminated.

**Note:** See the service information that was used to set up the workstations if you need more information on terminating twinaxial workstations.

- The cables attached to the console on the failing port must be tight and have no visible damage.

Did you need to correct any of the above conditions?

**Yes      No**

- ↓      Go to step 29 of this procedure.

19. Perform an IPL by doing the following:

- a. Ensure that alternative console is powered on.
- b. Select Manual mode on the control panel.
- c. Select function 03 (Start IPL) on the control panel and press Enter.
- d. Go to step 22 of this procedure.

20. Ensure that the following conditions for the alternative console are met. If they are not, correct them (see the *ASCII Work Station Reference* information if you need additional information):



- The ASCII workstation being used as the alternative console must be an IBM 315x, an IBM 316x, or a display that is equal to these.
- The device settings for the alternative console must be correct. See the following example.
  - Press and hold the Control (CTRL) key, then press the Setup key. A display that shows the device settings appears.
  - Enter the correct settings.

**Note:** See the specific device information for the correct settings for the device.

For example, the device settings for the 3161 are:

Device Settings	Enter
Machine Mode	3161
Operation Mode	echo
Interface	EIA 232-C
Line Control	IPRTS
Line Speed (bps)	19,200 bps
Parity	even
Stop Bit	1
Word Length (bits)	8

- The cable that connects the alternative console to the system must be a *direct* (8-wire) cable.

**Note:** There are several different cable types available. Ensure that you are using a *direct* (8-wire) cable. This cable is described in the *Physical Planning Reference* information.

- All cable connections must be tight and have no visible damage.  
If there were any cable changes in this area, check them over carefully.

Did you need to correct any of the above conditions?

**Yes    No**

↓        Go to step 24 of this procedure.

21. Perform an IPL by doing the following:
  - a. Ensure that the alternative console is powered on.
  - b. Select Manual mode on the control panel.
  - c. Select function 03 (Start IPL) on the control panel and press Enter.
  - d. Wait for one of the following to appear:
    - A display on the console
    - The System Attention light and a reference code on the control panel

22. Does a display appear on the console or on the alternative console?

**No    Yes**

↓        Continue to perform an IPL.

**This ends the procedure.**

23. Does the same reference code that sent you to this procedure occur?

**Yes    No**

## ASCII Workstation PIPs

- ↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

**This ends the procedure.**

24. Do you have another available, working IBM 315x, IBM 316x, or a display that is equal to these?

**Yes No**

- ↓ Go to step 29 of this procedure.

25. Exchange the console with the working display.

26. Perform an IPL by doing the following:

- Select Manual mode on the control panel.
- Select function 03 (Start IPL) on the control panel and press Enter.
- Wait for one of the following to appear:
  - A display on the console
  - The System Attention light and a reference code on the control panel

Does a display appear on the console?

**No Yes**

- ↓ The original console is the failing item. Select the *Perform an IPL* option to continue performing an IPL.

**This ends the procedure.**

27. Did reference 5082 send you to this procedure?

**No Yes**

- ↓ Perform “LIC-PIP3” on page 521.

**This ends the procedure.**

28. Perform the following:

- Exchange the following parts:

Failing Item	Probable Cause (%)
ASCII workstation IO processor card	50
Cable used to attach to the console	40
ASCII 6-port attachment	10

- Power on the system.

**This ends the procedure.**

29. Perform the following:

- Exchange the following parts:

Failing Item	Probable Cause (%)
ASCII workstation IO processor card	40
Cable used to attach to the console	30
Console	20
ASCII 6-port attachment	10

- Power on the system.

**This ends the procedure.**

**ASCII-PIP2**

**Introduction:** This procedure isolates problems on the ASCII workstation I/O processor card and the 12-port attachment.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 442 before continuing with this procedure.

1. Do you have a 12-port attachment?

**Yes      No**

↓ Perform the following:

- a. Exchange the first workstation I/O processor card (see “Chapter 6. Removal and Installation Procedures” on page 821).
- b. Power on the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).

**This ends the procedure.**

2. Power off the system unit or the expansion tower where the failing workstation is connected. (See “Powering Off and Powering On the System or Expansion Tower” on page 789.)
3. **DANGER**

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

- a. Find the ASCII workstation I/O processor card to which the failing workstation is connected.
- b. Disconnect the 12-port attachment from the ASCII workstation I/O processor card (see “Chapter 6. Removal and Installation Procedures” on page 821).
4. Perform an IPL by doing the following:
  - a. Select Manual mode on the control panel (see “Selecting IPL Type, Mode, and Speed” on page 793).
  - b. Power on the system.

Does a display appear on the console?

**No      Yes**

↓ The 12-port attachment is the failing item. Exchange the 12-port attachment.

Power on the system.

**This ends the procedure.**

5. Does the same reference code that sent you to this procedure occur?

**Yes      No**

## ASCII Workstation PIPs

- ↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

**This ends the procedure.**

6. Exchange the ASCII workstation I/O processor card to which the failing workstation is connected.

Power on the system.

**This ends the procedure.**

## Bus Problem Isolation Procedures

### Overview

**Note:** Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

### Reference Materials:

- “System Unit and Expansion Unit Locations and Addresses” on page 712.
- “Powering Off and Powering On the System or Expansion Tower” on page 789.
- “Chapter 6. Removal and Installation Procedures” on page 821.
- “Start a Service Tool” and “Control Panel Functions”, in the *AS/400 Service Functions* information.

Read all safety notices before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system before removing, exchanging, or installing a field-replaceable unit (FRU).

**Attention:** To prevent overheating problems, do not remove any SPD (book) card completely from the card enclosure unless you install an airflow card in its place.

**Attention:** Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read “Important Cryptographic I/O Processor Information” on page 785 before disconnecting or removing the cryptographic I/O processor.

### DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

### DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

**DANGER**

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

This procedure allows you to do the following:

- Determine the correct bus number

Bus hardware SRCs are listed in the service action log, product activity log, or on the control panel.

The SRC has the following format:

**Note:** The “words” shown in the following table are the same information that the corresponding control panel function would display for the same SRC.

*Table 12. SRC Word and Control Panel Function Descriptions*

SRC Word Number	Panel Function	Format	Description
1	11	B600 uuuu	uuuu = unit reference code (69xx)
2	12	MIGVEP62	See the <i>AS/400 Service Functions</i> information for details.
3	13	cccc cccc	Component reference code
4	14	pppp pppp	Programming reference code
5	15	pppp pppp	Programming reference code
6	16	pppp pppp	Programming reference code
7	17	BBBB Ccbb	BBBB = bus, Cc= card, bb = board <b>Note:</b> The BBBB bus number is in hexadecimal. It must be converted into decimal to match HSM bus numbers on console screens and in service documents.
8	18	tttt mmmm	tttt = IOP type, mmmm = IOP model (00000000 when missing)
9	19	0000 0000	Reserved field

**BUS-PIP1**

**Introduction:** BUS-PIP1 describes how to isolate a problem on a system SPD bus.

## Bus PIPs

**Note:** Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** This procedure will indicate the logical partition in which to perform service. Whenever the service actions in this procedure move from one logical partition to a different logical partition this procedure will indicate which logical partition to perform service in.

Refer to the “Overview” on page 450 for a list of Attentions, Dangers and understanding the SRC.

1. Is there an SRC in function 5 on the system control panel?

**Yes      No**

↓      Go to step 3 of this procedure.

2. Have you been sent here by a power procedure?

**Yes      No**

↓      Use the SRC in function 5 and go to “Chapter 2. Unit Reference Codes” on page 59.

3. Were you sent here by a power SRC (1xxx xxxx)?

**No      Yes**

↓      Go to “BUS-PIP2” on page 458.

4. Does the system have multiple logical partitions?

**Yes      No**

↓      Go to step 12 on page 453 of this procedure.

5. Perform the service actions from the Primary partition. Is there an SRC on the system control panel?

**No      Yes**

↓      Go to step 13 on page 453 of this procedure.

6. From the SST or DST *Work with Partition Status* screen, examine the logical partition where the problem was reported. Is the logical partition’s state “Failed” on the *Work with Partition Status* screen?

**No      Yes**

↓      Go to step 8 on page 453 of this procedure.

7. Is the failing partition’s console functional?

**No      Yes**

↓      Go to the console of the logical partition where the problem was reported. Perform the services actions from that secondary partition. (See “Locating a Secondary Partition’s Console” on page 811 for help in locating the console of the logical partition.)

Go to step 19 on page 454 of this procedure.

8. Perform the following:
  - a. Power off the logical partition. See "Powering Off a Secondary Partition" on page 791.
  - b. Select Manual mode for the logical partition. See "Selecting IPL Type and Mode for a Secondary Partition" on page 816.
  - c. Power on the logical partition. See "Powering Off a Secondary Partition" on page 791.
9. Is the logical partition's state *"Failed"* on the *Work with Partition Status* screen?
 

**No      Yes**

↓      Go to step 11 of this procedure.
10. Is the failing partition's console functional?
 

**No      Yes**

↓      Go to the console of the logical partition where the problem was reported. Perform the service actions from that logical partition. (See "Locating a Secondary Partition's Console" on page 811 for help in locating the console of the logical partition.)

Go to step 18 of this procedure.
11. Remain at the console of the Primary partition. Perform the service actions from the Primary partition.
 

Go to step 19 on page 454 of this procedure.
12. Does an SRC appear on the control panel?
 

**Yes      No**

↓      Go to step 19 of this procedure.
13. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
14. Verify the I/O bus SRC by performing the following:
  - a. Select Manual mode on the control panel.
  - b. Power on the system.
15. Does an SRC appear on the control panel?
 

**Yes      No**

↓      Go to step 18 of this procedure.
16. Is the SRC B600 69xx?
 

**Yes      No**

↓      Go to step 41 of this procedure.
17. Perform the following:
  - a. Select control panel function 17.
  - b. Record the first 6 digits of function 17. This is the direct select address.

**Note:** The first 4 characters of the direct select address are the bus number. The fifth and sixth characters are the card address.

Go to step 34 of this procedure.
18. Does the IPL complete successfully to the *IPL or Install the System* display?
 

**Yes      No**

↓      Go to step 27 of this procedure.

## Bus PIPs

19. Use the full-authority password to sign on to DST.

Search the Service Action and Product Activity Logs (see "Using the Service Action Log" on page 8 and "Using the Product Activity Log" on page 11) for one of the following SRCs that **occurred during the last IPL**:

B600 6901	B600 69D0	B600 69E8
B600 6902	B600 69D8	B600 69F0
B600 6905	B600 69E0	B600 69F8
B600 69B8		

**Note:** Perform one of the following to assist in the search for a specific SRC:

- Enter the specific SRCs in the *Reference code* field on the Select Analysis Report Options display.
- Use the Sort by function key to display specific SRC entries.

Did you find one of the SRCs listed, **and** did it occur during the last IPL?

**No      Yes**

- ↓ Record the bus number from the product activity log. Then go to "BUS-PIP6" on page 473.

**Note:** If the bus number is not available, select F4 (Additional information) from the Display Detail Report for Resource display. Record the first 6 digits of SRC word 7 (function 17).

**This ends the procedure.**

20. Search the Service Action and Product Activity logs (see "Using the Service Action Log" on page 8 and "Using the Product Activity Log" on page 11) for the following SRCs: • B600 69C1 • B600 69C5

**Note:** Perform one of the following to assist in the search for a specific SRC:

- Enter the specific SRCs in the *Reference code* field on the Select Analysis Report Options display.
- Use the Sort by function key to display specific SRC entries.

Did you find either one of the SRCs?

**No      Yes**

- ↓ Record the bus number and card position from the product activity log. Then go to "BUS-PIP7" on page 484.

**This ends the procedure.**

21. Use the hardware service manager function to search for missing or failed bus resources.

Are there I/O processor cards listed with a status other than "operational"?

**Note:** Ignore any IOPs that are listed with a status of "not connected".

**Yes      No**

- ↓ Press the F16 key to return to the Use Dedicated Service Tools (DST) display.

Go to step 31 of this procedure.

22. Is only one I/O processor "not operational"?



**Note:** Ignore any IOPs that are listed with a status of *"not connected"*.

**Yes      No**

↓      Go to step 26 of this procedure.

23. Use the packaging resource information in the hardware service manager function to determine the card position of the I/O processor.
  - If the I/O processor card is located in an expansion tower, then power off the expansion tower and exchange the I/O processor card. See "Expansion Tower Power Procedure" on page 794.
  - If the I/O processor card is located in the system unit, or the system expansion unit, then power off the system and exchange the I/O processor card. See "Powering Off the System" on page 789.
24. Power on the expansion tower or system where the I/O processor card is located and return to the hardware service manager function.

Is the status of the I/O processor card operational?

**No      Yes**

↓      You have corrected the problem. Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

25. Perform the following:
  - a. Power off the system or expansion tower where the I/O processor card is located.
  - b. Remove the I/O processor card you installed in step 23 of this procedure.
  - c. Reinstall the original I/O processor card.
  - d. Power on the system or expansion tower where the I/O processor card is located..
26. Use the hardware service manager function to record information about the bus:  
 Find the *"non-operational"* I/O processor card that has the lowest card address. Record the card address, bus number, board number, frame ID, and card position.

**Note:** Ignore any IOPs that are listed with a status of *"not connected"*.

Use Table 13 to determine your next action.

Table 13. Bus Isolation Procedures for a Non-Operational I/O Processor

Bus	Board	Action
Any	1	<ul style="list-style-type: none"> <li>• An unsupported bus extension unit failed. This indicates a Licensed Internal Code problem.</li> <li>• Ask your next level of support for assistance.</li> </ul>
1	0	<ul style="list-style-type: none"> <li>• Bus 1 failed. Perform "BUS-PIP2" on page 458.</li> </ul>
2	0	<ul style="list-style-type: none"> <li>• Expansion unit failed. Perform "BUS-PIP4" on page 465.</li> </ul>

## Bus PIPs

Table 13. Bus Isolation Procedures for a Non-Operational I/O Processor (continued)

Bus	Board	Action
3-6	0	<p>An optically connected bus failed.</p> <ol style="list-style-type: none"> <li>If only one I/O processor is not operational and you know the card position of the IOP then perform "BUS-PIP5" on page 468 for the I/O processor. If "BUS-PIP5" on page 468 does not identify the failing item, return here and continue with the next step in this table.</li> <li>If the expansion tower is FC 507x or FC 508x, perform "BUS-PIP3" on page 460.</li> <li>If the expansion tower is FC 5044, perform "BUS-PIP9" on page 490.</li> <li>If the expansion tower is FC 5065 or 5066, perform "BUS-PIP10" on page 495.</li> <li>Otherwise perform "BUS-PIP6" on page 473.</li> </ol>

**This ends the procedure.**

27. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

**No      Yes**

↓      Record all B600 xxxx entries (they may be related to the problem).  
Go to step 30 of this procedure.

28. Does the Display Failing System Bus display appear on the console?

**Yes      No**

↓      A different error occurred. Go to "Starting Point for All Problems" on page 4 to correct the problem.

**This ends the procedure.**

29. Record the failing system buses that are listed on the Display Failing System Bus display. You will need these bus numbers later in these procedures.

30. Press the Enter key.

The Use Dedicated Service Tools (DST) display appears.

31. Use the full-authority password to sign on to DST.

Search the Service Action and Product Activity Logs for the SRC that sent you to this procedure (see "Using the Service Action Log" on page 8 and "Using the Product Activity Log" on page 11).

**Notes:**

- a. Search only for SRCs that occurred during the last IPL. You may ignore informational and statistical log entries.
- b. For multiple entries of the SRC that sent you to this procedure, select the entry with the lowest card-logical address (direct select address).
- c. Perform one of the following to assist in the search for a specific SRC:
  - Enter the specific SRCs in the *Reference code* field on the Select Analysis Report Options display.
  - Use the Sort by function key to display specific SRC entries.

Did you find an entry for the SRC that sent you to this procedure?

**Yes      No**

- ↓      The problem appears to be intermittent. Check the service action and product activity logs for B600 xxxx SRCs (see “Using the Service Action Log” on page 8 and “Using the Product Activity Log” on page 11). If the B600 xxxx SRCs identify the same I/O processor, this I/O processor may be failing. Use this information to assist in problem analysis. Ask your next level of support for assistance.

**This ends the procedure.**

32. Is the SRC that sent you to this procedure B600 xxxx?

**Yes      No**

- ↓      Go to step 41 of this procedure.

33. From the product activity log information, record the bus number, card position, frame ID, and board number.

**Note:** If the bus number is blank, select F4 (Additional information) from the Display Detail Report for Resource display. Record the first 6 digits of SRC word 7 (function 17).

34. Is the SRC that sent you to this procedure B600 6920 or B600 6937?

**No      Yes**

- ↓      This indicates a Licensed Internal Code problem. Ask your next level of support for assistance.

**This ends the procedure.**

35. Is the SRC that sent you to this procedure one of the following?

- B600 6901
- B600 6902
- B600 6905
- B600 69B8
- B600 69D0
- B600 69D8
- B600 69E0
- B600 69E8
- B600 69F0
- B600 69F8

**No      Yes**

- ↓      Go to “BUS-PIP6” on page 473.

## Bus PIPs

**This ends the procedure.**

36. Is the SRC that sent you to this procedure B600 69C1 or B600 69C5?

**No      Yes**

↓      Go to "BUS-PIP7" on page 484.

**This ends the procedure.**

37. Is the SRC that sent you to this procedure B600 69xx?

**Yes      No**

↓

Any system bus 1 through 19 failed. Record the SRC and use it as the Entry Point SRC or error in the bus isolation procedure. Go to step 41 of this procedure.

38. Is the direct select address 0001xxxx, or is the bus number system bus 1?

**No      Yes**

↓      Go to "BUS-PIP2".

**This ends the procedure.**

39. Is the direct select address 0002xxxx, or is the bus number system bus 2?

**Yes      No**

↓      Go to step 43 of this procedure.

40. Go to "BUS-PIP4" on page 465.

**This ends the procedure.**

41. Is the SRC that sent you to this procedure B1xx xxxx, C1xx xxxx, or D1xx xxxx?

**Yes      No**

↓      A different SRC occurred.

Go to "Chapter 2. Unit Reference Codes" on page 59.

**This ends the procedure.**

42. System bus 1 failed.

Record the SRC and use it as the Entry Point SRC or error in the bus isolation procedure.

Go to "BUS-PIP2".

**This ends the procedure.**

43. Is the expansion tower for the failing bus FC 5044?

**No      Yes**

↓      Go to "BUS-PIP9" on page 490.

**This ends the procedure.**

44. Go to "BUS-PIP3" on page 460.

**This ends the procedure.**

## BUS-PIP2

**Introduction:** This procedure isolates a solid failure on system SPD bus 1 in the system unit. Throughout this procedure, use the system configuration list to verify the configuration information.

**Note:** Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** This procedure will perform service in the Primary partition only. If you came to this procedure from another procedure that was performing service in a secondary partition, move to the Primary partition’s console for this procedure.

Refer to the “Overview” on page 450 for a list of Attentions, Dangers and understanding the SRC.

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).

Check the power cables to ensure that they are connected and seated correctly. Disconnect the cards in positions C01 through C11 (if installed).

2. Power on the system.

**Note:** Ignore any system configuration or console not found errors that appear during the IPL sequence.

Does the SRC or failure that sent you to this procedure occur?

**No      Yes**

↓ Go to step 6 of this procedure and perform steps 6a on page 460, 6d on page 460, 6e on page 460 and continue with step 7 on page 460.

3. Perform the following:
  - a. Power off the system (before installing each card).
  - b. Install the cards you removed in step 1 of this procedure, one at a time in the order that is shown below.
  - c. Power on the system after you install each card.

**Card Position:**

C11  
C09  
C10  
C08  
C07  
C06  
C05  
C04  
C03  
C02  
C01

Does the SRC or failure that sent you to this procedure occur?

**Yes      No**

## Bus PIPs

- ↓ Repeat this step until the SRC or failure that sent you to this procedure occurs.

If the error does not occur, the problem may be intermittent. Ask your next level of support for assistance.

**This ends the procedure.**

4. Perform the following:
  - a. Power off the system.
  - b. Exchange the last card you reinstalled (see “Chapter 6. Removal and Installation Procedures” on page 821).
  - c. Power on the system.
5. Does the Entry Point SRC or error occur?

**Yes      No**

- ↓ The card you just exchanged is the failing item.  
Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

6. Perform the following:
  - a. Power off the system.
  - b. Remove the card you just exchanged.
  - c. Install the original card.
  - d. Exchange BACKPL2 (see “Type, Model, and Part Number List” on page 380).
  - e. Power on the system.

**Notes:**

- a. You are prompted for the system serial number because you exchanged the MFIO.
- b. Ignore any system configuration errors that may appear during the IPL sequence.

Does the SRC or failure that sent you to this procedure occur?

**Yes      No**

- ↓ You have corrected the problem.  
Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

7. Perform the following:
  - a. Power off the system.
  - b. Remove the BACKPL2 FRU you just exchanged and install the original.
  - c. Reconnect all cards and cables you disconnected during this procedure.
  - d. Power on the system.
  - e. You have exchanged or eliminated all the I/O bus parts.  
Ask your next level of support for assistance.

8. **This ends the procedure.**

## BUS-PIP3

**Introduction:** This procedure isolates a solid failure in the FC 507x or FC 508x Storage Expansion Towers.

**Note:** Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

Refer to the “Overview” on page 450 for a list of Attentions, Dangers and understanding the SRC.

For this procedure you must perform service in the logical partition which owns the bus on this expansion tower. If you came to this procedure while working in another logical partition, then move to the console of the logical partition which owns this bus and perform this procedure from there.

To determine which logical partition owns the bus see “Determining Which Logical Partition Owns a FRU or a System I/O Resource” on page 815.

To locate the console of a secondary partition see “Locating a Secondary Partition’s Console” on page 811.

1. Power off the expansion tower. (See “Expansion Tower Power Procedure” on page 794).

**Attention:** Verify that the expansion tower power indicator is off before you continue to the next step of this procedure. If the power indicator remains on, you may be working on a system that has OS/400–OptiConnect hardware. You may need to power off more than one system unit during this procedure.

2. Disconnect the cards at the following card positions (if installed) by sliding them partially out of the card enclosure:

**Note:** Do not remove the optical bus receiver card in position 1, the I/O card in position 2, or the air flow cards.

Table 14. Card Positions

FC 507x	FC 508x
3 through 14	4

Use the system configuration list to verify the configuration as you work.

3. Did you remove any cards in the previous step?

**No      Yes**

↓      Go to step 7 of this procedure.

4. Air flow cards are installed in the positions that are shown in Table 14.

Is there an I/O processor card (not an air flow card) that is installed in the first position on the bus? (Position 2 for FC 507x and position 3 for FC 508x.)

**No      Yes**

↓      Go to step 8 of this procedure.

5. Check the printed system configuration list to determine if I/O processors are supposed to be on this bus.

Are I/O processors missing?

## Bus PIPs

**Yes      No**

- ↓      If the Entry Point SRC was B600 6944, this indicates that there is an empty bus and the message can be ignored. If the Entry Point SRC was not B600 6944, ask your next level of support for assistance.

**This ends the procedure.**

6. Ask your next level of support for assistance.

**This ends the procedure.**

7. Power on the expansion tower. (See "Expansion Tower Power Procedure" on page 794.)

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

- ↓      Go to step 14 of this procedure.

8. Perform the following:

- Power off the expansion tower. (See "Expansion Tower Power Procedure" on page 794.)
- Remove the optical bus receiver and install a new optical bus receiver of the same type (see "Chapter 6. Removal and Installation Procedures" on page 821 ).
- Power on the expansion tower. (See "Expansion Tower Power Procedure" on page 794.)

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

- ↓      The failing item is the optical bus receiver card, which you have already exchanged.

Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

9. Remove the optical bus receiver you installed in the previous step and install the original optical bus receiver.
10. Perform "BUS-PIP5" on page 468 for the following cards:

*Table 15. Card Positions*

FC 507x	FC 508x
3 through 14	4

If BUS-PIP5 does not identify the failing item, return here and continue with the next step of this procedure.

11. Perform the following:



- a. Power off the expansion tower. (See “Expansion Tower Power Procedure” on page 794.)
- b. Exchange the I/O processor in the position that is shown in Table 15 on page 462
- c. Power on the expansion tower. (See “Expansion Tower Power Procedure” on page 794.)

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓      The failing unit is the I/O processor card, which you have already exchanged.

Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

12. Power off the expansion tower. (See “Expansion Tower Power Procedure” on page 794.)

Remove the I/O processor you installed in step 11 of this procedure and install the original I/O processor card and the attached adapter cards.

13. The only failing item remaining in the expansion tower is the card enclosure. Perform the following:
  - a. Exchange the expansion tower card enclosure.
  - b. Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

14. Install the cards you removed in step 2 of this procedure one at a time in the order that is shown in Table 16.

**Note:** Power off the expansion tower before installing each card. After you install each card, power on the expansion tower.

Table 16. Install Order

FC 507x	FC 508x
3	4
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	

## Bus PIPs

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓      Repeat this step until the SRC or failure that sent you to this procedure occurs.

If the error does not occur, the problem may be intermittent. Ask your next level of support for assistance.

**This ends the procedure.**

15. Perform "BUS-PIP5" on page 468 for the last card you reinstalled in step 14 of this procedure.

**Note:** If BUS-PIP5 does not identify the failing item, return here and continue with the next step of this procedure.

16. Perform the following:
  - a. Power off the expansion tower. (See "Expansion Tower Power Procedure" on page 794.)
  - b. Exchange the I/O processor card you last reinstalled in step 14 of this procedure with a new I/O processor card of the same type.
  - c. Power on the expansion tower. (See "Expansion Tower Power Procedure" on page 794.)

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓      The failing item is the I/O processor card, which you have just exchanged.

Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

17. Perform the following:
  - a. Power off the expansion tower. (See "Expansion Tower Power Procedure" on page 794.)
  - b. Remove the last card that you exchanged.
  - c. Install the original I/O processor card and the attached adapter cards.
18. Perform the following:
  - a. Use the Table 16 on page 463 and the I/O processor card with the position that is one less than the I/O processor card you are working with.
  - b. Exchange this I/O processor card.
  - c. Power on the expansion tower. (See "Expansion Tower Power Procedure" on page 794.)

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓      The failing item is the I/O processor card, which you have already exchanged.

Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

19. Perform the following:
  - a. Power off the expansion tower. (See “Expansion Tower Power Procedure” on page 794.)
  - b. Remove the I/O processor card you installed in the previous step.
  - c. Install the original I/O processor card.
20. The only failing item remaining is the expansion tower card enclosure. Perform the following:
  - a. Exchange the expansion tower card enclosure
  - b. Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

### BUS-PIP4

**Introduction:** This procedure isolates a solid failure in the system Expansion Unit.

**Note:** Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** This procedure will perform service in the Primary partition only. If you came to this procedure from another procedure that was performing service in a secondary partition, move to the Primary partition’s console for this procedure.

Refer to the “Overview” on page 450 for a list of Attentions, Dangers and understanding the SRC.

1. Check the printed system configuration list to determine if I/O processors are supposed to be on this bus.  
Does the Hardware Service Manager option for displaying logical resources indicate that there are fewer IOPs on this bus than the system configuration list indicates?

**Yes      No**

↓      If the Entry Point SRC was B600 6944, this indicates that there is an empty bus and the message can be ignored.

**This ends the procedure.**

## Bus PIPs

2. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).

**Attention:** Verify that the system unit power indicator is off before you continue to the next step of this procedure.

3. In the Expansion Unit for the bus you are isolating, disconnect the cards by sliding them partially out of the card enclosure.

For SPD Expansion Units, disconnect cards in slots S01 through S06.

For PCI Expansion Units, disconnect cards in slots E01 through E20.

Use the system configuration list to verify the configuration as you work.

4. Power on the system.

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**No      Yes**

↓      Go to step 11 of this procedure.

5. Perform the following:

- a. Power off the system (before installing each card).
- b. Install the cards you removed in step 3 of this procedure, one at a time from lowest numeric position.
- c. Power on the system after you install each card.

Does the SRC or failure that sent you to this procedure occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓      Repeat this step until the SRC or failure that sent you to this procedure occurs.

If the error does not occur, the problem may be intermittent. Ask your next level of support for assistance.

**This ends the procedure.**

6. Is the expansion unit an SPD expansion unit?

**No      Yes**

↓      Perform “BUS-PIP5” on page 468 for the last card you reinstalled.

**Note:** If BUS-PIP5 does not identify the failing item, return here and continue with the next step of this procedure.

7. Perform the following:

- a. Power off the system.
- b. Exchange the card you last reinstalled in step 5 of this procedure with a new card of the same type.
- c. Power on the system.

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓      The failing item is the card that you have already exchanged.

Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

8. Perform the following:
  - a. Power off the system.
  - b. Remove the last card you exchanged.
  - c. Install the original card and any attached adapter cards.
  - d. Find the card with the card position that is one less than the card you are working with.
  - e. Exchange this I/O processor card.
  - f. Power on the system.

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓      The failing item is the I/O processor card that you have already exchanged.

Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

9. Perform the following:
  - a. Power off the system.
  - b. Remove the card you installed in the previous step.
  - c. Install the original card.
  - d. Go to step 14 of this procedure.

10. Is the expansion unit an SPD expansion unit?

**Yes      No**

↓      Go to step 14 on page 468 of this procedure.

11. Is an local bus expansion adapter card, not an airflow card, installed in the first position on the bus?

- SPD expansion unit position S07

**Yes      No**

↓      Go to step 14 of this procedure.

12. Perform the following:
  - a. Power off the system.
  - b. Exchange the local bus expansion adapter.
  - c. Power on the system.

## Bus PIPs

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

<b>Yes</b>	<b>No</b>
------------	-----------

↓	The failing item is the local bus expansion adapter card, which you have already exchanged.
---	---

Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

13. Remove the local bus expansion adapter you installed in the previous step and install the original local bus expansion adapter.
14. The only failing item remaining is the expansion unit card enclosure. Perform the following:
  - a. Exchange the expansion unit card enclosure.
  - b. Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

## BUS-PIP5

**Introduction:** This procedure isolates a failing I/O adapter card that is controlled by the I/O processor card. This procedure has a section for I/O adapters directly attached to the I/O processor (SPD). This procedure also has a section for I/O adapters that are attached to the backplane where the I/O processor is attached (PCI).

**Note:** Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

Refer to the “Overview” on page 450 for a list of Attentions, Dangers and understanding the SRC.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If you came to this procedure from another bus isolation procedure, continue working in the same logical partition. If you did not come here from another bus isolation procedure, then move to the console of the logical partition which owns the input-output processor (IOP) on this bus.

To determine which logical partition owns the IOP see “Determining Which Logical Partition Owns a FRU or a System I/O Resource” on page 815.

To locate the console of a secondary partition see “Locating a Secondary Partition’s Console” on page 811.

1. If the I/O adapter cards are SPD cards that are physically attached to the I/O processor card, perform “I/O-Direct-Attached” on page 469.

2. If the I/O adapter cards are PCI cards that are physically attached to the backplane where the I/O processor card is attached, perform “Backplane-Attached” on page 471.
3. **This ends the procedure.**

#### **I/O–Direct–Attached:**

*Introduction:* This procedure isolates a failing I/O adapter card that is attached to the I/O processor card.

**Note:** Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

1. If the I/O processor card is located in an expansion tower, then power off the expansion tower. (See “Powering Off and Powering On the System or Expansion Tower” on page 789.)

If the I/O processor card is located in the system unit or the system expansion unit, or an SPD conversion tower then power off the system. (See “Powering Off and Powering On the System or Expansion Tower” on page 789.)

2. Disconnect the I/O processor card and check the backplane for bent or broken pins.

Are any pins damaged?

**Yes      No**

↓      Go to step 4 of this procedure.

3. Exchange the backplane (see “Chapter 6. Removal and Installation Procedures” on page 821).

Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

4. Reconnect the I/O processor card you removed in step 2 of this procedure.
5. Does the I/O processor card have any I/O adapters attached?

#### **Notes:**

- a. To find out more about the positions of the input/output adapters (IOA) under the IOPs, see “System Unit and Expansion Unit Locations and Addresses” on page 712 for the System Unit, Expansion Unit, SPD Conversion Tower, or I/O Expansion Tower where the IOP is located.
- b. The cards that are attached to the MSIOP cards (for example, types 6503 and 4700) are not I/O adapter cards.
- c. Some I/O adapters are inside the IOP. If so, the IOP must be removed to access the I/O adapter card.

**Yes      No**

↓      The I/O processor does not have any I/O adapter cards attached to it.

**Note:** The I/O processor may have airflow cards installed.  
Return to the procedure that sent you here.

**This ends the procedure.**

6. Perform the following:

## Bus PIPs

- a. Disconnect all the I/O adapters that are attached to the I/O processor card by sliding them out of the I/O adapter position.
- b. Check the adapter connections on the I/O processor card for bent or broken pins.

Are any pins damaged?

**No      Yes**

↓      Exchange the I/O processor card.

Reconnect all the I/O adapter cards you disconnected.

Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

- c. Power on the system or tower where the I/O processor card is located.

Does the system reference code (SRC) or failure that sent you to this procedure occur?

**Note:** If the system has logical partitions when looking for the entry point SRC or failure, check in the logical partition which reported the problem.

**No      Yes**

↓      The I/O adapter cards are operational. Reconnect all the I/O adapter cards you disconnected.

Return to the procedure that sent you here.

**This ends the procedure.**

7. Did a different SRC occur?

**No      Yes**

↓      Use the new SRC and go to the "Chapter 2. Unit Reference Codes" on page 59.

**This ends the procedure.**

8. Power off the system or tower where the I/O processor card is located and perform the following:

- a. Reconnect one of the I/O adapters you disconnected in step 6 of this procedure (starting with the bottom-most card).

- b. Power on the system or tower.

Does the SRC or failure that sent you to this procedure occur?

**Note:** If the system has logical partitions, when looking for the SRC or failure, check in the logical partition which reported the problem.

**No      Yes**

↓      Go to step 11 on page 471 of this procedure.

**This ends the procedure.**

9. Did a different SRC occur?

**No      Yes**

↓      Use the new SRC and go to the "Chapter 2. Unit Reference Codes" on page 59.

**This ends the procedure.**



10. Repeat step 8 on page 470 for each I/O adapter that is attached to the I/O processor card. If you have reconnected all of the I/O adapters and no errors occur, the problem is intermittent.

**This ends the procedure.**

11. Power off the system or tower where the I/O processor card is located.
12. Check for bent or broken pins between the adapter card that you last inserted and the I/O processor card .

Are any pins damaged?

**No      Yes**

↓      Exchange the I/O processor card.

Reconnect all the I/O adapter cards you disconnected.

Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

13. The I/O adapter card that you just installed is the failing item.  
Exchange the I/O adapter card.
14. Reconnect all of the I/O adapter cards you disconnected during this procedure.  
Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

#### **Backplane-Attached:**

*Introduction:* This procedure isolates a failing PCI I/O adapter card that is controlled by the I/O processor card.

1. If the I/O processor card is located in an expansion tower, then power off the expansion tower. (See "Powering Off and Powering On the System or Expansion Tower" on page 789.)

If the I/O processor card is located in the system unit or the system unit or the system expansion unit, or an SPD conversion tower, then power off the system. (See "Powering Off and Powering On the System or Expansion Tower" on page 789.)

2. Disconnect the I/O processor card and check the connection between the I/O processor card and the backplane for damage.

Is there any damage?

**Yes      No**

↓      Go to step 4 of this procedure.

3. Exchange either the damaged I/O processor or backplane (see "Chapter 6. Removal and Installation Procedures" on page 821).

Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

4. Reconnect the I/O processor card you removed in step 2 of this procedure.
5. Does the I/O processor card have any I/O adapters that it is controlling?

**Note:** To find out more about the positions of the IOAs under the IOPs, see "System Unit and Expansion Unit Locations and Addresses" on page 712 for the System Unit, Expansion Unit, SPD Conversion Tower, or I/O Expansion Tower where the IOP is located.

**Yes      No**

## Bus PIPs

- ↓ The I/O processor is not controlling any I/O adapter cards. Return to the procedure that sent you here.

**This ends the procedure.**

6. Perform the following:

- a. Disconnect all the I/O adapters that are controlled by the I/O processor card by sliding them out of the I/O adapter position.
- b. Check the adapter connections between the backplane and the I/O adapter cards for damage.

Is there any damage?

**No      Yes**

- ↓ Exchange either the damaged I/O adapter card or backplane. See "Chapter 6. Removal and Installation Procedures" on page 821.

Reconnect all the I/O adapter cards you disconnected.

Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

- c. Power on the system or tower where the I/O processor card is located.

Does the SRC or failure that sent you to this procedure occur?

**Note:** If the system has logical partitions when looking for the entry point SRC or failure, check in the logical partition which reported the problem.

**No      Yes**

- ↓ The I/O adapter cards are operational. Reconnect all the I/O adapter cards you disconnected.

Return to the procedure that sent you here.

**This ends the procedure.**

7. Did a different SRC occur?

**No      Yes**

- ↓ Use the new SRC and go to the "Chapter 2. Unit Reference Codes" on page 59.

**This ends the procedure.**

8. Power off the system or tower where the I/O processor card is located and perform the following:

- a. Reconnect one of the I/O adapters you disconnected in step 6 of this procedure.
- b. Power on the system or tower.

Does the SRC or failure that sent you to this procedure occur?

**Note:** If the system has logical partitions, when looking for the SRC or failure, check in the logical partition which reported the problem.

**No      Yes**

- ↓ Go to step 11 on page 473 of this procedure.

**This ends the procedure.**

9. Repeat step 8 on page 472 for each I/O adapter that is controlled by the I/O processor card. If you have reconnected all of the I/O adapters and no errors occur, the problem is intermittent.

**This ends the procedure.**

10. Did a different SRC occur?

**No      Yes**

↓      Use the new SRC and go to the "Chapter 2. Unit Reference Codes" on page 59.

**This ends the procedure.**

11. Power off the system or tower where the I/O processor card is located.
12. Check the connection between the adapter card that you last inserted and the backplane for damage.  
Is there any damage?

**No      Yes**

↓      Exchange either the damaged I/O adapter card or backplane. See "Chapter 6. Removal and Installation Procedures" on page 821.

Reconnect all the I/O adapter cards you disconnected.

Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

13. The I/O adapter card that you just installed is the failing item.  
Exchange the I/O adapter card.
14. Reconnect all of the I/O adapter cards you disconnected during this procedure.  
Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

### BUS-PIP6

**Introduction:** This procedure isolates a failure in the hardware that is driving the fiber optics on an SPD optical bus.

**Note:** Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

**Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.

**Note:** Move to the Primary partition and perform this procedure from there.

Refer to the "Overview" on page 450 for a list of Attentions, Dangers and understanding the SRC.

1. Is the SRC that sent you to this procedure B600 6901?

**No      Yes**

↓      The reference code indicates that the local bus expansion adapter card failed.

## Bus PIPs

Power off the system and exchange the first local bus expansion adapter in the system unit (card position 9). Ensure that the attached SPD optical bus driver cards are moved to the new bus expansion adapter card.

Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

2. Is the SRC B600 6902 or B600 69E0?

**No      Yes**

↓      The remote SPD optical bus receiver failed.

Perform the following:

- a. Power off the system.
- b. Verify that the power indicator on the system unit is off. If the indicator remains on, you *may* need to power off the system unit that is attached through the OS/400–OptiConnect hardware.
- c. Exchange the remote SPD optical bus receiver in the expansion tower for the failing bus (position 2 for FC 5080 or FC 5082; position 1 for FC 5044, FC 5070, and FC 5072; position CB1 for FC 5065 or 5066).
- d. Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

3. Is the SRC B600 69D0?

**Yes      No**

↓      Go to step 5 of this procedure.

4. A local SPD optical bus driver card is failing.

Refer to “Optical Bus Cable Layout and SPD Optical Bus Driver Card Locations” on page 723 to determine the location of the SPD optical bus driver card for your system.

Power off the system and exchange the failing local SPD optical bus driver card.

Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

5. Is the SRC B600 69B8?

**Yes      No**

↓      Go to step 7 of this procedure.

6. The SRC indicates a bus configuration problem.

Perform the following:

- Ensure that all optical connections are tight.
- Ensure that the cable in the top, even-number position (shown in the following figures as **E**) of the local SPD optical bus driver card is connected to the top connector (**E**) of the remote SPD optical bus receiver.
- Ensure that the cable in the bottom, odd-number position (shown in the following figures as **O**) of the local SPD optical bus driver card is connected to the bottom connector (**O**) of the remote SPD optical bus receiver card.
- Use the system configuration list and the following configuration examples to identify the correct configuration for your system.

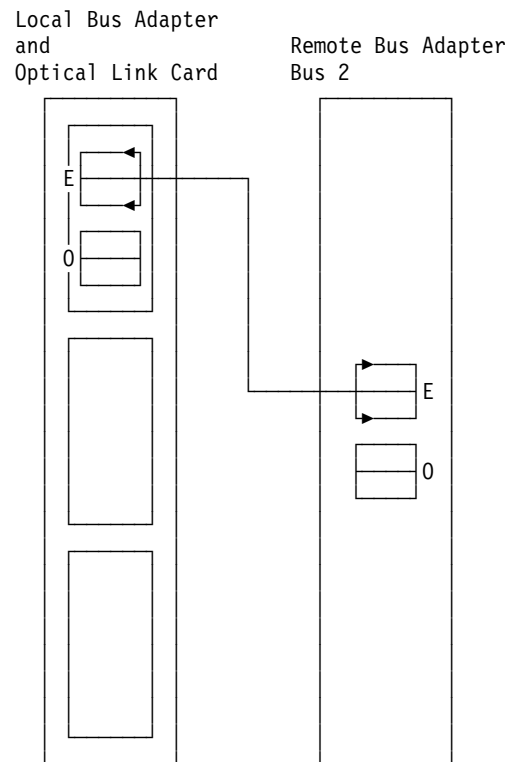


Figure 13. Example Single Bus

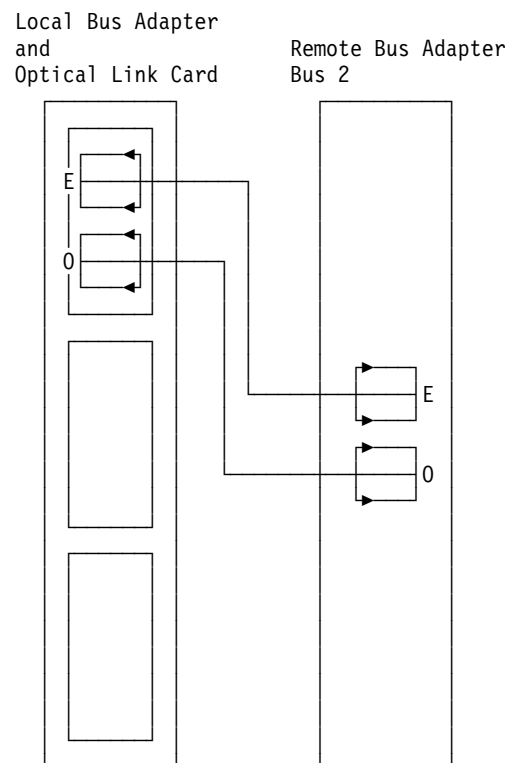
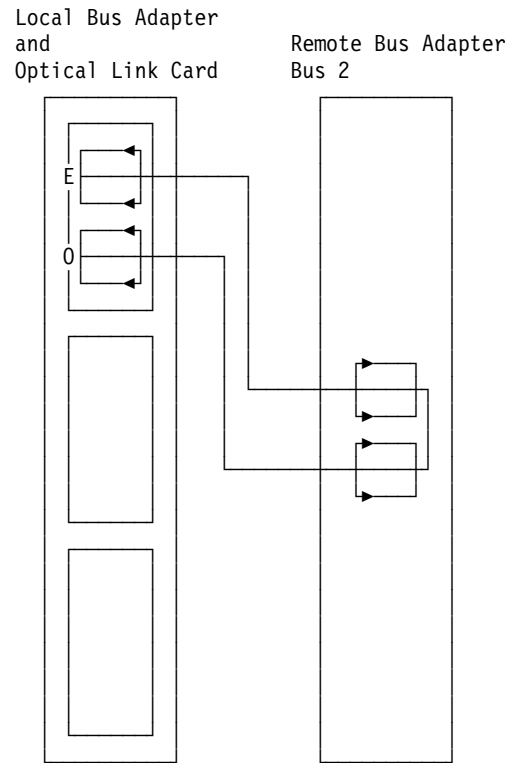


Figure 14. Example Paired Bus

## Bus PIPs



*Figure 15. Paired Buses with an Internal Copper Secondary Link*

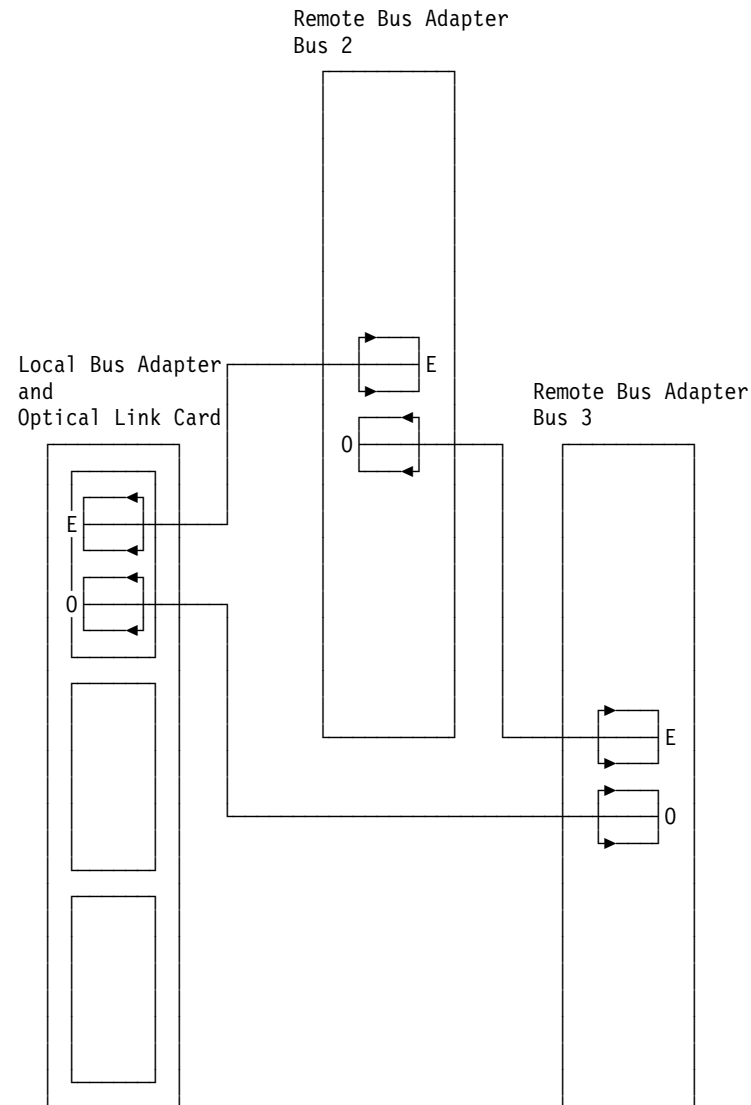


Figure 16. Example Paired Buses, Optical Secondary Link

## Bus PIPs

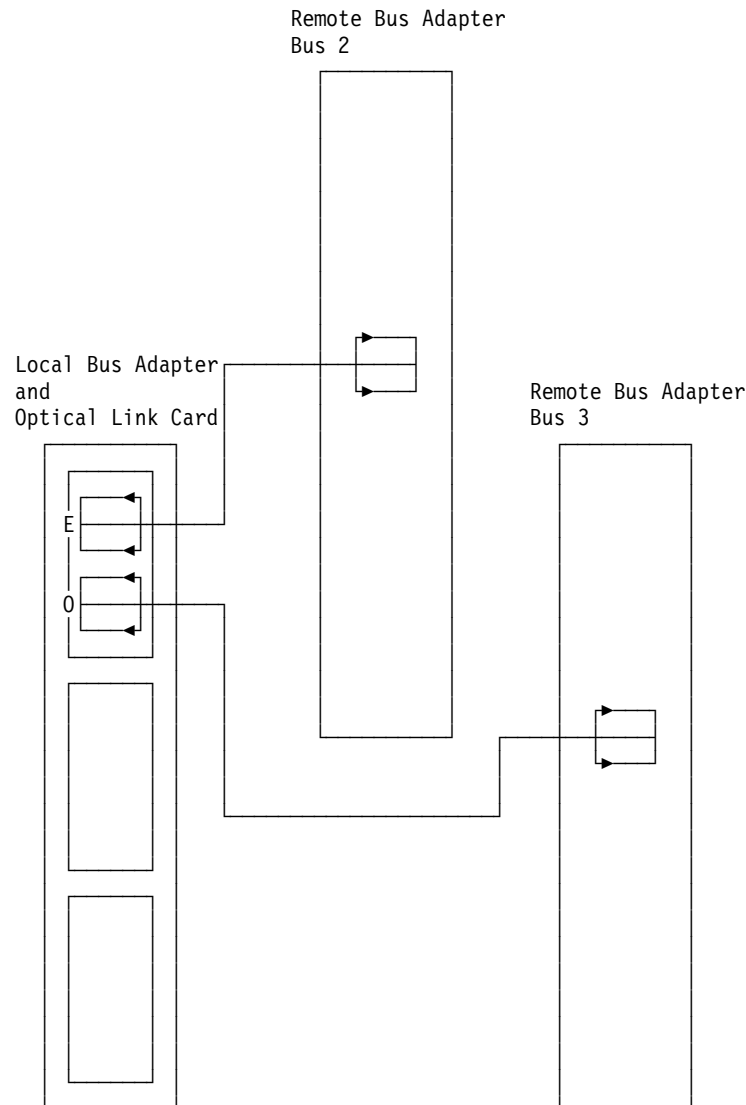


Figure 17. Example Single Bus Connection, No Redundancy

Did you correct the configuration problem?

**No      Yes**

↓ Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

7. Find the bus expansion tower for the failing bus.

Is the power indicator light off, or is a power reference code (1xxx xxxx) displayed on the expansion tower control panel?

**No      Yes**

↓ Go to step 10 of this procedure.

8. Does the remote SPD optical bus receiver have an optical cable in the bottom-most position that connects to a remote SPD optical bus receiver card in another bus expansion tower?

**Yes      No**



↓ Go to step 11 of this procedure.

9. Find the bus expansion tower for the bus that is paired with the failing bus.  
Is the power indicator light off, or is a power reference code (1xxx xxxx) displayed on the expansion tower control panel?

**Yes     No**

↓ Go to step 11 of this procedure.

10. Go to “Cannot Power On Secondary Frame (No SRC)” on page 42. If that does not isolate the problem, check the backplane for bent or broken pins. If there are no bent or broken pins, exchange the failing items that are listed in FI00065 one at a time. Only exchange failing items from the list that are located in this expansion tower.

**This ends the procedure.**

11. Perform the following to verify the configuration of the optical bus hardware:
  - a. Ensure that both ends of all optical cables are tightly connected.
  - b. Use the system configuration list, and Figure 13 through Figure 17 on page 478 to identify the correct configuration for your system. Verify that the optical bus cable connections are correct. Use the *AS/400e server 170, 250, 6xx, 7xx, and Sxx System Installation and Upgrade* if you need to verify the system configuration rules.
  - c. Ensure that an optical wrap plug is installed on the local SPD optical bus driver card for all buses that are not used.
  - d. Use the cleaning kit if you suspect that the optical bus cables are dirty.
  - e. Ensure that there are no bends in the optical bus cables less than a 2.54 cm (1 in) radius and no coils in the cables less than a 3.05 cm (1.2 in) diameter.

Did you make an adjustment?

**Yes     No**

↓ Go to step 13 of this procedure.

12. Power off the system (if it is not already powered off).  
Power the system on.  
Does the Entry Point SRC or error occur?

**Yes     No**

↓ Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

13. Is the SRC that sent you to this procedure B600 69E8?

**Yes     No**

↓ Go to step 19 of this procedure.

14. Trace the optical cable of the failing bus from the local SPD optical bus driver card to the remote SPD optical bus receiver.  
Is the remote SPD optical bus receiver connected to another remote SPD optical bus receiver through a secondary optical cable?

**Yes     No**

↓ Perform the following:

- a. Power off the system.

## Bus PIPs

- b. Verify that the power indicator on the expansion tower is off. If the indicator remains on, you *may* need to power off the system unit that is attached through the OS/400–OptiConnect hardware.
- c. Exchange the remote SPD optical bus receiver for the failing bus.
- d. Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

15. Perform the following:

- a. Power off the system and verify that the expansion tower power indicator is off.
- b. Exchange the remote SPD optical bus receiver for the failing bus.
- c. Power on the system.

Does SRC B600 69E8 occur on the control panel, on the console, in the service action log, or in the product activity log?

**Yes      No**

↓ Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

16. Perform the following:

- a. Power off the system and verify that the expansion tower power indicator is off.
- b. Remove the remote SPD optical bus receiver card you just exchanged.
- c. Reinstall the original remote SPD optical bus receiver.
- d. Exchange the remote SPD optical bus receiver for the bus that is paired with the failing bus.

Refer to “Optical Bus Cable Layout and SPD Optical Bus Driver Card Locations” on page 723 to view bus pairings on the local SPD optical bus driver card.

- e. Power on the system.

Does SRC B600 69E8 occur on the control panel, on the console, in the service action log, or in the product activity log?

**Yes      No**

↓ Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

17. Perform the following:

- a. Power off the system and verify that the expansion tower power indicator is off.
- b. Remove the remote SPD optical bus receiver card you just exchanged and install the original.
- c. Exchange the secondary optical cable that connects the remote bus adapters of the paired buses together.
- d. Power on the system.

Does SRC B600 69E8 occur on the control panel, on the console, in the service action log, or in the product activity log?

**Yes      No**

↓ Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

18. Go to step 36 of this procedure.
19. Check the local SPD optical bus driver card of the failing bus.  
Is either of the two connectors on this local SPD optical bus driver card disconnected?  
**Yes      No**  
↓      Go to step 24 of this procedure.
20. Power off the system.  
Use the system configuration list to determine the bus configuration of the system. If a bus should be connected to this local SPD optical bus driver card and it is not connected, ensure that it is connected. To do this, find the expansion tower for the bus and ensure that a cable is connected between its remote SPD optical bus receiver and the local SPD optical bus driver card. Otherwise, if there are no missing buses, ensure that wrap plugs are installed on the unused connectors on the local SPD optical bus driver card.
21. Power on the system.  
Does the SRC that sent you to this procedure occur on the control panel, on the console, in the service action log, or in the product activity log?  
**Yes      No**  
↓      Go to “BUS-PIP8” on page 487 to verify the repair.  
**This ends the procedure.**
22. Is an local SPD optical bus driver card terminator (PN 16G5609) available?  
**Yes      No**  
↓      Go to step 24.
23. Perform the following:
  - a. Power off the system.
  - b. Install the local SPD optical bus driver card terminator on the local SPD optical bus driver card.
  - c. Power on the system.
 Does the SRC that sent you to this procedure occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?  
**Yes      No**  
↓      Go to step 29.
24. Power off the system and exchange the local SPD optical bus driver card for the failing bus.  
Power on the system.  
Does the SRC that sent you to this procedure occur on the control panel, on the console, in the service action log, or in the product activity log?  
**Yes      No**  
↓      Go to “BUS-PIP8” on page 487 to verify the repair.  
**This ends the procedure.**
25. Perform the following:
  - a. Power off the system.
  - b. Verify that the power indicator on the expansion tower is off. If the indicator remains on, you *may* need to power off the system unit that is attached through the OS/400–OptiConnect hardware.

## Bus PIPs

- c. Disconnect the local SPD optical bus driver card you just installed and reconnect the original local SPD optical bus driver card.
- d. Exchange the remote SPD optical bus receiver for the failing bus.
- e. Power on the system.

Does the SRC that sent you to this procedure occur on the control panel, on the console, in the service action log, or in the product activity log?

**Yes     No**

↓     Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

26. Is the SRC that sent you to this procedure B600 69F8?

**Yes     No**

↓     Go to step 30 of this procedure.

27. Perform the following:

- a. Power off the system and verify that the expansion tower power indicator is off.
- b. Disconnect the remote SPD optical bus receiver that you just exchanged and reinstall the original.
- c. Exchange the optical cable between the local SPD optical bus driver card and the remote SPD optical bus receiver on the even bus of the bus pair you are working with. This is the top position of the local SPD optical bus driver card with the failing bus.
- d. Power on the system.

Does the SRC that sent you to this procedure occur on the control panel, on the console, in the service action log, or in the product activity log?

**Yes     No**

↓     Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

28. Go to step 36 of this procedure.

29. Determine if the optical cable is functioning properly. Go to "BUS-PIP11" on page 498. Then return here with the results and continue with this procedure.

Is the cable **functioning properly**?

**No     Yes**

↓     Go to step 31 on page 483 of this procedure.

**This ends the procedure.**

30. Perform the following:

- a. Power off the system and verify that the expansion tower power indicator is off.
- b. If you just exchanged the remote SPD optical bus receiver, then disconnect it and reinstall the original.
- c. Exchange both optical cables between the local local SPD optical bus driver card and the remote SPD optical bus receiver.
- d. Power on the system.

Does the SRC that sent you to this procedure occur on the control panel, on the console, in the service action log, or in the product activity log?

Yes No

↓ Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

31. Is the SRC that originally sent you to this procedure B600 69F0 or B600 6905?

Yes No

↓ The SRC that originally sent you to this procedure is B600 69D8.

Go to step 35 of this procedure.

32. Trace the optical cable of the failing bus from the local SPD optical bus driver card to the remote SPD optical bus receiver.

Is the remote SPD optical bus receiver connected to another remote SPD optical bus receiver?

Yes No

↓ Go to step 35 of this procedure.

33. Perform the following:

- a. Power off the system.
- b. Verify that the power indicator on the expansion tower is off. If the indicator remains on, you *may* need to power off the system unit that is attached through the OS/400–OptiConnect hardware.
- c. Exchange the remote SPD optical bus receiver card for the paired bus. This is the other bus that is connected to the local SPD optical bus driver card with the failing bus.
- d. Power on the system.

Does the SRC that sent you to this procedure occur on the control panel, on the console, in the service action log, or in the product activity log?

Yes No

↓ Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

34. Perform the following:

- a. Power off the system.
- b. Disconnect the remote SPD optical bus receiver you just exchanged and reinstall the original bus adapter.
- c. Exchange the secondary optical cable between the remote SPD optical bus receivers.
- d. Power on the system.

Does the SRC that sent you to this procedure occur on the control panel, on the console, in the service action log, or in the product activity log?

Yes No

↓ Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

35. Perform the following:

- a. Power off the system.
- b. Exchange the local bus expansion adapter ( see symbolic FRU "LBUSADP" on page 412").
- c. Power on the system.

## Bus PIPs

Does the SRC that sent you to this procedure occur on the control panel, on the console, in the Service Action Log, or in the Product Activity Log?

Yes      No

↓      Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

36. Perform the following:

- a. Power off the system and verify that the expansion tower power indicator is off.
- b. Exchange all of the parts in the failing item list at the same time. Exchange the local SPD optical bus driver card, all remote SPD optical bus receiver cards, and any optical link cables that are in the failing item list.
- c. Power on the system.

Does the SRC that sent you to this procedure occur on the control panel, on the console, in the service action log, or in the product activity log?

Yes      No

↓      Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

37. Ask your next level of support for assistance.

**This ends the procedure.**

## BUS-PIP7

**Introduction:** This procedure isolates a failure in the OS/400–OptiConnect hardware. OS/400–OptiConnect hardware connects AS/400 systems together through SPD optical bus receiver cards. The system that reports the failure does not necessarily have the failure.

The connected systems may vary in system type and model. Ensure that you are in the correct problem analysis book for your system.

**Note:** Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

**Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.

**Note:** Within this procedure the terms "system" and "logical partition" are interchangeable when used individually.

Perform this procedure from the logical partition or system that is reporting the problem.

To determine which logical partition owns the input-output processors (IOP) see "Determining Which Logical Partition Owns a FRU or a System I/O Resource" on page 815.

To locate the console of a secondary partition see “Locating a Secondary Partition’s Console” on page 811.

Certain conditions may cause the shared SPD optical bus receiver cards to show a status of Failed under system service tools. These include:

- The remote system or logical partition is not powered on, is still powering up, or is experiencing some hang condition where it is not responding.
- The optical cables to the remote system are damaged or not installed.
- The shared SPD optical bus receiver card-optical jumper is installed.
- The shared SPD optical bus receiver card-optical wrap plugs are installed.
- The shared SPD optical bus receiver card is failing.

When a remote system or logical partition powers up late, the UNKNOWN resource with the Failed status may remain as an entry in the resource list. However, this entry is supplemented with an additional entry showing the shared SPD optical bus receiver card as a resource with its card type and a status of Operational. Displaying additional details on these resources shows them at the same card location.

**Note:** Do not perform this procedure unless you have been trained on OS/400–OptiConnect. If you have **not** been trained on OS/400–OptiConnect, call your next level of support for assistance.

1. Go to “Appendix F. OptiConnect Table” on page 1065.

Does the table contain written information?

**Yes      No**

- ↓      The table was not completed when the system was installed. Call your next level of support for assistance.

**This ends the procedure.**

2. Record the status of every OS/400–OptiConnect resource on **ALL** systems by using the Work with Hardware resources (WRKHDWRSC \*CSA) command.

**Note:** If any system connected with OS/400–OptiConnect has logical partitions, then record the status of OS/400–OptiConnect resources on all logical partitions which have OS/400–OptiConnect hardware. Each logical partition which owns OS/400–OptiConnect hardware must be considered a separate system in the OS/400–OptiConnect configuration.

Mark the host buses of the network in the table.

Are there any host buses with a status of failed, disabled, or inoperative?  
(Look at the status beside the host bus, not the IOPs listed under the bus.)

**No      Yes**

- ↓      Go to “BUS-PIP3” on page 460.

**Note:** If this is a dual host configuration, this machine may still be operational. Check with the customer before proceeding.

3. Do the host bus or buses have one or more IOPs failing?

**Yes      No**

- ↓      Go to step 8 of this procedure.

4. Is the non-host system, or are the non-host systems powered on?

## Bus PIPs

**Note:** For any non-host system, or any non-host systems which have logical partitions, check that each logical partition connected with OS/400–OptiConnect hardware is powered on.

**Yes      No**

- ↓      Ask the customer why the system, or systems, logical partition, or logical partitions are powered off.

**This ends the procedure.**

5. On the command line, enter DSPOPCLNK (the display-optical link command). Identify the Down Links. Press the display the alternate view function key (F11) to identify the remote system bus.

Check all optical bus cables between failed non-host and host buses. Connect unplugged cables.

Did you fix a problem (example: connect an unplugged cable)?

**Yes      No**

- ↓      Go to step 9 of this procedure.

6. Wait at least 5 minutes for the link to return to operational.

Does the card become operational?

**No      Yes**

- ↓      Go to step 18 of this procedure.

7. Go to step 9 of this procedure.

8. Does a non-host bus or any non-host buses have a failed, disabled, or inoperative IOP?

**Yes      No**

- ↓      Go to step 16 of this procedure.

9. Perform the following:

- Use the STRSST command to start System Service Tools.
- Select the *Start a Service Tool* option.
- Select the *Hardware service manager* option.
- Select the *Logical Resources* option from the Hardware Service Manager display.
- Select the *System Bus Resources* option to view the status of the non-host buses on all of the systems.
- Select the *Display detail* option on the Logical Hardware Resources display.
- Note the card type/model number and the attached system name/logical partition ID for the failing resource.

10. **Before you continue, read and understand this step.**

This card may still have active connections to other systems. Check with the customer to find a time when an IOP IPL can be performed with minimal or no OS/400–OptiConnect activity on the attached system or logical partition that is identified in step 9 of this procedure.

Do not IPL an IOP from a non-host system or logical partition. This will cause the IPL to fail and may hang the service tool screen until the next IPL.

11. From the host system/logical partition, select the *Perform I/O Debug* option for the failed resource. On the *Select IOP Debug Function* display, select the option to IPL the I/O processor.

The IPL may take several minutes to complete.



The IPL may return with a status of failed. However, after several minutes the link may become operational. This can be expected and is a good result.

12. Does the IOP become operational?

**No      Yes**

↓      Go to step 18 of this procedure.

13. IPL the non-host system or logical partition.

Does the failed resource become operational?

**No      Yes**

↓      Go to step 18 of this procedure.

14. IPL the host system or logical partition.

Does the failed resource become operational?

**No      Yes**

↓      Go to step 18 of this procedure.

15. Exchange the following one at a time:

- Shared SPD optical bus receiver card

**Note:** The card may not show a failed status.

- SPD optical bus driver card
- Cables between the IOPs

If you have not corrected the problem, call your next level of support.

**This ends the procedure.**

16. Are you here because of a 69C1 reference code?

**Note:** If you need assistance at this point, call your next level of support.

**Yes      No**

↓      Call your next level of support.

**This ends the procedure.**

17. Ask the customer if there was IPL activity at the time of the error.

**Note:** If you need assistance at this point, call your next level of support.

Was there IPL activity at the time of the error?

**Yes      No**

↓      Call your next level of support.

**This ends the procedure.**

18. Check all systems/logical partitions (with OS/400–OptiConnect hardware) and verify that all hardware is operational using the WRKHDWRSC \*CSA command.

Return to step 1 of this procedure if any hardware resource does not report as operational.

**This ends the procedure.**

## BUS-PIP8

**Introduction:** This procedure will verify an SPD bus repair.

## Bus PIPs

**Note:** Within this procedure the terms "system" and "logical partition" are interchangeable when used individually.

Perform this procedure from the logical partition you were in when you were sent to this procedure.

To determine which logical partition owns an I/O resource see "Determining Which Logical Partition Owns a FRU or a System I/O Resource" on page 815.

To locate the console of a secondary partition see "Locating a Secondary Partition's Console" on page 811.

Perform the following procedure to ensure that the system functions correctly after you perform a bus isolation procedure. Use this procedure to verify a bus repair.

1. Power off the system or expansion tower where the service action was performed.
2. Install all cards, cables, and hardware. Ensure that all connections are tight. You may use the system configuration list to verify that the cards are installed correctly.
3. Power on the system or expansion tower.

Does the IPL complete successfully to the IPL or Install the System Display **or** does the expansion tower power on complete successfully?

**Yes      No**

↓      An SRC occurred.

Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

**This ends the procedure.**

4. Does the system/logical partition have mirrored protection?

**Note:** If you do not know the type of protection on your system/logical partition, select **Yes**.

**Yes      No**

↓      Go to step 6 of this procedure.

5. From the Dedicated Service Tools (DST) display, select the *Work with disk units* option and resume mirrored protection for all units that have a suspended status. (See "Work with Disk Unit Recovery" in the *AS/400 Service Functions* information).
6. From the Start a Service Tool display, select the *Hardware service manager* option and look for the I/O processors that have a failed or missing status. Are all I/O processor cards operational?

**Note:** Ignore any IOPs that are listed with a status of *not connected*.

**No      Yes**

↓      Go to step 12 of this procedure.

7. Display the logical hardware resource information for the non-operational I/O processors.

If more than one I/O processor is failing, record the bus, board, and card information for the card with the lowest logical card address.

8. Perform the following:

- a. Return to the Dedicated Service Tools (DST) display.
- b. Display the Product Activity Log.
- c. Select the *All logs* option and search for an entry with the same bus, board, and card address information as the non-operational I/O processor.

**Note:** Do not include informational or statistical entries in your search.  
Use only entries that occurred during the last IPL.

Did you find an entry for the SRC that sent you to this procedure?

**No      Yes**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

9. Did you find a B600 6944 SRC that occurred during the last IPL?

**Yes      No**

↓      A different SRC is associated with the non-operational I/O processor.  
  
Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

10. Is there a B600 xxxx SRC that occurred during the last IPL other than the B600 6944 and informational SRCs?

**Yes      No**

↓      You connected an I/O processor in the wrong card position. Use the system configuration list to compare the cards.

When you have corrected the configuration, go to the start of “BUS-PIP8” on page 487 to verify the bus repair.

**This ends the procedure.**

11. Use the other B600 xxxx SRC to determine the problem.  
Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

12. Use the hardware service manager function to print the system configuration list.

Are there any configuration mismatches?

**No      Yes**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

13. You have verified the repair of the system bus.  
If only an expansion tower was powered off for this service action, go to step 14 on page 490.  
Perform the following to return the system to the customer:
  - a. Power off the system/logical partition.
  - b. Select the operating mode with which the customer was originally running.

If the system was powered off, select the mode on the system control panel. If a secondary partition was powered off, select the mode on the *Work with Partition Status* screen under DST. (See “Selecting IPL Type and Mode for a Secondary Partition” on page 816.)

- c. Power on the system/logical partition.
14. If the system has logical partitions and the entry point SRC was B600xxxx, then check for related problems in other logical partitions that could have been caused by the failing part. (See “Closing Related Problems in Other Logical Partitions” on page 814.

**This ends the procedure.**

### BUS-PIP9

**Introduction:** This procedure isolates a solid failure on the FC 5044 Expansion Tower.

**FC 5044 Cabling and Bus Numbering Assumption:** This procedure assumes that the FC 5044 tower installation instructions were followed and therefore the tower was cabled to the system in the following way:

1. The optical cable port pair on the system unit's bus driver card for the even bus number connects to the top cable ports on the 2684 bus receiver card in the tower.
2. The optical cable port pair on the system unit's bus driver card for the odd bus number connects to the bottom port pair on the 2684 bus receiver card in the tower.

**Note:** Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** This procedure must perform service in the Primary partition. If you came to this procedure while working in another logical partition, then move to the console of the Primary partition. Perform this procedure from there.

Read the “Overview” on page 450 before continuing with this procedure.

**Attention:** If the expansion unit is connected through OS/400–OptiConnect hardware, you may need to power off more than one system unit during this procedure.

1. Read and understand the “FC 5044 Cabling and Bus Numbering Assumption”. Determine which card positions in the tower you will perform service on using the following procedure.

If the FC 5044 tower is cabled to the system as described in the Cabling and Bus Numbering Assumption:

- In V4R4 and earlier system models running any supported software version and release: The even bus number is in tower card positions C02 through C07. The odd bus number is in tower card positions C08 through C13.
- In V4R5 system models which have a migrated 5044 AND the cabling to the 5044 was not altered: The odd bus number is in tower card positions C02 through C07. The even numbered bus is in tower card positions C08 through C13.

If the FC 5044 tower was cabled to the system differently than as described in the Cabling and Bus Numbering Assumption:

- The bus number cabled to the top port pair on the 2684 bus receiver card is in card positions C02 through C07.
  - The bus number cabled to the bottom port pair on the 2684 bus receiver card is in card positions C08 through C13.
2. Power off the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 789).  
**Attention:** Verify that the system unit power indicator is off before you continue to the next step of this procedure. If the power indicator remains on, you may be working on a system that has OS/400–OptiConnect hardware. You may need to power off more than one system unit during this procedure.
  3. In the FC 5044 Expansion Unit, **for the bus you are isolating**, disconnect the cards at the following card positions (if installed) by sliding them partially out of the card enclosure:

Table 17. Card Positions

Bus in C02 through C07	Bus in C08 through C13
3	9
4	10
5	11
6	12
7	13
<b>Note:</b> Do not remove the I/O processor cards in positions 2 and 8, or the air flow cards.	

Use the system configuration list to verify the configuration as you work.

4. Did you remove any cards in the previous step?  
**No      Yes**  
 ↓      Go to step 8 of this procedure.
5. Airflow cards are installed in the positions that are shown in Table 17.  
 Is an SPD optical bus receiver card (not an airflow card) installed in the first position on the bus? Use the following table to determine the card position.

Table 18. Card Positions

Bus in C02 through C07	Bus in C08 through C13
2	8

- No      Yes**  
 ↓      Go to step 9 of this procedure.
6. Check the printed system configuration list to determine if I/O processors are supposed to be on this bus.  
 Are any I/O processors missing?  
**Yes      No**  
 ↓      If the Entry Point SRC was B600 6944, this indicates that there is an empty bus and the message can be ignored. If the Entry Point SRC was not B600 6944, ask your next level of support for assistance.

**This ends the procedure.**

## Bus PIPs

7. Ask your next level of support for assistance.

**This ends the procedure.**

8. Power on the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 789).

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓      Go to step 15 of this procedure.

9. Perform the following:
  - a. Power off the system unit(see “Powering Off and Powering On the System or Expansion Tower” on page 789).
  - b. Exchange the remote SPD optical bus receiver card.
  - c. Power on the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 789).

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓      The failing item is the remote SPD optical bus receiver card, which you have already exchanged.

Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

10. Remove the remote SPD optical bus receiver card you installed in the previous step and install the original remote SPD optical bus receiver card.
11. Perform “BUS-PIP5” on page 468 for the following cards:

*Table 19. Card Positions*

Bus in C02 through C07	Bus in C08 through C13
2	8

If BUS-PIP5 does not identify the failing item, return here and continue with the next step of this procedure.

12. Perform the following:
  - a. Power off the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
  - b. Exchange the I/O processor card in the position that is shown in Table 19.
  - c. Power on the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 789).

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

- ↓      The failing item is the I/O processor card, which you just exchanged.  
Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

13. Perform the following:
  - a. Power off the system unit “Powering Off and Powering On the System or Expansion Tower” on page 789.
  - b. Remove the I/O processor you installed in step 12 of this procedure and install the original I/O processor card and the attached adapter cards.
14. The only failing item remaining is the expansion unit card enclosure.  
Perform the following:
  - a. Exchange the expansion unit card enclosure.
  - b. Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

15. Install the cards you removed in step 3 of this procedure one at a time from the lowest to the highest position.

**Note:** Power off the system before installing each card. After you install each card, power on the system.

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

- ↓      Repeat this step until the SRC or failure that sent you to this procedure occurs.
- If the error does not occur, the problem may be intermittent. Ask your next level of support for assistance.

**This ends the procedure.**

16. Perform “BUS-PIP5” on page 468 for the last card you reinstalled in step 15 of this procedure.

**Note:** If BUS-PIP5 does not identify the failing item, return here and continue with the next step of this procedure.

17. Perform the following:
  - a. Power off the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
  - b. Exchange the I/O processor card you last reinstalled in step 15 of this procedure with a new I/O processor card of the same type.
  - c. Power on the system unit (see “Powering Off and Powering On the System or Expansion Tower” on page 789).

## Bus PIPs

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓      The failing item is the I/O processor card that you have already exchanged.

Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

18. Perform the following:

- a. Power off the system unit (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
- b. Remove the last card you exchanged.
- c. Install the original I/O processor card and the attached adapter cards.

19. Perform the following:

- a. Find the I/O processor card with the card position that is one less than the I/O processor card you are working with.
- b. Exchange this I/O processor card.
- c. Power on the system unit (see "Powering Off and Powering On the System or Expansion Tower" on page 789).

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓      The failing item is the I/O processor card that you have already exchanged.

Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

20. Perform the following:

- a. Power off the system unit (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
- b. Remove the I/O processor card you installed in the previous step.
- c. Install the original I/O processor card.

21. The only failing item remaining is the expansion unit card enclosure.

Perform the following:

- a. Exchange the expansion unit card enclosure.
- b. Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**



**BUS-PIP10**

**Introduction:** This procedure isolates a solid failure in the FC 5065 or 5066 Expansion Tower.

**Note:** On a FC 5065 or 5066 expansion tower the SPD IOP cards generate PCI for the I/O adapter cards they control. SPD I/O processor card positions are C03, C08 and C13. Empty SPD I/O processor card positions (between I/O processors) are not allowed on the system SPD bus which drives this I/O expansion tower. Card gaps may cause system reference codes (SRC) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

For this procedure you must perform service in the logical partition which owns the bus on this expansion tower. If you came to this procedure while working in another logical partition, then move to the console of the logical partition which owns this bus. Perform this procedure from there.

To determine which logical partition owns the bus see “Determining Which Logical Partition Owns a FRU or a System I/O Resource” on page 815.

To locate the console of a secondary partition see “Locating a Secondary Partition’s Console” on page 811.

Read the “Overview” on page 450 before continuing with this procedure.

1. Power off the expansion tower. (See “Expansion Tower Power Procedure” on page 794).

**Attention:** Verify that the expansion unit power indicator is off before you continue to the next step of this procedure. If the power indicator remains on, you may be working on a system that has OptiConnect/400 hardware. You may need to power off more than one system unit during this procedure.

2. Disconnect the cards at the following card positions (if installed) by sliding them partially out of the card enclosure C01 through C15:

**Note:** Do not remove the bus connection cables.

Use the system configuration list to verify the configuration as you work.

3. Did you remove any cards in the previous step?

**No      Yes**

↓      Go to step 6 of this procedure.

4. Check the printed system configuration list to determine if I/O processors are supposed to be on this bus.

Are I/O processors missing?

**Yes      No**

↓      If the Entry Point SRC was B600 6944, this indicates that there is an empty bus and the message can be ignored. If the Entry Point SRC was not B600 6944, ask your next level of support for assistance.

**This ends the procedure.**

## Bus PIPs

5. Ask your next level of support for assistance.

**This ends the procedure.**

6. Power on the expansion tower. (See “Expansion Tower Power Procedure” on page 794.)

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions which own I/O processor card resources on the bus.

**Yes      No**

↓      Go to step 9 of this procedure.

7. Perform the following:
  - a. Power off the expansion tower. (See “Expansion Tower Power Procedure” on page 794.)
  - b. Remove the tower card (see “TWRCARD” on page 433) and install a new one.
  - c. Power on the expansion tower. (See “Expansion Tower Power Procedure” on page 794.)

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓      The failing item is the tower card (TWRCARD), which you have already exchanged.

Go to “BUS-PIP8” on page 487 to verify the repair.

**This ends the procedure.**

8. Remove the tower card (TWRCARD) that you installed in the previous step and install the original tower card.
9. Install the cards you removed in step 2 of this procedure one card group at a time in the order that is shown in Table 20.

**Note:** Power off the expansion tower before installing each card group. After you install each card group, power on the expansion tower.

*Table 20. Install*

FC 5065 or 5066
I/O Processor in C03, I/O Adapters in C01, C02, C04 and C05
I/O Processor in C08, I/O Adapters in C06, C07, C09 and C10
I/O Processor in C13, I/O Adapters in C11, C12, C14 and C15

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓ Repeat this step until the SRC or failure that sent you to this procedure occurs.

If the error does not occur, the problem may be intermittent. Ask your next level of support for assistance.

**This ends the procedure.**

10. Perform "BUS-PIP5" on page 468 for the last card group that you reinstalled in step 9 of this procedure.

**Note:** If BUS-PIP5 does not identify the failing item, return here and continue with the next step of this procedure.

11. Perform the following:
  - a. Power off the expansion tower. (See "Expansion Tower Power Procedure" on page 794.)
  - b. Exchange the I/O processor card you last reinstalled in step 9 of this procedure with a new I/O processor card of the same type.
  - c. Power on the expansion tower. (See "Expansion Tower Power Procedure" on page 794.)

Does the Entry Point SRC or error occur?

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓ The failing item is the I/O processor card, which you have just exchanged.

Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

12. Perform the following:
  - a. Power off the expansion tower. (See "Expansion Tower Power Procedure" on page 794.)
  - b. Remove the last card that you exchanged.
  - c. Install the original I/O processor card and the attached adapter cards.
13. Perform the following:
  - a. Use the Table 20 on page 496 and the I/O processor card with the position that you previously reinstalled.
  - b. Exchange this I/O processor card.
  - c. Power on the expansion tower. (See "Expansion Tower Power Procedure" on page 794.)

Does the Entry Point SRC or error occur?

## Bus PIPs

**Note:** If the system has logical partitions, when looking for the entry point SRC, check first in the logical partition which reported the problem. Then check all other logical partitions that own I/O processor card resources on the bus.

**Yes      No**

↓      The failing item is the I/O processor card, which you have already exchanged.

Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

14. Perform the following:

- a. Power off the expansion tower. (See "Expansion Tower Power Procedure" on page 794.)
- b. Remove the I/O processor card you installed in the previous step.
- c. Install the original I/O processor card.

15. The only failing item remaining is the tower card (TWRCARD).

Perform the following:

- a. Exchange the tower card (TWRCARD). Go to "TWRCARD" on page 433.
- b. Go to "BUS-PIP8" on page 487 to verify the repair.

**This ends the procedure.**

## BUS-PIP11

**Introduction:** This procedure uses the optical cable wrap plug, PN 75G2725, to verify the function of an SPD bus optical cable. **PN 75G2725 can not be used on early optical cables (early 3xx systems, this cable has the optics connector oriented 90 degrees).** In this procedure you will determine and record one of these conditions for the proper function of the optical cable:

- The cable is **functioning properly**.
- The cable is **failing**.
- The proper function of the cable **cannot be determined**.

**Procedure:**

1. Do you have the optical cable wrap plug, PN 75G2725?

**Yes      No**

↓      You cannot perform this procedure. Record that the proper function of the optical cable **cannot be determined**. Return to the procedure, symbolic FRU or FI that sent you here.

**This ends the procedure.**

2. Perform the following:

- a. Power on the system if it is not already powered on.
- b. Power off the I/O tower for the failing bus. See "Expansion Tower Power Procedure" on page 794.
- c. Disconnect the optical cable from the remote SPD optical bus receiver card for the failing bus.
- d. Install the optical cable wrap plug on the optical cable at the end you disconnected.

3. Search the Product Activity Log of the Primary partition for a B600 699C.

**Note:** Search the Primary partition even if the system has multiple partitions.

Does SRC B6xx 699C occur in the Product Activity Log for the bus you are working on at a time that was during the IPL?

**No      Yes**

↓ Record that the optical cable is **functioning properly**. Go to step 9 of this procedure.

4. The local SPD optical bus driver card must be tested.

**Note:** This step requires an SPD optical bus driver card terminator (PN 16G5609). If you do not have a terminator you can use an SPD optical bus driver card terminator from an unused optical bus port by exchanging it with the cable you put the optical cable wrap plug on.

Is an SPD optical bus driver card terminator available?

**Yes      No**

↓ Record that the proper function of the optical cable **cannot be determined**. Go to step 8 of this procedure.

5. Install the SPD optical bus driver card terminator on the optical link card for the bus you are working on.
6. Search the Product Activity Log of the Primary partition for a B600 699C.

**Note:** Search the Primary partition even if the system has multiple partitions.

Does SRC B6xx 699C occur in the Product Activity Log for the bus you are working on at a time that was during the IPL?

**Yes      No**

↓ Record that the optical cable is **functioning properly**. Go to step 9 of this procedure.

7. Record that the optical cable is **failing**.
8. Perform the following:
  - a. Reinstall any SPD optical bus driver card terminators that you moved during this procedure.
  - b. Remove the optical cable wrap plug.
  - c. Return to the procedure, symbolic FRU or FI that sent you to this procedure.

**This ends the procedure.**

9. Perform the following:
  - a. Reinstall any SPD optical bus driver card terminators that you moved during this procedure.
  - b. Remove the optical cable wrap plug.
  - c. Reinstall the optical cable.
  - d. Return to the procedure, symbolic FRU or FI that sent you here.

**This ends the procedure.**

## Communications Problem Isolation Procedures

### Overview

This section contains the procedures necessary to isolate a communications failure.

## Communications PIPs

### DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

### DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

### DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

### DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

## COMM-PIP1

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. To determine which communications hardware to test, use the SRC from the problem summary form, or the problem log. For details on line description information, see the “Starting a Trace” section of “Work with Communications Trace” in the *AS/400 Service Functions* information.
2. Perform the following:
  - a. Vary off the resources.
  - b. Go to the Start a Service Tool display.
  - c. Select the *Hardware service manager* option.
  - d. Select the *Logical hardware resources* option.
  - e. Select the *System bus resources* option.
  - f. Select the *Resources associated with IOP* option for the attached IOPs in the list until you display the suspected failing hardware.
  - g. Select the *Verify* option on the hardware you want to test.

**Note:** The *Verify* option may be valid on the IOP, IOA, or port resource. When the *Verify* option is valid on the IOP resource, any replaceable memory will be tested. Communications IOAs are tested by using the

*Verify* option on the port resource. Workstation IOAs are tested by using the *Verify* option on the IOA resource.

3. Run the IOA/IOP test(s). This may include any of the following:

- Adapter internal test.
- Adapter wrap test (requires adapter wrap plug).
- Processor internal test.
- Memory test.
- Serial/parallel port test.

Does the IOA/IOP test(s) complete successfully?

**No      Yes**

↓      The IOA/IOP is good. Do NOT replace the IOA/IOP. Go to step 5 of this procedure.

4. The problem is in the IOA or IOP.

If a verify test identified a failing memory module, replace the memory module.

On multiple card combinations, exchange the IOA card before exchanging the IOP card.

Exchange the failing hardware (see “Chapter 6. Removal and Installation Procedures” on page 821).

**This ends the procedure.**

5. Before running tests on modems or network equipment, the remaining local hardware should be verified. Since the IOA/IOP test(s) have completed successfully, the remaining local hardware to be tested is the external cable.

Is the cable wrap test option available as a *Verify* test option for the hardware you are testing?

**Yes      No**

↓      Go to step 7 on page 502 of this procedure.

Verify the external cable by running the cable wrap test.

**Note:** Wrap plug part numbers can be found in the “Chapter 8. Parts Listing” on page 949.

Does the cable wrap test complete successfully?

**Yes      No**

↓      The problem is in the cable. Exchange the cable.

**This ends the procedure.**

6. All the local hardware is good. This completes the local hardware verification. The communications IOA/IOP and/or external cable is not the failing item.

One of the following could be causing the problem:

- The network.
- Any system or device on the network.
- The configuration of any system or device on the network.
- Intermittent problems on the network.
- A new SRC - go to “Starting Point for All Problems” on page 4 or ask your next level of support for assistance.

## Communications PIPs

Work with the customer or your next level of support to correct the problem.

**This ends the procedure.**

7. The communications IOA/IOP is not the failing item.

One of the following could be causing the problem:

- External cable.
- The network.
- Any system or device on the network.
- The configuration of any system or device on the network.
- Intermittent problems on the network.
- A new SRC - go to "Starting Point for All Problems" or ask your next level of support for assistance.

Work with the customer or your next level of support to correct the problem.

**This ends the procedure.**

## Diskette Unit Problem Isolation Procedures

### Overview

If you are instructed to exchange a part, see the *Repair and Parts* information for the system for checking, removal and installation procedures, and part number information.

### DSKT-PIP1

This procedure verifies that the diskette unit is operating correctly.

**Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the "Overview" before continuing with this procedure.

1. Perform the following to run the hardware verification serviceability tests:
  - a. Go to the Use Dedicated Service Tools (DST) display (see "How to Access Dedicated Service Tools" in the *AS/400 Service Functions* information).
  - b. Select the *Start a Service Tool* option.
  - c. Select the *Hardware service manager* option.
  - d. Select the *Logical hardware resources* option.
  - e. Select the *System bus resources* option.
  - f. On the Logical Hardware Resources on System Bus display, find the MFIOF to which this diskette unit is connected. Type a "9" in the *Opt* field. This retrieves resources associated with this MFIOF.
  - g. On the Logical Hardware Resources Associated with IOP display, find the diskette unit you want to test and type a 7 in the *Opt* field.
  - h. Follow the instructions that appear on the display and press Enter to run the test.

Does the test complete successfully?

**No      Yes**



- ↓ The diskette unit is working correctly now. The diskette is formatted correctly. This test does not calculate the number of read errors on this diskette. If the problem continues to occur, exchange the diskette media.

**This ends the procedure.**

2. Perform the following:
  - a. Record any messages that appear at the bottom of the display.
  - b. Return to the Use Dedicated Service Tools (DST) display.
  - c. Select the *Start a Service Tool* option.
  - d. Select the *Product Activity Log* option.
  - e. Search the product activity log for a new entry that was entered while the test was running.

**Note:** Use the test time period and take all other default parameters.

Did you find a new entry?

**No      Yes**

- ↓ Perform the following:
- a. Record the error information (SRC) from the product activity log entry.
  - b. Go to "Chapter 2. Unit Reference Codes" on page 59 and start at step 4 to correct the problem.

**This ends the procedure.**

3. Return to the Use Dedicated Service Tools (DST) display.
4. Was the message you recorded in step 2 of this procedure "The diskette drive is not ready"?

**Yes      No**

- ↓ Go to step 7 of this procedure.

5. Is the diskette unit ready?

**Yes      No**

- ↓ This is the expected result. Make the diskette unit ready and go to step 1b of this procedure.

6. Get a different diskette to use and go to step 1b of this procedure.

If the message "The diskette drive is not ready" does not occur with other diskettes, the original diskette is failing.

If the message "The diskette drive is not ready" occurs with every diskette you use, the diskette unit is failing. Perform one of the following:

- If the diskette unit is a type 6135, exchange the diskette unit (see "Type, Model, and Part Number List" on page 380 for part number information). If exchanging the diskette unit does not correct the problem, exchange the diskette unit power supply (see "Diskette Unit Failing Items" under "(6135) Diskette Unit Reference Codes" on page 201 for part number information).
- If the diskette unit is a type 9331, go to the service information for the diskette unit to correct the problem.

If performing the above action does not correct the problem, exchange the external signal cable (see "EXTSCSI" on page 408 for part number information).

## Diskette Unit PIPs

**This ends the procedure.**

7. Was the message you recorded in step 2 of this procedure "The system data on the diskette was found to be not valid"?

**No      Yes**

- ↓      The diskette is not formatted correctly for this system (see system operations book for formatting information).

**This ends the procedure.**

8. Was the message you recorded in step 2 of this procedure "The system data on the diskette could not be read"?

**No      Yes**

- ↓      A read error occurred while reading the system data area on the diskette. Exchange the diskette.

**This ends the procedure.**

9. Was the message you recorded in step 2 of this procedure "Hardware failure detected 1. Diskette adapter card 2. IOP card"?

**No      Yes**

- ↓      Exchange the diskette adapter card (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system). If this does not correct the problem, exchange the IOP card. If exchanging the IOP card does not correct the problem, perform one of the following:

- If the diskette unit is a type 6135, exchange the diskette unit (see "Type, Model, and Part Number List" on page 380 for part number information). If exchanging the diskette unit does not correct the problem, exchange the diskette unit power supply (see "Diskette Unit Failing Items" under "(6135) Diskette Unit Reference Codes" on page 201 for part number information).
- If the diskette unit is a type 9331, go to the service information for the diskette unit to correct the problem.

If performing the above action does not correct the problem, exchange the external signal cable (see "EXTSCSI" on page 408 for part number information).

**This ends the procedure.**

10. Was the message you recorded in step 2 of this procedure "Hardware failure occurred during the test"?

**No      Yes**

- ↓      The diskette unit is failing.

Perform one of the following:

- If the diskette unit is a type 6135, exchange the diskette unit (see "Type, Model, and Part Number List" on page 380 for part number information). If exchanging the diskette unit does not correct the problem, exchange the diskette unit power supply (see "Diskette Unit Failing Items" under "(6135) Diskette Unit Reference Codes" on page 201 for part number information).
- If the diskette unit is a type 9331, go to the service information for the diskette unit to correct the problem.

If performing the above action does not correct the problem, exchange the external signal cable (see "EXTSCSI" on page 408 for part number information).

**This ends the procedure.**

11. Was the message you recorded in step 2 of this procedure "The test timed out"?

**No      Yes**

↓ Verify that the diskette unit is powered on and that the diskette cables are connected correctly. Then go to step 1b of this procedure. If this message continues to occur, perform one of the following:

- If the diskette unit is a type 6135, exchange the diskette unit (see "Type, Model, and Part Number List" on page 380 for part number information). If exchanging the diskette unit does not correct the problem, exchange the diskette unit power supply (see "Diskette Unit Failing Items" under "(6135) Diskette Unit Reference Codes" on page 201 for part number information).
- If the diskette unit is a type 9331, go to the service information for the diskette unit to correct the problem.

If performing the above action does not correct the problem, exchange the external signal cable (see "EXTSCSI" on page 408 for part number information).

**This ends the procedure.**

12. Was the message you recorded in step 2 of this procedure "Hardware error or Licensed Internal Code error"?

**No      Yes**

↓ The IOP card or the Licensed Internal Code on this IOP is the probable failing item.

Verify that the latest PTF for this IOP is installed. If it is installed, exchange the IOP (see "Removal and Installation Procedures" in the *Repair and Parts* information for the system). If this does not correct the problem, ask your next level of support for assistance.

**This ends the procedure.**

13. Perform one of the following:

- If the diskette unit is a type 6135, exchange the diskette unit (see "Type, Model, and Part Number List" on page 380 for part number information). If exchanging the diskette unit does not correct the problem, exchange the diskette unit power supply (see "Diskette Unit Failing Items" under "(6135) Diskette Unit Reference Codes" on page 201 for part number information).
- If the diskette unit is a type 9331, go to the service information for the diskette unit to correct the problem.

If performing the above action does not correct the problem, exchange the external signal cable (see "EXTSCSI" on page 408 for part number information).

**This ends the procedure.**

# Disk Unit Problem Isolation Procedures

### Overview

This section contains the procedures necessary to isolate a failure in a disk unit.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

### DU-PIP3

**Introduction:** This procedure determines the system reference code (SRC) to be used to isolate the problem and to determine the failing device.

**Note:** When exchanging a disk unit, go to “Chapter 7. Recovery Procedures” on page 919.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Perform an IPL to dedicated service tool (DST) (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does an SRC appear on the control panel?

**No      Yes**

↓      Go to step 6 of this procedure.

2. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

**Yes      No**

↓      Go to step 4 of this procedure.

3. Does one of the following messages appear in the list?

- Missing disk units in the configuration
- Missing mirror protection disk units in the configuration
- Device parity protected units in exposed mode.

**No      Yes**

↓      Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to “LIC-PIP11” on page 527 and use cause code 0002. If any of the reference codes are not 0000, go to step 6 of this procedure and use the reference code that is not 0000.

**Note:** Use the characters in the *Type* column to find the correct reference code table.

4. Does the Display Failing System Bus display appear on the console?

**No      Yes**

- ↓ Use the reference code that is displayed under *Reference Code* to correct the problem.

**This ends the procedure.**

5. Look at all the Product Activity Logs by using the *Product activity log* option under DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

**Yes      No**

- ↓ You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 359 to help determine part numbers and location in the system.

**This ends the procedure.**

6. Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 1049).

Is the SRC the same one that sent you to this procedure?

**Yes      No**

- ↓ Go to “Starting Point for All Problems” on page 4 to correct the problem.

**This ends the procedure.**

7. Perform the following:

- a. If the input-output processor (IOP), is located in an I/O expansion tower, you are to use bus-level concurrent maintenance under *Hardware Service Manager* to power off the expansion tower. Otherwise, power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
- b. See “Failing Item (FI) Code Table” on page 359 to find the devices identified by FI code FI01106.
- c. Disconnect one of the disk units, (other than the load-source disk unit), the tape units, or the optical storage units that are identified by FI code FI01106. Slide it partially out of the system.

**Note:** Do not disconnect the load-source disk unit, although FI code FI01106 may identify it.

8. Power on the system or the expansion unit that you powered off.  
Does an SRC appear on the control panel?

**No      Yes**

- ↓ Go to step 12 of this procedure.

9. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console with one of the following listed?

- Missing disk units in the configuration
- Missing mirror protection disk units in the configuration
- Device parity protected units in exposed mode.

**Yes      No**

## Disk Unit PIPs

- ↓ Go to step 11 of this procedure.
10. Select option 5, then press F11, then press the Enter key to display details.  
Does an SRC appear in the Reference Code column?
- No Yes**
- ↓ Go to step 12 of this procedure.
11. Look at all the Product Activity Logs by using the *Product activity log* option under DST.  
Is an SRC logged as a result of this IPL?
- Yes No**
- ↓ The last device you disconnected is the failing item.  
Exchange the failing device and reconnect the devices that were disconnected previously.
- Note:** Before exchanging a disk drive, you should attempt to save customer data (see “Chapter 7. Recovery Procedures” on page 919).
- This ends the procedure.**
12. Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 1049).  
Is the SRC the same one that sent you to this procedure?
- No Yes**
- ↓ The last device you disconnected is not the failing item.
- a. Leave the device disconnected and go to step 7 of this procedure to continue isolation.
- b. If you have disconnected all devices that are identified by FI code FI01106 except the load-source disk unit, reconnect all devices.  
Then go to step 16 of this procedure.
13. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console with one of the following listed?
- Missing disk units in the configuration
  - Missing mirror protection disk units in the configuration
  - Device parity protected units in exposed mode.
- Yes No**
- ↓ Go to step 13 of this procedure.
14. Select option 5 then press F11, then press the Enter key to display details.  
Are all the reference codes 0000?
- No Yes**
- ↓ The last device you disconnected is the failing item.
- a. Reconnect all devices except the failing item.
- b. Before exchanging a disk unit, go to “Disk Unit” in “Chapter 6. Removal and Installation Procedures” on page 821.
- This ends the procedure.**
15. Use the reference code to correct the problem.

**This ends the procedure.**

16. Was disk unit 1 (the load-source disk unit) a failing item that FI code FI01106 identified?

**Yes      No**

- ↓      The failing items that FI code FI01106 identified are not failing. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 359 to help determine part numbers and location in the system.

**This ends the procedure.**

17. The failing items that FI code FI01106 identified are not failing. The load-source disk unit may be failing. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 359 to help determine part numbers and location in the system.

**This ends the procedure.**

## Intermittent Problem Isolation Procedures

### Introduction

These intermittent problem isolation procedures instruct you to perform procedures to help you correct an intermittent problem.

Use these procedures only if problem analysis steps or tables sent you here.

Perform only the procedures that apply to your system.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see "Powering Off and Powering On the System or Expansion Tower" on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

### INT-PIP3 External Noise on AC Voltage Lines

Electrical noise on incoming ac voltage lines can cause various system failures. The most common source of electrical noise is lightning.

## Intermittent PIPs

### DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

1. Ask the customer if an electrical storm was occurring at the time of the failure. This determines if lightning could have caused the failure.

Could lightning have caused the failure?

**Yes      No**

↓      Go to step 3 of this procedure.

2. Determine if lightning protection devices are installed on the incoming ac voltage lines where they enter the building.

**Note:** There must be a dedicated ground wire from the lightning protection devices to earth ground.

Are lightning protection devices installed?

**Yes      No**

↓      Lightning may have caused the intermittent problem. Recommend that the customer install lightning protection devices to prevent this problem from occurring again.

**This ends the procedure.**

3. *An installation planning representative should perform this step.*
  - a. Get a recording ac voltage monitor. Connect it to the incoming ac voltage lines of the units that contain the failing devices with reference to ground.
  - b. Set the voltage monitor to start recording at a voltage slightly higher than the normal incoming ac voltage.

Does the system fail again with the same symptoms?

**Yes      No**

↓      **This ends the procedure.**

4. Look at the recording and see if the voltage monitor recorded any noise when the failure occurred.

Did the monitor record any noise when the failure occurred?

**Yes      No**

↓      Perform the next INT-PIP listed in the *INT-PIP* column.

**This ends the procedure.**

5. Review with the customer what was happening external to the system when the failure occurred. This may help you to determine the source of the noise. Discuss with the customer what to do to remove the noise or to prevent it from affecting the AS/400 system.

**This ends the procedure.**



## INT-PIP5 External Noise on Twinaxial Cables

### DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

### DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

Electrical noise on twinaxial cables that are not installed correctly may affect the twinaxial workstation I/O processor card. Examples are: Open shields on twinaxial cables and station protectors that are not being installed where necessary.

1. Check for the following on the system:
  - There must be no more than 11 breaks in a twinaxial cable run.
  - Station protectors must be installed (in pairs) where a cable enters or leaves a building.
  - There can be only two station protectors for each twinaxial run.
  - There is a maximum of seven devices (with addresses 0-6) for each cable run.
  - There is a maximum cable length of 1524 meters (5000 feet) for each port.
  - All cable runs must be ended (terminated).
  - Disconnect all twinaxial cables that are not used.
  - Remove any cause of electrical noise in the twinaxial cables.
  - All workstations must be grounded.
2. See chapter 9 in the *AS/400 Technical Information Manual* SY44-0008, and use it to check for any cable problems.
3. For more information, see the *IBM 5250 Information Display Systems — Planning and Site Preparation Guide*, GA21-9337.

**This ends the procedure.**

## INT-PIP7 Electromagnetic Interference (EMI)

This procedure contains actions to lessen the effects of electrical noise on the system.

1. Ensure that air flow cards are installed in all full-size card slots and adapter card slots that are not used.
2. Keep all cables away from sources of electrical interference, such as ac voltage lines, fluorescent lights, arc welding equipment, and radio frequency (RF) induction heaters. These sources of electrical noise can cause the system to become powered off.
3. If you have an expansion unit, ensure that the cables that attach the system unit to the expansion unit are seated correctly.
4. *It is recommended that an installation planning representative perform the following steps.*

If the failures occur when people are close to the system or machines that are attached to the system, the problem may be electrostatic discharge (ESD).

## Intermittent PIPs

5. Use a radio frequency (RF) field intensity meter to determine if there is an unusual amount of RF noise near the AS/400 system. You can also use it to help determine the source of the noise.

**This ends the procedure.**

### INT-PIP8 Grounding

This procedure contains actions to ensure that the system is electrically grounded correctly.

#### DANGER

**An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)**

*An installation planning representative must perform all of the steps in this procedure.*

#### Notes:

1. Power off the AS/400 system and the power network branch circuits before performing this procedure.
2. The customer may have to get an electrician to perform some of the steps in this procedure.
3. Read *Electrical Safety for IBM Service Representatives*, S229-8124.
4. To ensure the safety of personnel, all electrical wiring in the United States must meet National Electrical Code requirements.
1. Check **ALL** system receptacles to ensure that each one is wired correctly. This includes receptacles for the AS/400 system and all equipment that attaches to the AS/400 system-including workstations. Do this to determine if a wire with primary voltage on it is swapped with the ground wire, causing an electrical shock hazard. Use the procedures for checking receptacles in *Electrical Safety for IBM Service Representatives*, S229-8124.
2. For each unit, check continuity from a conductive area on the frame to the ground pin on the plug. Do this at the end of the mainline ac power cable. The resistance must be 0.1 ohm or less.
3. Ground continuity must be present from each unit receptacle to an effective ground. Therefore, check the following:
  - The ac voltage receptacle for each unit must have a ground wire connected from the ground terminal on the receptacle to the ground bar in the power panel.
  - The ground bars in all branch circuit panels must be connected with an insulated ground wire to a **ground point**, which is defined as follows:
    - The nearest available metal cold water pipe, only if the pipe is effectively grounded to the earth (see *National Electric Code* Section 250-81, in the United States).
    - The nearest available steel beams in the building structure, only if the beam is effectively grounded to the earth.
    - Steel bars in the base of the building or a metal ground ring that is around the building under the surface of the earth.
    - A ground rod in the earth (see *National Electric Code* Section 250-83, in the United States).

**Note:** For installations in the United States only, by National Electrical Code standard, if more than one of the preceding grounding methods are used, they must be connected together electrically. See *National Electric Code* Section 250, for more information on grounding.

- The grounds of all separately derived sources (uninterruptible power supply, service entrance transformer, system power module, motor generator) must be connected to a **ground point** as defined above.
- The service entrance ground bar must connect to a **ground point** as defined above.
- All ground connections **must be tight**.
- Check continuity of the ground path for each unit that is using an ECOS tester, Model 1023-100. Check continuity at each unit receptacle, and measure to the **ground point** as defined above. The total resistance of each ground path must be 1.0 ohm or less. If you cannot meet this requirement, check for faults in the ground path.
- Conduit is sometimes used to meet wiring code requirements. If conduit is used, the branch circuits must still have a green (or green and yellow) wire for grounding as stated above.

**Note:** The ground bar and the neutral bar must never be connected together in branch circuit power panels.

The ground bar and the neutral bar in the power panels that make up the electrical power network for the AS/400 system must be connected together. This applies to the first electrically isolating unit that is found in the path of electrical wiring from the AS/400 system to the service entrance power panel. This isolating unit is sometimes referred to as a **separately derived source**. It can be an uninterruptible power supply, the system power module for the system, or the service entrance transformer. If the building has none of the above isolating units, the ground bar and the neutral bar must be connected together in the service entrance power panel.

4. Look inside all power panels to ensure the following:
  - There is a separate ground wire for each unit.
  - The green (or green and yellow) ground wires are connected only to the ground bar.
  - The ground bar inside each power panel is connected to the frame of the panel.
  - The neutral wires are connected only to the neutral bar.
  - The ground bar and the neutral bar are not connected together, except as stated in step 3 of this procedure.
5. For systems with more than one unit, the ground wire for each must not be connected from one receptacle to the next in a string. Each unit must have its own ground wire, which goes to the power source.
6. The grounding wires must be insulated with green (or green and yellow) wire at least equal in size to the phase wires. The grounding wires also should be as short as possible.
7. If extension-mainline power cables or multiple-outlet power strips are used, they must have a three-wire cable. One of the wires must be a ground conductor. The ground connector on the plug must not be removed. This applies to any extension mainline power cables or multiple-outlet power strips that are used on the AS/400 system. It also applies for attaching devices such as personal computers, workstations, and modems.

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**Note:** Check all extension-mainline power cables and multiple-outlet power strips with an ECOS tester and with power that is applied. Ensure that no wires are crossed (for example, a ground wire crossed with a wire that has voltage on it).

8. For a diagram of grounding in a typical power distribution system, see "Appendix C" in the *Physical Planning Reference*.

**This ends the procedure.**

### INT-PIP9 Utility Power and Battery Power Units

This procedure contains actions to check the ac electrical power for the system.

#### DANGER

**An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)**

*An installation planning representative must perform all of the steps in this procedure.*

#### Notes:

1. Power off the AS/400 system and the power network branch circuits before performing this procedure.
2. The customer may have to get an electrician to perform some of the steps in this procedure.
3. Read *Electrical Safety for IBM Service Representatives*, S229-8124.
4. To ensure the safety of personnel, all electrical wiring in the United States must meet National Electrical Code requirements.
  1. Check **ALL** system receptacles to ensure that each is wired correctly. This includes receptacles for the AS/400 system and all equipment that attaches to the AS/400 system-including workstations. Do this to determine if a wire with primary voltage on it has been swapped with the ground wire, causing an electrical shock hazard. Use the procedures for checking receptacles in *Electrical Safety for IBM Service Representatives*, S229-8124.
  2. When three-phase voltage is used to provide power to the AS/400 system, correct balancing of the load on each phase is important. Each unit in the AS/400 system uses only two of the three phases. Therefore, the units should be connected so that all three phases are used equally. Use the following as a guide to help balance the phases:
    - Connect a unit across phases A and B
    - Connect a unit across phases B and C
    - Connect a unit across phases A and C
    - Continue in this sequence for additional units
  3. The power distribution neutral must return to the "separately derived source" through an insulated wire that is the same size as the phase wire or larger.

**Note:** "Separately derived source" is defined in INT-PIP8 Grounding, step 4 on page 513.
  4. The AS/400 system and its attached equipment should be the only units that are connected to the power distribution network that the system gets its power.

5. The equipment that is attached to the AS/400 system, such as workstations and printers, must be attached to the power distribution network for the system when possible.
6. Each unit in the AS/400 system must have a circuit breaker that controls only the ac voltage to that unit. No other equipment may get its ac voltage from the same circuit breaker.
7. Check all circuit breakers in the network that supply ac power to the AS/400 system as follows:
  - Ensure that the circuit breakers are installed tightly in the power panel and are not loose.
  - Feel the front surface of each circuit breaker to detect if it is warm. A warm circuit breaker may be caused by:
    - The circuit breaker that is not installed tightly in the power panel
    - The contacts on the circuit breaker that is not making a good electrical connection with the contacts in the power panel.
    - A defective circuit breaker.
    - A circuit breaker of a smaller current rating than the current load which is going through it.
    - Devices on the branch circuit which are using more current than their rating.
8. Equipment that uses a large amount of current, such as: Air conditioners, copiers, and FAX machines, should not receive power from the same branch circuits as the system or its workstations. Also, the wiring that provides ac voltage for this equipment should not be placed in the same conduit as the ac voltage wiring for the AS/400 system. The reason for this is that this equipment generates ac noise pulses. These pulses can get into the ac voltage for the AS/400 system and cause intermittent problems.
9. Measure the ac voltage to each unit to ensure that it is in the normal range. Is the voltage outside the normal range?

**No      Yes**

↓      Contact the customer to have the voltage source returned to within the normal voltage range.

10. *The remainder of this procedure is only for an AS/400 system that is attached to a separately derived source.*

Some examples of separately derived sources are an uninterruptible power supply, a motor generator, a service entrance transformer, and a system power module.

The ac voltage system must meet all the requirements that are stated in this procedure and also all of the following:

**Notes:**

- a. The following applies to an uninterruptible power supply, but it can be used for any separately derived source.
- b. System upgrades **must not** exceed the power requirements of your derived source.

The uninterruptible power supply must be able to supply the peak repetitive current that is used by the system and the devices that attach to it. The uninterruptible power supply can be used over its maximum capacity if it has a low peak repetitive current specification, and the uninterruptible power supply is already fully loaded. Therefore, a derating factor for the uninterruptible power supply must be calculated to allow for the

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peak-repetitive current of the complete system. To help you determine the derating factor for an uninterruptible power supply, use the following:

**Note:** The peak-repetitive current is different from the “surge” current that occurs when the AS/400 system is powered on.

The derating factor equals the crest factor multiplied by the RMS load current divided by the peak load current where the:

- Crest factor is the peak-repetitive current rating of the uninterruptible power supply that is divided by the RMS current rating of the uninterruptible power supply.

**Note:** If you do not know the crest factor of the uninterruptible power supply, assume that it is 1.414.

- RMS load current is the steady state RMS current of the AS/400 system as determined by the power profile.
- Peak load current is the steady state peak current of the AS/400 system as determined by the power profile.

For example, if the derating factor of the uninterruptible power supply is calculated to be 0.707, then the uninterruptible power supply must not be used more than 70.7% of its kVA-rated capacity. If the kVA rating of the uninterruptible power supply is 50 kVA, then the maximum allowable load on it is 35.35 kVA (50 kVA multiplied by 0.707).

When a three-phase separately derived source is used, correct balancing of the load as specified in step 2 of this procedure is **critical**. If the load on any one phase of an uninterruptible power supply is more than the load on the other phases, the voltage on all phases may be reduced.

11. If the system is attached to an uninterruptible power supply or motor generator, then check for the following:
  - The system and the attached equipment should be the only items that are attached to the uninterruptible power supply or motor generator. Equipment such as air conditioners, copiers, and FAX machines should not be attached to the same uninterruptible power supply, or motor generator that the system is attached.
  - The system unit console and the Electronic Customer Support modem must get ac voltage from the same uninterruptible power supply or motor generator to which the system is attached.

**This ends the procedure.**

### INT-PIP14 Station Protectors

Station protectors must be installed on all twinaxial cables that leave the building in which the AS/400 system is located. This applies even if the cables go underground, through a tunnel, through a covered outside hallway, or through a skyway. Station protectors help prevent electrical noise on these cables from affecting the AS/400 system.

1. Look at the Product Activity Log to determine what workstations are associated with the failure.
2. Determine if station protectors are installed on the twinaxial cables to the failing workstations.

Are station protectors installed on the twinaxial cables to the failing workstations?

**No      Yes**

- ↓ Perform the next INT-PIP listed in the *INT-PIP* column.

**This ends the procedure.**

3. You may need to install station protectors on the twinaxial cables to the failing workstations. See chapter 9, section F in the *AS/400 Technical Information Manual*, SY44-0008, for additional information on station protectors.

**This ends the procedure.**

### INT-PIP16 Licensed Internal Code

Sometimes a dump of main storage is needed to analyze the problem. The data on the dump is analyzed at the AS/400 system factory to determine the cause of the problem and how to correct it.

1. Copy the main storage dump to tape (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).
2. Ask your next level of support to determine if a Licensed Internal Code trouble report (LICTR) needs to be written.

**This ends the procedure.**

### INT-PIP18 PTFs Not Installed

One or more PTFs may be available to correct this specific problem.

1. Ensure that all PTFs that relate to the problem have been installed.

**Note:** Ensure that the latest IOP PTF has been installed before you exchange an IOP card.

2. Ask your next level of support for more information.

**This ends the procedure.**

### INT-PIP20 Performance Problems

This procedure analyzes system performance problems.

1. Look at the Product Activity Log and determine if any hardware errors occurred at the same time that the performance problem occurred.

Did any hardware problems occur at the same time that the performance problem occurred?

**No      Yes**

- ↓ Correct the hardware errors.

**This ends the procedure.**

2. The performance problems are not related to hardware.

3. Perform the following:

- a. Ask the customer if they have asked software level one support for any software PTFs that relate to this problem.
- b. Recommend that the customer install a cumulative PTF package if they have not done so in the past three months.
- c. Inform the customer that performance could possibly be improved by having a system engineer analyze the conditions.
- d. Inform the customer that IBM has a Performance Tools Licensed Program Product (5728-PT1) for sale. This helps determine the areas of the system that need tuning.

**This ends the procedure.**

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### INT-PIP24 Service Processor Data Collection

The service processor reported a suspected intermittent problem. It is important that you collect data for this problem so that the problem can be corrected. This procedure tells you how to collect the data.

**Note:** Do not perform an IPL until you perform an IOP dump of the service processor.

To get an IOP dump of the service processor, perform the following:

1. Record the complete system reference code (SRC) (functions 11-3 through 20-3) on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 1049).
2. To start an IOP dump of the service processor, do the following:
  - a. Select function 25 and press the Enter key.
  - b. Select function 26 and press the Enter key to enable functions 54 through 70.
  - c. Select function 70 (MFIOP Storage Dump) on the control panel and press the Enter key.
  - d. Wait for the completion SRC, 11-3 B100 8ABF, or 11-3 A1xx 8ABF, to appear on the control panel.

The data is now written to disk. The following steps explain how to collect the storage dump from disk.

3. Perform the following:
  - a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
  - b. Power on the system in Manual mode.
  - c. Wait for the system to complete the IPL to dedicated service tool (DST) (the control panel SRCs go beyond C6xx 4103).

Is a display shown on the console?

**Yes      No**

↓      The problem is not intermittent.

If you were sent here from Chapter 2. Unit Reference Codes, return there and follow the procedure for a problem that is not intermittent.

**Note:** You may collect the storage dump data by performing "Low Level Debug and Data Collecting Procedures" in the *AS/400 Service Functions* information.

**This ends the procedure.**

4. The problem is intermittent.

Save the IOP dump to tape (see "Copying the IOP Storage Dump to Removable Media" in the *AS/400 Service Functions* information).
  5. Complete the IPL.
  6. Go to the General Intermittent Problem Checklist in "Analyzing Intermittent Problems" on page 13 to find available PTFs for this problem. Follow the steps to find and apply a program temporary fix (PTF) for this problem (see the PTF summary list to find PTFs with this SRC symptom).
- Then return here and answer the following question.
- Did you find and apply a PTF for this problem?



No      Yes

↓      **This ends the procedure.**

7. Ask your next level of support for assistance and provide the following:

- The complete SRC you recorded in this procedure
- The IOP dump to tape you obtained in step 4 of this procedure
- All known system symptoms:
  - How often the intermittent problem occurs
  - System environment (IPL, certain applications)
  - If necessary, other SRCs that you suspect relate to the problem
- Information needed to write an LICTR (see “APAR or LICTR” in the *AS/400 Service Functions* information)

**This ends the procedure.**

## Licensed Internal Code (LIC) Problem Isolation Procedures

### Overview

This section contains the procedures necessary to isolate Licensed Internal Code reference code problems.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

#### DANGER

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

#### DANGER

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

#### DANGER

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 789
- “Selecting IPL Type, Mode, and Speed” on page 793

### LIC-PIP1

#### Introduction:

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**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

LIC detected an IOP programming problem. Data must be gathered to determine the cause of the problem. **If using OptiConnect and the IOP is connected to another system, then collect this information from both systems.**

1. Is the system operational (did the SRC come from the Service Action Log, Product Activity Log, problem log, or system operator message)?

**Yes      No**

↓      Go to step 9 of this procedure.

2. Is this a x6xx5121 SRC?

**No      Yes**

↓      Go to step 4 of this procedure.

3. If the IOP has DASD attached to it, then the IOP dump is in SID87 (or SID187 if the DASD is mirrored). Copy the IOP dump (see “Copying the IOP Storage Dump to Removable Media” in the *AS/400 Service Functions* information).
4. Print the Product Activity Log, including any IOP dumps, to removable media for the day which the problem occurred. Select the option to obtain HEX data.
5. Use the “Licensed Internal Code log” service function under DST/SST to copy the LIC log entries to removable media for the day that the problem occurred.
6. Copy the system configuration list (see “Hardware Service Manager, Printing the System Configuration List” in the *AS/400 Service Functions* information).
7. Provide the dumps to IBM Service Support.
8. Check the Logical Hardware Resource STATUS field using Hardware Service Manager. If the status is not *Operational* then IPL the IOP using the I/O Debug option (Ignore resources with a status of *not connected*).

To IPL a failed IOP, the following command can be used: VRYCFG CFG0BJ(XXXX) CFGTYPE(\*CTL) STATUS(\*RESET) or use DST/SST Hardware Service Manager.

If the IPL does not work:

- Check the Service Action Log for new SRC entries (see “Using the Service Action Log” on page 8). Use the new SRC and go to “Chapter 2. Unit Reference Codes” on page 59.
- If there are no new SRCs in the Service Action Log, go to “BUS-PIP1” on page 451.

**This ends the procedure.**

9. Has the system stopped but the DST console is still active (Did the SRC come from the Main Storage Dump manager screen on the DST console)?

**Yes      No**

↓      Go to step 15 of this procedure.

10. Complete a Problem Summary Form using the information from functions 11 through 20 on the control panel, or from the DST Main Storage Dump screen (see “Error Recovery for Dumps, Reporting the Error” in the *AS/400 Service Functions* information).

11. The system has already taken a partial main storage dump for this SRC and automatically re-IPLed to DST (see “Automatic Main Storage Dump” in the *AS/400 Service Functions* information).
12. Copy the main storage dump to tape (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).
13. When the dump is completed, the system will re-IPL automatically. Sign on to DST or SST. Obtain the data in steps 3, 4, 5, and 6 of this procedure.
14. Provide the dumps to IBM Service Support.

**This ends the procedure.**

15. Has the system stopped with an SRC at the control panel?

**Yes      No**

↓      Go to step 1 of this procedure.

16. Complete a Problem Summary Form using the information from functions 11 through 20 on the control panel, or from the DST Main storage dump screen (see “Error Recovery for Dumps, Reporting the Error” in the *AS/400 Service Functions* information).
17. IPL to DST and start the Main storage dump manager service function.
18. Copy the main storage dump to tape (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).
19. Obtain the data in steps 3, 4, 5, and 6 of this procedure.
20. Re-IPL the system.
21. Has the system stopped with an SRC at the control panel?

**Yes      No**

↓      Provide the dumps to IBM Service Support.

**This ends the procedure.**

22. Use the new SRC and go to “Chapter 2. Unit Reference Codes” on page 59.

**This ends the procedure.**

## LIC-PIP3

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Dedicated service tools (DST) found a permanent program error, or a hardware failure occurred.

Read the “Overview” on page 519 before continuing with this procedure.

1. Does URC 50FF occur?

**No      Yes**

↓      Go to step 3 of this procedure.

2. Perform a main storage dump, then perform an IPL by doing the following:
  - a. Perform a main storage dump (see “Perform a Main Storage Dump to Disk” in the *AS/400 Service Functions* information).

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- b. Select manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
    - c. When the IPL has completed, the system console should be at the DST display. If the DST display does not appear on the system console, go to “BUS-PIP1” on page 451. Otherwise, go to step 6 of this procedure.
  3. Perform a main storage dump, then perform an IPL by doing the following:
    - a. Perform a main storage dump (see “Perform a Main Storage Dump to Disk” in the *AS/400 Service Functions* information).
    - b. Select manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does a display appear?

**No      Yes**

↓      Go to step 6 of this procedure.

4. If the problem is in the Primary partition, exchange the first workstation I/O processor card on bus 1 (see “Chapter 6. Removal and Installation Procedures” on page 821). If the problem is in the secondary partition, exchange the I/O processor card for the console of the secondary partition. To locate a secondary partition’s console and workstation I/O processor, see “Locating a Secondary Partition’s Console” on page 811.
        5. Select manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Is the IPL or Install the System display shown?

**Yes      No**

↓      Ask your next level of support for assistance and report the problem.

**This ends the procedure.**

6. Copy the main storage dump to removable media (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).
        7. Report a Licensed Internal Code problem to your next level of support.

**This ends the procedure.**

## LIC-PIP4

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

The IPL service function ended. Dedicated service tools (DST) was in the disconnected status or lost communications with the IPL console because of a console failure and could not communicate with the user.

Read the “Overview” on page 519 before continuing with this procedure.

1. Select function 21 (Make DST Available) on the control panel and press the Enter key to start DST again.

Does the DST Sign On display appear?

**Yes      No**

- ↓ Go to step 3 of this procedure.
2. Perform the following (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information):
    - a. Select the *Start a Service Tool* option.
    - b. Select the *Licensed Internal Code log* option.
    - c. Perform a dump of the Licensed Internal Code log to tape (see “Work with Licensed Internal Code Log” in the *AS/400 Service Functions* information).
    - d. Return here and continue with the next step of this procedure.
  3. Perform a main storage dump (see “Perform a Main Storage Dump to Disk” in the *AS/400 Service Functions* information).
  4. Copy the main storage dump to removable media (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).
  5. Report a Licensed Internal Code problem to your next level of support.
- This ends the procedure.**

## LIC-PIP7

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

The system detected a problem while communicating with a specific I/O processor. The problem could be caused by Licensed Internal Code, the I/O processor card, or by bus hardware.

Read the “Overview” on page 519 before continuing with this procedure.

1. Did a previous procedure have you power off the system then perform an IPL in Manual mode, **and** is the system in Manual mode now?

**No      Yes**

↓ Go to step 3 of this procedure.

2. Perform the following:
  - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
  - b. Select Manual mode on the control panel (see “Selecting IPL Type, Mode, and Speed” on page 793).
  - c. Power on the system.
3. Does the SRC that sent you to this procedure appear on the control panel?

**No      Yes**

↓ Use the information in the SRC to determine the card direct select address. If the SRC is B6006910, you can use control panel function 17 to find the direct select address. Function 17 contains the information in the BBBBCCbb format:

**BBBB** Bus number

**CC** Card direct select address

**bb** board address

Go to step 14 of this procedure.

4. Does the console display indicate a problem with missing disks?

**Yes No**

↓ Go to step 7 of this procedure.

5. Perform the following:

- Go to the DST main menu.
- On the DST sign-on display, enter the DST full authority user ID and password (see "Accessing Dedicated Service Tools" in the *AS/400 Service Functions* information).
- Select the Start a service tool option.
- Select the Hardware service manager option.
- Check for the SRC in the service action log (see "Using the Service Action Log" on page 8).
- Did you find the same SRC that sent you to this procedure?

**No Yes**

↓ Note the date and time for that SRC. Go to the Product Activity Log and search all logs to find the same SRC.

When you have found the SRC, go to step 12 of this procedure.

6. Perform the following:

- Return to the DST main menu.
- Perform an IPL and return to the Display Missing Disk Units display.
- Go to "LIC-PIP11" on page 527.

**This ends the procedure.**

7. Does the SRC that sent you to this procedure appear on the console or on the alternative console?

**No Yes**

↓ Go to step 9 of this procedure.

8. Does the IPL complete successfully to the IPL or Install the System display?

**Yes No**

↓ A different SRC occurred. Go to "Chapter 2. Unit Reference Codes" on page 59 and use the new SRC to correct the problem.

**This ends the procedure.**

9. Perform the following:

- Use the full-authority password to sign on to DST.
- Search *All logs* in the product activity log looking for references of SRC B600 5209 and the SRC that sent you to this procedure.

**Note:** Search only for SRCs that occurred during the last IPL.

Did you find B600 5209 or the same SRC that sent you to this procedure?

**No Yes**

↓ Go to step 13 on page 525.

10. Did you find a different SRC than the one that sent you to this procedure?

**Yes      No**

- ↓      The problem appears to be intermittent. Ask your next level of support for assistance.

**This ends the procedure.**

11. Use the new SRC to correct the problem. See “Chapter 2. Unit Reference Codes” on page 59.

**This ends the procedure.**

12. Use F11 to move through alternative views of the log analysis displays until you find the card position and frame ID of the failing IOP associated with the SRC.

Was the card position and frame ID available, **and** did this information help you find the IOP?

**No      Yes**

- ↓      Go to step 15 of this procedure.

13. Perform the following:
- Display the report for the log entry of the SRC that sent you to this procedure.
  - Display the additional information for the entry.
  - If the SRC is B600 6910, use word 17 of the System Reference Code Data to find the card direct select address. Function 17 contains the information in the BBBBCCbb format:

**BBBB**    Bus number

**CC**      Card direct select address

**bb**      board address

14. Use the BBBBCCbb information and refer to “System Unit and Expansion Unit Locations and Addresses” on page 712 to determine the failing IOP and its location.
15. Go to “BUS-PIP5” on page 468 to isolate an I/O adapter problem on the IOP you just identified.
- If that procedure fails to isolate the problem, return here and continue with the next step of this procedure.
16. Is the I/O processor card you identified in step 12 or step 14 of this procedure the MFIOP?

**No      Yes**

- ↓      Exchange the failing MFIOP card (see “Chapter 6. Removal and Installation Procedures” on page 821).

**Note:** You will be prompted for the system serial number. Ignore any error messages regarding system configuration that appear during the IPL.

Go to step 19 of this procedure.

17. Perform the following:
- Power off the system.
  - Remove the IOP card.
  - Power on the system.

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Does the SRC that sent you to this procedure appear on the control panel or appear as a new entry in the service action log or product activity log?

**No      Yes**

- ↓      Perform the following:
- a. Power off the system.
  - b. Install the IOP card you just removed.
  - c. Go to "BUS-PIP1" on page 451

**This ends the procedure.**

18. Perform the following:
- a. Power off the system.
  - b. Exchange the failing IOP card.

19. Power on the system.

Does the SRC that sent you to this procedure appear on the control panel, on the console, or on the alternative console?

**No      Yes**

- ↓      Go to step 22 of this procedure.

20. Does a different SRC appear on the control panel, on the console, or on the alternative console?

**No      Yes**

- ↓      Go to "Chapter 2. Unit Reference Codes" on page 59 and use the new SRC to correct the problem.

**This ends the procedure.**

21. The IPL or Install the System display is on the console.

Check for the SRC in the service action log (see "Using the Service Action Log" on page 8).

Did you find the same SRC that sent you to this procedure?

**Yes      No**

- ↓      Go to "BUS-PIP8" on page 487.

**This ends the procedure.**

22. Perform the following:
- a. Power off the system.
  - b. Remove the IOP card you just exchanged and install the original card.
  - c. Go to "BUS-PIP1" on page 451.

**This ends the procedure.**

23. Ask your next level of support for assistance and report a Licensed Internal Code problem.

You may be asked to verify that all PTFs have been applied.

If you are asked to perform the following, see the *AS/400 Service Functions* information:

- Copy the main storage dump from disk to tape or diskette.
- Print the product activity log.
- Copy the IOP storage dump to removable media.

**This ends the procedure.**



## LIC-PIP8

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Licensed Internal Code detected an operating system program problem.

Read the “Overview” on page 519 before continuing with this procedure.

1. Select manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does the same SRC occur?

**No      Yes**

↓      Go to step 6 of this procedure.

2. Does the same URC appear on the console?

**No      Yes**

↓      Go to step 5 of this procedure.

3. Does a different SRC occur, or does a different URC appear on the console?

**No      Yes**

↓      Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59). If the procedure for the new SRC sends you back to this procedure, go to step 5.

**This ends the procedure.**

4. Select the *Perform an IPL* option on the IPL or Install the System display to complete the IPL.

Is the problem intermittent?

**Yes      No**

↓      **This ends the procedure.**

5. Copy the main storage dump to removable media (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).

6. Report a Licensed Internal Code problem to your next level of support.

**This ends the procedure.**

## LIC-PIP11

**Introduction:** This procedure isolates a system STARTUP failure in the initial program load (IPL) mode.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the "Overview" on page 519 before continuing with this procedure.

*How to Find the Cause Code:*

1. Were you given a cause code by another procedure?

**No      Yes**

↓      Use the cause code given by the other procedure.

Go to step 3 of this procedure.

2. Look at the Data display characters for function 13. You can find these Data display characters by either:
  - Looking at the information for function 13 on the Problem Summary Form that was filled out earlier.
  - Selecting function 13 on the control panel and pressing the Enter key. The 8 characters of the SRC are displayed.

Refer to the 4 leftmost Data display characters for function 13. The 4 leftmost characters are the **cause code**.

3. If the **cause code** is:

0001: Disk configuration is missing.

1. Select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

Does the Disk Configuration Error Report display appear?

**Yes      No**

↓      The IPL completed successfully.

**This ends the procedure.**

2. Is Missing Disk Configuration information displayed?

**Yes      No**

↓      Go to step 1 for cause code 0002.

3. Select option 5 on the *Missing Disk Configuration* display.

Select the *Display Detailed Report* option and follow the instructions to:

- a. Select the *Work with disk units* option.
- b. Select the *Work with disk unit recovery* option.
- c. Select the *Recover Configuration* option and follow the instructions on the display.

**Note:** After the disk configuration is recovered, the system automatically performs an IPL.

**This ends the procedure.**

0002: Disk units are missing from the disk configuration.

Data from the control panel can be used to find information about the missing disk unit. See "Hardware SRC Formats" in the *AS/400 Service Functions*.

1. Did you enter this procedure because all the devices listed on the Display Missing Units display (reached from the Disk Configuration Error Report or the Disk Configuration Warning Report display) have a reference code of 0000?

**No      Yes**

↓      Go to step 20 of this procedure.

2. Have you installed a new disk enclosure in a disk unit and not restored the data to the disk unit?

**No      Yes**

↓      Ignore SRC A600 5090.

Continue with the disk unit exchange recovery procedure (see “Disk Service Support” in “Chapter 7. Recovery Procedures” on page 919).

**This ends the procedure.**

3. Use the function 11 through 20 information recorded on the Problem Summary Form to determine the disk unit that stopped communicating with the system:

- Function 14 contains the IOP direct select address.
- Function 16 contains the disk unit type, level and model number.
- Function 17 contains the disk unit serial number.

**Note:** For 9337 Disk Units, the 5 rightmost characters contain the disk unit serial number.

- Function 18 contains the number of missing disk units.

Are the problem disk units 660x or 671x Disk Units?

**No      Yes**

↓      Go to step 5 of this procedure.

4. Attempt to get all devices attached to the MSIOP to Ready status by performing the following:
- a. The MSIOP address (MSIOP Direct Select Address) to use is the value in function 14.
  - b. Verify the following and correct if necessary before continuing with step 11 of this procedure:
    - All cable connections are made correctly and are tight.
    - All storage devices have the correct signal bus address, as indicated in the system configuration list.
    - All storage devices are powered on and ready.

5. Did you enter this procedure because there was an entry in the Service Action Log which has the reference code B6005090?

**Yes      No**

↓      Go to step 11 of this procedure.

6. Are customer jobs running on the system now?

**Yes      No**

↓      **Attention:** Ensure that the customer is not running any jobs before continuing with this procedure.

Go to step 11 of this procedure.

7. Perform the following:
- a. Select System Service Tools (SST).
  - b. Select the *Work with disk units* option.
  - c. Select the *Display disk configuration* option.

d. Select the *Display disk configuration status* option.

Are any disk units missing from the configuration?

**Note:** Missing disk units are indicated by an asterisk (\*).

**Yes      No**

↓      **This ends the procedure.**

8. Do all of the disk units that are missing from the configuration have a status of "Suspended"?

**Yes      No**

↓      **Attention:** Ensure that the customer is not running any jobs before continuing with this procedure.

Go to step 11 of this procedure.

9. Use the Service Action Log to determine if there are any entries for the missing disk units (see "Using the Service Action Log" on page 8).

Are there any entries in the Service Action Log for the missing disk units that were logged since the last IPL?

**Yes      No**

↓      Go to step 21 of this procedure.

10. Use the information in the Service Action Log and go to the SRC information for the specific disk unit in "Chapter 2. Unit Reference Codes" on page 59.

Perform the action indicated for the unit reference code.

**This ends the procedure.**

11. Select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

Does the Disk Configuration Error Report or the Disk Configuration Warning Report display appear?

**Yes      No**

↓      The IPL completed successfully.

**This ends the procedure.**

12. Does one of the following messages appear in the list?

- Missing disk units in the configuration
- Missing mirror protected disk units in the configuration

**Yes      No**

↓      Go to step 16 of this procedure.

13. Select option 5, then press F11, then press the Enter key to display the details.

Do all of the disk units listed on the display have a reference code of 0000?

**Yes      No**

↓      Use the disk unit reference code shown on the display and go to the SRC information for the specific disk unit in "Chapter 2. Unit Reference Codes" on page 59. Perform the action indicated for the unit reference code.

**This ends the procedure.**

14. Do all of the IOPs or devices listed on the display have a reference code of 0000?

No      Yes

↓      Go to step 20 of this procedure.

15. Use the IOP reference code shown on the display and go to “Chapter 2. Unit Reference Codes” on page 59. Perform the action indicated for the reference code.

**This ends the procedure.**

16. Does the following message appear in the list?

- Unknown load-source status

Yes      No

↓      Go to step 18 of this procedure.

17. Select option 5 then press F11, then press the Enter key to display the details. Does the *Assign Missing Load Source Disk* display appear?

No      Yes

↓      Press the Enter key to assign the missing load-source disk unit.

**This ends the procedure.**

18. Does the following message appear in the list?

- Load source failure

Yes      No

↓      The IPL completed successfully.

**This ends the procedure.**

19. Select option 5, then press F11, then press the Enter key to display the details.
20. The number of failing disk unit facilities (actuators) is the number of disk units displayed. A disk unit has a *Unit* number greater than zero. Find the failing disk unit by type, model, serial number, or address displayed on the console.

21. Is the failing disk unit a 9337?

No      Yes

↓      Go to step 26 of this procedure.

22. Is there more than one failing disk device attached to the MSIOP?

Yes      No

↓      Go to step 24 of this procedure.

23. Are all the disk devices that are attached to the MSIOP failing?

**Note:** If the disk units are using mirrored protection, you may need to use *Display Disk Status* to answer the question.

No      Yes

↓      Go to step 25 of this procedure.

24. Go to the service information for the specific disk unit listed below and perform the action indicated. Then return here and answer the following question.
- 9337 Disk Unit: go to the “Starting Problem Analysis” section of the 9337 Service Information.
  - 660x, 671x Disk Units: Use SRC 3002 in “(660x, 671x, 673x) Disk Unit Reference Codes” on page 256 and exchange the FRUs shown one at a time.

Did the disk unit service information correct the problem?

**No      Yes**

↓      **This ends the procedure.**

25. Exchange the MSIOP (see "Chapter 6. Removal and Installation Procedures" on page 821).

If exchanging the MSIOP did not correct the problem, use the original SRC and exchange the failing items, starting with the highest probable cause of failure. If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 359 to help determine parts and locations.

**This ends the procedure.**

26. Use Hardware Service Manager to display logical resources connected to the MSIOP (see Hardware Service Manager in the *AS/400 Service Functions* ).
27. Are all the disk devices that are attached to the MSIOP failing?

**Yes      No**

↓      Go to step 30 of this procedure.

28. Is there more than one controller attached to the MSIOP?

**Yes      No**

↓      Go to step 24 of this procedure.

29. Go to step 25 of this procedure.

30. Are all disk units attached to one controller missing?

**Yes      No**

↓      Go to step 24 of this procedure.

31. Use the device documentation to correct the problem. Exchange the disk unit controller.

**This ends the procedure.**

0004: Some disk units are unprotected but configured into a mirrored ASP. These units were originally DPY protected but protection was disabled.

Perform the following:

1. Select DST using Function 21 (see "Control Panel Functions" in the *AS/400 Service Functions* information).
2. Select the *Work with disk units* option and take the actions to protect the system. If you do not know what actions to take, select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).
  - When the *Disk configuration error report* appears, the recovery actions are listed in the "Help" text for the error message "Unprotected disk units in a mirrored ASP".

**This ends the procedure.**

0005: A disk unit using parity protection is operating in exposed mode.

Select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

If the same reference code appears, ask your next level of support for assistance.

If no reference code appears and the IPL completes successfully, the problem is corrected.

If a different reference code appears, use it to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

**This ends the procedure.**

0006: There are new devices attached to the system that do not have Licensed Internal Code installed.

Ask your next level of support for assistance.

**This ends the procedure.**

0007: Some of the configured disk units have device parity protection disabled when the system expected device parity protection to be enabled.

Are the disk units part of a 9337 subsystem?

**No      Yes**

↓      If the protection was stopped without using the *Stop device parity protection* option of DST, use the 9337 device documentation and follow the manual process to enable device parity protection.

Select DST using Function 21 (see “Control Panel Functions” in the *AS/400 Service Functions* information).

Correct the problem by doing the following:

1. Select the *Work with disk units* option.
2. Select the *Work with disk unit recovery* option.
3. Select the *Correct device parity protection* option.
4. Follow the online instructions.

**This ends the procedure.**

0008: A disk unit has no more alternate sectors to assign.

1. Determine the failing unit by type, model, serial number, or address given in functions 14 through 17 (see “Hardware SRC Formats” in the *AS/400 Service Functions* ).
2. See the service information for the specific storage device. Use the disk unit reference code listed below for service information entry.  
660x 102E, 671x 102E (see Chapter 2. Unit Reference Codes)  
9337 7xx0, 8xx0, Dxx0, Exx0 (x can be a number from 0 through 8)

**This ends the procedure.**

0009: The procedure to restore a disk unit from the tape unit did not complete.

Continue with the disk unit exchange recovery procedure (see “Disk Service Support” in “Chapter 7. Recovery Procedures” on page 919).

**This ends the procedure.**

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000A: There is a problem with a disk unit subsystem. As a result, there are missing disk units in the system.

Perform the following:

1. Select DST using Function 21 (see “Control Panel Functions” in the *AS/400 Service Functions* information).
2. On the Service Tools display, select the *Start a Service Tool* option (see the *AS/400 Service Functions*).
3. Select the *Product activity log* option on the Start a Service Tool display.
4. Select the *Analyze log* option on the Product Activity Log display.
5. On the Select Subsystem Data display, select the option to view All Logs.

**Note:** You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.

6. Use the defaults on the Select Analysis Report Options display by pressing the Enter key.
7. Search the entries on the Log Analysis Report display for system reference codes associated with the missing disk units.
8. Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

**This ends the procedure.**

000B: Some system IOPs require cache storage be reclaimed.

Select DST using Function 21 (see “Control Panel Functions” in the *AS/400 Service Functions* information).

Reclaim the cache adapter card storage (see “Reclaim IOP Cache Storage” on page 773).

**Note:** The system operator may want to restore data from the most recent saved tape after you complete the repair.

**This ends the procedure.**

000C: One of the mirror protected disk units has no more alternate sectors to assign.

1. Determine the failing unit by type, model, serial number, or address given in functions 14 through 17 (see “Hardware SRC Formats” in the *AS/400 Service Functions* ).
2. See the service information for the specific storage device. Use the disk unit reference code listed below for service information entry.  
660x 102E, 671x 102E (see Chapter 2. Unit Reference Codes)  
9337 7xx0, 8xx0, Dxx0, Exx0 (x can be a number from 0 through 8)

**This ends the procedure.**

000D: The system disk capacity has been exceeded.

For more information about disk capacity, see *AS/400e Handbook*, GA19-5486-18 .

**This ends the procedure.**



0010: The disk configuration has changed.

The operating system must be installed again and all customer data must be restored.

Select Manual mode on the control panel (see "Selecting IPL Type, Mode, and Speed" on page 793). Perform an IPL to reinstall the operating system.

**Note:** The customer must restore all data from the latest system backup.

**This ends the procedure.**

0011: The serial number of the control panel does not match the system serial number.

Select Manual mode on the control panel (see "Selecting IPL Type, Mode, and Speed" on page 793). Perform an IPL. You will be prompted for the system serial number.

**This ends the procedure.**

0012: The operation to write the vital product data (VPD) to the control panel failed.

Exchange the multiple function I/O processor card (see "Chapter 6. Removal and Installation Procedures" on page 821). For the location of the card, see "System Unit and Expansion Unit Locations and Addresses" on page 712.

**This ends the procedure.**

0015: The mirrored load-source disk unit is missing from the disk configuration.

Go to step 1 for cause code 0002.

0016: A mirrored protected disk unit is missing.

Wait 6 minutes. If the same reference code appears, go to step 1 for cause code 0002.

0017: One or more disk units have a lower level of mirrored protection than originally configured.

Select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

The detailed display shows the new and the previous levels of mirrored protection.

**This ends the procedure.**

0018: Load-source configuration problem.

The load-source disk unit is using mirrored protection and is configured at an incorrect address.

Ensure that the load-source disk unit is in device location 1.

**This ends the procedure.**

0019: One or more disk units were formatted incorrectly.

The system will continue to operate normally. However, it will not operate at optimum performance. To repair the problem, perform the following:

1. Record the unit number and serial number of the disk unit that is formatted incorrectly.
2. Sign on to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
3. Select the *Work with disk units* option.
4. Select the *Work with disk unit configuration* option.
5. Select the *Remove unit from configuration* option.
6. Select the disk unit you recorded earlier in this procedure.
7. Confirm the option to remove data from the disk unit. This step may take a long time because the data must be moved to other disk units in the auxiliary storage pool (ASP)
8. When the remove function is complete, select the *Add unit to configuration* option.
9. Select the disk unit you recorded earlier in this procedure.
10. Confirm the add. The disk unit is formatted during functional operation.

**This ends the procedure.**

001A: The loadsource disk unit data is down-level.

The loadsource disk unit is mirror protected. The system is using the loadsource disk unit that does not have the current level of data.

1. Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does the Disk Configuration Error Report display appear?

**Yes      No**

↓      The system is now using the correct loadsource.

**This ends the procedure.**

2. Does a *Load source failure* message appear in the list?

**Yes      No**

↓      The system is now using the correct loadsource.

**This ends the procedure.**

3. Select option 5, then press F11, then press the Enter key to display details.

The loadsource type, model, and serial number information that the system needs is displayed on the console.

Is the loadsource disk unit (displayed on the console) attached to an MSIOP that cannot be used for a loadsource?

**Yes      No**

↓      The loadsource disk unit is missing. Go to step 1 for cause code 0002.

4. Is the system configured for remote loadsource protection?

**No      Yes**

- ↓ Go to “Recover Remote Loadsource” on page 946.
- 5. Move the loadsource disk unit to the loadsource MSIOP.

**This ends the procedure.**

001C: The disk units that are needed to update the system configuration are missing.

Perform an IPL by doing the following:

1. Select Manual mode on the control panel.
2. Perform an IPL (see “Initial Program Load (IPL) Information” in the *AS/400 Service Functions* information) to determine the cause of the problem.

**This ends the procedure.**

001D:

1. Is the Disk Configuration Warning Report displayed?

**Yes      No**

- ↓ Ask your next level of support for assistance.

**This ends the procedure.**

2. Select option 5 on the *Bad Load Source Configuration* message line. Press Enter to rebuild the load-source configuration information.

If there are other types of warnings, select option 5 on the warnings and correct the problem.

**This ends the procedure.**

001E: The load-source data must be restored.

Go to “Disk Service Support” on page 919.

**This ends the procedure.**

001F: Licensed Internal Code was installed on the wrong disk unit of the load-source mirrored pair.

The system performed an IPL on a load source that may not contain the same level of Licensed Internal Code that was installed on the other load source. The type, model, and address of the active device are displayed in functions 14 through 17 of the SRC.

If the load-source disk unit in position 1 contains the correct level of Licensed Internal Code, perform the following:

1. Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
2. Is the Disk Configuration Warning Report displayed?

**Yes      No**

- ↓ The system is now using the correct load source.

**This ends the procedure.**

3. Select option 5 on the Incorrect Licensed Internal Code Install message line. When the Display Incorrect Licensed Internal Code Install display appears on the console, press the Enter key.

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If the load-source disk unit in position 1 of the system unit does not contain the correct level of Licensed Internal Code, restore the Licensed Internal Code to the disk unit in position 1 of the system unit (see “Restoring Licensed Internal Code” in the *AS/400 Service Functions* information).

**This ends the procedure.**

0020: The system appears to be a one disk unit system.

Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

**This ends the procedure.**

0021: The system password verification failed.

Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). You will be prompted for the correct system password.

Enter the correct system password. If the correct system password is not available:

- Select the *Bypass the system password* option from the prompt.
- Have the customer contact the marketing representative immediately to order a new system password from IBM.

**This ends the procedure.**

0022: A different compression status was expected on a reporting disk unit.

Accept the warning. The reported compression status will be used as the current compression status.

This ends the procedure.

0023: There is a problem with a disk unit subsystem. As a result, there are missing disk units in the system.

The system is capable of IPLing in this state.

Perform the following:

1. Select DST using Function 21 (see “Control Panel Functions” in the *AS/400 Service Functions* information).
2. On the Service Tools display, select the *Start a Service Tool* option (see the *AS/400 Service Functions*).
3. Select the *Product activity log* option on the Start a Service Tool display.
4. Select the *Analyze log* option on the Product Activity Log display.
5. On the Select Subsystem Data display, select the option to view All Logs.

**Note:** You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.

6. Use the defaults on the Select Analysis Report Options display by pressing the Enter key.

7. Search the entries on the Log Analysis Report display for system reference codes associated with the missing disk units.
8. Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

**This ends the procedure.**

0024: The system type or system unique ID needs to be entered.

Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

You will be prompted for the correct system type or system unique ID.

**This ends the procedure.**

0025: Hardware Resource Information Persistence disabled.

Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Contact your next level of support for instructions on how to enable the Hardware Resource Information Persistence function.

**This ends the procedure.**

0026: A Disk Unit is incorrectly configured for an LPAR system.

1. Select Manual mode and perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
2. On the Service Tools display, select the *Start a Service Tool* option (see the *AS/400 Service Functions*).
3. Select the *Product activity log* option on the Start a Service Tool display.
4. Select the *Analyze log* option on the Product Activity Log display.
5. On the Select Subsystem Data display, select the option to view All Logs.

**Note:** You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.

6. Use the defaults on the Select Analysis Report Options display by pressing the Enter key.
7. Search the entries on the Log Analysis Report display for system reference codes (B6xx 53xx) that are associated with the error.
8. Go to “Chapter 2. Unit Reference Codes” on page 59 and use the SRC information to correct the problem.

**This ends the procedure.**

0031: A problem was detected with the installation of Licensed Internal Code service displays. The cause may be defective media, the installation media being removed too early, a device problem or a Licensed Internal Code problem.

Ask your next level of support for assistance. The 4 rightmost characters of function 13 contain information regarding the install error. For more information about the install error, see the “LIC Install Debug Information” chapter in the

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*AS/400 Licensed Internal Code Diagnostic Aids - Volume 1.* If the customer does not require the service displays to be in the national language, you may be able to continue by doing another system IPL.

**This ends the procedure.**

0099: A Licensed Internal Code program error occurred.

Ask your next level of support for assistance.

**This ends the procedure.**

### LIC-PIP13

#### Introduction:

**Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

**Note:** Do not power off the system when performing this procedure.

A disk unit seems to have stopped communicating with the system. The system has stopped normal operation until the cause of the disk unit failure can be found and corrected.

If the disk unit that stopped communicating with the system has mirrored protection active, normal operation of the system stops for 1 to 2 minutes. Then the system suspends mirrored protection for the disk unit that stopped communicating and continues normal operation. See "Disk Service Support" on page 919 for more information on systems with mirrored protection.

Read the "Overview" on page 519 before continuing with this procedure.

1. Was a Problem Summary Form completed for this problem?

No	Yes
----	-----

↓	Use the Problem Summary Form information and go to step 3 of this procedure.
---	--

2. Fill out a Problem Summary Form using the information from function 11 through 19 on the control panel. It is important that all the words of the SRC be written on the Problem Summary Form.

3. Recovery from a device command time out may have caused the communications loss condition (indicated by an SRC on the control panel). This communications loss condition has the following symptoms:

- The A6xx SRC does not increment within 2 minutes.
- The system continues to run normally after it recovers from the communications loss condition and the SRC is cleared from the control panel.

Does the communication loss condition have these symptoms?

Yes	No
-----	----

↓	Go to step 6 of this procedure.
---	---------------------------------

4. Verify that all Licensed Internal Code PTFs have been applied to the system. Apply any Licensed Internal Code PTFs that have not been applied to the system.

Does the intermittent condition continue?

**Yes      No**

↓      **This ends the procedure.**

5. Print all product activity logs. Print the LIC LOGs with a major code of 1000. Provide your next level of support with this information.

**This ends the procedure.**

6. Are the 2 rightmost characters of function 12 on the Problem Summary Form equal to 13 or 17?

**Yes      No**

↓      Go to step 11 of this procedure.

7. Use the function 11 through 20 information recorded on the Problem Summary Form to determine the disk unit that stopped communicating with the system:

- Function 13 contains the IOP direct select address.
- Function 14 contains the unit address.
- Function 16 may contain the disk unit type, level and model number.
- Function 17 four rightmost characters may contain the disk unit reference code.
- Function 18 may contain the disk unit serial number.

**Note:** For 9337 Disk Units, the 5 rightmost characters contain the disk unit serial number.

8. Is the disk unit a 9337?

**No      Yes**

↓      Go to step 24 of this procedure.

9. Is the disk unit reference code 0000?

**Yes      No**

↓      Using the information from step 7, find the table for the indicated disk unit type in "Chapter 2. Unit Reference Codes" on page 59. Perform problem analysis for the disk unit reference code.

**This ends the procedure.**

10. Find the table for the IOP type (the 4 leftmost characters of function 19) in "Chapter 2. Unit Reference Codes" on page 59. Perform problem analysis for the unit reference code found in function 19.

**This ends the procedure.**

11. Are the 2 rightmost characters of function 12 on the Problem Summary Form equal to 27?

**Yes      No**

↓      Go to step 16 of this procedure.

12. Use the function 11 through function 19 information recorded on the Problem Summary Form to determine the disk unit that stopped communicating with the system:

- Function 13 contains the IOP direct select address.
- Function 14 contains the disk unit address.

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- Function 15 contains the disk unit type, level, and model number.
- Function 18 contains the disk unit serial number.

**Note:** For 9337 Disk Units, the 5 rightmost characters contain the disk unit serial number.

- Function 19 four rightmost characters contain the disk unit reference code.

13. Is the disk unit a 9337?

**No      Yes**

↓      Go to step 24 of this procedure.

14. Is the disk unit reference code 0000?

**Yes      No**

↓      Using the information from step 12, find the table for the indicated disk unit type in “Chapter 2. Unit Reference Codes” on page 59. Perform problem analysis for the disk unit reference code.

**This ends the procedure.**

15. Find the table for the indicated disk unit type in “Chapter 2. Unit Reference Codes” on page 59.

Find unit reference code (URC) 3002 in the table and exchange the FRUs for that URC, one at a time.

**Note:** Do not perform any other PIPs that are associated with URC 3002.

**This ends the procedure.**

16. Are the 2 rightmost characters of function 12 on the Problem Summary Form equal to 62?

**Yes      No**

↓      Use the information in function 19 and go to “Chapter 2. Unit Reference Codes” on page 59. Use the information in function 19 instead of the information in function 11 for the reference code.

**This ends the procedure.**

17. Is function 13 equal to 00010004?

**Yes      No**

↓      Go to step 21 of this procedure.

18. Are the 4 rightmost characters of function 15 equal to 0000?

**No      Yes**

↓      Go to step 22 of this procedure.

19. Disk information available in this step is:

- Function 15 four rightmost characters contain the disk unit reference code.
- Function 16 contains the disk unit address.
- Function 17 contains the IOP direct select address.
- Function 18 contains the disk unit type, level, and model number.

Are the 4 leftmost characters of function 18 9337?

**No      Yes**



↓ Go to step 24 of this procedure.

20. Find the table for the disk unit type (the 4 leftmost characters of function 18) in “Chapter 2. Unit Reference Codes” on page 59 and use the 4 rightmost characters of function 15 as the unit reference code.

**This ends the procedure.**

21. Is function 13 equal to 0002000D?

**Yes      No**

↓ Use the information in function 19 and go to “Chapter 2. Unit Reference Codes” on page 59. Use the information in function 19 instead of the information in function 11 for the reference code.

**Note:**

- Function 16 may contain the disk unit address.
- Function 17 may contain the IOP direct select address.
- Function 18 may contain the disk unit type, level, and model number.

**This ends the procedure.**

22. Disk information available in this step is:

- Function 16 contains the disk unit address.
- Function 17 contains the IOP direct select address.
- Function 18 contains the disk unit type, level, and model number.

Are the 4 leftmost characters of function 18 9337?

**No      Yes**

↓ Go to step 24 of this procedure.

23. Find the table for the disk unit type (the 4 leftmost characters of function 18) in “Chapter 2. Unit Reference Codes” on page 59 and use 3002 as the unit reference code. Exchange the FRUs for URC 3002 one at a time.

**This ends the procedure.**

24. The disk unit that stopped communicating with the system is a 9337 Disk Unit.
25. Locate the IOP using the IOP address (see “System Unit and Expansion Unit Locations and Addresses” on page 712).

**Note:** If the IOP is located in a 504x rack, see *FC 504x Problem Analysis and Repair and Parts*.

Using the IOP type (identified by the label on the IOP), and the device address, find the location of the device (see “System Unit and Expansion Unit Locations and Addresses” on page 712).

Does the 9337 Disk Unit Data display contain the value 9337 xxxx?

**Note:** xxxx can be any hexadecimal value from 0000 to FFFF.

**No      Yes**

↓ Use the service information for the specific disk unit to analyze the status of the failing unit.

**This ends the procedure.**

26. Set the power switch on the failing 9337 disk unit to the Off position, then to the On position.  
After 4 minutes, does the 9337 Data display contain the value \*xxx?  
**Yes      No**  
↓      Go to step 29 of this procedure.
27. Does the system continue normal operation in 3 to 4 minutes?  
**No      Yes**  
↓      Go to step 33 of this procedure.
28. Go to step 30 of this procedure.
29. When the 9337 Disk Unit Data display contains the value B000, the disk unit has reached a ready status, but the system has not taken the ready status messages.  
Does the 9337 Disk Unit Data display contain the value B000 in less than 4 minutes?  
**Yes      No**  
↓      Use the service information for the specific disk unit to analyze the status of the failing unit.  
**This ends the procedure.**
30. Perform the following:
  - a. Check the cable connections between all of the units on the storage device I/O processor card that is connected to the failing unit.  
Correct any loose connections and ensure that the terminating plug is installed tightly.
  - b. Check the address switches on the backs of all of the units connected to the magnetic storage I/O processor card that is connected to the failing disk unit.  
**Notes:**
    - 1) If the device does not have address switches, continue with the next step of this procedure if you are servicing one of these units.
    - 2) Ensure that each address switch displays the correct number. See the system configuration list. The latest level printout should be stored in the back of the *Basic System Operation, Administration, and Problem Handling* binder.
  - c. If two or more address switches display the same number, change the address number of one or more units so that each address switch displays the correct number (see the system configuration list).
  - d. For each unit that had its address switch changed, set the unit Power switch off, then on again.
31. Does the system continue normal operation in 3 to 4 minutes?  
**No      Yes**  
↓      Go to step 33 of this procedure.
32. Set the Power switch on the disk unit to the Off position, then to the On position.  
Does the system continue normal operation in 3 to 4 minutes?  
**Yes      No**  
↓      Go to step 34 of this procedure.

33. Intermittent equipment checks may have caused this problem.  
 Display the system product activity log and look for entries that contain unit reference codes or IOP reference codes that may need action.  
 You can read a unit reference code history from the disk controller service panel.  
**This ends the procedure.**
34. Fill out a Problem Summary Form using the information from functions 11 through 20 on the control panel.  
 Are the 4 rightmost characters in function 11 on the Problem Summary Form the same as on the Problem Summary Form filled out in step 2 of this procedure?
- Yes      No**
- ↓      A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).  
**This ends the procedure.**
35. Are functions 13 through 19 on the Problem Summary Form the same as on the Problem Summary Form filled out in step 2 of this procedure?
- Yes      No**
- ↓      A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).  
**This ends the procedure.**
36. Are the 4 rightmost characters in function 19 on the Problem Summary Form you filled out in step 34 of this procedure equal to 0000?
- Yes      No**
- ↓      Return to “Chapter 2. Unit Reference Codes” on page 59. Analyze the problem using the data in function 19 on the Problem Summary Form in place of the data in function 11, which originally sent you to this procedure.  
**This ends the procedure.**
37. Go to the analyzing problems procedures in the service information for the specific disk unit to analyze the status of the failing unit. Then return here and answer the following question.  
 Did the service information for the specific disk unit correct the problem?
- No      Yes**
- ↓      **This ends the procedure.**
38. A manual reset of the IOP may clear the attention SRC. Perform the steps in the following table:

## LIC PIPs

Primary Partition Steps	Secondary Partition Steps
<ul style="list-style-type: none"> <li>a. Select Manual mode on the control panel.</li> <li>b. Select Function 25 and press Enter.</li> <li>c. Select Function 26 and press Enter.</li> <li>d. Select Function 67 and press Enter to reset the IOP.</li> <li>e. Select Function 25 and press Enter to disable the service functions on the control panel.</li> <li>f.</li> </ul>	<ul style="list-style-type: none"> <li>a. From the SST/DST screen select <i>Work With Partitions</i>.</li> <li>b. Select <i>Work With Partition Status</i>.</li> <li>c. Select Function 23 <i>More Options</i>.</li> <li>d. Select option 59 for the logical partition that you are working in.</li> <li>e. Select the IOP for debug.</li> <li>f. Select <i>Reset I/O Processor</i>.</li> <li>g. Return to the <i>Partition Status</i> screen.</li> </ul>

Does an SRC occur?

**Yes      No**

↓      **This ends the procedure.**

39. Force a dump of main storage, then perform an IPL by doing the following:

- a. Select Manual mode on the control panel.
- b. Select function 22 (Main Storage Dump) on the control panel.
- c. Press the Enter key to force a dump of main storage to the load-source disk unit.
- d. When SRC A100 300x occurs, the dump is complete.
- e. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does a different SRC occur, or does a display appear on the console showing reference codes.

**No      Yes**

↓      Use the new SRC or the URC displayed on the console and go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

40. Does the same SRC occur?

**No      Yes**

↓      Use the SRC information from the original failure and return to “Chapter 2. Unit Reference Codes” on page 59. Analyze the problem using the data in function 19 on the Problem Summary Form in place of the data in function 11.

**This ends the procedure.**

41. The problem is intermittent.

- a. Print the system product activity log for the magnetic storage subsystem and print the LIC LOGs with a major code of 1000.
- b. Copy the main storage dump to removable media (see “Copying a Main Storage Dump” in the *AS/400 Service Functions* information).
- c. Provide your next level of support with this information.

**This ends the procedure.**

## Logical Partition (LPAR) Problem Isolation Procedures

### LPAR-PIP01

This procedure identifies some Logical Partition (LPAR) configuration conditions and their associated corrective actions.

1. Is there **only one** B6005311 error logged, and is it against the load source device for the partition, in either the Primary or a secondary partition?

**Yes      No**

↓      Go to step 8 on page 548 of this procedure.

2. Is the reporting partition the Primary partition?

**Yes      No**

↓      Go to step 6 of this procedure.

3. Was the load source disk unit migrated from another partition within the same system?

**Yes      No**

↓      The load source disk unit has not changed. Contact your next level of support.

**This ends the procedure.**

4. Is this load source device intended to be the load source for the Primary partition?

**Yes      No**

↓      Power off the system. Return the original load source disk to the Primary partition and perform a system IPL.

**This ends the procedure.**

5. Use the *"Accept load source disk unit"* option to accept the new load source into the current partition.
  - a. Go to SST/DST in the current partition and select option *"Work with system partitions"*.
  - b. From the *"Work with system partitions"* screen select option *"Recover configuration data"*.
  - c. From the *"Recover configuration data"* screen select option *"Accept load source disk unit"*.

**This ends the procedure.**

6. The reporting partition is a secondary partition.

Since the last IPL of the reporting partition, have one of the following occurred?

- Has the Primary partition time/date been moved backward to a time/date earlier than the previous setting?
- Has the system serial number been changed?
- Was the load source disk unit in this secondary partition, replaced intentionally with a load source from another system or another partition from the same system?

**Yes      No**

↓      Contact your next level of support.

**This ends the procedure.**

7. Use the "Accept load source disk unit" option to accept the new load source into the current partition.
  - a. Go to SST/DST in the current partition and select option "Work with system partitions".
  - b. From the "Work with system partitions" screen select option "Recover configuration data".
  - c. From the "Recover configuration data" screen select option "Accept load source disk unit".

**This ends the procedure.**

8. Are there **multiple** B600 5311 SRCs logged in the same partition?

**Yes      No**

↓      None of the conditions in this procedure have been met, call your next level of support.

**This ends the procedure.**

9. Is the resource for **one** of the B600 5311 SRCs the load source device and are **all** of the other B600 5311 entries for resources which are non-configured disk units?

**Note:** To determine if a disk unit is a non-configured disk unit, refer to the "Work with disk unit options" section in the "DST options" section of the "DST chapter" in the *AS/400 Service Functions* information.

**Yes      No**

↓      Go to step 16 on page 549 of this procedure.

10. Is the partition that is reporting the error the **Primary** partition?

**Yes      No**

↓      Go to step 14 on page 549 of this procedure.

11. Was the load source disk unit migrated from another partition within the same system?

**Yes      No**

↓      The load source disk unit has not changed. Contact your next level of support.

**This ends the procedure.**

12. Is this load source device intended to be the load source for the Primary partition?

**Yes      No**

↓      Power off the system. Return the original load source disk to the Primary partition and perform a system IPL.

**This ends the procedure.**

13. Use the "Accept load source disk unit" option to accept the new load source into the current partition.
  - a. Go to SST/DST in the current partition and select option "Work with system partitions".
  - b. From the "Work with system partitions" screen select option "Recover configuration data".
  - c. From the "Recover configuration data" screen select option "Accept load source disk unit".

**This ends the procedure.**

14. The reporting partition is a secondary partition.

Since the last IPL of the reporting partition, have one of the following occurred:

- Has the Primary partition time/date been moved backward to a time/date earlier than the previous setting?
- Has the system serial number been changed?
- Was the load source disk unit in this secondary partition, replaced intentionally with a load source from another system or another partition from the same system?

**Yes      No**

↓      Contact your next level of support.

**This ends the procedure.**

15. Use the "Accept load source disk unit" option to accept the new load source into the current partition.
- a. Go to SST/DST in the current partition and select option "Work with system partitions".
  - b. From the "Work with system partitions" screen select option "Recover configuration data".
  - c. From the "Recover configuration data" screen select option "Accept load source disk unit".

**This ends the procedure.**

16. One or more B600 5311 SRCs have been logged in the same partition.

Do all of the B600 5311 errors have a resource which is a non-configured disk unit in the partition?

**Note:** To determine if a disk unit is a non-configured disk unit, refer to the "Work with disk unit options" section in the "DST options" section of the "DST chapter" in the *AS/400 Service Functions* information.

**Yes      No**

↓      None of the conditions in this procedure have been met, call your next level of support.

**This ends the procedure.**

17. Were any disk unit resources associated with the B600 5311 SRCs added to the partition, since the last IPL of this partition?

**No      Yes**

↓      Use the "Clear non-configured disk unit configuration data" option to clear old configuration data from each new disk unit device.

- a. Go to SST/DST in the partition and select option "Work with system partitions".
- b. From "Work with system partitions" screen select "Recover configuration data".
- c. From the "Recover configuration data" screen select option "Clear non-configured disk unit configuration data".
- d. Select each unit in the list which is new to the system. Press enter.
- e. Continue the system IPL.

**This ends the procedure.**

## LPAR PIPs

18. None of the resources that are associated with the B600 5311 SRCs are disk units that were added to the partition, since the last IPL of the partition.  
Has a scratch install recently been performed on the partition that is reporting the error(s)?

**No      Yes**

↓      Go to step 21 of this procedure.

19. A scratch install was not performed.

Was the "*Clear configuration data*" option recently used to discontinue LPAR use?

**Yes      No**

↓      The "*Clear configuration data*" option was not used. Contact your next level of support.

**This ends the procedure.**

20. Use the "*Clear non-configured disk unit configuration data*" option to clear old configuration data, from the old partition load source disk device(s).
- Go to SST/DST in the partition, select option "*Work with system partitions*".
  - From the "*Work with system partitions*" screen select option "*Recover configuration data*".
  - From the "*Recover configuration data*" screen select the option "*Clear non-configured disk unit configuration data*".
  - Select each former load source in the list. Press enter.
  - Continue the system IPL.

**This ends the procedure.**

21. Was the load source device previously mirrored before the scratch install?

**Yes      No**

↓      Go to step 23 of this procedure.

22. Use the "*Clear non-configured disk unit configuration data*" option. Clear the old configuration data from the disk unit that was mirroring the old load source disk.
- Go to SST/DST in the partition that is reporting the SRC and select the "*Work with system partitions*" option .
  - From the "*Work with system partitions*" screen select the "*Recover configuration data*" option.
  - From the "*Recover configuration data*" screen select the "*Clear non-configured disk unit configuration data*" option.
  - Select the former load source mirror in the list. Press enter.

23. Is the Primary partition reporting the B600 5311 error(s)?

**Yes      No**

↓      **This ends the procedure.**

24. Does the customer want multiple partitions on the system?

**Yes      No**

↓      **This ends the procedure.**

25. Use the "*Recover primary partition configuration data*" option to retrieve the LPAR configuration data from other devices in the system.



- a. Go to SST/DST in the primary partition and select the *"Work with system partitions"* option .
- b. From the *"Work with system partitions"* screen select option *"Recover configuration data"*.
- c. From the *"Recover configuration data"* screen select the *"Recover primary partition configuration data"* option.
- d. Verify the information that is presented on the screen. The device should be a former load source device from a secondary partition. The time and date should reflect a time when that partition was active. It should be more recent than the last change to the logical partition configuration.

**Note:** The system will perform an automatic IPL during this step.

**This ends the procedure.**

## Magnetic Storage I/O Processor (MSIOP) Problem Isolation Procedures

### Overview

This section contains the procedures necessary to isolate a failure detected by the magnetic storage I/O processor (MSIOP).

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see "Powering Off and Powering On the System or Expansion Tower" on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

### DANGER

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

### DANGER

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

Read and understand the following service procedures before using this section:

- "Powering Off and Powering On the System or Expansion Tower" on page 789
- "System Unit and Expansion Unit Locations and Addresses" on page 712

### MSIOP-PIP1

**Introduction:** This procedure runs the basic assurance tests (BATs) of the MSIOP card to see if the same reference code occurs. If a new reference code occurs, more analysis may be possible with the new reference code.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 574 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.
- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 577).

2. Perform “MSIOP Test Procedure” on page 572. Then return here and answer the following question.

Does an SRC or reference code occur after running the MSIOP test?

**Yes      No**

↓      Go to “MSIOP-PIP12” on page 563.

**This ends the procedure.**

3. Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?

**Yes      No**

↓      A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

**This ends the procedure.**

4. To isolate the failing storage device, signal cable, or terminating plug, go to “MSIOP-PIP2”, step 5.

**This ends the procedure.**

### MSIOP-PIP2

**Introduction:** This procedure isolates problems on the MSIOP, storage device, signal cables, or the terminating plug. It also instructs you on how to find the MSIOP, the storage devices, signal cables, and the terminating plug. After verifying that the cables are correct, an isolation procedure is used to determine the failing part.

The isolation is performed by moving the terminating plug from the end of the storage device string toward the MSIOP, one unit at a time, until the failing unit is

removed from the string. The MSIOP test is run each time the terminating plug is moved to the next unit to determine if the error occurs again.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 574 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.
- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 577).

2. Perform “MSIOP Test Procedure” on page 572. Then return here and answer the following question.

Does the test run successfully (without an SRC or reference code)?

**No      Yes**

↓      **This ends the procedure.**

3. Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?

**Yes      No**

↓      A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

**This ends the procedure.**

4. Is the terminating plug connected directly into the MSIOP card?

**No      Yes**

↓      You have isolated the problem to either the MSIOP card (80% probability) or the terminating plug (20% probability).

**This ends the procedure.**

5. Disconnect the last storage device from the signal bus by doing the following:
  - a. Disconnect both the terminating plug and the signal cable from the last storage device.
  - b. Connect the signal cable and terminating plug together directly.

**Note:** If you disconnected a signal cable connection from this storage device in an earlier step, reconnect the cable now.

6. Perform “MSIOP Test Procedure” on page 572. Then return here and answer the following question.

Does the same SRC or reference code occur?

**Yes      No**

## MSIOP PIPs

- ↓ You have isolated the problem to the storage device you disconnected from the signal cable in step 5 of this procedure.  
Perform the following:
  - a. Reconnect the signal cable you disconnected in step 5 of this procedure.
  - b. Connect the terminating plug to the device it was connected to when you started this procedure.
  - c. Go to step 10 of this procedure.
- 7. Disconnect the last length of signal cable from the signal bus by doing the following:
  - a. Disconnect the terminating plug from the signal cable.
  - b. Reconnect the signal cable to the storage device you disconnected it from in step 5 of this procedure.
  - c. Follow the same signal cable to the next storage device (or to the MSIOP card).
  - d. Disconnect the signal cable at this connection and connect the terminating plug in its place.
- 8. Perform “MSIOP Test Procedure” on page 572. Then return here and answer the following question.  
Does the same SRC or reference code occur?  
**No      Yes**
  - ↓ Go to step 4 of this procedure.
- 9. You have isolated the problem to the length of signal cable you disconnected from the signal bus in step 7 of this procedure.  
Exchange the signal cable.  
**This ends the procedure.**
- 10. Was the original URC 2000 or 2010?  
**No      Yes**
  - ↓ Go to the service information for the specific storage device with URC FFD2.  
**This ends the procedure.**
- 11. Go to the service information for the specific storage device with URC FFD5.  
**This ends the procedure.**

## MSIOP-PIP3

**Introduction:** This procedure isolates a fault that is causing communications problems between a storage device and the MSIOP that it is attached to.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 574 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.
- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 577).

2. Perform “MSIOP Test Procedure” on page 572. Then return here and answer the following question.

Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?

**Yes      No**

- ↓      A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

**This ends the procedure.**

3. The switch-addressed storage device is failing.
  - a. See “MSIOP Parts Location” on page 574 to find the MSIOP and the switch-addressed storage device.
  - b. Go to the service information for the specific storage device with URC FFD0.

**Note:** If the URC is 2030, the problem can be caused by a failure on the disk or tape where the MSIOP Licensed Internal Code is stored. If the failure was from disk, restore the Licensed Internal Code (see “Restoring Licensed Internal Code” in the *AS/400 Service Functions* information). If the failure was from tape, the tape must be exchanged with a new one.

**This ends the procedure.**

## **MSIOP-PIP4**

**Introduction:** This procedure isolates a failing storage device attached to the MSIOP that is causing errors on the signal bus.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 574 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.

## MSIOP PIPs

- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 577).
- 2. Perform “MSIOP Test Procedure” on page 572. Then return here and answer the following question.  
Does the test run successfully (without an SRC or reference code)?  
**No      Yes**  
↓      **This ends the procedure.**
- 3. Power off one of the storage devices attached to the signal cable.
- 4. Perform “MSIOP Test Procedure” on page 572. Then return here and answer the following question.  
Does an SRC or reference code occur after running the MSIOP test?  
**Yes      No**  
↓      The storage device you just powered off is causing the failure.  
Power on all of the storage devices attached to the signal cable. Then go to the correct storage device service information with URC FFD1.  
**This ends the procedure.**
- 5. Is the SRC xxxx 1800?  
**No      Yes**  
↓      The storage device you just powered off is causing the failure.  
Power on all of the storage devices attached to the signal cable. Then go to the correct storage device service information with URC FFD1.  
**This ends the procedure.**
- 6. Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?  
**Yes      No**  
↓      A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).  
  
**Note:** Leave powered off the units you have powered off in this procedure.  
  
**This ends the procedure.**
- 7. Have you powered off all of the storage devices attached to the signal cable?  
**Yes      No**  
↓      Go to step 3 of this procedure.
- 8. Perform the following:
  - a. Power on all of the storage devices attached to the signal cable.
  - b. Find the storage device on the signal cable with the terminating plug and disconnect the terminating plug.
  - c. Find the MSIOP card on the signal cable and disconnect the signal cable.
  - d. Connect the terminating plug to the MSIOP card.
  - e. Perform “MSIOP Test Procedure” on page 572.
  - f. Return here and answer the following question.Does the test run successfully (without an SRC or reference code)?

**No      Yes**



Perform the following:

- a. Disconnect the terminating plug from the MSIOP card.
- b. Reconnect the signal cable you disconnected in this step.
- c. Go to MSIOP-PIP2, step 5 on page 553 to continue analyzing the problem.

**This ends the procedure.**

9. The MSIOP card is the failing item.

Perform the following:

- a. Exchange the MSIOP card (see “Chapter 6. Removal and Installation Procedures” on page 821).
- b. Power on all of the storage devices attached to the MSIOP card. Go to “Verifying the Repair” on page 806.

**This ends the procedure.**

## MSIOP-PIP5

**Introduction:** This procedure isolates a problem on the signal cable of an MSIOP.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 574 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.
- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 577).

2. Perform “MSIOP Test Procedure” on page 572. Then return here and answer the following question.

Does the test run successfully (without an SRC or reference code)?

**No      Yes**



**This ends the procedure.**

3. Disconnect the signal cable from the MSIOP card.

4. Perform “MSIOP Test Procedure” on page 572. Then return here and answer the following question.

Does the same SRC or reference code occur that occurred in step 2 of this procedure?

**No      Yes**



The MSIOP card is the failing item.

## MSIOP PIPs

Perform the following:

- a. Exchange the MSIOP card (see "Chapter 6. Removal and Installation Procedures" on page 821).
- b. Reconnect the signal cable to the MSIOP card.
- c. Go to "Verifying the Repair" on page 806.

**This ends the procedure.**

5. Perform the following:

- a. Reconnect the signal cable to the MSIOP card.
- b. Go to "MSIOP-PIP2" on page 552, step 4 to continue analyzing the problem.

**Note:** If MSIOP-PIP2 isolates the problem to either the MSIOP card or the terminating plug, exchange the terminating plug.

**This ends the procedure.**

### MSIOP-PIP6

**Introduction:** This procedure finds configuration errors of the MSIOP card and the storage devices attached to it. The locations of the MSIOP card and the storage devices are found on a Problem Summary Form or a product activity log record. Then the given list of possible problems is used to find and correct the problem.

**Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the "Overview" on page 551 before continuing with this procedure.

1. See "MSIOP Parts Location" on page 574 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.
- All storage devices are powered on and are in a ready status (see "Storage Device Ready Conditions for MSIOP Devices" on page 577).

**Note:** If a storage device is not powered on, go to "Analyzing Power Problems" on page 36 to correct the problem.

2. Perform "MSIOP Test Procedure" on page 572. Then return here and answer the following question.

Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?

**Yes      No**

- ↓      A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

**This ends the procedure.**



3. Is the original reference code 3010?

Yes No

↓ Go to step 5 of this procedure.

4. The addressed storage device sent a response to the MSIOP that was either not expected or not valid. This usually means the device was not successful in getting its own Licensed Internal Code load.

Go to the service information for the specific storage device with URC FFD5 to continue analyzing the problem.

**Note:** This reference code could be the result of a configuration that is not valid. If the I/O processor number (the second digit of the unit address) is a 0 or a 1, ensure that the device is not a diskette or tape drive.

**This ends the procedure.**

5. This reference code indicates a configuration error. If there has been a recent change to the system configuration, review the installation procedures. Otherwise, use the table below to help isolate the problem.

#### Reference Code

##### Cause

- 6001** The addressed storage device has a block size that is not valid (block size must be 520 bytes).

See the following procedures:

- “9337 Procedure 4 - Problem Recovery” in the *FC 504x Problem Analysis and Repair and Parts* information

- 6005** More than 16 facilities have been detected by the MSIOP.

- 6006** The addressed storage device has a type number that is not valid, or the device needs an upgrade.

**This ends the procedure.**

## MSIOP-PIP7

**Introduction:** This procedure determines why a storage device attached to an MSIOP stopped working.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 574 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.

## MSIOP PIPs

- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 577).
2. Perform “MSIOP Test Procedure” on page 572. Then return here and answer the following question.

Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?

**Yes      No**

- ↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

**This ends the procedure.**

3. Go to the service information for the specific storage device with URC FFD5.

**This ends the procedure.**

### MSIOP-PIP8

**Introduction:** This procedure isolates a failure that occurred on the interface between the MSIOP and a storage device.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 574 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.
- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 577).

2. Perform “MSIOP Test Procedure” on page 572. Then return here and answer the following question.

Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?

**Yes      No**

- ↓ A new SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

**This ends the procedure.**

3. Go to the service information for the specific storage device with URC FFD3.

**This ends the procedure.**

## MSIOP-PIP9

**Introduction:** This procedure gets the error data for an addressed storage device from an error detected by the MSIOP.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. Go to “MSIOP Parts Location” on page 574 and determine the following information:
  - MSIOP location
  - Switch-addressed storage device location
  - Switch-addressed storage device type (on the device front panel)
  - Switch-addressed storage device model (on the device front panel)

Also, get the unit reference code (URC) from the Problem Summary Form.

**Note:** If the URC is not listed or is not valid for the device, use URC FFD5.

When you have the information, return here and continue with the next step of this procedure.

2. Using the unit type, unit model, and unit reference code information you found in step 1 of this procedure, go to the service information for the specific storage device to correct the problem.

**This ends the procedure.**

## MSIOP-PIP10

**Introduction:** This procedure isolates a failure that occurred on the interface between the MSIOP and a storage device.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. See “MSIOP Parts Location” on page 574 to find the MSIOP, signal cables, storage devices, and terminating plug.

Verify the following and correct if necessary before continuing with the next step of this procedure:

- All cable connections are made correctly and are tight.
- All storage devices have the correct switch address as indicated in the system configuration list.
- All storage devices are powered on and are in a ready status (see “Storage Device Ready Conditions for MSIOP Devices” on page 577).

## MSIOP PIPs

2. Perform “MSIOP Test Procedure” on page 572. Then return here and answer the following question.

Is the SRC or reference code that occurred during the MSIOP test the same SRC or reference code that sent you to this procedure?

**Yes      No**

- ↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

**This ends the procedure.**

3. Go to the *Analyzing Problems* manual for the storage device and perform the action indicated by URC FFF8.

**This ends the procedure.**

### MSIOP-PIP11

**Introduction:** This procedure runs a MSIOP diagnostic test that checks for intermittent storage errors. The MSIOP has the ability to run an extended storage loop test and to correct problems when they are found.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. Perform “MSIOP Test Procedure” on page 572. Then return here and answer the following question.

Does the test run successfully (without an SRC or reference code)?

**Yes      No**

- ↓ There is a solid (not intermittent) failure in the MSIOP. Go to step 8 of this procedure.

2. Perform the following:
  - a. From the AS/400 Main Menu, select the *Work with dedicated service tools (DST)* option.
  - b. Log on the system.
  - c. Select the *Work with disk units* option.
  - d. Select the *Analyze disk device problem* option.
3. For this step, you need to know the address of the MSIOP to test. To get the address, see “MSIOP Parts Location” on page 574.

Select the MSIOP to be tested by doing the following:

- a. Select the *Select storage device to test* option and press the Enter key.
- b. Enter 1 on the line next to the MSIOP with the correct address.

**Note:** This selection process needs to be performed only once for this procedure, or you can wait until the next initial Licensed Internal Code load.

Did you get a message that said you attempted to select the load-source MSIOP?

**No      Yes**

↓      This test cannot be run on the load-source MSIOP. Go to step 7 of this procedure.

4. Run the test on the MSIOP by doing the following:
  - a. Select the *Select and run tests* option and press the Enter key.
  - b. Select the *Controller storage test* option and press the Enter key.
  - c. Verify that the data displayed is correct and press the Enter key to start the test.

**Note:** Let this test run for 15 minutes or until a reference code occurs. Press the function key indicated on the display to end the test.

Does a reference code occur?

**Yes      No**

↓      Go to step 7 of this procedure.

5. Is the reference code 1020 or 1030?

**Yes      No**

↓      Go to step 8 of this procedure.

6. The problem was corrected. Return to normal operation.

**This ends the procedure.**

7. Check the reference codes in the product activity log (see the *AS/400 Service Functions* information) by doing the following:
  - a. Return to the Analyze Disk Device Problem display.
  - b. Write down the type, model, address, reference code, date, and time.

Has the original reference code at this MSIOP address occurred again in the last 24 hours?

**Yes      No**

↓      The MSIOP recovered from the intermittent error.

**This ends the procedure.**

8. Exchange the MSIOP card (see “Chapter 6. Removal and Installation Procedures” on page 821).

Go to “Verifying the Repair” on page 806.

**This ends the procedure.**

## MSIOP-PIP12

**Introduction:** This procedure isolates intermittent problems that are recorded in the product activity log. It looks for repeated errors occurring at one or more addresses of the MSIOP, storage device, or the storage I/O processor.

**Note:** For unit reference code (URC) 6007, a hardware or software failure can cause the errors. Software failures can occur in the storage device, the MSIOP, or in the Licensed Internal Code.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

## MSIOP PIPs

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. Look at the product activity log for repeated entries of SRC type 6112 with a common reference code (see “Product Activity Log” in the *AS/400 Service Functions* information).
2. Do you have repeated 6112 entries with common reference codes or common error descriptions?

**Yes      No**

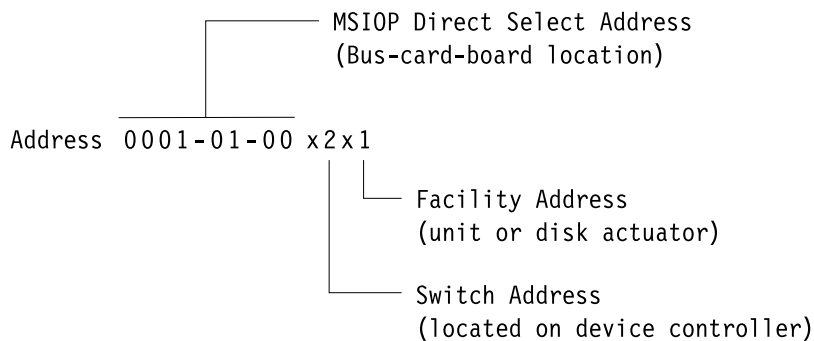
- ↓      Use the failing items associated with the original reference code and see “MSIOP (Type 611x) Failing Items” on page 575 to find the parts. Perform the necessary repair action and return to normal operation.

**Note:** For URC 6007, take no more action.

**This ends the procedure.**

3. Are all repeated errors occurring on the same MSIOP Direct Select Switch and Facility Address?

Example Address:



RZAG5501-1

**No      Yes**

- ↓      You have isolated the problem to a single storage device. To determine the correct FRU to exchange, go to the service information for that device with URC:  
FFD3 for 9331  
FFD5 for 9347

**Note:** The error condition may be two storage devices responding to the same MSIOP at the same time. This condition could be caused by one of the following:

- A device address switch set to the wrong address
- A failing device address switch
- A failing, loose, or disconnected device address cable

**This ends the procedure.**

4. Are all repeated errors occurring on the same MSIOP Direct Select Addresses, and are the Switch Addresses different?

**No      Yes**

- ↓ You have isolated the problem to either the MSIOP card or the attachment cables. Go to “MSIOP Parts Location” on page 574 to determine the correct FRU to exchange.

**This ends the procedure.**

5. Are all repeated errors occurring on the same MSIOP Direct Select Addresses and Switch Addresses, and are the Facility Addresses different?

**No      Yes**

- ↓ You have isolated the problem to a device controller. Go to the service information for the specific storage device with URC FFF4 to determine the correct FRU to exchange.

**This ends the procedure.**

6. If the same error is occurring on different MSIOP Direct Select addresses and a common reference code is logged against different MSIOPs, this indicates a Licensed Internal Code problem or a power supply problem. Ask your next level of support for assistance.

**This ends the procedure.**

## MSIOP-PIP13

**Introduction:** This procedure copies the dump to tape or diskette and asks you to send it to your next level of support.

When Licensed Internal Code errors that cannot be recovered occur, Licensed Internal Code attempts to dump the MSIOP to address 000087000000.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. Access DST on the system console (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
2. Copy the IOP dump from disk to tape or diskette. Use the instructions for the dump to tape or diskette function (see “Copying the IOP Storage Dump to Removable Media” in the *AS/400 Service Functions* information).

**Note:** Label the tape or diskette (for example, volid=SID87, file=DUMP).

3. Select all recent storage I/O processor product activity log entries and copy them to a diskette, tape, or printer. That is, spool the data and copy the spool file to a diskette, tape, or printer (see the *AS/400 Service Functions* information).

**Note:** Printer output is preferable for log data.

4. The loadable code group for the MSIOP is:
  - AJER101 for the type 6112 IOP

Ensure that the latest level of code for the MSIOP is loaded (see “Licensed Internal Code Information” in the *AS/400 Service Functions* information). Ask your next level of support for the code level.

5. For more error analysis, go to “MSIOP-PIP1” on page 552.

**This ends the procedure.**

### MSIOP-PIP14

**Introduction:** This procedure isolates a failure in the MSIOP (type 650x) subsystem. This subsystem consists of:

- The MSIOP (type 650x)
- The 9337 Disk Units, the signal cables from the MSIOP to the 9337 Disk Units, and the terminating plugs on the 9337 Disk Units
- The SCSI tape units, the signal cables from the MSIOP to the tape units, and the terminating plugs on the tape units

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. Use the list of “MSIOP (Type 650x) Failing Items” on page 576 to:

- Get address information for the failing item.
- Physically find the failing item.

**Note:** If the Problem Summary Form is not available, use the product activity log to gather the data. Select the entry for the reference code that sent you here and use the hexadecimal information to find the following:

- The direct select address (DSA)- BBBB-Cc-bb.
  - BBBB = hexadecimal offsets 4C and 4D.
  - Cc = hexadecimal offset 51.
  - bb = hexadecimal offset 4F.
- The unit address (UA)– hexadecimal offsets 18C through 18F.
- The device unit reference code (URC)– hexadecimal offsets 194 and 195.

See *AS/400 Service Functions* for more information on how to find address information in the product activity log.

2. Ensure that the cable connections between the MSIOP and the device are made correctly and are tight.
3. Ensure that both ends of the signal cable between the MSIOP and the device do not show any visible damage, such as bent or broken pins or a cracked connector.
4. Perform the following:
  - a. Go to “Storage Device Ready Conditions for MSIOP Devices” on page 577 and determine if there is a device ready problem.
  - b. If necessary, correct the problem using the device service information.
  - c. Return here and continue with the next step of this procedure.
5. Did you find and correct a device ready problem?

**No      Yes**

↓      **This ends the procedure.**

6. Is the problem intermittent?



No      Yes

↓      Go to “Correcting Intermittent Problems” on page 14.

**This ends the procedure.**

7. Exchange the FRUs in the failing item list for the reference code that sent you to this procedure (see “Chapter 6. Removal and Installation Procedures” on page 821).
8. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).  
Does the IPL complete successfully?

No      Yes

↓      **This ends the procedure.**

9. Go to “Starting Point for All Problems” on page 4 to correct the problem.  
**This ends the procedure.**

## MSIOP-PIP15

**Introduction:** This procedure isolates a failure in the SCSI bus.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. Were you performing an IPL from tape (type D) when the error occurred?

No      Yes

↓      Go to “MSIOP-PIP17” on page 571 to continue problem isolation.

**This ends the procedure.**

2. Is the system available, and can you enter commands at the console?

No      Yes

↓      Exchange the FRUs in the failing item list for the reference code that sent you to this procedure (see “Chapter 6. Removal and Installation Procedures” on page 821).

**This ends the procedure.**

3. Is the attached device a 9337 that is connected to the IOP with a **20-meter cable**?

Yes      No

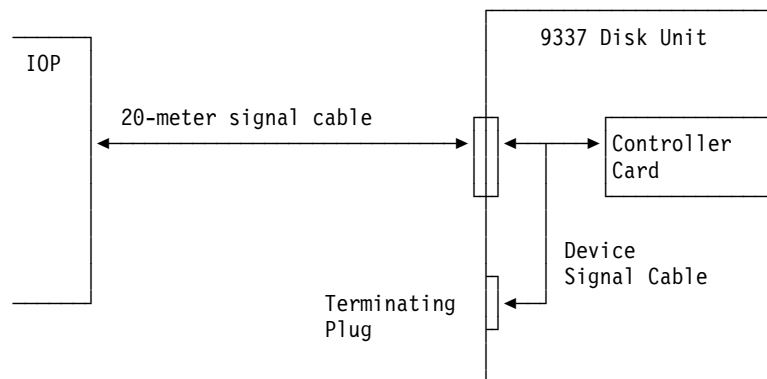
↓      Go to step 5 of this procedure.

4. Perform the following:
  - a. If the MSIOP is located in an I/O expansion tower, use bus level concurrent maintenance under *Hardware Service Manager* to power off the expansion tower. Otherwise, power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
  - b. Disconnect the 9337 controller card (inside the 9337) from the signal cable.

## MSIOP PIPs

### Notes:

- 1) To disconnect the card, see the *9337 Disk Array Service Information*
- 2) It is easier to disconnect the card than to disconnect the cable.
- 3) See the following diagram to help understand this step.
- 4) If the signal cable is isolated as the failing item, this failing item now includes the signal cable inside the 9337.



- c. Go to step 6 of this procedure.
5. Perform the following:
  - a.

If the MSIOP is located in an I/O expansion tower, use bus level concurrent maintenance under *Hardware Service Manager* to power off the expansion tower. Otherwise, power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
  - b. Disconnect the IOP signal cable from the attached device.
6. If you powered off an I/O expansion tower the power on the expansion tower. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does the Missing Disk Unit display appear on the console, and is the unit reference code 0000?

**No      Yes**

- ↓ Exchange the FRUs in the failing item list for the reference code that sent you to this procedure (see “Chapter 6. Removal and Installation Procedures” on page 821).

**This ends the procedure.**

7. Does the same SRC or reference code that sent you to this procedure occur?

**Yes      No**

- ↓ Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

8. The attached device and its terminating plug are not failing.

Perform the following:

a.

If the MSIOP is located in an I/O expansion tower, use bus level concurrent maintenance under *Hardware Service Manager* to power off the expansion tower. Otherwise, power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).

b. Disconnect the signal cable from the magnetic storage I/O processor (MSIOP) (type 650x).

c.

d. Power on the system or expansion tower that you powered off.

Does the same SRC or reference code that sent you to this procedure occur?

**Yes      No**

↓      Exchange the signal cable.

**This ends the procedure.**

9. Exchange the MSIOP (type 650x) (see “Chapter 6. Removal and Installation Procedures” on page 821).

Go to “Verifying the Repair” on page 806.

**This ends the procedure.**

## **MSIOP-PIP16**

**Introduction:** This procedure determines the device unit reference code (URC), then sends you to the reference code table in the device service information.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. Were you performing an IPL from tape (type D) when the error occurred?

**No      Yes**

↓      Go to the device service information to solve the problem.

2. Use the list of “MSIOP (Type 650x) Failing Items” on page 576 to:

- Get address information for the failing item.
- Physically find the failing item.

**Note:** If the Problem Summary Form is not available, use the product activity log to gather the data. Select the entry for the reference code that sent you here and use the hexadecimal information to find the following:

- The direct select address (DSA)- BBBB-Cc-bb.
  - BBBB = hexadecimal offsets 4C and 4D.
  - Cc = hexadecimal offset 51.
  - bb = hexadecimal offset 4F.
- The unit address (UA)– hexadecimal offsets 18C through 18F.
- The device unit reference code (URC)– hexadecimal offsets 194 and 195.

See *AS/400 Service Functions* for more information on how to find address information in the product activity log.

3. Ensure that the cable connections between the MSIOP and the device are made correctly and are tight.

4. Ensure that both ends of the signal cable between the MSIOP and the device do not show any visible damage, such as bent or broken pins or a cracked connector.

## MSIOP PIPs

5. From step 2 of this procedure, find the type and model information and the URC for the attached storage device.

If you are using the Problem Summary Form to analyze this problem:

- Determine the storage device type and model from information on the device.
- The attached storage device URC is in function 17.

If the Problem Summary Form is not available, use the device unit reference code that you found in step 2.

Is the device URC 3020 or 3021?

**Yes      No**

↓      Go to step 8 of this procedure.

6. A device URC of 3020 or 3021 means that a device attached to the addressed MSIOP is not given support or does not follow the system configuration rules (for example, too many devices are attached to the bus or a tape unit and a disk unit are attached to the same IOP).

Find the system configuration information from the last IPL and compare it to the present system configuration.

**Note:** To help in the comparison, look at the 4 leftmost characters of function 14 (the unit address of the device). Determine the physical address (see "System Unit and Expansion Unit Locations and Addresses" on page 712). Find this location in the system and get the device type and model number.

Do the system configurations match?

**No      Yes**

↓      A device on the SCSI bus may be failing. Go to the failing item list for the reference code that sent you to this procedure and exchange the FRUs listed (see "Chapter 6. Removal and Installation Procedures" on page 821). See "MSIOP Parts Location" on page 574 to find the failing item.

**This ends the procedure.**

7. Go to "Hardware Service Manager" in the *AS/400 Service Functions* information to correct the mismatch between the two configurations.

**This ends the procedure.**

8. Use the device type and model you found in step 5 of this procedure and go to the storage device service information to determine the reference code table ID.

Did you find a storage device URC in step 5 of this procedure?

**No      Yes**

↓      In the storage device service information, go to the reference code table and failing item list. Use the device URC from step 5 of this procedure to correct the problem.

**This ends the procedure.**

9. Go to the failing item list for the reference code that sent you to this procedure and exchange the FRUs listed (see "Chapter 6. Removal and Installation Procedures" on page 821).

**This ends the procedure.**

## MSIOP-PIP17

**Introduction:** This procedure isolates a failure in the MSIOP (type 650x) subsystem during an IPL from tape (type D). This subsystem consists of:

- The MSIOP (type 650x)
- The tape units, the signal cables from the MSIOP to the tape units, and the terminating plugs on the tape units

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 551 before continuing with this procedure.

1. Use the list of “MSIOP (Type 650x) Failing Items” on page 576 to:
  - Get address information for the failing item.
  - Physically find the failing item.
2. Ensure that the cable connections between the MSIOP and the device are made correctly and are tight.
3. Ensure that both ends of the signal cable between the MSIOP and the device do not show any visible damage, such as bent or broken pins or a cracked connector.
4. Perform the following:
  - a. Go to “Storage Device Ready Conditions for MSIOP Devices” on page 577 and determine if there is a device ready problem.
  - b. If necessary, correct the problem using the device service information.
  - c. Return here and continue with the next step of this procedure.
5. Did you find and correct a device ready problem?

**No      Yes**

↓      **This ends the procedure.**

6. Perform an IPL from tape by doing the following:
  - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
  - b. Select IPL type D, In manual mode (see “Selecting IPL Type, Mode, and Speed” on page 793).
  - c. Power on the system.

Does the IPL complete successfully?

**No      Yes**

↓      **This ends the procedure.**

7. Does the same SRC or reference code occur that sent you to this procedure?

**Yes      No**

↓      Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

8. Is the problem intermittent?

## MSIOP PIPs

No      Yes

↓      Go to “Correcting Intermittent Problems” on page 14.

**This ends the procedure.**

9. Exchange the FRUs in the failing item list for the reference code that sent you to this procedure (see “Chapter 6. Removal and Installation Procedures” on page 821).

**This ends the procedure.**

## MSIOP Test Procedure

**Introduction:** This procedure runs the basic assurance tests (BATs) of the MSIOP card.

After running the test, make a note of the resulting reference code data (if any) on the Problem Summary Form or in a notebook. Then return to the problem isolation procedure step that sent you here.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Does the IPL or Install the System display appear on the operator’s console, or is DST available on the console (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information)?

Yes      No

↓      Go to step 6 of this procedure.

2. Access the Logical Hardware Resources on System Bus display:
  - a. From the IPL or Install the System display, select the *Use dedicated service tools (DST)* option.
  - b. Enter the password. You need the customer password to get to the Use Dedicated Service Tools (DST) display.
  - c. Select the *Start a Service Tool* option.
  - d. Select the *Hardware service manager* option.
  - e. Select the *Logical hardware resources (buses, IOPs, controllers,...)* option.
  - f. Select the *System bus resources* option.
3. On the Logical Hardware Resources on System Bus display, perform the following:
  - a. Change the *Subset by* field to \*STG and press the Enter key.
  - b. Select the *I/O debug* option for the type 6112 IOP that has the same resource name, serial number and address as the IOP that reported the problem.

## Logical Hardware Resources on System Bus

System bus(es) to work with . . . . . \*ALL \*ALL, 1- 7  
 Subset by . . . . . \*STG \*ALL, \*STG, \*WS, \*CMN

Type options, press Enter.

2=Change detail    4=Remove    5=Display detail    6=I/O Debug  
 8=Associated packaging resource(s)    9=Resources associated with IOP

## Resource

Opt	Description	Type-Model	Status	Name
-	System Bus	-	Operational	BUS01
-	Multiple Function IOP	* 9162-001	Operational	CMB01
6	Storage IOP	6112-001	Operational	SI03
-	Storage IOP	6112-001	Operational	SI04
-	System Bus	-	Operational	BUS02
-	Storage IOP	6512-001	Operational	SI01
-	Storage IOP	6512-001	Operational	SI02

More...

F3=Exit    F5=Refresh    F6=Print    F9=Failed resources  
 F10=Non-reporting resources    F11=Display serial/part numbers    F12=Cancel

Figure 18. Example Logical Hardware Resources on System Bus Display

4. On the Select IOP Debug Function display, select the *IPL I/O processor* option and press the Enter key.

**Note:** Make a note of the time you select the *IPL I/O processor* option so that you can determine which product activity log entries occurred during the I/O processor IPL.

When the I/O processor completes the IPL, return to the Start a Service Tool display.

5. Look for product activity log entries that occurred during the I/O processor IPL by performing the following:
  - a. From the Start a Service Tool display, select the *Product activity log* option.
  - b. Select the *Analyze log* option.
  - c. Enter the date and time that corresponds with the I/O processor IPL.
  - d. If a new entry appears for the I/O processor IPL, write down the type, model, address, reference code, date, and time.
  - e. Return to the problem isolation procedure that sent you here.

**This ends the procedure.**
6. Perform an IPL by doing the following:
  - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
  - b. Power on the system in manual mode (see “Selecting IPL Type, Mode, and Speed” on page 793).

Does an SRC occur on the control panel?

**No      Yes**

↓ Record the reference code data on the Problem Summary Form. Then return to the problem isolation procedure step that sent you here.

**This ends the procedure.**

7. Look at the console.

## MSIOP PIPs

Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

**No      Yes**

↓      Record the MSIOP reference code. Then return to the problem isolation procedure step that sent you here.

**This ends the procedure.**

8. Look for product activity log entries that occurred during the I/O processor IPL by performing the following:
  - a. Go to the Product Activity Log display in DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
  - b. Select the *Analyze log* option.
  - c. Enter the date and time that corresponds with the I/O processor IPL.
  - d. If a new entry appears for the I/O processor IPL, write down the type, model, address, reference code, date, and time.
  - e. Return to the problem isolation procedure that sent you here.

**This ends the procedure.**

**This ends the procedure.**

## MSIOP Parts Location

**Introduction:** This procedure describes the following:

- Storage subsystem parts
- How to get address data from the product activity log or a Problem Summary Form
- How to use the system configuration list to physically find parts in the system

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Are you working on a type 611x MSIOP?

**Yes      No**

↓      Go to step 4 of this procedure.

2. Use the list of “MSIOP (Type 611x) Failing Items” on page 575 to:
  - Get address information for the failing item.
  - Physically find the failing item.

**Note:** If the Problem Summary Form is not available, use the product activity log to gather the data. In product activity log, go to the reference code that sent you here and use the hexadecimal information to find the following:

- The direct select address (DSA)- BBBB-Cc-bb.
  - BBBB = hexadecimal offsets 4C and 4D.
  - Cc = hexadecimal offset 51.
  - bb = hexadecimal offset 4F.
- The unit address (UA)– hexadecimal offsets 18C through 18F.



- The device unit reference code (URC)– hexadecimal offsets 194 and 195.

See *AS/400 Service Functions* for more information on how to find address information in the product activity log.

3. Return to the problem isolation procedure step that sent you here.

**This ends the procedure.**

4. You are working on a type 650x MSIOP.

Use the list of “MSIOP (Type 650x) Failing Items” on page 576 to:

- Get address information for the failing item.
- Physically find the failing item.

**Note:** If the Problem Summary Form is not available, use the product activity log to gather the data. Select the entry for the reference code that sent you here and use the hexadecimal information to find the following:

- The direct select address (DSA)– BBBB-Cc-bb.
  - BBBB = hexadecimal offsets 4C and 4D.
  - Cc = hexadecimal offset 51.
  - bb = hexadecimal offset 4F.
- The unit address (UA)– hexadecimal offsets 18C through 18F.
- The device unit reference code (URC)– hexadecimal offsets 194 and 195.

See *AS/400 Service Functions* for more information on how to find address information in the product activity log.

5. Return to the problem isolation procedure step that sent you here.

**This ends the procedure.**

## MSIOP (Type 611x) Failing Items

Table 21. MSIOP (Type 611x) Failing Items

Item Description	Location Procedure
Magnetic storage I/O processor (MSIOP)	<ol style="list-style-type: none"> <li>1. Read the direct select address of the failing MSIOP from the product activity log record or from the Problem Summary Form.</li> <li>2. If needed, use the system configuration list with this address to physically find the MSIOP.</li> </ol>
Signal cables	<ol style="list-style-type: none"> <li>1. Read the direct select address of the failing MSIOP from the product activity log record or from the Problem Summary Form.</li> <li>2. If needed, use the system configuration list with this address to physically find the MSIOP.</li> <li>3. The signal cables connect the MSIOP to all the devices attached to it. You can find a list of signal cable part numbers in FI00500 in the “Failing Item (FI) Code Table” on page 359.</li> </ol>

## MSIOP PIPs

Table 21. MSIOP (Type 611x) Failing Items (continued)

Item Description	Location Procedure
All attached storage devices	<ol style="list-style-type: none"><li>1. Read the direct select address of the failing MSIOP from the product activity log record or from the Problem Summary Form.</li><li>2. If needed, use the system configuration list with this address to physically find the MSIOP.</li><li>3. Follow the cables from the MSIOP to find all attached storage devices.</li></ol> <p><b>Note:</b> Any one of the storage devices attached to the MSIOP may be the failing item.</p>
Switch-addressed storage devices	<ol style="list-style-type: none"><li>1. Read the direct select address of the failing MSIOP from the product activity log record or from the Problem Summary Form.</li><li>2. Read the switch address of the failing storage device from the product activity log record or from the Problem Summary Form.</li><li>3. If needed, use the system configuration list with these addresses to physically find the MSIOP.</li><li>4. Follow the cables from the MSIOP to find the failing storage device with a switch address that compares to the product activity log or the Problem Summary Form.</li><li>5. More problem analysis may be possible by going to the service information for the specific storage device.</li></ol>
Terminating plug	<ol style="list-style-type: none"><li>1. Read the direct select address of the failing MSIOP from the product activity log record or from the Problem Summary Form.</li><li>2. If needed, use the system configuration list with this address to physically find the MSIOP.</li><li>3. Follow the cables from the MSIOP to find all attached storage devices.</li><li>4. Find the last device attached to the signal cable. The terminating plug is installed on that device.</li></ol>

## MSIOP (Type 650x) Failing Items

Table 22. MSIOP (Type 650x) Failing Items

Item Description	Location Procedure
Magnetic storage I/O processor (MSIOP)	<ol style="list-style-type: none"><li>1. Read the direct select address of the failing MSIOP from the product activity log record or from the Problem Summary Form.</li><li>2. If needed, use the system configuration list with this address to physically find the MSIOP.</li></ol>
Signal cable	<ol style="list-style-type: none"><li>1. Read the direct select address of the failing MSIOP from the product activity log record or from the Problem Summary Form.</li><li>2. If needed, use the system configuration list with this address to physically find the MSIOP. You can find the signal cable part numbers in FI00832 in the "Failing Item (FI) Code Table" on page 359. <b>Note:</b> For 3490 Tape Units, 35xx Tape Units, and 7208 Tape Drives, find the signal cable part numbers in FI00830.</li></ol>

Table 22. MSIOP (Type 650x) Failing Items (continued)

Item Description	Location Procedure
Device	<ol style="list-style-type: none"> <li>1. Read the direct select address of the failing MSIOP from the product activity log record or from the Problem Summary Form.</li> <li>2. If needed, use the system configuration list with this address to physically find the MSIOP.</li> <li>3. Use the storage device service information to exchange the failing device.</li> </ol>
Device controller card	<ol style="list-style-type: none"> <li>1. Read the direct select address of the failing MSIOP from the product activity log record or from the Problem Summary Form.</li> <li>2. If needed, use the system configuration list with this address to physically find the MSIOP.</li> <li>3. Follow the cable from the MSIOP to find the attached storage device.</li> <li>4. The failing device controller card is installed in the device connected to the MSIOP by the cable you followed.</li> <li>5. Use the storage device service information to exchange the failing device controller card.</li> </ol>
Device internal cable	<ol style="list-style-type: none"> <li>1. Read the direct select address of the failing MSIOP from the product activity log record or from the Problem Summary Form.</li> <li>2. If needed, use the system configuration list with this address to physically find the MSIOP.</li> <li>3. Follow the cable from the MSIOP to find the attached storage device.</li> <li>4. The failing device internal cable is installed in the device connected to the MSIOP by the cable you followed.</li> <li>5. Use the storage device service information to exchange the failing device internal cable.</li> </ol>
Terminating plug	<ol style="list-style-type: none"> <li>1. Read the direct select address of the failing MSIOP from the product activity log record or from the Problem Summary Form.</li> <li>2. If needed, use the system configuration list with this address to physically find the MSIOP.</li> <li>3. Follow the cable from the MSIOP to find the attached storage device.</li> <li>4. The terminating plug is installed on the device connected to the MSIOP by the cable you followed.</li> </ol>

### Storage Device Ready Conditions for MSIOP Devices

Use Table 23 on page 578 to determine the ready conditions for storage devices. All the conditions listed for each device must be correct for the device to be ready.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

**Note:** If the device is not ready, look at the Power Ready light on the frame control panel. If the device is not ready and it does not seem to be a primary power problem, use the unit reference code or other instructions in the *Action* column and go to the service information for the specific storage device.

## MSIOP PIPs

Table 23. Storage Device Ready Conditions

Storage Device	Ready Description	Action
3490, 3570, 3590, 63A0	<ul style="list-style-type: none"> <li>Power switch is set to the On position.</li> <li>Tape is loaded.</li> <li>Tape unit displays Ready.</li> <li>Tape unit SCSI address is set to 0 (zero). This setting is functionally the same as address 7.</li> </ul>	<p>See the tape unit operator information for instructions on how to make the tape unit ready.</p> <p>If you cannot make the tape unit ready, see the tape unit service information.</p>
7208	<ul style="list-style-type: none"> <li>Power switch is on (pressed).</li> <li>Power light is on.</li> <li>Data cartridge is inserted.</li> <li>Ready light is on.</li> <li>System external signal cable is connected to the MSIOP and to the 7208 Tape Drive.</li> </ul> <p><b>Note:</b> The SCSI I/O bus terminating plug for the system external signal cable is connected internally in the 7208 Tape Drive. The 7208 Tape Drive does not need, and must not have, an external terminating plug.</p>	<p>See the <i>7208 8 mm Tape Drive Operator's Manual</i> for instructions on making the tape drive ready. If you cannot make the tape drive ready, go to "TU-PIP2" on page 675</p>
9331	<ul style="list-style-type: none"> <li>Power switch is set to the On position.</li> <li>Power light is on.</li> <li>Unit Ready light is on.</li> </ul>	<p>See the <i>9331 Diskette Unit Service Information</i> for instructions on making the diskette unit ready.</p>
9337	<ul style="list-style-type: none"> <li>Power switch is set to the On position.</li> <li>Unit Ready light is on.</li> <li>Unit Attention light is off.</li> <li>Device data display contains either *xxx, where x is any hexadecimal character, or B000.</li> </ul>	<p>Use the contents of the Data display and go to the "Analyzing Problems" section of the <i>9337 Disk Array Service Information</i></p>

## Power Problem Isolation Procedures

### Overview

This section contains the procedures necessary to isolate a failure in the system power.

**Attention:** Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read "Important Cryptographic I/O Processor Information" on page 785 before disconnecting or removing the cryptographic I/O processor.

The following safety notices apply throughout this section.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see "Powering

Off and Powering On the System or Expansion Tower” on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

**DANGER**

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

**DANGER**

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

**DANGER**

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

**DANGER**

To prevent the system from powering on automatically during service procedures, select Manual or Secure mode on the system unit control panel. (RSFTD214)

## POW-PIP1

**Introduction:** This procedure isolates a power problem in the system unit.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel.

1. Is the SRC 004x, 005x, 2202, or 2302?

**No      Yes**



**Attention:** This part may be sensitive to electrostatic discharge (ESD). See “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061.

Go to “POW-PIP2” on page 585.

2. Perform the following:
  - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
  - b. Disconnect the power cable.
  - c. Remove the system covers (see “Chapter 6. Removal and Installation Procedures” on page 821).
  - d. Label and disconnect the following cables PWR1A, PWR1B, PWR1C, and PWR8 when present at the DASD and removable media devices or back

## Power PIPs

planes. (See "System Unit and Expansion Unit Locations and Addresses" on page 712 for location and address information for these cables.)

- e. Install the system covers (they contain an interlock).
- f. Connect the power cable.
- g. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No      Yes**

↓      Go to step 12 of this procedure.

3. Perform the following:

- a. Power off the system.
- b. Remove the system covers.
- c. Connect one of the cables that was disconnected in step 2 of this procedure to 1 backplane or device.
- d. Install the system covers if they contain an interlock.
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No      Yes**

↓

Go to step 6 of this procedure.

4. Have all the cables that were disconnected in step 2 of this procedure been reconnected?

**No      Yes**

↓      **This ends the procedure.**

5. Go to step 3 of this procedure.

6. Does the cable connect to 1 DASD or removable media device without a back plane?

**No      Yes**

↓      Exchange the single DASD or removable media device last connected in step 3 of this procedure.

**This ends the procedure.**

7. Perform the following:

- a. Power off the system.
- b. Disconnect the power cable.
- c. Remove the system covers.
- d. Disconnect all the DASD or removable media devices by backing them partially out of the enclosure.
- e. Install the system covers (they contain an interlock).
- f. Connect the power cable.
- g. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No      Yes**

↓      Exchange the DASD or removable media back plane that was last connected to a cable in step 3 of this procedure.

8. Perform the following:
  - a. Power off the system.
  - b. Disconnect the power cable.
  - c. Remove the system covers.
  - d. Connect 1 of the DASD or removable media devices that was disconnected in step 7 of this procedure.
  - e. Install the system covers (they contain an interlock).
  - f. Connect the power cable.
  - g. Power on the system.

Does an over current SRC occur in 30 seconds?

**No      Yes**

- ↓      Exchange the last DASD or removable media device that was connected in step 8 of this procedure.

**This ends the procedure.**

9. Have all the DASD or removable media devices been reconnected to the back plane you are working on?

**Yes      No**

↓

Go to step 8 of this procedure.

10. Have all the back planes, DASD and removable media devices that were disconnected in step 2 of this procedure been reconnected?

**No      Yes**

↓      **This ends the procedure.**

11. Go to step 3 of this procedure.

12. Perform the following:

- a. Power off the system.
- b. Disconnect the power cable.
- c. Remove the system covers.
- d. Disconnect an air moving device from the system unit power.
- e. Install the system covers (they contain an interlock).
- f. Connect the power cable.
- g. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**Yes      No**

- ↓      Exchange the last air moving device disconnected in this step.

13. Have all the air moving devices been disconnected in the system unit power?

**Yes      No**

↓      Go to step 12 of this procedure.

14. Reconnect all air moving devices and continue with step 15 of this procedure

15. **Attention:** This part may be sensitive to electrostatic discharge (ESD). See "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1061.

Perform the following:

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- a. Power off the system.
- b. Disconnect the power cord.
- c. Remove the system covers.
- d. Remove all the cards from the system unit MFIOP and processor card enclosures.
- e. Install the system covers (they contain an interlock).
- f. Connect the power cord.
- g. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No      Yes**

↓

Go to step 19 of this procedure.

16. Perform the following:

- a. Power off the system.
- b. Disconnect the power cord.
- c. Remove the system covers.
- d. Install one of the cards you removed from the system unit.
- e. Install the system covers (they contain an interlock).
- f. Connect the power cord.
- g. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No      Yes**

↓

Exchange the last card you installed in this step.

**This ends the procedure.**

17. Have you installed all the cards in the system card enclosures?

**No      Yes**

↓

**This ends the procedure.**

18. Go to step 16 of this procedure.

19. **Attention:** The 3 connectors should be removed from the system planar as a group of 3 in one step and installed as a group of 3 in one step to avoid high current damage to the pins and planar.

Perform the following:

- a. Power off the system.
- b. Disconnect the power cord.
- c. Remove the system covers.
- d. Disconnect and label cables PWR3A or PWR3B when present and PWR2A or PWR2B when present.
- e. Install the system covers (they contain an interlock).
- f. Connect the power cord.
- g. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**Yes      No**



↓ Go to step 25.

**This ends the procedure.**

20. Does the unit you are working on have a 480 watt power supply?

**No      Yes**

↓ Go to step 29 of this procedure.

21. Perform the following:

- a. Power off the system.
- b. Remove the system covers.
- c. Exchange the system unit power supply 1 (P01).
- d. Install the system covers (they contain an interlock).
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**Yes      No**

↓ The power supply exchanged in this step is the failing item.

**This ends the procedure.**

22. Is the expansion power supply unit 2 installed? (Backup power supply — not in all units.)

**Yes      No**

↓ Go to step 25.

23. Perform the following:

- a. Power off the system.
- b. Remove the system covers.
- c. Exchange the expansion unit power supply 2 (P02).
- d. Install the system covers (they contain an interlock).
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No      Yes**

↓ Go to step 27 on page 584 of this procedure.

24. The power supply you exchanged in the last step is the failing item.

**This ends the procedure.**

25. Perform the following:

- a. Power off the system.
- b. Remove the system covers.
- c. Exchange the following parts one at a time:
  - 1) MFIOP backplane
  - 2) Processor backplane
- d. Install the system covers (they contain an interlock).
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**Yes      No**

↓ The backplane exchanged in this step is the failing item.

**This ends the procedure.**

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26. Have all the backplanes in step 25 been exchanged?

Yes No

↓ Go to step 25.

27. Perform the following:

- a. Power off the system.
- b. Remove the system covers.
- c. Exchange the electronics panel card.
- d. Install the system covers (they contain an interlock).
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

Yes No

↓ The electronics panel card exchanged in this step is the failing item.

**This ends the procedure.**

28. Exchange the power supply distribution backplane.

**This ends the procedure.**

29. Perform the following:

- a. Verify that the linecord is plugged into both the supply and the outlet and that there is power to the outlet.
- b. With AC applied, check the back of the supply. A single LED should be lit indicating that voltage is present.

Is the left LED lite on? (See Figure 19).

Yes No

↓

Go to step 29c4.

c. Perform the following:

- 1) Disconnect all output cables plugged into the supply (not the AC linecord).
- 2) Using a non-conductive tool, locate the only *round* hole on the back of the supply.

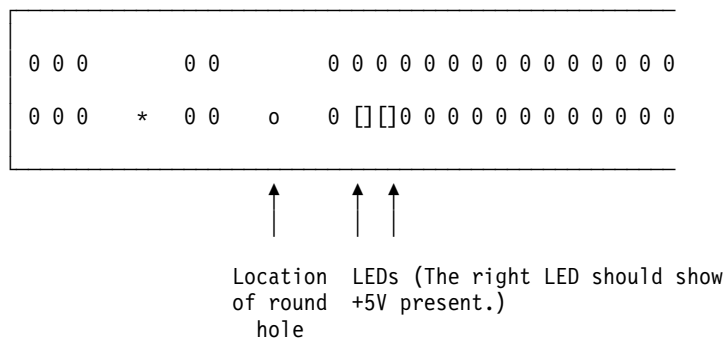


Figure 19. Round Hole Location On Back of Supply

- 3) Insert the tool into this round hole only to push the button within the supply (see Figure 19 on page 584). Hold the button in. (The second LED indicates +5V present.)

While holding the button in, does the second LED light and remain lit?

**No      Yes**

↓      Replace the control panel card (see “CTLPNL” on page 404).

**This ends the procedure.**

- 4) The power supply does not power on and remain powered on. Replace the power supply, part number 21H9364.

**This ends the procedure.**

## **POW-PIP2**

**Introduction:** This procedure isolates a power problem in the expansion unit.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel.

1. Is the SRC 00x3, 2201, or 2301?

**No      Yes**

↓      **Attention:** This part may be sensitive to electrostatic discharge (ESD). See “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061.

Go to “POW-PIP1” on page 579.

2. Are you working on an expansion unit with a SPD card enclosure?

**Yes      No**

↓

Go to step 7.

3. Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
- b. Remove the system covers (see “Chapter 6. Removal and Installation Procedures” on page 821).
- c. Remove all the cards from the expansion unit card enclosures except the 2735 bus card (see “Chapter 6. Removal and Installation Procedures” on page 821).
- d. Install the system covers (they contain an interlock).
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No      Yes**

↓      Go to step 7 of this procedure.

4. Perform the following:

- a. Power off the system.
- b. Remove the system covers.

## Power PIPs

- c. Install one of the cards you removed from the expansion unit.
- d. Install the system covers if they contain an interlock.
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No      Yes**

↓      Exchange the last card you installed in this step.

**This ends the procedure.**

5. Have you installed all the cards in the system card enclosures?

**No      Yes**

↓      **This ends the procedure.**

6. Go to step 4 of this procedure.

7. Perform the following:

- a. Power off the system.
- b. Disconnect the power cord.
- c. Remove the system covers.
- d. Disconnect and label cables PWR21 and PWR22 when present at the disk unit and removable media devices.
- e. Install the system covers (they contain an interlock).
- f. Connect the power cord.
- g. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No      Yes**

↓      Go to step 16 of this procedure.

8. Perform the following:

- a. Power off the system.
- b. Remove the system covers.
- c. Connect one of the cables that was disconnected in step 7 of this procedure to 1 backplane or device.
- d. Install the system covers if they contain an interlock.
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No      Yes**

↓      Go to step 11 of this procedure.

9. Have all of the cables that were disconnected in step 7 of this procedure been reconnected?

**No      Yes**

↓      **This ends the procedure.**

10. Go to step 8 of this procedure.

11. Perform the following:

- a. Power off the system.
- b. Disconnect the power cord.
- c. Remove the system covers.

- d. Disconnect all disk units or removable media units by backing them out of the enclosure slightly.
- e. Install the system covers (they contain an interlock).
- f. Connect the power cord.
- g. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No      Yes**

↓      Exchange the disk unit or removable media backplane.

12. Perform the following:

- a. Power off the system.
- b. Disconnect the power cord.
- c. Remove the system covers.
- d. Connect one of the disk units or removable media units that was disconnected in step 11 of this procedure.
- e. Install the system covers (they contain an interlock).
- f. Connect the power cord.
- g. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No      Yes**

↓      Exchange the last disk unit or removable media unit that was connected in this step.

**This ends the procedure.**

13. Have all the disk units or removable media units been reconnected to the backplane you are working on?

**Yes      No**

↓      Go to step 12 of this procedure.

14. Have all the back planes and disk units and removable media units that were disconnected in step 7 of this procedure been reconnected?

**No      Yes**

↓      **This ends the procedure.**

15. Go to step 8 of this procedure.

16. Perform the following:

- a. Power off the system.
- b. Disconnect the power cord.
- c. Remove the system covers.
- d. Disconnect an air moving device from the system unit power. (Disregard air moving device errors when device is removed.)
- e. Install the system covers (they contain an interlock).
- f. Connect the power cord.
- g. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**Yes      No**

↓      Exchange the last air moving device disconnected in this step.

**This ends the procedure.**

17. Have all the air moving devices been disconnected in the system unit power.

**Yes     No**

↓     Go to step 16 of this procedure.

18. Reconnect all air moving devices and go to step 19 of this procedure.

19. Are you working on an expansion unit with a PCI card planar?

**Yes     No**

↓     Go to step 28 of this procedure.

20. Perform the following:

- a. Power off the system.
- b. Remove the expansion system covers.
- c. Remove all the cards from the expansion unit PCI backplane.
- d. Install the expansion system covers (they contain an interlock).
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No     Yes**

↓     Go to step 24 of this procedure.

21. Perform the following:

- a. Power off the system.
- b. Remove the system covers.
- c. Install one of the cards you removed from the expansion unit PCI backplane.
- d. Install the expansion system covers (they contain an interlock).
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No     Yes**

↓     Exchange the last card you reinstalled in this step.

**This ends the procedure.**

22. Have you installed all the cards in the expansion PCI backplane?

**No     Yes**

↓     **This ends the procedure.**

23. Go to step 21.

24. Perform the following:

- a. Power off the system.
- b. Remove the system covers.
- c. Exchange the expansion unit power supply unit 3.
- d. Install the expansion covers (they contain an interlock).
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**Yes     No**

↓     The power supply exchanged in this step is the failing item.

**This ends the procedure.**

25. Is the expansion power supply unit 4 installed? This is the backup power supply and not used in all systems.

**Yes     No**

↓     Go to step 27 of this procedure.

26. Perform the following:

- a. Power off the system.
- b. Remove the system covers.
- c. Exchange the expansion unit power supply 4.
- d. Install the system covers (they contain an interlock).
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**Yes     No**

↓     The power supply exchanged in this step is the failing item.

**This ends the procedure.**

27. Are you working on an expansion unit with an SPD card enclosure?

**Yes     No**

↓     Go to step 30.

28. Perform the following:

- a. Power off the system.
- b. Remove the system covers.
- c. Exchange the 2735 expansion bus card.
- d. Install the system covers (they contain an interlock).
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**Yes     No**

↓     The 2735 expansion bus card exchanged in this step is the failing item.

**This ends the procedure.**

29. Perform the following:

- a. Power off the system.
- b. Remove the system covers.
- c. Exchange the SPD enclosure backplane.
- d. Install the system covers (they contain an interlock).
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**No     Yes**

↓     The SPD enclosure backplane exchanged in this step is the failing item.

**This ends the procedure.**

30. Perform the following:

- a. Power off the system.
- b. Remove the system covers.
- c. Exchange the expansion PCI backplane.

## Power PIPs

- d. Install the system covers (they contain an interlock).
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**Yes      No**

- ↓      The expansion PCI backplane exchanged in this step is the failing item.

**This ends the procedure.**

31. Perform the following:

- a. Power off the system.
- b. Remove the system covers.
- c. Exchange the control panel card (SPNLCRD).
- d. Install the system covers (they contain an interlock).
- e. Power on the system.

Does an overcurrent SRC occur in 30 seconds?

**Yes      No**

- ↓      The control panel card exchanged in this step is the failing item.

**This ends the procedure.**

32. Exchange the power supply interposer card and cable carrier assembly.

**This ends the procedure.**

## POW-PIP3

**Introduction:** This procedure tests the battery power unit for correct operation.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system is logically partitioned, perform this procedure only from the Primary partition’s console and the system control panel.

- 1. Ensure that the battery power unit is installed and that there was no system power loss for the last 8 hours by checking the message log for CPF1816.

**Note:** If the message log shows that a power loss occurred in the last 8 hours, the battery may not be at full charge and the test may fail.

To check the message log, perform the following:

- a. Enter the command DSPLOG QHST
- b. Press F4 (prompt).

**Note:** The *time date* parameter that you use should be for the last 8-hour period.

- c. Fill in the time and date.  
For the United States, the format is:  
hhmmss mmddyy

**Note:** The output may be printed (\*PRINT) or displayed. The default (\*) is to display.



2. Ensure that all user programs are ended.
  3. Perform the following:
    - a. Select Manual mode on the control panel (see “Selecting IPL Type, Mode, and Speed” on page 793).
    - b. Select function 21 (Make DST Available) on the control panel.
    - c. Press the Enter key.
    - d. Enter the password on the DST Sign On display. You need the customer password to get to the Use Dedicated Service Tools (DST) display.
  4. Select the *Start a service tool* option.
  5. Select the *System power control network* option.
  6. Press the Enter key to continue.
  7. Select the *Test battery interface* option by entering 7 under the *OPT* column on the line for the correct unit (**not** the line for the frame).
  8. Press the Enter key to confirm your selection.
- Does the battery test complete with no problems found?

**Yes      No**

↓ Exchange the following, one at a time (see “Removal and Installation Procedures” in the *Repair and Parts* information for the system):

- a. Battery power unit

**System Unit replace one at a time:**

- BATRY
- UPSUNIT

**Expansion Unit:**

- (See FI00251 in “Failing Item (FI) Code Table” on page 359).

- b. SPCN card (if installed)

**System Unit:**

- SPNLCRD

**Expansion Unit:**

- TWRCARD

- c. AC module (if installed)

- d. Backplane

**This ends the procedure.**

9. Approximately 24 hours from now, the system will perform a battery capacity test. When the battery capacity test completes successfully, the battery power unit test is complete.

**This ends the procedure.**

## Remote Operations Console Problem Isolation Procedures

### Overview

This section contains the procedures necessary to isolate a failure in the Remote Operations Console (ROC).

**The following symptoms can be caused by a defective Remote Control Panel cable:**

- Remote Control panel (hung) System Control Panel Functions.
- SRC 0000-DDDD with attention light on the system panel blinking.

## ROC PIPs

- Remote Control Panel accepts mode selections, however the system does not respond
- The Remote Control Panel does not function.
- AS/400 Operations Console status is "Remote Control Panel Unavailable..."

**Note:** This may also be caused by a problem with the internal SIG2 signal cable.

**The following AS/400 Operations Console Status screen messages can be caused by not powering on the AS/400:**

- Connecting Console/Remote...
- Remote Control Panel connection to xxxx xx failed. Do you want to try again?
- Remote Control Panel connection failed. Do you want to try again?

**Note:** A problem with the Remote Control Panel cable may also cause this symptom.

**The following symptoms can be caused by a defective Operations Console cable:**

- The Operations Console display is displayed, but it is not functioning while the Remote Control Panel is functioning.
- The Operations Console display is blank.

The following safety notices apply throughout this section.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see "Powering Off and Powering On the System or Expansion Tower" on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

### DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

### DANGER

To prevent the system from powering on automatically during service procedures, select Manual or Secure mode on the system unit control panel. (RSFTD214)

## ROC-PIP3

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

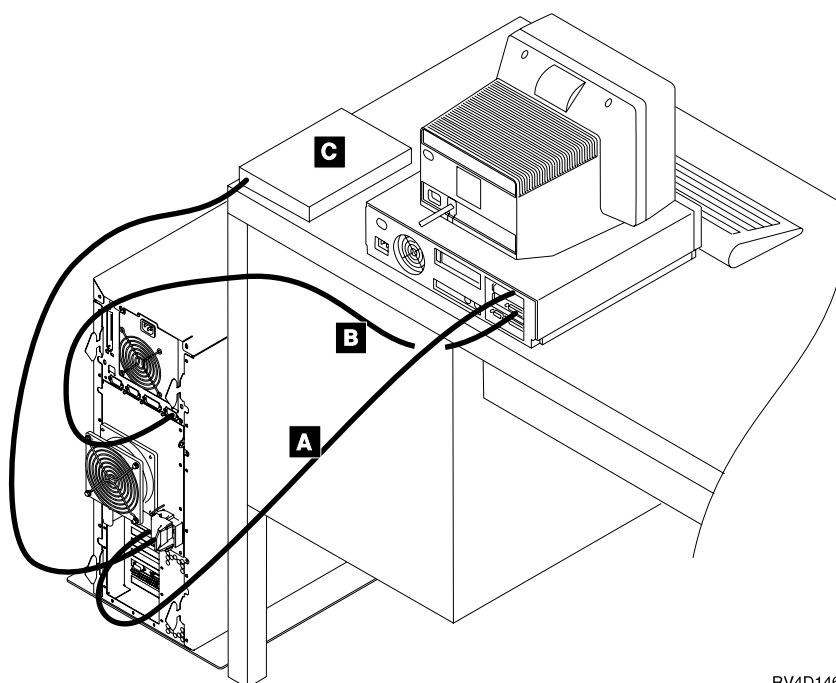
**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure will help isolate an Operations Console failure.

**The following symptoms can be caused by a defective Operations Console cable:**

- The Operations Console display is displayed, but it is not functioning while the Remote Control Panel is functioning.
- The Operations Console session display is blank.

**Procedure:**



RV4D146-1

**A** is the Operations Console cable, P/N 97H7557, from the system unit to the system unit console.

**B** is the Remote Control Panel cable, P/N 97H7591.

1. Ensure that the 2721 IOA is installed into position C09.
2. Ensure the cable **A** is connected to **port 0** (left connector) on the adapter card in position C09. Push in the cable connector and tighten the thumbscrews.
3. Verify the other end of the Operations Console cable is connected to the system unit console (PC) serial port. Push in the cable connector and tighten the thumbscrews.

**Note:** If the PC has a 9-pin connector, you need to use the 9 to 25 pin adapter, **part number 46G0298**, that was shipped with the system.

4. If there is a Remote Control Panel cable, P/N 97H7591, ensure it is connected to the connector labeled **MI** on the back of the system unit. The other end should be connected to port 2 on the system unit console (PC).
5. Are the PC and AS/400 powered on?

## ROC PIPs

- No      Yes**
- ↓
- Click on the system name.
  - Click on the disconnect icon.
  - Wait for the status light to indicate disconnected.
  - Click on the system name.
  - Click on the connect icon.
  - Go to 14.
6. Power on the PC (if not already powered on) that is being used as the system unit console.
7. Is the AS/400 powered on?
- No      Yes**
- ↓      Go to 13.
8. Enter **BM** into the Function/Data display.
9. Press the power button that is located on the AS/400 control panel. The IPL may take from 5 to 10 minutes.
10. Is the reference code **B6004501** shown in the Function/Data display?
- No      Yes**
- ↓      Go to 13.
11. Is the Attention light lit?
- Yes      No**
- ↓      If the system shows no activity for more than 10 minutes, go to the "Handling and Reporting System Problems" section of the *Basic System Operation, Administration, and Problem Handling*, which was shipped with the system. Then return here and continue.
12. Does a SRC of **x6xx500x** appear on the Function/Data display?
- Yes      No**
- ↓      Go to the "Handling and Reporting System Problems" section of the *Basic System Operation, Administration, and Problem Handling*, which was shipped with the system. Then return here and continue.
13. Open the Operations Console icon by doing the following:
- Click on **Start**.
  - Click on **Programs**.
  - Click on **IBM AS/400 Client Access**.
  - Click on **AS/400 Operations Console**.
14. Did the AS/400 *DST Sign On* appear?
- Yes      No**
- ↓      Go to "ROC-PIP5" on page 595 to determine if the cable is defective. If the cable is not defective call your next level of support.
15. Sign on using the system default values:
- In the *DST User ID* field, type **QSECOFR**.
  - In the *DST Password* field, type **QSECOFR**.

**Note:** If the system default values for User ID and Password were not valid the Customer may may have changed the DST password, obtain the new password from the Customer.

Then click on **OK**.

16. Did the Operations Console start?

**No      Yes**

↓      You should see the IPL or Install the system menu. Select *Use Dedicated Service Tools (DST)*. Go to 17.

17. Did you get the display prompting you for a DST user id and password?

**Yes      No**

↓      Call your next level of support.

18. Sign in on the DST display.

- In the *User ID* field, type **QSECOFR**.
- In the *Password* field, type **QSECOFR**.

**Note:** If the system default values for User ID and Password were not valid the Customer may may have changed the DST password, obtain the new password from the Customer.

19. Select Work with DST environment.

20. Select system devices.

21. Select console mode.

22. Select Operations Console.

23. Press F3.

24. If the Operations Console was not previously selected continue with the next step. If the Operations Console had been previously selected, select the option to IPL the system.

25. Select Start a Service Tool.

26. Select Power the system down.

27. Wait for the power light to turn off.

**This ends the Procedure.**

## ROC-PIP5

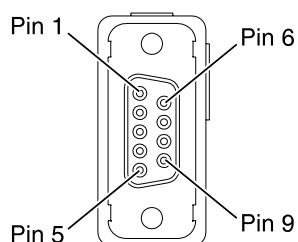
**Introduction:** This problem isolation procedure will isolate a failure in the Operations Console cable or the Remote Control Panel cable.

**Procedure:** Use the following tables and diagrams to check the pins on the Operations Console cable or the Remote Control Panel cable. Replace the defective cables. The part numbers are:

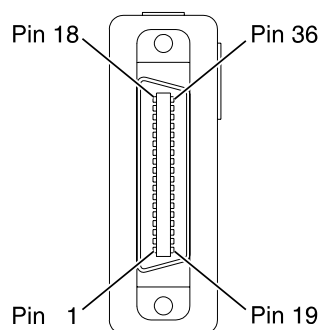
- Operations Console cable — 97H7557
- Remote Control Panel cable — 97H7591

## ROC PIPs

Cable #91H7557

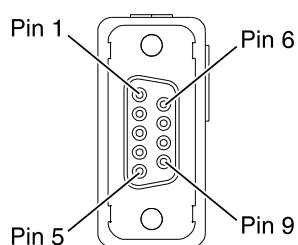


PC

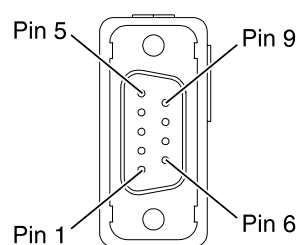


2721 Card

Cable #91H7591



PC



AS/400

RV4B515-0

Table 24. Pin out for the Operations Console cable

Body Color	Lead Number	"From" end Data Set Connection	"To" end I/O Connection	Signal Name
		Position Number	Position Number	
Black	1	2	13	RD - TD
Red	2	3	6	TD - RD
White	3	6	4	DSR - DTR
Green	4	8	2	CTS - RTS
Orange	5	7	33	RTS - CTS
Blue	6	1, 4	15	DTR/CD - DSR
Drain Wires		5	7, 10, 27	Signal Ground
Jacket, Foil, Braid				Frame Ground

Table 25. Pin out for the Remote Control Panel cable

Body Color	Lead Number	"From" end Data Set Connection	"To" end I/O Connection	Signal Name
		Position Number	Position Number	
Black	1	2	2	RD - TD
Red	2	3	3	TD - RD
White	3	7	7	RTS - CTS

Table 25. Pin out for the Remote Control Panel cable (continued)

Body Color	Lead Number	"From" end Data Set Connection	"To" end I/O Connection	Signal Name
		Position Number	Position Number	
Green	4	8	8	CTS - RTS
Orange	5	5	5	Signal Ground
Blue	6	5	5	Signal Ground
Jacket, Foil, Braid				Frame Ground

## ROC-PIP7

### Introduction:

**Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure isolates a Remote Control Panel communications problem between the system unit and the system unit PC.

**Note:** The SRC 0000-DDDD may indicate a temporary communications failure between the AS/400 control panel and the PC running the Operations Console program. This SRC normally clears when the RCP cable is connected to both the AS/400 and the PC, the PC is powered on, and the Operations Console program is started.

### The following symptoms can be caused by a defective Remote Control Panel cable:

- Remote Control panel (hung) System Control Panel Functions.
- SRC 0000-DDDD with attention light on the system panel blinking.
- Remote Control Panel accepts mode selections, however the system does not respond
- The Remote Control Panel does not function.
- AS/400 Operations Console status is "Remote Control Panel Unavailable..."

**Note:** This may also be caused by a problem with the internal SIG2 signal cable.

### The following AS/400 Operations Console Status screen messages can be caused by not powering on the AS/400:

- Connecting Console/Remote...
- Remote Control Panel connection to xxxx xx failed. Do you want to try again?
- Remote Control Panel connection failed. Do you want to try again?

**Note:** A problem with the Remote Control Panel cable may also cause this symptom.

### Procedure:

## ROC PIPs

1. Is the Remote Control Panel cable attached to the connector labeled MI on the back of the AS/400 system.

**Yes      No**

- ↓      Attach the Remote Control Panel cable, P/N 97H7591, to the connector labeled **MI** on the back of the system unit. The other end should be connected to port 2 on the system unit console (PC).

**Note:** If the PC has a 9-pin connector, you need to use the 9 to 25 pin adapter, **part number 46G0298**, that was shipped with the system.

2. Is the PC powered on?

**No      Yes**

- ↓
- a. Click on the system name.
  - b. Click on the disconnect icon.
  - c. Wait for the status light to indicate disconnected.
  - d. Click on the system name.
  - e. Click on the connect icon.
  - f. Go to 5.

3. Power on the PC that is being used as the system unit console.

4. Open the Operations Console icon by doing the following:

- a. Click on **Start**.
- b. Click on **Programs**.
- c. Click on **IBM AS/400 Client Access**.
- d. Click on **AS/400 Operations Console**.

5. Does the AS/400 Remote Control Panel Display appear on the system unit console PC?

**Yes      No**

- ↓      Go to "ROC-PIP5" on page 595 to determine if the cable is defective. If the cable is not defective, call your next level of support.

6. Verify manual and normal modes are selectable.

7. Select function 4, lamp test.

8. Verify scroll up and wrap around for IPL modes function properly.

9. Did the verification tests function properly?

**Yes      No**

- ↓      Call your next level of support.

**This ends the Procedure.**

## Storage Device I/O Processor (SDIOP) Problem Isolation Procedures

### Overview

This section contains the procedures necessary to isolate a failure in the multiple function I/O card.



Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

**DANGER**

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

**DANGER**

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

**DANGER**

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

**Warning:** Disconnecting the J15 and J16 cables will not prevent the system unit from powering on.

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 789
- “Initial Program Load (IPL) Information” in the *AS/400 Service Functions* information.
- “Determining the Load-Source Disk and Alternate IPL Device” on page 786.

**SDIOP-PIP1**

**Introduction:** This procedure performs an IPL to dedicated service tool (DST) to determine if the same reference code occurs. If a new reference code occurs, more analysis may be possible with the new reference code. If the same reference code occurs, you are instructed to exchange the failing items.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Was the IPL performed from disk (Type A or Type B)?

**No      Yes**

↓      Go to step 6 of this procedure.

2. Perform the following:

- a. Ensure that the IPL media is the correct version and level that are needed for the system model.

- b. Ensure that the media is not physically damaged.
- c. If the IPL media is cartridge type optical media (e.g. DVD), do not attempt to clean the media.

If the IPL media is non-cartridge type media (e.g. CD-ROM), wipe the disc in a straight line from the inner hub to the outer rim. Use a soft, lint-free cloth or lens tissue. Always handle the disc by the edges to avoid finger prints.

If the IPL media is tape, clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit.

3. Perform a Type D IPL in Manual mode.

Does a system reference code (SRC) appear on the control panel?

**Yes      No**

↓      Go to step 9 of this procedure.

4. Is the SRC the same one that sent you to this procedure?

**Yes      No**

↓      A different SRC occurred. Use the new SRC to correct the problem (see "Starting Point for All Problems" on page 4).

**This ends the procedure.**

5. You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 359 to help determine part numbers and location in the system.

**This ends the procedure.**

6. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

Does an SRC appear on the control panel?

**No      Yes**

↓      Go to step 11 of this procedure.

7. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

**No      Yes**

↓      Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to "LIC-PIP11" on page 527 and use cause code 0002. If any of the reference codes are not 0000, go to step 11 of this procedure and use the reference code that is not 0000.

**Note:** Use the characters in the *Type* column to find the correct reference code table.

8. Look at the product activity log (see "Product Activity Log" in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

**Yes      No**

↓      The problem cannot be isolated any more. Use the original SRC and

exchange the failing items. Start with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59 and “Chapter 6. Removal and Installation Procedures” on page 821). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 359 to help determine part numbers and location in the system.

**This ends the procedure.**

9. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

**No      Yes**

↓ Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to “LIC-PIP11” on page 527 and use cause code 0002. If any of the reference codes are not 0000, go to step 11 of this procedure and use the reference code that is not 0000.

**Note:** Use the characters in the *Type* column to find the correct reference code table.

10. Look at the product activity log (see “Product Activity Log” in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

**Yes      No**

↓ The problem is corrected.

**This ends the procedure.**

11. Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 1049).

Are the SRC and unit reference code (URC) the same ones that sent you to this procedure?

**Yes      No**

↓ Use the new SRC or reference code to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

**This ends the procedure.**

12. Perform the following:

- a. Power off the system.
- b. Exchange the FRUs in the failing item list for the SRC you have now. Start with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59 and “Chapter 6. Removal and Installation Procedures” on page 821). Perform steps 13 through 18 of this procedure after you exchange each FRU until you determine the failing FRU.

**Note:** If you exchange a disk unit, do not attempt to save customer data until instructed to do so in this procedure.

13. Power on the system.

Does an SRC appear on the control panel?

**No      Yes**

## SDIOP PIPs

↓ Go to step 16 of this procedure.

14. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

**No      Yes**

↓ Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to "LIC-PIP11" on page 527 and use cause code 0002. If any of the reference codes are not 0000, go to step 11 of this procedure and use the reference code that is not 0000.

**Note:** Use the characters in the *Type* column to find the correct reference code table.

15. Look at the product activity log (see "Product Activity Log" in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

**Yes      No**

↓ The last FRU you exchanged was failing.

**Note:** Before exchanging a disk unit, you should attempt to save customer data. Go to "Disk Unit" under "Chapter 6. Removal and Installation Procedures" on page 821 before exchanging a disk unit.

**This ends the procedure.**

16. Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 1049).

Is the SRC the same one that sent you to this procedure?

**No      Yes**

↓ The last FRU you exchanged is not the failing FRU. Go to step 12 of this procedure to continue FRU isolation.

17. Is the SRC B100 4504 or B100 4505 and have you exchanged disk unit 1 in the system unit, or are all the reference codes on the console 0000?

**Yes      No**

↓ Use the new SRC or reference code to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

**This ends the procedure.**

18. The last FRU you exchanged was failing.

**Note:** Before exchanging a disk unit, you should attempt to save customer data. Go to "Disk Unit" under "Chapter 6. Removal and Installation Procedures" on page 821 before exchanging a disk unit.

**This ends the procedure.**

## SDIOP-PIP3

**Introduction:** This procedure isolates problems on the interface between the storage device I/O card and the storage devices when the I/O card is the most probable failing item.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Perform an IPL to dedicated service tool (DST) (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does a system reference code (SRC) appear on the control panel?

**No      Yes**

↓ Go to step 5 of this procedure.

2. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

**Yes      No**

↓ Go to step 4 of this procedure.

3. Does one of the following messages appear in the list?

- Missing disk units in the configuration
- Missing mirror protection disk units in the configuration
- Device parity protected units in exposed mode.

**No      Yes**

↓ Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to “LIC-PIP11” on page 527 and use cause code 0002. If any of the reference codes are not 0000, go to step 5 of this procedure and use the reference code that is not 0000.

**Note:** Use the characters in the *Type* column to find the correct reference code table.

4. Look at the product activity log (see “Product Activity Log” in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

**Yes      No**

↓ You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 359 to help determine part numbers and location in the system.

**This ends the procedure.**

5. Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 1049).

Is the SRC the same one that sent you to this procedure?

**Yes      No**

↓ A different SRC occurred. Use the new SRC to correct the problem (see “Starting Point for All Problems” on page 4).

**This ends the procedure.**

6. Perform the following:
  - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
  - b. Disconnect one of the devices that are identified by FI code FI01107 (see “Failing Item (FI) Code Table” on page 359).
  - c. Power on the system.

Does an SRC appear on the control panel?

**No      Yes**

↓      Go to step 9 of this procedure.

7. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

**No      Yes**

↓      Go to step 9 of this procedure.

8. Look at the product activity log (see “Product Activity Log” in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

**Yes      No**

↓      The last FRU you disconnected is the failing FRU.

Exchange it and reconnect any other devices you disconnected in this procedure.

**Note:** Before exchanging a disk drive, you should attempt to save customer data. Go to “Start Disk Service Here” on page 919.

**This ends the procedure.**

9. Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 1049).

Is the SRC the same one that sent you to this procedure?

**Yes      No**

↓      Go to step 12 of this procedure.

10. The last device you disconnected is not failing.

Have you disconnected the last device that is identified by FI01107?

**Yes      No**

↓      Leave the device disconnected and go to step 6 of this procedure.

11. Reconnect all the devices you disconnected in this procedure. Then go to step 15 of this procedure.

12. Are you working in the system unit, is the SRC B1xx 4504, and has the load-source disk drive been disconnected?

**No      Yes**

↓      Go to step 14 of this procedure.

13. Is the SRC A600 5090, and are the 4 leftmost characters of function 13 one of the following: 0002, 0006, 0008, or 0013, or does one of the following displays appear on the console:

- Disk Configuration Error Report (with all reference codes 0000)
- Disk Configuration Warning Report (with all reference codes 0000)

- Display Missing Load-Source Disk
- Display Unknown Load-Source Disk
- Display Active Mirrored Load-Source Disk

**Yes      No**

- ↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Starting Point for All Problems” on page 4).

**This ends the procedure.**

14. Perform the following:

a. Exchange the following parts:

- 1) The last device you disconnected.

Reconnect any other devices you disconnected in this procedure.

**Note:** Before exchanging a disk drive, you should attempt to save customer data. Go to “Start Disk Service Here” on page 919.

- 2) The parts listed in FI00096 (see “Failing Item (FI) Code Table” on page 359).

b. Reconnect all the devices you disconnected in step 6 of this procedure.

**This ends the procedure.**

15. FI code FI01107 is not the failing part. Exchange the remaining FRUs in the failing item list one at a time.

**This ends the procedure.**

## SDIOP-PIP13

**Introduction:** This procedure isolates problems on the interface between the I/O card and the storage devices when the I/O card is the most probable failing item.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

**Note:** The unit reference code (part of the SRC that sent you to this procedure) indicates the SCSI bus that has the problem:

**URC      SCSI Bus**

**3100      0**

**3101      1**

**3102      2**

1. Were you performing an IPL from removable media (IPL type D) when the error occurred?

**No      Yes**

- ↓ Exchange the FRUs in the failing item list for the reference code that sent you to this procedure.

2. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

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Does an SRC appear on the control panel?

**No      Yes**

↓      Go to step 7 of this procedure.

3. Does one of the following displays appear on the console?

- Disk Configuration Error Report
- Disk Configuration Warning Report
- Display Unknown Mirrored Load-Source Status
- Display Load-Source Failure

**Yes      No**

↓      Go to step 6 of this procedure.

4. On some of the displays that are listed in step 3 of this procedure, you must press F11 to display reference codes.

Are all of the reference codes 0000?

**No      Yes**

↓      Go to "LIC-PIP11" on page 527 and use cause code 0002.

**This ends the procedure.**

5. Go to step 7 of this procedure and use the reference code that is not 0000.

6. Look at the product activity log (see "Product Activity Log" in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

**Yes      No**

↓      You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 359 to help determine part numbers and location in the system.

**This ends the procedure.**

7. Is the SRC the same one that sent you to this procedure?

**Yes      No**

↓      Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 1049). Then go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

**This ends the procedure.**

8. Perform the following:

- a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
- b. Find the I/O card identified in the failing item list.
- c. Remove the I/O card and install a new I/O card (see "Chapter 6. Removal and Installation Procedures" on page 821). This item has the highest probability of being the failing item.
- d. Power on the system.

Does an SRC appear on the control panel?

**No      Yes**



↓ Go to step 16 of this procedure.

9. Does one of the following displays appear on the console?

- Disk Configuration Error Report
- Disk Configuration Warning Report
- Display Unknown Mirrored Load-Source Status
- Display Load-Source Failure

**Yes      No**

↓ Go to step 15 of this procedure.

10. Does the Display Unknown Mirrored Load-Source Status display appear on the console?

**Yes      No**

↓ Go to step 13 of this procedure.

11. Is the reference code the same one that sent you to this procedure?

**No      Yes**

↓ Go to step 17 of this procedure.

12. Either a new reference code occurred, or the reference code is 0000. There may be more than one problem.

The original I/O card may be failing, but it must be installed in the system to continue problem isolation.

Install the original I/O card by doing the following:

- a. Power off the system.
- b. Remove the I/O card you installed in step 8 of this procedure and install the original I/O card.

**Note:** Do not power on the system now.

A device connected to the I/O card could be the failing item.

Go to SDIOP-PIP16, step 7 to continue isolating the problem.

**This ends the procedure.**

13. On some of the displays that are listed in step 9 of this procedure, you must press F11 to display reference codes.

Are all of the reference codes 0000?

**No      Yes**

↓ Go to "LIC-PIP11" on page 527 and use cause code 0002.

**This ends the procedure.**

14. Go to step 16 of this procedure and use the reference code that is not 0000.

15. Look at the product activity log (see "Product Activity Log" in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

**Yes      No**

↓ The I/O card, which you removed in step 8 of this procedure, is the failing item.

**This ends the procedure.**

16. Is the SRC or reference code the same one that sent you to this procedure?

## SDIOP PIPs

Yes      No

- ↓      Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 1049). Then go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

17. The original I/O card is not the failing item.

Install the original I/O card by doing the following:

- a. Power off the system.
- b. Remove the I/O card you installed in step 8 of this procedure and install the original I/O card.

**Note:** Do not power on the system now.

A device connected to the I/O card could be the failing item.

Go to SDIOP-PIP16, step 7 on page 609 to continue isolating the problem.

**This ends the procedure.**

### SDIOP-PIP16

**Introduction:** This procedure isolates failing devices that are identified by FI codes FI01105, FI01106, and FI01107. In this procedure, you will remove devices that are identified by the FI code. Then you will perform an IPL to determine if the symptoms of the failure have disappeared, or changed. You should not remove the load-source disk until you have shown that the other devices are not failing. Removing the load-source disk can change the symptom of failure, although it is not the failing unit.

**Note:** If the system has logical partitions, then refer to “Information About Logical Partitions” on page 809.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does an SRC appear on the control panel?

No      Yes

- ↓      Go to step 6 of this procedure.

2. Does one of the following displays appear on the console?

- Disk Configuration Error Report
- Disk Configuration Warning Report
- Display Unknown Mirrored Load-Source Status
- Display Load-Source Failure

**Note:** On the Disk Configuration Error Report display, the characters under *Type* are the same as the 4 leftmost characters of function 11-3. The characters under *Reference Code* are the same as the 4 rightmost characters of function 11-3.

Yes      No

- ↓      Go to step 5 of this procedure.

3. On some of the displays that are listed in step 2 of this procedure, you must press F11 to display reference codes.

Are all of the reference codes 0000?

**No      Yes**

↓      Go to "LIC-PIP11" on page 527 and use cause code 0002.

**This ends the procedure.**

4. Go to step 6 of this procedure and use the reference code that is not 0000.
5. Look at the Product Activity Log (see "Product Activity Log" in the *AS/400 Service Functions* information).

Is a reference code logged as a result of this IPL?

**Yes      No**

↓      You cannot continue isolating the problem. Use the original reference code and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 359 to help determine part numbers and location in the system.

**This ends the procedure.**

6. Is the SRC or reference code the same one that sent you to this procedure?

**Yes      No**

↓      Record the SRC or reference code on the Problem Summary Form. Then go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

**This ends the procedure.**

7. Isolate the failing device by doing the following:
  - a. Power off the system if it is powered on (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
  - b. Go to "Failing Item (FI) Code Table" on page 359 to find the devices identified by FI code FI01105, FI01106, or FI01107 in the failing item list.
  - c. Disconnect one of the devices that are identified by the FI code, other than the load-source disk unit.

**Note:** The tape, or optical units should be the first devices to be disconnected, if they are attached to the SCSI bus identified by FI01105, FI01106, or FI01107.

d. Go to step 9 of this procedure.

8. Continue to isolate the possible failing items by doing the following:
  - a. Power off the system.
  - b. Disconnect the next device that is identified by FI codes FI01105, FI01106, or FI01107 in the FRU list. (See the note in step 7 of this procedure). Do not disconnect disk unit 1 (load-source disk) until you have disconnected all other devices and the load-source disk is the last device that is identified by these FI codes.

9. Power on the system.

Does an SRC appear on the control panel?

**No      Yes**

↓      Go to step 14 of this procedure.

10. Does one of the following displays appear on the console?

- Disk Configuration Error Report
- Disk Configuration Warning Report
- Display Unknown Mirrored Load-Source Status
- Display Load-Source Failure

**Note:** On the Disk Configuration Error Report display, the characters under *Type* are the same as the 4 leftmost characters of function 11-3. The characters under *Reference Code* are the same as the 4 rightmost characters of function 11-3.

**No      Yes**

↓      Go to step 14 of this procedure.

11. Look at the Product Activity Log (see “Product Activity Log” in the *AS/400 Service Functions* information).

Is a reference code logged as a result of this IPL?

**No      Yes**

↓      Go to step 14 of this procedure.

12. You are here because the IPL completed successfully.

The last device you disconnected is the failing item.

Is the failing item a disk unit?

**No      Yes**

↓      Exchange the failing FRU.

**Note:** Before exchanging a disk drive, you should attempt to save customer data. Go to “Start Disk Service Here” on page 919 before exchanging a disk unit.

**This ends the procedure.**

13. Exchange the failing item and reconnect the devices you disconnected previously (see “Chapter 6. Removal and Installation Procedures” on page 821).

**This ends the procedure.**

14. Is the SRC or reference code the same one that sent you to this procedure?

**Yes      No**

↓      Record the SRC or reference code on the Problem Summary Form. Then go to step 17 of this procedure.

15. The last device you disconnected is not failing.

Have you disconnected all the devices that are identified by FI codes FI01105, FI01106, or FI01107 in the FRU list?

**Yes      No**

↓      Leave the device disconnected and go to step 8 of this procedure to continue isolating the possible failing items.

16. You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59)

on page 59). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 359 to help determine part numbers and location in the system.

**This ends the procedure.**

17. Is the SRC B1xx 4504, and have you disconnected the load-source disk unit?

**Note:** The load-source disk unit is disconnected by disconnecting disk unit 1.

**No      Yes**

↓      Go to step 19 of this procedure.

18. Does one of the following displays appear on the console, and are all reference codes 0000?

- Disk Configuration Error Report
- Disk Configuration Warning Report
- Display Unknown Mirrored Load-Source Status
- Display Load-Source Failure

**Note:** On the Disk Configuration Error Report display, the characters under *Type* are the same as the 4 leftmost characters of function 11-3. The characters under *Reference Code* are the same as the 4 rightmost characters of function 11-3.

**Yes      No**

↓      A new SRC or reference code occurred. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

19. The last device you disconnected may be the failing item. Exchange the last device you disconnected (see “Chapter 6. Removal and Installation Procedures” on page 821).

**Note:** Before exchanging a disk drive, you should attempt to save customer data. Go to “Start Disk Service Here” on page 919 before exchanging a disk unit.

Was the problem corrected by exchanging the last device you disconnected?

**No      Yes**

↓      **This ends the procedure.**

20. Reconnect the devices you disconnected previously in this procedure.
21. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59). Do not exchange the FRU that you exchanged in this procedure. If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 359 to help determine part numbers and location in the system.

**This ends the procedure.**

## SDIOP-PIP17

**Introduction:** This procedure isolates problems that are associated with SCSI bus configuration errors and device task initialization failures.

## SDIOP PIPs

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Were you performing an IPL from removable media (IPL type D) when the error occurred?

**No      Yes**

↓      Exchange the FRUs in the failing item list for the reference code that sent you to this procedure.

2. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does an SRC appear on the control panel?

**No      Yes**

↓      Go to step 6 of this procedure.

3. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

**Yes      No**

↓      Go to step 5 of this procedure.

4. Does one of the following messages appear in the list?

- Missing disk units in the configuration
- Missing mirror protection disk units in the configuration
- Device parity protected units in exposed mode.

**No      Yes**

↓      Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to “LIC-PIP11” on page 527 and use cause code 0002. If any of the reference codes are not 0000, go to step 6 of this procedure and use the reference code that is not 0000.

**Note:** Use the characters in the *Type* column to find the correct reference code table.

5. Look at the product activity log (see “Product Activity Log” in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

**Yes      No**

↓      You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in “Chapter 2. Unit Reference Codes” on page 59). If the failing item list contains FI codes, see “Failing Item (FI) Code Table” on page 359 to help determine part numbers and location in the system.

**This ends the procedure.**

6. Record the SRC on the Problem Summary Form (see “Appendix A. Problem Summary Form” on page 1049).

Is the SRC the same one that sent you to this procedure?

Yes No

- ↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Starting Point for All Problems” on page 4).

**This ends the procedure.**

7. Determine the device unit reference code (URC) from the SRC. If the Disk Configuration Error Report display or Disk Configuration Warning Report display appears on the console, the device URC is displayed under *Reference Code*. This is on the same line as the missing device. (See “System Reference Code (SRC) Record” in the *AS/400 Service Functions* information).

Is the device unit reference code 3020, 3021, or 3022?

Yes No

- ↓ Go to step 9 of this procedure.

8. A unit reference code of 3020, 3021, or 3022 indicates that there is a problem on an I/O card SCSI bus. The problem can be caused by a device that is attached to the I/O card that:

- Is not supported.
- Does not match system configuration rules. For example: There are too many devices that are attached to the bus.
- Is failing.

Perform the following:

- a. Look at the characters on the control panel Data display or the Problem Summary Form for function 13.

Use the format BBBB-Cc-bb (BBBB = bus, Cc = card, bb = board) to determine the card slot location for the I/O card (see “System Unit and Expansion Unit Locations and Addresses” on page 712).

- b. The unit reference code indicates the SCSI bus that has the problem:

URC	SCSI Bus
-----	----------

3020	0
------	---

3021	1
------	---

3022	2
------	---

To find the bus and device locations, see “System Unit and Expansion Unit Locations and Addresses” on page 712.

- c. Find the printout that shows the system configuration from the last IPL and compare it to the present system configuration.

**Note:** If configuration is not the problem, a device on the SCSI bus may be failing.

If you need to perform isolation on the SCSI bus, go to “SDIOP-PIP16” on page 608.

**This ends the procedure.**

9. The possible failing items are FI codes FI01105 (90%) and FI01112 (10%).

Find the device unit address from the SRC (see “SRC Address Formats” on page 767). Use this information to find the physical location of the device. Record the type and model numbers to determine if the addressed I/O card supports this device.

## SDIOP PIPs

Is the device given support on your system?

**Yes     No**

↓        Go to step 12 of this procedure.

10. Perform the following:

- a. Exchange the device.
- b. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does this correct the problem?

**No     Yes**

↓        **This ends the procedure.**

11. Ask your next level of support for assistance.

**This ends the procedure.**

12. Perform the following:

- a. Remove the device.
- b. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does this correct the problem?

**No     Yes**

↓        **This ends the procedure.**

13. Ask your next level of support for assistance.

**This ends the procedure.**

### SDIOP-PIP18

**Introduction:** This procedure isolates problems that are associated with SCSI bus configuration errors and device task initialization failures.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does an SRC appear on the control panel?

**No     Yes**

↓        Go to step 5 of this procedure.

2. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

**Yes     No**

↓        Go to step 4 of this procedure.

3. Does one of the following messages appear in the list?

- Missing disk units in the configuration
- Missing mirror protection disk units in the configuration
- Device parity protected units in exposed mode.



**No      Yes**

↓ Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to "LIC-PIP11" on page 527 and use cause code 0002. If any of the reference codes are not 0000, go to step 5 of this procedure and use the reference code that is not 0000.

**Note:** Use the characters in the *Type* column to find the correct reference code table.

4. Look at the product activity log (see "Product Activity Log" in the *AS/400 Service Functions* information).

Is an SRC logged as a result of this IPL?

**Yes      No**

↓ You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Item (FI) Code Table" on page 359 to help determine part numbers and location in the system.

**This ends the procedure.**

5. Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 1049).

Is the SRC the same one that sent you to this procedure?

**Yes      No**

↓ A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see "Starting Point for All Problems" on page 4).

**This ends the procedure.**

6. Determine the device unit reference code (URC) from the SRC. If the Disk Configuration Error Report display or Disk Configuration Warning Report display appears on the console, the device URC is displayed under *Reference Code*. This is on the same line as the missing device. (See "Stage 1 System Reference Code (SRC) Definition" in the *AS/400 Service Functions* information).

Is the device unit reference code 3020?

**Yes      No**

↓ Go to step 8 of this procedure.

7. A device reference code of 3020 indicates that a device is attached to the addressed I/O card. Either it is not supported, or it does not match system configuration rules. For example: There are too many devices that are attached to the bus.

Find the printout that shows the system configuration from the last IPL and compare it to the present system configuration.

**Note:** Use the unit address and the physical address in the SRC to help you with this comparison. If configuration is not the problem, a device on the SCSI bus may be failing. Use FI code FI00884 to help find the failing device. If you need to perform isolation on the SCSI bus, go to "SDIOP-PIP16" on page 608.

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**This ends the procedure.**

8. The possible failing items are FI codes FI01105 (90%) and FI01112 (10%).

Find the device unit address from the SRC. Use this information to find the physical location of the device. Record the type and model numbers to determine if the addressed I/O card supports this device.

Is the device given support on your system?

**Yes      No**

↓      Go to step 11 of this procedure.

9. Perform the following:

a. Exchange the device.

b. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does this correct the problem?

**No      Yes**

↓      **This ends the procedure.**

10. Ask your next level of support for assistance.

**This ends the procedure.**

11. Perform the following:

a. Remove the device.

b. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does this correct the problem?

**No      Yes**

↓      **This ends the procedure.**

12. Ask your next level of support for assistance.

**This ends the procedure.**

### SDIOP-PIP19

#### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

**Note:** If the Storage IOA is a 2740, 2748, or 2763 go to “(2740, 2748) Reference Codes” on page 151 with this SRC.

This procedure isolates the problem when the I/O card reports (during the IPL) that the cache adapter card is not the one it had at the last power off.

You were sent to this procedure from URC 9010, 9011, or 9013.

1. Go to SST or DST to determine if any other SRCs have occurred at about the same time as this error. If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

Have any other I/O card or device SRCs occurred at about the same time as this error?

**No      Yes**

- ↓      Use the other I/O card or device SRCs to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59)

**This ends the procedure.**

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

**Yes      No**

- ↓      Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

**This ends the procedure.**

3. Find the location of the I/O card with the cache adapter card problem by performing one of the following:

- If you can enter a command at the console, access system service tools (SST) (see “System Service Tools (SST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. Get the Physical location of the I/O card.
- If you cannot enter a command at the console, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. Get the Physical location of the I/O card.

If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:

- BBBB = hexadecimal offsets 4C and 4D.
- Cc = hexadecimal offset 51.
- bb = hexadecimal offset 4F.

The unit address of the I/O card is hexadecimal offset 18C through 18F. See “System Unit and Expansion Unit Locations and Addresses” on page 712 for location information. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.

Have you determined the location of the I/O card that is reporting the problem?

**Yes      No**

- ↓      Ask your next level of support for assistance.

**This ends the procedure.**

4. **Attention:** If the URC is 9010, the I/O card needs to retrieve data from the correct cache adapter card. If the correct cache adapter card is not installed, customer data will be lost.

**Attention:** If the URC is 9011 or 9013, the cache adapter card has data in its storage that may belong to another I/O card. Customer data from the other I/O card may be lost.

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Do you want to continue with the cache adapter card that is installed now and accept the data loss?

**No      Yes**

↓      Go to step 8 of this procedure.

5. The correct cache adapter card must be installed in the I/O card. Find the cache adapter card that was removed from the I/O card.

Did you find the correct cache adapter card?

**Yes      No**

↓      Go to step 7 of this procedure.

6. Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
- b. Install the correct cache adapter card that you found (see “Chapter 6. Removal and Installation Procedures” on page 821).
- c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 793)
- d. Power on the system.
- e. Go to step 9 of this procedure.

7. You may remove the cache adapter card and continue without a card temporarily. This will cause degraded performance until a card is installed.

**Attention:** When you install a new cache adapter card or continue without one, customer data is lost.

To continue without a cache adapter card, perform the following:

- a. Power off the system.
- b. Remove the cache adapter card.

8. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

**Attention:** Continuing with this option will cause the loss of customer data. Reclaim the cache adapter card storage (see “Reclaim IOP Cache Storage” on page 773).

**Note:** The system operator may want to restore data from the most recent saved tape after you complete the repair.

9. Does the IPL complete successfully?

**No      Yes**

↓      **This ends the procedure.**

10. Go to “Starting Point for All Problems” on page 4 to correct the problem.  
**This ends the procedure.**

## SDIOP-PIP20

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure isolates the problem when two or more devices are missing from a disk array.

You were sent to this procedure from URC 9020 or 9021.

1. Go to SST or DST to determine if any other SRCs have occurred at about the same time as this error. If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

Have any other I/O card or device SRCs occurred at about the same time as this error?

**No      Yes**

- ↓      Use the other I/O card or device SRCs to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59)

**This ends the procedure.**

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

**Yes      No**

- ↓      Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

**This ends the procedure.**

3. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:

- If you can enter a command at the console, select system service tools (SST) (see “System Service Tools (SST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC.
- If you cannot enter a command at the console, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC.

If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC.

4. Use the Product Activity Log entry that you found in step 3 of this procedure. Find and record all the array members that have both a present address of 0 and an expected address that is not 0. For a type A or B IPL, view the “Additional Information” to see the formatted log information. For a type D IPL, see “More Information from Hexadecimal Reports” in the *AS/400 Service Functions*.

These devices are missing from the disk array.

**Note:** There may be multiple displays of data. Ensure that you check all displays that are associated with the error.

5. There are three possible ways to correct the problem:

- a. Find the missing devices and install them in the correct physical locations in the system.

If you can find the missing devices and want to continue with this repair option, continue with step 6 of this procedure.

- b. Stop the disk array that contains the missing devices.

**Attention:** Customer data may be lost.

If you want to continue with this repair option, go to step 8 of this procedure.

- c. Initialize and format the remaining members of the disk array.

**Attention:** Customer data will be lost.

If you want to continue with this repair option, go to step 10 of this procedure.

- 6. Perform the following:

- a. Install the missing devices in the correct locations in the system (see "Chapter 6. Removal and Installation Procedures" on page 821).
- b. Power on the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).

Does the IPL complete successfully?

**No      Yes**

↓      **This ends the procedure.**

- 7. Go to "Starting Point for All Problems" on page 4 to correct the problem.

**This ends the procedure.**

- 8. You have chosen to stop the disk array that contains the missing devices.

**Attention:** Customer data may be lost.

Perform the following:

- a. If you are not already using dedicated service tools, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

- b. Select the *Work with disk units* option.

Did you get to DST with a Type D IPL?

**Yes      No**

↓

- 1) Select the *Work with disk configuration* option.
- 2) Select the *Work with device parity protection* option.

Then continue with the next step of this procedure.

- c. Select the *Stop device parity protection* option.
- d. Follow the online instructions to stop device parity protection.
- e. Perform an IPL from disk.

Does the IPL complete successfully?

**No      Yes**

↓      **This ends the procedure.**

- 9. Go to "Starting Point for All Problems" on page 4 to correct the problem.

**This ends the procedure.**

- 10. You have chosen to initialize and format the remaining members of the disk array.

**Attention:** Customer data will be lost.

Perform the following:

- a. If you are not already using dedicated service tools, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

- b. Select the *Work with disk units* option.

Did you get to DST with a Type D IPL?

**Yes      No**

↓

- 1) Select the *Work with disk unit recovery* option.
- 2) Select the *Disk unit problem recovery procedures* option.
- 3) Select the disk units on the display you identified in step 4 of this procedure.

Then continue with the next step of this procedure.

- c. Select the *Initialize and format disk unit* option.
- d. Follow the online instructions to format and initialize the disk units.
- e. Perform an IPL from disk.

Does the IPL complete successfully?

**No      Yes**

↓

**This ends the procedure.**

11. Go to “Starting Point for All Problems” on page 4 to correct the problem.

**This ends the procedure.**

## SDIOP-PIP21

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure determines the failing disk unit when, a disk unit is not compatible with other disk units in the disk array, or when a disk unit has failed. The disk array is running, but it is not protected.

You were sent to this procedure from URC 9025 or 9030.

1. Find the address of the I/O card that is reporting the problem, by performing one of the following:
  - If you can enter a command at the console, access system service tools (SST) (see “System Service Tools (SST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
  - If you cannot enter a command at the console, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log

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entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.

2. Perform the following:
  - a. Return to the SST or DST main menu.
  - b. Select the *Work with disk units* option.
  - c. Select the *Display disk configuration* option.
  - d. Select the *Display disk configuration status* option.
  - e. On the Display disk configuration status display, look for the devices attached to the I/O card that is identified in step 1 of this procedure.
  - f. Find the device that has a status of "DPY/Unknown" or "DPY/Failed". This is the device that is causing the problem. Show the device address by selecting the *Display Disk Unit Details* option. Then select the *Display Detailed Address* option and record the device address.
  - g. See "System Unit and Expansion Unit Locations and Addresses" on page 712 and find the diagram of the system unit, or the expansion unit and find the following:
    - The card slot that is identified by the I/O card direct select address
    - The disk unit location that is identified by the device address

Have you determined the location of the I/O card and disk unit that is causing the problem?

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

3. Exchange the disk unit that is causing the problem (see "Start Disk Service Here" on page 919).

**This ends the procedure.**

## SDIOP-PIP22

**Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:
  - If you can enter a command at the console, select system service tools (SST) (see "System Service Tools (SST)" in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC.
  - If you cannot enter a command at the console, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC.

If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC.



For a type A or B IPL, view the “Additional Information” to see the formatted log information. For a type D IPL, see “More Information from Hexadecimal Reports” in the *AS/400 Service Functions*.

Record all the information in the Product Activity Log entry for this SRC.

2. Ask your next level of support for assistance.

**Note:** Your next level of support may require the error information you recorded in the previous step.

**This ends the procedure.**

## SDIOP-PIP23

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure corrects the problem when the system cannot find the required cache data for the attached disk units.

**Note:** For some storage I/O adapters, the cache card is integrated and not removable.

You were sent to this procedure from URC 9050.

1. Have any other I/O card or device SRCs occurred at about the same time as this error?

**No      Yes**

↓      Use the other I/O card or device SRCs to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59)

**This ends the procedure.**

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

**Yes      No**

↓      Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

**This ends the procedure.**

3. Were both an I/O card **and** the cache adapter card exchanged during the last repair action or reconfiguration?

**Yes      No**

↓      Go to step 7 of this procedure.

4. Can you find the original cache adapter card that was exchanged during the last repair action or reconfiguration?

**Yes      No**

↓      Go to step 8 of this procedure.

5. Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
- b. Remove the cache adapter card from the I/O card and install the original cache adapter card (see “Chapter 6. Removal and Installation Procedures” on page 821).
- c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 793).
- d. Start an IPL by powering on the system.

Does the IPL complete successfully?

**Yes      No**

- ↓      This is a new problem. Go to “Starting Point for All Problems” on page 4.

**This ends the procedure.**

6. The repair action corrected the problem.

**This ends the procedure.**

7. Have disk units been moved from another I/O card to this I/O card?

**Yes      No**

- ↓      Ask your next level of support for assistance.

**This ends the procedure.**

8. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:

- If you can enter a command at the console, select system service tools (SST) (see “System Service Tools (SST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
- If you cannot enter a command at the console, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.

If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:

- BBBB = hexadecimal offsets 4C and 4D.
- Cc = hexadecimal offset 51.
- bb = hexadecimal offset 4F.

The unit address of the I/O card is hexadecimal offset 18C through 18F.

9. For a type A or B IPL, view the “Additional Information” to see the formatted log information. For a type D IPL, see “More Information from Hexadecimal Reports” in the *AS/400 Service Functions*.

Record the addresses that are not 0000 0000 for all devices listed.

**Note:** There may be multiple displays of data. Ensure that you check all displays that are associated with the error.

10. See “System Unit and Expansion Unit Locations and Addresses” on page 712 and find the diagram of the system unit, or the expansion unit. Then find the following:

- The card slot that is identified by the I/O card direct select address (DSA) and unit address. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.
- The disk unit locations that are identified by the unit addresses.

Have you determined the location of the I/O card and disk units with the problem?

Yes      No

↓      Ask your next level of support for assistance.

**This ends the procedure.**

11. There are three possible ways to correct the problem:

- Physically remove the disk units you identified in step 8 of this procedure and return them to their original location.

If you want to continue with this repair option, continue with step 12 of this procedure.

- Initialize and format the disk units you identified in step 8 of this procedure.

**Attention:** Customer data will be lost.

If you want to continue with this repair option, go to step 13 of this procedure.

- Perform an IPL to DST and perform the Reclaim Cache Storage procedure.

**Attention:** Customer data will be lost.

If you want to continue with this repair option, go to step 14 of this procedure.

12. You have chosen to remove the problem disk units.

Perform the following:

- a. Physically remove the problem disk units and return them to their original location.

**Note:** The Product Activity Log I/O processor and cache adapter card information fields identify the type, serial number of the original I/O card, and cache adapter card to which the disk units should be returned.

- b. Select the IPL type and mode that are used by the customer.
- c. Power on the system.
- d. Go to step 15 of this procedure.

13. You have chosen to initialize and format the disk units you identified in step 8 of this procedure.

**Attention:** Customer data will be lost.

Perform the following:

- a. If you are not already using dedicated service tools, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
- b. Select the *Work with disk units* option.

Did you get to DST with a Type D IPL?

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Yes      No



- 1) Select the *Work with disk unit recovery* option.
- 2) Select the *Disk unit problem recovery procedures* option.
- 3) Select the disk units on the display that you identified in step 8 of this procedure.

Then continue with the next step of this procedure.

- c. Select the *Initialize and format disk unit* option.
- d. Follow the online instructions to format and initialize the disk units.
- e. Perform an IPL from disk.
- f. Go to step 15 of this procedure.

14. You have chosen to perform an IPL to DST and perform the Reclaim Cache Storage procedure.

Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

Reclaim the cache adapter card storage (see “Reclaim IOP Cache Storage” on page 773).

**Note:** The system operator may want to restore data from the most recent saved tape after you complete the repair.

15. Does the IPL complete successfully?

No      Yes



**This ends the procedure.**

16. Go to “Starting Point for All Problems” on page 4 to correct the problem.  
**This ends the procedure.**

## SDIOP-PIP25

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure isolates the problem when a device attached to the I/O card has functions that are not given support on the I/O card.

You were sent to this procedure from URC 9008.

1. Have any other I/O card or device SRCs occurred at about the same time as this error?

No      Yes



Use the other I/O card or device SRCs to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

**This ends the procedure.**

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

Yes No

- ↓ Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

**This ends the procedure.**

3. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:
  - If you can enter a command at the console, select system service tools (SST) (see “System Service Tools (SST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
  - If you cannot enter a command at the console, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.

If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:

- BBBB = hexadecimal offsets 4C and 4D.
- Cc = hexadecimal offset 51.
- bb = hexadecimal offset 4F.

The unit address of the I/O card is hexadecimal offset 18C through 18F.

4. For a type A or B IPL, view the “Additional Information” to see the formatted log information. For a type D IPL, see “More Information from Hexadecimal Reports” in the *AS/400 Service Functions*.

Record the addresses that are not 0000 0000 for all devices listed.

**Note:** There may be multiple displays of data. Ensure that you check all displays that are associated with the error.

5. See “System Unit and Expansion Unit Locations and Addresses” on page 712 and find the diagram of the system unit, or the expansion unit. Then find the following:
  - The card slot that is identified by the I/O card direct select address (DSA) and unit address. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.
  - The disk unit locations that are identified by the unit addresses.

Have you determined the location of the I/O card and the devices that are causing the problem?

Yes No

- ↓ Ask your next level of support for assistance.

**This ends the procedure.**

6. Have one or more devices been moved to this I/O card from another I/O card?

Yes No

- ↓ Ask your next level of support for assistance.

**This ends the procedure.**

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7. Is the I/O card capable of supporting the devices attached, or is it in the correct mode to support the devices attached?

**Note:** For information on I/O card modes, see “Storage I/O Card Modes and Jumpers” on page 774.

**Yes      No**

↓      Either change the I/O card mode or remove the devices from the I/O card (see “Start Disk Service Here” on page 919).

**Note:** You can remove disk units without installing other disk units and the system will continue to operate.

**This ends the procedure.**

8. Do you want to continue using these devices with this I/O card?

**Yes      No**

↓      Remove the devices from the I/O card (see “Start Disk Service Here” on page 919).

**Note:** You can remove disk units without installing another disk unit, and the system will continue to operate.

**This ends the procedure.**

9. Initialize and format the disk units.

**Attention:** Data on the disk unit will be lost.

Perform the following:

- a. Access SST or DST(see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
- b. Select the *Work with disk units* option.

Did you get to DST with a Type D IPL?

**Yes      No**

↓      Select the *Work with disk unit recovery* option.

Then continue with the next step of this procedure.

- c. Select the *Initialize and format disk unit* option for each disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete. This may take 30 minutes or longer.
- d. The disk unit is now ready to be added to the system configuration.

**This ends the procedure.**

## SDIOP-PIP26

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure corrects the problem when the I/O card recognizes that the attached disk unit must be initialized and formatted.

You were sent to this procedure from URC 9092.

1. Have any other I/O card or device SRCs occurred at about the same time as this error?

**No      Yes**

- ↓      Use the other I/O card or device SRCs to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

**This ends the procedure.**

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

**Yes      No**

- ↓      Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

**This ends the procedure.**

3. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:

- If you can enter a command at the console, select system service tools (SST) (see "System Service Tools (SST)" in the *AS/400 Service Functions* information). Select the *Product Activity Log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
- If you cannot enter a command at the console, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.

If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:

- BBBB = hexadecimal offsets 4C and 4D.
- Cc = hexadecimal offset 51.
- bb = hexadecimal offset 4F.

The unit address of the I/O card is hexadecimal offset 18C through 18F.

4. For a type A or B IPL, view the "Additional Information" to see the formatted log information. For a type D IPL, see "More Information from Hexadecimal Reports" in the *AS/400 Service Functions*.

Record the addresses that are not 0000 0000 for all devices listed.

**Note:** There may be multiple displays of data. Ensure that you check all displays that are associated with the error.

5. See "System Unit and Expansion Unit Locations and Addresses" on page 712 and find the diagram of the system unit, or the expansion unit. Then find the following:

- The card slot that is identified by the I/O card direct select address (DSA) and unit address. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.
- The disk unit locations that are identified by the unit addresses.

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Have you determined the location of the I/O card and the devices that are causing the problem?

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

6. Have one or more devices been moved to this I/O card from another I/O card?

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

7. Do you want to continue using these devices with this I/O card?

**Yes      No**

↓      Remove the devices from the I/O card (see “Start Disk Service Here” on page 919).

**Note:** You can remove disk units without installing another disk unit, and the system will continue to operate.

**This ends the procedure.**

8. Initialize and format the disk units.

**Attention:** Data on the disk unit will be lost.

Perform the following:

a. Access SST or DST.

b. Select the *Work with disk units* option.

Did you get to DST with a Type D IPL?

**Yes      No**

↓      Select the *Work with disk unit recovery* option.

Then continue with the next step of this procedure.

c. Select the *Initialize and format disk unit* option for each disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete. This may take 30 minutes or longer.

d. The disk unit is now ready to be added to the system configuration.

**This ends the procedure.**

## SDIOP-PIP27

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

You were sent to this procedure with a unit reference code of 9051.

**Note:** For some storage I/O adapters, the cache card is integrated and not removable.



I/O card cache data exists for a missing or failed device. The possible causes are:

- One or more disk units have failed on the I/O card.
- The cache card of the I/O card was not cleared before it was shipped as a MES to the customer. In addition, the service representative moved devices from the I/O card to a different I/O card before performing a system IPL.
- The cache card of the I/O card was not cleared before it was shipped to the customer. In addition, residual data was left in the cache card for disk units that manufacturing used to test the I/O card.
- The I/O card and cache card were moved from a different system or a different location on this system after an abnormal power off.
- One or more disk units were moved either concurrently, or they were removed after an abnormal power off.

**Note: Any Function 08 power down (including from a D-IPL) is an Abnormal power off!**

Perform the following:

1. Display the Product Activity Log entry for URC 9051 by performing one of the following:
  - If you can enter a command at the console, access system service tools (SST) (see "System Service Tools (SST)" in the *AS/400 Service Functions* information). Select the Product Activity Log option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
  - If you cannot enter a command at the console, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information). Select the Product activity log option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
  - If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the Product Activity Log option and display the Product Activity Log for this SRC. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:
    - BBBB = hexadecimal offsets 4C and 4D.
    - Cc = hexadecimal offset 51.
    - bb = hexadecimal offset 4F.

The unit address of the I/O card is hexadecimal offset 18C through 18F.

For a type A or B IPL, view the "Additional Information" to see the formatted log information. For a type D IPL, see "More Information from Hexadecimal Reports" in the *AS/400 Service Functions* information.

Record the device types and serial numbers for those devices that show a unit address of 0000 0000.

**Note:** There may be multiple displays of data. Ensure that you check all displays that are associated with the error.

See "System Unit and Expansion Unit Locations and Addresses" on page 712 and find the diagram of the system unit, or the expansion unit. Find the card slot that is identified by the I/O card direct select address (DSA) and unit

- address. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.
2. If the devices from step 1 of this procedure have never been installed on this system, go to step 3 of this procedure. If the devices are not in the current system disk configuration, go to step 5 of this procedure. Otherwise, the devices are part of the system disk configuration; go to step 7 of this procedure.
  3. If this I/O card and cache card were moved from a different system, go to step 4 of this procedure. Otherwise, the cache card was shipped to the customer without first being cleared. Make a note of both the serial number and the customer number, and the device types and their serial numbers. These were found in step 1 of this procedure. Then inform your next level of support. Then, go to step 6 of this procedure to clear the cache card and correct the URC 9051 problem.
  4. You should install both the I/O card, and the cache cards back into their original locations. Then re-IPL the system. There could be data in the cache card for devices in the disk configuration of the original system. After an IPL to DST and a normal power off on the original system, the cache card will be cleared. It is then safe to move the I/O card and the cache card to another location.
  5. One or more devices that are not currently part of the system disk configuration were installed on this I/O card. Either they were removed concurrently, or they were removed after an abnormal power off, or they have failed. Go to step 6 of this procedure to clear the cache card and correct the URC 9051 problem.
  6. Use the Reclaim IOP Cache Storage procedure to clear data from the cache for the missing or failed devices as follows :
    - a. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).  
If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
    - b. Reclaim the cache adapter card storage (see "Reclaim IOP Cache Storage" on page 773).
  7. If this I/O card and cache card were moved from a different location on this system, go to step 4 of this procedure. If the devices from step 1 of this procedure are now installed on another I/O card, and they were moved there before the devices were added to the system disk configuration, go to step 3 of this procedure. (On an MES, the disk units are sometimes moved from one I/O card to another I/O card. This problem will result if manufacturing did not clear the cache card before shipping the MES.) Otherwise, go to step 8 of this procedure.
  8. One or more devices that are currently part of the system disk configuration are either missing or failed and have data in the cache card. This problem may be because devices were moved from the I/O card concurrently, or they were removed after an abnormal power off. If this is the case, locate the devices, power off the system and install the devices on the correct I/O card. If no devices were moved, look for other errors logged against the device, or against the I/O card that occurred at approximately the same time as this error. Continue the service action by using these system reference codes.

### SDIOP-PIP28

#### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

You were sent to this procedure with a unit reference code of 9052.

Either cache data exists for a device that has been modified, or the cache card failed during system operation and became operational at the next system IPL.

1. Has a device currently under this storage I/O adapter been moved from a different I/O card?

**No      Yes**

↓      **Attention:** Customer data may be lost.

Ask your next level of support for assistance.

**This ends the procedure.**

2. The cache card failed during system operation and became available at the next IPL. Perform the following:
  - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
  - b. Remove the cache card.
  - c. Power on and IPL the system to DST.

If the problem is corrected, exchange the failing cache card (see “Chapter 6. Removal and Installation Procedures” on page 821).

**Note:** Disk units attached to the I/O card will continue to operate in degraded mode until the cache card is exchanged.

**This ends the procedure.**

## SDIOP-PIP29

**Introduction:** The cache card is missing or failed.

You were sent to this procedure from URC 9012.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Find the location of the I/O card with the cache adapter card problem by performing one of the following:
  - If you can enter a command at the console, access system service tools (SST) (see “System Service Tools (SST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. Get the Physical location of the I/O card.

- If you cannot enter a command at the console, perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. Get the Physical location of the I/O card.  
If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:
  - BBBB = hexadecimal offsets 4C and 4D.
  - Cc = hexadecimal offset 51.
  - bb = hexadecimal offset 4F.

The unit address of the I/O card is hexadecimal offset 18C through 18F. See “System Unit and Expansion Unit Locations and Addresses” on page 712 for location information. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.

Have you determined the location of the I/O card that is reporting the problem?

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

2. The correct cache adapter card must be installed in the I/O card. Find the cache adapter card that was removed from the I/O card.

**Attention:** The I/O card needs to retrieve data from the correct cache adapter card. If the correct cache adapter card is not installed, customer data will be lost.

Did you find the correct cache adapter card?

**Yes      No**

↓      Go to step 4 of this procedure.

3. Perform the following:
  - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
  - b. Install the correct cache adapter card you found in step 2 (see “Chapter 6. Removal and Installation Procedures” on page 821).
  - c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 793).
  - d. Power on the system.
  - e. Go to step 5 of this procedure.
4. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

**Attention:** Continuing with this option will cause the loss of customer data. Reclaim the cache adapter card storage (see “Reclaim IOP Cache Storage” on page 773).

**Note:** The system operator may want to restore data from the most recent saved tape after you complete the repair.

5. Does the IPL complete successfully?

No      Yes

↓      **This ends the procedure.**

6. Go to “Starting Point for All Problems” on page 4 to correct the problem.

**This ends the procedure.**

## SDIOP-PIP30

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure corrects the problem when the system cannot find the required cache data for the attached disk units.

You were sent to this procedure from URC 9050.

1. Did you just exchange the storage I/O adapter as a result of a failure?

Yes      No

↓      Go to “SDIOP-PIP23” on page 623.

**This ends the procedure.**

2. You have just exchanged a storage I/O adapter.

**Attention:** Customer data may be lost.

Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
- b. Replace the new cache directory card with the original cache directory card from the failed storage I/O adapter (see “Cache Directory Card, For Type 2740, 2748” on page 831).
- c. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

**Note:** This IPL will result in a 9010 URC. Ignore this and continue with the next steps.

3. Reclaim the cache storage (see “Reclaim IOP Cache Storage” on page 773).

**Note:** The system operator may want to restore data from the most recent saved tape after you complete the repair.

4. Does the IPL complete successfully?

Yes      No

↓      Go to “Starting Point for All Problems” on page 4 to correct the problem.

**This ends the procedure.**

5. Before completing this service action, perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).

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- b. Replace the cache directory card from the failed storage I/O adapter with the cache directory card that came with the replacement storage I/O adapter that you exchanged in step 2b on page 635. (See “Cache Directory Card, For Type 2740, 2748” on page 831.)
  - c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 793).
  - d. Power on the system.
6. Does the IPL complete successfully?
- No      Yes**
- ↓      **This ends the procedure.**
7. Go to “Starting Point for All Problems” on page 4 to correct the problem.
- This ends the procedure.**

### SDIOP-PIP31

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

**Introduction:** Cache data associated with the attached devices cannot be found.

You were sent to this procedure from URC 9010.

1. Did you just exchange the storage I/O adapter as a result of a failure?

**Yes      No**

↓      Go to step 6 on page 637 of this procedure.

2. Reclaim the cache storage (see “Reclaim IOP Cache Storage” on page 773).

**Note:** The system operator may want to restore data from the most recent saved tape after you complete the repair.

3. Does the IPL complete successfully?

**Yes      No**

↓      Go to “Starting Point for All Problems” on page 4 to correct the problem.

**This ends the procedure.**

4. Before completing this service action, perform the following:
    - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
    - b. Replace the cache directory card from the failed storage I/O adapter with the cache directory card that came with the replacement storage I/O adapter (see “Cache Directory Card, For Type 2740, 2748” on page 831).
    - c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 793).
    - d. Power on the system.
  5. Does the IPL complete successfully?
- No      Yes**

↓ **This ends the procedure.**

6. Have the I/O cards been moved or reconfigured recently?

**Yes      No**

↓ Go to step 9 of this procedure.

7. Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
- b. Restore all I/O cards to their original position.
- c. Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 793).
- d. Power on the system.

8. Does the IPL complete successfully?

**No      Yes**

↓ **This ends the procedure.**

9. Has the system been powered off for several days?

**Yes      No**

↓ Ask your next level of support for assistance.

**This ends the procedure.**

10. The cache battery pack may be depleted. Do NOT replace the I/O adapter or the cache battery pack.

Reclaim the cache storage (see “Reclaim IOP Cache Storage” on page 773).

**Note:** The system operator may want to restore data from the most recent saved tape after you complete the repair.

11. Does the IPL complete successfully?

**No      Yes**

↓ **This ends the procedure.**

12. Ask your next level of support for assistance.

**This ends the procedure.**

## SDIOP-PIP32

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

You were sent to this procedure from URC 9011.

**Attention:** There is data in the cache of this I/O card, that belongs to devices other than those that are attached. Customer data may be lost.

1. Did you just exchange the storage I/O adapter as a result of a failure?

**Yes      No**

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- ↓ Go to step 5 of this procedure.
2. You have just exchanged a storage I/O adapter.  
Reclaim the cache storage (see “Reclaim IOP Cache Storage” on page 773).
3. Does the IPL complete successfully?
- No      Yes**
- ↓ **This ends the procedure.**
4. Go to “Starting Point for All Problems” on page 4 to correct the problem.  
**This ends the procedure.**
5. Have the I/O cards been moved or reconfigured recently?
- Yes      No**
- ↓ Ask your next level of support for assistance.  
**This ends the procedure.**
6. Perform the following:
- Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
  - Restore all I/O cards to their original position.
  - Select the IPL type and mode that are used by the customer (see “Selecting IPL Type, Mode, and Speed” on page 793).
  - Power on the system.
7. Does the IPL complete successfully?
- No      Yes**
- ↓ **This ends the procedure.**
8. Ask your next level of support for assistance.  
**This ends the procedure.**

### Storage Device I/O Card FRU Locations

Use Table 26 to find FRU locations. If only a type number is listed, go to the “Type, Model, and Part Number List” on page 380 to determine the part number. If the failing item is an FI code, see “Failing Item (FI) Code Table” on page 359.

**Note:** See “System Unit and Expansion Unit Locations and Addresses” on page 712 to help find FRUs that are not in this table.

Table 26. Storage Device I/O card FRU Locations

FRU Description	Location Procedure
<ul style="list-style-type: none"><li>Diskette adapter (type 6146 or type 6147)</li><li>I/O card</li></ul>	Use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.
Terminating plug	See the symbolic FRU “DEVTERM” in “Symbolic FRU Isolation” on page 392 for more information.  Also see “System Unit and Expansion Unit Locations and Addresses” on page 712.



## Service Processor Problem Isolation Procedures

### Overview

This section contains the procedures necessary to isolate a failure detected by the service processor. This section covers the following items:

- Bus unit
- Magnetic storage I/O processor card
- Service processor card or a card in the wrong slot
- Match problems between the hardware and software
- Information needed to perform a removable media or a disk IPL from the control panel

**Note:** Select the Manual mode on the control panel before performing these procedures.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

### DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

### DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

**Attention:** When removing or installing the service processor card, failure to follow the Cards procedure in “Chapter 6. Removal and Installation Procedures” on page 821 may damage the card, the card enclosure, or both.

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 789
- “Cards” on page 887
- “Hardware Service Manager” in the *AS/400 Service Functions* information

### SP-PIP40

**Introduction:** This procedure isolates a failing load-source IOP card.

## Service Processor PIPs

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel.

1. Record the extended reference code (ERC) information for function 13 on the control panel.

Is the ERC 1xxx?

**No      Yes**

↓      Go to step 6 of this procedure.

2. Is the ERC 8xxx?

**No      Yes**

↓      Go to step 9 of this procedure.

3. Is the SRC B1xx 4502?

**No      Yes**

↓      Perform “Bus Problem Isolation Procedures” on page 450.

**This ends the procedure.**

4. Perform the following:

- a. Exchange the MFIOIP card (see “Chapter 6. Removal and Installation Procedures” on page 821).

- b. Perform an IPL.

Does the IPL complete successfully?

**No      Yes**

↓      **This ends the procedure.**

5. Perform the following:

- a. Exchange the system processor card.

- b. Perform an IPL.

Does the IPL complete successfully?

**No      Yes**

↓      **This ends the procedure.**

6. The problem is in the load-source device.

Perform the following:

- a. Find the load-source device and verify the connection of all cables.

- b. Perform an IPL.

Does the IPL complete successfully?

**No      Yes**

↓      **This ends the procedure.**

7. Perform the following:

- a. Exchange the load-source device (see “Chapter 6. Removal and Installation Procedures” on page 821).

- b. Perform an IPL.

Does the IPL complete successfully?

No      Yes

↓      **This ends the procedure.**

8. Go to step 11 of this procedure.

9. The control panel is the failing item.

Verify the connection of all control panel cables.

Does this correct the problem?

No      Yes

↓      **This ends the procedure.**

10. Exchange the control panel (see “Chapter 6. Removal and Installation Procedures” on page 821).

Does this correct the problem?

No      Yes

↓      **This ends the procedure.**

11. Ask your next level of support for assistance and provide the SRC information for functions 11-3 through 20-3.

**This ends the procedure.**

## System Power Control Network (SPCN) Problem Isolation Procedures

### Overview

This section contains the procedures necessary to isolate a failure in the system power control network (SPCN).

**Attention:** Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read “Important Cryptographic I/O Processor Information” on page 785 before disconnecting or removing the cryptographic I/O processor.

The following safety notices apply throughout this section.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

### DANGER

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

### DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

### SPCN-PIP1

**Introduction:** This procedure isolates regulator problems in the expansion unit.

Read the "Overview" on page 641 before continuing with this procedure.

**Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel.

#### Procedure:

1. Perform the following:
  - a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
  - b. Power on the system.

Does the same SRC that sent you to this procedure occur?

**Yes      No**

- ↓      A different SRC or reference code occurred. Use the new SRC or reference code and go to "Starting Point for All Problems" on page 4.

**This ends the procedure.**

2. Perform the following:
  - a. Power off the system.
  - b. Do not remove the card enclosure AMD assembly.
 

**Attention:** Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read "Important Cryptographic I/O Processor Information" on page 785 before disconnecting or removing the cryptographic I/O processor.

**Attention:** To prevent overheating problems, do not remove any card completely from the card enclosure unless you install an airflow card in its place.
  - c. Disconnect all the cards (except the regulators) in the expansion card enclosure by sliding them partially out of the card enclosure.
  - d. Power on the system.

Does a regulator overcurrent SRC occur?

**No      Yes**

- ↓      Go to step 6 of this procedure.

3. Perform the following:
  - a. Power off the system.
  - b. Connect one of the cards you disconnected in step 2 of this procedure.

c. Power on the system.

Does a regulator fault SRC occur?

**No      Yes**

↓ Exchange the regulator indicated by the SRC (see “Chapter 6. Removal and Installation Procedures” on page 821).

**This ends the procedure.**

4. Does a regulator SRC occur?

**Yes      No**

↓ Repeat steps 3 and 4 of this procedure until you determine the failing card.

**This ends the procedure.**

5. Exchange the last card you reconnected in step 3 of this procedure (see “Chapter 6. Removal and Installation Procedures” on page 821).

**This ends the procedure.**

6. Perform the following:

- a. Power off the system.
- b. Remove all except one of the regulators.
- c. Power on the system.

Does the remaining regulator report an SRC?

**Yes      No**

↓ Go to step 9 of this procedure.

7. Perform the following:

- a. Power off the system.
- b. Remove the remaining regulator and install one of the regulators you removed in step 6 of this procedure.
- c. Power on the system.

Does a regulator fault SRC occur?

**Yes      No**

↓ Exchange the regulator you removed in this step.

**This ends the procedure.**

8. Exchange the following FRUs in the failing unit one at a time:

- a. AC module
- b. Card enclosure

**Note:** Exchange all the failing items for the SRC that sent you here before exchanging the card enclosure.

**This ends the procedure.**

9. Perform the following:

- a. Power off the system.
- b. Install one of the regulators that was disconnected in step 6 of this procedure.
- c. Power on the system.

Does a regulator fault SRC occur?

## SPCN PIPs

No      Yes

↓      Exchange the regulator you just installed.

**This ends the procedure.**

10. Have all of the regulators that were removed in step 8 of this procedure been installed?

No      Yes

↓      **This ends the procedure.**

11. Go to step 9 of this procedure.

### SPCN-PIP5

**Introduction:** This procedure prepares a system with the Continuously Powered Main Storage (CPM) feature for hardware maintenance procedures.

Read the “Important Continuously Powered Main Storage (CPM) Information” on page 785 before continuing with this procedure.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel.

#### Procedure:

1. Is the background light for the Data display on the control panel on?

**Note:** The background light is a dim (yellow) light in the Data area on the control panel.

Yes      No

↓      Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
- b. Go to step 4 of this procedure.

2. Attempt to select function 06 on the control panel. **Function 06 must be accessed with the control panel in manual mode when powered down.**

Can you select function 06 on the control panel?

Yes      No

↓      The CPM feature is disabled. You may continue with any hardware maintenance procedures. Return to the procedure that sent you here.

**This ends the procedure.**

3. Power on the system.

Does the system power on and complete an IPL successfully?

No      Yes

↓      Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
- b. Go to step 5 of this procedure.

4. The background light for the Data display on the control panel is not on, or the system did not power on and complete an IPL successfully.

Is the background light for the Data display on the control panel on?

**Yes      No**

↓ Perform the following:

- a. Power off the system.
- b. Disconnect the mainline ac power cable from the customer's power outlet.

**Attention:** Disconnecting the battery power unit from the system unit disables the CPM feature. Tell the customer that the next IPL will take longer than usual.

- c. Disconnect all battery power from the system unit (see "Chapter 6. Removal and Installation Procedures" on page 821).

**Note:** Uninterruptible power supply units have no ac power output with battery power removed or a defective battery.

You may continue with any hardware maintenance procedures. Return to the procedure that sent you here.

**This ends the procedure.**

5. Attempt to select function 06 on the control panel.  
Can you select function 06 on the control panel?

**Yes      No**

↓ The CPM feature is disabled. You may continue with any hardware maintenance procedures. Return to the procedure that sent you here.

**This ends the procedure.**

6. **Attention:** Disconnecting the battery power unit from the system unit disables the CPM feature. Tell the customer that the next IPL will take longer than usual.

Scroll to function 06 and select D to disable the CPM feature. Scroll to function 06 again and ensure that it was disabled.

Was function 06 disabled on the control panel?

**No      Yes**

↓ You may continue with any hardware maintenance procedures. Return to the procedure that sent you here.

**This ends the procedure.**

7. Perform the following:

- a. Power off the system.
- b. Disconnect the mainline AC power cable from the outlet.
- c. **Attention:** Disconnecting the battery power unit from the system unit disables the CPM feature. Tell the customer that the next IPL will take longer than usual.

Disconnect all battery power from the system unit (see "Chapter 6. Removal and Installation Procedures" on page 821).

**Note:** Uninterruptible power supply units have no ac power output with battery power removed or a defective battery.

You may continue with any hardware maintenance procedures. Return to the procedure that sent you here.

**This ends the procedure.**

### SPCN-PIP10

**Introduction:** A power supply is failing.

Read the "Overview" on page 641 before continuing with this procedure.

**Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel.

#### Procedure:

1. Perform the following:

- a. Power off the system.
- b. Power on the system.

Does the same SRC that sent you to this procedure occur?

**Yes      No**

- ↓      A different SRC occurred. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59.

**This ends the procedure.**

2. Does a 1xxx 7404 SRC occur?

**No      Yes**

- ↓      Go to Step 21.

3. Perform the following:

- a. Power off the system.
- b. Disconnect the ac power cable.

4. Remove the expansion covers (see "Chapter 6. Removal and Installation Procedures" on page 821).

5. Is the SRC on a FC 5065 or 5066 secondary tower?

**No      Yes**

- ↓      Go to step 28 of this procedure.

6. Perform the following:

**Attention:** To prevent overheating problems, do not remove any card completely from the card enclosure unless you install an airflow card in its place.

Do not remove the card enclosure AMD assembly.

- a. Disconnect all the I/O devices (tape, diskette, optical, and disk units) from the unit you are working on by sliding them partially out of the unit (see "Chapter 6. Removal and Installation Procedures" on page 821).
- b. Disconnect all cards (except regulators) from the front and rear by sliding them partially out of the card enclosure.



- c. Disconnect the feature power supplies (if installed) from the unit you are working on (see "Chapter 6. Removal and Installation Procedures" on page 821).
- d. Disconnect all batteries by sliding them partially out of the enclosure. (An A300 SRC will appear, disregard it during this procedure).
- e. Disconnect the disk expansion unit power cable (if installed) at the top of the card enclosure.
- f. Reconnect the power cable to the unit you are working on.
- g. Power on the system.

Does a power supply reference code occur?

**No      Yes**

- ↓ Exchange the following, one at a time, until the problem is resolved (see "Chapter 6. Removal and Installation Procedures" on page 821):
  - a. AC module
  - b. Regulators in the card enclosure
  - c. Card enclosure AMD assembly
  - d. Control panel
  - e. Control panel cable
  - f. Card enclosure

**This ends the procedure.**

- 7. Were feature power supplies removed in step 6 of this procedure (see "System Unit and Expansion Unit Locations and Addresses" on page 712)?

**Yes      No**

- ↓ Go to step 10 of this procedure.

- 8. Perform the following:
  - a. Power off the system.
  - b. Disconnect the power cable to the unit you are working on.
  - c. Reconnect one feature power supply (see "Chapter 6. Removal and Installation Procedures" on page 821).
  - d. Reconnect the power cable to the unit you are working on.
  - e. Power on the system.

Does a power supply reference code occur?

**No      Yes**

- ↓ Exchange the last feature power supply you reconnected in this step (see "Chapter 6. Removal and Installation Procedures" on page 821).

**This ends the procedure.**

- 9. Have you reconnected all the feature power supplies?

**Yes      No**

- ↓ Repeat step 8 of this procedure.

**This ends the procedure.**

- 10. Perform the following:
  - a. Power off the system.
  - b. Disconnect the power cable to the unit you are working on.

- c. Connect one battery power unit (see "Chapter 6. Removal and Installation Procedures" on page 821).
- d. Connect the power cable to the unit you are working on.
- e. Power on the system.

Does a power supply reference code occur?

**No      Yes**

- ↓ Exchange the last battery power unit you connected in this step (see "Chapter 6. Removal and Installation Procedures" on page 821).

**This ends the procedure.**

11. Have you reconnected all the battery power units?

**Yes      No**

- ↓ Go to step 10 of this procedure.

12. Perform the following:

- a. Power off the system.
- b. Reconnect all of the I/O devices (tape, diskette, or disk units) you disconnected in step 6 of this procedure.
- c. Power on the system.

Does a power supply reference code occur?

**Yes      No**

- ↓ Go to step 15 of this procedure.

13. Perform the following:

- a. Power off the system.
- b. Disconnect all of the I/O devices (tape, diskette, or disk units) that you connected in step 12 of this procedure.
- c. Reconnect one of the I/O devices (tape, diskette, or disk units) that you disconnected in step 13b of this procedure.
- d. Power on the system.

Does a power supply reference code occur?

**Yes      No**

- ↓ Exchange the last I/O device you disconnected in this step (see "Chapter 6. Removal and Installation Procedures" on page 821).

14. Have you reconnected all the I/O devices?

**Yes      No**

- ↓ Repeat step 13a, 13c, and 13d of this procedure.

15. Is the storage expansion unit installed?

**Yes      No**

- ↓ **This ends the procedure.**

16. Perform the following:

- a. Power off the system.
- b. Reconnect the storage expansion unit power cable (PWR20X) at the top of the card enclosure.
- c. Install the AMD.
- d. Power on the system.

Does a power supply reference code occur?

**Yes     No**

↓     **This ends the procedure.**

17. Perform the following:

- a. Power off the system.
- b. Disconnect all the disk units by sliding them partially out of the storage expansion unit.
- c. Power on the system.

Does a power supply reference code occur?

**No     Yes**

↓     Exchange the following, one at a time, (see “Chapter 6. Removal and Installation Procedures” on page 821):

- a. Storage expansion unit adapter
- b. Storage expansion unit power cable

**This ends the procedure.**

18. Perform the following:

- a. Power off the system.
- b. Connect one disk unit you disconnected in step 17 of this procedure.
- c. Power on the system.

Does a power supply reference code occur?

**No     Yes**

↓     Exchange the tray assembly of the last disk unit you connected in this step (see “Chapter 6. Removal and Installation Procedures” on page 821).

**This ends the procedure.**

19. Have you reconnected all the disk units in the storage expansion unit?

**Yes     No**

↓     Repeat step 18 of this procedure.

20. **This ends the procedure.**

21. Are feature power supplies installed?

**Yes     No**

↓     Go to step 25 of this procedure.

22. Perform the following:

- a. Power off the system.
- b. Remove the feature power supplies.
- c. Power on the system.

Does a 1xxx 7404 SRC occur?

**No     Yes**

↓     Go to step 25 of this procedure.

23. Perform the following:

- Power off the system.

- Reconnect one of the feature power supplies removed in step 22 of this procedure.
- Power on the system.

Does a 1xxx 7404 SRC occur?

**No      Yes**

↓      Exchange the feature power supply reconnected in this step.

**This ends the procedure.**

24. Exchange the following one at a time:
- a. Second feature power supply (if installed).
  - b. ACMODUL
  - c. BACKPLN

**This ends the procedure.**

25. Perform the following:
- a. Power off the system.
  - b. Remove the battery charger units.
  - c. Power on the system.

Does a 1xxx 7404 SRC occur?

**No      Yes**

↓      Go to step 27 of this procedure.

26. Perform the following:
- a. Power off the system.
  - b. Install one of the battery charger units removed in step 25 of this procedure.
  - c. Power on the system.

Does a 1xxx 7404 SRC occur?

**No      Yes**

↓      Exchange the battery charger unit installed in this step.

27. Exchange the following one at a time:
- a. Second battery charger unit (if installed)
  - b. ACMODUL
  - c. BACKPLN

**This ends the procedure.**

28. Perform the following:
- a. Disconnect all the I/O devices (tape, diskette, optical, and disk units) from the unit you are working on by sliding them partially out of the unit (see "Chapter 6. Removal and Installation Procedures" on page 821).
  - b. Remove and label all cards installed in the PCI card area.
  - c. Reconnect the ac power cable to the unit you are working on.
  - d. Power on the system.

Does a power supply reference code occur?

**Yes      No**

↓      Go to step 37.

29. Perform the following:

- a. Power off the system.
- b. Remove power supplies P02 and P03.
- c. Power on the system.

Does a power supply reference code occur?

**No      Yes**

↓      Go to step 32.

30. Perform the following:

- a. Power off the system.
- b. Reconnect power supply P02 removed in step 29 of this procedure.
- c. Power on the system.

Does a power supply reference code occur?

**No      Yes**

↓      Exchange the power supply P02 reconnected in this step.

**This ends the procedure.**

31. Exchange power supply P03.

**This ends the procedure.**

32. Perform the following:

- a. Power off the system.
- b. Remove power supply P01.
- c. Reconnect power supply P02 or P03.
- d. Power on the system.

Does a power supply reference code occur?

**Yes      No**

↓      Exchange the power supply P01.

**This ends the procedure.**

33. Perform the following:

- a. Remove one of the AMDs from the system that was not previously removed during this procedure. (Disregard a AMD SRC if it occurs during this step.)
- b. Power on the system.

Does a power supply reference code occur?

**Yes      No**

↓      The AMD you removed in this step is the failing item.

**This ends the procedure.**

34. Have you removed all of the AMDs one at a time?

**No      Yes**

↓      Install all the AMDs and continue with step 37 of this procedure.

35. Perform the following:

- a. Power off the system.
- b. Install the AMD that was removed in step 33 in the original location.
- c. Go to step 33.

36. Replace BACKPLN.

**This ends the procedure.**

37. Perform the following:

- a. Reinstall all of the cards you removed in step 28 of this procedure.
- b. Reconnect the ac power cable to the unit you are working on.
- c. Power on the system.

Does a power supply reference code occur?

**Yes      No**

↓      Go to step 40.

38. Perform the following:

- a. Power off the system.
- b. Disconnect one of the cards you connected in step 37 of this procedure.
- c. Power on the system.

Does a power supply reference code occur?

**Yes      No**

↓      Exchange the last card you disconnected in this step (see "Chapter 6. Removal and Installation Procedures" on page 821).

39. Have you disconnected all the cards?

**Yes      No**

↓      Repeat step 38 of this procedure.

40. Perform the following:

- a. Power off the system.
- b. Reconnect all of the I/O devices (tape, diskette, or disk units) you disconnected in step 28 of this procedure.
- c. Power on the system.

Does a power supply reference code occur?

**Yes      No**

↓      **This ends the procedure.**

41. Perform the following:

- a. Power off the system.
- b. Disconnect all of the I/O devices (tape, diskette, or disk units) you connected in step 40 of this procedure.
- c. Reconnect one of the I/O devices (tape, diskette, or disk units) you connected in this step 41b of this procedure.
- d. Power on the system.

Does a power supply reference code occur?

**No      Yes**

↓      Exchange the last I/O device you reconnected in this step (see "Chapter 6. Removal and Installation Procedures" on page 821).

42. Have you reconnected all the I/O devices?

**Yes      No**

↓      Repeat step 41a, 41c, and 41d of this procedure.

43. Replace BACKPLN.

**This ends the procedure.**

**SPCN-PIP20**

**Introduction:** This procedure verifies that the lights and display on the following are operating correctly:

- System Unit
- FC 505x Storage Expansion Unit
- FC 506x PCI Expansion Frame
- FC 507x System Unit Expansion
- FC 508x Storage Expansion Tower

Read the “Overview” on page 641 before continuing with this procedure.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel.

**Procedure:**

1. Perform the following:
  - a. Select function 04 (Lamp Test) on the control panel (see “Selecting IPL Type, Mode, and Speed” on page 793).
  - b. Press the Enter key.
2. Look at the display panels on the following:
  - System Unit
  - FC 505x Storage Expansion Unit
  - FC 506x PCI Expansion Frame
  - FC 507x System Unit Expansion
  - FC 508x Storage Expansion Tower

**Note:** The SPCN lamp test is active for only 25 seconds after you press the Enter key.

Are all of the following lights on?

For the System Unit, the FC 505x Storage Expansion Unit, the FC 506x PCI Expansion Frame, the FC 507x System Unit Expansion, and the FC 508x Storage Expansion Tower:

- Power-on light
- Attention light
- A five-by-seven dot pattern for the 8-character display or a five-by seven dot pattern for the 32-character display

**No      Yes**

↓      These control panel lights are working correctly.

**This ends the procedure.**

3. **Attention:** Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read “Important Cryptographic I/O Processor Information” on page 785 before disconnecting or removing the cryptographic I/O processor.

## SPCN PIPs

Exchange the following FRUs in the failing unit one at a time (see “Chapter 6. Removal and Installation Procedures” on page 821):

- a. Control panel (CTLPNL)
- b. SPCN panel card (SPNLCRD)
- c. Control panel cable

**This ends the procedure.**

### SPCN-PIP21

**Introduction:** This procedure verifies that the Remote Control Panel is operating correctly.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel.

#### Procedure:

1. Select function 04 (Lamp Test) on the control panel by clicking on the↑ until 04 appears, then click on Enter.
2. Look at the display panels on the System Unit.

Are all of the following lights on?

- Power-on light
- Attention light
- Manual light
- Normal light
- Auto light
- Secure light
- The 8-character display segments

**No      Yes**

↓      The control panel lights are working correctly.

**This ends the procedure.**

3. Exchange the following FRU in the failing unit
  - Remote Control Panel cable – 97H7591
  - Operations Console Configuration cable — 97H7557

**This ends the procedure.**

## Tape I/O Processor Problem Isolation Procedures

### Overview

This section contains the procedures necessary to isolate a failure that the tape I/O processor (TIOP) has detected during an alternate IPL.

The System/370-type sequences are specifically for the 3422/3430 and 3480/3490 Tape Units. Therefore, the attachment of other System/370 devices is not valid.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always



power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

**DANGER**

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

**DANGER**

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

**DANGER**

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 789
- “Cards” on page 887

**TIOP-PIP1****Introduction:**

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure isolates problems on the System/370 interface for the tape I/O processor (TIOP). It explains how to find the TIOP, the I/O device, System/370 interface cables, and terminating plugs. After you verify that the cables are correct, use an isolation procedure to find the failing part.

Read the “Overview” on page 654 before continuing with this procedure.

1. See “Tape I/O Processor Failing Items” on page 669 to find the TIOP, interface adapter cable, System/370 interface cables, I/O devices, and terminating plugs. Verify the following, and correct if necessary before continuing with the next step of this procedure:
  - Ensure that all cable connections are correct and are tight.
  - Ensure that there are no pushed-back or damaged pins on the interface cable connectors, adapter cable connectors, terminating plugs, or device connectors.

## Tape IOP PIPs

- Ensure that the Bus and Tag cables are in the correct location, between the Interface Adapter cable box and the I/O device control unit. The Bus cable goes to Bus-in, and the Tag cable goes to Tag-in. The dark-colored connectors attach to the light-colored connectors.
- Ensure that the Bus terminating plug is in the Bus-Out location in the device control unit. Ensure that the Tag terminating plug is in the Tag-Out location in the device control unit.

**Note:** The 3490E Model Cxx has only one terminating plug.

- Ensure that all I/O devices have the correct address, as indicated in the system configuration list.
  - Ensure that all I/O devices are powered on. The I/O device should be ready for use and either enabled or online. If necessary, see the service information for the specific I/O device.
  - Set the service switches on the device to the Off or Normal position if they are not already set.
2. Perform the following:
    - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
    - b. Power on the system in manual mode (see “Selecting IPL Type, Mode, and Speed” on page 793).

Does the IPL complete successfully?

**No      Yes**

↓      **This ends the procedure.**

3. Perform the “System/370 Interface Cable Wrap Test” on page 657. Then return here and answer the following question.

Did you find and correct a problem?

**No      Yes**

↓      **This ends the procedure.**

4. Go to the service information for the specific tape unit and perform the procedures for an interface or channel problem. After completing the tape unit procedures, return to this step and answer the following question.

Did you find and correct a problem?

**No      Yes**

↓      **This ends the procedure.**

5. Exchange the Bus terminating plug and Tag terminating plug in the I/O device control unit.
6. Perform the following:
  - a. Power off the system.
  - b. Power on the system in manual mode

Does the IPL complete successfully?

**No      Yes**

↓      **This ends the procedure.**

7. Exchange the TIOP card (see “Chapter 6. Removal and Installation Procedures” on page 821).

Does the IPL complete successfully?

No      Yes

↓      **This ends the procedure.**

8. Ask your next level of support for assistance.

**This ends the procedure.**

## TIOP-PIP5

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure isolates the cause of an assign command failure.

Read the “Overview” on page 654 before continuing with this procedure.

1. Ask the system operator if the tape subsystem is shared with other systems.

Is the tape subsystem shared with other systems?

Yes      No

↓      Ask your next level of support for assistance.

**This ends the procedure.**

2. Ask the system operator if another system was controlling the tape subsystem when the SRC that sent you here occurred.

Was another system controlling the tape subsystem when the SRC that sent you here occurred?

No      Yes

↓      Wait for the other system to finish using the tape subsystem. Then ask the system operator to vary off the tape drive on the other system.

**This ends the procedure.**

3. Ask your next level of support for assistance.

**This ends the procedure.**

## System/370 Interface Cable Wrap Test

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure determines if the tape I/O processor (TIOP) card or one of the cables that connects the TIOP to the tape device is failing. If a cable is failing, perform further analysis to find the failing signal lines. You may repair or exchange a failing cable.

## Tape IOP PIPs

### Notes:

1. To perform this procedure, the tape unit must be the alternate IPL device.
2. To perform this procedure, you need one or both of the following:
  - Channel wrap block 1 (part 62X3403)
  - Channel wrap block 2 (part 6473051)

See “Channel Wrap Block 1” on page 804 and “Channel Wrap Block 2” on page 805.

These channel wrap blocks are stored with the system tools.

The tape subsystem configuration of the system determines the channel wrap blocks you need.

1. Is a 3490 Model Cxx Tape Unit connected to the system?

**No      Yes**

↓      Go to step 27 of this procedure.

2. The tape subsystem cables connect as shown in Figure 20.

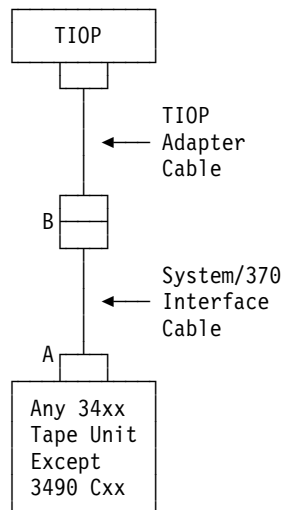


Figure 20. Tape Subsystem Cable Connections

Perform the following:

- a. Disconnect the System/370 interface cable from the I/O device control unit (at **A** in Figure 20).
  - b. Connect channel wrap block 1, part 62X3403, to the end of the System/370 interface cable (Bus to Bus and Tag to Tag). The channel wrap block 1 is stored with the system tools.
3. Perform the following:
    - a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
    - b. Select IPL type D in manual mode (see “Selecting IPL Type, Mode, and Speed” on page 793).
    - c. Power on the system.

Does a TIOP reference code occur?

**Note:** This may take up to 5 minutes.

**No      Yes**

↓      Go to step 6 of this procedure.

4. Does a different reference code occur?

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

5. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

6. Read the TIOP unit reference code (4 rightmost characters).

Does TIOP unit reference code 3100 occur (function 11-3 SRC 26xx 3100)?

**No      Yes**

↓      This is the normal reference code when the channel wrap block is connected and the cable string is not failing. The tape unit may be causing the problem.

Perform the following:

- a. Disconnect the channel wrap block from the device end of the System/370 interface cable.
- b. Reconnect the cable to the I/O device control unit.
- c. Return to the procedure that sent you here.

**This ends the procedure.**

7. Does TIOP reference code 3090 occur?

**No      Yes**

↓      Go to step 10 of this procedure.

8. Does a different reference code occur?

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

9. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

10. The wrap test detected a cable failure or TIOP card failure.

Perform the following:

- a. Disconnect channel wrap block 1 from the end of the System/370 interface cable.
- b. Disconnect the TIOP adapter cable from the System/370 interface cable (at **B** in Figure 20 on page 658).
- c. Connect channel wrap block 1 to the end of the TIOP adapter cable.

11. Perform the following:

- a. Power off the system.
- b. Select IPL type D in manual mode.
- c. Power on the system.

Does a TIOP reference code occur?

## Tape IOP PIPs

**Note:** This may take up to 5 minutes.

**No      Yes**

↓      Go to step 14 of this procedure.

12. Does a different reference code occur?

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

13. Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

**This ends the procedure.**

14. Read the TIOP unit reference code (4 rightmost characters).

Does TIOP unit reference code 3100 occur (function 11-3 SRC 26xx 3100)?

**No      Yes**

↓      This is the normal code when the channel wrap block is connected and the cable string is not failing. The System/370 interface cable (the one you disconnected from the cable string in step 10 of this procedure) is the failing item. Go to step 61 of this procedure.

15. Does TIOP reference code 3090 occur again?

**No      Yes**

↓      Go to step 18 of this procedure.

16. Does a different reference code occur?

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

17. Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

**This ends the procedure.**

18. You have isolated the problem to either the TIOP adapter cable or the TIOP card.

Perform the following:

- a. Power off the system.
- b. Exchange the TIOP card (see "Chapter 6. Removal and Installation Procedures" on page 821).
- c. Select IPL type D in manual mode.
- d. Power on the system.

Does TIOP reference code 3090 occur again?

**No      Yes**

↓      Go to step 22 of this procedure.

19. Does TIOP unit reference code 3100 occur?

**No      Yes**

↓      This is the normal code when the channel wrap block is connected and the cable string is not failing. The failing item is the TIOP card, which you exchanged in step 18 of this procedure.

Perform the following:

- a. Disconnect the channel wrap block from the end of the TIOP adapter cable.
- b. Reconnect the TIOP adapter cable to the System/370 interface cable.
- c. Reconnect the System/370 interface cable to the I/O device control unit.
- d. Return to the procedure that sent you here.

**This ends the procedure.**

20. Does a different reference code occur?

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

21. Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

**This ends the procedure.**

22. Perform the following:

- a. Disconnect the channel wrap block from the end of the TIOP adapter cable.
- b. Exchange the TIOP adapter cable that is connected to the TIOP card.

23. Perform the following:

- a. Power off the system.
- b. Select IPL type D in manual mode.
- c. Power on the system.

Does TIOP reference code 3090 occur again?

**No      Yes**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

24. Does TIOP unit reference code 3100 occur?

**No      Yes**

↓      This is the normal code when the channel wrap block is connected and the cable string is not failing. The failing item is the TIOP adapter cable, which you exchanged in step 22 of this procedure.

Perform the following:

- a. Reconnect the TIOP adapter cable to the System/370 interface cable.
- b. Reconnect the System/370 interface cable to the I/O device control unit.
- c. Return to the procedure that sent you here.

**This ends the procedure.**

25. Does a different reference code occur?

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

## Tape IOP PIPs

26. Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

**This ends the procedure.**

27. You are here because a 3490 Model Cxx is connected to the system.

Is a System/370 interface cable connected in the cable string between the TIOP and the 3490 Model Cxx?

**Yes      No**

↓      Go to step 66 of this procedure.

28. The tape subsystem cables connect as shown in Figure 21.

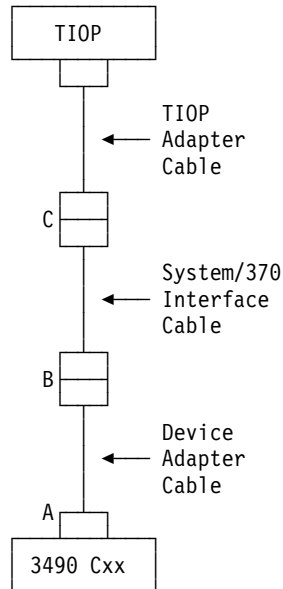


Figure 21. Tape Subsystem Cable Connections

Perform the following:

- Disconnect the device adapter cable from the I/O device control unit (at **A** in Figure 21).
- Connect channel wrap block 2, part 6473051, to the device end of the device adapter cable. The channel wrap block 2 is stored with the system tools.

29. Perform the following:

- Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
- Select IPL type D in manual mode (see "Selecting IPL Type, Mode, and Speed" on page 793).
- Power on the system.

Does a TIOP reference code occur?

**Note:** This may take up to 5 minutes.

**No      Yes**

↓      Go to step 32 of this procedure.

30. Does a different reference code occur?



**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

31. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

32. Read the TIOP unit reference code (4 rightmost characters).

Does TIOP unit reference code 3100 occur (function 11-3 SRC 26xx 3100)?

**No      Yes**

↓      This is the normal reference code when the channel wrap block is connected and the cable string is not failing. The tape unit may be causing the problem.

Perform the following:

- a. Disconnect the channel wrap block from the device end of the device adapter cable.
- b. Reconnect the cable to the I/O device control unit.
- c. Return to the procedure that sent you here.

**This ends the procedure.**

33. Does TIOP reference code 3090 occur?

**No      Yes**

↓      Go to step 36 of this procedure.

34. Does a different reference code occur?

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

35. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

36. The wrap test detected a cable failure or TIOP card failure.

Perform the following:

- a. Disconnect channel wrap block 2 from the end of the device adapter cable.
- b. Disconnect the System/370 interface cable from the device adapter cable (at **B** in Figure 21 on page 662).
- c. Connect channel wrap block 1 (part 62X3403) to the end of the System/370 interface cable (Bus to Bus and Tag to Tag).

37. Perform the following:

- a. Power off the system.
- b. Select IPL type D in manual mode.
- c. Power on the system.

Does a TIOP reference code occur?

**Note:** This may take up to 5 minutes.

**No      Yes**

↓      Go to step 40 of this procedure.

38. Does a different reference code occur?

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Yes No

↓ Ask your next level of support for assistance.

**This ends the procedure.**

39. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

40. Read the TIOP unit reference code (4 rightmost characters).

Does TIOP unit reference code 3100 occur (function 11-3 SRC 26xx 3100)?

No Yes

↓ This is the normal code when the channel wrap block is connected and the cable string is not failing. The failing item is the device adapter cable, which you disconnected from the cable string in step 36 of this procedure.

Perform the following:

- Exchange the device adapter cable.
- Disconnect the channel wrap block from the end of the System/370 interface cable.
- Reconnect the System/370 interface cable to the device adapter cable.
- Reconnect the device adapter cable to the I/O device control unit.
- Return to the procedure that sent you here.

**This ends the procedure.**

41. Does TIOP reference code 3090 still occur?

No Yes

↓ Go to step 44 of this procedure.

42. Does a different reference code occur?

Yes No

↓ Ask your next level of support for assistance.

**This ends the procedure.**

43. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

44. You have isolated the problem to one of the remaining cables or to the TIOP card.

Perform the following:

- Disconnect channel wrap block 1 from the end of the System/370 interface cable.
- Disconnect the TIOP adapter cable from the System/370 interface cable (at **C** in Figure 21 on page 662).
- Connect channel wrap block 1 to the end of the TIOP adapter cable (Bus to Bus and Tag to Tag).

45. Perform the following:

- Power off the system.
- Select IPL type D in manual mode.
- Power on the system.

Does a TIOP reference code occur?

**Note:** This may take up to 5 minutes.

**No      Yes**

↓      Go to step 48 of this procedure.

46. Does a different reference code occur?

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

47. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

48. Read the TIOP unit reference code (4 rightmost characters).

Does TIOP unit reference code 3100 occur (function 11-3 SRC 26xx 3100)?

**No      Yes**

↓      This is the normal code when the channel wrap block is connected and the cable string is not failing. The System/370 interface cable (the one you disconnected from the cable string in step 44 of this procedure) is the failing item. Go to step 61 of this procedure.

49. Does TIOP reference code 3090 occur again?

**No      Yes**

↓      Go to step 52 of this procedure.

50. Does a different reference code occur?

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

51. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

52. You have isolated the problem to the TIOP adapter cable or the TIOP card.

Perform the following:

- a. Power off the system.
- b. Exchange the TIOP card (see “Chapter 6. Removal and Installation Procedures” on page 821).
- c. Select IPL type D in manual mode.
- d. Power on the system.

Does TIOP reference code 3090 still occur?

**No      Yes**

↓      Go to step 56 of this procedure.

53. Does TIOP unit reference code 3100 occur?

**No      Yes**

↓      This is the normal code when the channel wrap block is connected and the cable string is not failing. The failing item is the TIOP card, which you exchanged in step 52 of this procedure.

Perform the following:

- a. Disconnect the channel wrap block from the end of the TIOP adapter cable.

## Tape IOP PIPs

- b. Reconnect the TIOP adapter cable to the System/370 interface cable.
- c. Reconnect the System/370 interface cable to the I/O device control unit.
- d. Return to the procedure that sent you here.

**This ends the procedure.**

54. Does a different reference code occur?

**Yes     No**

↓     Ask your next level of support for assistance.

**This ends the procedure.**

55. Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

**This ends the procedure.**

56. Exchange the TIOP adapter cable that is connected to the TIOP card.

57. Perform the following:

- a. Power off the system.
- b. Select IPL type D in manual mode.
- c. Power on the system.

Does TIOP reference code 3090 still occur?

**No     Yes**

↓     Ask your next level of support for assistance.

**This ends the procedure.**

58. Does TIOP unit reference code 3100 occur?

**No     Yes**

↓     This is the normal code when the channel wrap block is connected and the cable string is not failing. The failing item is the TIOP adapter cable, which you exchanged in step 56 of this procedure.

Perform the following:

- a. Reconnect the TIOP adapter cable to the System/370 interface cable.
- b. Reconnect the System/370 interface cable to the I/O device control unit.
- c. Return to the procedure that sent you here.

**This ends the procedure.**

59. Does a different reference code occur?

**Yes     No**

↓     Ask your next level of support for assistance.

**This ends the procedure.**

60. Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

**This ends the procedure.**

61. Use "System/370 Interface Information" on page 798, channel wrap block 1, and a multimeter to perform a continuity check on the System/370 interface cable. This procedure is used to find any open or short circuits.

62. Repair the cable if possible.

Does the open or short circuit condition in the cable still exist after you repaired it?

**Yes      No**

↓      Exchange the cable. Then go to step 64 of this procedure.

63. Connect the cables to their original locations (Bus to Bus and Tag to Tag).

64. Perform the following:

- a. Power off the system.
- b. Select IPL type D in manual mode.
- c. Power on the system.

Does the IPL complete successfully?

**No      Yes**

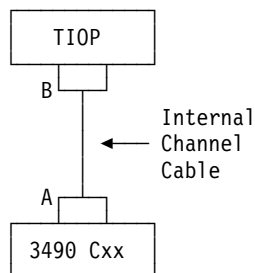
↓      **This ends the procedure.**

65. Ask your next level of support for assistance.

**This ends the procedure.**

66. You are here because an internal channel cable connects TIOP to the 3490 Model Cxx.

The tape subsystem cables connect as shown in Figure 22.



*Figure 22. Tape Subsystem Cable Connections*

Perform the following:

- a. Disconnect the internal channel cable from the I/O device control unit (at **A** in Figure 22).
- b. Connect channel wrap block 2, part 6473051, to the device end of the internal channel cable. The channel wrap block 2 is stored with the system tools.

67. Perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
- b. Select IPL type D in manual mode (see “Selecting IPL Type, Mode, and Speed” on page 793).
- c. Power on the system.

Does a TIOP reference code occur?

**Note:** This may take up to 5 minutes.

**No      Yes**

↓      Go to step 70 of this procedure.

## Tape IOP PIPs

68. Does a different reference code occur?

**Yes     No**

↓     Ask your next level of support for assistance.

**This ends the procedure.**

69. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

70. Read the TIOP unit reference code (4 rightmost characters).

Does TIOP unit reference code 3100 occur (function 11-3 SRC 26xx 3100)?

**No     Yes**

↓     This is the normal code when the channel wrap block is connected and the cable string is not failing. You do not have to perform further analysis.

Perform the following:

- a. Disconnect the channel wrap block from the device end of the internal channel cable.
- b. Reconnect the cable to the I/O device control unit.
- c. Return to the procedure that sent you here.

**This ends the procedure.**

71. Does TIOP reference code 3090 occur?

**No     Yes**

↓     Go to step 74 of this procedure.

72. Does a different reference code occur?

**Yes     No**

↓     Ask your next level of support for assistance.

**This ends the procedure.**

73. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

74. The wrap test detected an internal channel cable failure or TIOP card failure.

Perform the following:

- a. Disconnect channel wrap block 2 from the end of the internal channel cable.
- b. Disconnect the internal channel cable from the TIOP card (at **B** in Figure 22 on page 667).
- c. Connect channel wrap block 2 to the TIOP card (at **B** in Figure 22 on page 667).

75. Perform the following:

- a. Power off the system.
- b. Select IPL type D in manual mode.
- c. Power on the system.

Does TIOP reference code 3090 occur again?

**No     Yes**

↓     The failing item is the TIOP card.

Perform the following:

- a. Disconnect channel wrap block 2 from the TIOP card.
- b. Exchange the TIOP card (see “Chapter 6. Removal and Installation Procedures” on page 821).
- c. Reconnect the internal channel cable to the TIOP card (at **B** in Figure 22 on page 667).
- d. Reconnect the internal channel cable to the I/O device control unit (at **A** in Figure 22 on page 667).
- e. Return to the procedure that sent you here.

**This ends the procedure.**

76. Does TIOP unit reference code 3100 occur?

**No      Yes**

- ↓      This is the normal code when the channel wrap block is connected and the cable string is not failing. The failing item is the internal channel cable, which you disconnected from the TIOP card in step 74 of this procedure.

Perform the following:

- a. Disconnect channel wrap block 2 from the TIOP card.
- b. Exchange the internal channel cable.
- c. Return to the procedure that sent you here.

**This ends the procedure.**

77. Does a different reference code occur?

**Yes      No**

- ↓      Ask your next level of support for assistance.

**This ends the procedure.**

78. Go to “Chapter 2. Unit Reference Codes” on page 59 to correct the problem.

**This ends the procedure.**

## Tape I/O Processor Failing Items

Item Description	Location Procedure
Tape I/O processor	<ol style="list-style-type: none"> <li>1. Read the address of the failing TIOP from the product activity log record or from the Problem Summary Form (see “Problem Summary Form Content (Example)” on page 671).</li> <li>2. If needed, use the system configuration list with this address to physically find the TIOP card.</li> </ol>
Bus and Tag terminating plugs	<ol style="list-style-type: none"> <li>1. Read the address of the failing TIOP from the product activity log record or from the Problem Summary Form (see “Problem Summary Form Content (Example)” on page 671).</li> <li>2. If needed, use the system configuration list with this address to physically find the I/O devices attached to the TIOP.</li> <li>3. Find the control unit device attached to the interface cable. The Bus and Tag terminating plugs are in that control unit.</li> </ol>

## Tape IOP PIPs

### Item Description

Interface cables

### Location Procedure

1. Read the address of the failing TIOP from the product activity log record or from the Problem Summary Form (see "Problem Summary Form Content (Example)" on page 671).
2. If needed, use the system configuration list with this address to physically find the I/O devices attached to the TIOP.
3. The interface cables connect the TIOP to the device control unit. The failing item number for FI00850 is in "Failing Item (FI) Code Table" on page 359.

Attached I/O devices

1. Read the address of the failing TIOP from the product activity log record or from the Problem Summary Form (see "Problem Summary Form Content (Example)" on page 671).
2. If needed, use the system configuration list with this address to physically find the I/O devices attached to the TIOP.

**Note:** Any one of the I/O devices attached to the TIOP may be the failing item.

Tape I/O processor card to cable adapter for the System/370 interface cable

1. Read the address of the failing TIOP from the product activity log record or from the Problem Summary Form (see "Problem Summary Form Content (Example)" on page 671).
2. Read the address of the failing I/O device from the product activity log record or from the Problem Summary Form.
3. If needed, use the system configuration list with this address to physically find the TIOP card.
4. The cable adapter connects the TIOP card to the System/370 interface cables.



## Problem Summary Form Content (Example)

Function	11 3	2644	281E	Data
----------	------	------	------	------

Diagram labels for Function 11 3:

- Tape IOP Type or Tape Unit Type (points to 2644)
- Reference Code (points to 281E)

Function	12 3	xxxx	xxxx	Data
----------	------	------	------	------

Function	13 3	0000	xxxx	Data
----------	------	------	------	------

Diagram label for Function 13 3:

- Tape IOP Direct Select Address (points to 0000)

Function	14 3	xxxx	xxxx	Data
----------	------	------	------	------

Function	15 3	2644	0001	Data
----------	------	------	------	------

Diagram labels for Function 15 3:

- Tape IOP Type or Tape Unit Type (points to 2644)
- Model Number (points to 0001)

Function	16 3	2644	0001	Data
----------	------	------	------	------

Diagram labels for Function 16 3:

- Tape IOP Type or Tape Unit Type (points to 2644)
- Tape IOP Model (points to 0001)

To display device sense data (if available):

**Note:** If the system has logical partitions, select these functions from the system control panel, they are not available from the *Partition Status* screen.

1. Select function 25 (Service Switch 1).
2. Select function 26 (Service Switch 2).
3. Select function 55.
4. Select function 5515.
5. Record the data that is displayed from function 5515 (first control unit error code).
6. Select function 5516.
7. Record the data that is displayed from function 5516 (second and third control unit error codes).
8. Select function 5518.
9. Record the data that is displayed from function 5518 (drive error codes).

**Note:** See “System Unit and Expansion Unit Locations and Addresses” on page 712 for information on direct select address and unit address.

# Tape Unit Problem Isolation Procedures

## Overview

This section contains the procedures necessary to isolate a failure in a tape device.

In these procedures, the term *tape unit* may be any one of the following:

- An internal tape drive; this includes its electronic parts and status indicators
- An internal tape drive; this includes its tray, power regulator, and AMDs
- An external tape drive; this includes its power supply, power switch, power regulator, and AMDs

You should interpret the term *tape unit* to mean the tape drive you are working on. However, this document uses the terms *tape drive* and *enclosure* to indicate a more specific meaning.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

## DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

## DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

## DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 789
- “Initial Program Load (IPL) Information” in the *AS/400 Service Functions* information

## TU-PIP1

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure isolates tape unit power problems.

Read the “Overview” on page 672 before continuing with this procedure.

1. Is the tape unit in an external enclosure, and does the tape unit enclosure have a Power switch?

**Yes      No**

↓      Go to “TU-PIP3” on page 677.

**This ends the procedure.**

2. Is the tape unit powered on?

**Yes      No**

↓      Go to step 10 of this procedure.

3. Press the Unload switch on the front of the tape unit.  
Is a data cartridge or a tape reel present?

**Yes      No**

↓      Go to step 5 of this procedure.

4. Attempt to remove the data cartridge or tape reel from the tape unit.  
Can you remove the data cartridge or tape reel?

**Yes      No**

↓      The tape unit is the failing part.

Go to “TU-PIP3” on page 677.

**Note:** If the tape unit is an 8-mm tape drive, perform the following:

- a. Go to “Manually Removing the Tape Cartridge” on page 776.
- b. Go to “TU-PIP3” on page 677.

**This ends the procedure.**

5. Is the tape unit installed in an FC 5032 Removable Storage Unit?

**No      Yes**

↓      Go to “TU-PIP5” on page 687.

**This ends the procedure.**

6. Are you working on an 8-mm tape drive?

**Yes      No**

↓      Go to step 8 of this procedure.

7. Is the system powered on?

**Yes      No**

↓      The 8-mm tape drive cannot operate if the system is powered off and the external I/O signal cable is connected.

## Tape Unit PIPs

Perform the following:

- a. Disconnect the external I/O signal cable from the 8-mm tape drive.
- b. Continue with the next step of this procedure.

8. Is the tape unit Power light on?

**Yes      No**

↓ Perform the following:

- a. Ensure that the power cable connects tightly to the power cable connector at the back of the tape unit.
- b. Ensure that the power cable connects to a power outlet that has the correct voltage.
- c. Go to step 10 of this procedure.

9. Set the tape unit Power switch to the Power Off position (see Table 27).

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

*Table 27. Power Off and Power On Positions of Tape Unit Power Switches*

Operation	Power Switch Type	Toggle
		Push In/Out
Power Off	Down	Out
Power On	Up	In

10. Set the tape unit Power switch to the Power On position (see Table 27).

The Power light should go on and remain on. If a power problem is present, one of the following power failure conditions may occur:

- The Power light flashes, then remains off.
- The Power light does not go on.
- Another indication of a power problem occurs.

Does one of the above power failure conditions occur?

**No      Yes**

↓ Perform the following:

- a. Go to the service information for the specific tape device to correct the power problem.
- b. When you have corrected the power problem, go to “TU-PIP3” on page 677.

**This ends the procedure.**

11. The tape unit is powered on and runs its power-on self-test. Wait for the power-on self-test to complete.

Does the power-on self-test complete successfully?

**No      Yes**

↓ Go to “TU-PIP3” on page 677.

**This ends the procedure.**

12. Go to the service information for the specific tape device to correct the problem. Then go to “TU-PIP3” on page 677.

**This ends the procedure.**

## TU-PIP2

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure performs the 8-mm tape drive read self-test and hardware self-test. The write test is performed in “TU-PIP3” on page 677.

Read the “Overview” on page 672 before continuing with this procedure.

1. Press the Unload switch on the front of the 8-mm tape drive.

Is a data cartridge present?

**Yes      No**

↓      Go to step 3 of this procedure.

2. Attempt to remove the data cartridge.

Can you remove the data cartridge?

**Yes      No**

↓      The tape drive is the failing part.

Go to “Manually Removing the Tape Cartridge” on page 776. After removing the data cartridge, exchange the tape drive (see Removable Media in “Chapter 6. Removal and Installation Procedures” on page 821).

**This ends the procedure.**

3. Clean the tape drive by using the cleaning cartridge (part 16G8467).

**Note:** If the tape drive ejects the cleaning cartridge with the Disturbance light on, a new cleaning cartridge is needed.

The tape drive unloads automatically when cleaning is complete. Cleaning takes up to 5 minutes.

Is the Disturbance light on continuously?

**No      Yes**

↓      Repeat this step while using a new cleaning cartridge. If you are using a new cleaning cartridge and the Disturbance light does not go off, the possible failing part is the 8-mm tape drive.

Go to “TU-PIP3” on page 677.

**This ends the procedure.**

4. Is the Disturbance light blinking?

**No      Yes**

↓

## Tape Unit PIPs

- If the 8-mm tape drive is a type 6390, the possible failing part is the 6390 Tape Drive.
- If the 8-mm tape drive is a type 7208, the possible failing parts are:
  - a. 7208 Tape Drive
  - b. Power supply
  - c. AMD

Go to "TU-PIP3" on page 677.

### **This ends the procedure.**

5. The 8-mm tape drive read self-test and hardware self-test can take up to 5 minutes to run.

The tape drive runs the read self-test first. During the read self-test, the Read-Write light blinks, and the Disturbance and Ready lights are off.

To start the read self-test and hardware self-test, insert the diagnostic cartridge (part 46G2660) into the tape drive.

The following conditions indicate that the read self-test ended successfully:

- The Read-Write light stops blinking.
- The diagnostic cartridge ejects automatically.
- The three status lights go on to indicate the start of the hardware test.

Does the read self-test end successfully?

**No      Yes**

↓      Go to step 9 of this procedure.

6. Does the tape drive eject the diagnostic cartridge?

**Yes      No**

↓      The tape drive is the failing part.

Go to "Manually Removing the Tape Cartridge" on page 776. After removing the diagnostic cartridge, exchange the tape drive (see Removable Media in "Chapter 6. Removal and Installation Procedures" on page 821).

### **This ends the procedure.**

7. Is the Disturbance light blinking approximately four times per second?

**No      Yes**

↓      The possible failing part is the diagnostic cartridge (part 46G2660).

If this is your first time through this step, get a new diagnostic cartridge. Go to step 3 of this procedure to clean the tape drive again. Afterwards, run the read self-test and hardware self-test while using the new diagnostic cartridge.

If this is your second time through this step, the possible failing part is the 8-mm tape drive.

Go to "TU-PIP3" on page 677.

### **This ends the procedure.**

8. The Disturbance light is blinking approximately once per second.

- If the 8-mm tape drive is a type 6390, the possible failing part is the 6390 Tape Drive.
- If the 8-mm tape drive is a type 7208, the possible failing parts are:

- a. 7208 Tape Drive
- b. Power supply
- c. AMD

Go to "TU-PIP3".

**This ends the procedure.**

9. The tape drive runs the hardware self-test. During the hardware self-test, the three tape drive status lights are on for 15 to 30 seconds. The three status lights go off when the hardware self-test ends successfully.

Does the hardware self-test end successfully?

**Yes      No**

↓ When the hardware self-test does not end successfully, the following conditions occur:

- The three status lights do not go off.
- The Ready and Read-Write lights go off.
- The Disturbance light blinks approximately once per second.

Possible failing parts are:

- If the 8-mm tape drive is a type 6390, the possible failing part is the 6390 Tape Drive.
- If the 8-mm tape drive is a type 7208, the possible failing parts are:
  - a. 7208 Tape Drive
  - b. Power supply
  - c. AMD

Go to "TU-PIP3".

**This ends the procedure.**

10. The read self-test and hardware self-test ended successfully.

Was the user's original tape identified as the probable cause of failure?

**Yes      No**

↓ Go to "TU-PIP3".

**This ends the procedure.**

11. Perform the following:

- a. Mark and date the data cartridge to indicate that it failed with a permanent error.
- b. Discard this data cartridge when:
  - Volume statistics (if available) indicate a problem with the data cartridge.
  - A total of three permanent errors have occurred with the same data cartridge.
- c. If possible, continue operations with a new data cartridge.

Go to "TU-PIP3".

**This ends the procedure.**

## **TU-PIP3**

### **Introduction:**

## Tape Unit PIPs

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

When you are directed to this procedure, you may need to exchange a failing part. You determined the failing part from one of the following:

- Other problem isolation procedures
- The *Failing Item* column of the tape unit reference code table
- Tape unit service guide

**Note:** Sometimes, the AS/400 system is available but not performing an alternate IPL (type D IPL). In this instance, any hardware failure of the tape unit I/O processor or any device attached to it is not critical. With the exception of the loss of the affected devices, the system remains available.

Read the “Overview” on page 672 before continuing with this procedure.

1. Do you need to exchange a possible failing device?

**No      Yes**

↓      Perform the following:

For an internal tape unit, go to Removable Media “Chapter 6. Removal and Installation Procedures” on page 821.

For an external tape unit, go to the removal and installation procedures in the device service information.

2. Do you need to exchange the tape unit I/O processor?

**No      Yes**

↓      Exchange the tape unit I/O processor (see “Chapter 6. Removal and Installation Procedures” on page 821). When you have completed the removal and installation procedure, continue with the next step of this procedure.

3. Are you working with a tape unit in the system unit or in an expansion unit?

**Yes      No**

↓      Go to step 5 of this procedure.

4. Is the system available, and can you enter commands on the command line?

**No      Yes**

↓      Go to step 12 of this procedure.

5. Display the selected IPL type (see “Selecting IPL Type, Mode, and Speed” on page 793).

Is the displayed IPL type D?

**No      Yes**

↓      Go to step 8 of this procedure.

6. Do you want to perform an alternate IPL (type D)?

**No      Yes**

↓      Go to step 8 of this procedure.



7. Perform an IPL from disk by doing the following:
  - a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
  - b. Select IPL type A in manual mode.
  - c. Power on the system.
  - d. Go to step 10 of this procedure.
8. Place the first tape of the latest set of SAVSYS tapes or SAVSTG tapes, or the first IBM Software Distribution tape in the alternate IPL tape drive. The tape drive automatically becomes ready for the IPL operation (this may take several minutes).

**Note:** Do not use the Model-Unique Licensed Internal Code tape.

9. Perform an alternate IPL by doing the following:
  - a. Power off the system.
  - b. Select IPL type D in manual mode.
  - c. Power on the system.
10. The IPL may take one or more hours to complete.  
Does an unexpected SRC appear on the control panel, and is the System Attention light on?

**No      Yes**

↓      Go to step 13 of this procedure.

11. Does the IPL complete successfully?

**Yes      No**

↓      Go to "Starting Point for All Problems" on page 4 to continue analyzing the problem.

**This ends the procedure.**

12. Perform the following to test the tape unit:
  - a. Enter  
VFYTAP  
  
(the Verify Tape command) on the command line.
  - b. Follow the prompts on the Verify Tape displays, then return here and answer the following question.

Does the  
VFYTAP

command end successfully?

**No      Yes**

↓      **This ends the procedure.**

13. Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 1049).

Is the SRC the same one that sent you to this procedure?

**Yes      No**

↓      A different SRC occurred. Use the new SRC to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

**This ends the procedure.**

## Tape Unit PIPs

14. You cannot continue to analyze the problem. Use the original SRC and exchange the FRUs. Begin with the FRU which has the highest percent of probable failure (see the failing item list for this reference code).

**This ends the procedure.**

### TU-PIP4

#### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Use this procedure to reset an IOP and its attached tape units.

**Note:** If disk units are attached to an IOP, you must power off the system, then power it on to reset the IOP.

1. Is the tape unit powered on?

**No      Yes**

↓      Perform the following:

- a. Press the Unload switch on the front of the tape unit you are working on.
- b. If a data cartridge or a tape reel is present, do not load it until you need it.
- c. Continue with the next step of this procedure.

2. Verify the following:

- If the external device has a power switch, ensure that it is set to the On position.
- Ensure that the power and external signal cables are connected correctly.

**Note:** For every 8-mm and 1/4-inch tape unit, the I/O bus terminating plug for the SCSI external signal cable is connected internally. These devices do not need and should not have an external terminating plug.

3. Did you press the Unload switch in step 1 of this procedure?

**Yes      No**

↓      Press the Unload switch on the front of the tape unit you are working on.

If a data cartridge or a tape reel is present, do not load it until you need it.

Continue with the next step of this procedure.

4. Can you enter commands on the command line?

**Yes      No**

↓      Go to step 12 of this procedure.

5. Has the tape unit operated correctly since it was installed?

**Note:** If you do not know, continue with the next step of this procedure.

Yes      No

↓      Go to step 12 of this procedure.

6. If a system message displayed an I/O processor name, a tape unit resource name, or a device name, record the name for use in step 7 of this procedure. You may continue without a name.

Does the I/O processor give support to only one tape unit?

**Note:** If you do not know, continue with the next step of this procedure.

No      Yes

↓      Perform the following:

- a. Enter

WRKCFGSTS \*DEV \*TAP ASTLVL(\*INTERMED)

(the Work with Configuration Status command) on the command line.

- b. You must complete all parts of this step before you press the Enter key.

**Note:** If the device is not varied off, select the *Vary off* option before continuing.

- c. Select the *Vary on* option for the failing tape unit.

- d. Enter

RESET(\*YES)

(the Reset command) on the command line.

- e. Press the Enter key.

**This ends the procedure.**

7. Steps 7 and 8 of this procedure determine if the I/O processor for the tape unit gives support to other tape units or to a disk unit.

**Notes:**

- a. If you cannot determine the tape unit you are attempting to use, go to step 12 of this procedure.
- b. System messages refer to other tape units that the I/O processor gives support to as *associated devices*.

Enter

WRKHDWRSC \*STG

(the Work with Hardware Resources command) on the command line.

Did you record an I/O processor (IOP) resource name in step 6 of this procedure?

No      Yes

↓      Perform the following:

- a. Select the *Work with resources* option for that resource.
- b. Record the *Configuration description* name of all tape units for which the I/O processor provides support.
- c. Record whether the I/O processor for the tape unit also gives support to any disk unit resources.

## Tape Unit PIPs

- d. Go to step 9 of this procedure.
8. Perform the following:
  - a. Select the *Work with resources* option for each storage resource IOP (CMB01, SIO1, and SIO2 are examples of storage resource IOPs).
  - b. Find the Configuration Description name of the tape unit you are attempting to use. Record the Configuration Description names of all tape units that the I/O processor gives support to.
  - c. Record whether the I/O processor for the tape unit also gives support to any disk unit resources.
9. Does the I/O processor give support to any disk unit resources?

**No      Yes**

↓      The *Reset* option is not available. Go to step 12 of this procedure.

10. Does the I/O processor give support to only one tape unit?

**No      Yes**

↓      Perform the following:

- a. Select the *Work with configuration description* option and press the Enter key.
- b. Select the *Work with status* option and press the Enter key.
- c. You must complete the remaining parts of this step before you press the Enter key.

**Note:** If the device is not varied off, select the *Vary off* option before continuing.

- d. Select the *Vary on* option for the failing tape unit.
- e. Enter  
RESET(\*YES)

(the Reset command) on the command line.

- f. Press the Enter key.

**This ends the procedure.**

11. Perform the following:
  - a. Enter  
WRKCFGSTS \*DEV \*TAP ASTLVL(\*INTERMED)  
  
(the Work with Configuration Status command) on the command line.
  - b. Select the *Vary off* option for the failing tape unit and associated devices (the devices you identified in step 7 or 8 of this procedure). Press the Enter key.
  - c. You must complete the remaining parts of this step before you press the Enter key.
  - d. Select the *Vary on* option for the failing tape unit.
  - e. Enter  
RESET(\*YES)  
  
(the Reset command) on the command line.
  - f. Press the Enter key.

- g. Select the *Vary on* option for the associated devices (tape units) you identified in step 7 or 8 of this procedure. It is not necessary to use the *Reset* option again.

Does a system message indicate that the vary on operation failed?

**Yes      No**

↓      **This ends the procedure.**

12. The *Reset* option is not available, or you were not able to find the Configuration Description name when using  
WRKHDWRSC \*STG

(the Work with Hardware Resources command).

You can perform an I/O processor (IOP) reset by performing an IPL of the I/O processor. All devices that are attached to the IOP will reset.

The following steps describe how to load an IOP, how to configure a tape drive, how to vary on tape devices, and how to make tape devices available.

13. Is the tape device you are working on an 8-mm tape drive?

**Yes      No**

↓      Go to step 15 of this procedure.

14. Verify the following on the 8-mm tape drive:

- The power and external signal cables are connected correctly.
- The Power switch is set to the On position (pushed in).

**Note:** The SCSI I/O bus terminating plug for the system-external signal cables is connected internally in the 8-mm tape drive. The 8-mm tape drive does not need and must not have an external terminating plug.

Is the 8-mm tape drive Power light on, and is the Disturbance light off?

**Yes      No**

↓      Go to "TU-PIP2" on page 675 to correct the problem.

**This ends the procedure.**

15. Is a data cartridge or a tape reel installed in the tape device?

**No      Yes**

↓      Remove the data cartridge or tape reel. Then continue with the next step of this procedure.

16. Can you enter commands on the command line?

**Yes      No**

↓      Perform the following:

- a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
- b. Power on the system.

The system performs an IPL and resets all devices. If the tape device responds to SCSI address 7, the AS/400 system configures the tape device.

**This ends the procedure.**

## Tape Unit PIPs

17. Verify that automatic configuration is On by entering  
DPSYSVAL QAUTOCFG

(the Display System Value command) on the command line.

Is the *Autoconfigure device* option set to 1?

**Yes**      **No**

↓

Perform the following:

- a. Press the Enter key to return to the command line.
- b. Set automatic configuration to On by entering  
CHGSYSVAL QAUTOCFG '1'

(the Change System Value command) on the command line.

**Note:** QAUTOCFG resets to its initial value in step 23 of this procedure,

- c. Continue with the next step of this procedure.

18. Perform the following:

- a. Enter  
STRSST

(the Start SST command) on the command line.

- b. Select the *Start a Service Tool* option.
- c. Select the *Hardware Service Manager* option.
- d. Select the *Logical Hardware Resources* option.
- e. Select the *System Bus Resources* option.

The Logical Hardware Resources on System Bus display shows all of the IOPs.

- f. Find the IOP you want to reset.

**Note:** You **must** ensure that no one is using any of the tape units, communication channels, or display stations that are attached to the IOP you want to reset.

Does a "\*" indicator appear to the right of the IOP description?

**No**      **Yes**

↓

Disk units are attached to the IOP.

Perform the following:

- a. Press F3 until the Exit System Service Tools display appears.
- b. Press the Enter key.
- c. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
- d. Power on the system.

The system performs an IPL and resets all devices.

**This ends the procedure.**

19. Perform the following:

- a. Select the *I/O debug* option.

- b. Select the *IPL the I/O processor* option.
  - c. When the IOP reset is complete, continue with the next step of this procedure.
20. Perform the following:
- a. Press F12 to return to the Logical Hardware Resources on System Bus display.
  - b. Select the *Resources associated with IOP* option for the IOP you reset.

Did the IOP detect the tape unit?

**Yes      No**

↓      The IOP did not detect the tape unit.

Ensure that the tape unit is powered on and that the signal cables are connected correctly. If you find and correct a power problem or a signal cable problem, return to step 18 of this procedure.

The tape unit may be failing. Go to the tape unit service information and perform the procedures for analyzing device problems. If you find and correct a tape unit problem, return to step 18 of this procedure.

If not, ask your next level of support for assistance.

**This ends the procedure.**

21. Press F3 until the Exit System Service Tools display appears. Then press the Enter key.
22. Was automatic configuration Off before you performed step 17 of this procedure?

**Yes      No**

↓      **This ends the procedure.**

23. Enter
- ```
CHGSYSVAL QAUTOCFG '0'
```

(the Change System Value command) on the command line to reset QAUTOCFG to its initial value.

**This ends the procedure.**

**Note: TU-PIP5 FOLLOWS PIP6.**

## TU-PIP6

**Introduction:** This procedure isolates a Device Not Found message during installation from an alternate device. There are several possible causes:

- The alternate installation device was not correctly defined.
- The alternate installation device was not made ready.
- The alternate installation device does not contain installation media.
- The alternate installation device is not powered on.
- The alternate installation device is not connected properly.
- There is a hardware error on the alternate installation device or the attached I/O Processor.

## Tape Unit PIPs

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 672 before continuing with this procedure.

1. Is the device that you are using for alternate installation defined as the alternate installation device?

**Yes      No**

↓      Correct the alternate installation device information and retry the alternate installation.

**This ends the procedure.**

2. Is the alternate installation device ready?

**Yes      No**

↓      Make the alternate installation device ready and retry the alternate installation.

**This ends the procedure.**

3. Is there installation media in the alternate installation device?

**Yes      No**

↓      Load the correct media and retry the alternate installation.

**This ends the procedure.**

4. Is the alternate installation device an external device?

**Yes      No**

↓      Go to 11 of this procedure.

5. Is the alternate installation device powered on?

**Yes      No**

↓      Go to step 8 of this procedure.

6. Make sure that the alternate installation device is properly connected to the I/O processor or I/O Adapter card.

Is the alternate installation device properly connected?

**Yes      No**

↓      Correct the problem and retry the alternate installation.

**This ends the procedure.**

7. Go to step 11 of this procedure.

8. Ensure that the power cable is connected tightly to the power cable connector at the back of the alternate device. Ensure that the power cable is connected to a power outlet that has the correct voltage. Set the alternate device Power switch to the Power On position.

The Power light should go on and remain on. If a power problem is present, one of the following power failure conditions may occur:

- The Power light flashes, then remains off.
- The Power light does not go on.
- Another indication of a power problem occurs.



Does one of the above power failure conditions occur?

**No      Yes**

↓ Perform the following:

- a. Go to the service information for the specific alternate device to correct the power problem.
- b. When you have corrected the power problem, retry the alternate installation.

**This ends the procedure.**

9. The alternate device is powered on and runs its power-on self-test. Wait for the power-on self-test to complete.

Does the power-on self-test complete successfully?

**No      Yes**

↓ Retry the alternate installation.

**This ends the procedure.**

10. Go to the service information for the specific alternate installation device to correct the problem. Then retry the alternate installation.

**This ends the procedure.**

11. Was a device error recorded in the Product Activity Log?

**No      Yes**

↓ See "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

**This ends the procedure.**

12. Contact your next level of support.

## TU-PIP5

### Introduction

This procedure isolates Field Replacable Units when the failing tape unit is installed in the FC 5032 Removable Storage Unit and is being used for an alternate IPL operation. For this operation, install the failing tape unit in position 1 or 3 of the FC 5032 Removable Storage Unit.

**Note:** The DSE module (differential to single-ended module) internal to the FC 5032 Removable Storage Unit terminates each external signal cable. No terminating plug is required. The DSE module converts two external differential signal I/O buses to four internal tape unit single-ended (SE) I/O buses. The DSE module connects Tape units as follows:

- Tape units in the top 5032 locations (positions 1 and 2) use the top external cable connector.
- Tape units in the bottom 5032 locations (positions 3 and 4) use the bottom external cable connector.

Each 1/4-inch tape unit has a terminating plug that terminates the internal single-ended I/O bus.

**Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.

## Tape Unit PIPs

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the "Overview" on page 672 before continuing with this procedure.

1. Is the Power On switch on the FC 5032 Removable Storage Unit set to the Power On position?

**Yes      No**

↓      Set the Power On switch on the FC 5032 Removable Storage Unit to the Power On position.

**This ends the procedure.**

2. Is a data cartridge installed in the tape unit?

**No      Yes**

↓      Remove the data cartridge. Then continue with the next step of this procedure.

3. Is the Power On light (green) on the front of the FC 5032 Removable Storage Unit on?

**No      Yes**

↓      Go to step 7 of this procedure.

4. Perform the following:

- a. Set the Power On switch on the FC 5032 Removable Storage Unit to the Power Off position.
- b. Ensure that the tape unit power cable is connected correctly at the back of the tape unit and at the frame power control compartment (PCC).
- c. Ensure that the PCC circuit breaker for the tape unit power cable is set to the I (on) position.
- d. Set the Power On switch on the FC 5032 Removable Storage Unit to the Power On position.

5. Look at the display on the FC 5032 Removable Storage Unit control panel.

The display may be blank, or it may have system power control network (SPCN) status codes in the following form:

- 1RRN rrrr - Power fault

Where RR is the frame number, N is the port number, and rrrr is a reference code that is listed in "(1xxx) System Power Control Network (SPCN) Reference Codes" on page 69.

Is the display 1RRN rrrr?

**No      Yes**

↓      Use the value for the reference code **rrrr** and go to "(1xxx) System Power Control Network (SPCN) Reference Codes" on page 69 to correct the problem.

**This ends the procedure.**

6. Is the Power On light (green) on the front of the FC 5032 Removable Storage Unit on?

**Yes      No**

↓      Go to "Starting Point for All Problems" on page 4 to correct the problem.

**This ends the procedure.**

7. Is the tape indicator light on the front of the tape unit on?

**No      Yes**

↓      The tape unit is failing. Exchange this tape unit (see Removable Media in “Chapter 6. Removal and Installation Procedures” on page 821).

**This ends the procedure.**

8. Insert the test data cartridge into the failing tape unit.

Does the tape indicator light (green) on the front of the tape unit go on for approximately 1 minute, then go off?

**No      Yes**

↓      This tape unit is not failing.

If this is your first time through this procedure, go to step 13 of this procedure.

If this is your second time through this procedure, go to step 11 of this procedure.

If this is your third time through this procedure, go to step 12 of this procedure.

9. Perform the following:

- a. Set the Power On switch on the FC 5032 Removable Storage Unit to the Power Off position.
- b. Reseat the following:
  - The tray for the failing tape unit
  - The external signal cable at the FC 5032 Removable Storage Unit and at the I/O processor.
- c. Set the Power On switch on the FC 5032 Removable Storage Unit to the Power On position.

Does the tape indicator light (green) on the front of the tape unit go on for approximately 1 minute, then go off?

**No      Yes**

↓      You corrected the problem by reseating the items in this step.

**This ends the procedure.**

10. Insert a test data cartridge (part 21F8586) into the tape unit to the right of the tape unit you are using.

**Note:** A tape unit to the right of the tape unit being used may be causing the failure. The signal control lines from the left and right tape units are common at the FC 5032 DSE module internal I/O bus. A tape unit above or below the tape unit being used is *not* a probable cause of failure. (It is attached to a different internal DSE I/O bus.)

Does the tape indicator light (green) on the front of the tape unit to the right go on for approximately 1 minute, then go off?

**Yes      No**

↓      Go to step 12 of this procedure.

11. Exchange the following field replacable units one at a time until you have corrected the problem:

## Tape Unit PIPs

- a. Failing tape unit - 96%
- b. External signal cable - 1%
- c. DSE module - 1%
- d. If a tape unit is installed to the right of the tape unit in use, exchange that tape unit - 1%
- e. Cable carrier - 1%

**Note:** After exchanging each field replaceable unit, perform the following:

- a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
- b. Select IPL type D in manual mode (see "Selecting IPL Type, Mode, and Speed" on page 793).
- c. Power on the system.
- d. Select the first tape of the latest set of SAVSYS tapes, SAVSTG tapes, or the first IBM Software Distribution tape. Place it in the tape unit that is located in the system unit. The tape unit automatically becomes ready for the IPL operation (this may take several minutes).

**This ends the procedure.**

- 12. Exchange the following field replaceable units one at a time until you have corrected the problem:
  - a. I/O processor - 91%
  - b. DSE module - 4%
  - c. Cable carrier - 4%
  - d. External signal cable - 1%

**Note:** After exchanging each field replaceable unit, perform the following:

- a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
- b. Select IPL type D in manual mode (see "Selecting IPL Type, Mode, and Speed" on page 793).
- c. Power on the system.
- d. Select the first tape of the latest set of SAVSYS tapes, SAVSTG tapes, or the first IBM Software Distribution tape. Place it in the tape unit that is located in the system unit. The tape unit automatically becomes ready for the IPL operation (this may take several minutes).

**This ends the procedure.**

- 13. Perform the following:
  - a. Remove the test data cartridge from the tape unit.
  - b. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
  - c. Select IPL type D in manual mode (see "Selecting IPL Type, Mode, and Speed" on page 793).
  - d. Select the first tape of the latest set of SAVSYS tapes, SAVSTG tapes, or the first IBM Software Distribution tape. Place it in the tape unit that is located in the system unit. The tape unit automatically becomes ready for the IPL operation (this may take several minutes).

- Note:** Do not use the Model-Unique Licensed Internal Code tape.
- e. Power on the system.

**This ends the procedure.**

## Tape Device Ready Conditions

### Introduction

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

All the conditions that are listed for the device must be correct for the device to be ready.

**Note:** If the device is not ready, use the *Action* column or other instructions and go to the service information for the specific tape device.

Table 28. Tape Device Ready Conditions

| Storage Device | Ready Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Action                                                                                                                                                                                                                                                                  |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2440           | <ul style="list-style-type: none"> <li>Power switch is set to the On position.</li> <li>Power light is on.</li> <li>Tape is loaded.</li> <li>Status display shows A 0.</li> <li>Online light is on.</li> </ul>                                                                                                                                                                                                                                                                                                                      | See the <i>IBM 2440 Magnetic Tape Subsystem Operator's Manual</i> G571-0149, for instructions on making the tape unit ready. If you cannot make the tape unit ready, go to the “MAPs” section of the <i>IBM 2440 Magnetic Tape Subsystem Service Guide</i> , G571-0166. |
| 3422/3430      | <ul style="list-style-type: none"> <li>Power switch is set to the On position.</li> <li>Power light is on.</li> <li>Enable/Disable switch is set to the Enable position.</li> <li>Tape is loaded.</li> <li>Ready light is on.</li> </ul>                                                                                                                                                                                                                                                                                            | See the <i>3422 Magnetic Tape Subsystem Operator's Guide</i> , SA32-0090, or <i>3430 Magnetic Tape Subsystem Operator's Guide</i> , SA32-0079, for instructions on making the tape unit ready.                                                                          |
| 3480/3490      | <ul style="list-style-type: none"> <li>Power switch is set to the On position.</li> <li>Power light is on.</li> <li>DC Power light is on.</li> <li>Control unit Online switch is set to the Online position.</li> <li>Control unit Normal/Test switch is set to the Normal position.</li> <li>Control unit channel Enable/Disable switch is set to the Enable position.</li> <li>Tape unit Online/Offline switch is set to the Online position.</li> <li>Tape is loaded.</li> <li>Tape unit displays Ready U or Ready F.</li> </ul> | See the <i>3480 Magnetic Tape Subsystem Operator's Guide</i> , SA32-0066, or <i>3490 Magnetic Tape Subsystem Operator's Guide</i> , SA32-0124, for instructions on making the tape unit ready.                                                                          |

## Tape Unit PIPs

Table 28. Tape Device Ready Conditions (continued)

| Storage Device | Ready Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Action                                                                                                                                                                                                                                                |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7208           | <ul style="list-style-type: none"><li>• Power switch is on (pressed).</li><li>• Power light is on.</li><li>• Data cartridge is inserted.</li><li>• Ready light is on.</li><li>• System external signal cable is connected to the type 2621 I/O processor and to the 7208 Tape Drive.</li></ul> <p><b>Note:</b> The SCSI I/O bus terminating plug for the system external signal cable is connected internally in the 7208 Tape Drive. The 7208 Tape Drive does not need, and must not have, an external terminating plug.</p> | See the <i>7208 8 mm Tape Drive Operator's Manual</i> for instructions on making the tape drive ready. If you cannot make the 7208 Model 012 Tape Drive ready, go to "TU-PIP2" on page 675.                                                           |
| 9348           | <ul style="list-style-type: none"><li>• Power switch is set to the On position.</li><li>• Power light is on.</li><li>• Tape is loaded.</li><li>• Status display shows 00 A002.</li><li>• Online light is on.</li></ul>                                                                                                                                                                                                                                                                                                        | See the <i>9348 Customer Information manual, SA21-9567</i> , for instructions on making the tape unit ready. If you cannot make the tape unit ready, go to the "Analyzing Problems" section of <i>9348 Tape Unit Service Information</i> , SY31-0697. |

## Twinaxial Workstation I/O Processor Problem Isolation Procedures

This section contains the procedures to isolate a failure which has been detected by the twinaxial workstation I/O processor.

**Note:** If you are using a personal computer, an emulation program must be installed and working.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see "Powering Off and Powering On the System or Expansion Tower" on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

### DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

### DANGER

To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)

### DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

### DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

**Attention:** When instructed, remove and connect cables carefully. You may damage the connectors if you use too much force.

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 789
- “Determining a Primary or Alternative Console” in the *AS/400 Service Functions* information

## TWSC-PIP1

**Introduction:** The workstation IOP detected an error. One of the following occurred:

- All of the workstations on one port are not working.
- All of the workstations on the system are not working.
- One of the workstations on the system is not working.
- The reference code table instructed you to perform this procedure.
- The Remote Operations Console is not working.

**Note:** If you are using a Remote Operations Console, use “ROC-PIP3” on page 592 before using this procedure.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Are you using a workstation adapter console?

## Twinaxial Workstation PIPs

**Note:** A personal computer (used as a console) that is attached to the AS/400 system by using a console cable feature is known as a workstation adapter console. The cable (part number 46G0450, 46G0479, or 44H7504) connects the serial port on the personal computer to a communications I/O adapter on the AS/400 system.

**No      Yes**

↓      Go to "WSAC-PIP1" on page 705.

**This ends the procedure.**

2. Is the device you are attempting to repair a personal computer (PC)?

**No      Yes**

↓      PC emulation programs operate and report system-to-PC communications problems differently. See the PC emulation information for details on error identification.

Go to step 3 of this procedure.

3. Perform the following:

- a. Verify that all the devices you are attempting to repair, the primary console, and any alternative consoles are powered on.
- b. Verify that all the devices you are attempting to repair, the primary console, and any alternative consoles have an available status. For more information on displaying the device status, see "Hardware Service Manager" in the *AS/400 Service Functions* information.
- c. Verify that the workstation addresses of all workstations on the failing port are correct. Each workstation on the port must have a separate address, from 0 through 6. See the workstation service information for details on how to check addresses.
- d. Verify that the last workstation on the failing port is terminated. All other workstations on that port must not be terminated.
- e. Ensure that the cables that are attached to the device or devices are tight and are not visibly damaged.
- f. If there were any cable changes, check them carefully.
- g. If all of the workstations on the system are not working, disconnect them by terminating at the console.
- h. Verify the device operation (see the device information for instructions).

**Note:** The cursor position can assist in problem analysis.

- The cursor in the upper left corner indicates a communication problem between the workstation IOP and the operating system. Perform the following to assist in problem analysis:
  - Verify that all current PTFs are loaded.
  - Ask your next level of support for assistance.
- The cursor in the upper right corner indicates a communication problem between the workstation IOP and the device.
  - Continue to the next step of this procedure to analyze the problem.

4. Is the system powered off?

**Yes      No**

↓      Go to step 7 of this procedure.

5. Perform the following:



- a. Power on the system in Manual mode (see “Selecting IPL Type, Mode, and Speed” on page 793).
- b. Wait for a display to appear on the console or a reference code to appear on the control panel.

Does a display appear on the console?

**No      Yes**

↓ If you disconnected any devices after the console in step 3 of this procedure, perform the following:

- a. Power off the system.
- b. Reconnect one device.

**Note:** Ensure that you terminate the device you just reconnected and remove the termination from the device previously terminated.

- c. Power on the system.
- d. If a reference code appears on the control panel, go to step 8 of this procedure.
- e. If no reference code appears, repeat steps a through d of this step until you have checked all devices disconnected previously.
- f. Continue to perform the initial program load (IPL).

**This ends the procedure.**

6. Does the same reference code that sent you to this procedure appear on the control panel?

**Yes      No**

↓ Go to “Starting Point for All Problems” on page 4 for this new problem.

**This ends the procedure.**

7. Perform the following to make DST available:
  - a. Ensure that Manual mode on the control panel is selected (see “Selecting IPL Type, Mode, and Speed” on page 793).
  - b. Select function 21 (Make DST Available).
  - c. Check the console and any alternative consoles for a display.

Does a display appear on any of the console displays?

**No      Yes**

↓ If you disconnected any devices after the console in step 3 of this procedure, perform the following:

- a. Power off the system.
- b. Reconnect one device.

**Note:** Ensure that you terminate the device you just reconnected and remove the termination from the previously terminated device.

- c. Power on the system.
- d. If a reference code appears on the control panel, go to step 8 of this procedure.
- e. If no reference code appears, repeat steps a through d of this step until you have checked all devices disconnected previously.

## Twinaxial Workstation PIPs

Continue to perform the initial program load (IPL).

**This ends the procedure.**

8. Ensure that the following conditions are met:

- The workstation addresses of all workstations on the failing port must be correct.

Each workstation on the port must have a separate address, from 0 through 6. See the workstation service information if you need help with checking addresses.

Did you find a problem with any of the above conditions?

**Yes      No**

↓      Go to step 11 of this procedure.

9. Perform the following:

- a. Correct the problem.
- b. Select function 21 (Make DST Available).
- c. Check the console and any alternative consoles for a display.

Does a display appear on any of the consoles?

**No      Yes**

↓      Continue to perform the IPL.

**This ends the procedure.**

10. Does the same reference code appear on the control panel?

**Yes      No**

↓      Go to "Starting Point for All Problems" on page 4 for this new problem.

**This ends the procedure.**

11. Is the reference code one of the following?: 0001, 0003, 0004, 0005, 0006, 0101, 0103, 0104, 0105, 0106, 5004, 5082, B000, D010, or D023.

**No      Yes**

↓      Go to step 15 of this procedure.

12. Does the system have an alternative console on a second workstation IOP?

**Yes      No**

↓      Go to step 14 of this procedure.

13. There is either a Licensed Internal Code problem, or there are two device failures on the workstation IOPs, consoles, or cables. The console and any alternative consoles are the most probable causes for this failure.

- See the service information for the failing display to attempt to correct the problem. If a display is connected to the system by a link protocol converter, use the link protocol converter information to attempt to correct the problem. The link protocol converter may be the failing item.
- If you have another working display, you can exchange the console and alternative consoles and perform an IPL to attempt to correct the problem.
- Exchange the following parts one at a time until you determine the failing item:
  - a. Console
  - b. Alternative console

- c. Cables
- d. Workstation IOA for the console
- e. BACKPL2 (see "BACKPLx" on page 396.)

**This ends the procedure.**

14. The console, cables, or the workstation IOP card is the most probable causes for this failure. If the console is connected to the system by a link protocol converter, the link protocol converter is possibly the failing item.

Use one or more of the following options to correct the problem:

- See the service information for the failing displays for more information. If a display is connected to the system by a link protocol converter, see the link protocol converter information to attempt to correct the problem.
- If you have another working display, you can exchange the console and perform an IPL to attempt to correct the problem.
- Exchange the following parts one at a time until you determine the failing item:
  - a. Console
  - b. Workstation IOA
  - c. BACKPL2 (see "BACKPLx" on page 396)
  - d. Twinaxial attachment (cable)

**This ends the procedure.**

15. To continue problem analysis, use a port tester, part 93X2040 or 59X4262, which you may have with your tools or the customer may have one. The port tester has either two or three lights.

Is a port tester available?

**No      Yes**

↓      Go to step 18 of this procedure.

16. Check or exchange the cables from the system to the failing display.

Did this correct the problem?

**Yes      No**

↓      Go to step 12 of this procedure.

17. You corrected the problem.

**This ends the procedure.**

18. **DANGER**

**To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)**

To use the port tester to isolate the problem, perform the following:

- Verify that the port tester is operating correctly by doing a self-test. A self-test can be made at any time, even when the port tester is attached to a port or cable. Perform the following steps to do a self-test:
    - a. Move the selector switch to the center (0) position.
    - b. Push and hold the test button until all lights go on. The yellow lights should go on immediately, and the green light should go on approximately 5 seconds later. The port tester is ready for use if all lights go on.
  - Leave the system power on.
19. Find the input cable to the failing console or port.

## Twinaxial Workstation PIPs

Is the failing console or the failing port attached to a protocol converter?

**No      Yes**

↓      Perform the following:

- a. Disconnect the cable that comes from the system at the protocol converter.
- b. Connect the port tester to the cable.
- c. Go to step 21 of this procedure.

20. Perform the following:

- a. Disconnect the input cable from the failing console.
- b. Connect the port tester to the input cable.

21. Set the selector switch on the port tester to the left (1) position for a twinaxial connection. Set the switch to the right (2) position for a twisted pair connection.

Press and hold the test switch on the port tester for 15 seconds and observe the lights.

**If the port tester has three lights, do the following:**

- If only the top (green) light is on, go to step 31 of this procedure.
- If both the top (green) and center (yellow) lights are on, go to step 23 of this procedure.

**Note:** The center (yellow) light is always on for twisted pair cable and may be on for fiber optical cable.

- If only the bottom (yellow) light is on, go to step 24 of this procedure.
- If all lights are off, go to step 25 of this procedure.
- If all lights are on, go to step 22 of this procedure.

**If the port tester has two lights, do the following:**

- If only the top (green) light is on, go to step 31 of this procedure.
- If only the bottom (yellow) light is on, go to step 24 of this procedure.
- If both lights are off, go to step 25 of this procedure.
- If both lights are on, continue with the next step of this procedure.

22. The tester is in the self-test mode. Check the position of the selector switch. If the selector switch is not in the correct position, go to step 21 of this procedure.

If the selector switch is already in the correct position, the port tester is not working correctly. Exchange the port tester and go to step 18 of this procedure.

23. The cable you are testing has an open shield.

**Note:** The open shield can be checked only on the cable from the twinaxial workstation attachment to the device or from device to device. Only one section of cable can be checked at a time. See the *Port Tester Use* information.

**This ends the procedure.**

24. The cable network is bad. The wires in the cable between the console and the twinaxial workstation attachment are reversed. Go to step 30 of this procedure.

25. Perform the following:

- a. Find the twinaxial workstation attachment to which the failing console is attached.
- b. Disconnect the cable from port 0 on that twinaxial workstation attachment.
- c. Connect the port tester to port 0 on the attachment.
- d. Set the selector switch on the port tester to the left (1) position.

26. Press and hold the test switch on the port tester for 15 seconds and observe the lights.

**If the port tester has three lights, do the following:**

- If both the top (green) and center (yellow) lights are on, continue with step 27 of this procedure.

**Note:** The center (yellow) light is always on for twisted pair cable and may be on for fiber optical cable.

- If only the bottom (yellow) light is on, continue with step 27 of this procedure.
- If all lights are off, continue with step 27 of this procedure.
- If only the top (green) light is on, go to step 29 of this procedure.
- If all lights are on, go to step 28 of this procedure.

**If the port tester has two lights, do the following:**

- If only the top (green) light is on, go to step 29 of this procedure.
- If only the bottom (yellow) light is on, continue with step 27 of this procedure.
- If both lights are off, continue with step 27 of this procedure.
- If both lights are on, go to step 28 of this procedure.

27. The test indicated that there was no signal from the system. Reconnect the cable you disconnected and perform the following:

- a. Exchange the following parts:
  - 1) Twinaxial workstation IOA card
  - 2) BACKPL2 (see "BACKPLx" on page 396)
- b. Power on the system to perform an IPL.

**This ends the procedure.**

28. The tester is in the self-test mode. Check the position of the selector switch. If the selector switch is not in the left (1) position, set the switch to the left (1) position. Then go to step 26 of this procedure.

If the selector switch is already in the left (1) position, the port tester is not working correctly. Exchange the port tester and go to step 25 of this procedure.

29. The cable to the workstation is the failing item.

Continue with the next step of this procedure.

30. Cable maintenance is a customer responsibility.

See the information that is listed below for more information on correcting cable problems.

- If the IBM cable system is being used to attach the workstation, see the following information:
  - *IBM Cabling System Planning and Installation Guide*, GA27-3361
  - *Using the IBM Cabling System with Communication Products*, GA27-3620

## Twinaxial Workstation PIPs

- *IBM Cabling System Problem Determination Guide for Twinaxial Applications* , GA21-9491
- If the telephone twisted-pair cable is being used to attach the console, see:
  - *IBM 5299 Model 3 Terminal Multiconnector and IBM Twinaxial to Twisted-pair Adapter Planning, Installation, and Problem Analysis Guide*, GA27-3749
- If a twinaxial cable is being used to attach the console, see:
  - *IBM 5250 Information Display System Planning and Site Preparation Guide* , GA21-9337
  - *Twinaxial Cabling Troubleshooting Guide* , SY31-0703
- If a link protocol converter is being used to attach the console, see the link protocol converter service information for problem analysis.
- The cable must be repaired or exchanged.

Then power on the system to perform an IPL.

**This ends the procedure.**

31. The port tester detects most problems, but it does not always detect an intermittent problem or some cable impedance problems. The tester may indicate a good condition, although there is a problem with the workstation IOP card or cables.
  - If the failing display is connected to a link protocol converter, the link protocol converter is the failing item. See the link protocol converter service information to correct the problem.
  - Exchange the following parts:
    - a. Console
    - b. Twinaxial workstation IOA
    - c. BACKPL2 (see “BACKPLx” on page 396)
    - d. Cables
  - If you have another working display, you can exchange the console and perform an IPL to attempt to correct the problem.
  - See the service information for the failing display for more information.
  - If exchanging the failing items did not correct the problem and the reference code was a 5002, 5082, or 50FF, there may be a Licensed Internal Code problem. Go to “LIC-PIP3” on page 521.
  - The problem may be caused by devices that are attached after the console on port 0.

**This ends the procedure.**

## Workstation Adapter Problem Isolation Procedures

### Overview

This section contains the procedures necessary to isolate a failure that is detected by the workstation adapter. These procedures are used when no display is available with which to perform online problem analysis.

The workstation adapter detected a problem while communicating with the workstation that is used as the primary console.

**Note:** If you are using a PC, you must install an emulation program.

## Workstation Adapter PIPs

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

### DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

### DANGER

To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)

### DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

### DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 789
- “Determining a Primary or Alternative Console” in the *AS/400 Service Functions* information

## WS-PIP1

### Introduction:

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

## Workstation Adapter PIPs

Read the "Overview" on page 700 before continuing with this procedure.

**Note:** If the console has a keyboard error, there may be a K on the display. See the workstation service information for more information.

1. Are you using a workstation adapter console (type 6A58 or 6A59)?

**No      Yes**

↓      Go to "WSAC-PIP1" on page 705.

**This ends the procedure.**

2. Perform the following:

- a. Select the icon on the workstation to make it the console (you may have already done this). You must *save* the console selection. For more information see *Local Device Configuration* and *LAN, Frame-Relay and ATM Support*.
- b. Access dedicated service tools (DST) by performing the following:
  - 1) Select Manual mode on the control panel.
  - 2) Use the selection switch on the control panel to display function 21 (Make DST Available). Press Enter on the control panel.
  - 3) Wait for a display to appear on the console or for a reference code to appear on the control panel.

Does a display appear on the console?

**No      Yes**

↓      The problem is corrected.

**This ends the procedure.**

3. Isolate the problem to one AS/400 system and one workstation (console) by doing the following:
  - a. Disconnect the power cable from the workstation.
  - b. Eliminate all workstations, cables, and connector boxes from the network except for one AS/400 system, one console, two connector boxes, and one cable.
  - c. Ensure that the cables that are connected to the console, the keyboard, and the AS/400 system are connected correctly and are not damaged.
4. Perform the following:
  - a. Ensure that the AS/400 system console is terminated correctly.
  - b. Set the Power switch on the console to the On position.
  - c. Select the SNA\*PS icon on the console.

See the workstation information for more information.

5. Access DST by performing the following:
  - a. Select Manual mode on the control panel.
  - b. Use the selection switch on the control panel to display function 21 (Make DST Available). Press Enter on the control panel.
  - c. Wait for a display to appear on the console or for a reference code to appear on the control panel.

Does a display appear on the console?

**No      Yes**

↓      The problem is in a cable, connector box, or device you disconnected in step 3 of this procedure.



**This ends the procedure.**

6. Does the reference code A600 5005 appear on the control panel?

**Yes      No**

↓      Go to “Starting Point for All Problems” on page 4 to correct the problem.

**This ends the procedure.**

7. Do you have another workstation, cable, and two connector boxes you can exchange with the workstation connected to the AS/400 system?

**Yes      No**

↓      Go to step 10 of this procedure.

8. Repeat steps 3 through 7 of this procedure, using a different workstation, cable, and connector boxes.

Do you still have a problem?

**Yes      No**

↓      The problem is in the cable, connector boxes, or workstation you disconnected.

**This ends the procedure.**

9. One of the following is causing the problem:

- Workstation adapter Licensed Internal Code
- Workstation adapter configuration
- Workstation IOA
- Communications IOP

**Note:** The items at the top of the list have a higher probability of fixing the problem than the items at the bottom of the list.

To bring up a workstation other than the console, perform the following:

- a. Connect another workstation into this network.
- b. Select Normal mode on the control panel.
- c. Perform an IPL (see “Initial Program Load (IPL) Information” in the *AS/400 Service Functions* information).

If the sign-on display appears, the following parts are good:

- Communications IOP
- Workstation IOA

**Note:** If a printer connected to this assembly is not working correctly, it may look like the display is bad. Perform a self-test on the printer to ensure that it prints correctly (see the printer service information).

If you still have not corrected the problem, ask your next level of support for assistance.

**This ends the procedure.**

10. One of the following is causing the problem:

- Workstation adapter Licensed Internal Code
- Workstation adapter configuration
- Workstation

## Workstation Adapter PIPs

- Cable
- Connector box
- Workstation IOA
- Workstation IOP

**Note:** The items at the top of the list have a higher probability of fixing the problem than the items at the bottom of the list.

If you still have not corrected the problem, ask your next level of support for assistance.

**This ends the procedure.**

## Workstation Adapter Console Problem Isolation Procedures

### Overview

This section contains the procedures necessary to isolate a failure that is detected by the workstation adapter console. Use these procedures when no display is available with which to perform online problem analysis.

**Note:** If you are using a PC, you must install an emulation program.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see “Powering Off and Powering On the System or Expansion Tower” on page 789) before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

### DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

### DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

### DANGER

To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)

### DANGER

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

Read and understand the following service procedures before using this section:

- “Powering Off and Powering On the System or Expansion Tower” on page 789
- “Determining a Primary or Alternative Console” in the *AS/400 Service Functions* information
- “Card Removal and Installation” in “Chapter 6. Removal and Installation Procedures” on page 821.
- “System Unit and Expansion Unit Locations and Addresses” on page 712

### WSAC-PIP1

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the “Overview” on page 704 before continuing with this procedure.

**Note:** If the console has a keyboard error, there may be a K on the display. See the workstation service information for more information.

1. Ensure that your workstation meets the following conditions:
  - The workstation that you are using for the console is powered on.
  - The emulation program is installed and is working.
  - The input/output adapter (IOA) is installed into the MFIOP.
  - The workstation console cable is attached.

#### Notes:

##### a. Card information:

- Hardware that is associated with 6A58 feature is the type 2612 card.
- Hardware that is associated with 6A59 feature is the type 2609, 2721 , or 2745 card.

##### b. Cable information:

- If the IOA is type 2612, 2721 or 2745, the cable attaches directly to the IOA.
- If the IOA is type 2609, the cable attaches to the two-port adapter cable on the port labeled P2.

Did you find a problem with any of the conditions listed above?

**No      Yes**

↓      Correct the problem. Then perform an IPL of the system.

**This ends the procedure.**

2. Perform the following to make dedicated service tool (DST) available:
  - a. If there is an alternative console, ensure that it is powered on.

## Workstation Adapter Console PIPs

- b. Ensure that Manual mode on the control panel is selected (see “Selecting IPL Type, Mode, and Speed” on page 793).
- c. Select function 21 (Make DST Available) on the control panel and press Enter.

Does a display appear on either the console or any alternative console?

**No      Yes**

↓      Complete the IPL.

When the operating system display appears, use the Work with Problem command (WRKPRB) or Analyze Problem command (ANZPRB) to analyze and correct or report any console problems .

**This ends the procedure.**

3. Do you have SRC A600 5001, A600 5004, A600 5007, or B075 xxxx (where xxxx is any value)?

**No      Yes**

↓      Perform the following for the type of IOA card you have:

Type 2609:

- a. Disconnect the cable that is attached to the two-port adapter cable port that is labeled P2.
- b. Install the BB wrap plug on the P2 connection of the two-port adapter cable.
- c. Perform an IPL in Manual mode.

Type 2612, 2721, or 2745:

- a. Disconnect any cables that are attached to the IOA.
- b. Install the wrap plug on the IOA. The 2612 wrap plug label is BB. The 2721 and 2745 wrap plug label is QQ.
- c. Perform an IPL in Manual mode.

4. Does SRC 6A58 5007 or 6A59 5007 occur?

**No      Yes**

↓      One of the following is causing the problem:

- Workstation emulation program
- Workstation
- Workstation console cable

**This ends the procedure.**

5. Did SRC A600 5001, A600 5004, 6A58 5008, or 6A59 5008 occur?

**No      Yes**

↓      One of the following is causing the problem:

Type 2609:

- Workstation adapter
- Two-port adapter cable

Type 2612, 2721, or 2745:

- Workstation adapter

**This ends the procedure.**

## **Workstation Adapter Console PIPs**

6. This is a new problem. Use the new reference code to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59) or ask your next level of support for assistance.

**This ends the procedure.**

## Workstation Adapter Console PIPs

## Chapter 5. Locations, Addresses, and Service Reference Information

|                                                        |     |                                                     |     |
|--------------------------------------------------------|-----|-----------------------------------------------------|-----|
| Start Here for Locations Information . . . . .         | 710 | 2750/2751 and 2761 Adapter Card Port                |     |
| System Unit and Expansion Unit Locations and           |     | Connector Locations . . . . .                       | 741 |
| Addresses . . . . .                                    | 712 | Integrated Netfinity Server for AS/400 (2850)       | 742 |
| 600, S10 System Unit, Processor Type 2118, 2119,       |     | Tape and Optical Unit Address Jumpers . . . . .     | 742 |
| 2129, 2134, 2135, and 2136 . . . . .                   | 712 | Optical Unit . . . . .                              | 742 |
| 720 System Unit, Processor Type 206A, 206B,            |     | 6383, 6385, 6386 Tape Unit . . . . .                | 742 |
| and 206C . . . . .                                     | 713 | 6379, 6380, 6381, 6382 Tape Unit . . . . .          | 743 |
| 620, S20 System Unit, Processor Type 2161, 2175,       |     | 6390 Tape Unit . . . . .                            | 743 |
| 2179, and 2180 . . . . .                               | 714 | 6335 Tape Unit . . . . .                            | 743 |
| 620, S20, 720 System Unit, Processor Type 206D,        |     | External Devices . . . . .                          | 744 |
| 206E, 206F, 207A, 207B, 207C, 207D, 207E, 207F,        |     | SCSI I/O Processor (Type 2621) Addressing           |     |
| 208A, 208B, 208C, 208D, 2163, 2165, 2166, 2170,        |     | Scheme . . . . .                                    | 744 |
| 2177, 2178, 2181, and 2182 . . . . .                   | 715 | Tape I/O Processor (Type 2644) Addressing           |     |
| Device Locations and Addresses . . . . .               | 716 | Scheme . . . . .                                    | 745 |
| PCI Card Addressing (System Unit) . . . . .            | 716 | Type 2718 IOA, 2729 IOA, and 6534 IOP               |     |
| PCI Expansion Unit . . . . .                           | 718 | Addressing . . . . .                                | 746 |
| Device Locations and Addresses (PCI                    |     | Type 6501 IOP Addressing . . . . .                  | 748 |
| Expansion Unit) . . . . .                              | 719 | Expansion Tower Locations and Addresses . . . . .   | 750 |
| Card Addressing (PCI Expansion Unit) . . . . .         | 719 | Storage Expansion Unit (FC 5051) . . . . .          | 750 |
| SPD Expansion Unit . . . . .                           | 721 | Storage Expansion Unit (FC 5052 and 5058) . . . . . | 751 |
| Device Locations and Addresses (SPD                    |     | FC 5065 and FC 5066 Expansion Towers . . . . .      | 752 |
| Expansion Unit) . . . . .                              | 721 | System Unit Expansion Tower (FC 5070, 5071,         |     |
| Card Addressing (SPD Expansion Unit) . . . . .         | 722 | 5072, and FC 5073) . . . . .                        | 754 |
| Optical Bus Cable Layout and SPD Optical Bus           |     | Storage Expansion Tower (FC 5080, 5081, 5082,       |     |
| Driver Card Locations . . . . .                        | 723 | or 5083) . . . . .                                  | 756 |
| Power and Signal Cables . . . . .                      | 725 | Cable Diagrams for Expansion Towers . . . . .       | 759 |
| 600, S10 System Unit, Processor Type 2118,             |     | Cable Diagrams . . . . .                            | 759 |
| 2119, 2129, 2134, 2135, and 2136 . . . . .             | 725 | FC 5065 or 5066 Power and Signal cables . . . . .   | 759 |
| 720 System Unit, Processor Type 206A, 206B,            |     | I/O Bus Addressing Schemes . . . . .                | 764 |
| and 206C . . . . .                                     | 726 | Communications I/O Processor Unit Addressing        |     |
| 620 and S20 Base System Unit, Processor                |     | Scheme . . . . .                                    | 765 |
| Type 2161, 2175, 2179, and 2180 . . . . .              | 727 | Twinaxial Workstation I/O Processor Unit            |     |
| 620, S20, 720 System Unit, Processor Type              |     | Addressing Scheme . . . . .                         | 766 |
| 206D, 206E, 206F, 207A, 207B, 207C, 207D,              |     | ASCII Workstation I/O Processor Unit                |     |
| 207E, 207F, 208A, 208B, 208C, 208D, 2163,              |     | Addressing Scheme . . . . .                         | 766 |
| 2165, 2166, 2170, 2177, 2178, 2181, and 2182 . . . . . | 728 | SRC Address Formats . . . . .                       | 767 |
| Expansion Unit, PCI Bus . . . . .                      | 729 | Hardware SRC Formats . . . . .                      | 771 |
| Expansion Unit, SPD Bus . . . . .                      | 730 | Reclaim IOP Cache Storage . . . . .                 | 773 |
| Backplane IOP/IOA Connection Diagrams . . . . .        | 731 | Storage I/O Card Modes and Jumpers . . . . .        | 774 |
| Base System Unit . . . . .                             | 731 | Determining and Setting the Mode of an I/O          |     |
| Expansion Unit, PCI Bus . . . . .                      | 732 | Card . . . . .                                      | 774 |
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| I/O Adapters . . . . .                                 | 737 | 1/4 inch Tape Cartridge (Type 6335) . . . . .       | 776 |
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| Integrated Netfinity for AS/400 Server (IOA)           |     | Locked Position . . . . .                           | 778 |
| Switch Settings . . . . .                              | 738 | Standby Position . . . . .                          | 779 |
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| 6510/6520 . . . . .                                    | 739 | Important Continuously Powered Main Storage         |     |
| 6616 . . . . .                                         | 740 | (CPM) Information . . . . .                         | 785 |
| 6617 . . . . .                                         | 741 | Important Cryptographic I/O Processor               |     |
|                                                        |     | Information . . . . .                               | 785 |

|                                                         |     |                                                            |     |
|---------------------------------------------------------|-----|------------------------------------------------------------|-----|
| Setting the System Date and Time . . . . .              | 786 | Tape I/O Processor Card Connectors . . . . .               | 804 |
| Hexadecimal Product Activity Log Data . . . . .         | 786 | Type 2644 . . . . .                                        | 804 |
| Determining the Primary and Alternate Console . . . . . | 786 | Channel Wrap Block 1 . . . . .                             | 804 |
| Determining the Load-Source Disk and Alternate          |     | Channel Wrap Block 2 . . . . .                             | 805 |
| IPL Device . . . . .                                    | 786 | Card and Channel Wrap Layout (Type 2644) . . . . .         | 806 |
| Introduction . . . . .                                  | 786 | Verifying the Repair . . . . .                             | 806 |
| Finding the Load-Source Disk on Systems                 |     | Verify Dedicated Repair. . . . .                           | 807 |
| without Mirrored Protection . . . . .                   | 787 | Verify Concurrent Repair. . . . .                          | 808 |
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| Finding the Load-Source Disks on Systems with           |     | Procedures for systems with multiple partitions . . . . .  | 810 |
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| Search Sequence for the Alternate IPL Device . . . . .  | 788 | Locating a Secondary Partition's Console . . . . .         | 811 |
| Internal Devices . . . . .                              | 788 | Locating a Secondary Partition's Load Source . . . . .     | 812 |
| External Devices . . . . .                              | 788 | Locating a Secondary Partition's Load Source               |     |
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| Expansion Tower . . . . .                               | 789 | Locating a Secondary Partition's Load Source               |     |
| Powering Off the System . . . . .                       | 789 | From the Primary Partition's Console . . . . .             | 813 |
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| System/370 Interface Information . . . . .              | 798 | FRU or a System I/O Resource . . . . .                     | 815 |
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| System/370 Channel Bus Cable Pin Layout                 |     | Missing or Non-reporting System Bus Resources . . . . .    | 816 |
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| (Type 2644) . . . . .                                   | 802 |                                                            |     |

## Start Here for Locations Information

This procedure describes how to find the correct diagram to use in this section.

1. Is the Frame ID 1 or is the direct select address 0001xxxx or 0002xxxx?

**Yes      No**

↓      Go to step 3 of this procedure.

2. The hardware is located in the system unit or expansion unit. Find the model number. When in manual mode, the system displays the model number in function 20 in pxxx cccc format, where xxx is the model number.

Go to "System Unit and Expansion Unit Locations and Addresses" on page 712 and find the diagram for the model number.

3. Do you know the Frame ID?

**No      Yes**

↓      The Frame ID is the hexadecimal representation of the decimal number that is displayed on the panel of the unit or rack. Find the unit or rack that displays this number. Then, find the unit or rack diagram that matches this hardware. Tower diagrams are in this book. For rack diagrams, see *FC 504x Problem Analysis and Repair and Parts*.



4. Use the following steps in Hardware Service Manager in SST/DST to locate which tower the failing item is in. You will need the bus number given in the direct select address.
  - a. Go to SST. If SST is not available, go to DST.
  - b. Select "Start a service tool".
  - c. Select "Hardware service manager".
  - d. Select "Logical hardware resources".
  - e. Select "System bus resources".
  - f. Change the "System bus(es) to work with" field to the decimal equivalent of the Hex bus address (this is the first four characters of the Direct Select Address). Press enter.
  - g. Select option 8 (Associated packaging resource(s)) for any IOP displayed.

```

Logical Hardware Resources on System Bus

System bus(es) to work with . . . . . 6      *ALL, 1- 7
Subset by . . . . . *ALL *ALL, *STG, *WS, *CMN

Type options, press Enter.
2=Change detail    4=Remove    5=Display detail    6=I/O Debug
8=Associated packaging resource(s)  9=Resources associated with IO P

Resource
Opt Description                Type-Model Status      Name
-  System Bus                  -          Operational BUS02
8  Storage IOP                 6512-001   Operational SI04
-  Storage IOP                 6512-001   Operational SI05

F3=Exit    F5=Refresh    F6=Print    F9=Failed resources
F10=Non-reporting resources F11=Display serial/part numbers F12=Cancel
  
```

Figure 23. Example Display Only

5. The number that is displayed in the "Frame ID" column is the hexadecimal representation of the decimal number that is displayed on the panel of the unit or rack. Find the unit or rack that displays this number. Then, find the unit or rack diagram that matches this hardware. Tower diagrams are in this book. For rack diagrams, see *FC 504x Problem Analysis and Repair and Parts*.

## Locations and Addresses

### Packaging Resources Associated with a Logical Resource

| Logical resource | Type-Model | Resource Name |
|------------------|------------|---------------|
| Storage IOP      | 6512-001   | SI04          |

Type options, press Enter.

|                                  |                                     |                  |
|----------------------------------|-------------------------------------|------------------|
| 2=Change detail                  | 4=Remove                            | 5=Display detail |
| 8=Associated logical resource(s) | 9=Hardware contained within package |                  |

| Opt Description | Type-Model | Frame ID | Resource Name |
|-----------------|------------|----------|---------------|
| _ Storage IOP   | 6512-001   | 4        | C18           |

|                            |                          |            |
|----------------------------|--------------------------|------------|
| F3=Exit                    | F5=Refresh               | F6=Print   |
| F10=Non-reporting hardware | F11=Unresolved locations | F12=Cancel |

Figure 24. Example Display Only

## System Unit and Expansion Unit Locations and Addresses

### 600, S10 System Unit, Processor Type 2118, 2119, 2129, 2134, 2135, and 2136

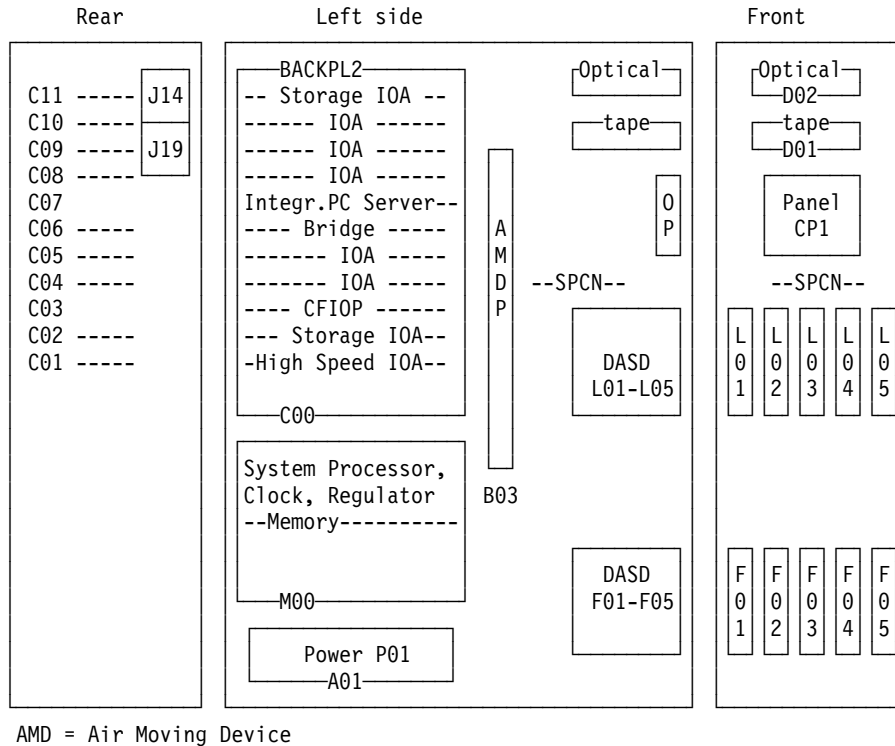
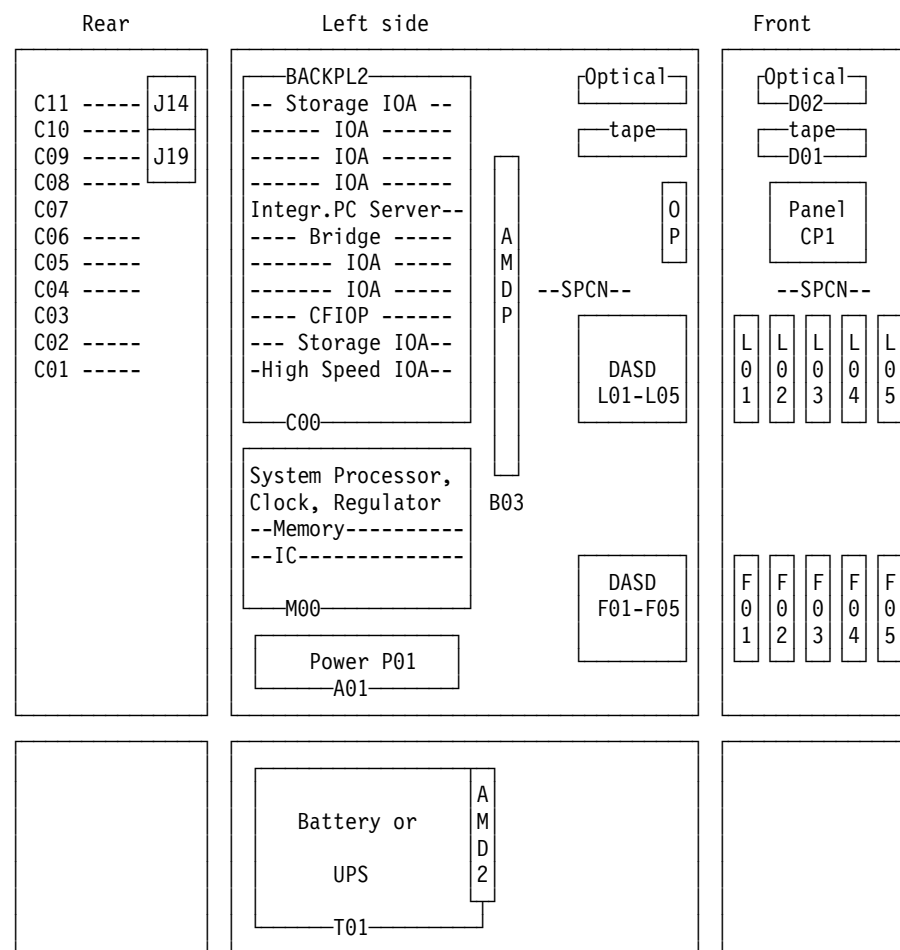


Figure 25. System unit — Processor Type 2118, 2119, 2129, 2134, 2135, and 2136

**Notes:**

1. To determine the locations for high speed or low speed IOAs, see “High and Low Speed PCI IOAs” on page 737.
2. Location C09 is used for Electronic Customer Support.
3. The backplane (MFIOP) controls locations C04 through C11.
4. The Combined Function IOP in location C03 controls locations C01 through C05.
5. If the Integrated Netfinity Server for AS/400 (2850) is installed in location C07, it controls locations C04 and C05.
6. J14 is the Uninterruptible Power Supply connector.
7. J19 is a manufacturing interface.

**720 System Unit, Processor Type 206A, 206B, and 206C**

AMD = Air Moving Device

*Figure 26. System unit — Processor Type 206A, 206B, and 206C***Notes:**

1. To determine the locations for high speed or low speed IOAs, see “High and Low Speed PCI IOAs” on page 737.
2. Location C09 is used for Electronic Customer Support.
3. The backplane (MFIOP) controls locations C04 through C11.

## Locations and Addresses

4. The Combined Function IOP in location C03 controls locations C01 through C05.
5. If the Integrated Netfinity Server for AS/400 (2850) is installed in location C07, it controls locations C04 and C05.
6. J14 is the Uninterruptible Power Supply connector.
7. J19 is a manufacturing interface.
8. IC is an Interactive Card.

## 620, S20 System Unit, Processor Type 2161, 2175, 2179, and 2180

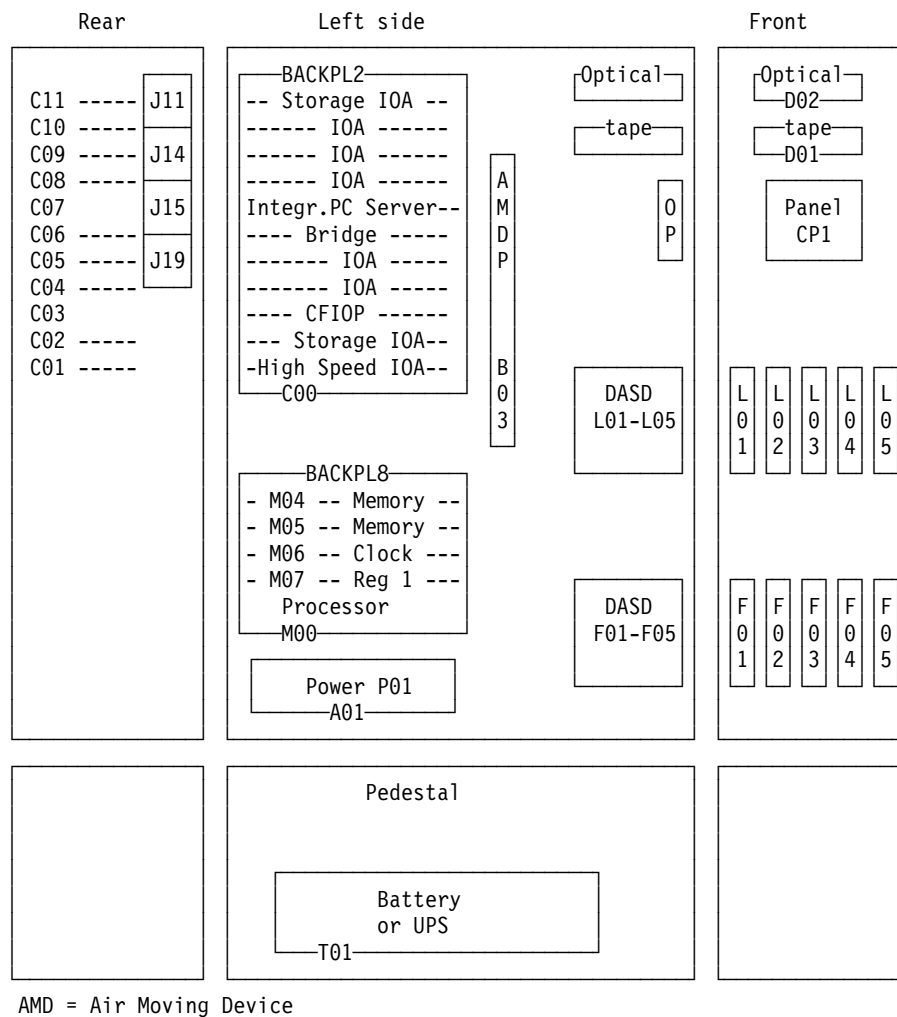


Figure 27. System unit — Processor Type 2161, 2175, 2179, and 2180

### Notes:

1. To determine the locations for high speed or low speed IOAs, see “High and Low Speed PCI IOAs” on page 737.
2. Location C09 is used for Electronic Customer Support.
3. The backplane (MFIOF) controls locations C04 through C11.
4. The Combined Function IOP in location C03 controls locations C01 through C05.

## Locations and Addresses

5. If the Integrated Netfinity Server for AS/400 (2850) is installed in location C07, it controls locations C04 and C05.
6. J11 is the Remote Power On/EPO connector.
7. J14 is the Uninterruptible Power Supply connector.
8. J15 is the SPCN connector.
9. J19 is a manufacturing interface.
10. Slot M07 is physically located on the back of BACKPL8.

### 620, S20, 720 System Unit, Processor Type 206D, 206E, 206F, 207A, 207B, 207C, 207D, 207E, 207F, 208A, 208B, 208C, 208D, 2163, 2165, 2166, 2170, 2177, 2178, 2181, and 2182

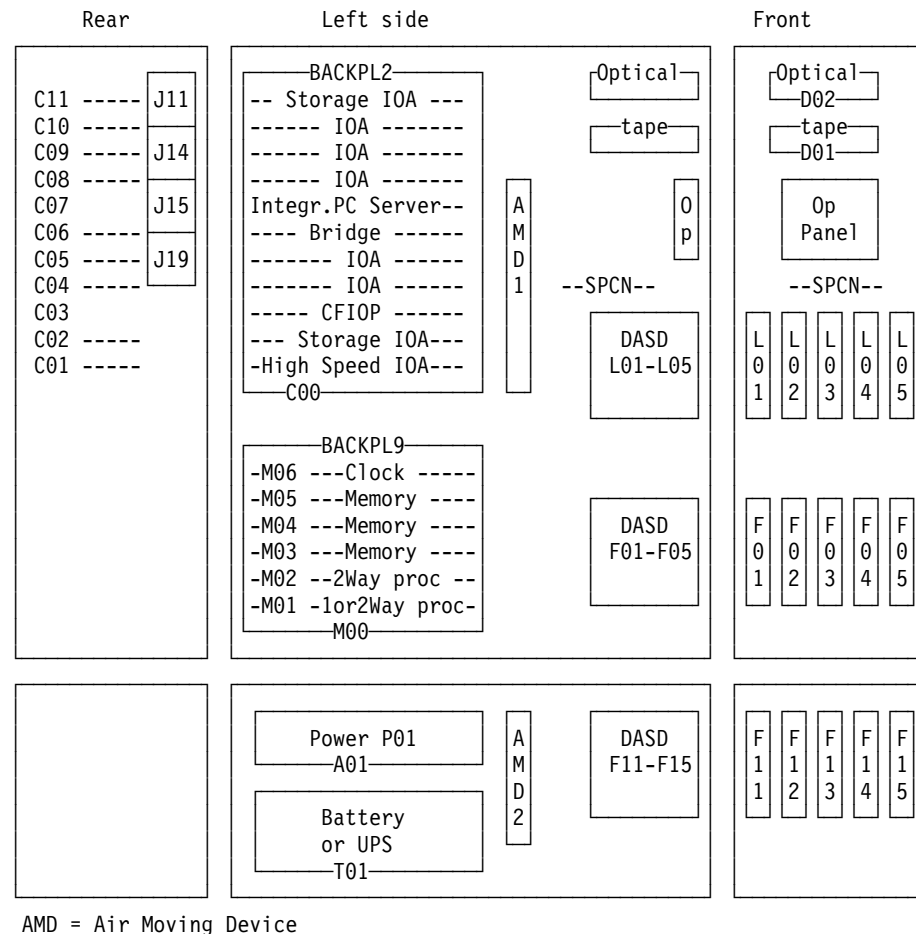


Figure 28. System unit — 1 to 4 way processor

#### Notes:

1. To determine the locations for high speed or low speed IOAs, see “High and Low Speed PCI IOAs” on page 737.
2. An Interactive Card (IC) will be plugged into each processor card on a model 720.
3. Location C09 is used for Electronic Customer Support.
4. The backplane (MFIOP) controls locations C04 through C11.

## Locations and Addresses

5. The Combined Function IOP in location C03 controls locations C01 through C05.
6. If the Integrated Netfinity Server for AS/400 (2850) is installed in location C07, it controls locations C04 and C05.
7. A clock card is located in position M06 on the rear of backplane BACKPL9 in position M00.
8. J11 is the Remote Power On/EPO connector.
9. J14 is the Uninterruptible Power Supply connector.
10. J15 is the SPCN connector.
11. J19 is a manufacturing interface.

## Device Locations and Addresses

The following table shows location and addressing information for all system units.

**Note:** In the following list, DSA means Direct Select Address.

| Location                                                      | Device   | DSA        | Unit Address |
|---------------------------------------------------------------|----------|------------|--------------|
| L01                                                           | DASD     | 0001-01-00 | 0001 00FF    |
| L02                                                           | DASD     | 0001-01-00 | 0002 00FF    |
| L03                                                           | DASD     | 0001-01-00 | 0003 00FF    |
| L04                                                           | DASD     | 0001-01-00 | 0004 00FF    |
| L05                                                           | DASD     | 0001-01-00 | 0005 00FF    |
| D02                                                           | Optical  | 0001-01-00 | 0006 00FF    |
| D01                                                           | Tape     | 0001-01-00 | 0007 00FF    |
| F01                                                           | DASD     | 0001-01-00 | 0101 00FF    |
| F02                                                           | DASD     | 0001-01-00 | 0102 00FF    |
| F03                                                           | DASD     | 0001-01-00 | 0103 00FF    |
| F04                                                           | DASD     | 0001-01-00 | 0104 00FF    |
| F05                                                           | DASD     | 0001-01-00 | 0105 00FF    |
| F11                                                           | DASD     | 0001-01-00 | 0201 00FF    |
| F12                                                           | DASD     | 0001-01-00 | 0202 00FF    |
| F13                                                           | DASD     | 0001-01-00 | 0203 00FF    |
| F14                                                           | DASD     | 0001-01-00 | 0204 00FF    |
| F15                                                           | DASD     | 0001-01-00 | 0205 00FF    |
|                                                               | External | 0001-02-00 | 0007 00FF    |
| DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved |          |            |              |

## PCI Card Addressing (System Unit)

| Location | Description  | DSA        | Unit Address |
|----------|--------------|------------|--------------|
|          | Planar Board | 0001-01-00 | FFFF FFFF    |
| C11      | Storage IOA  | 0001-01-00 | 0FFF FFFF    |

## Locations and Addresses

| Location                                                      | Description                                                                                                      | DSA                      | Unit Address                                                  |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------|
| C10                                                           | WAN/LAN<br>Client Access Console<br>Client Access Console Workstation<br>Twinax (2722, 2746)<br>2720 Workstation | 0001-01-00               | E2FF FFFF<br>EAFF FFFF<br>EA00 00FF<br>E2xx yyzz<br>EAxx yyzz |
| C09                                                           | WAN/LAN<br>Client Access Console<br>Client Access Console Workstation<br>Twinax (2722, 2746)<br>2720 Workstation | 0001-01-00               | E1FF FFFF<br>E9FF FFFF<br>E900 00FF<br>E1xx yyzz<br>E9xx yyzz |
| C08                                                           | WAN/LAN<br>Twinax (2722, 2746)<br>2720 Workstation                                                               | 0001-01-00               | E0FF FFFF<br>E0xx yyzz<br>E8xx yyzz                           |
| C07                                                           | Integrated Netfinity Server for AS/400 (2850)<br>Integrated Netfinity Server for AS/400 virtual port             | 0001-01-00               | E4FF FFFF<br>E40F FFFF                                        |
| C06                                                           | Bridge<br><b>Note:</b> Integrated Netfinity Server for AS/400 (2850) reports VPD for the bridge                  | 0001-01-00               | E5FF FFFF                                                     |
| C05                                                           | Integrated Netfinity Server for AS/400 (2850) LAN<br>Twinax (2722, 2746)<br>WAN/LAN                              | 0001-01-00<br>0001-02-00 | E401 FFFF<br>E1xx yyzz<br>E1FF FFFF                           |
| C04                                                           | Integrated Netfinity Server for AS/400 (2850) LAN<br>Twinax (2722, 2746)<br>WAN/LAN                              | 0001-01-00<br>0001-02-00 | E400 FFFF<br>E0xx yyzz<br>E0FF FFFF                           |
| C03                                                           | Combined Function IOP                                                                                            | 0001-02-00               | FFFF FFFF                                                     |
| C02                                                           | External SCSI Controller                                                                                         | 0001-02-00               | 0FFF FFFF                                                     |
| C01                                                           | ATM<br>ATM port<br>High Speed Ethernet Adapter<br>LAN port                                                       | 0001-02-00               | ECFF FFFF<br>EC00 FFFF<br>ECFF FFFF<br>EC00 FFFF              |
| DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved |                                                                                                                  |                          |                                                               |

## Locations and Addresses

### Notes:

1. The 2720 workstation/communications adapter reports VPD twice; once for twinax and once for communications. Communications and twinax have different type numbers.
2. For workstation unit addresses --xx yyzz; xx is the port address (00-07), yy is the workstation address, and zz is the shared session.
3. Positions C04 and C05 are dual purpose. If the Integrated Netfinity Server for AS/400 (2850) is installed in position 7, then positions C04 and C05 are connected to the Integrated Netfinity Server for AS/400 (2850).

## PCI Expansion Unit

Figure 29 is a block diagram of the PCI expansion unit.

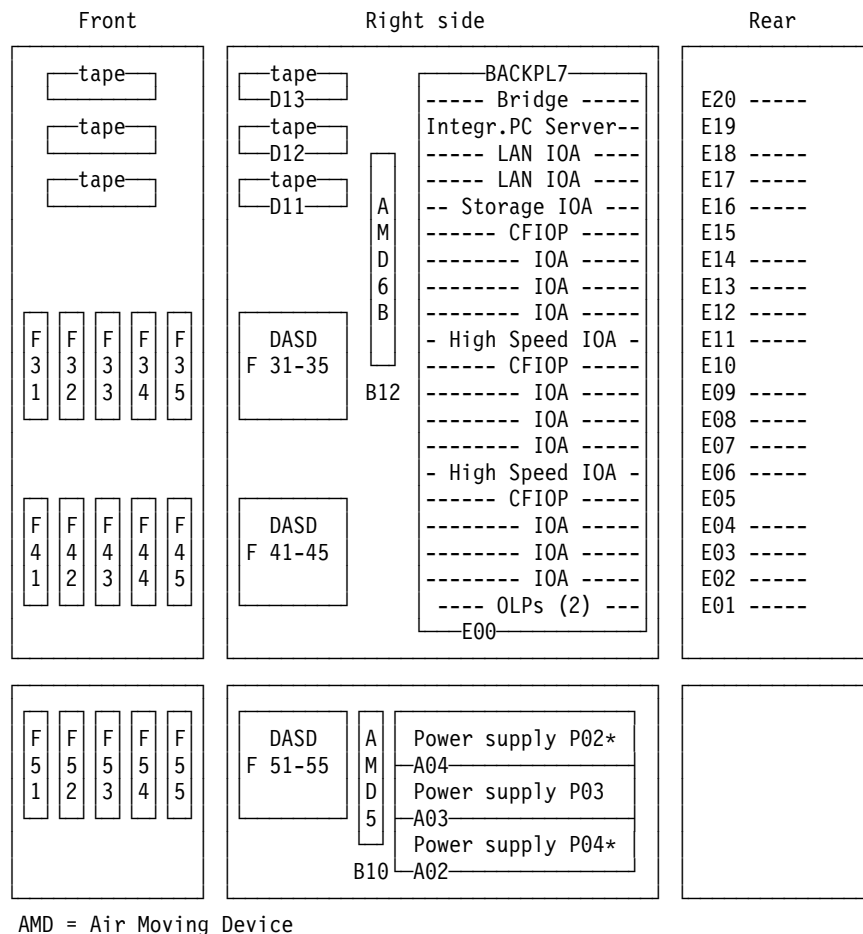


Figure 29. PCI Expansion unit

### Notes:

1. The Combined Function IOP in location E15 controls locations E12 through E20.
2. The Combined Function IOP in location E10 controls locations E07 through E11.
3. The Combined Function IOP in location E05 controls locations E02 through E06.
4. The Integrated Netfinity Server for AS/400 in location E19 controls locations E17 and E18.



## Locations and Addresses

5. The power supplies that are marked with an asterisk (\*) are redundant power supplies.
6. The tape unit in D11 must be a 2-byte wide SCSI tape unit (68-pin connector).
7. BACKPL7 contains an integrated Local Bus Expansion Adapter.

### Device Locations and Addresses (PCI Expansion Unit)

The following tables show location and addressing information for Figure 29 on page 718.

**Note:** In the following list, UA means Unit Address, and DSA means Direct Select Address.

| Location | Device   | DSA        | Unit Address                                                                       |
|----------|----------|------------|------------------------------------------------------------------------------------|
| F31      | DASD     | 0002-01-00 | 0001 00FF                                                                          |
| F32      | DASD     | 0002-01-00 | 0002 00FF                                                                          |
| F33      | DASD     | 0002-01-00 | 0003 00FF                                                                          |
| F34      | DASD     | 0002-01-00 | 0004 00FF                                                                          |
| F35      | DASD     | 0002-01-00 | 0005 00FF                                                                          |
| D13      | Tape     | 0002-01-00 | 0006 00FF                                                                          |
| D12      | Tape     | 0002-01-00 | 0007 00FF                                                                          |
| D11      | Tape     | 0002-01-00 | 0008 00FF<br><b>Note:</b> Requires a 2-byte wide SCSI tape unit (68-pin connector) |
| F41      | DASD     | 0002-01-00 | 0101 00FF                                                                          |
| F42      | DASD     | 0002-01-00 | 0102 00FF                                                                          |
| F43      | DASD     | 0002-01-00 | 0103 00FF                                                                          |
| F44      | DASD     | 0002-01-00 | 0104 00FF                                                                          |
| F45      | DASD     | 0002-01-00 | 0105 00FF                                                                          |
| F51      | DASD     | 0002-01-00 | 0201 00FF                                                                          |
| F52      | DASD     | 0002-01-00 | 0202 00FF                                                                          |
| F53      | DASD     | 0002-01-00 | 0203 00FF                                                                          |
| F54      | DASD     | 0002-01-00 | 0204 00FF                                                                          |
| F55      | DASD     | 0002-01-00 | 0205 00FF                                                                          |
|          | External | 0002-02-00 | 0007 00FF                                                                          |

DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved

### Card Addressing (PCI Expansion Unit)

| Location | Description                                                                                       | DSA        | Unit Address               |
|----------|---------------------------------------------------------------------------------------------------|------------|----------------------------|
| E20      | Bridge<br><b>Note:</b> Integrated Netfinity Server for AS/400 reports VPD for the bridge          | 0002-01-00 | E5FF FFFF                  |
| E19      | Integrated Netfinity Server for AS/400<br><br>Integrated Netfinity Server for AS/400 virtual port | 0002-01-00 | E4FF FFFF<br><br>E40F FFFF |

## Locations and Addresses

| Location | Description                                                                            | DSA        | Unit Address                                                  |
|----------|----------------------------------------------------------------------------------------|------------|---------------------------------------------------------------|
| E18      | Integrated Netfinity Server for AS/400 LAN                                             | 0002-01-00 | E401 FFFF                                                     |
| E17      | Integrated Netfinity Server for AS/400 LAN                                             | 0002-01-00 | E400 FFFF                                                     |
| E16      | Storage IOA                                                                            | 0002-01-00 | 0FFF FFFF                                                     |
| E15      | Combined Function IOP                                                                  | 0002-01-00 | FFFF FFFF                                                     |
| E14      | Twinax (2722, 2746)<br>WAN/LAN                                                         | 0002-01-00 | E2xx yyzz<br>E2FF FFFF                                        |
| E13      | Twinax (2722, 2746)<br>WAN/LAN                                                         | 0002-01-00 | E1xx yyzz<br>E1FF FFFF                                        |
| E12      | Twinax (2722, 2746)<br>WAN/LAN                                                         | 0002-01-00 | E0xx yyzz<br>E0FF FFFF                                        |
| E11      | ATM<br>ATM port<br>High Speed Ethernet Adapter<br>LAN port<br>External SCSI Controller | 0002-02-00 | E7FF FFFF<br>E700 FFFF<br>E7FF FFFF<br>E700 FFFF<br>0FFF FFFF |
| E10      | Combined Function IOP                                                                  | 0002-02-00 | FFFF FFFF                                                     |
| E09      | Twinax (2722, 2746)<br>WAN/LAN                                                         | 0002-02-00 | E2xx yyzz<br>E2FF FFFF                                        |
| E08      | Twinax (2722, 2746)<br>WAN/LAN                                                         | 0002-02-00 | E1xx yyzz<br>E1FF FFFF                                        |
| E07      | Twinax (2722, 2746)<br>WAN/LAN                                                         | 0002-02-00 | E0xx yyzz<br>E0FF FFFF                                        |
| E06      | ATM<br>ATM port<br>High Speed Ethernet Adapter<br>LAN port<br>External SCSI Controller | 0002-03-00 | E7FF FFFF<br>E700 FFFF<br>E7FF FFFF<br>E700 FFFF<br>0FFF FFFF |
| E05      | Combined Function IOP                                                                  | 0002-03-00 | FFFF FFFF                                                     |
| E04      | Twinax (2722, 2746)<br>WAN/LAN                                                         | 0002-03-00 | E2xx yyzz<br>E2FF FFFF                                        |
| E03      | Twinax (2722, 2746)<br>WAN/LAN                                                         | 0002-03-00 | E1xx yyzz<br>E1FF FFFF                                        |
| E02      | Twinax (2722, 2746)<br>WAN/LAN                                                         | 0002-03-00 | E0xx yyzz<br>E0FF FFFF                                        |

## Locations and Addresses

| Location                                                      | Description                            | DSA | Unit Address |
|---------------------------------------------------------------|----------------------------------------|-----|--------------|
| E01B                                                          | SPD optical bus driver, busses 6 and 5 | N/A | N/A          |
| E01A                                                          | SPD optical bus driver, busses 4 and 3 | N/A | N/A          |
| E00                                                           | SPD local bus adapter                  | N/A | N/A          |
| DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved |                                        |     |              |

**Note:** For Twinax (2722, 2746) unit addresses --xx yyzz; xx is the port address (00-07), yy is the workstation address, and zz is the shared session.

## SPD Expansion Unit

Figure 30 is a block diagram of the SPD expansion unit.

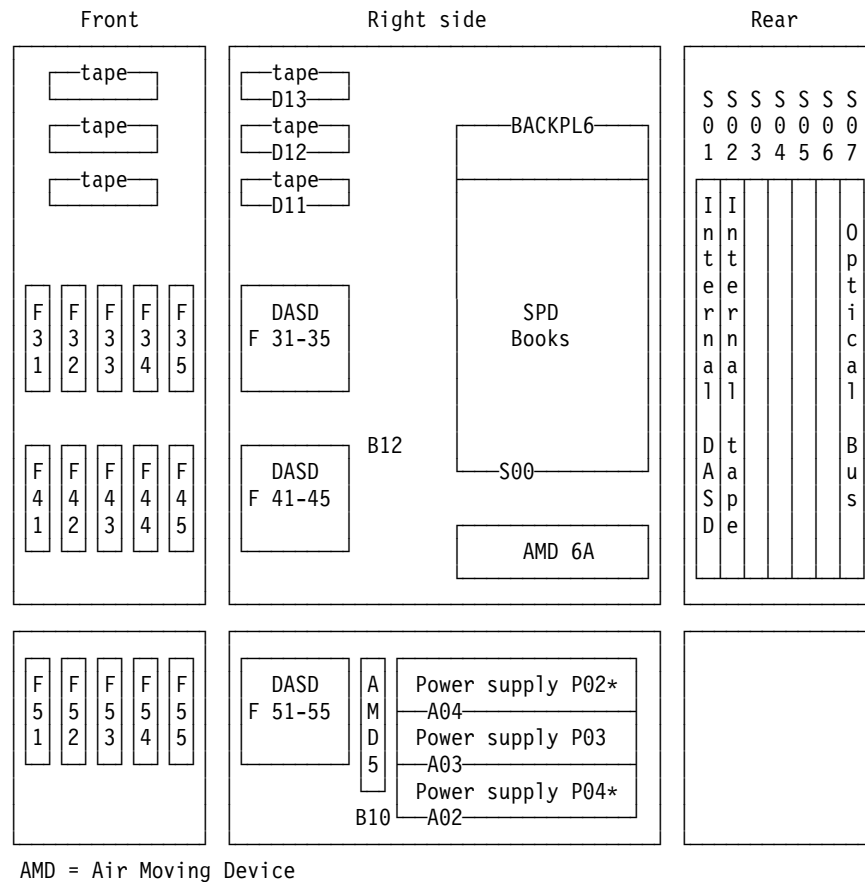


Figure 30. SPD Expansion unit

### Notes:

- \* = redundant power supply
- The tape unit in location D11 must be a 2-byte wide SCSI tape unit (68-pin connector).

## Device Locations and Addresses (SPD Expansion Unit)

The following tables show location and addressing information for Figure 30.

## Locations and Addresses

**Note:** In the following list, DSA means Direct Select Address.

| Location | Device | DSA        | 6502/6512/6530 | 6532/6533    |
|----------|--------|------------|----------------|--------------|
|          |        |            | Unit Address   | Unit Address |
| F31      | DASD   | 0002-01-00 | 0100 FFFF      | 0001 00FF    |
| F32      | DASD   | 0002-01-00 | 0200 FFFF      | 0002 00FF    |
| F33      | DASD   | 0002-01-00 | 0300 FFFF      | 0003 00FF    |
| F34      | DASD   | 0002-01-00 | 0400 FFFF      | 0004 00FF    |
| F35      | DASD   | 0002-01-00 | 0500 FFFF      | 0005 00FF    |
| F41      | DASD   | 0002-01-00 | 1100 FFFF      | 0101 00FF    |
| F42      | DASD   | 0002-01-00 | 1200 FFFF      | 0102 00FF    |
| F43      | DASD   | 0002-01-00 | 1300 FFFF      | 0103 00FF    |
| F44      | DASD   | 0002-01-00 | 1400 FFFF      | 0104 00FF    |
| F45      | DASD   | 0002-01-00 | 1500 FFFF      | 0105 00FF    |
| F51      | DASD   | 0002-01-00 | 2100 FFFF      | 0201 00FF    |
| F52      | DASD   | 0002-01-00 | 2200 FFFF      | 0202 00FF    |
| F53      | DASD   | 0002-01-00 | 2300 FFFF      | 0203 00FF    |
| F54      | DASD   | 0002-01-00 | 2400 FFFF      | 0204 00FF    |
| F55      | DASD   | 0002-01-00 | 2500 FFFF      | 0205 00FF    |

| Location                                                                                            | Device | DSA        | 6513         |
|-----------------------------------------------------------------------------------------------------|--------|------------|--------------|
|                                                                                                     |        |            | Unit Address |
| D13                                                                                                 | Tape   | 0002-02-00 | 0600 FFFF    |
| D12                                                                                                 | Tape   | 0002-02-00 | 0700 FFFF    |
| D11                                                                                                 | Tape   | 0002-02-00 | 0800 FFFF    |
| <b>Note:</b> The tape unit in location D11 must be a 2-byte wide SCSI tape unit (68-pin connector). |        |            |              |
| DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved                                       |        |            |              |

## Card Addressing (SPD Expansion Unit)

| Location                                                      | Description                            | DSA (BBCb) | Unit Address |
|---------------------------------------------------------------|----------------------------------------|------------|--------------|
| S01                                                           | Internal DASD IOP/IOP                  | 0002-01-00 | FFFF FFFF    |
| S02                                                           | Internal tape IOP/IOP                  | 0002-02-00 | FFFF FFFF    |
| S03                                                           | IOP                                    | 0002-03-00 | FFFF FFFF    |
| S04                                                           | IOP                                    | 0002-04-00 | FFFF FFFF    |
| S05                                                           | IOP                                    | 0002-05-00 | FFFF FFFF    |
| S06                                                           | IOP                                    | 0002-06-00 | FFFF FFFF    |
| S07                                                           | SPD local bus adapter                  | N/A        | N/A          |
| S07C                                                          | SPD optical bus driver, busses 3 and 4 | N/A        | N/A          |
| S07B                                                          | SPD optical bus driver, busses 5 and 6 | N/A        | N/A          |
| DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved |                                        |            |              |

## Optical Bus Cable Layout and SPD Optical Bus Driver Card Locations

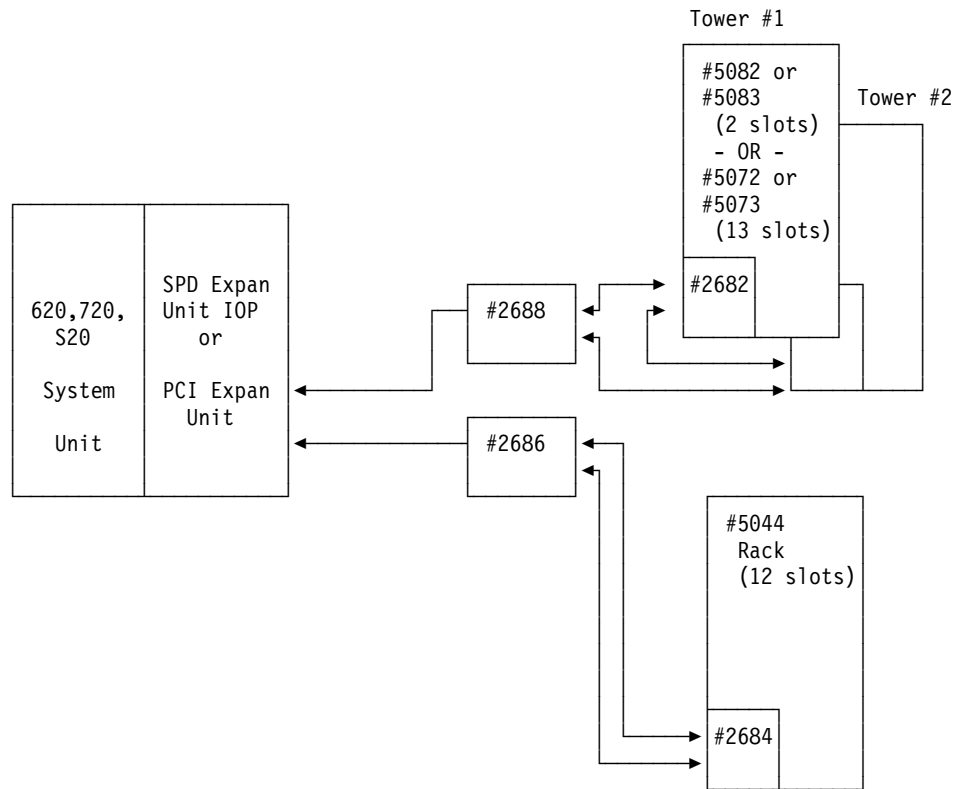


Figure 31. SPD Optical Bus Driver Card Locations

You can attach two of any combination of 2686 and 2688 to the Model 620, 720, or S20 Expansion Unit. This allows up to four units or two racks, or any combination thereof, to attach to each expansion unit.

## Locations and Addresses

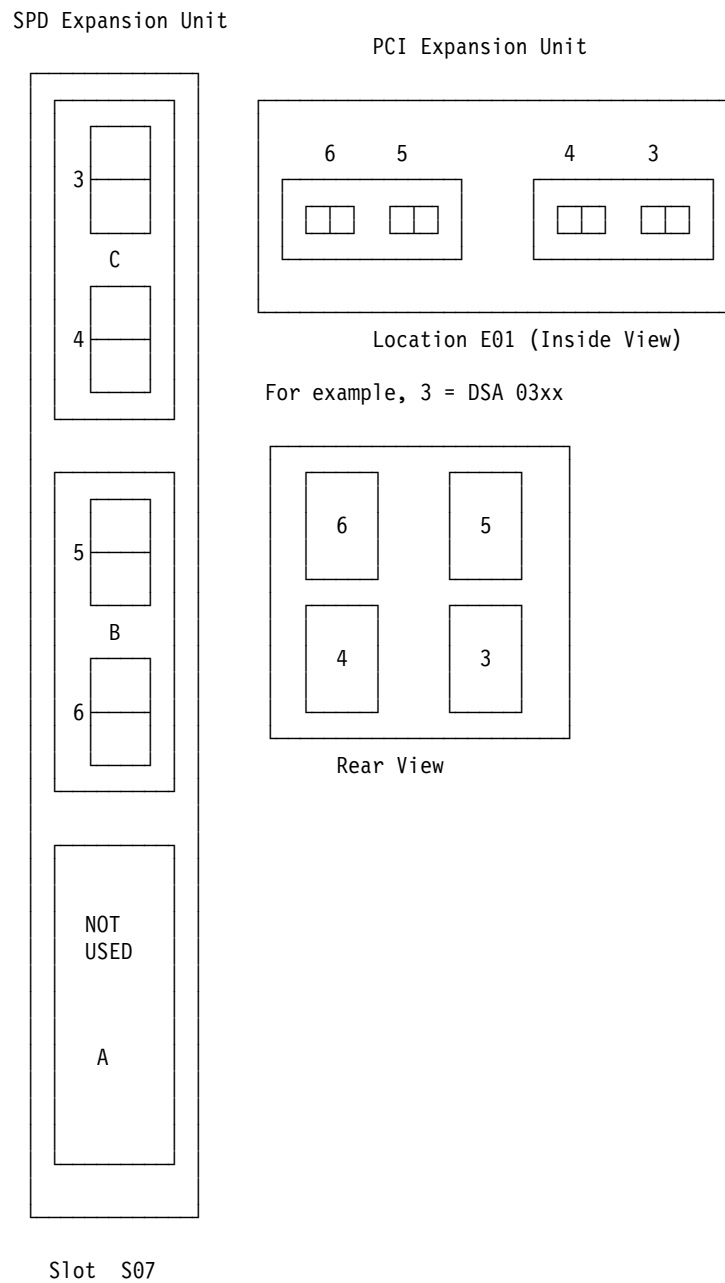


Figure 32. SPD Optical Bus Driver Card Positions

## Power and Signal Cables

**600, S10 System Unit, Processor Type 2118, 2119, 2129, 2134, 2135, and 2136**

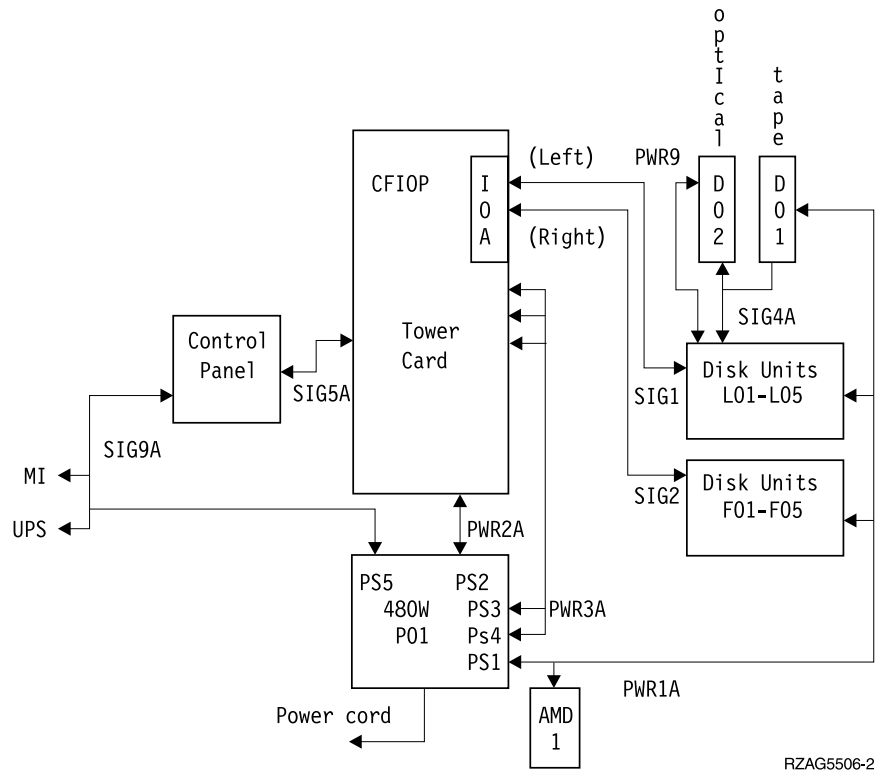
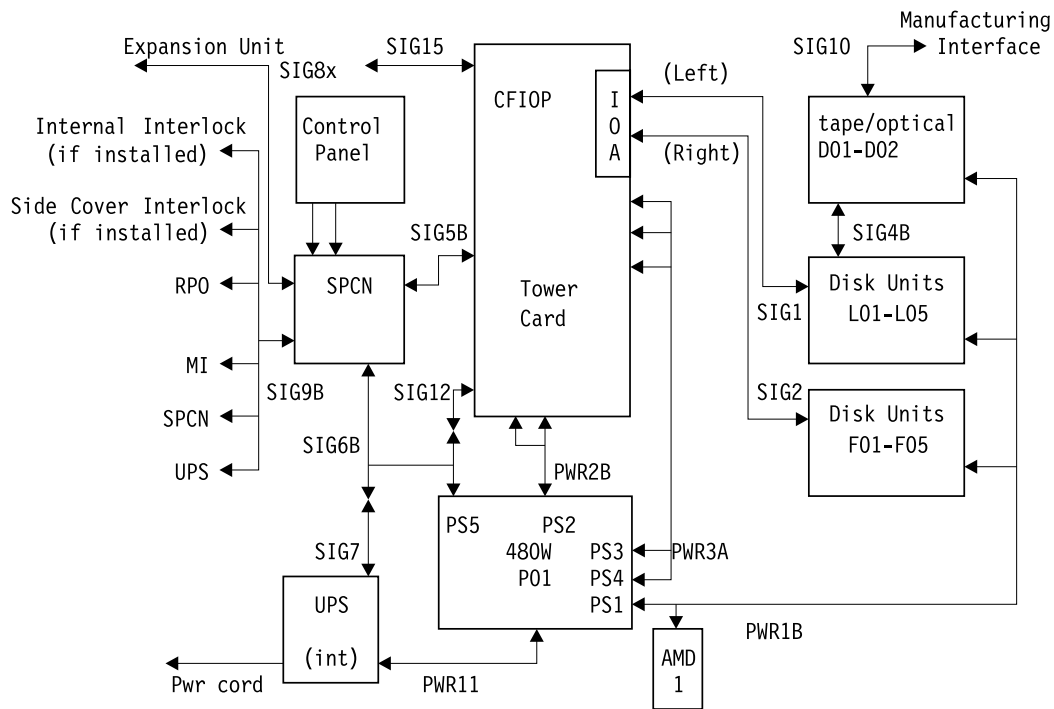


Figure 33. Model 600 and S10 system unit

For cable part number information see "Assembly 23: Internal Cable Assemblies" on page 1026.

## Locations and Addresses

### 720 System Unit, Processor Type 206A, 206B, and 206C



AMD = Air Moving Device

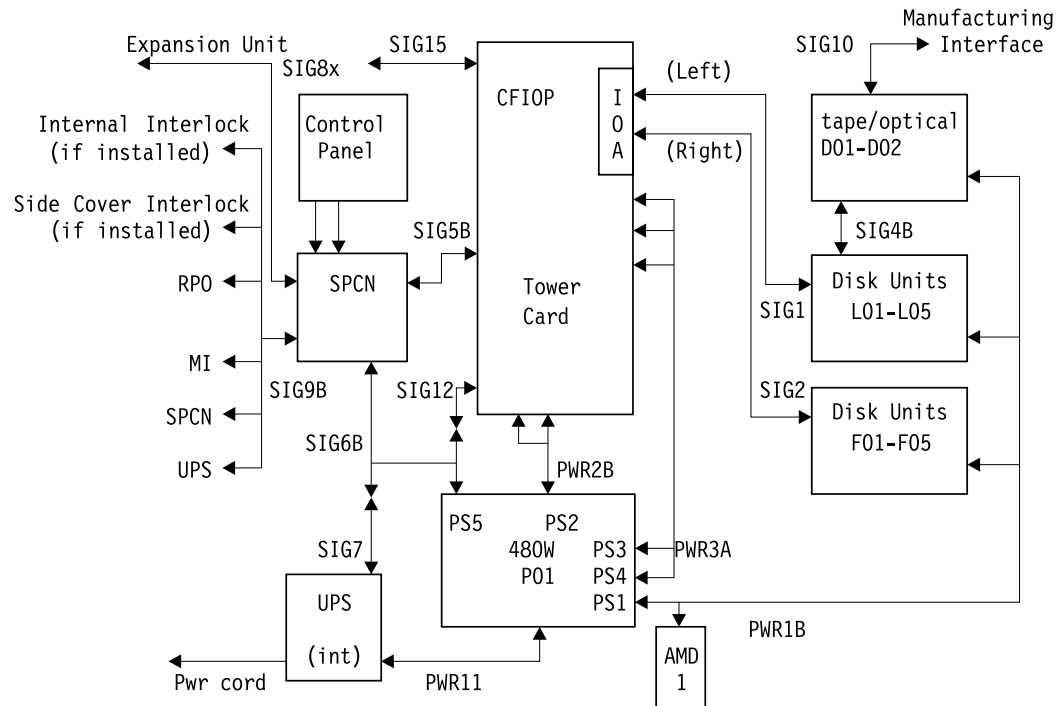
RZAG5507-2

Figure 34. Model 720 system unit

For cable part number information see "Assembly 23: Internal Cable Assemblies" on page 1026.



## 620 and S20 Base System Unit, Processor Type 2161, 2175, 2179, and 2180



AMD = Air Moving Device

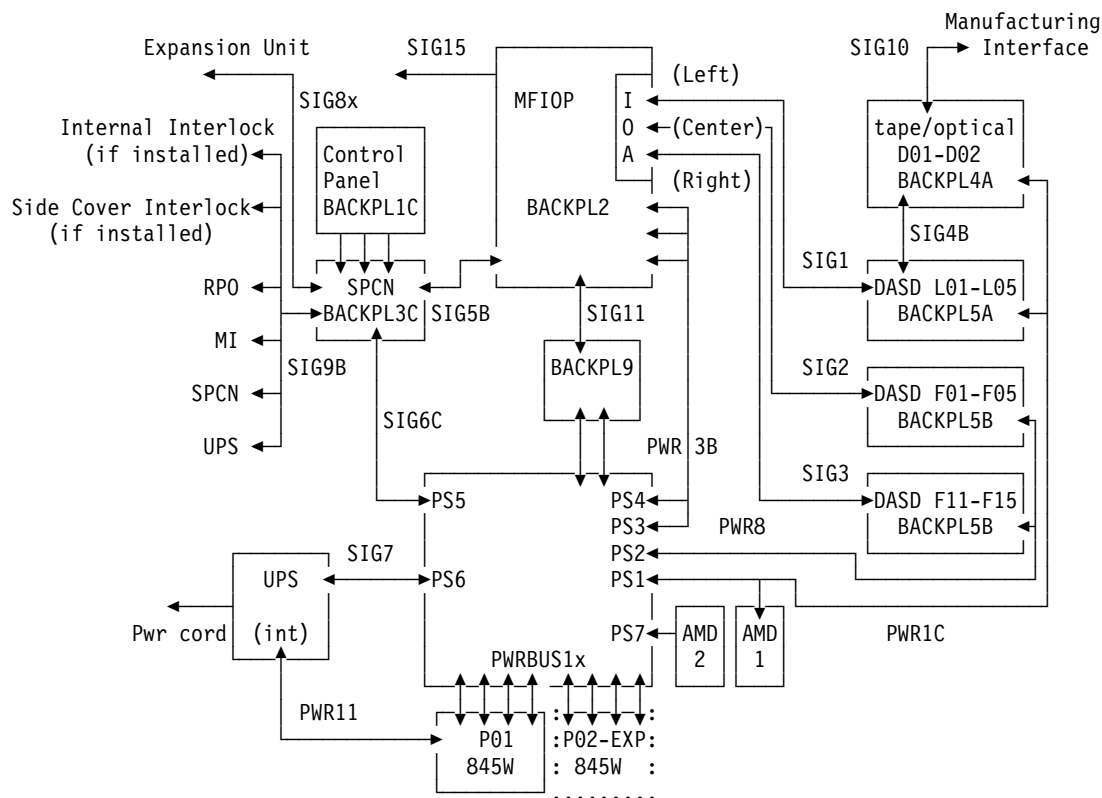
RZAG5507-2

Figure 35. Model 620 and S20 system unit

For cable part number information see "Assembly 23: Internal Cable Assemblies" on page 1026.

## Locations and Addresses

**620, S20, 720 System Unit, Processor Type 206D, 206E, 206F, 207A, 207B, 207C, 207D, 207E, 207F, 208A, 208B, 208C, 208D, 2163, 2165, 2166, 2170, 2177, 2178, 2181, and 2182**



AMD = Air Moving Device

Figure 36. Model 720 system unit

For cable part number information see "Assembly 23: Internal Cable Assemblies" on page 1026.

The illustration below shows where the external cable connectors (RPO, MI, SPCN and UPS) are located.

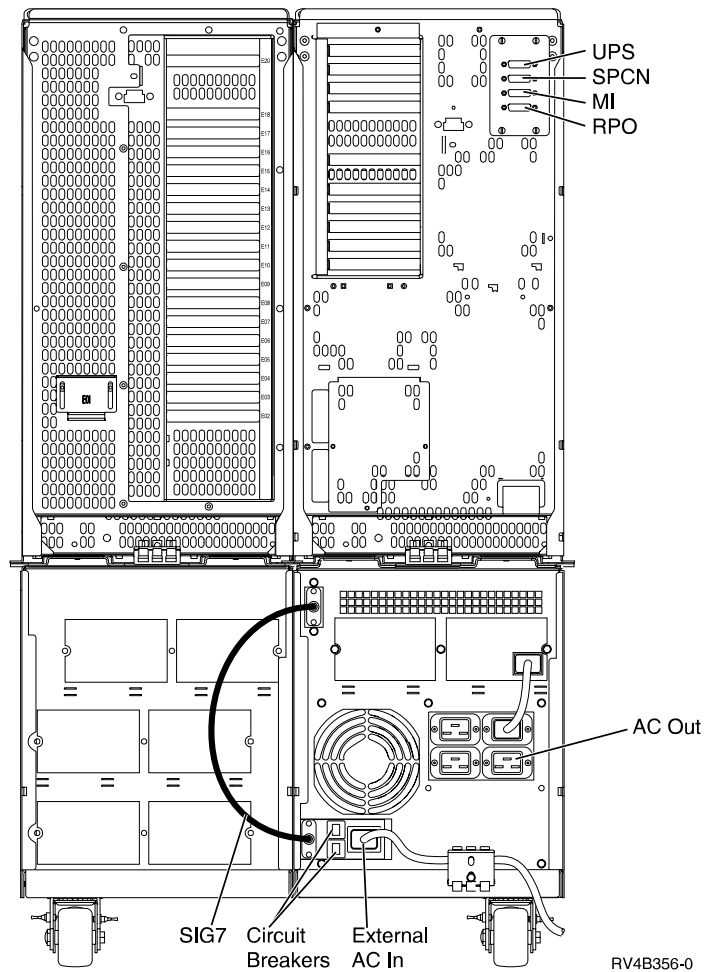
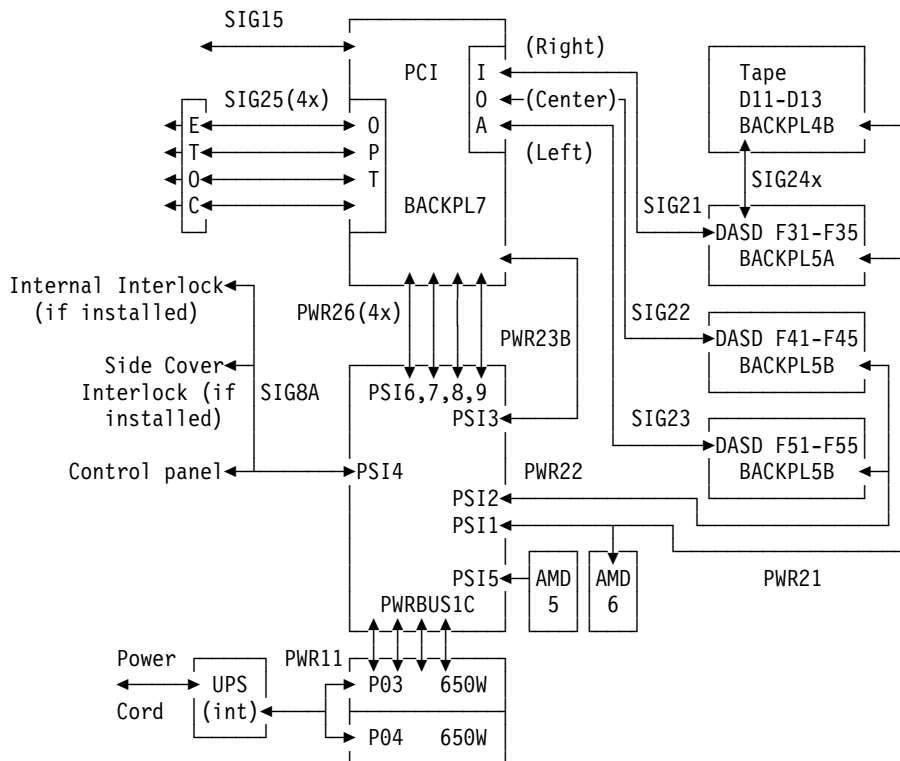


Figure 37. External Cable Connections (note: Models 600 and S10 do not have RPO and SPCN connectors)

## Expansion Unit, PCI Bus

Figure 38 on page 730 is a block diagram of the power and signal cables for a PCI bus expansion unit.

## Locations and Addresses



AMD = Air Moving Device

OPT = Optical Bus Card

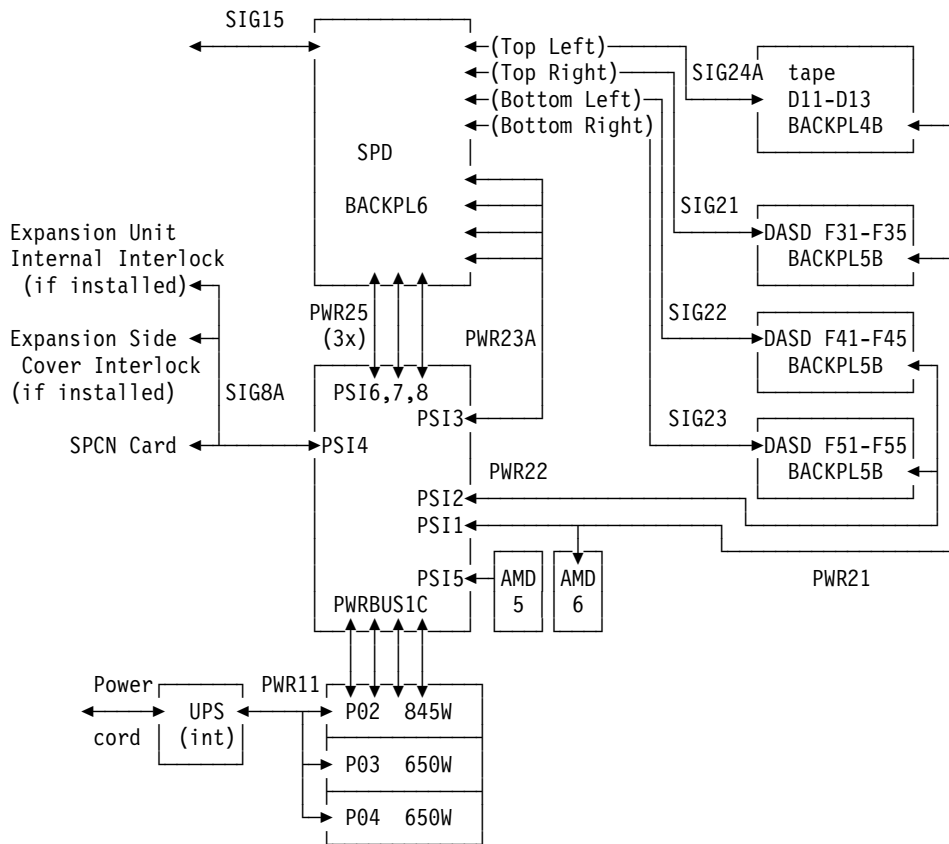
ETOC = Expansion Tower Optical Connector

Figure 38. Expansion unit — PCI bus

For cable part number information see "Assembly 23: Internal Cable Assemblies" on page 1026.

### Expansion Unit, SPD Bus

Figure 39 on page 731 is a block diagram of the power and signal cables for a PCI bus expansion unit.



AMD = Air Moving Device

Figure 39. Expansion unit — SPD bus

For cable part number information see "Assembly 23: Internal Cable Assemblies" on page 1026.

## Backplane IOP/IOA Connection Diagrams

### Base System Unit

Figure 40 on page 732 is a block diagram of the base system unit.

## Locations and Addresses

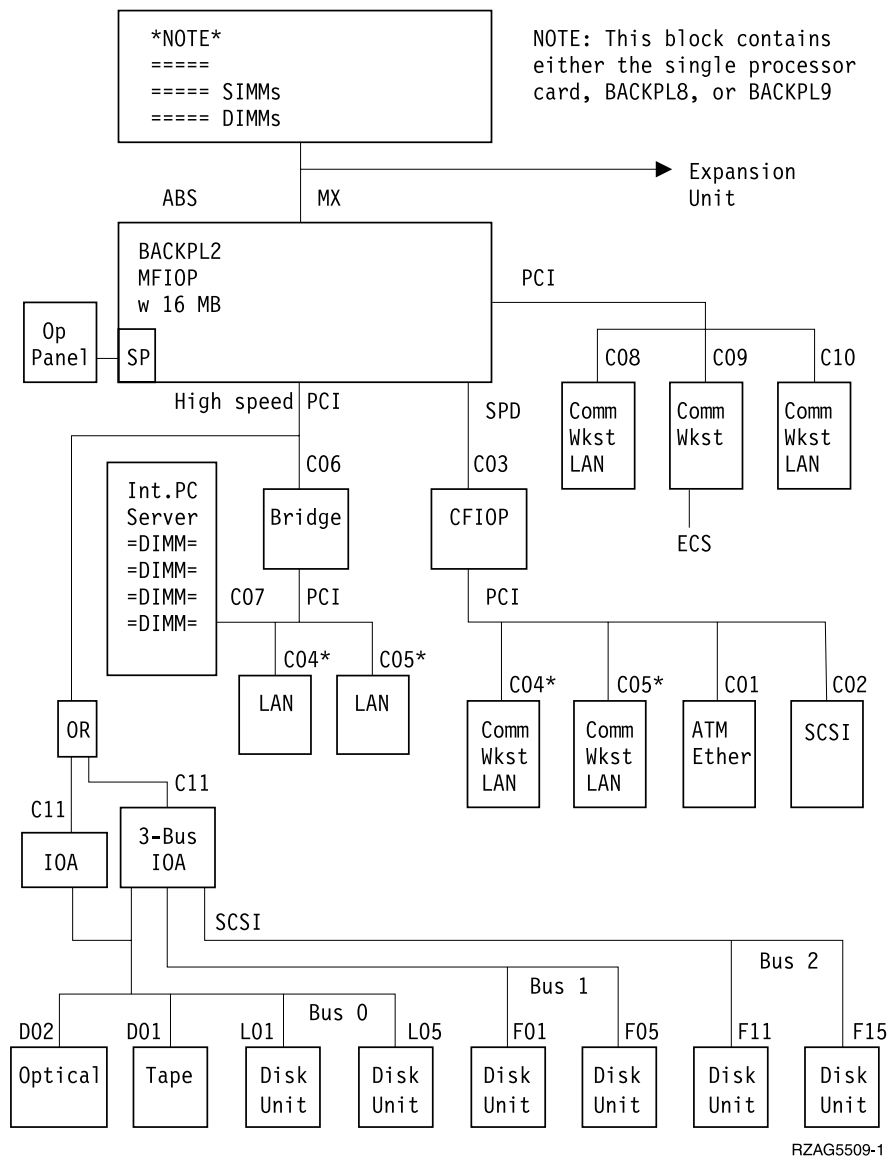


Figure 40. Base system unit

### Notes:

1. If a card is installed in position C07, it drives positions C04 and C05. Otherwise position C03 drives positions C04 and C05.
2. Locations C01 and C02 contain High Speed IOAs.

### Expansion Unit, PCI Bus

Figure 41 on page 733 is a block diagram of the expansion unit with a PCI bus.

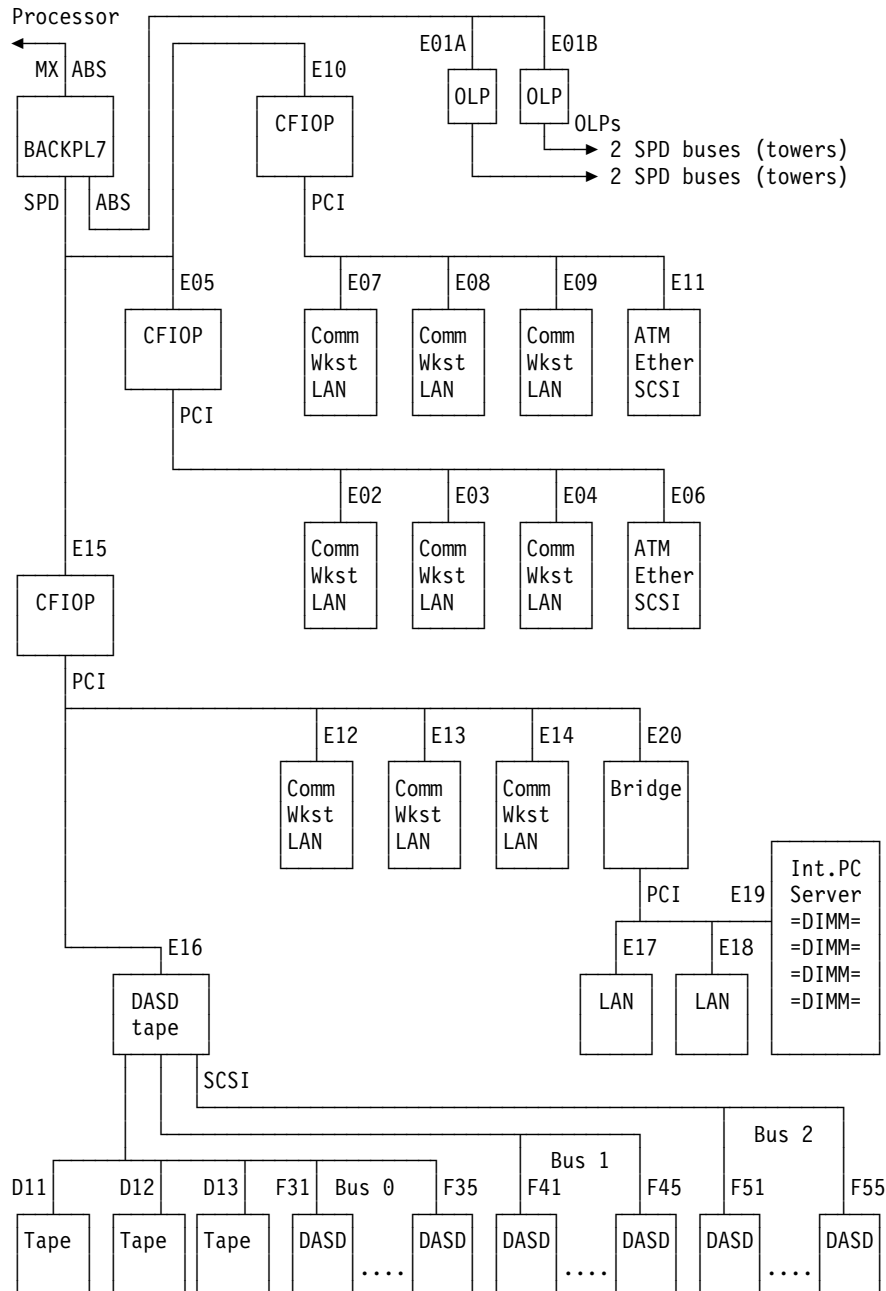


Figure 41. Expansion unit — PCI bus

**Note:** Locations E06 and E11 contain High Speed IOAs.

### Expansion Unit, SPD Bus

Figure 42 on page 734 is a block diagram of the expansion unit with an SPD bus.

## Locations and Addresses

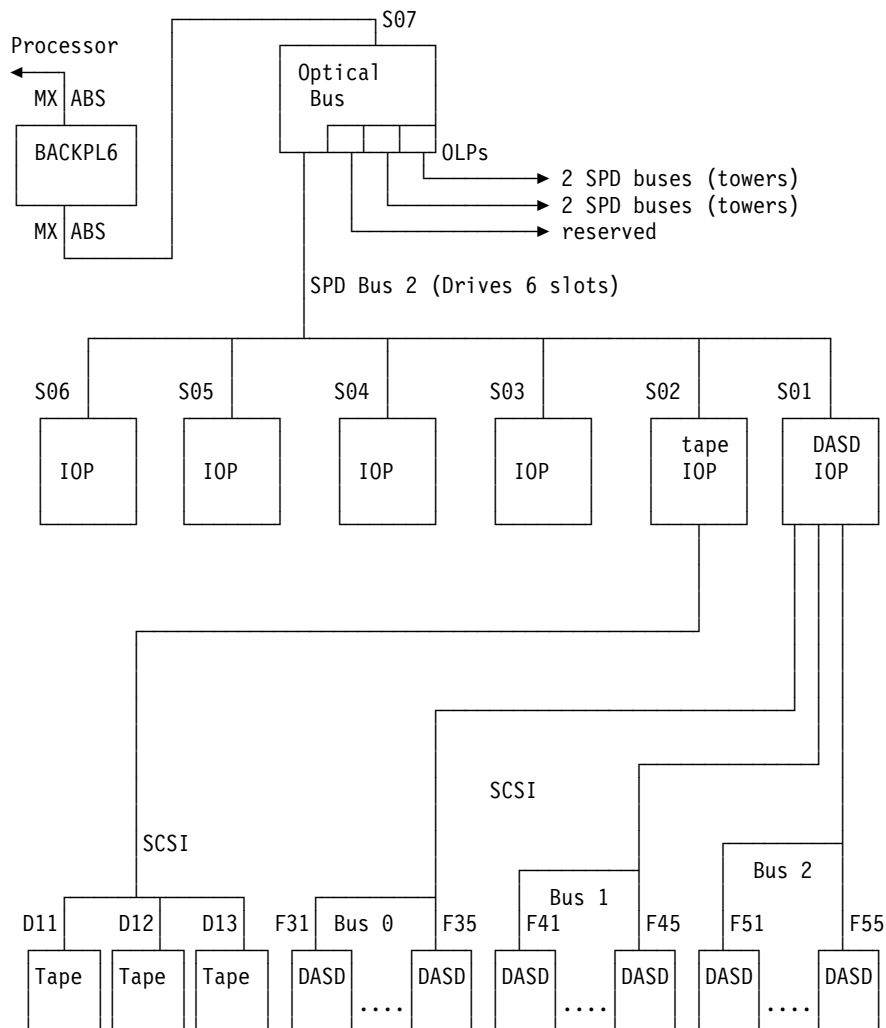


Figure 42. Expansion unit — SPD bus



## Processor and Storage

### Model 600 and S10 Processor

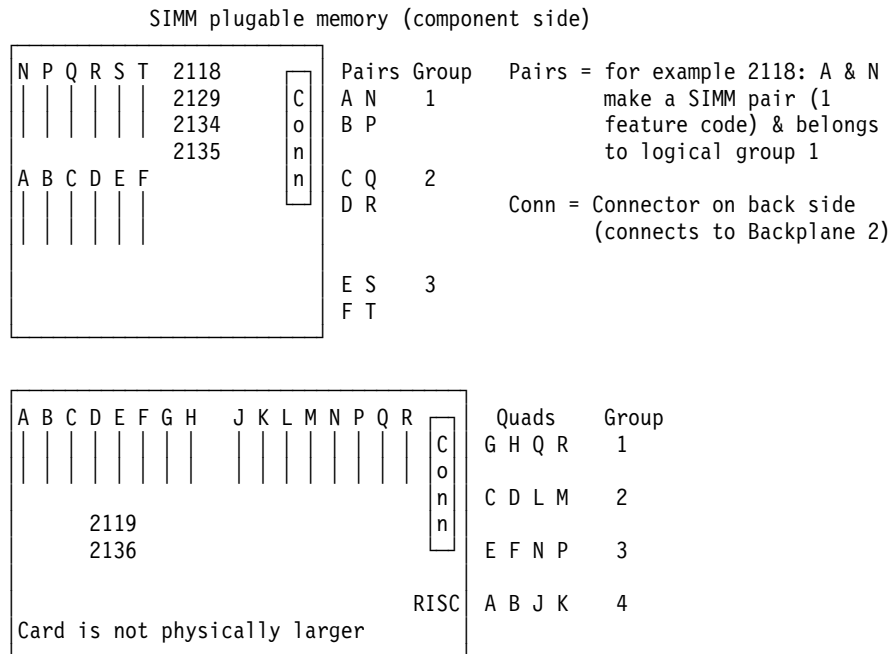


Figure 43. Model 600 and S10 processor and storage

| Model                                                                                 | Processor        | SIMMs (MB) | SIMM type         | Base (MB) | Feature (MB) | Maximum (MB) |
|---------------------------------------------------------------------------------------|------------------|------------|-------------------|-----------|--------------|--------------|
| S10                                                                                   | 2118             | 32/64      | 3172/ 3110        | 64        | 320          | 384          |
| S10                                                                                   | 2119             | 32/64      | 3172/ 3110 (note) | 128       | 384          | 512          |
| 600                                                                                   | 2129, 2134, 2135 | 32/64      | 3172/ 3110        | 64        | 320          | 384          |
| 600                                                                                   | 2136             | 32/64      | 3172/ 3110 (note) | 128       | 384          | 512          |
| <b>Note:</b> Two sets of SIMM features (4 SIMM cards) are needed for base or upgrade. |                  |            |                   |           |              |              |

**SIMM Plugging:** The following tables show the locations for SIMM feature combinations. Find the processor type and row that matches the number and type of SIMMs. The socket pairs are indicated at the bottom of each table,

## Locations and Addresses

Table 29. SIMM table for processor types 2118, 2129, 2134, 2135

|                                                                                                               |           |           |           |           |           |           |
|---------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|                                                                                                               | 3172/3110 |           |           |           |           |           |
|                                                                                                               | 3172/3110 | 3172/3110 |           |           |           |           |
|                                                                                                               | 3172/3110 | 3172/3110 | 3172/3110 |           |           |           |
|                                                                                                               | 3172/3110 | 3172/3110 | 3172/3110 | 3172/3110 |           |           |
|                                                                                                               | 3172/3110 | 3172/3110 | 3172/3110 | 3172/3110 | 3172/3110 |           |
|                                                                                                               | 3172/3110 | 3172/3110 | 3172/3110 | 3172/3110 | 3172/3110 | 3172/3110 |
| Socket pair                                                                                                   | A/N       | B/P       | C/Q       | D/R       | E/S       | F/T       |
| <b>Note:</b> Modules must be installed as a pair, for example two type 3172 modules or two type 3110 modules. |           |           |           |           |           |           |

Table 30. SIMM table for processor types 2119, 2136

|                                                                                                               |           |           |           |           |
|---------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|
|                                                                                                               | 3172/3110 |           |           |           |
|                                                                                                               | 3172/3110 | 3172/3110 |           |           |
|                                                                                                               | 3172/3110 | 3172/3110 | 3172/3110 |           |
|                                                                                                               | 3172/3110 | 3172/3110 | 3172/3110 | 3172/3110 |
| Sockets                                                                                                       | G/H/Q/R   | C/D/L/M   | E/F/N/P   | A/B/J/K   |
| <b>Note:</b> 4 SIMMs (2 feature codes) must be installed together. All 4 SIMMs must be the same feature type. |           |           |           |           |

### Model 620, 720, and S20 Processor

Figure 44 shows the processor, main storage card, and DIMM locations for a Model 620, 720, or S20 system unit.

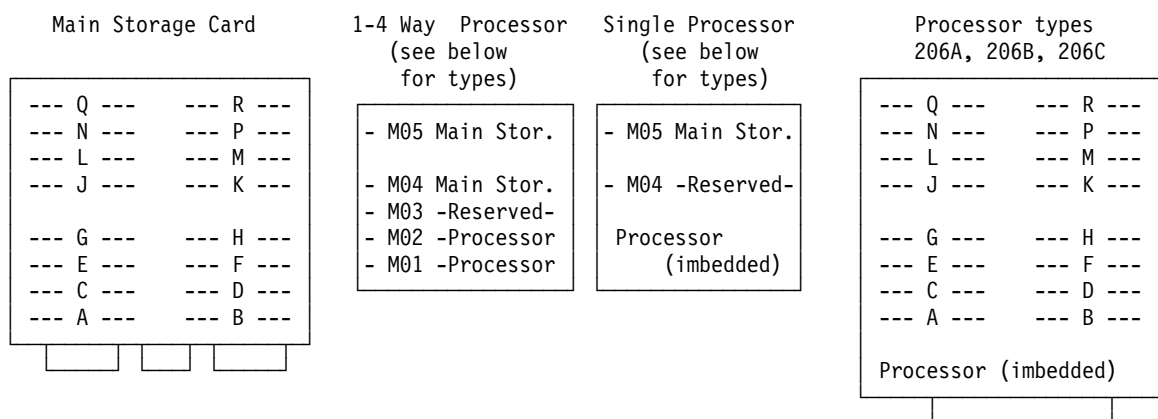


Figure 44. Model 620, 720, and S20 processor and storage

**Note:** The storage plugging order for the 1 - 4 way Processor is M04, M05, M03.

**Note:** 1 to 4 way Processor is one of type 206D, 206E, 206F, 207A, 207B, 207C, 207D, 207E, 207F, 208A, 208B, 208C, 208D, 2163, 2165, 2166, 2170, 2177, 2178, 2181, 2182

## Locations and Addresses

Single Processor is one of type 2161, 2175, 2179, 2180

| Model                                                                                                              | Processor          | DIMMs         | Type             | Base (MB) | Maximum (MB) |
|--------------------------------------------------------------------------------------------------------------------|--------------------|---------------|------------------|-----------|--------------|
| S20                                                                                                                | 2161               | 32/128MB      | 3001/3002        | 256       | 2048         |
| S20                                                                                                                | 2170               | 32/128MB      | 3001/3002        | 256       | 4096         |
| 620                                                                                                                | 2175               | 32/128MB      | 3001/3002        | 64        | 1856         |
| 620                                                                                                                | 2179               | 32/128MB      | 3001/3002        | 256       | 2048         |
| 620                                                                                                                | 2180               | 32/128MB      | 3001/3002        | 256       | 2048         |
| S20                                                                                                                | 2163 (M01)         | 32/128MB      | 3001/3002        | 256       | 2048         |
| 620                                                                                                                | 2181 (M01)         | 32/128MB      | 3001/3002        | 256       | 2048         |
| 620                                                                                                                | 2182 (M01)         | 32/128MB      | 3001/3002        | 256       | 4096 (note)  |
| S20                                                                                                                | 2165 (M01)         | 32/128MB      | 3001/3002        | 256       | 4096 (note)  |
| S20                                                                                                                | 2166 (M02)         | 32/128MB      | 3001/3002        | 256       | 4096 (note)  |
| 720                                                                                                                | 206A, 206B, 206C   | 32/128/256 MB | 3001, 3002, 3004 | 256       | 2048 (note)  |
| 720                                                                                                                | 206D to 206F, 207A | 32/128/256 MB | 3001, 3002, 3004 | 256       | 4096 (note)  |
| 720                                                                                                                | 207B to 207E       | 32/128/256 MB | 3001, 3002, 3004 | 256       | 8192 (note)  |
| 720                                                                                                                | 207F, 208A to 208D | 32/128/256 MB | 3001, 3002, 3004 | 256       | 8192 (note)  |
| <b>Note:</b> This is the maximum main storage for a 2-way or a 4-way processor. The minimum main storage is 256MB. |                    |               |                  |           |              |

**DIMM Plugging:** Main storage will display with 48 possible entries; 3 storage cards x 16 DIMM sockets.

DIMM placement must follow these rules:

1. DIMMs are installed in 64MB or 256MB increments. Each pair must be either 2 x 32MB or 2 x 128MB. Pairs are A and B, C and D, and so forth
2. DIMMs must be installed in pairs. A 64MB pair or a 256MB pair can be installed in any pair of sockets except for the storage card in position M03.
3. The card in position M03 can only have DIMM pairs installed if a matching pair is installed on the card in position M04. The matching pairs must be the same type.
4. For cards in positions M04 and M05, install DIMMs by starting with the bottom DIMM sockets.

## I/O Adapters

### High and Low Speed PCI IOAs

Table 31 shows the PCI IOA types with descriptions and speeds.

Table 31. PCI IOAs

| IOA Type | Description                                     | Speed |
|----------|-------------------------------------------------|-------|
| 2718     | External removable media controller             | High  |
| 2720     | 2-line communications and twinaxial workstation | Low   |
| 2721     | 2-line communications                           | Low   |

## Locations and Addresses

Table 31. PCI IOAs (continued)

| IOA Type | Description                                  | Speed       |
|----------|----------------------------------------------|-------------|
| 2722     | Twinaxial workstation                        | Low         |
| 2723     | Ethernet                                     | Low         |
| 2724     | Token Ring                                   | Low         |
| 2726     | Internal RAID disk, tape, optical controller | High        |
| 2728     | Internal disk, tape, optical controller      | High        |
| 2729     | External tape controller                     | High        |
| 2740     | Internal RAID disk, tape, optical controller | High        |
| 2741     | Internal RAID disk, tape, optical controller | High        |
| 2745     | 2-line communications                        | Low or High |
| 2746     | Twinaxial IOA                                | Low or High |
| 2748     | Internal RAID disk, tape, optical controller | High        |
| 2750     | ISDN Communications IOA                      | Low or High |
| 2751     | ISDN Communications IOA                      | Low or High |
| 2761     | Integrated Modem IOA                         | Low or High |
| 2838     | Ethernet                                     | High        |
| 4758     | Encryption IOA                               | High        |

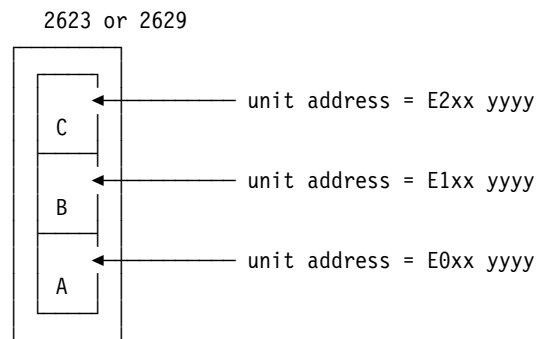
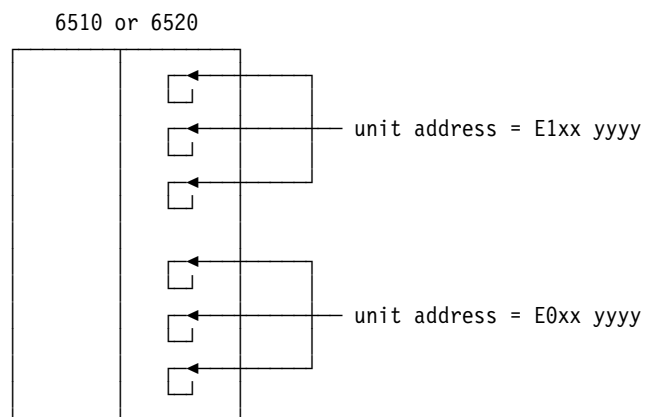
## Integrated Netfinity for AS/400 Server (IOA) Switch Settings

|                                                |     |                                         |   |   |   |   |  |
|------------------------------------------------|-----|-----------------------------------------|---|---|---|---|--|
|                                                |     | 166 MHz (has a cooling AMD on the card) |   |   |   |   |  |
| Press the switch at the TOP to turn it ON.     | 1   | 2                                       | 3 | 4 | 5 | 6 |  |
|                                                | 0   | 0                                       | 0 | 0 | 0 | 0 |  |
|                                                | N   | N                                       | F | N | F | F |  |
| Press the switch at the BOTTOM to turn it OFF. |     |                                         | F |   | F | F |  |
|                                                | OFF |                                         |   |   |   |   |  |

|                                                |     |                                      |   |   |   |   |  |
|------------------------------------------------|-----|--------------------------------------|---|---|---|---|--|
|                                                |     | 133 MHz (no cooling AMD on the card) |   |   |   |   |  |
| Press the switch at the TOP to turn it ON.     | 1   | 2                                    | 3 | 4 | 5 | 6 |  |
|                                                | 0   | 0                                    | 0 | 0 | 0 | 0 |  |
|                                                | N   | F                                    | F | N | F | F |  |
| Press the switch at the BOTTOM to turn it OFF. |     |                                      | F |   | F | F |  |
|                                                | OFF |                                      |   |   |   |   |  |

Figure 45. Switch Settings

**Note:** The 200 MHz and the 333 MHz Integrated Netfinity for AS/400 Server cards do not have switches and do not require jumpers.

**2623/2629***Figure 46. 2623/2629 Plugging***6510/6520***Figure 47. 6510/6520 Plugging*

## Locations and Addresses

### 6616

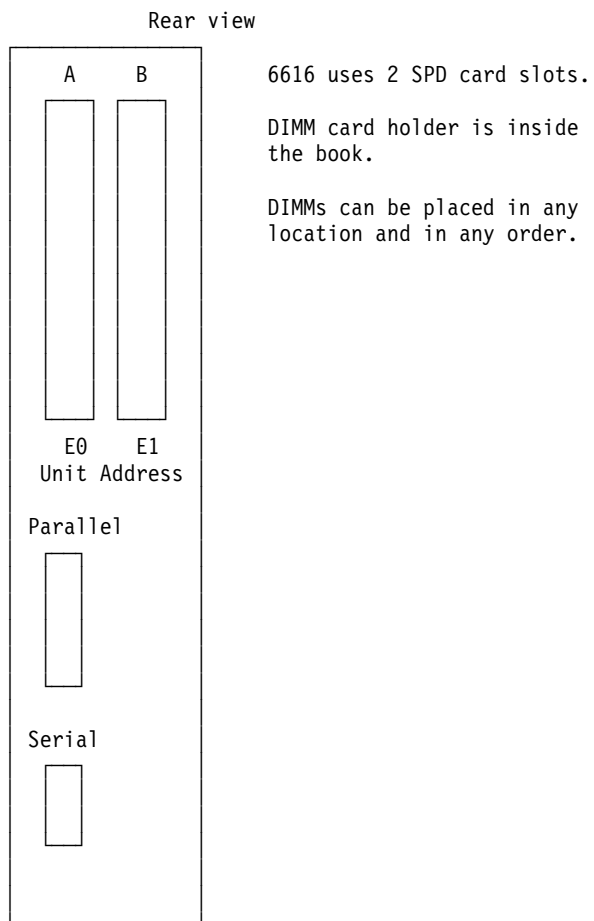
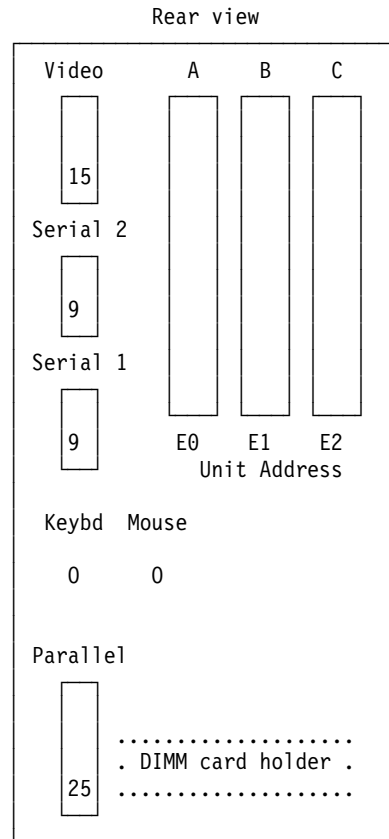


Figure 48. 6616 Plugging

**6617**

6617 requires 3 SPD card slots.

Slots A, B, C are PCI card slots

(Note: Slot C is used only by Windows NT)

DIMM card holder is inside the book.

DIMM plugging order  
 DIMM 3, 2, 1, 0

DIMM card holder

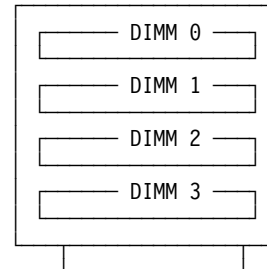


Figure 49. 6617 Plugging

## 2750/2751 and 2761 Adapter Card Port Connector Locations



FC 2750 and FC 2751 Card

The locations are numbered 4 to 1 (Left to Right)

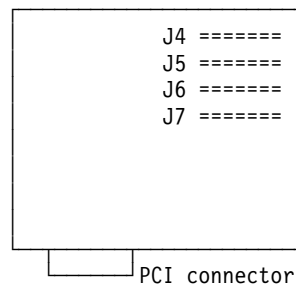


FC 2761 Card

The locations are numbered 8 to 1 (Left to Right)

## Locations and Addresses

### Integrated Netfinity Server for AS/400 (2850)



Max of 4 features. A feature is one DIMM (32MB, 128MB, or 256MB) and can be installed in any slots.

Base is 32MB.

Suggested plugging order:  
J7, J6, J5, J4

Figure 50. Integrated Netfinity Server for AS/400 (2850) Plugging

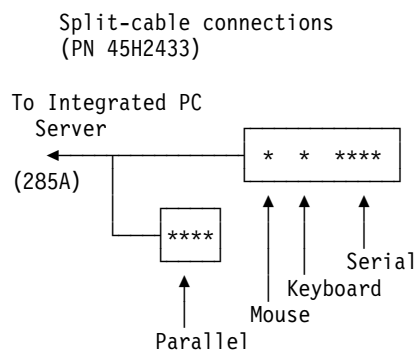


Figure 51. Split-tail Cable (PN45H2433) Connections

### Tape and Optical Unit Address Jumpers

Only locations D01 and D02 on Models 600 or S10 require address jumpers. All other locations automatically address the tape or optical unit when installed into the backplane.

#### Optical Unit

You can not install the optical unit in location D01.

Location D02

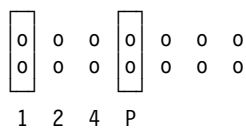


Figure 52. Optical Unit jumpers for location D02

**Note:** The optical unit uses jumper part number 1675209.

#### 6383, 6385, 6386 Tape Unit

You do not need to install jumpers with the tape unit in location D01.



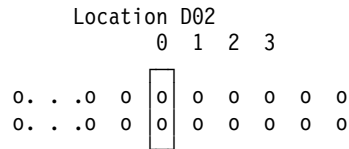


Figure 53. 6383, 6385, 6386 tape unit address jumpers for location D02

**Note:** The 6383, 6385, and 6386 tape units use jumper part number 61X7052.

### 6379, 6380, 6381, 6382 Tape Unit

You do not need to install jumpers with the tape unit in location D01.

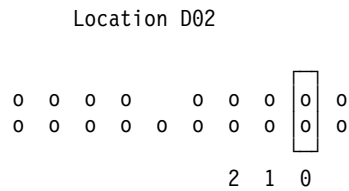


Figure 54. 6379, 6380, 6381, 6382 tape unit address jumpers for location D02

**Note:** The 6379, 6380, 6381 and 6382 tape units use jumper part number 1675209.

### 6390 Tape Unit

You do not need to install jumpers with the tape unit in location D01.

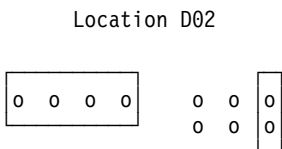


Figure 55. 6390 tape unit address jumpers for location D02

**Note:** The 6390 tape unit uses jumper part number 1675209.

### 6335 Tape Unit

You do not need to install jumpers with the tape unit in location D01.

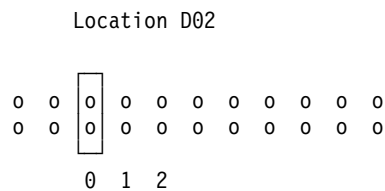


Figure 56. 6335 tape unit address jumpers for location D02

**Note:** The 6335 tape unit uses jumper part number 1675209.

### External Devices

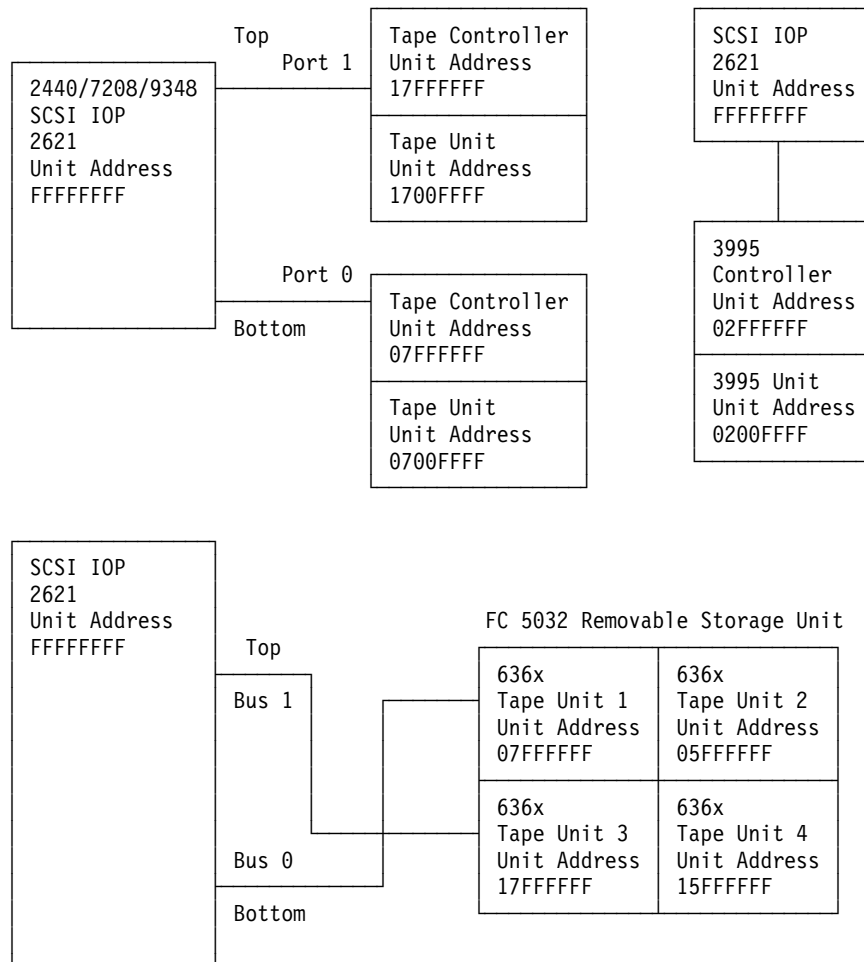
#### SCSI I/O Processor (Type 2621) Addressing Scheme

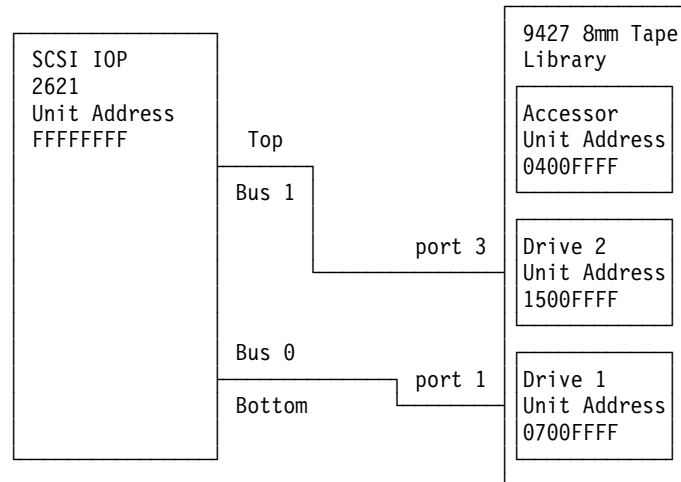
The type 2621 SCSI I/O processor provides support for the following:

- 2440 Tape Unit
- 3995 AS/400 Optical Library Dataserver
- 636x Tape Units in the FC 5032 Removable Storage Unit
- 7208 Tape Drive
- 9348 Tape Unit
- 9427 8-mm Tape Library

The SCSI I/O processor maps the unit addresses as follows:

#### SCSI I/O Processor Unit Address Assignments:





### Tape I/O Processor (Type 2644) Addressing Scheme

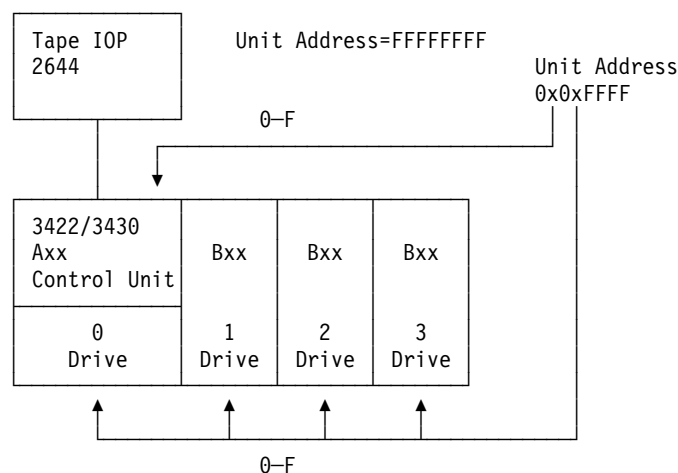
The tape I/O processor (type 2644) provides support for the 3422, 3430, 3480, and 3490 Tape Units. The second character of the unit address is the control unit number. The fourth character is the drive address. For more information on the address for the alternate IPL device see “Determining the Load-Source Disk and Alternate IPL Device” on page 786.

**Note:** There must *not* be a tape unit installed with address 0.

Assume that you have a tape I/O processor with one 3430 Tape Unit; the tape I/O processor maps the unit addresses as follows: 3430 control unit UA=00FFFFFF, 3430 device 1 UA=0000FFFF, 3430 device 2 UA=0001FFFF, 3430 device 3 UA=0002FFFF, and 3430 device 4 UA=0003FFFF.

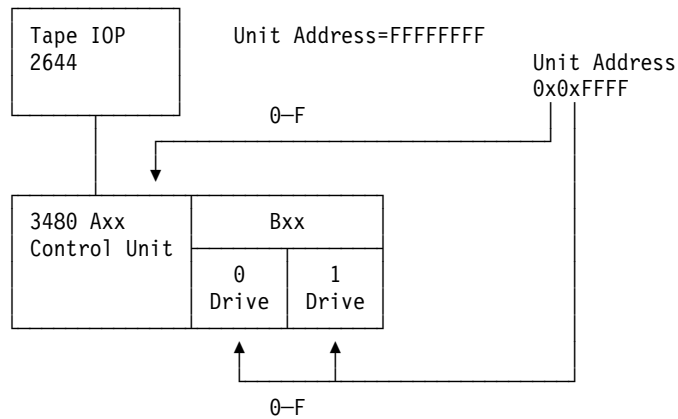
### Tape I/O Processor (Type 2644) Unit Address Assignments:

#### 3422/3430 Tape Drives:

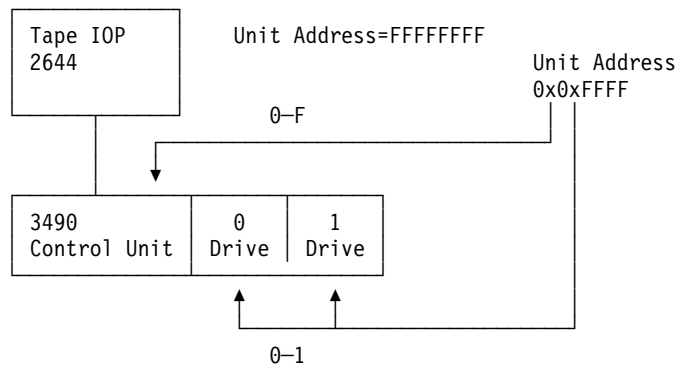


## Locations and Addresses

### 3480 Tape Drive:



### 3490 Tape Drive:



## Type 2718 IOA, 2729 IOA, and 6534 IOP Addressing

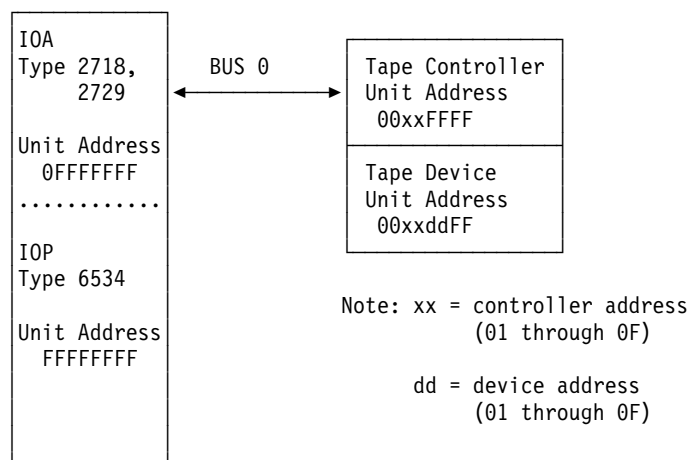


Figure 57. 2718 IOA, 2729 IOA, and 6534 IOP to tape unit

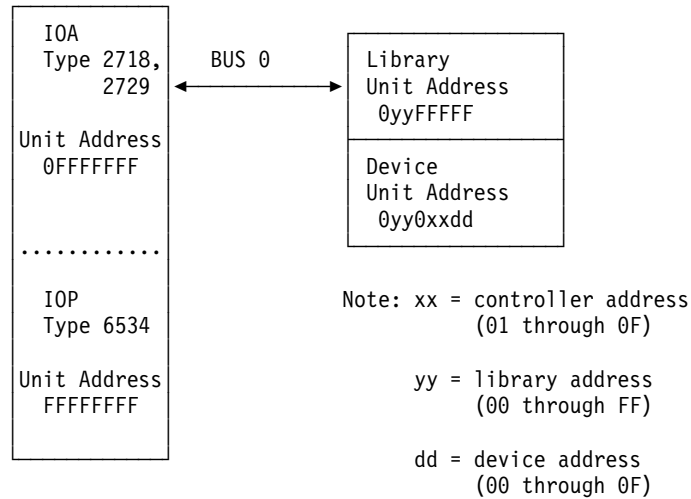


Figure 58. 2718 IOA, 2729 IOA, and 6534 IOP to tape or optical library

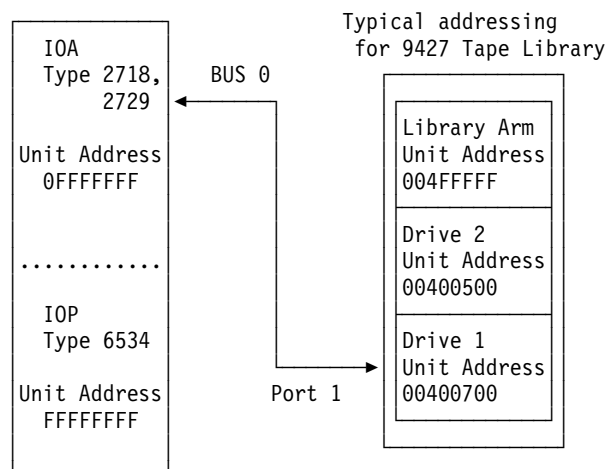


Figure 59. Typical addressing

## Locations and Addresses

### Type 6501 IOP Addressing

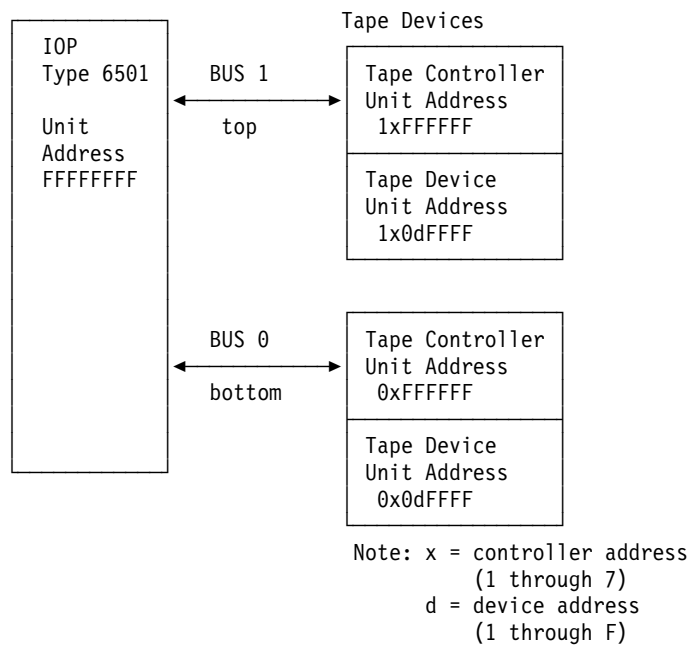


Figure 60. 6501 IOP to tape units

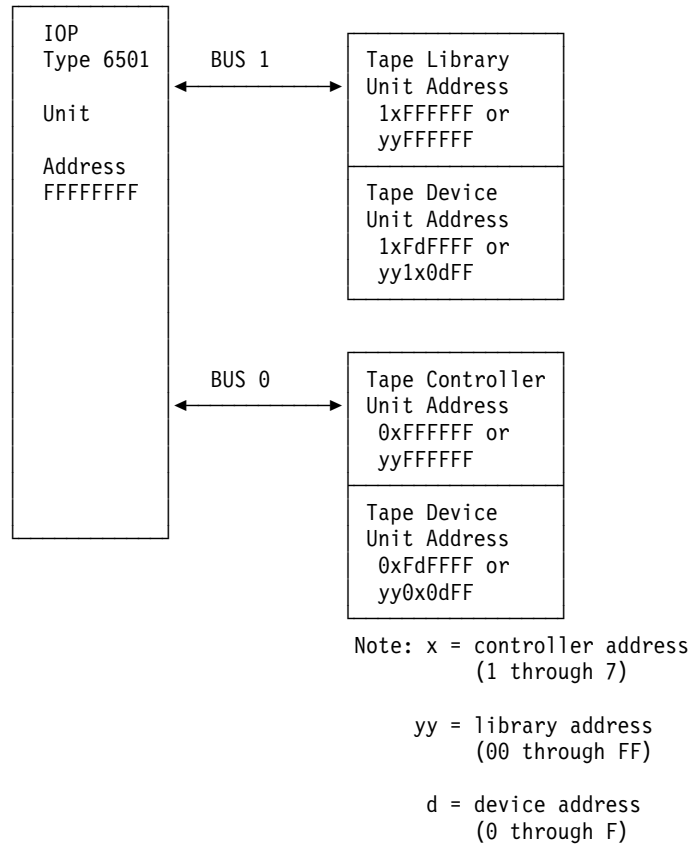


Figure 61. 6501 IOP to tape library

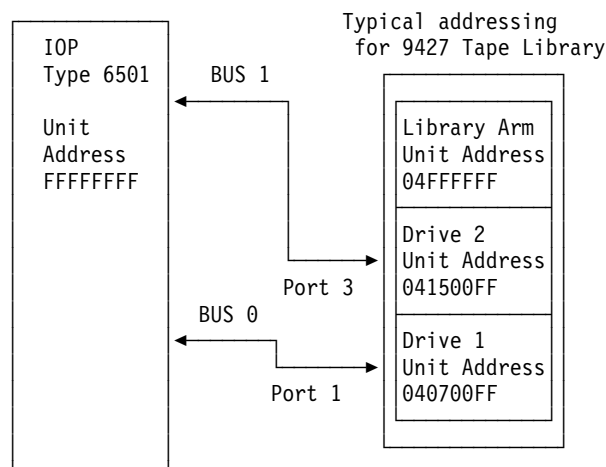


Figure 62. Typical addressing

## Locations and Addresses

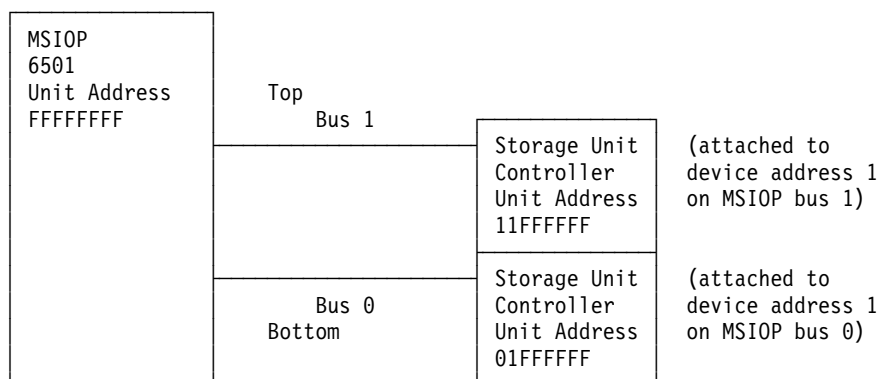


Figure 63. 6501 IOP to storage units

## Expansion Tower Locations and Addresses

### Storage Expansion Unit (FC 5051)

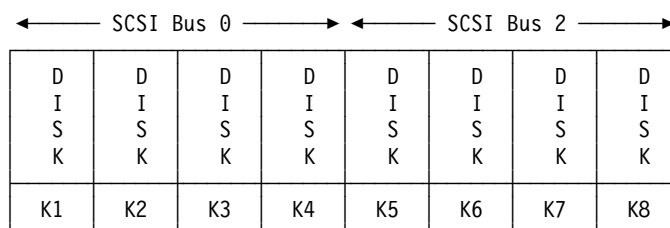


Figure 64. Front View

**Note:** Disk units 6109 (FC 1109, FC 6109), 6602 (FC 1602) and 6603 (FC 1603) can not be installed in disk unit positions K8 through K16 of the storage expansion unit.

| Device | Location | 6502/6512/6530 Unit Address | 6532/6533 Unit Address |
|--------|----------|-----------------------------|------------------------|
| Disk   | K1       | 0100 FFFF                   | 0001 00FF              |
| Disk   | K2       | 0200 FFFF                   | 0002 00FF              |
| Disk   | K3       | 0300 FFFF                   | 0003 00FF              |
| Disk   | K4       | 0400 FFFF                   | 0004 00FF              |
| Disk   | K5       | 2500 FFFF                   | 0205 00FF              |
| Disk   | K6       | 2600 FFFF                   | 0206 00FF              |
| Disk   | K7       | 2700 FFFF                   | 0207 00FF              |
| Disk   | K8       | 2800 FFFF                   | 0208 00FF              |



## Storage Expansion Unit (FC 5052 and 5058)

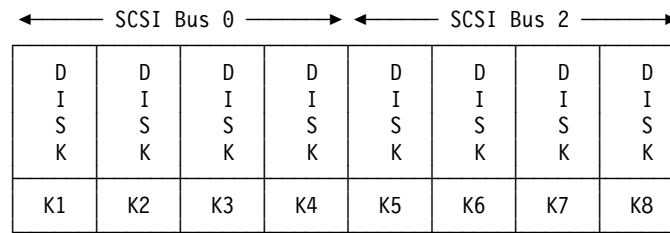


Figure 65. Front View

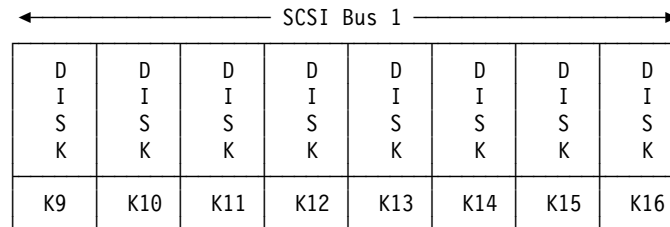


Figure 66. Rear View

**Note:** Disk units 6109 (FC 1109, FC 6109), 6602 (FC 1602) and 6603 (FC 1603) can not be installed in disk unit positions K8 through K16 of the storage expansion unit.

| Device | Location | 6502/6512/6530 Unit Address | 6532/6533 Unit Address |
|--------|----------|-----------------------------|------------------------|
| Disk   | K1       | 0100 FFFF                   | 0001 00FF              |
| Disk   | K2       | 0200 FFFF                   | 0002 00FF              |
| Disk   | K3       | 0300 FFFF                   | 0003 00FF              |
| Disk   | K4       | 0400 FFFF                   | 0004 00FF              |
| Disk   | K5       | 2500 FFFF                   | 0205 00FF              |
| Disk   | K6       | 2600 FFFF                   | 0206 00FF              |
| Disk   | K7       | 2700 FFFF                   | 0207 00FF              |
| Disk   | K8       | 2800 FFFF                   | 0208 00FF              |
| Disk   | K9       | 1100 FFFF                   | 0101 00FF              |
| Disk   | K10      | 1200 FFFF                   | 0102 00FF              |
| Disk   | K11      | 1300 FFFF                   | 0103 00FF              |
| Disk   | K12      | 1400 FFFF                   | 0104 00FF              |
| Disk   | K13      | 1500 FFFF                   | 0105 00FF              |
| Disk   | K14      | 1600 FFFF                   | 0106 00FF              |
| Disk   | K15      | 1700 FFFF                   | 0107 00FF              |
| Disk   | K16      | 1800 FFFF                   | 0108 00FF              |

## Locations and Addresses

### FC 5065 and FC 5066 Expansion Towers

**Note:** Service the FC 5066 Expansion Tower as two FC 5065

Figure 67 shows the physical locations inside the FC 5065 expansion tower.

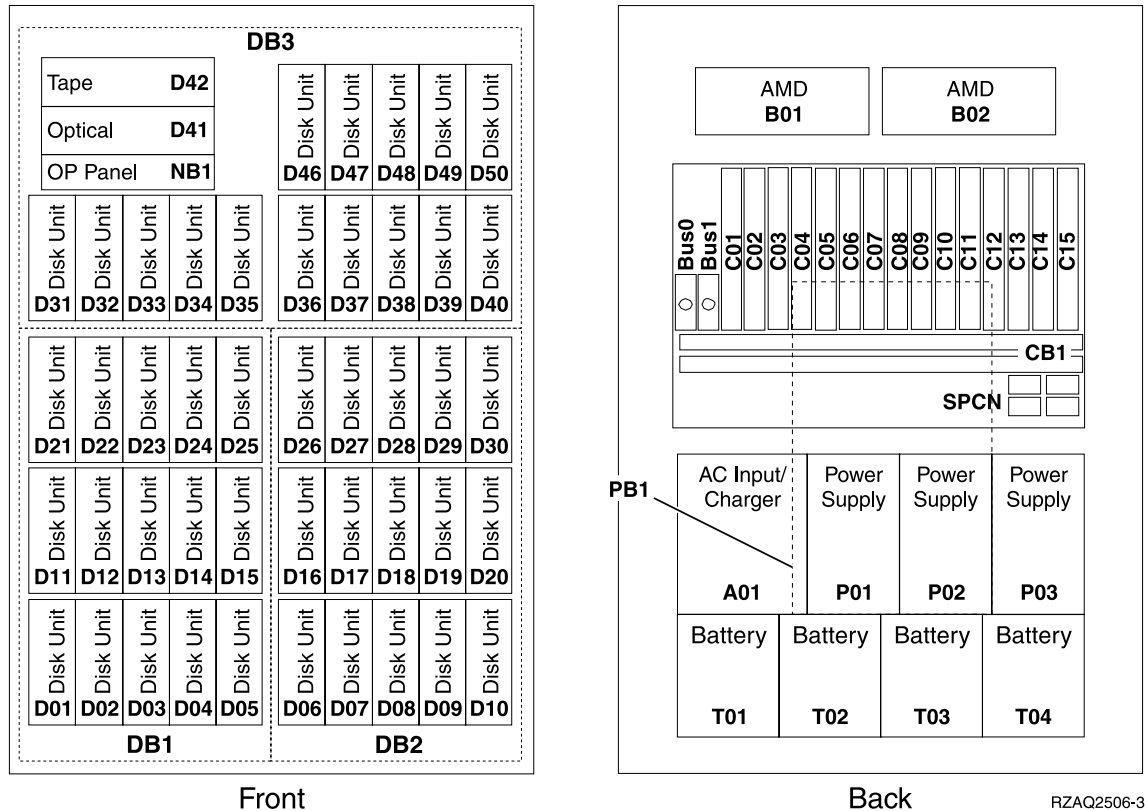


Figure 67. FC 5065 Expansion Tower (Note: Service the FC 5066 Expansion Tower as two FC 5065)

Table 32 shows the Unit Addresses and descriptions for each PCI card slot.

Table 32. Card Slot Unit Addresses and Descriptions

| Slot | DSA (BBBBcbb) | Unit Address                        | Description                                |
|------|---------------|-------------------------------------|--------------------------------------------|
| C01  | xxxx-01-00    | E0FF FFFF                           | WAN/LAN/Twinax                             |
| C02  | xxxx-01-00    | E1FF FFFF                           | WAN/LAN/Twinax                             |
| C03  | xxxx-01-00    | FFFF FFFF                           | CFIOP                                      |
| C04  | xxxx-01-00    | E7FF FFFF<br>0FFF FFFF<br>E7FF FFFF | 2838, ATM<br>Storage IOA<br>WAN/LAN/Twinax |
| C05  | xxxx-01-00    | ECFF FFFF                           | 2838, ATM<br>WAN/LAN/Twinax                |
| C06  | xxxx-02-00    | E0FF FFFF                           | WAN/LAN/Twinax                             |
| C07  | xxxx-02-00    | E1FF FFFF                           | WAN/LAN/Twinax                             |
| C08  | xxxx-02-00    | FFFF FFFF                           | CFIOP                                      |

Table 32. Card Slot Unit Addresses and Descriptions (continued)

| Slot                                                          | DSA (BBBBCcbb) | Unit Address                        | Description                                |
|---------------------------------------------------------------|----------------|-------------------------------------|--------------------------------------------|
| C09                                                           | xxxx-02-00     | E7FF FFFF<br>0FFF FFFF<br>E7FF FFFF | 2838, ATM<br>Storage IOA<br>WAN/LAN/Twinax |
| C10                                                           | xxxx-02-00     | ECFF FFFF                           | 2838, ATM<br>WAN/LAN/Twinax                |
| C11                                                           | xxxx-03-00     | E0FF FFFF                           | WAN/LAN/Twinax                             |
| C12                                                           | xxxx-03-00     | E1FF FFFF                           | WAN/LAN/Twinax                             |
| C13                                                           | xxxx-03-00     | FFFF FFFF                           | CFIOP                                      |
| C14                                                           | xxxx-03-00     | E7FF FFFF<br>0FFF FFFF<br>E7FF FFFF | 2838, ATM<br>Storage IOA<br>WAN/LAN/Twinax |
| C15                                                           | xxxx-03-00     | ECFF FFFF                           | 2838, ATM<br>WAN/LAN/Twinax                |
| DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved |                |                                     |                                            |

Table 33 shows the Unit Addresses and descriptions for each device.

Table 33. Device Unit Addresses and Descriptions

| Location | Device    | DSA (BBBBCcbb) | Unit Address |
|----------|-----------|----------------|--------------|
| D01      | Disk Unit | xxxx-02-00     | 0003 00FF    |
| D02      | Disk Unit | xxxx-02-00     | 0004 00FF    |
| D03      | Disk Unit | xxxx-02-00     | 0005 00FF    |
| D04      | Disk Unit | xxxx-02-00     | 0006 00FF    |
| D05      | Disk Unit | xxxx-02-00     | 0007 00FF    |
| D06      | Disk Unit | xxxx-03-00     | 0003 00FF    |
| D07      | Disk Unit | xxxx-03-00     | 0004 00FF    |
| D08      | Disk Unit | xxxx-03-00     | 0005 00FF    |
| D09      | Disk Unit | xxxx-03-00     | 0006 00FF    |
| D10      | Disk Unit | xxxx-03-00     | 0007 00FF    |
| D11      | Disk Unit | xxxx-02-00     | 0103 00FF    |
| D12      | Disk Unit | xxxx-02-00     | 0104 00FF    |
| D13      | Disk Unit | xxxx-02-00     | 0105 00FF    |
| D14      | Disk Unit | xxxx-02-00     | 0106 00FF    |
| D15      | Disk Unit | xxxx-02-00     | 0107 00FF    |
| D16      | Disk Unit | xxxx-03-00     | 0103 00FF    |
| D17      | Disk Unit | xxxx-03-00     | 0104 00FF    |
| D18      | Disk Unit | xxxx-03-00     | 0105 00FF    |
| D19      | Disk Unit | xxxx-03-00     | 0106 00FF    |
| D20      | Disk Unit | xxxx-03-00     | 0107 00FF    |
| D21      | Disk Unit | xxxx-02-00     | 0203 00FF    |
| D22      | Disk Unit | xxxx-02-00     | 0204 00FF    |
| D23      | Disk Unit | xxxx-02-00     | 0205 00FF    |
| D24      | Disk Unit | xxxx-02-00     | 0206 00FF    |

## Locations and Addresses

Table 33. Device Unit Addresses and Descriptions (continued)

| Location                                                      | Device    | DSA (BBBBCcbb) | Unit Address |
|---------------------------------------------------------------|-----------|----------------|--------------|
| D25                                                           | Disk Unit | xxxx-02-00     | 0207 00FF    |
| D26                                                           | Disk Unit | xxxx-03-00     | 0203 00FF    |
| D27                                                           | Disk Unit | xxxx-03-00     | 0204 00FF    |
| D28                                                           | Disk Unit | xxxx-03-00     | 0205 00FF    |
| D29                                                           | Disk Unit | xxxx-03-00     | 0206 00FF    |
| D30                                                           | Disk Unit | xxxx-03-00     | 0207 00FF    |
| D31                                                           | Disk Unit | xxxx-01-00     | 0001 00FF    |
| D32                                                           | Disk Unit | xxxx-01-00     | 0002 00FF    |
| D33                                                           | Disk Unit | xxxx-01-00     | 0003 00FF    |
| D34                                                           | Disk Unit | xxxx-01-00     | 0004 00FF    |
| D35                                                           | Disk Unit | xxxx-01-00     | 0005 00FF    |
| D36                                                           | Disk Unit | xxxx-01-00     | 0103 00FF    |
| D37                                                           | Disk Unit | xxxx-01-00     | 0104 00FF    |
| D38                                                           | Disk Unit | xxxx-01-00     | 0105 00FF    |
| D39                                                           | Disk Unit | xxxx-01-00     | 0106 00FF    |
| D40                                                           | Disk Unit | xxxx-01-00     | 0107 00FF    |
| D41                                                           | Optical   | xxxx-01-00     | 0006 00FF    |
| D42                                                           | Tape      | xxxx-01-00     | 0007 00FF    |
| D46                                                           | Disk Unit | xxxx-01-00     | 0203 00FF    |
| D47                                                           | Disk Unit | xxxx-01-00     | 0204 00FF    |
| D48                                                           | Disk Unit | xxxx-01-00     | 0205 00FF    |
| D49                                                           | Disk Unit | xxxx-01-00     | 0206 00FF    |
| D50                                                           | Disk Unit | xxxx-01-00     | 0207 00FF    |
| DSA = BBBBCcbb : BBBB = Bus, Cc = Card Address, bb = reserved |           |                |              |

## System Unit Expansion Tower (FC 5070, 5071, 5072, and FC 5073)

**Note:** \*\*\*\* in a location indicates a minimum configuration.

## Locations and Addresses

|            |    |    |    |    |    |                                                    |                                                    |                                          |  |                                          |  |  |  |
|------------|----|----|----|----|----|----------------------------------------------------|----------------------------------------------------|------------------------------------------|--|------------------------------------------|--|--|--|
| DEVICE 4   |    |    |    |    |    | DEVICE 2                                           |                                                    |                                          |  | CONTROL<br>PANEL<br><br>****             |  |  |  |
| DEVICE 3   |    |    |    |    |    | DEVICE 1                                           |                                                    |                                          |  |                                          |  |  |  |
| AIR INTAKE |    |    |    |    |    |                                                    |                                                    |                                          |  |                                          |  |  |  |
| A          | B  | C  | D  | E  | F  | R<br>E<br>G<br>U<br>L<br>A<br>T<br>O<br>R<br><br>1 | R<br>E<br>G<br>U<br>L<br>A<br>T<br>O<br>R<br><br>2 | E<br>M<br>P<br>T<br>Y                    |  | F<br>E<br>A<br>T<br>U<br>R<br>E<br><br>2 |  |  |  |
|            |    |    |    |    |    | ****                                               | ****                                               | B<br>A<br>T<br>T<br>E<br>R<br>Y<br><br>1 |  | F<br>E<br>A<br>T<br>U<br>R<br>E<br><br>1 |  |  |  |
| 09         | 10 | 11 | 12 | 13 | 14 | 15                                                 | 16                                                 | ****                                     |  | ****                                     |  |  |  |

Slot

RZAG6700-1

RZAG6700-1

Figure 68. Front View

|                    |     |              |       |                   |    |    |    |    |    |    |      |
|--------------------|-----|--------------|-------|-------------------|----|----|----|----|----|----|------|
| AMD<br>4           |     |              |       | AMD<br>3<br>***** |    |    |    |    |    |    |      |
| AMD<br>2<br>*****  |     |              |       | G                 | H  | I  | J  | K  | L  | M  | N    |
| AMD<br>1<br>*****  |     |              |       |                   |    |    |    |    |    |    |      |
| AC MODULE<br>***** |     |              |       |                   |    |    |    |    |    |    |      |
| J15                | J16 | J19          |       |                   |    |    |    |    |    |    |      |
|                    |     | J11          |       |                   |    |    |    |    |    |    |      |
| A<br>C             |     | J14<br>(UPS) | ***** |                   |    |    |    |    |    |    |      |
|                    |     |              | 01    | 02                | 03 | 04 | 05 | 06 | 07 | 08 | Slot |

RZAG6701-1

RZAG6701-1

Figure 69. Rear View

**Note:** In the following list, DSA means Direct Select Address, and UA means Unit Address.

Device 1 (UA=0700 FFFF)

## Locations and Addresses

Device 2 (UA=0600 FFFF)

Device 3 (UA=0500 FFFF)

Device 4 (UA=0400 FFFF)

A Feature IOP (DSA=xxxx-08-00 UA=FFFF FFFF)

B Feature IOP (DSA=xxxx-09-00 UA=FFFF FFFF)

C Feature IOP (DSA=xxxx-0A-00 UA=FFFF FFFF)

D Feature IOP (DSA=xxxx-0B-00 UA=FFFF FFFF)

E Feature IOP (DSA=xxxx-0C-00 UA=FFFF FFFF)

F Feature IOP (DSA=xxxx-0D-00 UA=FFFF FFFF)

G Optical Bus Adapter (DSA=xxxx-00-00 UA=FFFF FFFF)

H Feature IOP or MSIOP (DSA=xxxx-01-00 UA=FFFF FFFF)

**Note:** See "Storage Expansion Unit (FC 5051)" on page 750 or "Storage Expansion Unit (FC 5052 and 5058)" on page 751 for unit address information.

I Feature IOP or Internal Tape IOP (DSA=xxxx-02-00 UA=FFFF FFFF)

J Feature IOP (DSA=xxxx-03-00 UA=FFFF FFFF)

K Feature IOP (DSA=xxxx-04-00 UA=FFFF FFFF)

L Feature IOP (DSA=xxxx-05-00 UA=FFFF FFFF)

M Feature IOP (DSA=xxxx-06-00 UA=FFFF FFFF)

N Feature IOP (DSA=xxxx-07-00 UA=FFFF FFFF)

## Storage Expansion Tower (FC 5080, 5081, 5082, or 5083)

### Notes:

1. \*\*\*\* in a location indicates a minimum configuration.
2. Disk units 6109 (FC 1109, FC 6109), 6602 (FC 1602) and 6603 (FC 1603) can not be installed in disk unit positions K8 through K16 of the storage expansion unit.
3. Figure 70 on page 757 is shown with FC 5052/5058 installed.
4. Figure 71 on page 758 is shown with FC 5052/5058 installed.

## Locations and Addresses

|                 |                 |                 |                 |                                              |                                              |            |            |
|-----------------|-----------------|-----------------|-----------------|----------------------------------------------|----------------------------------------------|------------|------------|
| DISK<br>K1      | DISK<br>K2      | DISK<br>K3      | DISK<br>K4      | DISK<br>K5                                   | DISK<br>K6                                   | DISK<br>K7 | DISK<br>K8 |
| DEVICE 1<br>09C | DEVICE 2<br>11C | DEVICE 3<br>13C | DEVICE 4<br>15C | CONTROL<br>PANEL<br><br>****                 |                                              |            |            |
| DISK 2<br>09B   | DISK 4<br>11B   | DISK 6<br>13B   | DISK 8<br>15B   | E<br>M<br>P<br>T<br>Y                        | F<br>P<br>O<br>W<br>E<br>R<br>E<br>2         |            |            |
| DISK 1<br>09A   | DISK 3<br>11A   | DISK 5<br>13A   | DISK 7<br>15A   | B<br>A<br>T<br>T<br>E<br>R<br>Y<br>1<br>**** | F<br>P<br>O<br>W<br>E<br>R<br>E<br>1<br>**** |            |            |
| 09              | 10              | 11              | 12              | 13                                           | 14                                           | 15         | 16         |

Slot

RZAG6702-0

Figure 70. Front View

## Locations and Addresses

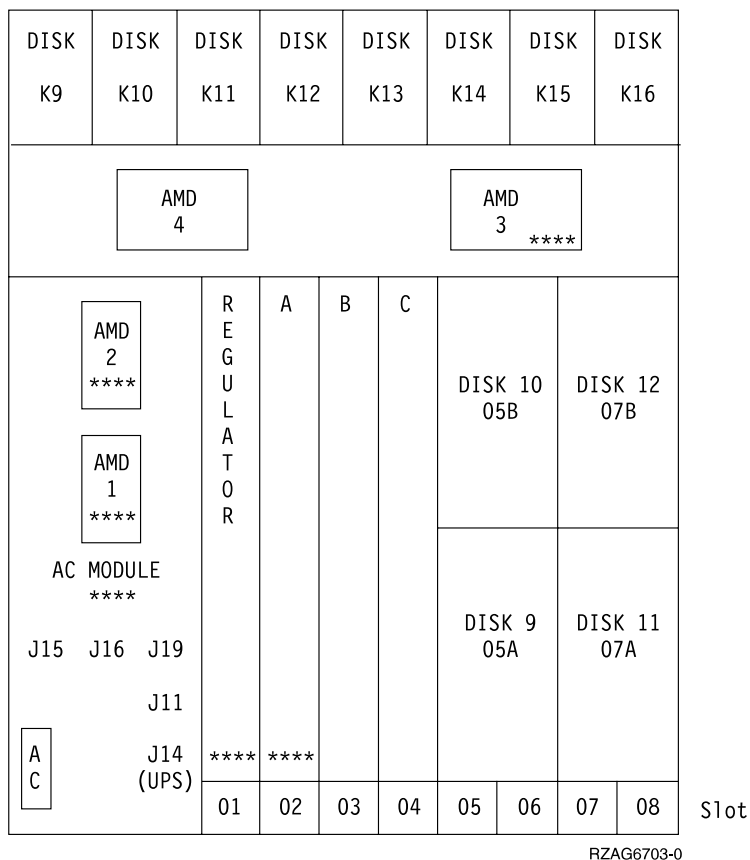


Figure 71. Rear View

A(card position 02) SPD Optical Bus Receiver (DSA=xxxx-00-00 UA=FFFF FFFF)  
BB (card position 03) MSIOP (DSA=xxxx-01-00 UA=FFFF FFFF):

|                 | DSA<br>(BBBBCCbb) | 6502, 6512, 6530<br>Unit Address | 6532/6533<br>Unit Address |                 | DSA<br>(BBBBCCbb) | 6502, 6512,<br>6530 Unit<br>Address | 6532/6533<br>Unit Address |
|-----------------|-------------------|----------------------------------|---------------------------|-----------------|-------------------|-------------------------------------|---------------------------|
| Device 1<br>09C | xxxx-01-00        | 0700 FFFF                        | 0007 00FF                 | Device 2<br>11C | xxxx-01-00        | 0600 FFFF                           | 0006 00FF                 |
| Device 3<br>13C | xxxx-01-00        | 0500 FFFF                        | 0005 00FF                 | Device 4<br>15C | xxxx-01-00        | 0400 FFFF                           | 0004 00FF                 |



## Locations and Addresses

|                       | DSA<br>(BBBBCcbb) | 6502, 6512, 6530<br>Unit Address | 6532/6533 Unit<br>Address |                    | DSA<br>(BBBBCcbb) | 6502, 6512,<br>6530 Unit<br>Address | 6532/6533<br>Unit<br>Address |
|-----------------------|-------------------|----------------------------------|---------------------------|--------------------|-------------------|-------------------------------------|------------------------------|
| Disk 1<br><b>09A</b>  | xxxx-01-00        | 2100 FFFF                        | 0201 00FF                 | Disk 2 <b>09B</b>  | xxxx-01-00        | 1100 FFFF                           | 0101 00FF                    |
| Disk 3<br><b>11A</b>  | xxxx-01-00        | 2200 FFFF                        | 0202 00FF                 | Disk 4 <b>11B</b>  | xxxx-01-00        | 1200 FFFF                           | 0102 00FF                    |
| Disk 5<br><b>13A</b>  | xxxx-01-00        | 2300 FFFF                        | 0203 00FF                 | Disk 6 <b>13B</b>  | xxxx-01-00        | 1300 FFFF                           | 0103 00FF                    |
| Disk 7<br><b>15A</b>  | xxxx-01-00        | 2400 FFFF                        | 0204 00FF                 | Disk 8 <b>15B</b>  | xxxx-01-00        | 1400 FFFF                           | 0104 00FF                    |
| Disk 9<br><b>05A</b>  | xxxx-01-00        | 2500 FFFF                        | 0205 00FF                 | Disk 10 <b>05B</b> | xxxx-01-00        | 1500 FFFF                           | 0105 00FF                    |
| Disk 11<br><b>07A</b> | xxxx-01-00        | 2600 FFFF                        | 0206 00FF                 | Disk 12 <b>07B</b> | xxxx-01-00        | 1600 FFFF                           | 0106 00FF                    |

CC (card position 04) MSIOP (DSA=xxxx-02-00 UA=FFFF FFFF):

|                | DSA<br>(BBBBCcbb) | 6502, 6512, 6530<br>Unit Address | 6532/6533 Unit<br>Address |                 | DSA<br>(BBBBCcbb) | 6502, 6512,<br>6530 Unit<br>Address | 6532/6533<br>Unit<br>Address |
|----------------|-------------------|----------------------------------|---------------------------|-----------------|-------------------|-------------------------------------|------------------------------|
| Disk <b>K1</b> | xxxx-02-00        | 0100 FFFF                        | 0001 00FF                 | Disk <b>K9</b>  | xxxx-02-00        | 1100 FFFF                           | 0101 00FF                    |
| Disk <b>K2</b> | xxxx-02-00        | 0200 FFFF                        | 0002 00FF                 | Disk <b>K10</b> | xxxx-02-00        | 1200 FFFF                           | 0102 00FF                    |
| Disk <b>K3</b> | xxxx-02-00        | 0300 FFFF                        | 0003 00FF                 | Disk <b>K11</b> | xxxx-02-00        | 1300 FFFF                           | 0103 00FF                    |
| Disk <b>K4</b> | xxxx-02-00        | 0400 FFFF                        | 0004 00FF                 | Disk <b>K12</b> | xxxx-02-00        | 1400 FFFF                           | 0104 00FF                    |
| Disk <b>K5</b> | xxxx-02-00        | 2500 FFFF                        | 0205 00FF                 | Disk <b>K13</b> | xxxx-02-00        | 1500 FFFF                           | 0105 00FF                    |
| Disk <b>K6</b> | xxxx-02-00        | 2600 FFFF                        | 0206 00FF                 | Disk <b>K14</b> | xxxx-02-00        | 1600 FFFF                           | 0106 00FF                    |
| Disk <b>K7</b> | xxxx-02-00        | 2700 FFFF                        | 0207 00FF                 | Disk <b>K15</b> | xxxx-02-00        | 1700 FFFF                           | 0107 00FF                    |
| Disk <b>K8</b> | xxxx-02-00        | 2800 FFFF                        | 0208 00FF                 | Disk <b>K16</b> | xxxx-02-00        | 1800 FFFF                           | 0108 00FF                    |

## Cable Diagrams for Expansion Towers

The following cable lists help identify the cables in the expansion towers. Not all cables are present in all models. You can find cable part numbers in the “Assembly 23: Internal Cable Assemblies” on page 1026.

### Cable Diagrams

The following diagrams show the logical cable connections in the expansion towers.

#### FC 5065 or 5066 Power and Signal cables

The following diagram shows the power cables for a FC 5065 or 5066 expansion tower.

## Locations and Addresses

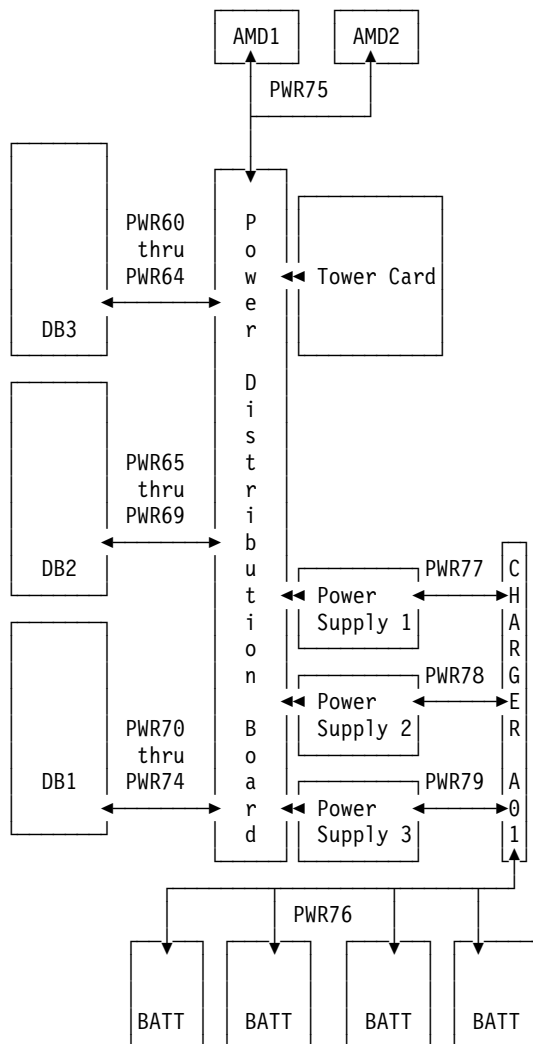


Figure 72. FC 5065 or 5066 Power cables

The following diagram shows the signal cables for a FC 5065 or 5066 expansion tower.

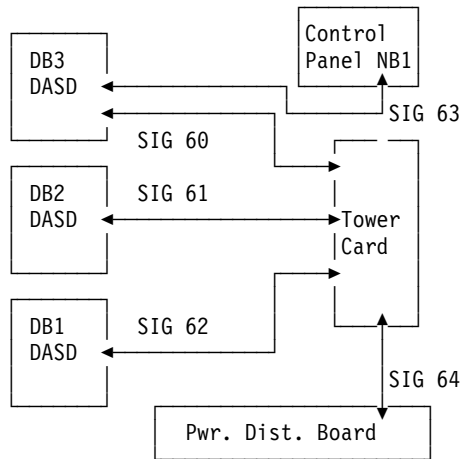


Figure 73. FC 5065 or 5066 Signal cables

## Locations and Addresses

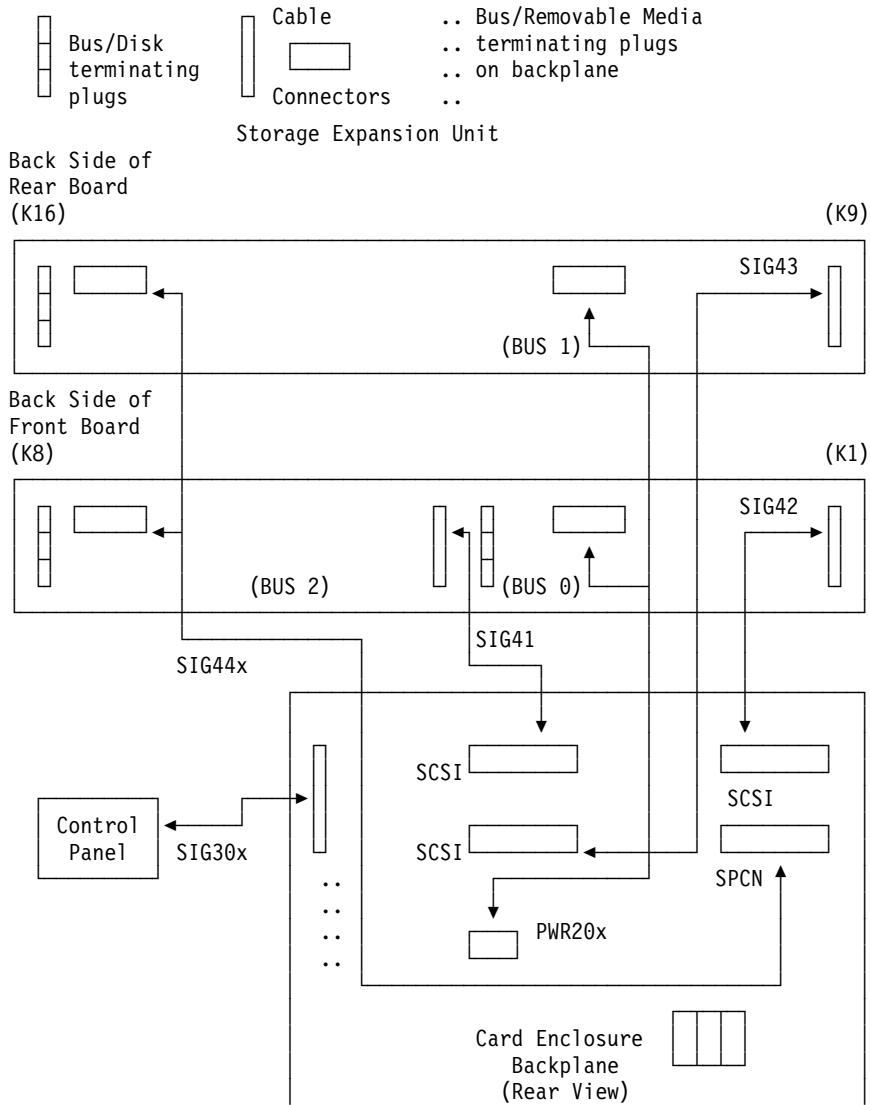


Figure 74. System Unit Expansion Tower (FC 5070, 5072) with Storage Expansion Unit (FC 505x)

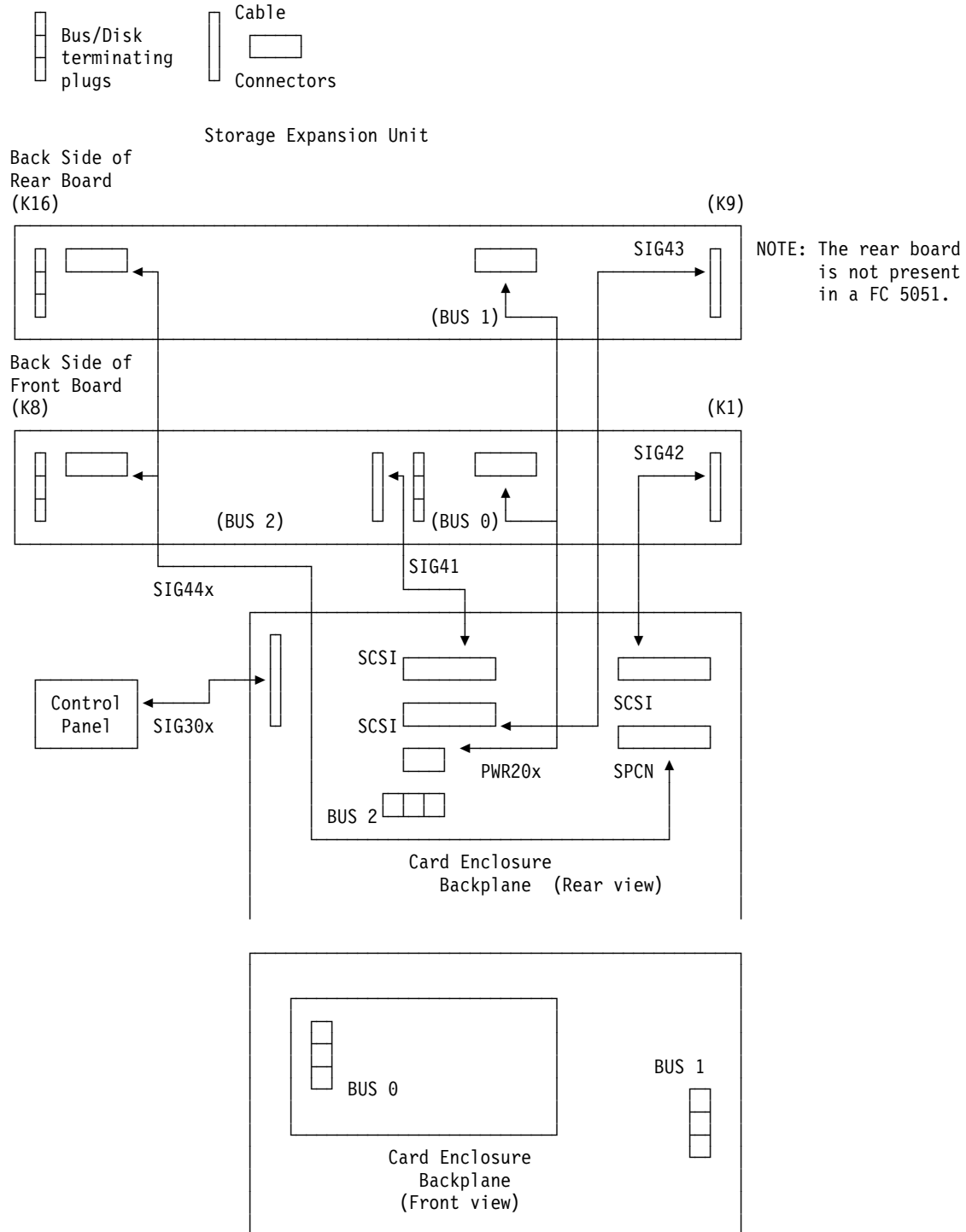


Figure 75. Storage Expansion Tower (FC 5080, 5082) with Storage Expansion Unit (FC 505x)

## Locations and Addresses

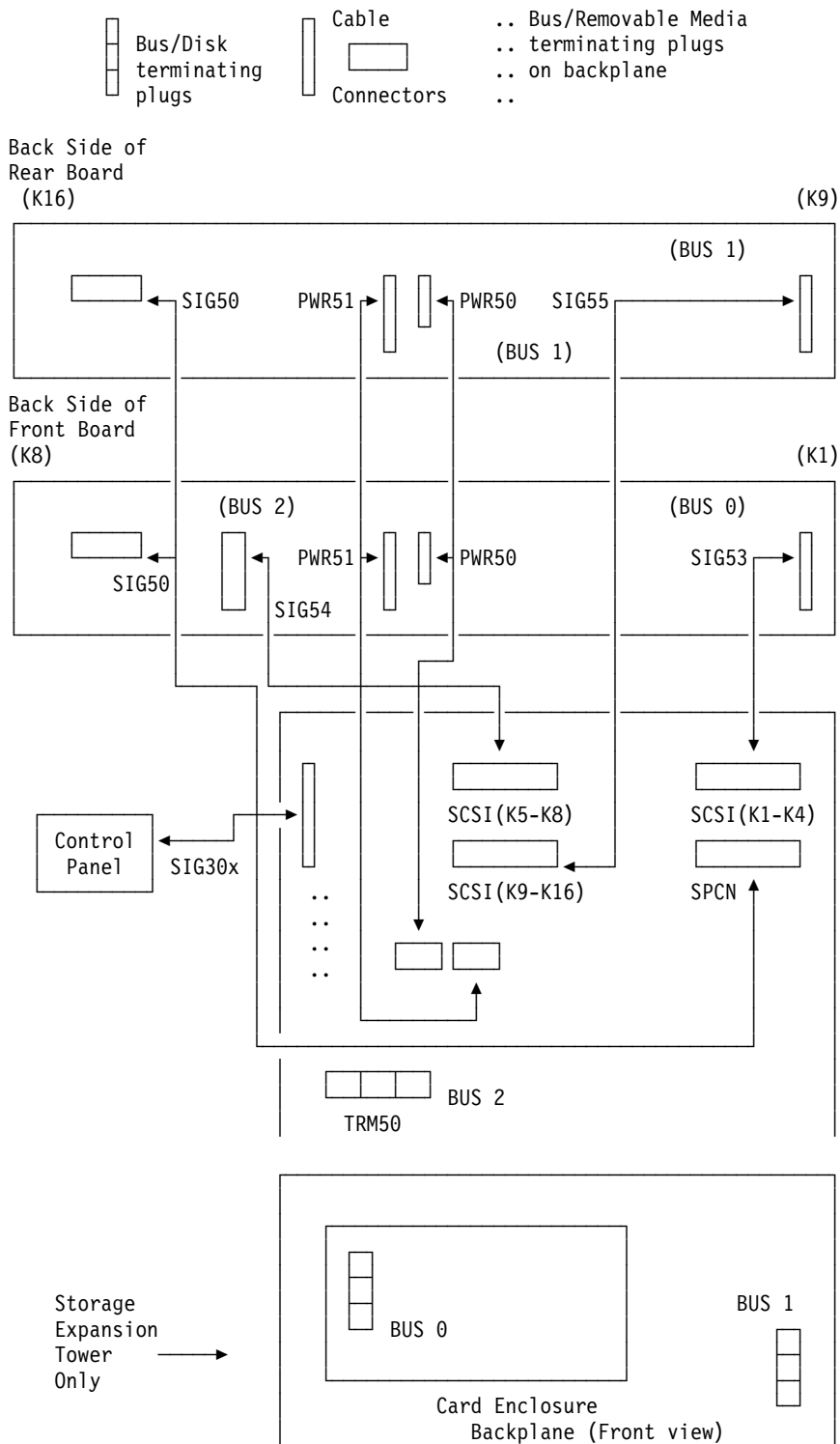


Figure 76. System Unit Expansion Tower (FC 5071, 5073) and Storage Expansion Tower (FC5081, 5083) with Storage Expansion Unit (FC 5058)

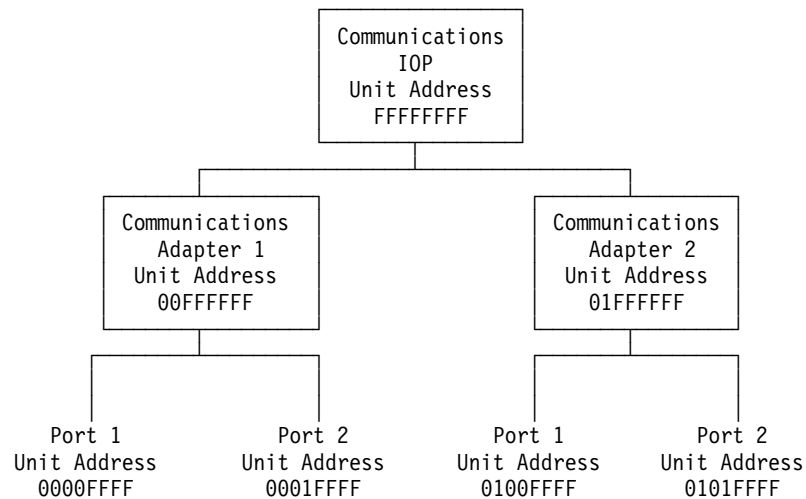
## I/O Bus Addressing Schemes

The unique schemes for each subsystem are described on the following pages.

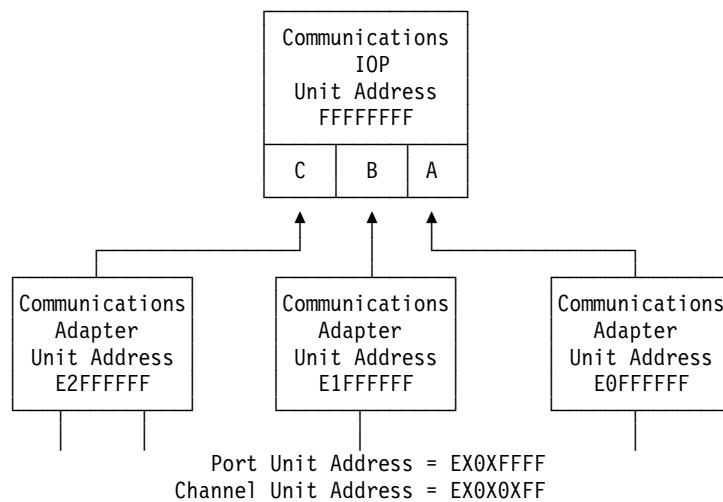
## Communications I/O Processor Unit Addressing Scheme

This example, for an SRC that is displayed on the control panel, shows a communications I/O processor with two I/O adapters and two ports.

When the system indicates the I/O processor, the 4 bytes of unit address (UA) for the I/O processor contain hex FFFFFFFF (the unit address points back to the I/O processor). For an I/O adapter, the first byte of the unit address is the I/O adapter number-1, the second through fourth, hex FFFFFF. For a port, the first byte is the I/O adapter number-1, the second byte is the port number-1 and the third and fourth, hex FFFF. For example, in the following hardware configuration, the communications I/O processor maps the unit addresses as follows:



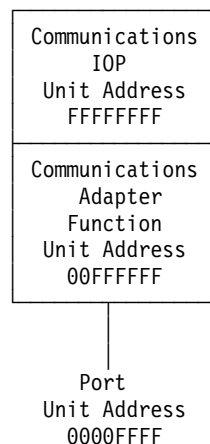
In the following example for an SRC that is displayed on the control panel, port 2 on the communications adapter would map its unit address as E201FFFF. The fourth channel from the communications adapter would map its unit address as E10004FF.



### Assignments for Local Area Networks

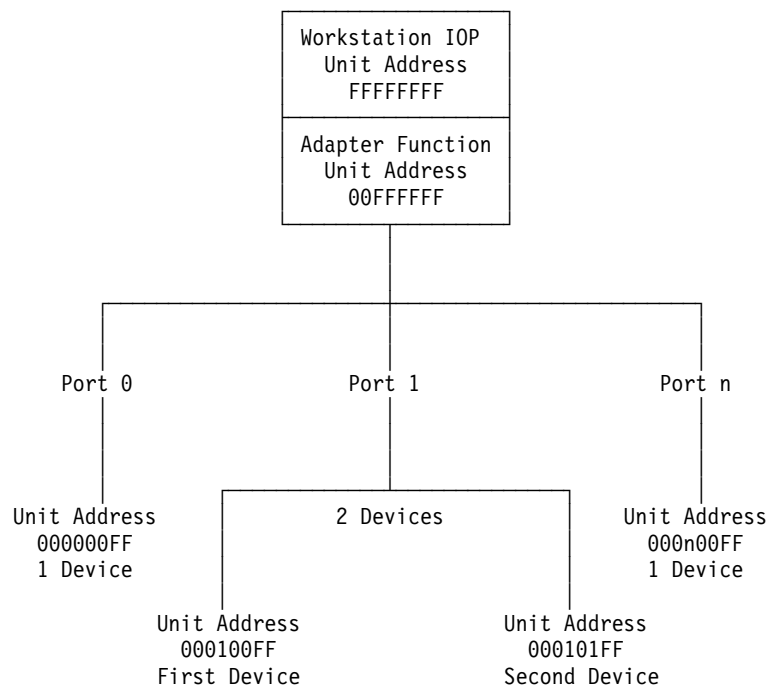
## Locations and Addresses

### Local Area Networks



## Twinaxial Workstation I/O Processor Unit Addressing Scheme

The example for a twinaxial workstation I/O processor SRC displayed on the control panel is described below. When the system indicates the I/O processor, the 4 bytes of unit address for the I/O processor always contain hex 00FFFFFF. The workstation I/O processor knows a device by its port and station address. So for a device, the first byte of the unit address is hex 00. The second byte is the port number (from 0 to 7). The third byte is the station address (from 0 to 6). The fourth byte is hex FF.

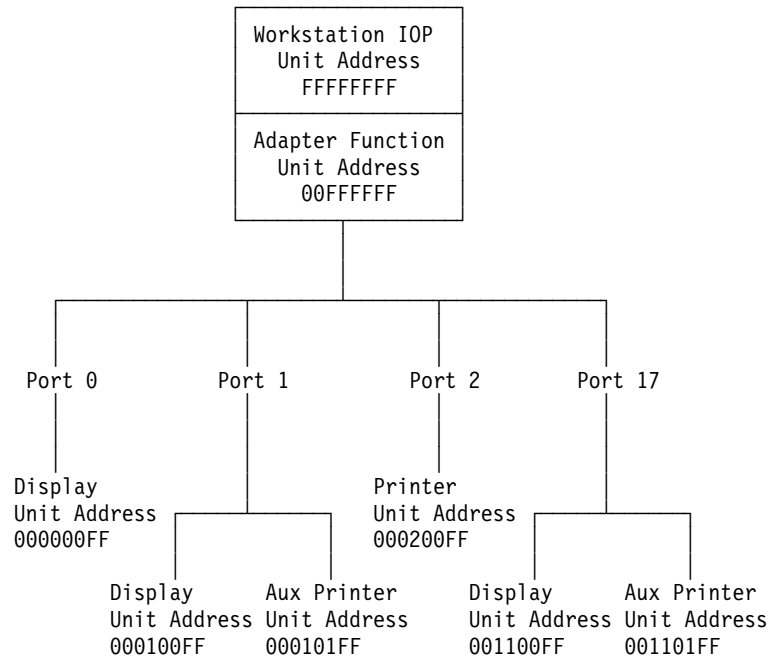


## ASCII Workstation I/O Processor Unit Addressing Scheme

The example for an ASCII workstation I/O processor SRC that is displayed on the control panel is described below. When the system indicates the I/O processor, the 4 bytes of unit address for the I/O processor always contain hex 00FFFFFF. The workstation I/O processor knows a device by its port and station address. So, for a device, the first byte of the unit address is hex 00. The second byte is the port



number (from 00 to 11). The third byte is the station address (from 00 to 01). The fourth byte is hex FF. The primary device always has a station address of 00. It may be a display or a printer (if attached through a modem, the primary device can only be a display). Each port may have an auxiliary printer attached if the primary is a display, and its station address is always 01. The ASCII workstation I/O processor maps the unit addresses as follows:



## SRC Address Formats

Use this section to determine the IOP, IOA or device address from either a control panel or a console display.

1. Was the SRC and addressing information obtained either from a control panel display or the Main Storage Dump Manager screen?

**No**      **Yes**

↓      Go to step 7 of this procedure.

2. Are you using the Service Action Log?

**No**      **Yes**

↓      Go to step 5 of this procedure.

3. Are you using OS/400 communication-diagnostic panels that are displayed by the commands VFYCMN, WRKPRB, or ANZPRB?

**No**      **Yes**

↓      Go to step 13 of this procedure.

4. Go to step 10 of this procedure.

5. Display the FRU details for the problem that you are attempting to fix. The location information in the field-replaceable unit detail is only available for IOPs, IOAs, and devices.

Is the field-replaceable unit an IOP, IOA, or device *and* is there location information in the Location field of the display?

## SRC Address Formats

No      Yes

↓      Use the location information and return to the procedure that sent you here.

6. Go to "Hexadecimal Product Activity Log Data" in the *AS/400 Service Functions* to obtain the address information. When that procedure instructs you to return to the previous procedure, return to step 8 of this procedure.
7. Addressing information is in the Bus-Bus-Bus-Bus/Card-card/board-board (BBBBCcbb) format as follows:
  - If the last 2 characters of function 12 (word 2) are 60:
    - The IOP address is in function 14 (word 4) in the format "BBBBCcbb".
    - The device address is the 8 characters of function 15 (word 5) in the format "abcd efgh".
  - If the last 2 characters of function 12 (word 2) are 13, 17, 27, or 29:
    - The IOP address is in function 13 (word 3) in the format "BBBBCcbb".
    - The device address is the 8 characters of function 14 (word 4) in the format "abcd efgh".
  - If the last 2 characters of function 12 (word 2) are 62:
    - The IOP address may be in function 17 (word 7) in the format "BBBBCcbb".
    - The device address may be the 8 characters of function 16 (word 6) in the format "abcd efgh".
8. The BBBBCcbb format is the hexadecimal direct select address of a card position in the system unit, expansion unit or expansion tower. The format definition is:
  - BBBB—System Bus
  - Cc—System Card
  - bb—System Board
9. Go to step 12 of this procedure for IOA and device address information.
10. Addressing information is in the Bus/Board/Card format.

**Note:** This format shows the system bus number in decimal form.

If no address information is available in the console error message, check the product activity log entry that is associated with the console error message. Figure 77 on page 769 is an example of a product activity log display for a storage device. Other devices (for example, workstations or communications) have similar displays. For more information about the product activity log, see "Product Activity Log" in *AS/400 Service Functions*.

| Display Address Information for Resource |               |             |               |               |
|------------------------------------------|---------------|-------------|---------------|---------------|
| Name                                     | Type          | Model       | Serial Number | Resource Name |
| Storage                                  | 6607          | 050         | 83-00834      | DD001         |
| Physical Location                        |               |             |               |               |
| Frame ID                                 | . . . . . : 1 |             |               |               |
| Device Position                          | . . . . : L01 |             |               |               |
| Logical Address:                         |               |             |               |               |
| SPD Bus:                                 |               | Storage:    |               |               |
| System Bus                               | . . . . . : 1 | I/O Adapter | . . . . . : 0 |               |
| System Board                             | . . . . . : 0 | I/O Bus     | . . . . . : 0 |               |
| System Card                              | . . . . . : 1 | Controller  | . . . . . : 1 |               |
|                                          |               | Device      | . . . . . : 0 |               |

Figure 77. Product Activity Log display example

In the above example, the contents of “Storage” are defined as follows:

#### Reference

##### Description

##### I/O Bus

This is the SCSI bus to which the device is connected.

##### I/O Adapter

This is the adapter that the I/O bus connects to on the I/O processor.

##### Controller

This is the logical controller for the addressed device.

##### Device

This is the *logical* device that is attached to the *logical* device controller.

11. Use Figure 78 on page 770 to understand how addresses in the Bus/Board/Card format relate to the Bus-Bus-Bus-Bus/Card-Card/Board-Board format. You can also use Figure 78 on page 770 to understand how addresses in the Bus/Board/Card format relate to the direct select addresses used in “System Unit and Expansion Unit Locations and Addresses” on page 712.

**Note:** When converting from Bus/Board/Card format to Bus-Bus-Bus-Bus/Card-Card/Board-Board format, the numbers must be converted from Decimal to Hexadecimal.

## SRC Address Formats

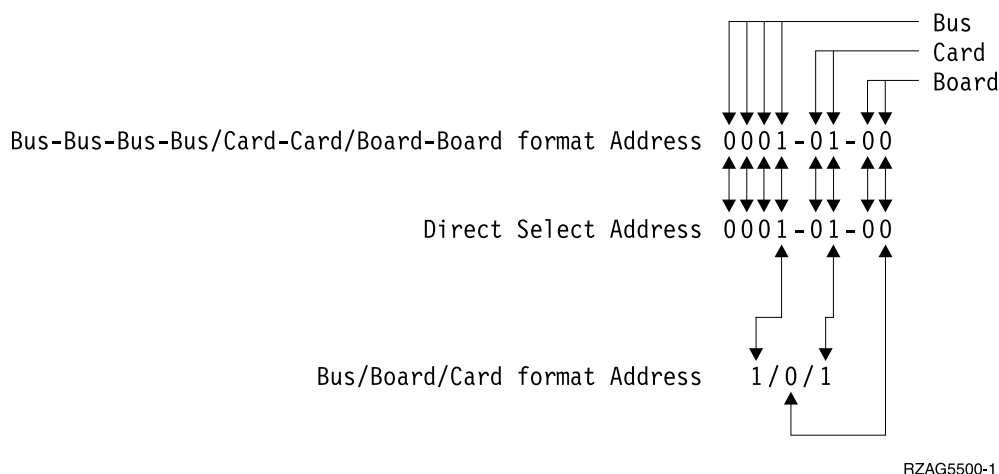


Figure 78. Format Conversion

12. Unit (Device) Address Definitions are explained in an “abcd efgh” format. For example, if the unit address is 0100 FFFF or 0001 00FF, the address relates to the “abcd efgh” format as follows:

Disk Unit example  
without I/O adapter  
(Address Type A)

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 0 | 1 | 0 | 0 | F | F | F | F |
| ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| a | b | c | d | e | f | g | h |

OR

Disk Unit example  
with I/O adapter  
(Address Type B)

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 1 | 0 | 0 | F | F |
| ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| a | b | c | d | e | f | g | h |

Note: Type A IOPs that do not have the additional adapter addressing are 2621, 2624, 2644, 6112, 6500, 6501, 6502, 6512, 6513, 6530, 916x, and 918x. All other IOPs or storage adapters have the additional adapter addressing and use the Type B address format.

The characters “abcd efgh” can have different meanings, depending on the subsystem that reports the problem. However, they define the information that is contained in the unit (device) address as follows:

### Communications

|           |         |
|-----------|---------|
| <b>a</b>  | I/O Bus |
| <b>b</b>  | Adapter |
| <b>c</b>  | 0       |
| <b>d</b>  | Port    |
| <b>e</b>  | 0       |
| <b>f</b>  | Channel |
| <b>gh</b> | FF      |

### Disk, Tape, or Optical without I/O adapter address (Type A)

|             |            |
|-------------|------------|
| <b>a</b>    | I/O Bus    |
| <b>b</b>    | Controller |
| <b>c</b>    | 0          |
| <b>d</b>    | Device     |
| <b>efgh</b> | FFFF       |

## SRC Address Formats

### Workstation

|           |         |
|-----------|---------|
| <b>a</b>  | I/O Bus |
| <b>b</b>  | Adapter |
| <b>cd</b> | Port    |
| <b>e</b>  | 0       |
| <b>f</b>  | Device  |
| <b>g</b>  | 0       |
| <b>h</b>  | Session |

### Disk, Tape, or Optical with I/O adapter address (Type B)

|           |             |
|-----------|-------------|
| <b>a</b>  | I/O Adapter |
| <b>b</b>  | I/O Bus     |
| <b>cd</b> | Controller  |
| <b>ef</b> | Device      |
| <b>gh</b> | FF          |

**Note:** If the unit (device) address appears as FFFF FFFF, the address cannot be determined.

13. OS/400 communication-diagnostic panels that are displayed by the commands VFYCMN, WRKPRB, and ANZPRB use the following address format:

**x1 x2 x3x4**

Table 34. Decimal Address Values

| Value                        | Description                                                                                                                                                                                    |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>x1</b> = System bus       | The one, two or three digit decimal representation of the hexadecimal <b>Bus</b> value of the <b>Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address</b> at the top of Figure 78 on page 770. |
| <b>x2</b> = System board     | The one or two digit decimal representation of the hexadecimal <b>Board</b> value of the <b>Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address</b> at the top of Figure 78 on page 770.      |
| <b>x3</b> = System card      | The one or two digit decimal representation of the hexadecimal <b>Card</b> value of the <b>Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address</b> at the top of Figure 78 on page 770.       |
| <b>x4</b> = Adapter location | The one or two digit decimal representation of the hexadecimal <b>b Adapter</b> value of the <b>Communications unit address</b> value in step 12 on page 770.                                  |

Return to the information that sent you to this procedure.

This ends the procedure.

## Hardware SRC Formats

Table 35. SRC format examples (other formats exist; if necessary contact your next level of support)

| SRC word number | Panel Function | IOP SRC Format 13 | IOP SRC Format 17 | Device SRC Format 27 | LIC SRC Format 60 | LIC SRC Format 61 | LIC SRC Format 62 | LIC SRC Format 63 |
|-----------------|----------------|-------------------|-------------------|----------------------|-------------------|-------------------|-------------------|-------------------|
| 1               | 11             | TTTT<br>RRRR      | TTTT<br>RRRR      | tttt rrrr            | A6xx<br>RRRR      | B6xx RRRR         | ww00<br>RRRR      | A600<br>RRRR      |
| 2               | 12             | MIGV<br>EP13      | MIGV<br>EP17      | MIGV<br>EP27         | MIGV<br>EP60      | MIGV<br>EP61      | MIGV<br>EP62      | MIGV<br>EP63      |
| 3               | 13             | BBBB<br>Cbbb      | BBBB Cbbb         | BBBB Cbbb            | PPPP 0000         | cccc cccc         | cccc cccc         | AAAA<br>BBBB      |

## SRC Address Formats

Table 35. SRC format examples (other formats exist; if necessary contact your next level of support) (continued)

| SRC word number | Panel Function | IOP SRC Format 13 | IOP SRC Format 17 | Device SRC Format 27 | LIC SRC Format 60 | LIC SRC Format 61 | LIC SRC Format 62 | LIC SRC Format 63 |
|-----------------|----------------|-------------------|-------------------|----------------------|-------------------|-------------------|-------------------|-------------------|
| 4               | 14             | aaaa<br>aaaa      | aaaa aaaa         | aaaa aaaa            | BBBB Ccbb         | pppp pppp         | pppp pppp         | CCCC<br>DDDD      |
| 5               | 15             | TTTT<br>LMMM      | TTTT<br>LMMM      | tttt lmmm            | aaaa aaaa         | qqqq qqqq         | RRRR rrrr         | EEEE FFFF         |
| 6               | 16             | uuuu<br>uuuu      | tttt lmmm         | TTTT<br>LMMM         | tttt mmmm         | qqqq qqqq         | aaaa aaaa         | GGGG<br>HHHH      |
| 7               | 17             | uuuu<br>uuuu      | ZZZZ rrrr         | ZZZZ<br>RRRR         | ssss ssss         | 0000 0000         | BBBB Ccbb         | JJJJ KKKK         |
| 8               | 18             | uuuu<br>uuuu      | ssss ssss         | ssss ssss            | NNNN<br>0000      | 0000 0000         | tttt lmmm         | TTTT<br>0MMM      |
| 9               | 19             | uuuu<br>uuuu      | uuuu uuuu         | uuuu uuuu            | 0000 0000         | 0000 0000         | ZZZZ<br>ZZZZ      | SSSS SSSS         |

For further definition of the “Logical Address Format” - see *AS/400 Service Functions* “Logical Address Format” information.

### AAAA

Type of I/O Bus (see Logical Address Format - field 'A')

**aaaa** Unit address

**BBBB** System Bus Number (see Logical Address Format - field 'B')

### BBBBCcbb

Bus, bus, bus, bus, card, card, and board, board address (Direct Select Address or DSA)

**CCCC** System Board Number (see Logical Address Format - field 'C')

### cccc cccc

Component reference code. Format 62 varies by component.

### DDDD

System Card Number (see Logical Address Format - field 'D')

**EEEE** (see Logical Address Format - Unit Address type - field 'E')

**FFFF** (see Logical Address Format - Unit Address data - field 'F')

### GGGG

(see Logical Address Format - Unit Address data - field 'G')

### HHHH

(see Logical Address Format - Unit Address data - field 'H')

**JJJJ** (see Logical Address Format - Unit Address data - field 'J')

### KKKK

(see Logical Address Format - Unit Address data - field 'K')

### 0MMM

Model number of failing device (i.e. MMM='001')

### SSSSSSSS

System Reference Code - this SRC is used to determine why the primary console failed to respond.

|                  |                                                               |
|------------------|---------------------------------------------------------------|
| <b>PPPP</b>      | Cause code                                                    |
| <b>Immm</b>      | Level indicator plus 3"digit model number of failing device   |
| <b>LMMM</b>      | Level indicator plus 3"digit model number (for example, 0001) |
| <b>MIGV EP</b>   | General system status.                                        |
| <b>NNNN</b>      | Number of disk device facilities that are missing             |
| <b>PPPP PPPP</b> | Programming reference code                                    |
| <b>qqqq qqqq</b> | Programming reference code qualifier                          |
| <b>rrrr</b>      | Outboard failing unit reference code (URC)                    |
| <b>RRRR</b>      | Unit reference code (URC)                                     |
| <b>ssss</b>      | Serial number of failing unit                                 |
| <b>tttt</b>      | Outboard failing unit type number (for example, 6607)         |
| <b>TTTT</b>      | Type number or card identification number (hex)               |
| <b>uuuu</b>      | Unit-specific data                                            |
| <b>ww</b>        | SRC type                                                      |
| <b>ZZZZ</b>      | Reserved                                                      |

**Note:** Function 20-3 displays the machine type (940x), model number, and processor feature code.

---

## Reclaim IOP Cache Storage

1. If you are not already using dedicated service tools, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information). If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
2. Reclaim the cache adapter card storage by doing the following:  
Did you get to DST with a Type D IPL?  
**Yes      No**  
↓      Go to step 2d of this procedure.
  - a. Select the *Work with disk units* option.
  - b. Select the *Reclaim IOP cache storage* option.
  - c. Follow the on-line instructions to reclaim cache storage. The system will Automatically perform an IPL to a Disk Configuration Warning Report screen. Take the option to display the report. Because the Reclaim Cache Storage was selected after a D-IPL, the system will now require another Reclaim Cache Storage to be performed.
  - d. Select the *Work with disk units* option.
  - e. Select the *Work with disk unit recovery* option.
  - f. Select the *Reclaim IOP Cache Storage* option.
  - g. Follow the on-line instructions to reclaim cache storage. Depending on the reason for performing the Reclaim IOP Cache procedure, there may be a

## Reclaim Storage

message requiring the ASP be cleared before performing this option, or a message stating the number of lost sectors.

**Note:** If there are lost sectors, some objects may be damaged. The customer may have to load the damaged objects again. (see the *Backup and Recovery* for more information.)

**Note:** When Reclaim IOP Cache Storage is performed on the MFIOIP, the MFIOIP will perform a Reset/Reload which causes CXXX XXXX codes to be displayed on the system control panel. The DST console will then have a blank screen with 01 B displayed on the system control panel for up to 15 minutes. This will be followed by SRC A600 5082 on the system control panel. When the SRC A600 5082 is displayed, Function 21 must be performed to recover the DST console. DO NOT perform any type of System power down or IPL before doing the Function 21.

This ends the procedure.

---

## Storage I/O Card Modes and Jumpers

The 2748 I/O card can run in either Compression mode or Enhanced mode. The tailstock of the I/O card is marked with a C, indicating compression mode, and an E, indicating enhanced mode. Three pins on the tailstock determine the mode of the card, depending on which of the pins have a jumper placed on them.

You can determine and set the mode of the I/O card by locating the three pins on the card's tailstock.

You can also switch the mode of the I/O card by changing the location of the jumper on the card's tailstock.

The jumper may be moved at any time, but changes only take effect during a system IPL.

When an error regarding the mode of the Storage I/O card appears, the error message indicates whether the jumper is missing or overridden.

- If the error message is CPPEA20, the I/O card has overridden the mode set by the jumper. See Mode Jumper has been Overridden.
- If the error message is CPPEA21, the I/O card has detected that the jumper is missing. See Mode Jumper is Missing.

## Determining and Setting the Mode of an I/O Card

The 2748 I/O Card supports two modes, compression and enhanced.

### Mode Description

#### Compression Mode

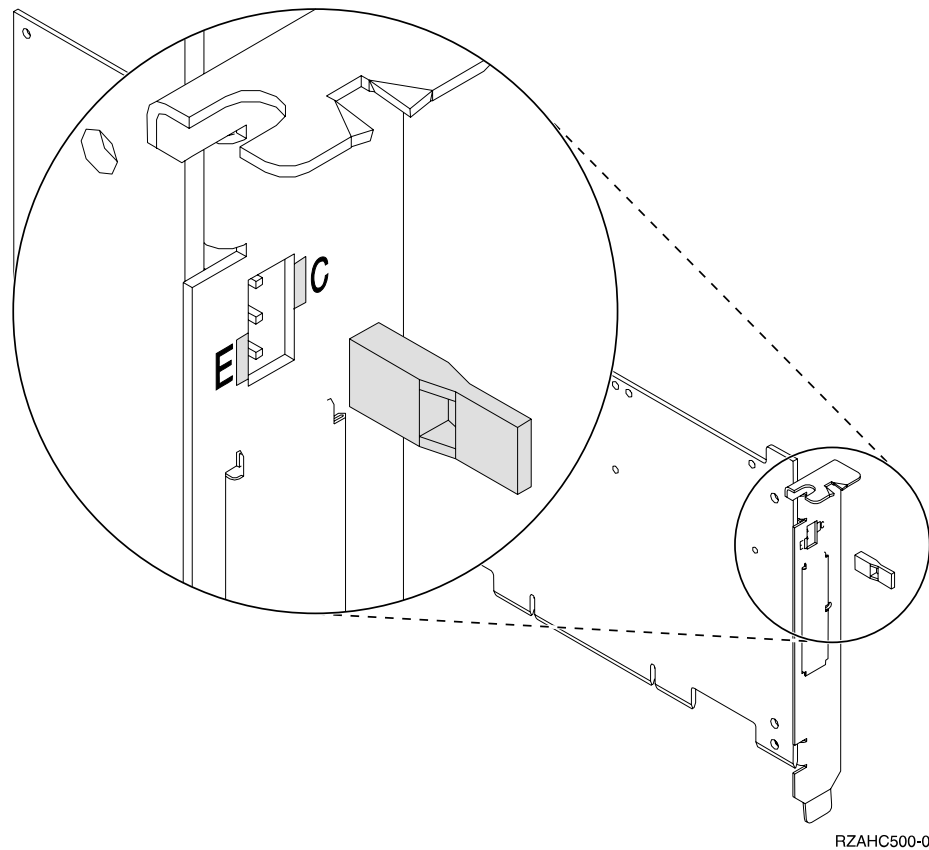
Compression mode should only be used when you wish to run Integrated Hardware Disk Compression. In compression mode, the write cache size is 4MB.

#### Enhanced Mode

Enhanced mode has an enhanced write cache size. In Enhanced mode, the write cache size is 26MB. Enhanced mode also provides support for Extended Adaptive Cache (via attachment of a Read Cache Device) and Extended Adaptive Cache Simulator.



Refer to the illustration below while performing this procedure.



Set the mode of the card to Compressed (C) by placing the jumper on the top and middle pins. Set the mode of the card to Enhanced (E) by placing the jumper on the middle and bottom pins.

## Switching the Mode of an I/O Card

If the mode jumper is not in the desired position (See Determining and Setting the Mode of an I/O Card) do the following:

1. Power off the system, ensuring that no jobs are currently processing. (See "Starting and Stopping the System" in Chapter 1 of *Basic System Operation, Administration, and Problem Handling*).
2. Move the mode jumper to the position that is desired. See Determining and Setting the Mode of an I/O Card.

**Note:** The mode jumper is accessible without requiring the removal of the I/O Card.

3. Select the IPL type and mode.
4. Power on the system.

## Mode Jumper has been Overridden

The error message **CPPEA20** appears when the mode jumper has been overridden. This is due to cache data that is in a conflicting mode.

To begin correcting this error, examine the mode jumpers in the tailstock section of the Storage I/O card.

## Reclaim Storage

If the mode jumper is not in the desired position(See Determining and Setting the Mode of an I/O Card), do the following:

1. Power off the system, ensuring that no jobs are currently processing. (See "Starting and Stopping the System" in Chapter 1 of *Basic System Operation, Administration, and Problem Handling*).
2. Move the mode jumper to the position that is desired. See Determining and Setting the Mode of an I/O Card.

**Note:** The mode jumper is accessible without requiring the removal of the I/O Card.

3. Select the IPL type and mode.
4. Power on the system.

**This ends the procedure.**

If the mode jumper is in the desired position and any other I/O card or device SRCs occurred at about the same time as this error, Contact your IBM service center.

If the mode jumper is in the desired position and no other I/O card or device SRCs occurred at about the same time as this error, then power the system down normally and IPL (see "Starting and Stopping the System" in Chapter 1 of *Basic System Operation, Administration, and Problem Handling*).

## Mode Jumper is Missing

The error message **CPPEA21** appears when the mode jumper is missing from the Storage I/O card.

1. Locate the jumper.
2. Power off the system (see "Starting and Stopping the System" in Chapter 1 of *Basic System Operation, Administration, and Problem Handling*).
3. Install the jumper in the correct position (see "Determining and Setting the Mode of an I/O Card" on page 774).
4. Power on the system.

**This ends the procedure.**

---

## Manually Removing the Tape Cartridge

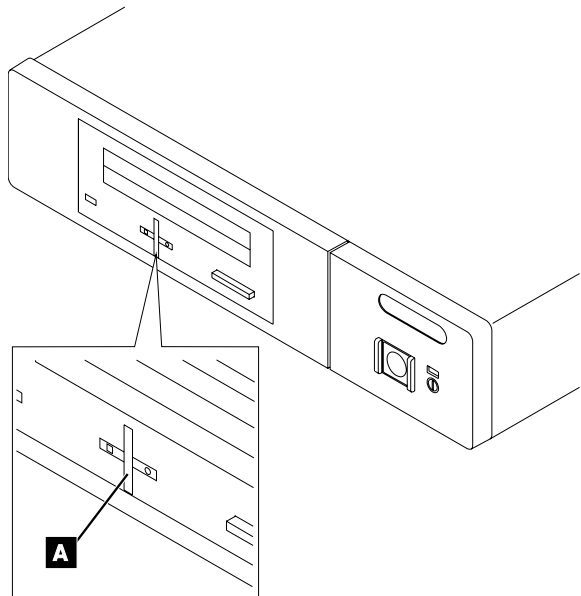
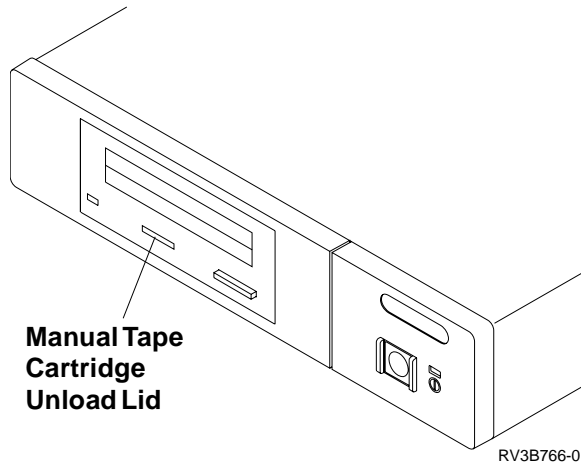
### 1/4 inch Tape Cartridge (Type 6335)

**Attention:** This procedure is very delicate and may damage or destroy the tape cartridge. Use this procedure only when you have attempted the other options for removing the tape cartridge.

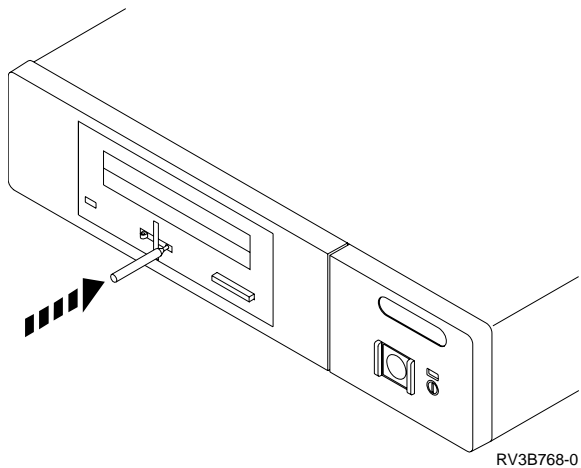
The following procedure describes how to remove a tape cartridge manually from an internal 1/4 inch tape unit. This procedure may be required if a defective tape cartridge or tape unit has caused the cartridge ejection function to fail. The procedure may also be needed if the data on the tape cartridge is either critical or sensitive and the customer can not afford its loss.

1. Power off the tape unit.
2. Carefully lift and turn the manual tape cartridge unload lid **A**.

## Removing Tape Cartridge

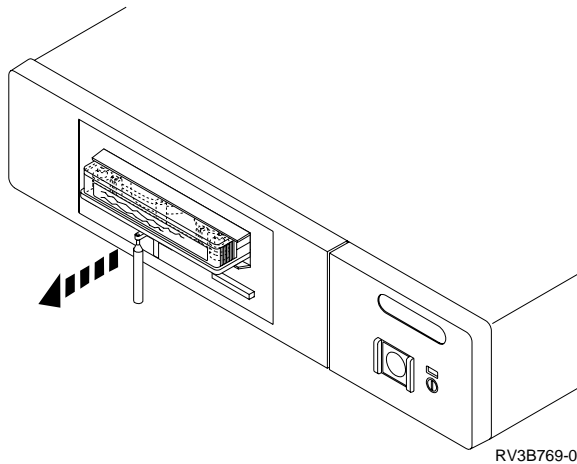


3. Insert a solid metal rod (like a bristol wrench) into the manual tape cartridge unload hole and push in until it stops and the arm appears.



## Removing Tape Cartridge

4. Pull the arm out until it stops. Insert the solid metal rod into the hole of the arm and pull out until the tape cartridge comes out.



5. Remove the tape cartridge.
6. Push the arm back in until it stops, turn the manual tape cartridge lid back to the starting position and push it back in place.

## 6383, 6385, 6386 Tape Cartridge

**Attention:** This procedure is very delicate and may damage or destroy the tape cartridge. Use this procedure only when you have tried the other options for removing the tape cartridge.

The following procedure describes how to remove a tape cartridge manually from a 6383, 6385, or 6386 tape unit. You may need this procedure if a power failure or tape unit failure prevent the tape cartridge from ejecting.

The procedure for removing a tape cartridge varies for the following two conditions:

- Standby position - with the bridge moved away from the cartridge.
- Locked position - with the bridge engaged to the cartridge.

To determine which position the tape unit is in, open the tape unit door and check the location of the bridge.

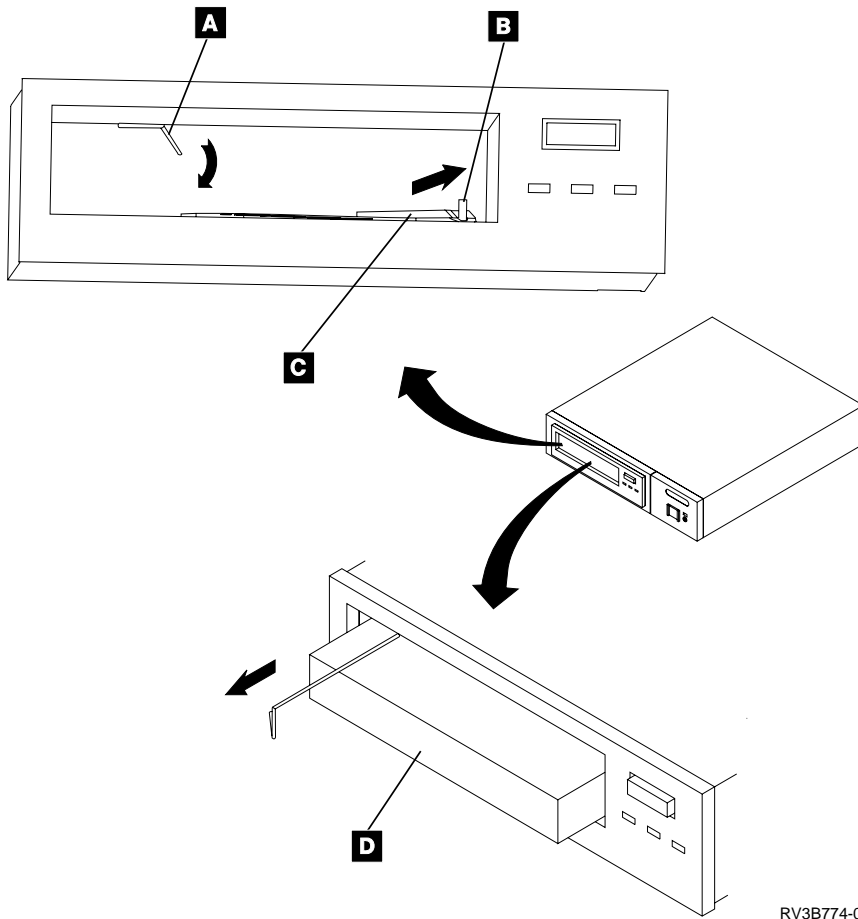
### Locked Position

1. Power off the tape unit.
2. Open the tape unit door.
3. Locate the metal axle **B** inside the tape unit. Look towards the lower right corner.
4. Insert a pointed object (like a pen or screwdriver) into the tape unit and push the axle inward.
5. Push the bridge **C** to the right.

The tape unit is now in standby position. Continue with "Standby Position" on page 779.

### Standby Position

1. Power off the tape unit.
2. Open the tape unit door.
3. Locate the hook shaped metal rod **A** inside the tape unit in the upper left corner.
4. Insert a pointed object (like a pen or screwdriver) into the tape unit and push the metal rod downward.
5. Pull the metal rod forward until the cartridge ejects.  
The cartridge **D** is pushed out the tape unit door and can be removed.



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### 8-mm Tape Cartridge (6390)

**Attention:** This procedure is very delicate and may damage or destroy the tape cartridge. Use this procedure only when you have attempted the other options for removing the tape cartridge.

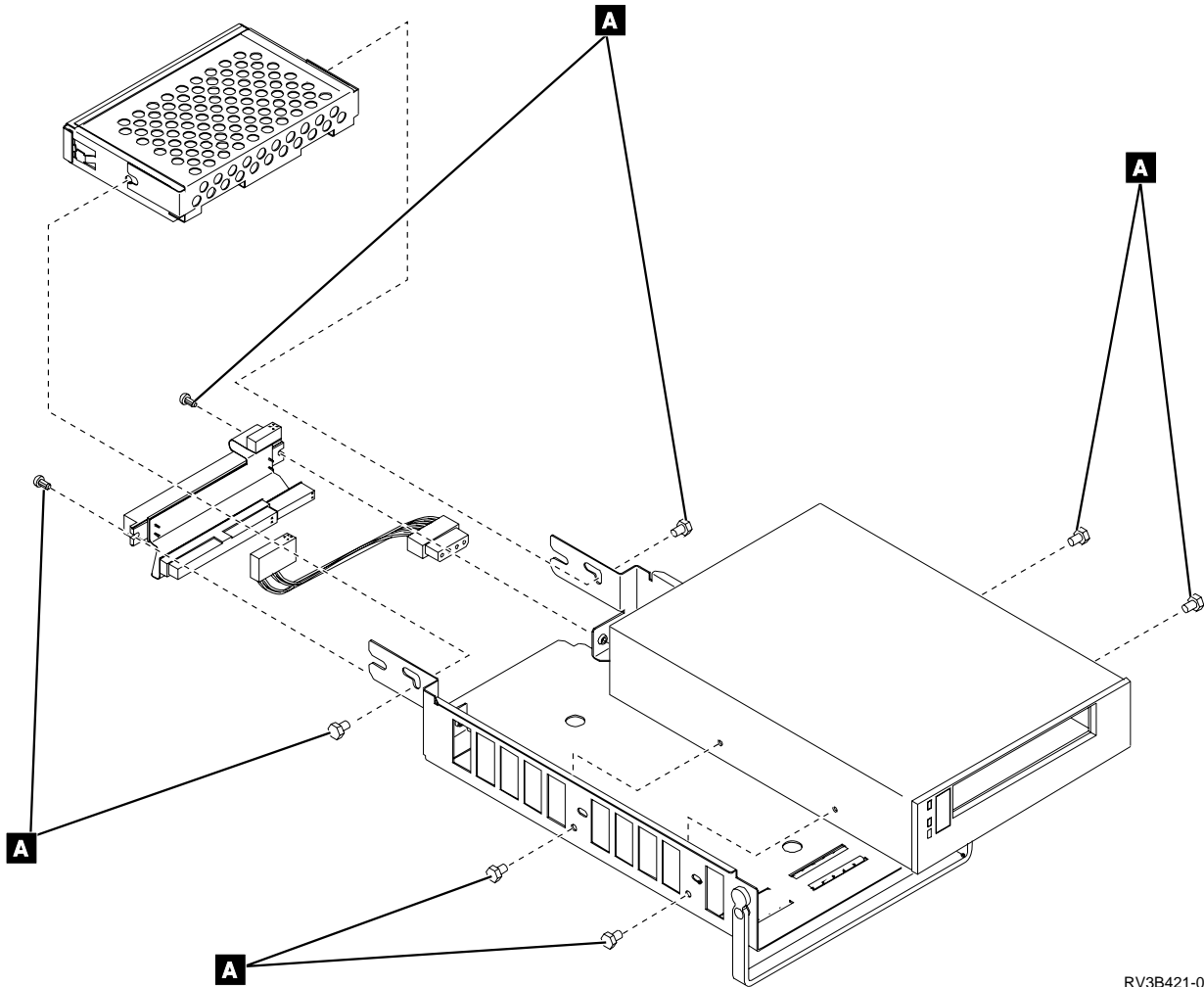
The following procedure describes how to remove a tape cartridge manually from an internal 8-mm tape unit. This procedure should be used if a defective tape cartridge or tape unit has caused a failure of the tape ejection function. The procedure should also be used if the data on the tape cartridge is critical or sensitive and the customer can not afford its loss.

1. Is the 8-mm tape drive in a tray as shown below?

Yes      No

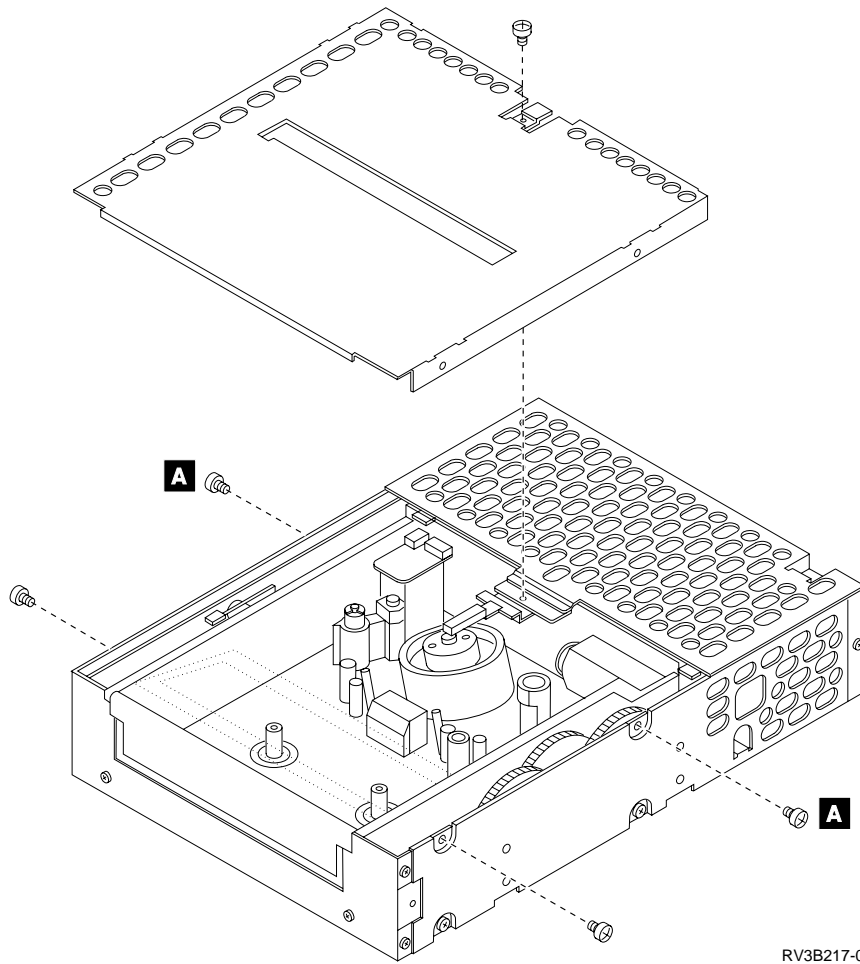
## Removing Tape Cartridge

- ↓ Go to step 4 of this procedure.
2. Remove the tape unit from the system (see “Chapter 6. Removal and Installation Procedures” on page 821).
  3. Remove the screws **A** to remove the tape drive from the tape tray.



4. Remove the screws from the top cover of the drive assembly. Screws **A** may not be present.

## Removing Tape Cartridge



5. Inspect the tape and tape cartridge. There are two positions for the tape:
- If a tape is unloaded correctly, it is tight across the opening of the tape cartridge as shown. It should not touch any tape guides in the drive assembly.
  - Loaded (touching) on the tape guides.

Is the tape unloaded correctly?

**No**      **Yes**

↓      Go to step 9 of this procedure.

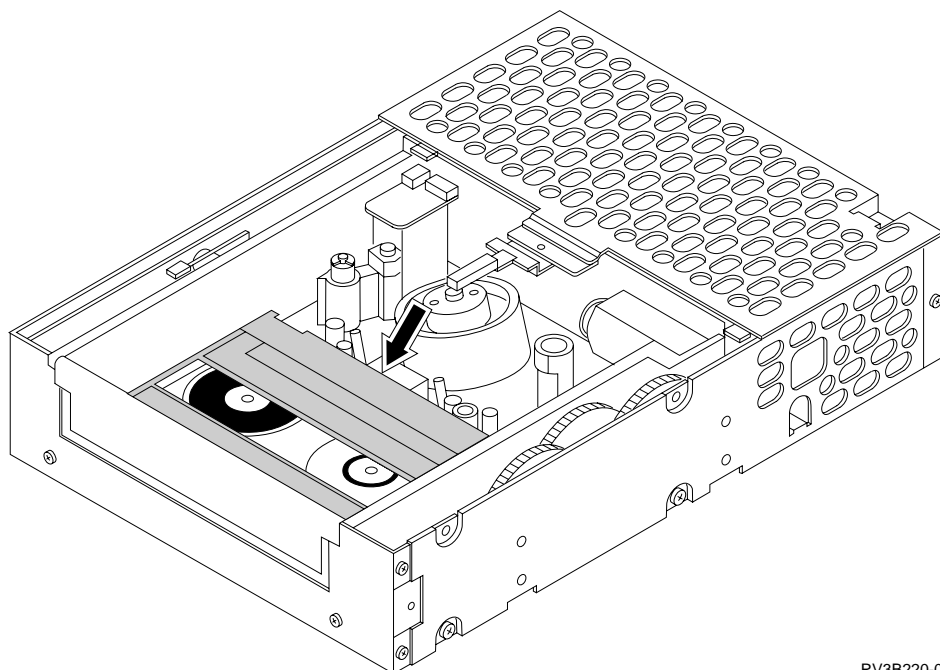
6. The drive assembly may need assistance to unload the tape. Two options are available:
- Cutting the tape  
To perform this option, continue with step 7 of this procedure.
  - Using manual actions to unload the tape from the tape guides  
To perform this option, go to step 8 of this procedure.

**Note:** The instructions listed in step 7 of this procedure may damage the tape and can result in data loss from that tape cartridge. The customer should be made aware of this possibility before these procedures are attempted.

7. **Attention:** The following step will destroy the data and the tape cartridge.

## Removing Tape Cartridge

Cut the tape at a convenient location. Go to step 9 of this procedure to remove the tape cartridge from the drive assembly.



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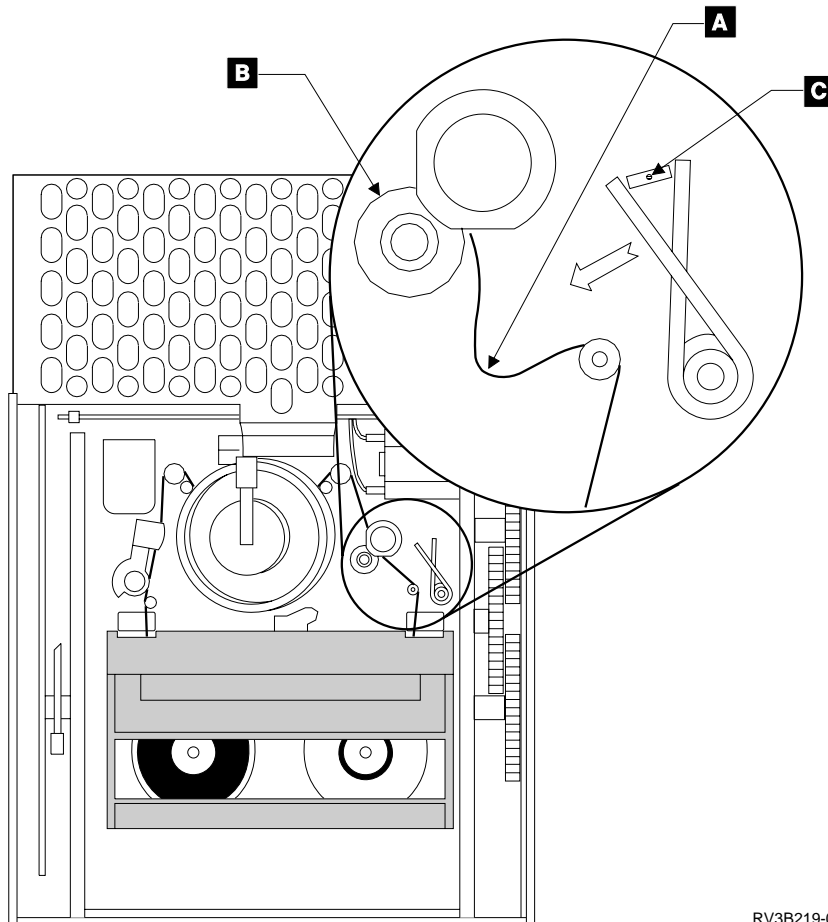
### 8. Perform the following:

- a. Loosen the tape as shown **A**. Make sure not to damage or crease the tape. If the pinch roller **B** is engaged, push the pinch roller spring bracket as shown **C**. This releases the pinch roller and provides a gap from which the tape can be removed.

**Note:** Use a smooth, clean, rounded tool to loosen and lift the tape off the tape guides.



## Removing Tape Cartridge



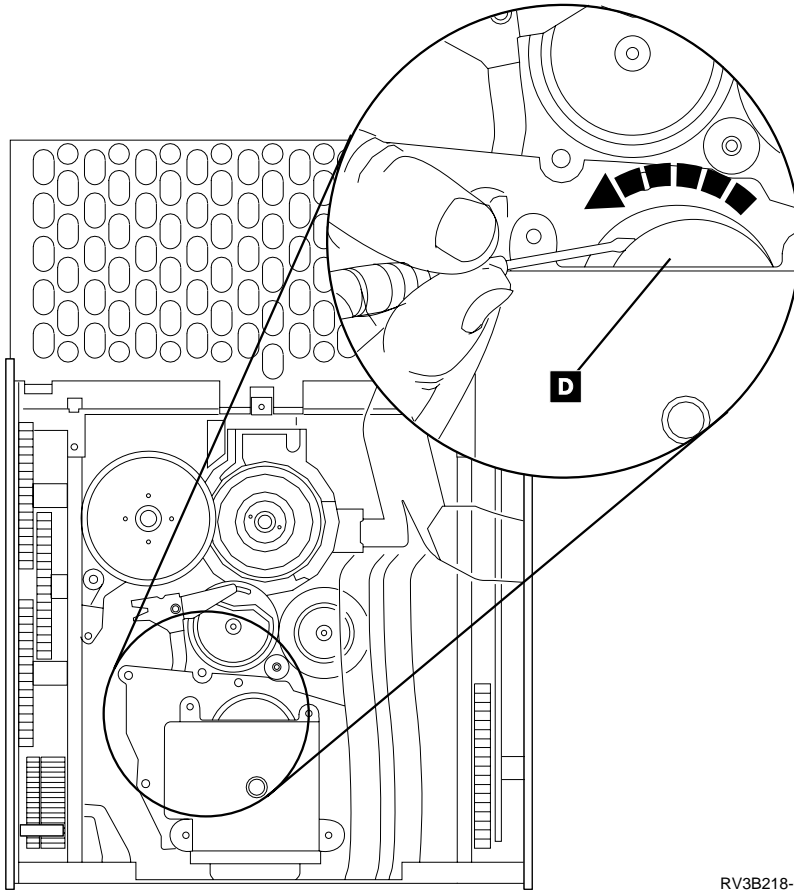
RV3B219-0

- b. Turn the drive assembly over. Remove the five screws from the bottom cover of the drive assembly. These screws are similar to the screws on the top cover.
- c. Wind the tape into the tape cartridge by following these steps:
  - 1) Using a small screwdriver, push and hold the reel motor gear **D** to the right as far as possible.
  - 2) Rotate the reel motor gear counter-clockwise while also maintaining pressure by holding the gear to the right.
  - 3) Continue to rotate the gear until all of the tape is wound into the tape cartridge and the tape is tight across the opening.

**Note:** Make sure that the tape does not catch on the guide pins.

- d. Continue with the next step of this procedure.

## Removing Tape Cartridge

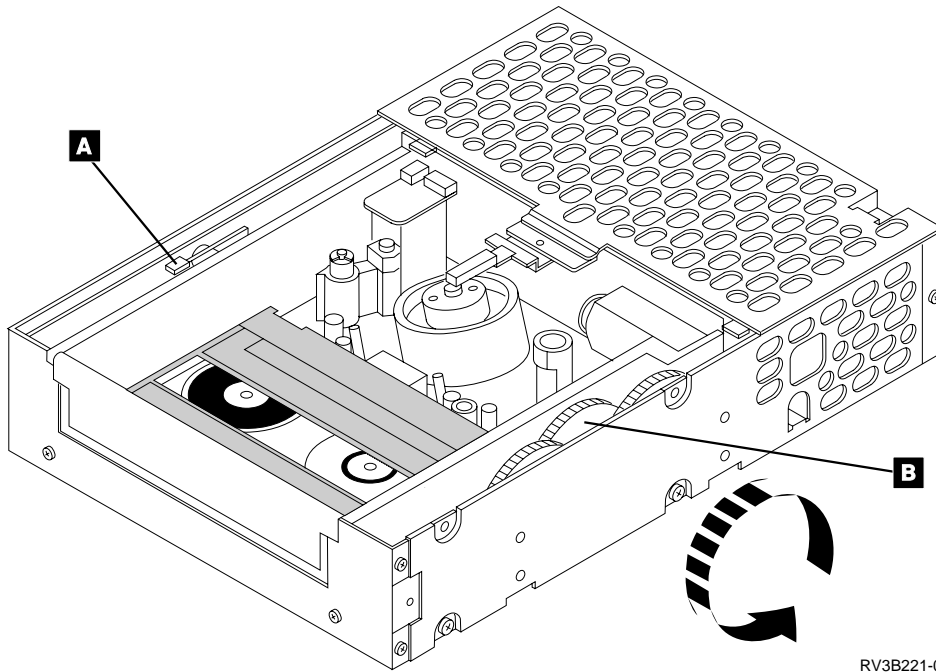


RV3B218-0

9. Find the lock release tab **A** and the cassette loading gear **B**.
10. Using your index finger, gently press down the lock release tab until it clicks.
11. Using the thumb of your other hand, roll the cassette loading gear toward the front of the drive assembly until the tape cartridge is ejected.

**Note:** Removed cartridges should not be reused.

**This ends the procedure.**



### Important Continuously Powered Main Storage (CPM) Information

**Attention:** Component damage will occur if processor, main storage, or regulators are removed with Continuously Powered Main Storage (CPM) enabled.

With CPM enabled due to a loss of ac voltage (utility power failure), the batteries supply power to the main storage cards even with the system powered off.

Performing repair actions without disabling CPM causes system hardware failures.

Disabling CPM incorrectly causes the loss of data in main storage.

See SPCN-PIP5 for the correct procedure to disable CPM.

### Important Cryptographic I/O Processor Information

**Attention:** The type 2620 or type 2628 cryptographic I/O processor should not be removed or disconnected except by qualified IBM service personnel. Performing this action *for any reason* causes the loss of the primary encryption key.

Before disconnecting or removing the cryptographic I/O processor, ensure that the customer has access to a record of the primary encryption key. After any service action that involves disconnecting or removing the processor, the customer must reinstall the primary encryption key. This is the only way that the customer can access the data encryption function. Refer the customer to this document for more information:

*IBM Common Cryptographic Architecture Services/400 Installation and Operating Guide, SC41-0102*

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### Setting the System Date and Time

See *AS/400 Service Functions* for information about setting system date and time.

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### Hexadecimal Product Activity Log Data

See *AS/400 Service Functions* for information about the Hexadecimal Product Activity Log.

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### Determining the Primary and Alternate Console

If you are looking for the primary or the alternate console on a secondary partition, then go to “Locating a Secondary Partition’s Console” on page 811. Otherwise, continue with this procedure.

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

Compare the following list of cards with the cards in your system. The first match you find will be the primary console. The second match you find will be the alternate console.

**Note:** If the alternate console is a 2720 or a 2722 card, and there is a workstation at port 1 address 0, then the port 1 address 0 workstation is an alternate console. In this case, there can be a second alternate console. The second alternate console will be the next match on the list.

|      |                                              |
|------|----------------------------------------------|
| 2721 | with Client Access Console cable in slot C09 |
| 2745 | with Client Access Console cable in slot C09 |
| 2720 | in slot C09 (port 0 address 0)               |
| 2722 | in slot C08 (port 0 address 0)               |
| 2746 | in slot C08 (port 0 address 0)               |
| 2722 | in slot C10 (port 0 address 0)               |
| 2746 | in slot C10 (port 0 address 0)               |
| 2721 | with Client Access Console cable in slot C08 |
| 2745 | with Client Access Console cable in slot C08 |
| 2720 | in slot C08 (port 0 address 0)               |
| 2721 | with Client Access Console cable in slot C10 |
| 2745 | with Client Access Console cable in slot C10 |
| 2720 | in slot C10 (port 0 address 0)               |

Client Access Console Cable PN is 44H7504.

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### Determining the Load-Source Disk and Alternate IPL Device

#### Introduction

If you have a system configuration list that shows the load-source disk unit and the alternate IPL device, use that information. If you do not, use the following

information and, when found, make a note of the locations (see “System Unit and Expansion Unit Locations and Addresses” on page 712).

### Finding the Load-Source Disk on Systems without Mirrored Protection

The load-source disk is disk unit drive 1 in the system unit. It is attached internally to the storage device IOP function on the multiple function I/O processor (MFIOP).

### What You Should Know about Load-Source Disks on Systems with Mirrored Protection

If the AS/400 system ASP (ASP1) has mirrored protection, it has two load-source disks. These disks are equals and contain the same data. The AS/400 can use either disk as its source for IPL data; it uses the disk that first reports to the service processor. The system starts the IPL with this device and later synchronizes the second load-source disk with the first.

If the first load-source disk fails after the Licensed Internal Code determines that the system has mirrored protection, the Licensed Internal Code performs the IPL by using the second load-source disk.

If the first load-source disk fails before the Licensed Internal Code determines that the system has mirrored protection, the IPL stops with an SRC displayed.

If the system starts the IPL on a load-source disk that contains defective data, the Licensed Internal Code attempts to start the IPL from the second load-source disk. If the second attempt fails, the IPL stops with an SRC displayed.

### Finding the Load-Source Disks on Systems with Mirrored Protection

When the system auxiliary storage pool (ASP1) is protected with mirrored protection, the system has two disk units that are load-source disks.

Use the *Work with disk units* option under DST or SST to display the configuration.

### Alternate IPL Device

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Attention:** If the system has logical partitions, this procedure is for the Primary partition **only**. To locate the alternate IPL device for a secondary partition see “Locating a Secondary Partition’s Load Source” on page 812.

The process of performing an IPL from removable media (tape or optical) is an alternate or Type D IPL. The device that contains the IPL media is the alternate IPL device. The system searches for the alternate IPL device in a specific sequence (see “Search Sequence for the Alternate IPL Device” on page 788).

The alternate IPL device may be attached internally (in the system unit) or externally. For more information on how the internal and external devices attach, see “Internal Devices” on page 788 and “External Devices” on page 788.

## Load-Source Disk, Alternate IPL

The system configuration list shows the alternate IPL devices. For information on how to print the system configuration list, see "Hardware Service Manager" in the *AS/400 Service Functions* information.

**Note:** The system configuration list will not show all of the external devices that the system can possibly use for an alternate IPL. See "External Devices" for more information.

### Search Sequence for the Alternate IPL Device

The system attempts to IPL from the device that was last used for an alternate IPL. If that device is ready and contains IPL media, the system begins an IPL.

If that device does not contain IPL media or is not available, the system searches for another alternate IPL device in a specific order. The system attempts an IPL from the first alternate IPL device it finds that is ready and contains IPL media.

The system uses the following search sequence:

1. Internal device attached to the Storage IOA with a unit address of 7.
2. Internal device attached to the Storage IOA with a unit address of 6.
3. External device attached to the Tape IOA with a controller address of 7.

If no device can be used as the alternate IPL device, the system displays an SRC on the control panel.

**Note:** The system displays the SRC for the most severe error that is found during the search sequence for the alternate IPL device. The error may not be associated with the device that the system uses for the alternate IPL. Before using the displayed SRC to analyze the problem, ensure that the device used for the alternate IPL is ready and contains the correct IPL media.

### Internal Devices

If the alternate IPL device is internal (in the system unit), it attaches to the Storage IOA in position C11 with a unit address of 7 or 6.

For more information on card positions, see "System Unit and Expansion Unit Locations and Addresses" on page 712.

### External Devices

If the alternate IPL device is external to the system unit, it attaches to the Tape IOA in position C02.

The external alternate IPL device must have a controller address of 7. For most devices, the controller address is preset to 7 and you cannot alter it. For devices that have changeable addresses, use the following information:

- For 34xx, 35xx, and 7208 model 342 tape devices, the SCSI address must be set to 0.
- For an IBM 9427 8mm Tape Cartridge Library, the tape library address for the drive that is used as the alternate IPL device must be set to 0.

For the location of the address switch on external devices, see the information in the device installation service manual.

## Powering Off and Powering On the System or Expansion Tower

### Powering Off the System

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Attention:** Power off and power on of a system with multiple partitions are different than a system with a single partition. Read and understand the power off and power on procedures referenced when a procedure directs you to power on or power off a system or partition.

If the system is operating under Dedicated Service Tools (DST), power off the system by selecting the *Power off the system* option on the Start a Service Tool display.

If the system is operating under OS/400, enter the *PWRDWNSYS* command to power off the system.

**Note:** For consoles that run Client Access, a delayed power-off operation by using the *PWRDWNSYS* command is required. You **must** stop all applications, including console applications, and subsystems that are running, before the delayed power-off operation is complete.

If you cannot use these methods, you can power off the system by using the “Control Panel Power Button” procedure.

#### Control Panel Power Button

**Attention:** Using the control panel Power pushbutton to power off the system may cause unpredictable results in the data files, and the next IPL will take longer to complete.

1. Open the control panel cover.
2. The system must be in Manual mode to power off. To select Manual mode, see “Selecting IPL Type, Mode, and Speed” on page 793.
3. Press the Power button (white) on the control panel.  
The Data-Function display shows **O?** (the international power-off symbol), and the **?** is blinking.
4. Press the Power button (white) on the control panel again.

**Note:** To cancel the power-off operation, do not press the Power button a second time. Instead, press any other control panel button.

5. The Power On light starts blinking as the system powers off. The light stops blinking and stays off when the power-off operation is complete.

Does the system power off successfully?

**No      Yes**

↓      **This ends the procedure.**

6. Perform the following:
  - a. Press the ↑ or the ↓ button until function 08 is shown in the Function display.
  - b. Press the Enter button.

## Power Off, On, IPL

- c. SRC A100 8008 is on the Data display.
7. Press the Power button (white) on the control panel.  
The Data-Function display shows **O?** (the international power-off symbol), and the ? is blinking.
8. Press the Power button (white) on the control panel again.  
The system powers off, and the Power On light goes off and remains off.

**Note:** To cancel the power-off operation, do not select function 08. Instead, press any other control panel button.

**This ends the procedure.**

## Powering Off a System With Logical Partitions

Determine if the system must be powered off or if only the secondary partition that you are servicing must be powered off by using the following table as a guide.

| The Service Action is:                                                                                                                                                                                                                                                    | Go to:                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A power or system power control network problem.                                                                                                                                                                                                                          | "Powering Off a Logical Partition System Using the Control Panel or Primary Partition" on page 791.                                                                                       |
| A processor, system storage or processor clock problem.                                                                                                                                                                                                                   | "Powering Off a Logical Partition System Using the Control Panel or Primary Partition" on page 791.                                                                                       |
| A problem with any resource owned by the Primary partition.                                                                                                                                                                                                               | "Powering Off a Logical Partition System Using the Control Panel or Primary Partition" on page 791.                                                                                       |
| The SRC came from the system control panel.                                                                                                                                                                                                                               | "Powering Off a Logical Partition System Using the Control Panel or Primary Partition" on page 791.                                                                                       |
| The part to remove or install or isolate is in the system unit.<br>The part to remove or install or isolate is in the system expansion unit.                                                                                                                              | "Powering Off a Logical Partition System Using the Control Panel or Primary Partition" on page 791.                                                                                       |
| The part to remove or install or isolate is in an expansion tower.<br>• AND<br>The expansion tower can be powered down using the Hardware Service Manager in the <b>Secondary</b> partition that you are servicing.                                                       | Power off the secondary partition using the "Powering Off a Secondary Partition" on page 791, then power off the expansion tower using the "Expansion Tower Power Procedure" on page 794. |
| The part to remove or install or isolate is in an expansion tower.<br>• AND<br>The expansion tower cannot be powered off from the secondary partition that owns it. The tower can only be powered off using the Hardware Service Manager in the <b>Primary</b> partition. | Power off the secondary partition using the "Powering Off a Secondary Partition" on page 791, then power off the expansion tower using the "Expansion Tower Power Procedure" on page 794. |
| Powering off a secondary partition failed.                                                                                                                                                                                                                                | "Powering Off a Logical Partition System Using the Control Panel or Primary Partition" on page 791.                                                                                       |



| The Service Action is:                                                   | Go to:                                                                                  |
|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| From the Primary partition you were instructed to power down the system. | "Powering Off a Logical Partition System Using the Control Panel or Primary Partition". |

## Powering Off a Logical Partition System Using the Control Panel or Primary Partition

**Attention:** This procedure will result in powering off the entire system including all secondary partitions. Be certain that all secondary partitions are able to be powered off at this time. Do not continue with this procedure until the customer will allow all logical partitions to be powered off.

**Note:** Abnormal IPL's in the secondary partitions can result from powering off the Primary partition. To avoid abnormal IPLs in secondary partitions, power off all secondary partitions, when possible, before powering off the Primary partition.

If the Primary partition is under Dedicated Service Tools (DST), power off the system from the Primary partition by selecting the *Power Off the System* option on the *Start a Service Tool (SST)* display of the Primary partition's console.

If the Primary partition is operating under OS/400, from the Primary partition's console enter the **PWRDWN SYS** command to power off the system.

If you cannot use these methods, you can power off the system by using the procedure "Control Panel Power Button" on page 789.

**Note:** For consoles on the Primary partition that run Client Access, a delayed power-off operation by using the **PWRDWN SYS** command is required. You **must** stop all applications, including console applications, and subsystems that are running in **all** logical partitions, before the delayed power-off operation is complete.

**Attention:** Using the control panel power push-button to power off the system may cause unpredictable results in the data files, and the next IPL will take longer to complete.

## Powering Off a Secondary Partition

**Attention:** Powering off a secondary partition will not power off any expansion tower(s) that the partition owns. If it is necessary to power off the expansion tower(s) owned by the secondary partition, use the "Expansion Tower Power Procedure" on page 794. Power off the secondary partition(s) before powering off the expansion tower(s) owned by the logical partition(s).

If the secondary partition is operating under Dedicated Service Tools (DST), power off the logical partition by selecting the *Power Off the System* option on the *Start a Service Tool (SST)* display of the secondary partition's console.

**Note:** To locate the secondary partition's console or alternative console go to "Locating a Secondary Partition's Console" on page 811.

If the secondary partition is operating under OS/400, from the logical partition's console enter the **PWRDWN SYS** command to power off the secondary partition.

## Power Off, On, IPL

**Note:** For consoles on the secondary partition that run Client Access, a delayed power-off operation by using the *PWRDWN* command is required. You **must** stop all applications, including console applications, and subsystems that are running in the **secondary** partition before the delayed power-off operation is complete.

If the secondary partition fails to power off **or** if the console of the secondary partition is not functioning:

1. Go to the console of the Primary partition.
2. From the *Use Dedicated Service Tools (DST)* screen, select the *Work with System Partitions* option.
3. At the *Work with System Partitions* screen:
  - a. Select *Work with Partition Status*.
  - b. Type option **7** *Power off Delayed* and press enter.

If the secondary partition fails to power off then go to "Powering Off a Logical Partition System Using the Control Panel or Primary Partition" on page 791.

## Powering On the System

1. Open the control panel cover.
2. Press the Power (white) button on the control panel.
3. The Power On light starts blinking as the system is powered on. The light stops blinking and stays on when power on is complete.
- 4.

**Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.

If the system has multiple partitions, some secondary partitions may not power on if they have been configured to "Hold". To determine if a secondary partition has been configured to "Hold" check the "Sys IPL Action" for the partition on the *Work with partition status* screen. See "Accessing a Logical Partition's Panel Functions" on page 815. If you need to IPL a secondary partition with a "Sys IPL Action" of "Hold" see "Powering On a Secondary Partition".

**This ends the procedure.**

## Powering On a Secondary Partition

**Attention:** Powering on a secondary partition will not power on any expansion I/O towers that the logical partition owns. If it is necessary to power on expansion towers owned by the secondary partition, use the "Expansion Tower Power Procedure" on page 794 before powering on the secondary partition.

1. Go to the console of the Primary partition.
2. From the *Use Dedicated Service Tools (DST)* screen select the *Work with system partitions* option.
3. At the *Work with system partitions* screen:
  - a. Select *Work with Partition Status*.
  - b. Type option **1** *Power On* next to the logical partition that you want to IPL and press enter.

## Selecting IPL Type, Mode, and Speed

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions and you are working in a secondary partition see “Selecting IPL Type and Mode for a Secondary Partition” on page 816.

This function allows you to **select** the IPL Type, IPL Mode and IPL speed. Systems with a keystick must be in Manual mode to perform this function. System power must be off to change IPL speed.

1. Pressing Enter **once** puts you into the change IPL type (A, B, C, or D) operation and, on systems without a keystick, the IPL mode (M or N).

**Note:** On systems with a keystick, select the mode by engaging the keystick and pressing the *Mode* button to scroll through the four operating modes (Manual, Normal, Auto, and Secure). A lit mode light indicates the active mode.

2. Pressing the Enter button **twice** puts you into the operation for overriding the system IPL speed (F, S, V) for the next IPL.

**Note:** Changing IPL speed from the control panel affects all IPLs until the next Power-On Reset IPL. Subsequent IPLs use the system-defined value. You can set the system-defined IPL speed with the CHGIPLA CL command.

**For systems with an electronic keystick:** When first selected, function 02 enters the Change IPL Type display. For example (where each ( ) represents 1 character):

Table 36. Function 02 Select IPL **Type** for Systems with an Electronic Keystick

| Function/Data  | Description                                                                                                                                                                                                                          |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 02 _ _ _ _ _   | Use increment or decrement button and scroll to function 02.                                                                                                                                                                         |
| 02 _ _ _ A _ _ | Press ENTER <b>once</b> to enter Function 02 Select IPL Type display. Use the increment or decrement buttons to scroll through the valid IPL types A, B, C, and D. Pressing Enter saves the selected IPL type and exits Function 02. |

**For system types that do not use a keystick,** the IPL mode (M or N only) also displays. This appears in the eighth character position of the *Function/Data* display. For example (where each ( ) represents 1 character):

Table 37. Function 02 Select IPL **Type and Mode** for Systems without an Electronic Keystick

| Function/Data  | Description                                                                                                                                                                                                                                                                                                   |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 02 _ _ _ _ _   | Use increment or decrement button and scroll to Function 02.                                                                                                                                                                                                                                                  |
| 02 _ _ _ A _ N | Press ENTER <b>once</b> to enter function 02 Select IPL Type and Mode display. Use the increment or decrement buttons to scroll through valid IPL Type and Mode combinations (A_N, B_N, C_N, D_N, A_M, B_M, C_M, D_M). Pressing Enter saves the selected IPL Type and Mode combination and exits Function 02. |

## Power Off, On, IPL

Table 38. Function 02 Select IPL **Speed** for Systems with or without an Electronic Keystick

| Function/Data  | Description                                                                                                                                                                                                                                                                                                                                                          |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 02 _ _ _ _ _   | Use increment or decrement button and scroll to function 02.                                                                                                                                                                                                                                                                                                         |
| 02 _ _ _ _ V _ | With system power off push ENTER <b>twice</b> to enter the Select IPL Speed display. Use the increment or decrement button to scroll through the valid speeds, which are: 02 _ _ _ _ V _ , 02 _ _ _ _ F _ , or 02 _ _ _ _ S _ . <ul style="list-style-type: none"><li>• F: Fast Override</li><li>• S: Slow Override</li><li>• V: Use system-defined speed.</li></ul> |
|                | Press Enter to activate the override (F or S) or to cancel it (V), and to exit the Select IPL Speed display.                                                                                                                                                                                                                                                         |

## Expansion Tower Power Procedure

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, then all operations on the console refer to the console of the logical partition in which you are working.

**Note:** To locate a secondary partition’s console go to “Locating a Secondary Partition’s Console” on page 811.

Use this procedure only to power off an expansion tower when you are performing one of the following:

- Removing or replacing a failing IOP within an expansion tower.
- Adding, moving, removing, or replacing a feature card on a bus within an expansion tower.

**Do not** use this procedure on the system unit or the integrated expansion unit.

**Do not** use this procedure to replace disk units. For disk units, use device concurrent maintenance.

**Do not** use this procedure for Feature 504x towers. If you are powering off a 504x tower then power off the system unit. Go to “Powering Off and Powering On the System or Expansion Tower” on page 789.

**Attention:** Perform this action only with the assistance of the customer.

1. Check to see that no other towers are powered off at this time.

**Attention:** During this procedure only one tower connected to this system can be powered off! You must not have more than one tower powered off at any given time during this service action!

2. Are you working in an FC 5066 expansion tower?

**No**      **Yes**

↓      **Power off only the unit (FC 5065) that you are servicing.**

**Attention:** Only one unit may be powered off at any given time!

Continue with the next step of this procedure.

3. Do you know the location of the failing IOP or where to add, move, remove, or replace the feature card?

**Note:** The SPCN number in the expansion tower control panel is equal to the Frame ID under *Packaging Resources*.

**Yes      No**

- ↓ Go to "System Unit and Expansion Unit Locations and Addresses" on page 712 to determine the position information and then continue with step 4.

4. Verify that the hardware (IOP's/feature cards) contained in the expansion tower that you are powering off matches what is shown on the system by performing the following:
  - a. From the SST or DST menu, select the *Start a service tool* option.
  - b. Select the *Hardware service manager* option.
  - c. Select the *Packaging Hardware Resources (systems, frames, cards,...)* option.

**Note:** If you have only the resource name, select the *Locate Resource by Resource Name* option and display the *Associated packaging resource(s)* for the selected resource. Use the Frame ID shown for the selected resource in step 4d.

- d. Select the *Hardware contained within package* option for the Frame ID of the Expansion Unit. Ensure that all of the resources displayed match the resources in the expansion tower that you are powering off.
5. Work with the customer to end all bus activity by performing one of the following:

**Note:** If multiple logical partitions own IOPs on the bus, then the customer will be directed to end all of the bus activity in each of those partitions.

- If the expansion tower does not contain disk unit IOPs, work with the customer to end all jobs and vary off all devices, lines, and controllers for that expansion tower.
- If the expansion tower contains disk unit IOPs and the disk units are **not** mirrored to disk units in other expansion towers, work with the customer to end all communications activities to these disk units by ending all subsystems.
- If the expansion tower contains disk unit IOPs and these disk units **are** mirrored to disk units in other expansion towers, you do not need to end all subsystems. Mirroring will assist during the service action.
- If the system has a non-redundant (single hub configuration) OptiConnect bus, work with the customer to end all jobs and vary off the QSOC resources on the affected system.

**Note:** Use the WRKOPCACT command to work with the QSOC resources on the affected system.

- If the system has a redundant (dual hub configuration) OptiConnect bus, you do not need to end subsystems or vary off the resources. Redundancy will assist during the service action.
6. Power off the expansion tower by performing the following:

## Power Off, On, IPL

**Attention:** If any console for a logical partition resides on the bus that you are powering off, then powering off the bus will result in the loss of that partition's console. **If this condition exists** for the partition that you are working in, you will need to perform this procedure from the primary partition's console.

- a. Use the system console and get to the SST or DST menu. Select the *Start a service tool* option.
- b. Select the *Hardware service manager* option.
- c. Select the *Packaging Hardware Resources (systems, frames, cards,...)* option.
- d. From the Packaging Hardware Resources display, specify the *Concurrent Maintenance* option for the expansion tower that you are powering off, then press the power off **PF** key.

**Note:** If resources on the bus are active you will receive a message indicating which resources are in use and the expansion tower will not power off. Return to step 5 on page 795 of this procedure and ensure that all resources on the bus are varied off. Follow the instructions on the screen for locating the active resources and varying them off.

**Note:** If the system has logical partitions and multiple logical partitions own IOPs on the bus, then you must do the power off from the Primary partition's console. When instructed to power on the expansion tower, do it from the console of the Primary partition.

- e. The Confirm Power Off display appears. Follow the instructions on the display.

**Note:** You may be directed to perform a function 68 to power the tower down **and** a function 69 to power the tower back on, or you may be directed to do only a function 69 to power the tower back on. **Make a note of what you were instructed to do at this time!** You will need this information to complete the repair.

Ensure that the frame ID displayed is correct for the expansion tower that you intend to power off, and press the Enter key.

- f. Wait for the expansion tower to power off. This may take several minutes depending on the I/O configuration and number of buses in the system power control network.

When the power off action is initiated, DST reports that the expansion tower is powered off successfully. However, to ensure that the expansion tower is actually powered off; verify that **one** of the two air moving devices (AMD) in the expansion tower has stopped and that the power LED indicator on the expansion tower control panel is off.

**Note:** If the expansion tower contains disk IOPs, an attention SRC may appear on the control panel. Note the following:

- Ignore the SRCs if the expansion tower completes the power off procedure.
- If the expansion tower does not power off in the maximum time allowed, the system may be hung. You must power off the entire system from the control panel to do the repair.

7. When the expansion tower is powered off, disconnect the power cord.
8. Remove or replace the failing item or add, move, remove, or replace the feature card.

**Notes:**

- a. On OS/400 V4R3 and earlier, a failing IOP or feature card that is removed can be re-installed **only** in the original position.
  - b. Ensure that you replace the failing IOP, IOA, or feature card with the same type and model.
  - c. When IOPs and feature cards are moved or removed, ensure that the configuration rules are followed. (For example, two empty card positions are not allowed between IOPs or feature cards.)
  - d. When adding, moving, or removing IOPs or feature cards that occupy multiple card positions, such as the Integrated Netfinity Server for AS/400 IOPs, pay special attention to the configuration rules so that no occupied card locations are left in an electrically open condition (there are not two empty card positions between IOPs or feature cards).
9. Perform the following:
- a. Reconnect the AC power cord.

**Note:** The tower will automatically power on however, you will need to finish the steps in this procedure to complete the power on and restore the system to normal operation.

- b. Were you instructed to perform a function 69 to power the tower on?

**Yes      No**

↓      Go to step 9f of this procedure.

- c. Are you working on a system that has multiple partitions?

**Yes      No**

↓      Perform the function 69 (with the control panel set to Manual Mode) from the control panel (See “Control Panel Functions” in the *AS/400 Service Functions* information). Then, go to step 10 on page 798 of this procedure.

- d. Are you working in the Primary partition?

**No      Yes**

↓      Perform the function 69 (with the control panel set to Manual Mode) from the control panel (See “Control Panel Functions” in the *AS/400 Service Functions* information). Then, go to step 10 on page 798 of this procedure.

- e. Perform function 69 from the *Work with partition status* screen in the Primary partition. Then, go to step 10 on page 798 of this procedure.
- f. If the Packaging Hardware Resources display is available, specify the *Power on* option for the expansion tower you were working on and press the Enter key.
- g. If the Packaging Hardware Resources display is **not** available, select (with the control panel set to Manual Mode) the SPCN control panel function to power on the expansion tower.

**Note:** See “Control Panel Functions” in the *AS/400 Service Functions* information.

- 1) Select function 07 and press enter.
- 2) Increment to 01 and press enter.

## Power Off, On, IPL

This will send out a Rack Power On command on the SPCN Network which will restore power to the expansion tower, which has become powered off.

10. From the Packaging Hardware Resources display of the partition that you are working on, select the *Associated Logical Resource(s)* option for the expansion tower.

The Logical Hardware Resources Associated a Packaging Resource display shows the status of devices and IOPs.

11. When all expected resources appear with an operational status, work with the customer to bring the system to the operational state.

**Note:** For V4R3, a resource that has been removed will show a status of *Not Connected*. For earlier systems the status will show as *Disabled*.

Work with the customer to restart all bus activity:

- Start all subsystems that were ended.
- Vary on all devices, lines, and controllers for the expansion tower that was powered off.
- Start customer applications.

**This ends the procedure.**

---

## System/370 Interface Information

### Introduction

The System/370-type sequences are specifically for the 3422/3430 and 3480/3490 Tape Units. Therefore, the attachment of other System/370 devices is not valid.

Use this information when you are sent here by the System/370 Interface Cable Wrap Test in "Tape I/O Processor Problem Isolation Procedures" on page 654.

### Cable Wrap Test

The cable wrap test first checks to determine if all bits can be reset to zero. Any bits remaining at an *up* level (failing to reset) cause the error display in Figure 79 on page 799 to appear. The failing bit is sometimes named a *hot* bit. For the bus lines, the bits represent bus bits 0 through 7. For the tag lines, the bits represent the specific tag lines as shown by the abbreviations to the right of the bit layout.

In Figure 79 on page 799, the *Active Tag lines equal* field has a hexadecimal character (translate to equal 8 binary bits) 40 in it. This means that either Address Out or Address In is always *hot*.



## Channel Cable Wrap Test

The channel cable wrap test did not clear these lines:

Active Tag lines equal (in hexadecimal) . . : 40

Active Bus lines equal (in hexadecimal) . . : 00

| Bit Number | Tag lines |    | In      | Bus Lines |    | In |
|------------|-----------|----|---------|-----------|----|----|
|            | Out       |    |         | Out       |    |    |
| 0          | OP        | -- | OP      | 0         | -- | 0  |
| 1          | ADR       | -- | ADR     | 1         | -- | 1  |
| 2          | HLD/SEL   | -- | DSC/SEL | 2         | -- | 2  |
| 3          | SUPR      | -- | REQ     | 4         | -- | 4  |
| 4          | SRV       | -- | SRV     | 5         | -- | 5  |
| 5          | CMD       | -- | STA     | 6         | -- | 6  |
| 6          | DAT       | -- | DAT     | 7         | -- | 7  |
| 7          | CHMSYNC   | -- | MRK     | 3         | -- | 3  |

Press Enter to continue.

Figure 79. Example Display Only

Table 39 shows the interface line names for the tag line abbreviations in this error display.

Table 39. Interface Line Names

| Abbreviation | Line Name              | Cable |
|--------------|------------------------|-------|
| OP           | Operational Out/In     | Tag   |
| ADR          | Address Out/In         | Tag   |
| HLD          | Hold Out               | Tag   |
| DSC          | Disconnect In          | Tag   |
| SEL          | Select Out/In          | Tag   |
| SUPR         | Suppress Out           | Tag   |
| REQ          | Request In             | Tag   |
| SRV          | Service Out/In         | Tag   |
| CMD          | Command Out            | Tag   |
| STA          | Status In              | Tag   |
| DAT          | Data Out/In            | Tag   |
| CHM SYNC     | Chim Sync (Mark 0 Out) | Tag   |
| MRK          | Mark 0 In              | Bus   |

The cable wrap test also activates (switches on) each outbound bus and tag line and waits for a response on the wrapped inbound line. After a period of time, the cable wrap test continues until all outbound lines have been wrapped. The results are then displayed on the error display. Figure 80 on page 800 is an example of the display that appears when any bit in the bus or tag line fails to respond. The failing bit is sometimes named a *dead* bit.

When the expected data does not match the actual data, the bit pattern shown indicates the bit in the bus or tag line that is in error. For the bus lines, each

## System/370 Interface

pattern represents a byte of data sent on the bus. This byte represents bus bits 0 through 7. For example, if the actual data under the expected pattern of A5 is 85, then the failing bus bit is bit 2.

```

Channel Cable Wrap Test

Bus (flags and bit patterns):

Flags          *
Expected  5A   A5   80   40   20   10   08   04   02   01   FF
Actual    5A   85   80   40   20   10   08   04   02   01   FF

Tag (bit patterns):

SE/SE
OP/OP  AD/AD  HD/DC  SP/RE  SR/SR  CD/ST  DA/DA  CMS/MI
Expected  80    40    20    10    08    04    02    01
Actual   80    40    20    10    08    04    82    01

Press Enter to continue.

```

Figure 80. Example Display Only

Table 40 shows the interface line names for the tag line abbreviations in this error display.

Table 40. Interface Line Names

| Abbreviation | Line Name              | Cable      |
|--------------|------------------------|------------|
| OP           | Operational Out/In     | Tag        |
| AD           | Address Out/In         | Tag        |
| SE           | Select Out/In          | Tag        |
| HD           | Hold Out               | Tag        |
| DC           | Disconnect In          | Tag        |
| SP           | Suppress Out           | Tag        |
| RE           | Request In             | Tag        |
| SR           | Service Out/In         | Tag        |
| CD           | Command Out            | Tag        |
| ST           | Status In              | Tag        |
| DA           | Data Out/In            | Tag        |
| CMS          | Chim Sync (Mark 0 Out) | Tag        |
| MI           | Mark 0 In              | <b>Bus</b> |

**Note:** An asterisk above the expected pattern means that a Bus In parity check occurred on that pattern, or that the pattern was in error. If the data in the *Expected* and *Actual* rows is the same, there could be a problem with the parity bit.

For the tag lines, the bits represent the specific tag lines, as shown by the abbreviations above the *Expected* and *Actual* data. For example, if the *Actual* data under the *Expected* pattern of 02 is an 82, this means that the Op Out or Op In tag line was switched on.

If a new cable is not available, use the “Card and Channel Wrap Layout (Type 2644)” on page 806 and a multimeter to test for the continuity of each line and for short circuits between lines.

Repair a failing line by exchanging it with one of the lines not used (see “System/370 Channel Bus Cable Pin Layout (Type 2644)”).

### System/370 Channel Bus Cable Pin Layout (Type 2644)

In Table 41, the *Card Connector Pin* column identifies the 78-pin connector on the back of the tape I/O processor card (type 2644), which is found in the card enclosure.

Table 41. System/370 Channel Bus Cable Pin Layout (Type 2644)

| Line Name            | Card Connector Pin |
|----------------------|--------------------|
| Bus Out bit P        | 9                  |
| Bus Out bit P ground | 10                 |
| Bus In bit P         | 47                 |
| Bus In bit P ground  | 46                 |
|                      |                    |
| Bus Out bit 0        | 69                 |
| Bus Out bit 0 ground | 68                 |
| Bus In bit 0         | 5                  |
| Bus In bit 0 ground  | 6                  |
|                      |                    |
| Bus Out bit 1        | 7                  |
| Bus Out bit 1 ground | 8                  |
| Bus In bit 1         | 67                 |
| Bus In bit 1 ground  | 66                 |
|                      |                    |
| Bus Out bit 2        | 49                 |
| Bus Out bit 2 ground | 48                 |
| Bus In bit 2         | 25                 |
| Bus In bit 2 ground  | 26                 |
|                      |                    |
| Bus Out bit 3        | 27                 |
| Bus Out bit 3 ground | 28                 |
| Bus In bit 3         | 45                 |
| Bus In bit 3 ground  | 44                 |
|                      |                    |
| Bus Out bit 4        | 21                 |
| Bus Out bit 4 ground | 22                 |

## System/370 Interface

Table 41. System/370 Channel Bus Cable Pin Layout (Type 2644) (continued)

| Line Name            | Card Connector Pin |
|----------------------|--------------------|
| Bus In bit 4         | 23                 |
| Bus In bit 4 ground  | 24                 |
| Bus Out bit 5        | 63                 |
| Bus Out bit 5 ground | 62                 |
| Bus In bit 5         | 3                  |
| Bus In bit 5 ground  | 4                  |
|                      |                    |
| Bus Out bit 6        | 43                 |
| Bus Out bit 6 ground | 42                 |
| Bus In bit 6         | 65                 |
| Bus In bit 6 ground  | 64                 |
|                      |                    |
| Bus Out bit 7        | 1                  |
| Bus Out bit 7 ground | 2                  |
| Bus In bit 7         | 41                 |
| Bus In bit 7 ground  | 40                 |
|                      |                    |
| Mark 0 Out           | 29                 |
| Mark 0 Out ground    | 30                 |
| Mark 0 In            | 61                 |
| Mark 0 In ground     | 60                 |

## System/370 Channel Tag Cable Pin Layout (Type 2644)

In Table 42, the *Card Connector Pin* column identifies the 78-pin connector on the back of the tape I/O processor card (type 2644), which is found in the card enclosure.

Table 42. System/370 Channel Tag Cable Pin Layout (Type 2644)

| Line Name          | Card Connector Pin |
|--------------------|--------------------|
| Address Out        | 17                 |
| Address Out ground | 18                 |
| Address In         | 39                 |
| Address In ground  | 38                 |
|                    |                    |
| Command Out        | 37                 |
| Command Out ground | 36                 |
| Status In          | 77                 |
| Status In ground   | 78                 |
|                    |                    |
| Service Out        | 73                 |
| Service Out ground | 74                 |

*Table 42. System/370 Channel Tag Cable Pin Layout (Type 2644) (continued)*

| Line Name                      | Card Connector Pin |
|--------------------------------|--------------------|
| Service In                     | 55                 |
| Service In ground              | 54                 |
|                                |                    |
| Data Out                       | 33                 |
| Data Out ground                | 32                 |
| Data In                        | 15                 |
| Data In ground                 | 16                 |
|                                |                    |
| Operational Out                | 51                 |
| Operational Out ground         | 50                 |
| Operational In                 | 59                 |
| Operational In ground          | 58                 |
|                                |                    |
| Select Out                     | 19                 |
| Select Out ground              | 20                 |
| Select In                      | 57                 |
| Select In ground               | 56                 |
| Hold Out                       | 71                 |
| Hold Out ground                | 72                 |
| Disconnect In                  | 53                 |
| Disconnect In ground           | 52                 |
|                                |                    |
| Suppress Out                   | 75                 |
| Suppress Out ground            | 76                 |
| Request In                     | 13                 |
| Request In ground              | 14                 |
|                                |                    |
| Sync                           | 35                 |
| Sync ground                    | 34                 |
| Clock Out (not used)           | 70                 |
| Clock Out ground (not used)    | 50                 |
|                                |                    |
| Metering Out (not used)        | 31                 |
| Metering Out ground (not used) | 12                 |
| Metering In (not used)         | 11                 |
| Metering In ground (not used)  | 12                 |

## Tape I/O Processor Card Connectors

### Type 2644

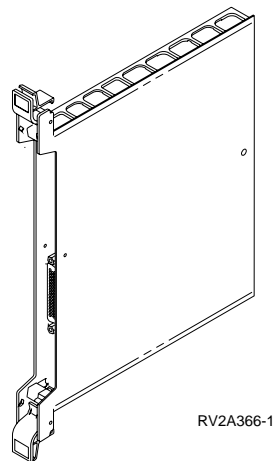


Figure 81. Type 2644 Card Connector

## Channel Wrap Block 1

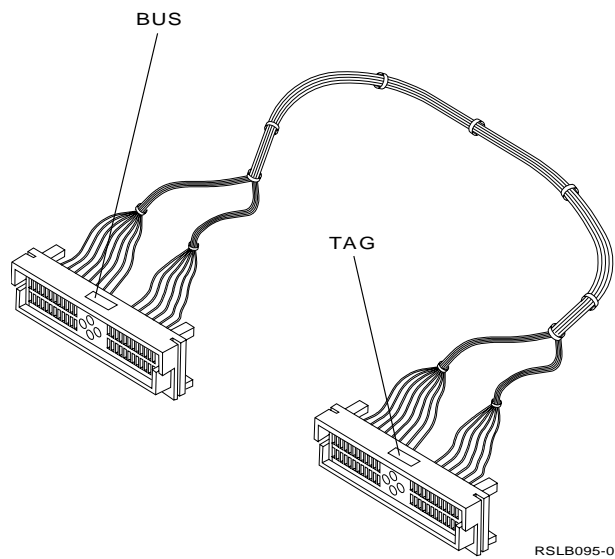
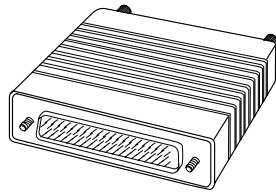


Figure 82. Channel Wrap Block 1, part 62X3403

## Channel Wrap Block 2



RV2A368-0

*Figure 83. Channel Wrap Block 2, part 6473051*

## Card and Channel Wrap Layout (Type 2644)

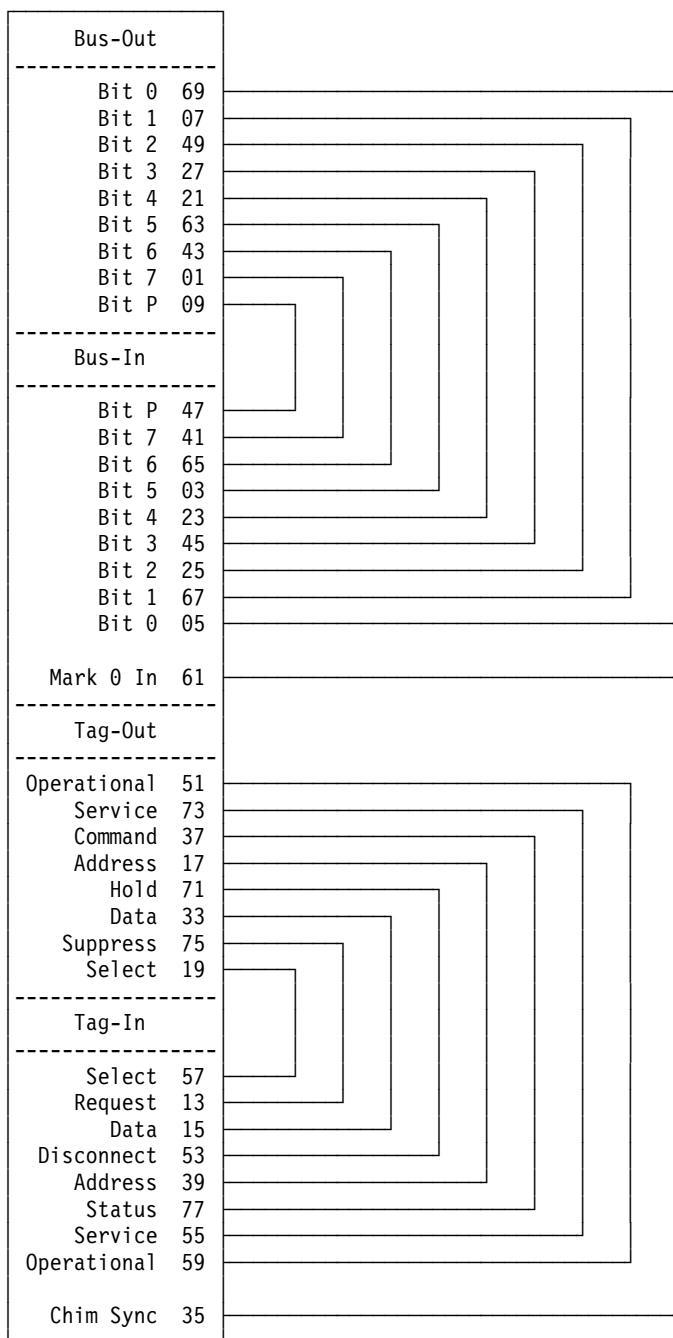


Figure 84. Card and Channel Wrap Layout (Type 2644)

## Verifying the Repair

1. Were you sent here after completing a concurrent maintenance procedure?

**No      Yes**



Go to "Verify Concurrent Repair." on page 808.



**This ends the procedure.**

2. Go to "Verify Dedicated Repair."

**This ends the procedure.**

## Verify Dedicated Repair.

1. Perform the following:
  - a. Verify that the power cable is plugged into the power outlet.
  - b. Verify that power is available at the customer's power outlet.
2. Select the IPL type and mode that the customer uses (see Selecting IPL Type, Mode, and Speed in "Powering Off and Powering On the System or Expansion Tower" on page 789).

**Note:** If you select Normal mode when you power on the system, the *Dedicated service tools* option will not be shown.

3. Start an IPL by powering on the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).

Did the system complete the IPL?

**Yes      No**

- ↓ This may be a new problem. Go to "Starting Point for All Problems" on page 4.

**This ends the procedure.**

4. Use the service action log to look for any system reference codes (system reference code (SRC)) that are related to this IPL (see "Using the Service Action Log" on page 8).

Are there any SRCs that are related to this IPL?

**Yes      No**

- ↓ Perform the "Verification Procedures" (in the Hardware Service Manager chapter) in the *AS/400 Service Functions* information to verify that the problem is corrected.

The verification procedures only cover removable media, communications and diskette problems.

Then return the system to the customer.

**Ensure that the customer verifies the system date and time.**

**This ends the procedure.**

5. Is the SRC the same as the original SRC?

**Yes      No**

- ↓ A new symptom may have occurred.

Use the SRC information and go to "Chapter 2. Unit Reference Codes" on page 59 to determine the cause of the problem.

**This ends the procedure.**

6. Are there any other failing items that remain to be exchanged?

**Yes      No**

- ↓ Ask your next level of support for assistance.

**This ends the procedure.**

## Verifying Repair

7. Exchange the next failing item listed for this URC.

**This ends the procedure.**

## Verify Concurrent Repair.

1. Was concurrent maintenance just performed on a optical storage unit?

**No      Yes**

↓      The Product Activity Log, in most cases, contains an SRC for the optical storage unit after concurrent maintenance.

Perform the "Verification Procedures" in the *AS/400 Service Functions* information to verify that the problem is corrected.

Then return the system to the customer.

**Ensure that the customer verifies the system date and time.**

**This ends the procedure.**

2. Use the service action log to look for any new SRCs (see "Using the Service Action Log" on page 8).

Are there any new SRCs?

**No      Yes**

↓      Go to step 5 of this procedure.

3. Are you working with a tape device?

**Yes      No**

↓      Perform the "Verification Procedures" in the *AS/400 Service Functions* information, to verify that the problem is corrected.

Resources which normally vary on automatically during IPL or which were previously varied on manually, may need to be varied back on after "Verification Procedures" have been completed.

Then return the system to the customer.

**Ensure that the customer verifies the system date and time.**

**This ends the procedure.**

4. Perform the "Verification Procedures" in the *AS/400 Service Functions* information, to verify that the problem is corrected.

After the verification test has completed, the tape device description will be set to the "Failed" state because a resource change was detected. You will need to vary the tape device description off and back on before it can be used.

Then return the system to the customer.

**Ensure that the customer verifies the system date and time.**

**This ends the procedure.**

5. Is the SRC the same as the original SRC?

**Yes      No**

↓      A new symptom may have occurred.

Use the SRC information and go to "Chapter 2. Unit Reference Codes" on page 59 to determine the cause of the problem.

**This ends the procedure.**

6. Are there any other failing items that remain to be exchanged?

Yes      No

↓      Ask your next level of support for assistance.

**This ends the procedure.**

7. Exchange the next failing item listed for this URC.

**This ends the procedure.**

---

## Determining if the System Has Logical Partitions

This procedure instructs the user on how to determine if the system has logical partitions.

1. Go to the Primary partition system console.
2. From the SST or DST screen select the *Work with system partitions* option.
3. At the *Work with system partitions* screen:
  - a. Note the *Partition manager release*.
  - b. Note the *Number of partitions*.
4. Each system will always have (1) Primary partition. Some systems have the Primary partition and one or more other logical partitions configured.

Is the number of partitions one (1)?

No      Yes

↓      The system does not have multiple logical partitions. You are working with a system that has a Primary partition only. Return to the procedure, failing item or symbolic FRU that sent you here.

5. The system has multiple logical partitions. Read and understand the "Information About Logical Partitions". Then return to the procedure, Failing Item, or Symbolic FRU that sent you here.

---

## Information About Logical Partitions

Logical Partitions are the distribution of resources within a single AS/400 to make it operate as if it were two or more independent systems.

**Note:** If the system has logical partitions, then unless otherwise stated in a procedure, Failing Item, or Symbolic FRU the terms: **Console, Alternative Console, IPL, SST, DST, Load Source, Alternate Load Source, Power Off, Power On, Panel Function, Product Activity Log, Service Action Log, Licensed Internal Code Log, and Operating System** refer to the logical partition that you are servicing.

**Primary:** If you are performing service in the Primary partition, then the terms **Control Panel, Panel, Panel Functions, Power Off, Power On, and System** refer to the system unit and its control panel.

**Secondary:** If you are performing service in a secondary partition, then the terms **Control Panel, Panel, Panel Functions, Power Off, Power On, and System** refer to the partition status functions available under the *Work with system partitions* option on the SST/DST screen of the secondary partition's console or the Primary partition's console.

**Failed Partition:** Failures can be reported from the partition that experienced the problem with a resource or from the Primary partition or from a

## Verifying Repair

partition that shares the bus. Attempt to service from the failed partition unless otherwise directed.

**System Attention Light:** For secondary partitions, the system attention light is represented as the partition's *State* on the *Work with Partition Status* screen.

**Powering off and on:** Power off and power on of a system with multiple partitions are different than a system with a single partition. Read and understand the power off and power on procedures referenced when a procedure directs you to power on or power off a system or partition.

**Attention:** Doing a dump or re-IPL of the Primary partition will cause all secondary partitions to power down immediately. Be certain that all secondary partitions are able to be powered off at that time. Do not do a dump or re-IPL of the Primary partition until the customer will allow all logical partitions to be powered off. To prevent abnormal IPLs in the secondary partitions, power down all secondary partitions before doing a dump or re-IPL of the Primary partition. See "Powering Off a Secondary Partition" on page 791.

**Note:** When servicing any logical partition you must use the service documentation that supports the version and release of the logical partition. See "Determining the Release Level of a Logical Partition" on page 811.

**Note:** On most systems with Logical Partitions, it is common to have one or more "Missing or Non-reporting" system bus resource/s under Hardware Service Manager. See "Missing or Non-reporting System Bus Resources" on page 816 for details.

## Procedures for systems with multiple partitions

**Determine if a system has logical partitions:**

See "Determining if the System Has Logical Partitions" on page 809.

**Determine the release level of a logical partition:**

See "Determining the Release Level of a Logical Partition" on page 811.

**Conversion of secondary partition time and date:**

See "Conversion of Secondary Partition Time and Date to Primary Partition Time" on page 814.

**Determine which partition owns a FRU or I/O resource:**

See "Determining Which Logical Partition Owns a FRU or a System I/O Resource" on page 815.

**Locating the console:**

See "Locating a Secondary Partition's Console" on page 811.

**Locating the alternate console:**

See "Locating a Secondary Partition's Console" on page 811.

**Accessing panel functions:**

See "Accessing a Logical Partition's Panel Functions" on page 815.

**Finding the load source:**

See "Locating a Secondary Partition's Load Source" on page 812.

**Powering off:**

See "Powering Off a System With Logical Partitions" on page 790.

### Powering on:

See "Powering Off and Powering On the System or Expansion Tower" on page 789.

### Closing Related Problems:

See "Closing Related Problems in Other Logical Partitions" on page 814.

### IPL type and mode:

See "Selecting IPL Type and Mode for a Secondary Partition" on page 816.

### SRC history:

See "Finding the SRC History List for a Secondary Partition" on page 814.

## Determining the Release Level of a Logical Partition

This procedure instructs the user on how to determine the release level of the Primary and any secondary partition.

1. From the SST or DST screen of the partition's console or the Primary partition's console, select *Work with system partitions*.
2. At the *Work with system partitions* screen, the number of partitions and the partition manager release are displayed. This is the release level of the Primary partition.
3. At the *Work with system partitions* screen select *Display partition information*.
4. At the *Display partition information* screen select *Display partition release level*.
5. From the *Display partition release level* screen, the partition identifier, name, and version/release level is displayed.

## Locating a Secondary Partition's Console

This procedure instructs the user on how to locate a logical partition's console and alternative console in a system that has logical partitions, using the Primary partition's console.

**Note:** The logical *Partition Identifier (ID)* or *Partition name* is required to perform this procedure.

1. Go to the console of the Primary partition.
2. From the SST or DST screen select the *Work with system partitions* option.
3. At the *Work with system partitions* screen:
  - a. Record the *Partition Manager Release*.
  - b. Record *the number of partitions*.
  - c. Select *Display Partition Information*.
4. At the *Display Partition Information* screen select *Display Allocated I/O Resources*.
  - a. Locate the secondary partition and look for its console. The console and alternative console are tagged on the screen under the logical partition's IOP information. The console is tagged with a (<) character and the alternative console is tagged with a (>) character. Note that the logical partition may not have an alternative console. Note the **logical address** of the console and alternative console. Use the **logical address** to determine where the physical console is located.
5. If the logical partition does not have an alternate console but one is needed:
  - a. Determine if the customer has a work station controller that can be switched to this logical partition.  
Does the customer have a work station controller that can be switched?  
  
Yes      No

## Verifying Repair

- ↓ There is no alternate console for the logical partition.
- b. Have the customer switch the input-output processor (IOP) with an available workstation to the logical partition that requires an alternate console. Have the customer dynamically reconfigure the IOP and note the IOP's physical location.

## Locating a Secondary Partition's Load Source

These procedures instruct the user on how to locate a logical partition's load source from the logical partition's console.

**Note:** The '\*' which indicates the secondary partition's load source, is only correct if the partition's configuration has not been changed since the partition was last IPL'd. If the partition's configuration has been changed since the partition's last IPL, then call your next level of support for help in locating the load source for the partition.

1. Are you using the Primary partition's console?

**No      Yes**

↓ From the Primary partition's console, go to "Locating a Secondary Partition's Load Source From the Primary Partition's Console" on page 813.

2. From the secondary partition's console, go to "Locating a Secondary Partition's Load Source From the Secondary Partition's Console".

## Locating a Secondary Partition's Load Source From the Secondary Partition's Console

This procedure instructs the user on how to locate a logical partition's load source from the logical partition's console.

1. Go to the console of the logical partition.
2. From the SST or DST screen select the *Start a service tool* option.
3. Select *Hardware Service Manager*
4. Look for the load source. The load source is tagged with a \* on the screen under the IOP information. Note that the partition may not have an alternate load source.

Does the logical partition have an alternate load source?

**No      Yes**

↓ Note the **logical address** of the alternate load source. Use the **logical address** to determine where the physical load source is located.

5. Is an alternate load source required?

**Yes      No**

↓ **This ends the procedure.**

6. Determine if the customer has an available alternate load source on an IOP in another logical partition that can be switched to this logical partition.

Does the customer have an available alternate load source that can be switched?

**Yes      No**

↓ There is no alternate load source for the logical partition.

7. Have the customer switch the IOP with an available load source to the logical partition that requires an alternate load source. Have the customer dynamically reconfigure the IOP and note the alternate load source-**physical** location.

### Locating a Secondary Partition's Load Source From the Primary Partition's Console

This procedure instructs the user on how to locate a logical partition's load source and alternate load source in a system that has logical partitions, using the Primary partition's console.

**Note:** The logical *Partition Identifier* or *Partition name* is required to perform this procedure.

**Note:** The *Partition number* is the last two digits in the logical serial number of the logical partition.

1. Go to the console of the Primary partition.
2. From the SST or DST screen select the *Work with System Partitions* option.
3. At the *Work with System Partitions* screen:
  - a. Record the *Partition management release*.
  - b. Record the number of partitions.
  - c. Select *Display partition information*.
4. At the *Display partition information* screen select *Display Allocated I/O Resources*.
  - a. Locate the secondary partition and look for its load source. The load source and alternate load source are tagged on the screen under the logical partition's IOP information. Note that the logical partition may not have an alternate load source. Note the **logical address** of the load source and alternate load source. Use the **logical address** to determine where the **physical** load source is located.
  - b. If the logical partition does not have an alternate load source and one is needed, perform the following:
    - 1) Determine if the customer has an alternate load source that can be switched to this logical partition.  
Does the customer have an available alternate load source that can be switched?  
**Yes      No**  
↓      There is no alternate load source for the logical partition.
    - 2) Have the customer switch the IOP with an available load source to the logical partition that requires an alternate load source. Have the customer dynamically reconfigure the IOP and note the alternate load source-**physical** location.

### Query of Logical Partition Time and Date

1. From the AS/400 Main Menu select *Define or Change System Values*.
2. From the *Define or Change System Values* screen, select *Work With System Values*.
3. From the *Work With System Values* screen, type option 5 *Display* for these system values and record the information:
  - QDATE
  - QTIME

## Verifying Repair

### Conversion of Secondary Partition Time and Date to Primary Partition Time

Use the "Query of Logical Partition Time and Date" on page 813 procedure to determine the time and date values for the Primary partition and any other logical partition that you are working with.

1. Record the difference in time between the Primary partition and each secondary partition with which you are working. Use the following table:

Table 43. Time and Date Conversion Table

| Secondary Partition Time and Date |                         | Primary Partition Time and Date (Record immediately after recording secondary partition time and date) | Conversion Value = Primary Time and Date minus the Secondary Time and Date (Primary - Secondary) |
|-----------------------------------|-------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Partition Name/Number             | Partition Time and Date |                                                                                                        |                                                                                                  |
|                                   |                         |                                                                                                        |                                                                                                  |
|                                   |                         |                                                                                                        |                                                                                                  |
|                                   |                         |                                                                                                        |                                                                                                  |
|                                   |                         |                                                                                                        |                                                                                                  |

The SAL entry time stamps for any logical partition that you are working with are converted to Primary partition time by adding the conversion value in the last column of the table to the SAL entry time.

### Finding the SRC History List for a Secondary Partition

This procedure instructs the user in how to find the SRC history list that is created during an IPL of a secondary partition.

1. From the SST or DST screen on the Primary partition's console select *"Work with system partitions"*.
2. At the *Work with system partitions* screen select *"Display partition information"*.
3. At the *Display partition information* screen select *"Display secondary partition reference code history"*. Page down to the partition ID for which you want the reference code history. Use the function key labeled *"Include reference code detail"* to expand the display of SRC information from only word 11 to all words of the SRC.

### Closing Related Problems in Other Logical Partitions

Look in the SALs of other logical partitions where problems may have been logged by the same failing item just replaced. Search the Primary partition. If the failure was I/O related, then search any logical partition that shares the bus with the I/O failure. For any problems that were caused by the failing item just replaced, close the problem. Use the following procedure:

**Note:** To locate the console for a secondary partition, go to "Locating a Secondary Partition's Console" on page 811.

1. Convert the time and date of the SAL entry for the failing item that you replaced to the Primary partition's time and date by using the conversion procedure "Conversion of Secondary Partition Time and Date to Primary Partition Time".
2. Complete Table 43 by calculating the conversion value for each of the logical partitions that own resources on the same bus.



3. Convert the time and date of SAL entries in those logical partitions to the Primary partition's time and date by adding the conversion value for the SAL's logical partition.
4. If any SAL entries in those logical partitions were logged at approximately the same time and they appear to be related to the problem just repaired, close the entry.

## Accessing a Logical Partition's Panel Functions

This procedure instructs the user on how to find panel functions for secondary partitions.

If the panel function required is not available from the console of the secondary partition, then go to the Primary partition's console to access that panel function for the secondary partition.

You must be on the Primary partition's console to:

- Power on a secondary partition.

**Note:** To locate a secondary partition's console or alternate console go to "Locating a Secondary Partition's Console" on page 811.

1. Go to the console of the secondary partition, or the console of the Primary partition.
2. From the SST or DST screen select the *Work with System Partitions* option.
3. At the *Work with System Partitions* screen:
  - a. Select *Work with Partition Status*.

Additional panel functions and information are available by pressing the function key for:

- *Monitor Partition Status*
- *Work with Partition Configuration*
- *More Options*

For panel functions 11 through 20:

- Press the function key for *Monitor Partition Status*.
- Move the cursor to the line for the partition in which you want to view functions 11 through 19.
- Press the function key for *Include Reference Code Detail*.
- For panel function 20 use the system control panel or option 20 on the *Work with Partition Status* screen.

## Determining Which Logical Partition Owns a FRU or a System I/O Resource

This procedure helps you locate the logical partition which owns a FRU or system I/O resource. It is used to direct you to the correct logical partition in which to conduct the repair or exchange action.

**Note:** If you are locating a FRU, you are required to have the logical address or both the serial and the part number.

1. Go to the console of the Primary partition.
2. From the SST or DST screen select the *Work with System Partitions* option.
3. At the *Work with System Partitions* screen:
  - a. Record the *Partition manager release*.

## Verifying Repair

- b. Record the number of partitions.
- c. Select *Display Partition Information*.
4. At the *Display Partition Information* screen select *Display Allocated I/O Resources*.
5. Select **\*ALL** for which logical partitions to display, select **\*ALL** for the level of detail to display.
6. If the display does not show serial and part information, press the function key for *Display Serial/Part Numbers*.
7. If you are locating a FRU, page forward until you locate the serial number and part number.  
If you are locating a resource, page forward until you locate the resource name.  
Record the logical partition in which the FRU or resource is located. Press the function key for *Display logical address* to record the logical address of the FRU or resource.

## Selecting IPL Type and Mode for a Secondary Partition

This procedure will instruct the user on how to set the IPL type and IPL mode for a secondary partition.

1. Go to the console of the Primary partition.

**Note:** If the secondary partition is running, you can select the IPL type and IPL mode from the console of the secondary partition. See "Locating a Secondary Partition's Console" on page 811.

2. From the SST or DST screen select the *Work with System Partitions* option.
3. At the *Work with System Partitions* screen:
  - a. Record the *Partition manager release*.
  - b. Record the *Number of partitions*.
  - c. Select *Work With Partition Status*.
  - d. At the *Work With Partition Status* screen the IPL type and IPL mode are options for the secondary partition.

## Missing or Non-reporting System Bus Resources

**Note:** On most systems with Logical Partitions, it is common to have one or more "Missing" or "Non-reporting" system bus resource(s) under Hardware Service Manager.

You need to understand the reason for each "Missing" or "Non-reporting" resource and follow the appropriate recovery action. These can occur for the following reasons:

1. Residual resource names may be left in the Primary partition after the IPL of a secondary partition. During an IPL of a secondary partition, there will be resource names created in the Primary partition for the secondary partition's load source IOP, IOA, and the load device (disk, tape, optical). These resources are temporarily used in the Primary partition during the IPL of the secondary partition. They will then show as "Non-reporting" in the Primary partition anytime after the IPL. These resource names will be reused on subsequent IPLs of the secondary partition.

**Recovery action:** These resources should be left in the Primary partition. They will be reused each time you IPL the secondary partition. If they are removed, a new resource will be created and the resource name will increment.

2. Residual resource names may be left in Primary or secondary partitions after a re-configuration of resources. When resources are removed from a partition, there are two options;
  - a. The *"Remove"* option will not alter the original resource names. Use this option if the customer intends to switch the resources back to the original partition.

**Note:** When the *"Remove"* option is selected, the resource names will show as *"Non-reporting"* in the partition from which they were removed after the next IPL of that partition.

**Recovery action:** Work with the customer to understand why the *"Remove"* option was selected. The resources should not be altered if the customer intends to switch the resource back to the partition from which they were removed.

- b. The *"Remove and clear hardware resource(s)"* option will remove the resource names permanently. If they are removed and the resource is switched back to the original partition, a new resource will be created and the resource name will increment. This will cause problems with the device descriptor that uses this resource. For example, if **TAP01** is being used by multiple partitions.
3. The system's logical partition configuration may leave residual resources in the event that the system partition information becomes corrupted. When this happens, all I/O resources are defaulted into the Primary partition until the logical partition configuration for the entire system has been recovered. After the configuration has been corrected or recovered, the resource names will remain in the Primary partition in a *"Non-reporting"* status.

**Recovery action:** Your next level of support will help you to recover the system logical partition configuration. Work with the customer to remove the residual resources that were defaulted in to the Primary partition as a result of the corruption.

4. A resource has failed or has been removed from the system.

**Recovery action:** Continue with the normal problem determination procedures.

## Verifying Repair

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## **Part 2. Repair and Parts**



## Chapter 6. Removal and Installation Procedures

|                                                             |     |                                                                           |     |
|-------------------------------------------------------------|-----|---------------------------------------------------------------------------|-----|
| System Unit and Expansion Unit . . . . .                    | 823 | Parts Catalog References. . . . .                                         | 838 |
| AMD 1, 2, 5, 6 and AMDP . . . . .                           | 823 | Procedure . . . . .                                                       | 838 |
| Parts Catalog References. . . . .                           | 823 | Control Panel Battery. . . . .                                            | 839 |
| Procedure . . . . .                                         | 823 | Parts Catalog References. . . . .                                         | 839 |
| AMD 9 . . . . .                                             | 824 | Procedure . . . . .                                                       | 839 |
| Parts Catalog References. . . . .                           | 824 | Covers . . . . .                                                          | 839 |
| Procedure . . . . .                                         | 824 | Parts Catalog Reference . . . . .                                         | 839 |
| BACKPL2-PCI Bus (System Unit) . . . . .                     | 824 | Procedure . . . . .                                                       | 840 |
| Parts Catalog References. . . . .                           | 825 | Disk Unit — Dedicated and Concurrent . . . . .                            | 841 |
| Procedure . . . . .                                         | 825 | Parts Catalog References. . . . .                                         | 841 |
| BACKPL4x—Removable Media Frame Assembly. . . . .            | 825 | Procedure . . . . .                                                       | 841 |
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| Procedure . . . . .                                         | 826 | Dedicated Maintenance-Removal and installation . . . . .                  | 843 |
| BACKPL5x—Disk Unit Frame Assembly . . . . .                 | 826 | Disk Unit – Removal from Holder . . . . .                                 | 845 |
| Parts Catalog References. . . . .                           | 826 | Parts Catalog References. . . . .                                         | 845 |
| Procedure . . . . .                                         | 826 | Procedure . . . . .                                                       | 845 |
| BACKPL6-SPD Bus (Expansion Unit) . . . . .                  | 827 | File Server IOP - Type 6506. . . . .                                      | 845 |
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| Procedure . . . . .                                         | 827 | Procedure . . . . .                                                       | 845 |
| BACKPL7-PCI Bus (Expansion Unit) . . . . .                  | 827 | Integrated Netfinity Server for AS/400 IOA — Type 2850 . . . . .          | 847 |
| Parts Catalog References. . . . .                           | 827 | Procedure . . . . .                                                       | 847 |
| Procedure . . . . .                                         | 827 | Integrated Netfinity Server for AS/400 - Type 6616 . . . . .              | 848 |
| BACKPL8—Single Processor and Backplane . . . . .            | 828 | Parts Catalog References. . . . .                                         | 848 |
| Parts Catalog References. . . . .                           | 828 | Procedure . . . . .                                                       | 848 |
| Procedure . . . . .                                         | 828 | Integrated Netfinity Server for AS/400 (Type 6617) . . . . .              | 850 |
| BACKPL9—N-way Processor Backplane. . . . .                  | 829 | LAN/WAN IOP Card — Type 2810 . . . . .                                    | 851 |
| Parts Catalog References. . . . .                           | 829 | Procedure . . . . .                                                       | 851 |
| Procedure . . . . .                                         | 829 | Memory Card and Memory Modules—Model 620, 720, or S20 Processor . . . . . | 851 |
| Cache Battery Pack, For Type 2740, 2748 . . . . .           | 829 | Parts Catalog References. . . . .                                         | 851 |
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| Procedure . . . . .                                         | 830 | Memory Modules—Model 600 or S10 Processor . . . . .                       | 852 |
| Cache Directory Card, For Type 2740, 2748 . . . . .         | 831 | Parts Catalog References. . . . .                                         | 852 |
| Parts Catalog References. . . . .                           | 831 | Procedure . . . . .                                                       | 852 |
| Procedure . . . . .                                         | 831 | Micro Channel Adapter for a Wireless LAN IOA - Type 2663, 2668 . . . . .  | 852 |
| Cards—Cache, Type 4010. . . . .                             | 832 | Parts Catalog References. . . . .                                         | 852 |
| Parts Catalog References. . . . .                           | 832 | Procedure . . . . .                                                       | 852 |
| Procedure . . . . .                                         | 832 | Power Distribution —PWRBUS1X (System Side) . . . . .                      | 853 |
| Cards—Cache, Type 4700 and 6503 (SPD-Book) . . . . .        | 833 | Parts Catalog References. . . . .                                         | 853 |
| Parts Catalog References. . . . .                           | 833 | Procedure . . . . .                                                       | 853 |
| Procedure . . . . .                                         | 833 | Power Distribution — PWRBUS1C (Expansion Side) . . . . .                  | 854 |
| Cards—PCI . . . . .                                         | 833 | Parts Catalog References. . . . .                                         | 854 |
| Parts Catalog References. . . . .                           | 833 | Procedure . . . . .                                                       | 854 |
| Procedure . . . . .                                         | 833 | Power Supply — 480 Watt (P01) . . . . .                                   | 854 |
| Cards—PCI Type 4758 Battery Replacement Procedure . . . . . | 834 | Parts Catalog References. . . . .                                         | 854 |
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## System Unit Removal and Installation

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|                                               |     |
|-----------------------------------------------|-----|
| Procedure . . . . .                           | 915 |
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|                     |     |
|---------------------|-----|
| Procedure . . . . . | 916 |
|---------------------|-----|

This is the starting point for all remove procedures.

**Note:** It is not always necessary to power off the system to exchange a field-replaceable unit (FRU). You will be directed through a concurrent exchange, if possible, for disk or removable media storage units. For other FRU types, see “Expansion Tower Power Procedure” on page 794.

If removing a FRU from the system unit uses the same procedure as removing the FRU from the expansion unit, you will find the procedure in the system unit section of this chapter. If a FRU has a unique removal procedure in an expansion unit, you will find that procedure the expansion unit section of this chapter.

## System Unit and Expansion Unit

When you have completed the remove procedure, install the FRU by reversing the remove procedure unless otherwise noted.

### AMD 1, 2, 5, 6 and AMDP

#### Parts Catalog References

- “Models 600 or S10 System Unit” on page 956
- “Models 620, 720 or S20 System Unit” on page 968
- “Models 620, 720, or S20 System Unit” on page 970
- “Models 620, 720, or S20 System Unit with Expansion Unit” on page 978
- “Models 620, 720, or S20 System Unit with Expansion Unit” on page 980
- “Models 620, 720, or S20 Expansion Unit” on page 984
- “Models 620, 720, or S20 Expansion Unit” on page 986
- “Models 620, 720, or S20 Expansion Unit” on page 988

#### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the covers (see “Covers” on page 839).
4. Are you removing an AMD from a pedestal?

|    |     |
|----|-----|
| No | Yes |
|----|-----|

↓

- a. Remove the pedestal EMC access plate.
- b. Remove the screws that hold the AMD assembly.
- c. Slide the AMD assembly out of the pedestal.

**This ends the procedure.**

5. Remove the EMC access plate.

**Note:** When installing this EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

6. Disconnect the power cables connected to the AMDs.
7. Remove the screws that hold the AMD assembly.

## System Unit Removal and Installation

- Slide the AMD assembly out of the frame (See “Models 600 or S10 System Unit” on page 956).

**This ends the procedure.**

## AMD 9

**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

### CAUTION:

**This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)**

## Parts Catalog References

- None

## Procedure

- Read “Important Continuously Powered Main Storage (CPM) Information” on page 785 before continuing in this procedure.
- Perform “SPCN-PIP5” on page 644. Then return here and continue with the next step of this procedure.
- Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
- Disconnect the power cord from the system unit.
- Remove the covers (see “Covers” on page 839).
- Remove the left side EMC access plate.

**Note:** When installing this EMC shield, ensure that slotted screws are used to secure the shield to the frame.

- Remove the cover over the processor, clock, and memory cards.
- Release the card latches and remove all the cards in the enclosure.
- Remove the screws that hold the enclosure.
- Remove the bus cable connector at the top of the enclosure.
- Slide the enclosure partially out of the system. Then remove the power cable from the PS2 connector on the power supply.
- Remove the signal cable (SIG12) from the enclosure.
- Lift the enclosure assembly out of the system.
- Remove the AMD assembly by removing the screws holding the fan to the enclosure.
- Disconnect the power connector and remove the screws that hold the AMD.
- Attention:** When installing the AMD, the air flow must be outward from the enclosure.

**This ends the procedure.**

## BACKPL2–PCI Bus (System Unit)

### CAUTION:

**This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)**

### Parts Catalog References

- “Models 600 or S10 System Unit” on page 956
- “Models 620, 720 or S20 System Unit” on page 968
- “Models 620, 720, or S20 System Unit with Expansion Unit” on page 978

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the covers (see “Covers” on page 839).
4. Remove the left side EMC access plate .

**Note:** When installing this EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

Is this a Model 600 or S10 system unit?

**No      Yes**

↓      Remove the Processor Card (see “Processor Card — Model 600 or S10” on page 856). Then continue with step 5.

5. Record the location of the PCI cards.
6. Record the cable locations and disconnect the cables to the PCI cards.
7. Remove the PCI cards (see “Cards-PCI” on page 833).
8. Disconnect the cables that are connected to the backplane.
9. Remove the screws that hold the PCI backplane bracket.

Are you removing the backplane from a Model 600 or S10 system unit?

**No      Yes**

↓

- a. Lift the backplane assembly up and out of the system.
- b. Remove the control panel battery (see “Control Panel Battery” on page 839. The battery must be installed on the new backplane.

**This ends the procedure.**

10. Lift the backplane assembly up off the frame and rotate it toward the front of the system.
11. Disconnect the bus cable from the rear of the backplane.
12. Remove the backplane assembly from the system.
13. Remove the control panel battery (see “Control Panel Battery” on page 839. The battery must be installed on the new backplane.

**This ends the procedure.**

## BACKPL4x— Removable Media Frame Assembly

### CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

### Parts Catalog References

- “Assembly 2: Models 600 or S10 System Unit” on page 954
- “Assembly 7: Model 620, 720, or S20 System Unit” on page 966

## System Unit Removal and Installation

- “Assembly 10: Models 620, 720, or S20 System Unit with Expansion Unit” on page 976
- “Assembly 11: Models 620, 720, or S20 Expansion Unit” on page 982

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the covers (see “Covers” on page 839).
4. Remove the EMC access plate from the side of the frame.

**Note:** When installing this EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

5. Remove the AMDs, if necessary (see “AMD 1, 2, 5, 6 and AMDP” on page 823).
6. Remove the cables from the rear of the backplane.
7. Remove all units (see “Removable Media — Dedicated and Concurrent” on page 858) and label the position of each. **The units must be installed in the same positions they were removed from.**
8. Remove the screws that hold the frame assembly.

Is this a system unit side?

**No      Yes**

↓      Remove the control panel (see “Control Panel” on page 838). Then continue with step 9.

9. Remove the frame assembly from the system.

**This ends the procedure.**

## BACKPL5x—Disk Unit Frame Assembly

### CAUTION:

**This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)**

### Parts Catalog References

- “Assembly 2: Models 600 or S10 System Unit” on page 954
- “Assembly 7: Model 620, 720, or S20 System Unit” on page 966
- “Assembly 10: Models 620, 720, or S20 System Unit with Expansion Unit” on page 976
- “Assembly 11: Models 620, 720, or S20 Expansion Unit” on page 982

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the covers (see “Covers” on page 839).
4. Remove the EMC access plate from the side of the frame.

**Note:** When installing this EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

5. Remove the AMDs (see “AMD 1, 2, 5, 6 and AMDP” on page 823).

6. Remove the cables from the rear of the disk unit backplane.
7. Remove all disk units (see the disk unit procedure in “Chapter 6. Removal and Installation Procedures” on page 821) and label the position of each. **The disk units must be installed in the same positions they were removed from.**
8. Remove the screws that hold the frame assembly.
9. Remove the frame assembly from the system.

This ends the procedure.

### BACKPL6–SPD Bus (Expansion Unit)

#### CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

#### Parts Catalog References

- “Models 620, 720, or S20 Expansion Unit” on page 984

#### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the covers (see “Covers” on page 839).
4. Remove the right side EMC access plates .

**Note:** When installing this EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

5. Remove the SPD cards (see “Cards–SPD (Book)” on page 836).

**Note:** Label the location of the cards and cables.

6. Disconnect the cables that are connected to the backplane.
7. Remove the screws that hold the SPD backplane frame.
8. Lift the backplane and frame out the rear of the system.

This ends the procedure.

### BACKPL7–PCI Bus (Expansion Unit)

#### CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

#### Parts Catalog References

- “Models 620, 720, or S20 Expansion Unit” on page 986

#### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the covers (see “Covers” on page 839).
4. Remove the right side EMC access plate .

## System Unit Removal and Installation

**Note:** When installing this EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

5. Record the location of the PCI cards.
6. Remove the PCI cards (see “Cards–PCI” on page 833).
7. Remove the AMDs, if necessary (see “AMD 1, 2, 5, 6 and AMDP” on page 823).
8. Disconnect the cables that are connected to the backplane.
9. Remove the screws that hold the PCI backplane.
10. Lift the backplane assembly up off the frame and rotate it toward the front of the system.
11. Disconnect the bus cable from the rear of the backplane.
12. Remove the backplane assembly from the system.

**This ends the procedure.**

## BACKPL8–Single Processor and Backplane

### CAUTION:

**This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)**

### Parts Catalog References

- “Models 620, 720 or S20 System Unit” on page 968

### Procedure

**Note:** The backplane location is M00 (see “System Unit and Expansion Unit Locations and Addresses” on page 712).

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the covers (see “Covers” on page 839).
4. Remove the EMC access plate.

**Note:** When installing this EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

5. Remove the cover from the front of the processor frame assembly.

**Note:** When installing this cover, ensure that slotted screws are used to secure the cover to the frame.

6. Remove the memory card (see “Memory Card and Memory Modules–Model 620, 720, or S20 Processor” on page 851).
7. Remove the regulator card and the clock card.
8. Remove the screws that hold the processor frame.
9. Slide the assembly partially out of the system.
10. Disconnect the cables from the assembly.

**Note:** It may be easier to disconnect the power cable from the power supply instead of from the processor frame.

11. Remove the bus cable from the rear of the backplane.
12. Remove the screws holding the backplane to the frame.

This ends the procedure.

### BACKPL9–N-way Processor Backplane

#### CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

#### Parts Catalog References

- “Models 620, 720, or S20 System Unit with Expansion Unit” on page 978

#### Procedure

**Note:** The backplane location is M00 (see “System Unit and Expansion Unit Locations and Addresses” on page 712).

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the covers (see “Covers” on page 839).
4. Remove the EMC access plate.

**Note:** When installing this EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

5. Remove the cover from the front of the processor frame assembly.

**Note:** When installing this cover, ensure that slotted screws are used to secure the cover to the frame.

6. Remove the processor card(s) (see “Processor Card — Model 620, 720, or S20” on page 856)
7. Remove the memory card(s) (see “Memory Card and Memory Modules—Model 620, 720, or S20 Processor” on page 851)
8. Remove the screws that hold the backplane frame and lift the assembly out of the system.
9. Remove the **Clock Card** from the rear of the backplane.
10. Remove the bus cable from the rear of the backplane.
11. Remove the screws that hold the backplane.

This ends the procedure.

### Cache Battery Pack, For Type 2740, 2748

#### CAUTION:

This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)

**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

**Attention:** Power the system down normally prior to replacing the Cache Battery Pack. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)

## System Unit Removal and Installation

### Parts Catalog References

- none

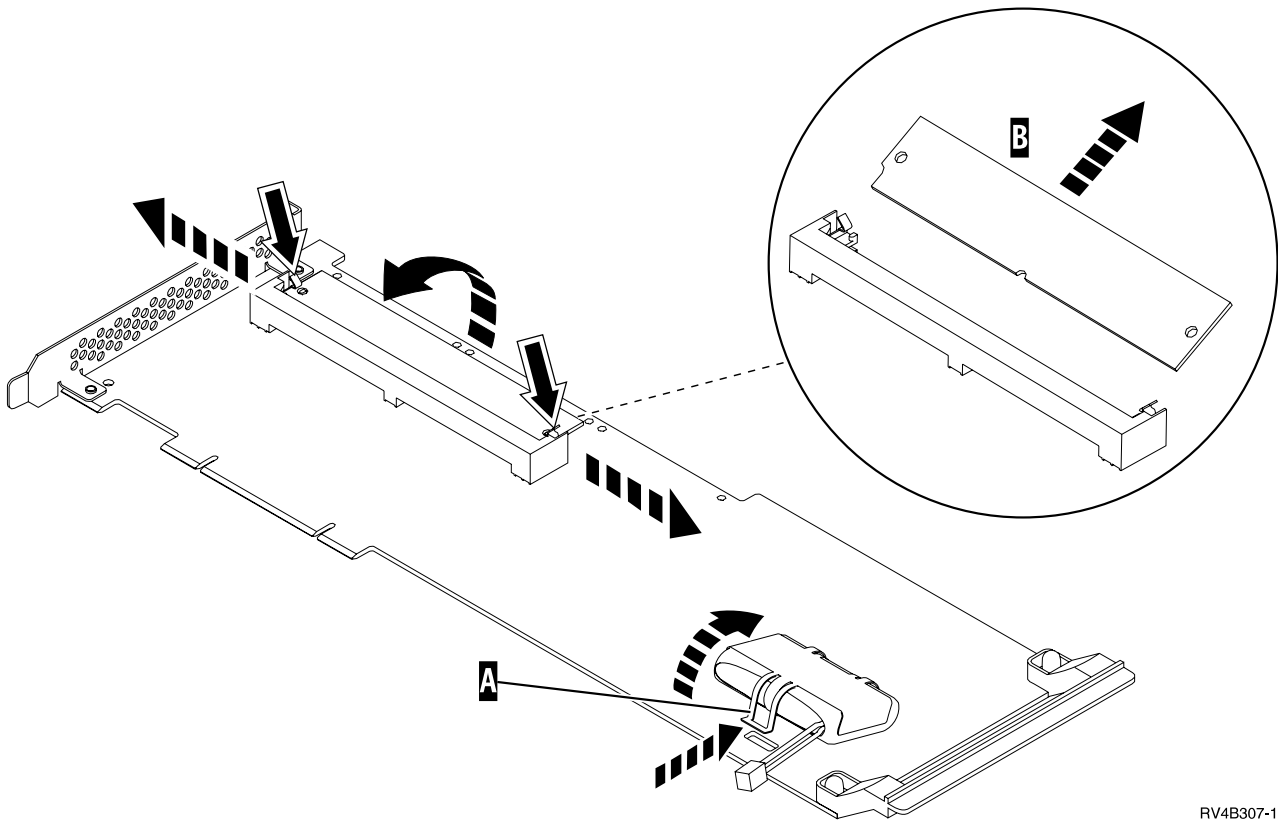
### Procedure

1. Locate the casing **A** that holds the battery pack. See Figure 85 and Figure 86 on page 831.
2. Squeeze the casing **A** to remove battery unit from the card.
3. Remove the plug that connects the battery unit and the card.

**Note:** The plug fits in the board only one way so it can not be inserted incorrectly during the replacement phase.

4. Remove the battery unit from the battery casing.

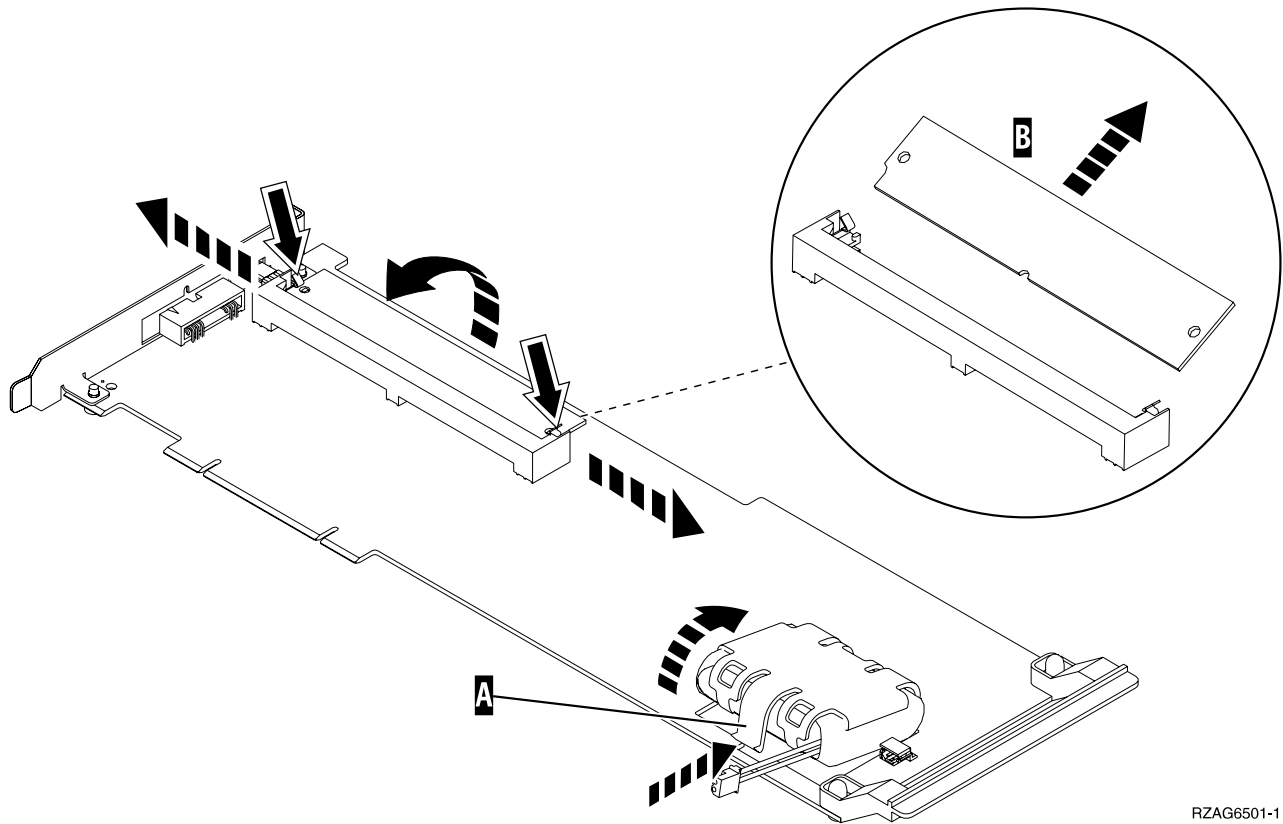
**Note:** Save the battery casing. The replacement battery pack will not come equipped with a casing.



RV4B307-1

Figure 85. Cache Battery Pack and Cache Directory Card for Type 2740





RZAG6501-1

Figure 86. Cache Battery Pack and Cache Directory Card for Type 2748

This ends the procedure.

## Cache Directory Card, For Type 2740, 2748

**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

### CAUTION:

This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)

### Parts Catalog References

- none

### Procedure

1. Locate the cache directory card **B**; a small rectangular card mounted on the I/O card. See Figure 85 on page 830 and Figure 86.
2. Spread the tabs on each side of the cache directory card and raise the back of the cache directory card **B** up away from the I/O card. The cache directory card will pivot up about 20°.
3. Pull cache directory card out.

**Note:** To install the replacement cache directory card, the cache directory card should be wiggled into place at a 20° angle before pushing it down and locking the tabs. Be sure that the holes on each side of the cache directory card are filled by the pegs on the cache card to ensure proper seating.

## System Unit Removal and Installation

This ends the procedure.

### Cards—Cache, Type 4010

**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

**CAUTION:**

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

#### Parts Catalog References

- None

#### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system or expansion unit.
3. Remove the covers. (See “Covers” on page 839 or if you are working in a FC 5065 or 5066 expansion tower see “Covers” on page 867.)
4. Remove the EMC access plate.

**Note:** When installing this EMC access plate in a system unit, ensure that slotted screws are used to secure the shield to the frame.

5. Disconnect the cables that are connected to the PCI card.

**Note:** Label the cables to ensure correct installation.

6. Record the location of the card being removed.
7. Remove the screw that holds the card bracket.
8. Pull the card out of the system.
9. Remove the alignment pins from the corners of the cache card **A**.
10. Pull the cache card out of the connector at the rear of the Storage IOA card.

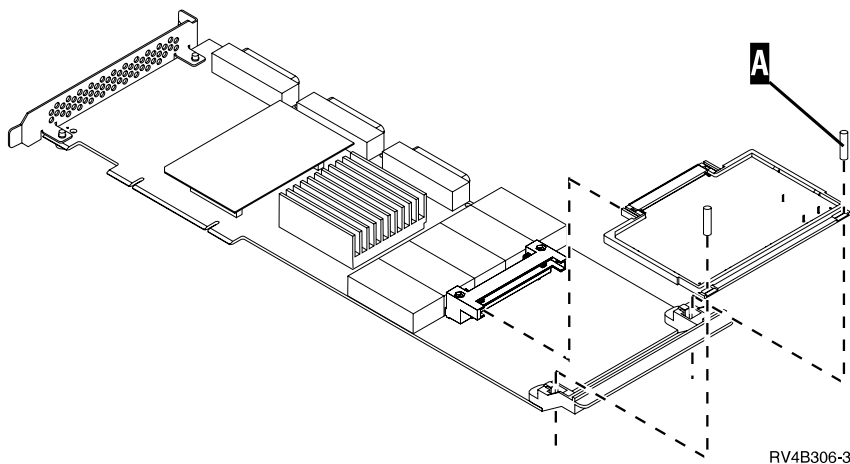


Figure 87. Cache card removal

This ends the procedure.

## Cards—Cache, Type 4700 and 6503 (SPD-Book)

**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

**CAUTION:**

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

**CAUTION:**

This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)

### Parts Catalog References

- None

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the rear covers from the expansion unit (see “Covers” on page 839).
4. Loosen the screws on the card retaining bar and move it up to release the card latches.
5. Remove the adapter card from the full-size card by doing the following:
  - a. Press the two latch surfaces together to release the latch.
  - b. Rotate the latch downward.
  - c. Pull on the latch to remove the adapter card from the full-size card.

This ends the procedure.

## Cards—PCI

**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

**CAUTION:**

This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)

**CAUTION:**

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

### Parts Catalog References

- None

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the covers (see “Covers” on page 839).

## System Unit Removal and Installation

4. Remove the safety shield (see "Safety Cover – PCI Card" on page 861).
5. Remove the EMC access plate.

**Note:** When installing this EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

6. Disconnect the cables that are connected to the PCI card.

**Note:** Label the cables to ensure correct installation.

7. Record the location of the card being removed.
8. Remove the screw that holds the card bracket.
9. Pull the card out of the system.

**Note:** If you are exchanging a type 4758 PCI Cryptographic Coprocessor, go to "Cards-PCI Type 4758 Disablement Procedure" on page 835.

### Attention:

**Note:** If you are exchanging a type 2726 or 2741, you must remove the cache card from the original type 2726, 2741 card and install it on the new card. See "Cards-Cache, Type 4010" on page 832.

**Note:** If you are exchanging a type 2748, you must place the mode jumper in the same location as it is on the card that you are replacing. See "Storage I/O Card Modes and Jumpers" on page 774 for information on mode and jumper locations.

This ends the procedure.

## Cards-PCI Type 4758 Battery Replacement Procedure

This procedure demonstrates the proper method for replacing the Type 4758 PCI Cryptographic Coprocessor card's batteries.

### CAUTION:

**The battery is a lithium battery. To avoid possible explosion, do not burn or charge the battery. Exchange only with the IBM-approved part. Discard the battery as instructed by local regulations. (RSFTC227)**

### Procedure

1. Power off the system or expansion tower (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
2. If you are working in an expansion tower disconnect the power cord.
3. Remove the cover from the expansion slots. (See "Covers" on page 839 or if you are working in a FC 5065 or 5066 expansion tower see "Covers" on page 867.)
4. Remove the PCI Cryptographic Coprocessor card from the PCI-bus slot in the unit.
5. Find the location of the two lithium batteries. They are located in adjacent holders, with the left holder above the J3 connector. Refer to the illustration below.

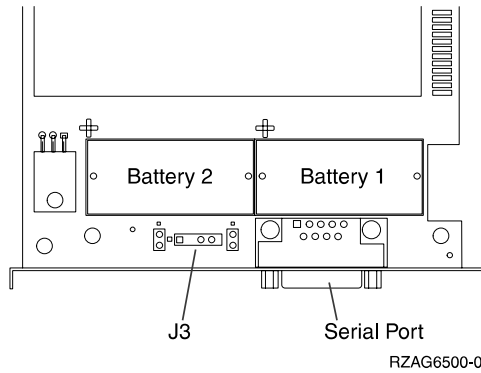


Figure 88. Battery Locations on the 4758 PCI Cryptographic Coprocessor

6. **Attention:** Any loss of battery power erases data stored in the card's protected memory and renders the card useless.
7. Open the battery replacement kit.
8. Insert one of the new batteries into the battery tray provided with the kit.

**Note:** The battery '+' must be oriented in the battery tray with the same polarity matching the '+' on the tray.

9. Connect the battery tray's cable to the J3 connector on the 4758 card.

**Note:** This maintains battery power to the card while the new batteries are installed one at a time. Refer to step 6 of this procedure.

10. Remove the battery warning label which covers Battery 1 and Battery 2. Discard the label.
11. Replace the battery in the Battery 1 position with a new battery.

**Note:** The battery '+' must be oriented in the holder with the same polarity matching the '+' on the holder.

12. Replace the battery in the Battery 2 position with the battery in the battery tray.

**Note:** The battery '+' must be oriented in the holder with the same polarity matching the '+' on the holder.

13. Remove the battery tray from the J3 connector and discard it.
14. Place the new Battery Warning label (PN 04K9421) over the 2 new batteries which were just installed.
15. Reinstall the card.

**This ends the procedure.**

## Cards-PCI Type 4758 Disablement Procedure

**Attention:** For security reasons, when replacing the cryptographic coprocessor, use the following procedure.

This procedure demonstrates the proper method for disabling the Type 4758 PCI Cryptographic Coprocessor card. The disablement procedure assures that the contents of the Coprocessor's protected memory are set to zeroes. The cryptographic master key and other data stored in the protected memory will be lost.

## System Unit Removal and Installation

### CAUTION:

The battery is a lithium battery. To avoid possible explosion, do not burn or charge the battery. Exchange only with the IBM-approved part. Discard the battery as instructed by local regulations. (RSFTC227)

### Procedure

1. Power off the system or expansion tower (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
2. If you are working in an expansion tower disconnect the power cord.
3. Remove the cover from the expansion slots. (See "Covers" on page 839 or if you are working in a FC 5065 or 5066 expansion tower see "Covers" on page 867.)
4. Remove the PCI Cryptographic Coprocessor card from the PCI-bus slot in the unit.
5. Find the location of the two lithium batteries. They are located in adjacent holders, with the left holder above the J3 connector. Refer to the illustration below.

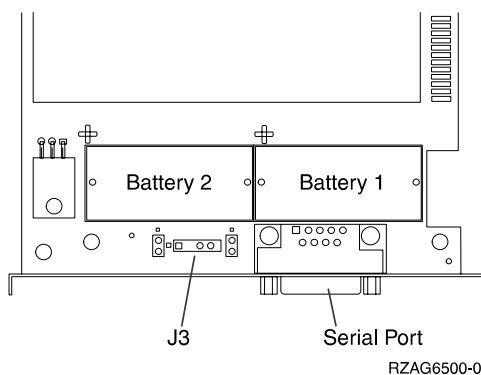


Figure 89. Battery Locations on the 4758 PCI Cryptographic Coprocessor

**Note:** The loss of battery power erases data stored in the card's protected memory and renders the card useless.

6. Remove the battery in the "Battery1" holder (right side).
7. Remove the battery in the "Battery2" holder (left side). When this has been accomplished, the PCI Cryptographic Coprocessor card has been disabled.
8. You can now install the new card.

**This ends the procedure.**

## Cards—SPD (Book)

**Attention:** All cards are sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1061).

### CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

### Parts Catalog References

- None

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the rear covers from the expansion unit (see “Covers” on page 839).
4. Loosen the screws on the card retaining bar and move it up to release the card latches.
5. Label and disconnect any cables attached to the card you are going to remove.
6. If you are working with card type 2620, 2628, 65x2, or 6532, 6533, read the following:

#### CAUTION:

**This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)**

7. If you are working with card type 2664 read the following:

#### DANGER

**Use caution when installing or modifying telephone lines. Disconnect the lines at the network interface before working with telephone wires that are not insulated. Never install telephone jacks that are not waterproof in wet locations. Do not install or modify telephone lines or use a telephone (other than a cordless type) during an electrical storm. Do not use a telephone to report a gas leak in the area of the leak. (RSFTD213)**

8. If you are working with card type 2620 or 2628, read the following:  
**Attention:** Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read “Important Cryptographic I/O Processor Information” on page 785 before disconnecting or removing the cryptographic I/O processor.
9. If you are working with card type 2624, read the following:  
If a retainer is installed on the adapter card in adapter card position A and you need to remove this plug to exchange the adapter card, ensure that you reinstall the retainer.
10. If you are removing a full-size card from the slot, do the following:
  - a. Press the two latch surfaces together to release each latch.
  - b. Pull on both latches at the same time to remove the card from the slot.
11. If you are removing an adapter card from a full-size card, do the following:
  - a. Remove any cables or wrap plugs from the adapter cards.
  - b. Press the two latch surfaces together to release the latch.
  - c. Rotate the latch downward.
  - d. Pull on the latch to remove the adapter card from the full-size card.

**This ends the procedure.**

### Clock Card

#### CAUTION:

**This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)**

## System Unit Removal and Installation

### Parts Catalog References

- None

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the covers (see “Covers” on page 839).
4. Remove the EMC access plate.

**Note:** When installing this EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

Are you removing the clock card from BACKPL8?

**No      Yes**

↓

- a. Remove the cover over the processor and memory cards.
- b. Remove the clock card from location M06 on the processor card.

**This ends the procedure.**

5. Remove BACKPL9 (see “BACKPL9–N-way Processor Backplane” on page 829).
6. Remove the clock card from the rear of the backplane.

**This ends the procedure.**

## Control Panel

**Attention:** The control panel is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

### CAUTION:

**This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)**

### Parts Catalog References

- “Assembly 2: Models 600 or S10 System Unit” on page 954
- “Assembly 3: Control Panel Assembly - 600 or S10 System Unit” on page 958
- “Assembly 7: Model 620, 720, or S20 System Unit” on page 966
- “Assembly 8: Control Panel Assembly - Models 620, 720, or S20 System Unit (Single Processor)” on page 972
- “Assembly 10: Models 620, 720, or S20 System Unit with Expansion Unit” on page 976
- “Assembly 12: Control Panel Assembly - Model 620, 720, or S20 System Unit (N-way Processor)” on page 990

### Procedure

**Note:** The control panel is BACKPL1x (see “System Unit and Expansion Unit Locations and Addresses” on page 712).

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
2. Disconnect the power cord from the system unit.



3. Remove the front cover.
4. Remove the screws that hold the control panel assembly.
5. Remove the control panel.
6. Disconnect the cables connected to the control panel card.
7. Remove the control panel card.
8. Reverse the previous steps to install the new control panel.
9. **After the installation is complete, IPL the system in MANUAL MODE.**
10. **Have the customer set the time and date.**

This ends the procedure.

## Control Panel Battery

### CAUTION:

The battery is a lithium battery. Only trained service personnel may replace this battery using the instructions in the Problem Analysis, Repair, and Parts service manual. To avoid possible explosion, do not burn or charge the battery. Exchange only with the IBM-approved part. Discard the battery as instructed by local regulations. (RSFTC241)

### Parts Catalog References

- None

The control panel battery is located on BACKPL2, the system unit PCI-bus backplane.

### Procedure

1. Power off the system. (see "Powering Off and Powering On the System or Expansion Tower" on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the covers (see "Covers").
4. Remove the left side EMC access plate.

**Note:** When installing this EMC shield, ensure that slotted screws are used to secure the shield to the frame.

5. Remove the PCI cards preventing access to the battery (see "Cards-PCI" on page 833).

**Note:** Record the location of the PCI cards.

6. Remove the control panel battery. Use a flat object (screwdriver) to pry the battery out.
7. Reverse the previous steps to install the new control panel.
8. **After the installation is complete, IPL the system in MANUAL MODE.**
9. **Have the customer set the time and date.**

This ends the procedure.

## Covers

### Parts Catalog Reference

- "Assembly 1: Cover Assemblies - 600 or S10 System Unit" on page 952
- "Assembly 6: Cover Assemblies - Model 620, 720, or S20 System Unit" on page 964

## System Unit Removal and Installation

- “Assembly 9: Cover Assemblies - Models 620, 720, or S20 System Unit with Exp Unit” on page 974

### Procedure

If you are working in a FC 5065 or 5066 expansion tower go to “Covers” on page 867.

Are you working on a Model 62x, S2x or 720 system unit?

No      Yes

- ↓      The pedestal covers must be removed before removing the system unit covers above them. All the pedestal covers are removed the same way:

**Note:** The front pedestal cover must be removed first.

Grasp the top of the cover and pull it away from the system unit. Lift the cover up and out of the locating slots in the frame.

Continue with step 1 of this procedure.

1. Remove the front cover:
  - a. Unlock the front cover (notch on key is to the left when unlocked).
  - b. Slide the cover latches (louvers 2 thru 5) up to unlatch the cover.
  - c. Grasp along the top, center of the cover and pull it away from the system unit. Lift the cover up and out of the locating slots on the base of the frame.
2. Remove the rear cover:

**Note:** Ensure the system is powered off before continuing this procedure. The system powers off immediately when the cable cover is removed. Removing the cable cover without first powering off the system may cause loss of data in main storage.

- a. Lift the cover up and away from the frame.
3. Remove the top cover:
    - a. Loosen the cover lock retainer screws at the rear of the system.
    - b. Slide the cover toward the front of the system.
    - c. Lift the cover up and away from the frame.
  4. Remove the side cover(s):
    - a. Slide the cover latches (louvers 2—5) up to expose the side cover screws.
    - b. Remove the front and rear screws that hold the cover.

**Note:** When installing the covers, ensure that slotted screws are used to secure the cover to the frame.

- c. Lift the cover up and away from the frame.
- d. Remove the side EMC cover(s):

**Note:** Ensure the system is powered off before continuing this procedure. The system powers off immediately when the EMC cover is removed. Removing the EMC cover without first powering off the system may cause loss of data in main storage.

- 1) Remove the screws labelled A (the A is embossed in the metal plate).
- 2) Remove the EMC cover from the system.

**This ends the procedure.**

### Disk Unit — Dedicated and Concurrent

**Attention:** The disk unit is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

**Attention:** Work carefully with the disk unit. Excessive movement may damage the disk unit.

#### Parts Catalog References

- “Assembly 2: Models 600 or S10 System Unit” on page 954
- “Assembly 4: Disk Unit/Holder Assembly” on page 960
- “Assembly 7: Model 620, 720, or S20 System Unit” on page 966
- “Assembly 10: Models 620, 720, or S20 System Unit with Expansion Unit” on page 976
- “Assembly 11: Models 620, 720, or S20 Expansion Unit” on page 982

#### Procedure

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

1. Are you working in a 507x or 508x expansion tower?

**No      Yes**

↓ Go to “Disk Unit (Concurrent)” on page 894 or “Disk Unit (Dedicated)” on page 897.

2. Are you working in a FC 5065 or 5066 expansion tower?

**No      Yes**

↓ Go to “Disk Unit — Dedicated and Concurrent For FC 5065 or 5066” on page 872.

3. Were you directed here from “Chapter 7. Recovery Procedures” on page 919?

**Yes      No**

↓ Go to “Chapter 7. Recovery Procedures” on page 919.

4. Remove the front covers (see “Covers” on page 839).

5. Remove the EMC access plate.

**Note:** When installing this EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

6. Are you removing or installing a disk unit by using device concurrent maintenance?

**No      Yes**

↓ Go to “Concurrent Maintenance-Removal and Installation”.

7. Go to “Dedicated Maintenance-Removal and installation” on page 843.

#### Concurrent Maintenance-Removal and Installation

**Procedure:** To remove a disk unit using concurrent maintenance perform the following:

1. Select System Service Tools (SST). If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
2. Select the *Start a Service Tool* option.

## System Unit Removal and Installation

3. Select the *Hardware Service Manager* option.
4. Select *Device Concurrent Maintenance* and enter the required information in the information fields.
5. Press the Enter key on the console. After the delay time, the light above the device location will begin flashing. You now have 9 seconds to pull out firmly on the handle and pull the disk unit partially out of the frame.

**Attention:** If you remove the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

**Note:** The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.

Wait another 5 seconds to allow time for the disk to stop spinning. Then pull the disk unit the remaining way out of the frame.

6. The concurrent repair sequence takes 15 seconds to fully complete.

Does the light start flashing 2 times per second after the concurrent maintenance procedure has completed?

**No      Yes**

- ↓      The disk unit is not the cause of the problem. Schedule the system for dedicated repair in order to replace the disk unit backplane.

If the disk unit was in a location labeled Lxx, replace BACKPL5A.

If the disk unit was in a location labeled Fxx, replace BACKPL5B.

For part number information, see "Chapter 8. Parts Listing" on page 949 .

For replacement procedures, see BACKPL5x, see "BACKPL5x—Disk Unit Frame Assembly" on page 826.

**This ends the procedure.**

7. Remove the disk unit from the holder (see "Disk Unit – Removal from Holder" on page 845).

Replace the failing item (either the holder or the disk unit).

**This ends the removal procedure.**

8. Are you finished with the repair?

**No      Yes**

- ↓      Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**

9. **To insert a disk unit using Device Concurrent Maintenance:**

- a. Install the new disk unit into the holder (see "Disk Unit – Removal from Holder" on page 845).

- b. Select System Service Tools (SST). If you cannot get to SST, select DST.

**Do not perform a system IPL to get to DST.**

- c. Select the *Start a Service Tool* option.

- d. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**

- e. Slide the unit half-way into the mounting frame. **Ensure that the device does not contact the backplane at this time.**

## System Unit Removal and Installation

- f. Press the Enter key on the console. After the delay time, the light above the device location will begin flashing 10 times per second. You now have 9 seconds to push in firmly on the handle and push the disk unit completely into the frame.

**Attention:** If you install the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

**Note:** The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

10. Did the light above the device go on and remain on?

No      Yes

↓      **This ends the install procedure.**

11. Perform the device concurrent maintenance procedure again without physically moving the disk unit.

Did the light above the device go on and remain on?

No      Yes

↓      **This ends the install procedure.**

12. Did the light start flashing 2 times per second after the concurrent maintenance procedure was completed?

Yes      No

↓      There is a power problem. One of the following has occurred:

- The new disk unit is defective. Repeat this procedure using a different disk unit or disk unit holder.
- The disk unit backplane was damaged during the device concurrent maintenance procedure.

If the disk unit was in a location labeled Lxx, replace BACKPL5A.

If the disk unit was in a location labeled Fxx, replace BACKPL5B.

For part number information, see "Chapter 8. Parts Listing" on page 949.

For replacement procedures, see BACKPL5x, see "BACKPL5x—Disk Unit Frame Assembly" on page 826.

- There is a new problem with the power subsystem. Use the new reference code to solve the problem.

**This ends the procedure.**

13. What you replaced was not the failing item. If you replaced the disk unit, then perform this procedure again and replace the disk unit holder.

If you replaced the disk unit holder, replace the disk unit. Go to "Start Disk Service Here" on page 919 to replace the disk unit.

**This ends the procedure.**

## Dedicated Maintenance-Removal and installation

### Procedure:

1. Is the disk unit light at the location you are working with flashing 2 times per second?

No      Yes

## System Unit Removal and Installation

- ↓ The problem is either the disk unit holder, the disk unit, or the disk unit backplane.

Go to step 5 of this procedure.

2. **To remove a disk unit using dedicated maintenance perform the following:**
  - a. Power off the system. (see "Powering Off and Powering On the System or Expansion Tower" on page 789)
  - b. Disconnect the power cord from the system unit.
  - c. Pull out firmly on the handle to remove the disk unit.
  - d. Remove the unit from the holder (see "Disk Unit – Removal from Holder" on page 845).
  - e. Replace the failing item (either the holder or the disk unit).
  - f. Install the disk unit into the holder (see "Disk Unit – Removal from Holder" on page 845).
3. Are you finished with the repair?

**No      Yes**

- ↓ Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**

4. **To install a disk unit using dedicated maintenance perform the following:**
  - a. Power off the system. (see "Powering Off and Powering On the System or Expansion Tower" on page 789)
  - b. Disconnect the power cord from the system unit.
  - c. Install the disk unit into the holder (see "Disk Unit – Removal from Holder" on page 845).
  - d. Push in firmly on the handle to install the disk unit.
  - e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**

5. You are at this step because you are doing a dedicated repair and the disk unit light is flashing 2 times per second. Perform the following:
  - a. Make a note of the location of the disk unit that has the flashing light.
  - b. Power off the system. (see "Powering Off and Powering On the System or Expansion Tower" on page 789)
  - c. Remove the disk unit that had the flashing light.
  - d. IPL the system to DST. (see "Powering Off and Powering On the System or Expansion Tower" on page 789)
6. Approximately 20 seconds after powering on the system, look at the light at the disk unit location. Is the disk unit light flashing 2 times per second?

**No      Yes**

- ↓ The disk unit you removed was not the failing item. Perform the following:
  - a. Power off the system. (see "Powering Off and Powering On the System or Expansion Tower" on page 789)
  - b. If the disk unit was in a location labeled Lxx, replace BACKPL5A.  
If the disk unit was in a location labeled Fxx, replace BACKPL5B.

## System Unit Removal and Installation

For part number information, see “Chapter 8. Parts Listing” on page 949.

For replacement procedures, see BACKPL5x, see “BACKPL5x—Disk Unit Frame Assembly” on page 826.

**This ends the procedure.**

7. The disk unit or the disk unit holder is failing. Perform the following:
  - a. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
  - b. Repeat this procedure to install a new disk unit or disk unit holder.

**This ends the procedure.**

## Disk Unit – Removal from Holder

**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

### CAUTION:

**This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)**

### Parts Catalog References

- “Assembly 4: Disk Unit/Holder Assembly” on page 960.

### Procedure

1. If necessary, remove the disk unit from the system or expansion unit. (See the disk unit procedure in “Chapter 6. Removal and Installation Procedures” on page 821 .)
2. Loosen and remove screws **A** and **B** first. Then loosen and remove screws **C** and **D** .

**To install disk units into the casing:**

1. Tighten and torque the screws in the following sequence (see “Assembly 4: Disk Unit/Holder Assembly” on page 960).
  - **A**
  - **B**
  - **C**
  - **D**

2. Do not over tighten!

**This ends the procedure.**

## File Server IOP - Type 6506

### Parts Catalog References

- None

### Procedure

**Attention:** The storage card is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

1. Remove the file server IOP card from the system (see “Cards–SPD (Book)” on page 836).

## System Unit Removal and Installation

2. Place the card assembly on a flat surface with the latches next to the work surface.
3. Release the four clips **A** from the rail assemblies. It may be necessary to use a screwdriver to release the clips.
4. Rotate the top and bottom rail assemblies away from the card as shown.  
Remove the rails by lifting the cover at the hinge points.
5. Remove the clips **A**.

**Note:** When the clips are installed, the rails must be fully seated against the covers.

6. Remove the three cover screws **B** and the cover.  
Do not remove the two screws that attach the cover to the end cover.
7. Remove the crossover connector **C** by doing the following:
  - a. Turn the screw counterclockwise until the crossover connector separates from the processor card **D** and the adapter card **E**.
  - b. Remove the crossover connector.

**Attention:** When the crossover connector is installed, the corner notch **L** must be located as shown or the card may be damaged.

8. Remove the three screws **F**.
9. Remove the three standoff retainers **G**.
10. Remove the adapter card **E**.
11. Remove the crossover connector bracket **N**.

**Note:** The connector bracket must be installed in the same direction as shown.

12. Rotate and release **M**.
13. To remove the cover from the I/O processor card, do the following:
  - a. Remove the test port cover **H**.
  - b. Remove the test port connector standoffs **I**.
  - c. Remove the two screws **J** through the access holes in the cover.
14. Slide the I/O processor card out from the cover.

**Note:** If exchanging the I/O processor card, move the standoffs to new card.

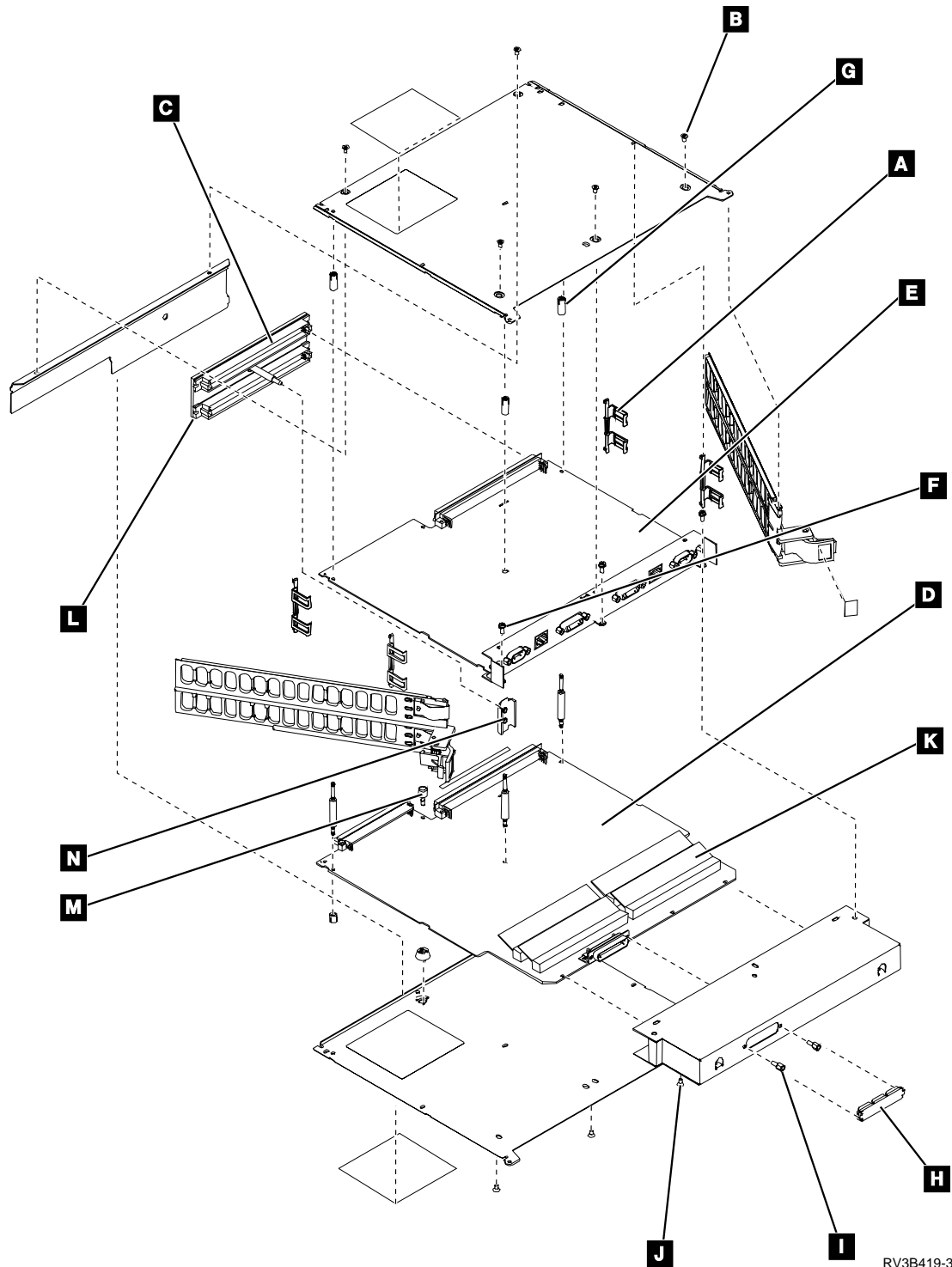
15. To remove the storage card **K** from the processor card, do the following:
  - a. Push outward on the latches located at the end of the card.
  - b. Pull the card from the card socket.

**Note:** The storage card location is marked next to each card socket on the processor card.

16. Install the parts of the file server IOP by reversing the removal procedure.  
After exchanging an item, go to "Verifying the Repair" on page 806.

**This ends the procedure.**





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## Integrated Netfinity Server for AS/400 IOA — Type 2850

**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

### Procedure

1. Remove the 2850 (INS) card from the system (see “Cards-PCI” on page 833).

## System Unit Removal and Installation

2. If the failing item was the Integrated Netfinity Server card, remove all the memory modules (DIMM) and install them on the new Integrated Netfinity Server card and install the card by reversing the removal procedure.

If the failing item was a memory module, install a new memory module on the Integrated Netfinity Server card and install the card by reversing the removal procedure.

**Note:** To remove a memory module, open the clips and remove the module.

**This ends the procedure.**

## Integrated Netfinity Server for AS/400 - Type 6616

### Parts Catalog References

- None

### Procedure

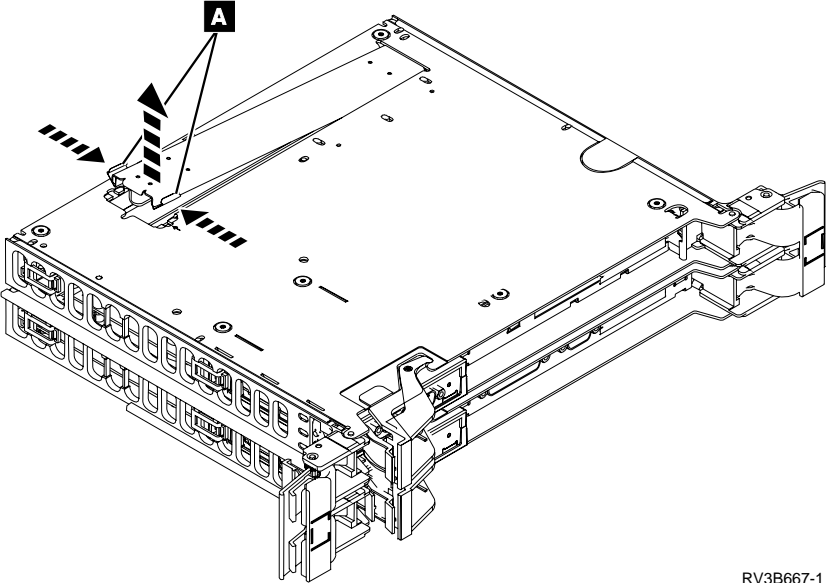
**Attention:** The memory module is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

1. Remove the Integrated Netfinity server card from the system (see “Cards–SPD (Book)” on page 836). It is a double wide card.
2. Place the card assembly on a flat surface with the door facing up.
3. Release the tabs **A** at one end of the door by pressing inward with a screwdriver or similar object.
4. Remove the door.
5. Remove the memory module(s) by opening the clips on each side and lifting it out.
6. If the failing item was the integrated Netfinity server card, first install the memory modules you removed on the new integrated Netfinity server card. Then install the card by reversing the removal procedure.

If the failing item was the memory module, install a new memory module on the integrated Netfinity server card and install the card by reversing the removal procedure.

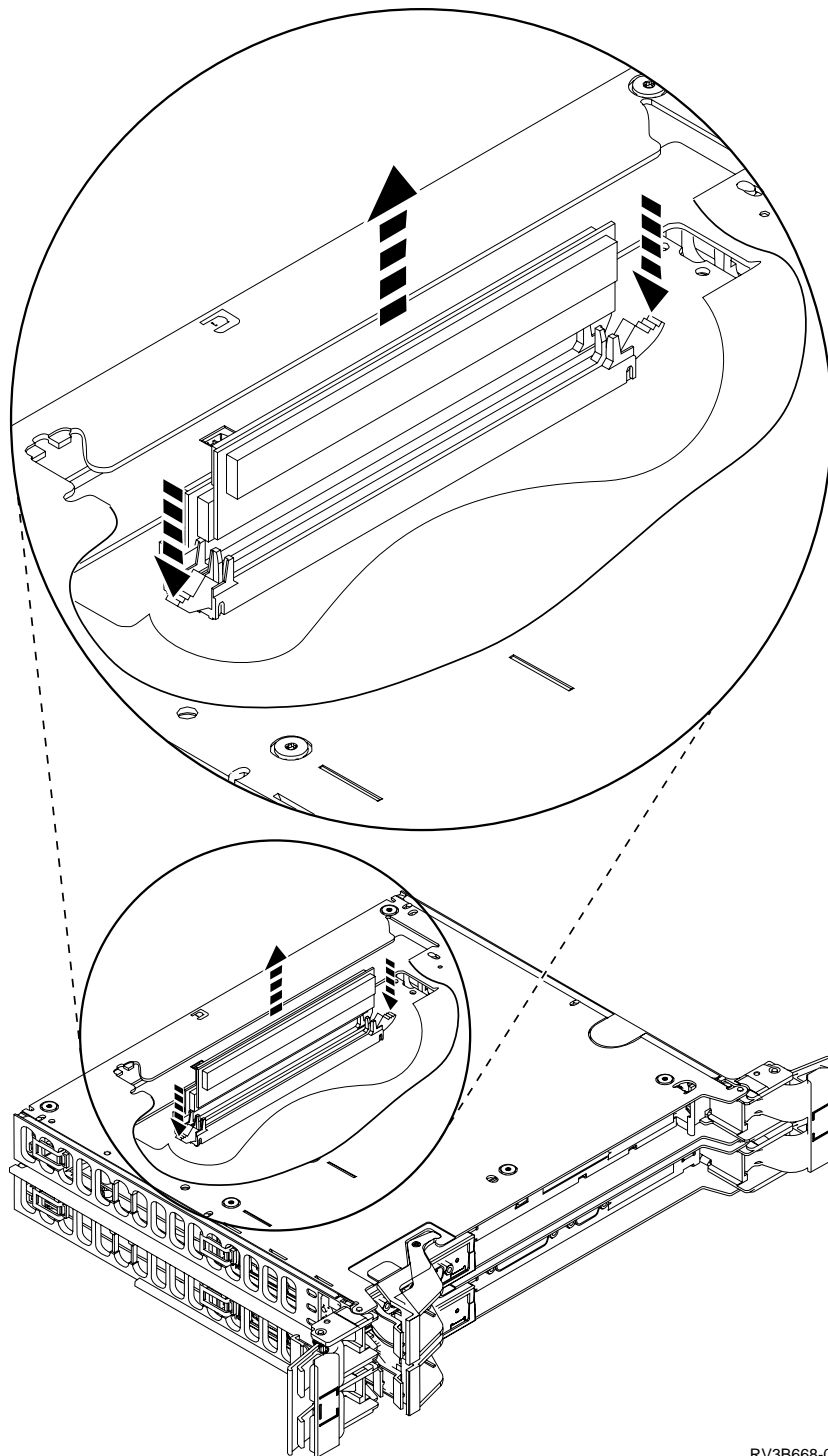
After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the procedure.**



RV3B667-1

## System Unit Removal and Installation



RV3B668-0

### Integrated Netfinity Server for AS/400 (Type 6617)

Refer to “Integrated Netfinity Server for AS/400 (Type 6617)” on page 906 for this procedure.

## LAN/WAN IOP Card — Type 2810

**Attention:** The main storage cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

### Procedure

1. Remove the 2810 card from the system (see “Cards–SPD (Book)” on page 836).
2. Remove 2 screws from bottom of each side of card (4 screws total).
3. Rotate the bottom rail away from the assembly.
4. Remove the IOA card from the assembly.
5. If you are replacing the IOA card, install the new IOA card into the assembly.
6. If you are replacing the 2810 card, install the IOA card into the new 2810 assembly.
7. Install the 2810 by reversing the removal procedure.
8. After exchanging an item, go to “Verifying the Repair” on page 806.
9. **This ends the procedure.**

## Memory Card and Memory Modules–Model 620, 720, or S20 Processor

### CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

### Parts Catalog References

- “Models 620, 720 or S20 System Unit” on page 968
- “Models 620, 720, or S20 System Unit with Expansion Unit” on page 978

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the covers (see “Covers” on page 839).
4. Remove the left side EMC access plate.

**Note:** When installing this EMC shield, ensure that slotted screws are used to secure the shield to the frame.

5. Remove the cover over the processor and memory cards.

**Note:** When installing this cover, ensure that slotted screws are used to secure the cover to the frame.

6. Release the card latch and remove the memory card.
7. To remove the memory module, release the clips on each side of the module and lift the module straight up and out of the socket.

**Note:** Record the memory module positions to ensure they are installed in the same locations.

**This ends the procedure.**

### Memory Modules—Model 600 or S10 Processor

#### Parts Catalog References

- “Assembly 5: Processor/Memory Assembly - Model 600 or S10” on page 962

#### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the Model 600 or S10 covers (see “Covers” on page 839).
4. Remove the left side EMC access plate.

**Note:** When installing this EMC shield, ensure that slotted screws are used to secure the shield to the frame.

5. Remove the Processor Card (see “Processor Card — Model 600 or S10” on page 856).
6. To remove the memory module, release the clips on each side of the module.

**Note:** Record the memory module positions to ensure they are installed in the same locations.

This ends the procedure.

### Micro Channel Adapter for a Wireless LAN IOA - Type 2663, 2668

#### Parts Catalog References

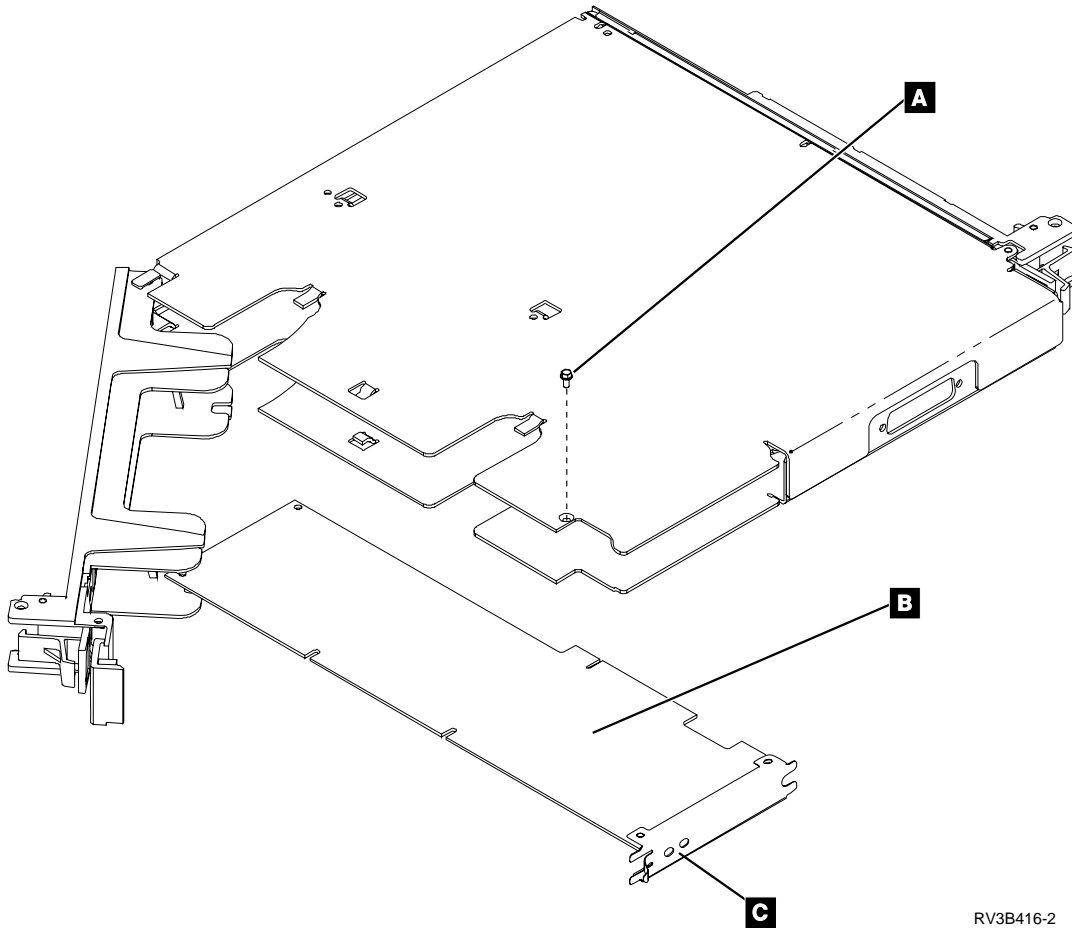
- None

#### Procedure

**Attention:** The micro channel adapter is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

1. Remove the cables **C**.
2. Remove the micro channel adapter assembly from the system (see “Cards-SPD (Book)” on page 836).
3. Remove the screw **A**.
4. Rotate the bottom rail away from the assembly as shown.
5. Remove the micro channel adapter **B**.
6. Install the micro channel adapter assembly by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 806.

This ends the procedure.



RV3B416-2

## Power Distribution —PWRBUS1X (System Side)

### Parts Catalog References

- None

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system.
3. Remove the covers (see “Covers” on page 839).
4. Remove the EMC access plates.

**Note:** When installing the system unit EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

5. Remove BACKPL9 frame (see “BACKPL9–N-way Processor Backplane” on page 829).
6. Remove the 845 Watt power supply in location A01 (see “Power Supply — 845 Watt (P01 and P02)” on page 855).
7. Remove the pedestal AMD (see “AMD 1, 2, 5, 6 and AMDP” on page 823).
8. Remove the power distribution cables from the sockets at the front of the bus assembly.

## System Unit Removal and Installation

9. Remove the screws that hold the power bus.

**Note:** When installing the bus, do not over tighten these screws. The power connectors are self-aligning and must be free to move as necessary.

10. Remove the screws that hold the bus.

**Do not remove any of the recessed screws.**

11. Pull the power distribution assembly out through the pedestal.

**This ends the procedure.**

## Power Distribution — PWRBUS1C (Expansion Side)

### Parts Catalog References

- None

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system.
3. Remove the covers (see “Covers” on page 839).
4. Remove the EMC access plates.

**Note:** When installing the expansion unit EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

5. Remove the SPD backplane (see “BACKPL6–SPD Bus (Expansion Unit)” on page 827)
6. Remove the 650 Watt power supply in location A02 and A03 (see “Power Supply — 650 Watt (P03 and P04)” on page 855).
7. Remove the 845 Watt power supply in location A04 (see “Power Supply — 845 Watt (P01 and P02)” on page 855).
8. Remove the pedestal AMD (see “AMD 1, 2, 5, 6 and AMDP” on page 823).
9. Remove the pedestal AMD mounting bracket.
10. Remove the power distribution cables from the sockets at the front of the bus assembly.
11. Remove the screws that hold the power bus.

**Note:** When installing the bus, do not over tighten these screws. The power connectors are self-aligning and must be free to move as necessary.

12. Remove the screws that hold the bus.
13. Pull the power distribution assembly out through the pedestal.

**This ends the procedure.**

## Power Supply — 480 Watt (P01)

### Parts Catalog References

- “Models 600 or S10 System Unit” on page 956
- “Models 620, 720 or S20 System Unit” on page 968

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)



## System Unit Removal and Installation

2. Disconnect the power cord from the system.
3. Remove the covers (see “Covers” on page 839).
4. Remove the left side EMC access plate.

**Note:** When installing this EMC shield, ensure that slotted screws are used to secure the shield to the frame.

5. Remove the AMDs (see “AMD 1, 2, 5, 6 and AMDP” on page 823).
6. Remove the screws that hold the AMD mounting bracket.
7. Remove all cables from the power supply.
8. Remove the screws that hold the power supply.

Are you removing the power supply from a system with BACKPL8 installed?

**No      Yes**

↓

- a. Remove BACKPL8 (see “BACKPL8–Single Processor and Backplane” on page 828).

**Note:** You only need to perform steps 5 through 10 of that procedure.

- b. Then, continue with the next step of this procedure.
9. Disconnect the cables from the power supply.
  10. Remove the power supply.

**This ends the procedure.**

## Power Supply — 650 Watt (P03 and P04)

### Parts Catalog References

- “Models 620, 720, or S20 Expansion Unit” on page 988

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system.
3. Remove the covers (see “Covers” on page 839).
4. Disconnect the UPS power jumper cables from the rear of the system.
5. Remove the pedestal EMC access plate.
6. Remove the screws that hold the power supply.
7. Remove the power supply by pulling it straight out of the pedestal frame.

**This ends the procedure.**

## Power Supply — 845 Watt (P01 and P02)

### Parts Catalog References

- “Models 620, 720, or S20 Expansion Unit” on page 986
- “Models 620, 720, or S20 Expansion Unit” on page 988

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system.

## System Unit Removal and Installation

3. Remove the covers (see “Covers” on page 839).
4. Disconnect the UPS power jumper cables from the rear of the system.
5. Remove the pedestal EMC access plate.
6. Remove the screws that hold the power supply.
7. Remove the power supply by pulling it straight out of the pedestal frame.

**This ends the procedure.**

## Processor Card — Model 600 or S10

**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

### CAUTION:

**This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)**

### Parts Catalog References

- “Assembly 5: Processor/Memory Assembly - Model 600 or S10” on page 962

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the Model 600 or S10 covers (see “Covers” on page 839).
4. Remove the left side EMC access plate.

**Note:** When installing this EMC shield, ensure that slotted screws are used to secure the shield to the frame.

5. Disconnect the power cable to the processor card (pull **down**, not out).
6. Remove the card retainer screws.
7. Pull the processor card out of the system.
8. Release the latches that hold the processor card assembly.
9. Open the plastic enclosure by pressing the plastic locking clips.
10. Release the clips on the sides of the memory modules to remove them.

**This ends the procedure.**

## Processor Card — Model 620, 720, or S20

**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

### CAUTION:

**This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)**

### Parts Catalog References

- “Models 620, 720 or S20 System Unit” on page 968
- “Models 620, 720, or S20 System Unit with Expansion Unit” on page 978

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the covers (see “Covers” on page 839).
4. Remove the left side EMC access plate.

**Note:** When installing this EMC shield, ensure that slotted screws are used to secure the shield to the frame.

5. Remove the cover over the processor and memory cards.
6. Release the card latch and remove the processor card.

**This ends the procedure.**

### Interactive Card

#### Procedure:

1. Remove the processor using “Processor Card — Model 600 or S10” on page 856 or “Processor Card — Model 620, 720, or S20” on page 856.
2. Open the cover on the bottom of the processor book.
3. Wiggle the interactive card out of the processor book.
4. The card is keyed so that the card can only be installed on the processor in the correct way.
5. To assist with label tampering detection, verify that the new parts have the same type numbers as the parts which are currently installed in the customer’s machine. To verify the correct interactive card in the customers system:
  - a. Read the logo label that is covering a module on the front of the interactive card that you removed from the system (this label is square with an IBM logo on it.) See Figure 90 on page 858.
  - b. Verify that the **type number** on the above logo label matches the type number of the replacement interactive card.
  - c. Use the type number from the logo label on the interactive card that you removed from the system to obtain a part number from the “Type, Model, and Part Number List” on page 380.

**Note:** The part number for the interactive card is the second part number listed in the “Type, Model, and Part Number List” on page 380.

- d. Compare the part number that you obtained from the “Type, Model, and Part Number List” on page 380 with the part number on the bar code label on the back of the interactive card that you removed from the system.

## System Unit Removal and Installation

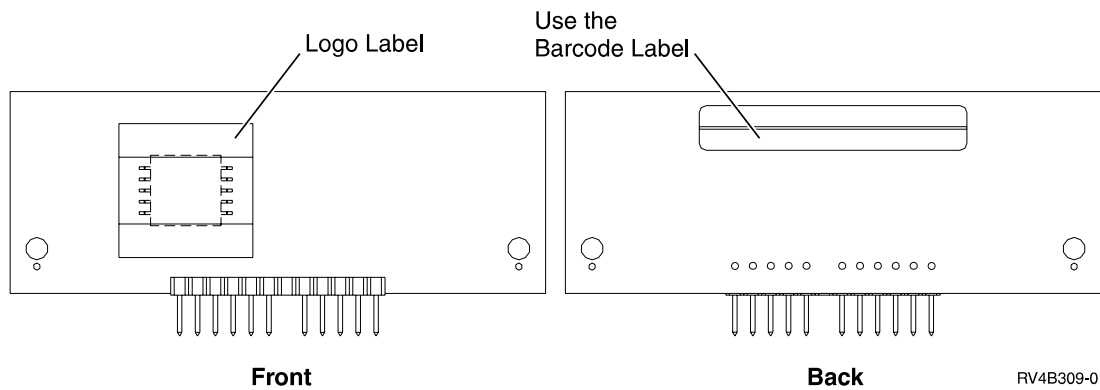


Figure 90. Interactive Card

If the replacement parts do not have a corresponding part in the customer's machine, contact your parts distribution center for a valid substitution string. Report any alteration of the logo label to your next level of support.

6. Assemble the new interactive card into the new processor card by reversing this procedure.

**Note:** Do not install the interactive card that you removed from the system into the new processor card. Return it along with the processor card that you are replacing.

This ends the procedure.

## Removable Media — Dedicated and Concurrent

### Parts Catalog References

- "Assembly 2: Models 600 or S10 System Unit" on page 954
- "Assembly 7: Model 620, 720, or S20 System Unit" on page 966
- "Assembly 10: Models 620, 720, or S20 System Unit with Expansion Unit" on page 976
- "Assembly 11: Models 620, 720, or S20 Expansion Unit" on page 982

### Procedure

**Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.

1. Remove media (if any) from the device. If the eject button on an optical device is failing and will not open, follow these steps:
  - a. Locate the manual eject hole. The manual eject hole is a small round hole on the face of the unit located next to the eject button.
  - b. Insert a metal rod that is approximately 1.2mm in diameter and at least 35 mm in length (1/16 x 13/8 inches) into the manual eject hole, and push firmly. A straightened paper clip works well.
  - c. The tray will eject out 1/4 to 1/2 inch. Continue by pulling the tray out by hand until the optical media can be removed.
2. Remove the front cover (see "Covers" on page 839).
3. Are you removing a unit by using device concurrent maintenance?

## System Unit Removal and Installation

**Note:** Device concurrent maintenance is only supported on a Model 620, 720, or S20.

Yes      No



- a. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
- b. Disconnect the power cord from the system unit.
- c. If you are removing the unit from a Model 600 or S10, first remove the left side EMC access plate. Then disconnect the cables from the rear of the removable media unit.

**Note:** When installing this EMC access plate, ensure that slotted screws are used to secure the shield to the frame.

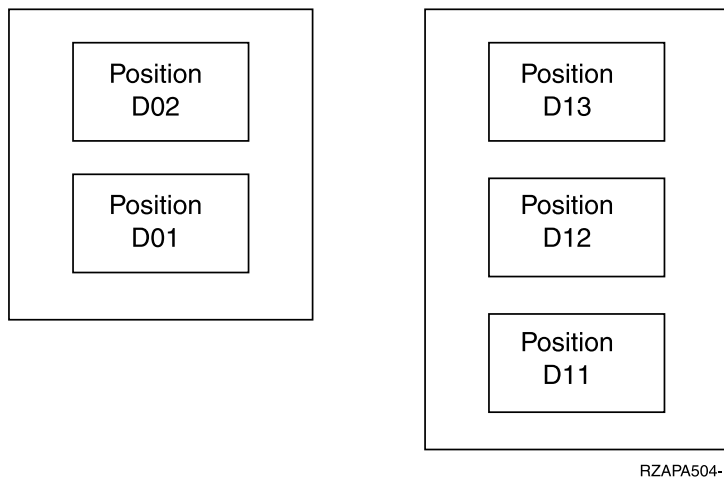
- d. Pull the handle on each side of the unit out and remove the unit.

**Note:** If the unit does not have a handle on each side, remove the screws on each side of the unit and then remove the unit.

- e. Remove the unit from the mounting frame.
- f. Refer to “Tape and Optical Unit Address Jumpers” on page 742 for the device.

**This ends the procedure.**

4. Before exchanging a removable media unit, you must ensure that the unit is not in use and is varied off.
5. Use the figure to determine the location of the internal removable media unit. Record this location for later use.



RZAPA504-1

Figure 91. Internal removable media locations for the System CEC tower and System PCI and SPD Expansion Unit

6. Perform the following:
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select the *Start a Service Tool* option.
  - c. Select the *Hardware Service Manager* option.
  - d. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**

## System Unit Removal and Installation

- e. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
- f. Press the Enter key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to pull out firmly on the handles and pull the unit partially out of the frame.

**Attention:** If you remove the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.

**Note:** The light at the top right of the device will go off and remain off as soon as the device is no longer making contact with the backplane.

- g. Remove the unit from the holder .

**This ends the removal procedure.**

**Continue with the next step of this procedure to install the new unit.**

7. Perform the following to **install** a new unit:
  - a. Install the new unit into the holder.
  - b. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**
  - c. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
  - d. Slide the unit partially into the mounting frame. **Ensure that the device does not contact the backplane at this time.**
  - e. Press the Enter key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to push in firmly on the handles and push the unit completely into the frame.

**Attention:** If you install the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.

**Note:** The light at the top right of the device will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

Did the light on the device go on and remain on?

**No      Yes**

↓      After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the install procedure.**

- f. Attempt the device concurrent maintenance procedure again without physically moving the unit.

Did the light above the device go on and remain on?

**No      Yes**

↓      After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the install procedure.**

- g. There is a power problem. Either:
  - The new unit is defective
  - The backplane was damaged during the device concurrent maintenance procedure.
  - There is a new problem with the power subsystem.

**This ends the procedure.**

## Safety Cover – PCI Card

### Parts Catalog References

- “Assembly 7: Model 620, 720, or S20 System Unit” on page 966.
- “Assembly 11: Models 620, 720, or S20 Expansion Unit” on page 982.

### Procedure

**Attention:** Ensure the system is powered off before continuing this procedure. The system powers off immediately when the cover is removed. Removing the cover without first powering off the system may cause loss of data in main storage.

Perform the following:

1. Remove the rear cover (see “Covers” on page 839).
2. Remove the screw that holds the interlock jumper plug.
3. Press down on the top of the safety shield to release the shield holding clips from the frame while (at the same time) pressing the tabs over the interlock jumper plug to release the shield from the interlock.
4. Pull the top of the shield away from the system unit and lift the shield out of the slots in the frame at the bottom of the safety shield.

This ends the procedure.

## SPCN Panel Card (SPNLCARD)

**Attention:** The SPCN panel card is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

### CAUTION:

**This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)**

### Parts Catalog References

- “Assembly 6: Cover Assemblies - Model 620, 720, or S20 System Unit” on page 964.
- “Assembly 7: Model 620, 720, or S20 System Unit” on page 966.
- “Assembly 9: Cover Assemblies - Models 620, 720, or S20 System Unit with Exp Unit” on page 974.
- “Assembly 10: Models 620, 720, or S20 System Unit with Expansion Unit” on page 976.

### Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the Front cover (see “Covers” on page 839).
4. Remove the screws that hold the control panel assembly.
5. Disconnect the 3 cables that connect the control panel to the SPCN panel card.

**Note:** Label the cables to ensure correct installation.

6. Remove the control panel.
7. Disconnect the cables connected to the SPCN panel card.

## System Unit Removal and Installation

8. Remove the SPCN panel card.
9. Reverse the previous steps to install the new SPCN panel card.
10. After the installation is complete, IPL the system in **Manual Mode**.
11. The system date and time will need to be set after this procedure is completed. See *AS/400 Service Functions*.

This ends the procedure.

## Uninterruptible Power Supply

### Parts Catalog References

- “Models 620, 720, or S20 System Unit” on page 970
- “Models 620, 720, or S20 System Unit with Expansion Unit” on page 980

### Important UPS Information

Before continuing the repair action, read and understand the following information. It is important that the instructions to verify the repair are followed.

After completing a repair action, you must run a battery test from the Hardware Service Manager – SPCN display. The test is required to verify the repair and also to reset the 90-day battery test timer.

If the battery is not charged, the UPS may reject the test and the HST display will show a status code of 2C. Any other code indicates that the test was successful. Depending on the state of the battery charge, it may take up to 24 hours for the UPS to accept the test.

If the SRC that initiated the repair action was 1xxx 2403, 1xxx 2404, or 1xxx 2405, this SRC will display when the system is powered on after the repair action is complete. A battery test will reset this SRC indication. If the SRC is not reset after the battery test, the repair action was not successful and the UPS was not the failing item.

If the SRC that initiated the repair action was **not** 1xxx 2403, 1xxx 2404, or 1xxx 2405 and the repair action was successful, the system will power on and no SRC will display. However, the battery test must still be run to reset the 90-day timer. If the repair action was not successful, either the original SRC or a new SRC will display.

If a problem was detected during the battery test, the results may be misleading because the SRC may not return until a new test is required.

Once the battery test is successful, the repair action is complete.

### Procedure

**Attention:** Read “Important Continuously Powered Main Storage (CPM) Information” on page 785.

Before continuing with this procedure, ensure that you have read and understand the information in “Important UPS Information”.

1. Are you only doing concurrent maintenance on a UPS battery? (Service while powered on)

**No      Yes**

↓



## System Unit Removal and Installation

Go to step 5 of this procedure.

2. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
3. Disconnect the power cord from the system.

**Attention:** AC power must be removed to prevent the batteries from charging during the removal procedure.

4. **Attention:** Wait 2 minutes and 30 seconds before continuing this procedure. This ensures that the system is not running on the UPS batteries.
5. Remove the covers (see “Covers” on page 839).
6. Remove the pedestal EMC access plate.

Are you only exchanging the transformer?

**No      Yes**

↓

Go to step 10 of this procedure.

7. Remove the battery pack retaining bar.

**CAUTION:**

**Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)**

8. Disconnect the battery cable connectors from the connectors on the UPS power supply.

**CAUTION:**

**The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.**

**In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)**

9. Slide the battery pack out of the pedestal.
- Are you only exchanging the battery pack?

**No      Yes**

↓

**This ends the procedure.** Reverse this procedure to install or reinstall the battery.

10. Remove the front pedestal EMC access plate.
11. Remove the screws that hold the transformer assembly.

**DANGER**

|                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>Up to 240 V ac is present at the power module connectors when the main power cord is connected to a power source. (RSFTD010)</b> |
|-------------------------------------------------------------------------------------------------------------------------------------|

12. Slide the transformer assembly out the front of the pedestal.
- Are you only exchanging the transformer?

**No      Yes**

↓

**This ends the procedure.**

## System Unit Removal and Installation

13. Disconnect the UPS power jumper cables from the rear of the system.
14. Remove the screws that hold the UPS power supply.
15. Remove the screws that hold the power supply.
16. Slide the UPS power supply out of the pedestal.

---

## FC 5065 or 5066 Expansion Tower Removal and Installation Procedures

### AMDs (Air Moving Devices)

#### Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 996.

#### Procedure

1. Power off the expansion tower. (See “Powering Off and Powering On the System or Expansion Tower” on page 789.)
2. Disconnect the power cord from the expansion tower.
3. Open the rear cover. (See “Covers” on page 867.)
4. Remove the EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
5. Remove the screw from the EMC access plate for the AMD that you are replacing. For location information, see “FC 5065 and FC 5066 Expansion Towers” on page 752.
6. Remove the AMD by sliding it out of the enclosure while holding the EMC access plate open.
7. Install the AMD by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 806.

This ends the procedure.

### Battery

#### CAUTION:

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

#### Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 996.

#### Procedure

**Attention:** Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the backplane.

1. When the expansion unit is powered on indicated by the green panel light, do NOT power off the system. Go to step 3 on page 865 of this procedure.
2. If the system is running on battery power, AC power must be applied to all of the power supplies before continuing with this procedure or powered off.

## FC 5065 or 5066 Expansion Tower Removal and Installation

3. Open the rear cover. (See “Covers” on page 867.)
4. **Attention:** Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the PCI card enclosure.

If the console will accept commands, the system is not running on battery power. Continue with the next step of this procedure.

5. To remove the battery power unit perform the following:

### CAUTION:

**Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)**

- a. Remove the screws from the EMC access plate that is covering the the batteries.
- b. Remove the EMC access plate from the battery enclosure.
- c. Remove the top and bottom screws from the battery unit.
- d. Pull on the ring using two hands to remove the battery power unit.

### CAUTION:

**The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.**

**In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)**

Remove the battery unit from the frame.

- e. Install the battery power unit by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the procedure.**

## Battery Charger

### Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 996.

### Procedure

1. Power off the expansion tower. (See “Powering Off and Powering On the System or Expansion Tower” on page 789.)
2. Disconnect the incoming AC power cord from the expansion tower.
3. Open the rear cover. (See “Covers” on page 867.)
4. Disconnect all the power cords from the battery charger. (See “FC 5065 and FC 5066 Expansion Towers” on page 752.)
5. Remove the screws that are holding the charger to the frame.
6. Remove the battery charging unit.
7. Install the battery charger by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the procedure.**

## Cards–PCI in FC 5065 or 5066

**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

## FC 5065 or 5066 Expansion Tower Removal and Installation

### CAUTION:

This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)

### CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

## Parts Catalog References

- None

## Procedure

1. Power off the expansion tower. (See "Powering Off and Powering On the System or Expansion Tower" on page 789.)
2. Disconnect the incoming AC power cord from the expansion tower.
3. Open the rear cover. (See "Covers" on page 867.)
4. Remove the EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
5. Remove the screws that are holding the PCI card enclosure to the frame.
6. Disconnect the cable from the card that is located in C04 and partially slide the PCI card enclosure out of the tower until it stops.
7. Disconnect the cables that are connected to the PCI card that you are replacing.

**Note:** Label the cables to ensure correct installation.

8. Record the location of the card that you are removing.
9. Remove the screw that holds the card bracket to the enclosure.
10. Pull the card out of the PCI card enclosure.

**Note:** If you are exchanging a type 4758 PCI Cryptographic Coprocessor, go to "Cards-PCI Type 4758 Disablement Procedure" on page 835.

**Note:** If you are exchanging a type 2726 or 2741, you must remove the cache card from the original type 2726, 2741 card and install it on the new card. See "Cards-Cache, Type 4010" on page 832.

**Note:** If you are exchanging a type 2748, you must place the mode jumper in the same location as it is on the card that you are replacing. See "Storage I/O Card Modes and Jumpers" on page 774 for information on mode and jumper locations.

Install the card that you replaced by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 806.

This ends the procedure.

## Cards-Cache Battery Pack, for Type 2740, 2748

Go to "Cache Battery Pack, For Type 2740, 2748" on page 829.

## Cards–Cache Directory Cards, for Type 2740, 2748

Go to “Cache Directory Card, For Type 2740, 2748” on page 831.

## Cards–Cache, for Type 4010

Go to “Cards–Cache, Type 4010” on page 832.

## Control Panel-NB1

### Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 996.

### Procedure

**Attention:** The control panel is sensitive to electrostatic discharge. (See “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061.)

1. Power off the expansion tower. (See “Powering Off and Powering On the System or Expansion Tower” on page 789.)
2. Disconnect the power cord from the expansion tower.
3. Open the front cover. (See “Covers”.)
4. Pull on the blue handles that are located on each side of the unit and slide it partially out of the tower.
5. Disconnect the control panel cable from the rear of the control panel.
6. Remove the control panel.
7. Install the control panel by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the procedure.**

## Covers

### Parts Catalog References

- “Assembly 13: Cover Assemblies for FC 5065 and FC 5066 Expansion Towers” on page 992.

### Procedure

**Note:** The front and rear covers will swing open to a little more than 90 degrees. This makes it possible to replace all FRUs, without having to remove the covers.

**To open the front or rear covers perform the following:**

1. Unlock the cover (front only)
2. Release the cover latching mechanism by pushing in on the blue button “A” that is located midway along the right edge of the cover.
3. Grasp the top, right corner of the cover and pull it towards you to open it.
4. Do you need to remove the cover?

Yes      No

↓      **This ends the procedure.**

5. **To remove the cover:**

- a. After opening the cover, press down on the lever “B” that is located inside along the top, left side of the cover.

## FC 5065 or 5066 Expansion Tower Removal and Installation

- b. Tilt the top of the cover away from the tower and lift the cover off. See Figure 92 and Figure 93.

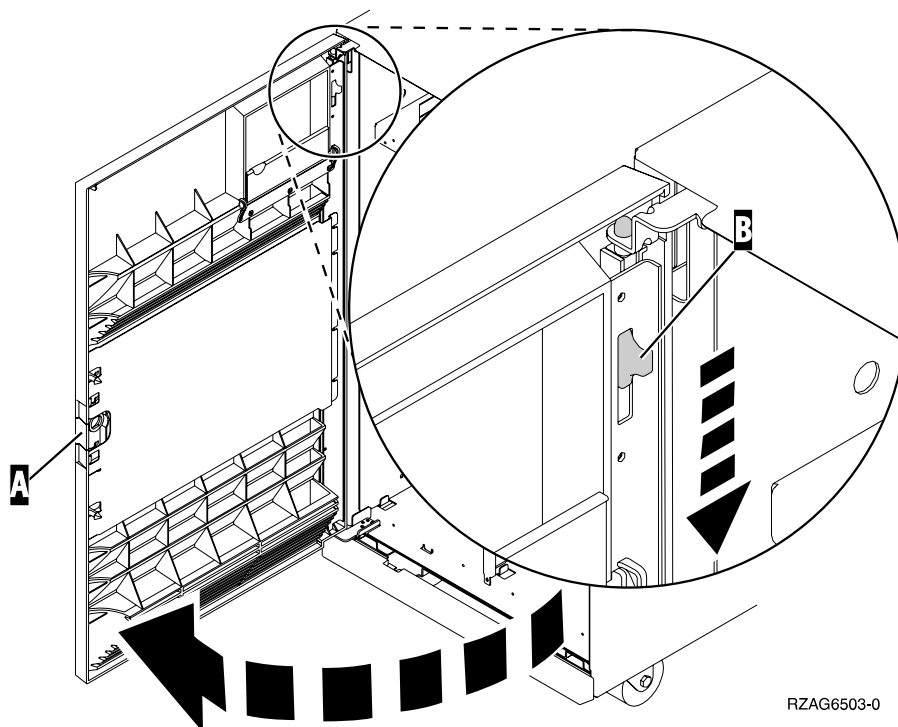


Figure 92. Front Cover - Removal

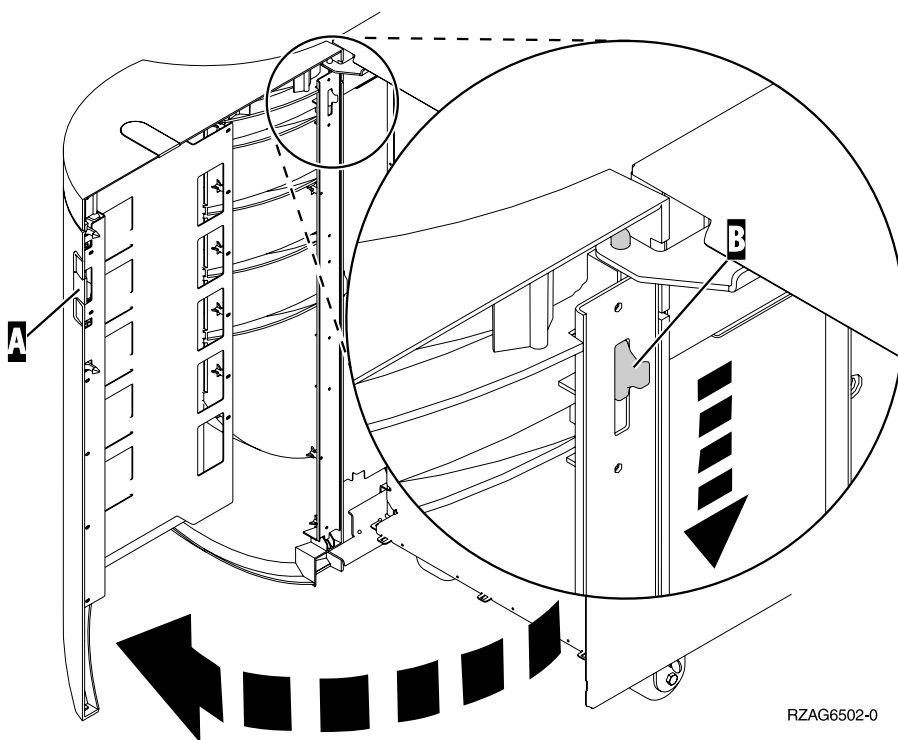


Figure 93. Rear Cover - Removal

## FC 5065 or 5066 Expansion Tower Removal and Installation

This ends the procedure.

### Device Boards – DB1 and DB2

#### Parts Catalog References

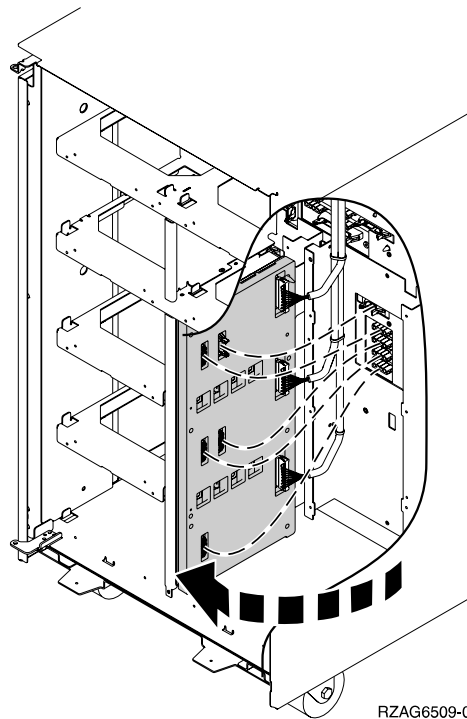
- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 996.

#### Procedure

1. Power off the expansion tower. (See “Powering Off and Powering On the System or Expansion Tower” on page 789.)
2. Disconnect the power cord from the expansion tower.
3. Open the front cover. (See “Covers” on page 867.)
4. From the front of the expansion tower **remove** the following:
  - a. Remove the EMC access plates from the disk unit enclosures that are located in front of the backplane that you are replacing. For location information, see “FC 5065 and FC 5066 Expansion Towers” on page 752. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - b. Record the locations of the disk units and then remove them from the disk unit enclosures that you just uncovered.  
**Attention:** The disk units are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).
  - c. Remove the screws that hold the disk unit cage assembly in to the frame.
  - d. Remove the two retaining screws that are located inside of the disk unit cage assembly (the top right and bottom left corners).
  - e. Remove the disk unit cage assemblies.
  - f. Remove the screws that hold the DASD shelf to the frame.
  - g. Remove the DASD shelf from the frame.
5. Remove the retaining screw that is holding the DASD board assembly to the frame.
6. Pull the DASD board assembly out until it slides off the guide pins, then rotate the DASD board assembly 90° to remove the cables that are located on the

## FC 5065 or 5066 Expansion Tower Removal and Installation

backside of it.



7. Remove the cables from the rear of the DASD board assembly and note their locations.

**Note:** Both ends of the ribbon cables are marked “LH” or “RH” indicating that one end of the cable is plugged in to either the left-hand (DB1) or right-hand (DB2) DASD board assembly. The other end of the cable is plugged in to either the left-most (LH) or right-most (RH) DASD controller card (The cables will crisscross in the center of the tower).

8. Remove the DASD board assembly.
9. Install the DASD board assembly by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 806.

This ends the procedure.

## Device Board – DB3

### Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 996.

### Procedure

1. Power off the expansion tower. (See “Powering Off and Powering On the System or Expansion Tower” on page 789.)
2. Disconnect the power cord from the expansion tower.
3. Open the rear cover. (See “Covers” on page 867.)
4. From the rear of the expansion tower **remove** the following:
  - a. Remove the EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - b. Remove the cables from the disk unit controller cards (IOAs) that are located inside the PCI card enclosure and note their locations.



## FC 5065 or 5066 Expansion Tower Removal and Installation

**Note:** Both ends of the ribbon cables are marked “LH” or “RH” indicating that one end of the cable is plugged in to either the left-hand (DB1) or right-hand (DB2) DASD board assembly. The other end of the cable is plugged in to either the left-most (LH) or right-most (RH) DASD controller card (The cables will crisscross in the center of the tower).

- c. Remove the screws that hold the PCI card enclosure in the frame.
  - d. Pull the PCI card enclosure partially out of the frame while lifting the cables clear of the enclosure.
  - e. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.
  - f. Remove the PCI card enclosure from the frame.
  - g. Remove the screws from the EMC access plate that is located inside the frame and directly above the power distribution board.
  - h. Remove the EMC access plate.
  - i. Reach through the opening and remove the cables from the backside of the base DASD board assembly (DB3).
5. Open the front cover. (See “Covers” on page 867.)
6. From the front of the expansion tower **remove** the following:
- a. Note the removable media locations and then remove them by pulling out on the handles which are located on each side of the unit.
  - b. Remove the control panel by pulling on the blue handles that are located on each side of the unit and sliding it partially out of the tower. Then, unplug the cable from the rear of the control panel. (See “Control Panel-NB1” on page 867.)
  - c. Unplug the control panel cable from the base DASD board assembly (DB3).
  - d. Remove the two retaining screws that are located inside of the removable media enclosure (the top right and lower left corners).
  - e. Remove the removable media enclosure.
  - f. Remove the EMC access plates from the disk unit enclosures that are located in front of the backplane (DB3). For location information, see “FC 5065 and FC 5066 Expansion Towers” on page 752. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - g. Record the disk unit locations and then remove them from the disk unit enclosures that you just uncovered.  
**Attention:** The disk units are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).
  - h. Remove the screws that hold the disk unit enclosures to the frame.
  - i. Remove the retaining screws that are located inside the disk unit enclosure.
  - j. Remove the disk unit enclosures.
  - k. Remove the screws that hold the center support bracket and shelf for the disk unit and removable media enclosure to the frame.
  - l. Remove the support bracket and shelf.
  - m. Remove the base DASD board assembly (DB3).
7. Install the base DASD board assembly by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 806.

## FC 5065 or 5066 Expansion Tower Removal and Installation

This ends the procedure.

### Disk Unit — Dedicated and Concurrent For FC 5065 or 5066

#### Parts Catalog References

- None.

#### Procedure

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Attention:** The disk unit is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

1. Were you directed here from “Chapter 7. Recovery Procedures” on page 919?

**Yes      No**

↓      Go to “Chapter 7. Recovery Procedures” on page 919.

2. After you have determined the location of the disk unit to replace, remove the front covers for access (see “Covers” on page 867).
3. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see “FC 5065 and FC 5066 Expansion Towers” on page 752.
4. Are you removing or installing a disk unit using concurrent maintenance?

**No      Yes**

↓      Perform “Concurrent Maintenance-Removal and Installation”.

5. Go to “Dedicated Maintenance-Removal and Installation” on page 874.

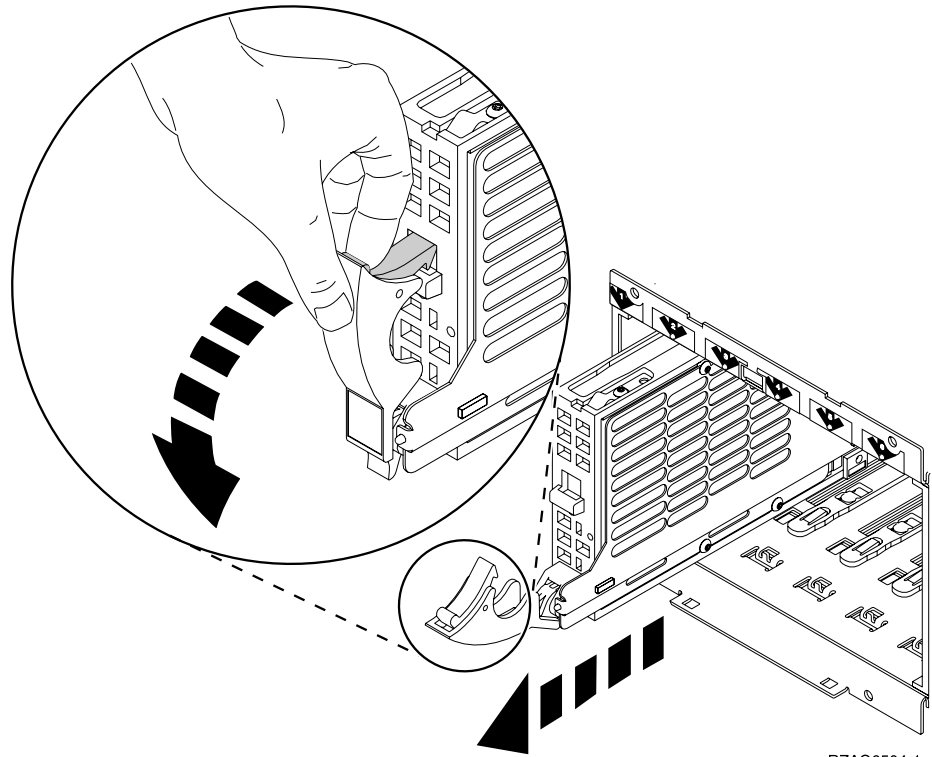
#### Concurrent Maintenance-Removal and Installation

##### Procedure:

1. **To remove a disk unit using concurrent maintenance perform the following:**
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select the *Start a Service Tool* option.
  - c. Select the *Hardware Service Manager* option.
  - d. Select *Device Concurrent Maintenance* and enter the required information in the information fields.
  - e. Press the Enter key on the console. After the delay time, the light above the device location will begin flashing. You now have 9 seconds to pinch the two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit partially out of the tower.

## FC 5065 or 5066 Expansion Tower Removal and Installation

**Attention:** If you remove the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.



**Note:** The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.

Wait another 5 seconds to allow time for the disk to stop spinning. Then pull the disk unit the remaining way out of the tower.

2. Are you finished with the repair?

**No**      **Yes**



Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**

3. To install a disk unit using concurrent maintenance perform the following:

- a. Select System Service Tools (SST). If you cannot get to SST, select DST.

**Do not perform a system IPL to get to DST.**

- b. Select the *Start a Service Tool* option.
- c. Select the *Hardware Service Manager* option.
- d. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**
- e. Slide the unit half-way into the tower. **Ensure that the device does not contact the backplane at this time.**
- f. Press the Enter key on the console. After the delay time, the light above the device location will begin flashing. You now have 9 seconds to insert the disk unit. Put the disk unit part way into the desired slot and rotate the

## FC 5065 or 5066 Expansion Tower Removal and Installation

handle of the disk unit towards you. Then push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.

**Attention:** If you install the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

**Note:** The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

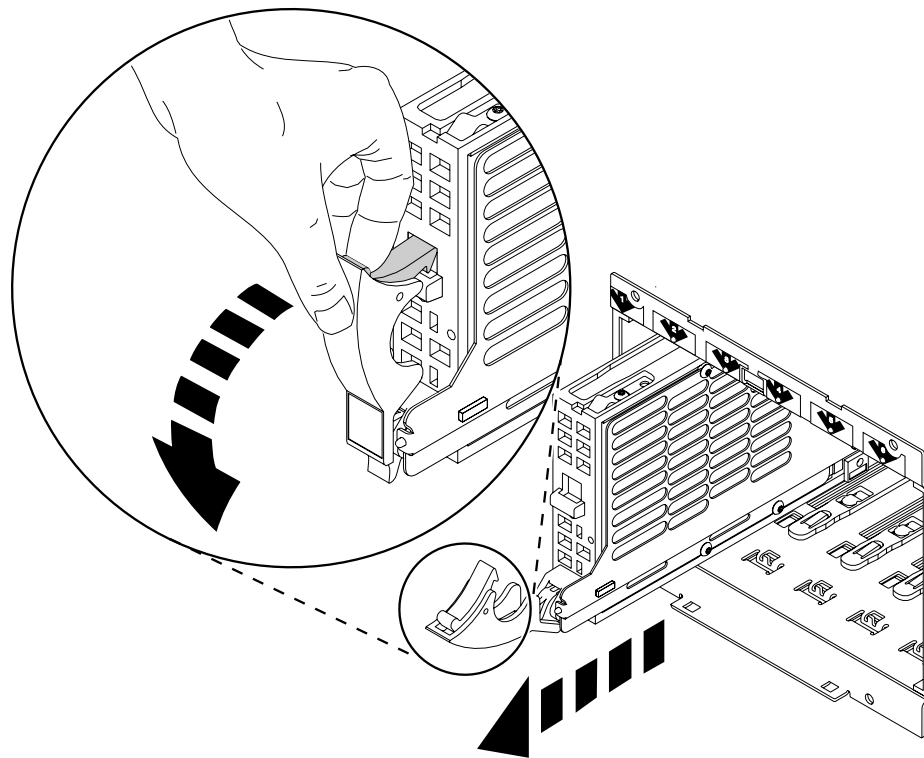
- g. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**

## Dedicated Maintenance-Removal and Installation

### Procedure:

1. **To remove a disk unit using dedicated maintenance perform the following:**
  - a. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
  - b. Disconnect the power cord.
  - c. To remove the disk unit, pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.
  - d. Remove the unit from the tower.



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2. Are you finished with the repair?

**No      Yes**

## FC 5065 or 5066 Expansion Tower Removal and Installation

- ↓ Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**

### 3. To Install a disk unit using dedicated maintenance perform the following:

- a. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
- b. Disconnect the power cord.
- c. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you.
- d. Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.
- e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

**This ends the procedure.**

## Power Distribution Backplane

### Parts Catalog References

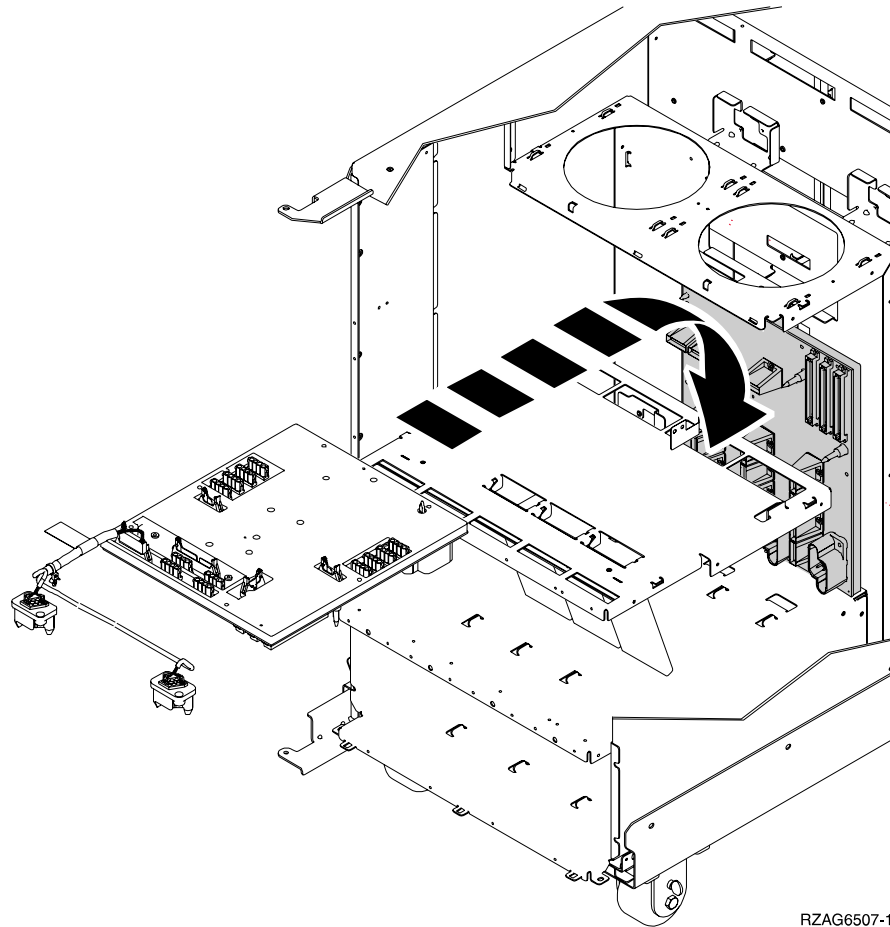
- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 996.

### Procedure

1. You **must** remove both disk unit backplanes DB1 and DB2. Perform “Device Boards – DB1 and DB2” on page 869 for each backplane.  
After you have removed **both** disk unit backplanes DB1 and DB2 return here and continue with step 3 of this procedure.
2. Open the rear cover. (See “Covers” on page 867.)
3. From the rear of the expansion tower remove the following:
  - a. The EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - b. The cables from the disk unit controller cards that are located inside the PCI card enclosure.  
**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).
  - c. The screws that hold the PCI card enclosure in the frame.
  - d. Pull the PCI card enclosure partially out of the frame while lifting the cables clear of the enclosure.
  - e. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.
  - f. The battery charger. (See “Battery Charger” on page 865.)
  - g. The power supplies. (See “Power Supply” on page 876.)
  - h. The blank filler plate(s).
4. From the front of the tower, reach through the frame and remove the cables from the backside of the power distribution backplane and note their locations.
5. From the rear of the tower, remove the mounting screws that hold the power distribution backplane to the frame.

## FC 5065 or 5066 Expansion Tower Removal and Installation

6. Pull the power distribution backplane slightly towards you and lift it up to remove it from the frame.



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7. Install the power distribution backplane by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 806.

**This ends the procedure.**

## Power Supply

### Parts Catalog References

- "Assembly 14: Final Assemblies for FC 5065 expansion tower" on page 996.

### Procedure

1. Is the system powered on?  

|     |               |
|-----|---------------|
| Yes | No            |
| ↓   | Go to step 3. |
2. Do NOT power off the system.
3. Remove the rear cover. (See "Covers" on page 867.)
4. Disconnect the power jumper cord from the unit that you are replacing. (See "FC 5065 and FC 5066 Expansion Towers" on page 752.)
5. Remove the bottom screw (if installed).
6. Rotate the handle from right to left to release the power supply from the frame.

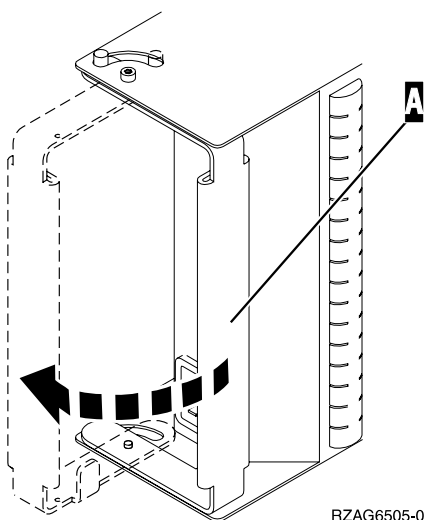
## FC 5065 or 5066 Expansion Tower Removal and Installation

### DANGER

Up to 240 V ac is present at the power module connectors when the main power cord is connected to a power source. (RSFTD010)

Remove the power supply from the frame.

**Note:** Do not slam the power supply in when installing it into the system. Insert it until the power supply engages the frame, then rotate the handle from left to right.



7. Install the power supply by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 806.

This ends the procedure.

## Removable Media — Dedicated and Concurrent

### Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 996.

### Procedure

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

1. Remove media (if any) from the device. If the eject button on an optical device is failing and will not open, follow these steps:
  - a. Locate the manual eject hole. The manual eject hole is a small round hole on the face of the unit located next to the eject button.
  - b. Insert a metal rod that is approximately 1.2mm in diameter and at least 35 mm in length (1/16 x 13/8 inches) into the manual eject hole, and push firmly. A straightened paper clip works well.
  - c. The tray will eject out 1/4 to 1/2 inch. Continue by pulling the tray out by hand until the optical media can be removed.
2. Are you removing a unit by using device concurrent maintenance?

Yes      No

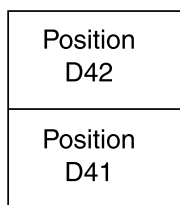


## FC 5065 or 5066 Expansion Tower Removal and Installation

- a. Power off the expansion tower. (see "Powering Off and Powering On the System or Expansion Tower" on page 789)
- b. Disconnect the power cord from the expansion tower.
- c. Open the front cover. (See "Covers" on page 867.)
- d. Pull on the handles which are located on each side of the unit and remove the unit.
- e. Install the new device by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 806.

**This ends the procedure.**

3. Before exchanging a removable media unit, you must ensure that the unit is not in use and is varied off.
4. Use the figure to determine the location of the internal removable media unit. Record this location for later use.



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Figure 94. Internal removable media locations

5. Perform the following:
  - a. Select System Service Tools (SST). If you cannot get to SST, select DST.  
**Do not perform a system IPL to get to DST.**
  - b. Select the *Start a Service Tool* option.
  - c. Select the *Hardware Service Manager* option.
  - d. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**
  - e. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
  - f. Press the Enter key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to pull out firmly on the handles and pull the unit partially out of the tower.  
**Attention:** If you remove the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.  
  
**Note:** The light at the top right of the device will go off and remain off as soon as the device is no longer making contact with the backplane.
  - g. Remove the unit from the tower.  
**This ends the removal procedure. Continue with the next step of this procedure to install the new unit.**
6. Perform the following to **install** a new unit:
  - a. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**
  - b. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
  - c. Slide the unit partially into the tower. **Ensure that the device does not contact the backplane at this time.**



## FC 5065 or 5066 Expansion Tower Removal and Installation

- d. Press the Enter key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to push in firmly on the handles and push the unit completely into the frame.

**Attention:** If you install the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.

**Note:** The light at the top right of the device will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

Did the light on the device go on and remain on?

**No      Yes**

↓ After exchanging an item, go to “Verifying the Repair” on page 806.  
**This ends the install procedure.**

- e. Attempt the device concurrent maintenance procedure again without physically moving the unit.

Did the light above the device go on and remain on?

**No      Yes**

↓ After exchanging an item, go to “Verifying the Repair” on page 806.  
**This ends the install procedure.**

- f. There is a power problem. Either:

- The new unit is defective.
- The backplane was damaged during the device concurrent maintenance procedure.
- There is a new problem with the power subsystem.

**This ends the procedure.**

## Tower Card Assembly-CB1

### Parts Catalog References

- “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 996.

### Procedure

1. Power off the expansion tower. (See “Powering Off and Powering On the System or Expansion Tower” on page 789.)
2. Remove the power cord from the expansion tower.
3. Open the rear cover. (See “Covers” on page 867.)
4. From the rear of the expansion tower remove the following:
  - a. The external cables from the rear of the PCI card enclosure and note their locations.
  - b. The EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
  - c. The cables from the top of the PCI cards and note their locations.

**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).
  - d. The screws that hold the PCI card enclosure to the frame.

## FC 5065 or 5066 Expansion Tower Removal and Installation

- e. Pull the PCI card enclosure partially out of the frame while lifting the cables clear of the enclosure.
- f. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.
5. Remove the PCI cards from the enclosure and note their locations. (See “Cards–PCI in FC 5065 or 5066” on page 865.)
6. Remove the retaining fasteners (standoffs) that hold the J11, J14, J15, and J16 connectors to the PCI enclosure.
7. Remove the screws that hold the tower card assembly to the PCI card enclosure. See “Assembly 14: Final Assemblies for FC 5065 expansion tower” on page 996.
8. Disconnect the top ribbon cable from the tower card assembly and note its location.
9. Turn the PCI card enclosure on to its side. Reach through the opening in the bottom of the enclosure and disconnect the two remaining ribbon cables from the tower card assembly.
10. Slide the tower card forward and tilt the rear edge of the tower card assembly upwards and lift it from the enclosure.
11. Install the tower card assembly by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the procedure.**

---

## FC 507x and 508X Expansion Towers

### AC Module and AMD

#### Procedure

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
2. Disconnect the power cord.
3. Remove the rear cover (see “Covers” on page 892).
4. **DANGER**

|                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>Up to 240 V ac is present at the power module connectors when the main power cord is connected to a power source. (RSFTD010)</b> |
|-------------------------------------------------------------------------------------------------------------------------------------|

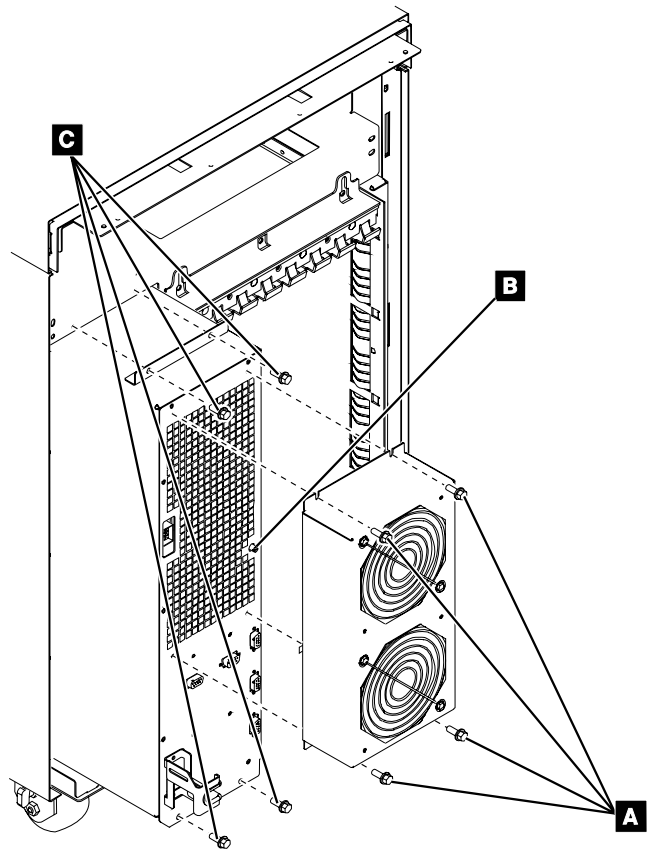
If there is a power supply or power supplies installed, remove the power supply or power supplies (see “Power Supply” on page 908).

5. Label and remove all cables connected to the ac module, including the power cord.
6. Remove the AMD assembly by removing the screws **A**.
7. If a leadscrew **B** is installed in the ac module, turn the leadscrew counterclockwise until it stops.
8. Remove the ac module by removing the screws **C**.
9. Install the parts of the ac module by reversing the removal procedure.

The AC module is spring loaded. Push the AC module to get the screws started.

After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the procedure.**



RV3B414-3

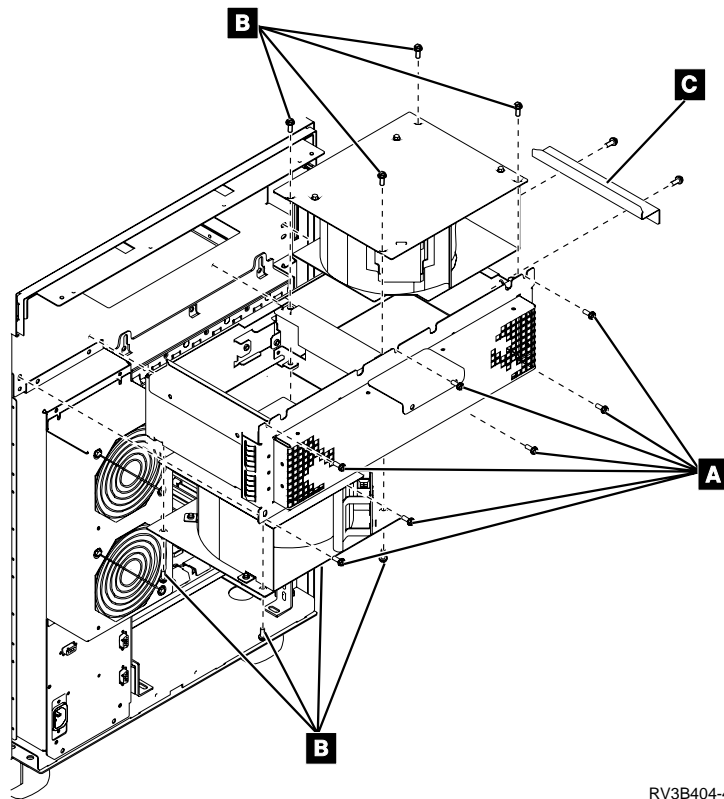
## AMD

### Procedure

1. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
2. Disconnect the power cord.
3. Remove the rear cover (see "Covers" on page 892).
4. Remove the screws **A**.
5. Pull the AMD assembly from the frame.
6. Remove the screws **B** that hold the AMD you are exchanging to the AMD assembly. You may need to remove the blower support bracket **C**.
7. Install the parts of the AMD assembly by reversing the removal procedure.

After exchanging an item, go to "Verifying the Repair" on page 806.

**This ends the procedure.**



RV3B404-4

## Battery Power Unit

### Procedure

If you are removing or installing a 2-part battery, see “Battery Power Unit (2-Part)” on page 883.

**Attention:** Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the card enclosure.

1. If the system has ac power on or if the system is powered on, the control panel backlight will be on.

Is the control panel green backlight on?

**No**      **Yes**

↓      Go to step 3 of this procedure.

2. Check the system ac power for failure and correct any problems found.
3. Remove the front cover (see “Covers” on page 892).
4. Loosen the screws **A**.
5. Remove the screws **B**.
6. Pull out and lift to remove the screen.
7. **Attention:** Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the card enclosure.

If the console will accept system commands, the system is **not** running on battery power. Continue with the next step of this procedure.

8. Remove the screws **C** to remove the battery power unit.

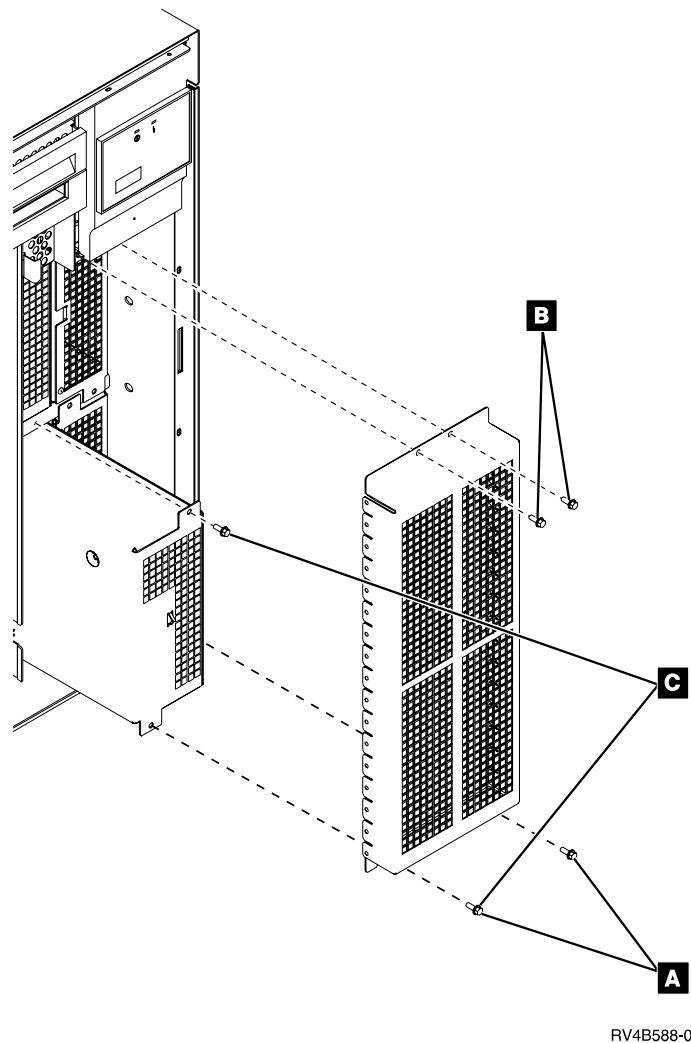
**CAUTION:**

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

9. Install the battery power unit by reversing the removal procedure.
10. After exchanging an item, go to "Verifying the Repair" on page 806.

**This ends the procedure.**



### Battery Power Unit (2-Part)

Use this procedure to remove the battery power unit that can be separated from the battery power unit charger. Also use this procedure to remove the battery power unit charger.

## FC 507x/508x Removal and Installation

### Procedure

1. Does the system have ac power on?

You can verify that ac power is applied by looking to see if the panel backlight is on.

No      Yes

↓      Do not power off the system. Go to step 3 of this procedure.

2. If the system is powered off or running on battery power, ac power must be applied to the ac module before continuing with this procedure.
3. Remove the front cover.
4. Pull out to remove screen **A**.
5. **Attention:** Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the card enclosure.  
If the console will accept system commands, the system is **not** running on battery power. Continue with the next step of this procedure.
6. To remove both the battery power unit charger **E** and the battery power unit **D**, perform the following:

#### CAUTION:

Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)

- a. Remove the screws **C**.
- b. Pull on the ring and then use two hands to remove the battery power unit and the battery power unit charger.
- c. Loosen the screws **B**.
- d. Separate the battery power unit from the battery power unit charger.

#### CAUTION:

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

7. To remove only the battery power unit **D**, perform the following:

#### CAUTION:

Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)

- a. Loosen the screws **B**.
- b. Pull on the ring, then use two hands to remove the battery power unit.

#### CAUTION:

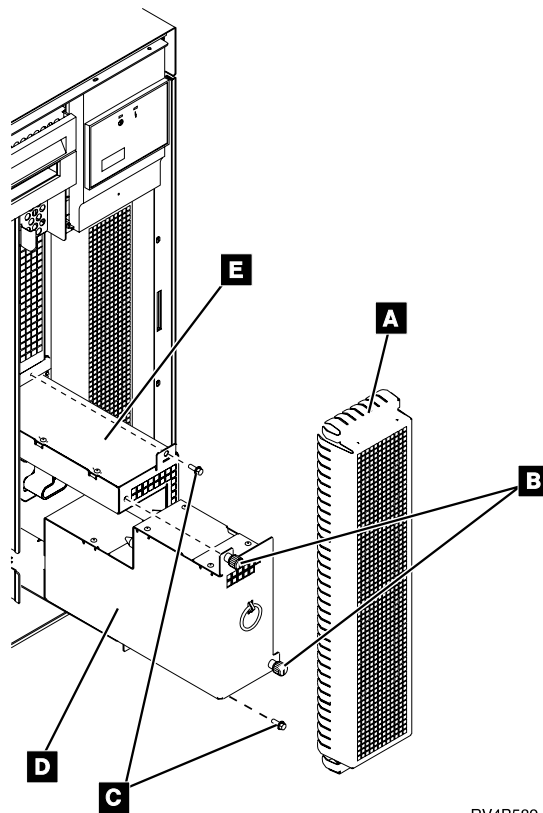
The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

8. Install the battery power unit and the battery power unit charger by performing the following:
  - a. Install the battery power unit charger into the system.
  - b. Insert and tighten the screws **C**
  - c. Install the battery power unit slowly into the system.
  - d. Tighten the screws **B**
  - e. Install the screen.
  - f. Install the front cover.

After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the procedure.**



RV4B589-0

## Battery Power Unit - External

### Procedure

1. Verify that ac power is applied by looking to see if the panel backlight is on.  
Does the system have ac power on?  
 No      Yes  
 ↓      Do not power off the system. Go to step 3 of this procedure.
2. If the system is powered off or running on battery power, ac power must be applied to the ac module before continuing with this procedure.
3. Remove the front cover (see “Covers” on page 892).
4. Loosen the screws **A**.

## FC 507x/508x Removal and Installation

5. Remove the screws **B**.
6. Pull out and lift to remove the screen.
7. **Attention:** Removing the external battery power unit charger or cable while the system is running on battery power causes the system to fail and may damage the external battery power unit and the card enclosure.  
If the console will accept system commands, the system is **not** running on battery power. Continue with the next step of this procedure.
8. To remove the cable **D**, do the following:
  - a. Remove screw **E** on the cable clamp.
  - b. Pull on the cable connector **C** to disconnect the cable from the charger.
  - c. Remove the cable from the cable clamp.
  - d. Remove the battery rear cover.
  - e. Remove the screws **F** and cover.
  - f. Remove the screws **G** and cable clamp.
  - g. Pull on the cable connector to disconnect the cable from the battery.
9. To remove the charger **H**, do the following:
  - a. Remove the screws **I**.
  - b. Pull the charger from the frame.
10. To remove the battery **J**, do the following:

### CAUTION:

The weight of this part or unit is more than 55 kilograms (121.2 pounds). It takes specially trained persons with a lifting device to safely lift this part or unit. (RSFTC206)

- a. Remove the battery rear cover.
- b. Pull on the cable connector to disconnect the cable from the battery.

### CAUTION:

The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

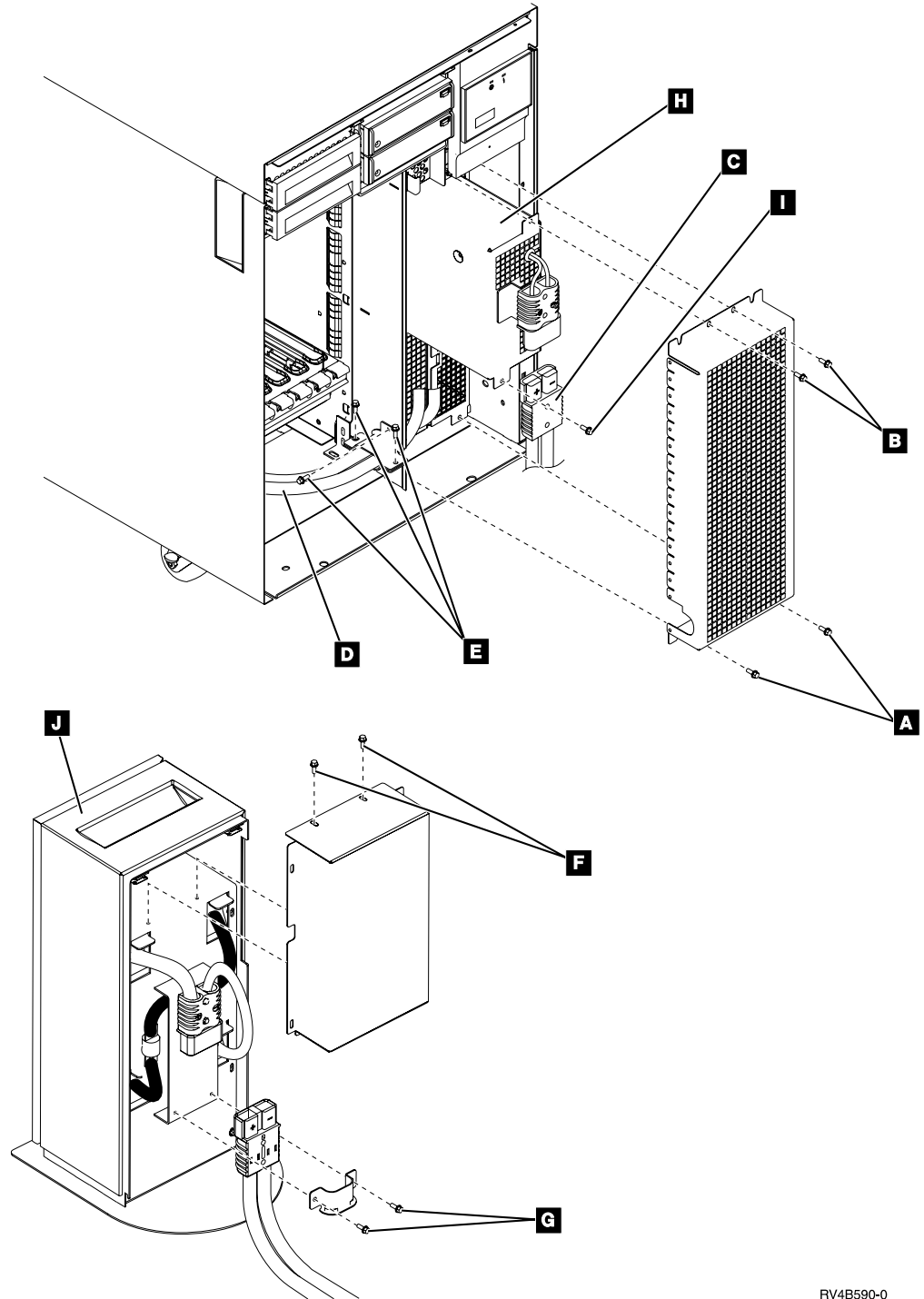
11. Install the parts of the external battery power unit by doing the following:
  - a. Connect the cable to the battery and install the rear cover.
  - b. Connect the cable to the charger.
  - c. Install the charger into the frame.
  - d. Reverse the remainder of the removal procedure.

**Note:** The external battery power unit charger assembly must be removed and installed with the battery cable attached to reset the battery error.

After exchanging an item, go to "Verifying the Repair" on page 806.

**This ends the procedure.**





RV4B590-0

## Cards

**Attention:** All cards are sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1061).

## FC 507x/508x Removal and Installation

### CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

### Procedure

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
2. Disconnect the power cords.
3. Remove the front or rear cover (see “Covers” on page 892).
4. Loosen the screws **A** on the card retaining bar.
5. Label and disconnect any cables attached to the card you are going to remove.
6. If you are working with card type 2620, 2628, or 65x2, read the following:

### CAUTION:

This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)

7. If you are working with card type 2664 read the following:

### DANGER

Use caution when installing or modifying telephone lines. Disconnect the lines at the network interface before working with telephone wires that are not insulated. Never install telephone jacks that are not waterproof in wet locations. Do not install or modify telephone lines or use a telephone (other than a cordless type) during an electrical storm. Do not use a telephone to report a gas leak in the area of the leak. (RSFTD213)

8. If you are working with card type 2620 or 2628, read the following:

**Attention:** Disconnecting or removing the type 2620 or type 2628 cryptographic I/O processor causes the loss of the master encryption key. Read “Important Cryptographic I/O Processor Information” on page 785 before disconnecting or removing the cryptographic I/O processor.

9. If you are working with card type 2624, read the following:

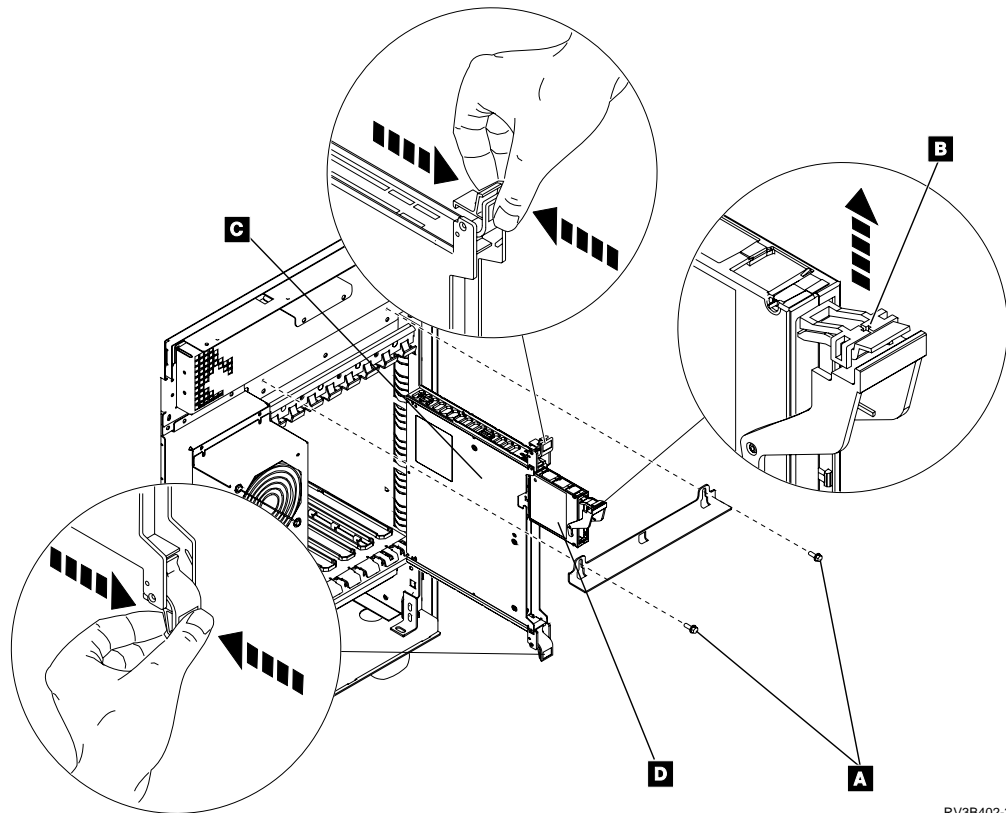
If a retainer **B** is installed on the adapter card in adapter card position A and you need to remove this plug to exchange the adapter card, ensure that you reinstall the retainer.

10. If you are removing a full-size card **C** from the slot, do the following:
  - a. Press the two latch surfaces together to release each latch.
  - b. Pull on both latches at the same time to remove the card from the slot.
11. If you are removing an adapter card **D** from a full-size card, do the following:
  - a. Remove any cables or wrap plugs from the adapter cards.
  - b. Press the two latch surfaces together to release the latch.
  - c. Rotate the latch downward.
  - d. Pull on the latch to remove the adapter card from the full-size card.
12. Install the card by reversing the removal procedure. Ensure that the cables are installed in the same place they were located originally.

Return to the procedure that sent you here.

After exchanging an item, go to “Verifying the Repair” on page 806.

This ends the procedure.



RV3B402-3

## Cards—Cache, Type 4700 and 6503

**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

### CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

### CAUTION:

This card assembly contains a lithium battery. To avoid possible explosion, do not burn, exchange, or charge the battery. Discard the card assembly as instructed by local regulations for lithium batteries. (RSFTC233)

## Parts Catalog References

- None

## Procedure

1. Power off the system. (see “Powering Off and Powering On the System or Expansion Tower” on page 789)
2. Disconnect the power cord from the system unit.
3. Remove the front or rear covers (see “Covers” on page 892).
4. Loosen the screws on the card retaining bar.
5. Remove the adapter card from the full-size card by doing the following:

## FC 507x/508x Removal and Installation

- a. Press the two latch surfaces together to release the latch.
- b. Rotate the latch downward.
- c. Pull on the latch to remove the adapter card from the full-size card.

This ends the procedure.

## Card Enclosure

### Procedure

1. Are you repairing a FC 9251 I/O tower?

No      Yes

↓

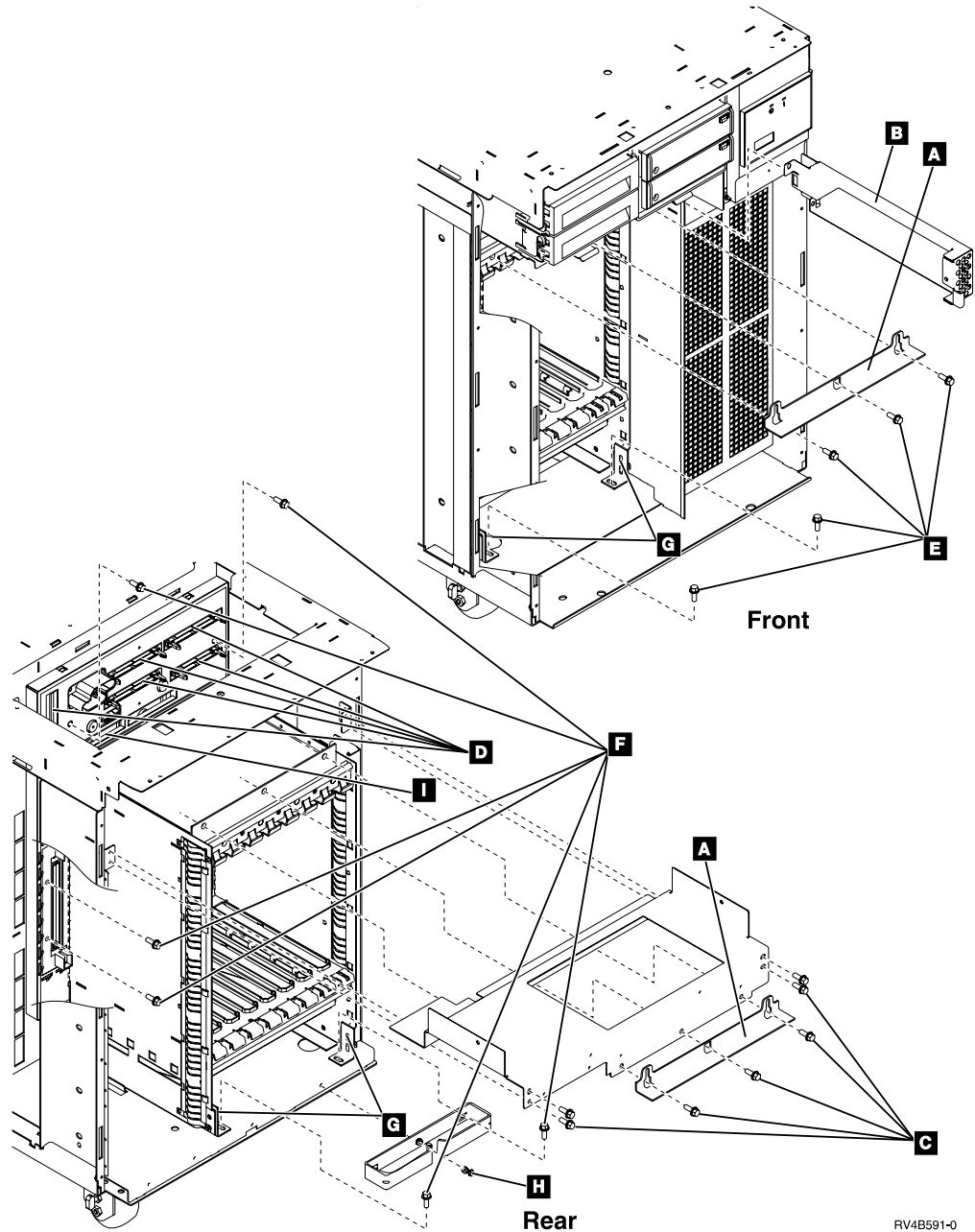
**Attention:** Read “Important Continuously Powered Main Storage (CPM) Information” on page 785.

Perform “SPCN-PIP5” on page 644, return here, and continue with the next step of this procedure.

2. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
3. Disconnect the power cord.
4. Remove the front and rear covers (see “Covers” on page 892).
5. Because safety labels may be applied to the card retaining bars **A**, it is important to install the card retaining bars in the same location from which they were removed.  
Label or write down the location of the card retaining bars.
6. Remove the card retaining bars.
7. **Attention:** Failure to reinstall the cards in the same slot in which they were located originally may cause data loss.  
Label or write down each cable, card, and slot where the card is located.
8. Disconnect all cables that are connected to the cards and remove all of the cards in the card enclosure (see “Cards” on page 887).
9. Remove any internal disk units and disk unit enclosures from the card enclosure (see “Disk Unit (Dedicated)” on page 897).
10. Remove the ac module (see “AC Module and AMD” on page 880).
11. Remove the removable media enclosures (see “Removable Media Enclosure” on page 912).
12. Remove the terminating plug **B**.
13. Remove the AMD (see “AMD” on page 881).
14. Remove the screws **C** holding the AMD mounting assembly to the frame and remove the AMD mounting assembly.
15. Remove the tape terminating plug **I** from the rear of the card enclosure.
16. Disconnect the cables **D** connected to the card enclosure. If storage expansion unit cables are present, ensure that they are pushed out of the way.
17. Remove the screws **F** holding the rear of the card enclosure to the frame.
18. Remove the screw **H** holding the cable bracket to the frame and remove the cable bracket.
19. Remove the screws **E** holding the front of the card enclosure to the frame.
20. Remove screws **G** and remove the angle brackets. Slide the card enclosure out of the rear of the system.

## FC 507x/508x Removal and Installation

21. Install the card enclosure by reversing the removal procedure. Ensure that the cards are installed the same slots in which they were located originally.  
After exchanging an item, go to “Verifying the Repair” on page 806.  
**This ends the procedure.**



## Control Panel

**Attention:** The control panel is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

### Procedure

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
2. Disconnect the power cord.

## FC 507x/508x Removal and Installation

3. Remove the front cover (see “Covers”).
4. Remove the screws.
5. Pull the control panel from the frame.
6. Disconnect the control panel cable from the control panel.
7. Remove the control panel circuit board from the bezel assembly by doing the following:
  - a. Remove the screw.
  - b. Press the latches to release the circuit card.

**This ends the procedure.**

## Covers

### Procedure

1. Remove the front cover by doing the following:
  - a. Hold the edges of the cover near the top.
  - b. Pull until the cover comes off the frame.
2. Remove the rear cover by doing the following:
  - a. Hold the cover near the top.
  - b. Lift up on the cover and pull until the cover comes off the frame.

**Note:** If you do not have disk units in the rear of the storage expansion unit that is on top of the expansion tower, you must also remove the 4 screws that hold the rear plate to the frame.

3. Remove the top cover by doing the following:
  - a. Remove the storage expansion unit front and rear covers.
  - b. Remove the screws and open the storage expansion unit cover **A**.
  - c. **Attention:** Failure to reinstall the disk units in the same slot in which they were originally located may cause data loss.  
Label or write down each disk unit and the slot where it is located.
  - d. Remove all of the disk units and disk unit fillers in the storage expansion unit (see “Disk Unit (Dedicated)” on page 897).
  - e. Remove the screws **B**.
  - f. Lift the top cover up and off of the frame.

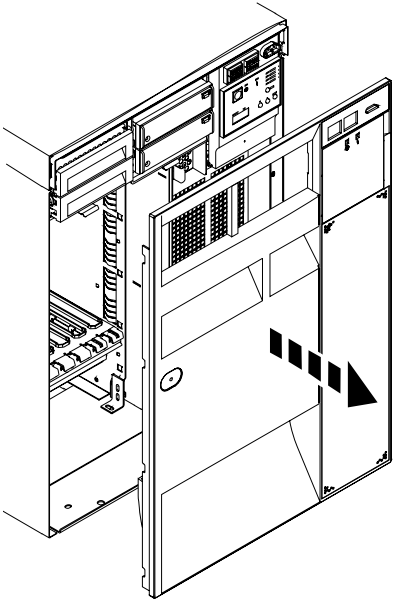
### CAUTION:

**Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)**

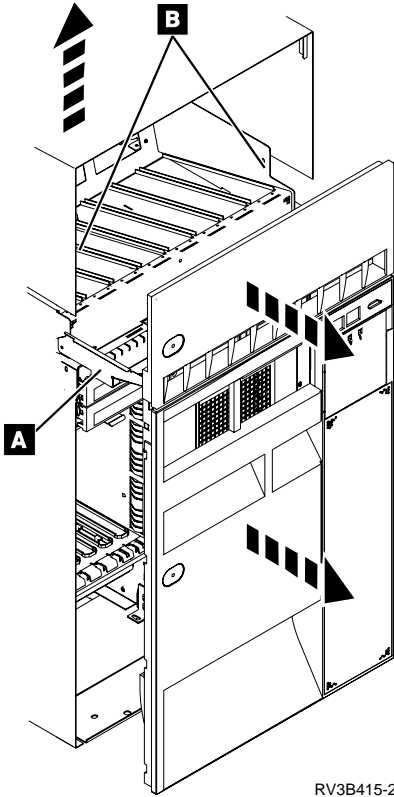
4. Install the covers by reversing the removal procedure.  
After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the procedure.**

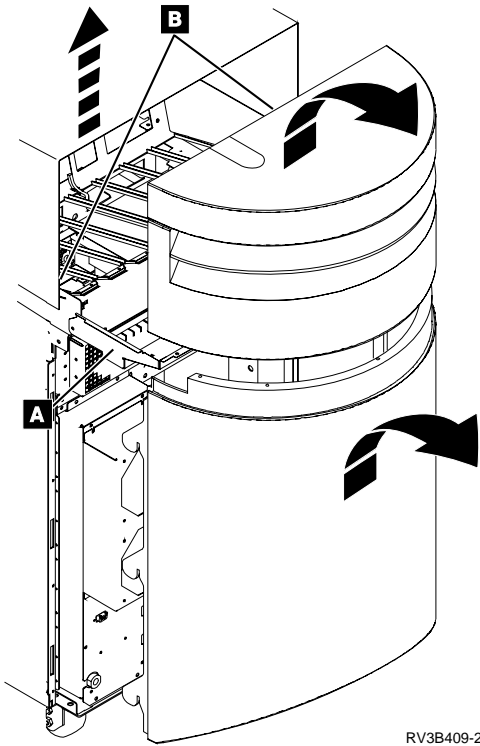
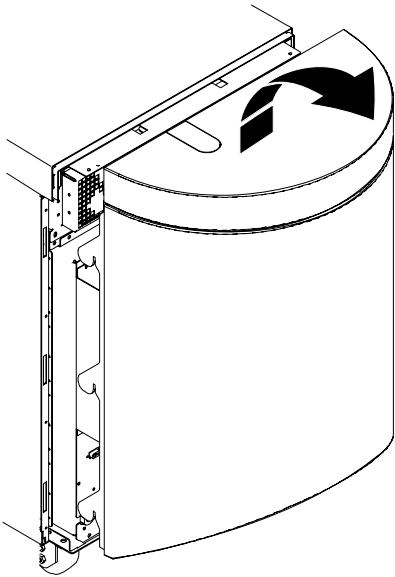
### Front View



Back View



RV3B415-2



RV3B409-2

## Disk Unit (Concurrent)

**Attention:** The disk unit is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

**Attention:** Work carefully with the disk unit. Excessive movement may damage the disk unit.

### Procedure

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that owns the disk unit. (See “Determining Which Logical Partition Owns a FRU or a System I/O Resource” on page 815.)

1. Are you here to remove a disk unit using concurrent maintenance?

**Yes      No**

↓      Go to “Removable Media (Concurrent)” on page 909.

**This ends the procedure.**

2. Data may need to be saved before exchanging a disk unit.  
Did you come here from “Start Disk Service Here” on page 919?

**Yes      No**

↓      Go to “Start Disk Service Here” on page 919.

3. Do not power off the system.
4. Remove the front or rear cover (see “Covers” on page 892).
5. Are you removing a disk unit in a storage expansion unit **C** or in a rear disk unit enclosure **E**?

**Yes      No**

↓      Go to step 7 on page 895 of this procedure.

6. You are removing a disk unit in a storage expansion unit **C** or in a rear disk unit enclosure **E**. Do the following:
  - a. Remove the screws.
  - b. Open the storage expansion unit cover.
  - c. Select System Service Tools (SST).  
If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions* ).

**Note:** Do not IPL the system to get to DST.

- d. On the Service Tools display, select the *Start a service tool* option (see the *AS/400 Service Functions*).
- e. Select the *Hardware Service Manager* option on the Start a Service Tool display.
- f. Select *Concurrent Maintenance* from the Hardware Service Manager display and follow the instructions to remove a disk unit. Light **A** will be off and light **B** will be on for about 8 seconds. Three 8-second periods will occur about 15 seconds apart. See “Disk Unit Concurrent Maintenance” in the *AS/400 Service Functions* book for more information.



- g. **Attention:** If you remove the disk unit when light **A** is on or light **B** is off, data may be lost and the disk unit and the storage expansion unit may be damaged.

When the light **A** is off and light **B** is on, press the two latch surfaces together, pull the latch completely down, and pull the tray out a little bit. After another 15 seconds (long enough for the drive to stop spinning), remove the disk unit from the system.

Go to step 8 on page 896 of this procedure.

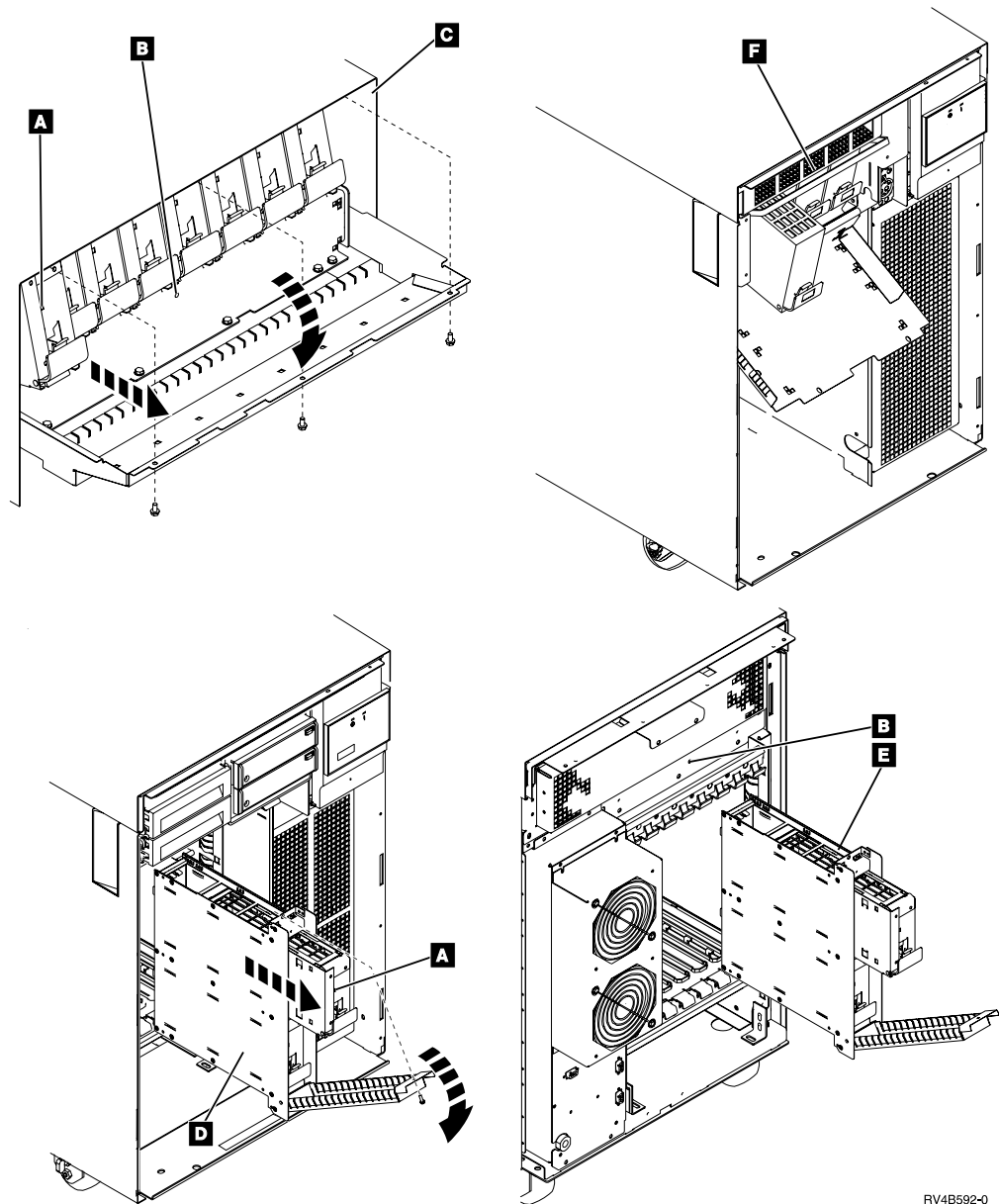
- 7. You are removing a disk unit in a disk unit enclosure **D** or in an upper disk unit enclosure **F**. Do the following:
  - a. Remove the screw from the disk unit enclosure cover.
  - b. Pull the disk unit enclosure cover down as shown.
  - c. Pivot the retainer bar out of the way.
  - d. Select System Service Tools (SST).
 

If you cannot get to SST, select DST (see "Accessing Dedicated Service Tools" in the *AS/400 Service Functions* ).

**Note:** Do not IPL the system to get to DST.

- e. On the Service Tools display, select the *Start a service tool* option (see the *AS/400 Service Functions*).
- f. Select the *Hardware Service Manager* option on the Start a Service Tool display.
- g. Select *Concurrent Maintenance* from the Hardware Service Manager display and follow the instructions to remove a disk unit. Light **A** will be off and 1xxx 02xx will be shown in the Function/Data display on the control panel for about 8 seconds. Three 8-second periods will occur about 15 seconds apart. See "Disk Unit Concurrent Maintenance" in the *AS/400 Service Functions* book for more information.
- h. Continue with step 7i of this procedure.

## FC 507x/508x Removal and Installation



RV4B592-0

- i. **Attention:** If you remove the disk unit when light **A** is on or 1xxx 02xx is not shown in the Function/Data display on the control panel, data may be lost and the disk unit and the disk unit enclosure may be damaged.

When the light **A** is off and 1xxx 02xx is shown in the Function/Data display on the control panel, press the two latch surfaces together, pull the latch completely down, and pull the tray out a little bit. After another 15 seconds (long enough for the drive to stop spinning), remove the disk unit from the system.

8. To remove the disk drive and logic card from the tray, go to "Disk Unit – Removal from Tray" on page 899.
9. Are you installing a disk unit in a storage expansion unit **C** or in a rear disk unit enclosure **E**?

Yes      No

↓      Go to step 11 on page 897 of this procedure.

10. You are installing a disk unit in a storage expansion unit **C** or in a rear disk unit enclosure **E**. Do the following:
  - a. Select System Service Tools (SST).  
If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions* ).
  - Note:** Do not IPL the system to get to DST.
  - b. On the Service Tools display, select the *Start a service tool* option (see the *AS/400 Service Functions*).
  - c. Select the *Hardware Service Manager* option on the Start a Service Tool display.
  - d. Select *Concurrent Maintenance* from the Hardware Service Manager display and follow the instructions to install a disk unit. Light **B** will be on for about 8 seconds. Three 8-second periods will occur about 15 seconds apart.
  - e. **Attention:** If you install the disk unit when light **B** is off, data may be lost.  
When the light **B** is on, install and latch the disk unit.
  - f. Close the storage expansion unit cover.
  - g. Install the screws.

Return to the procedure that sent you here.

**This ends the procedure.**

11. You are installing a disk unit in a disk unit enclosure **D** or in an upper disk unit enclosure **F**. Do the following:
  - a. Select System Service Tools (SST).  
If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions* ).
  - Note:** Do not IPL the system to get to DST.
  - b. On the Service Tools display, select the *Start a service tool* option (see the *AS/400 Service Functions*).
  - c. Select the *Hardware Service Manager* option on the Start a Service Tool display.
  - d. Select *Concurrent Maintenance* from the Hardware Service Manager display and follow the instructions to install a disk unit. 1xxx 01xx will be shown in the Function/Data display on the control panel for about 8 seconds. Three 8-second periods will occur about 15 seconds apart.
  - e. **Attention:** If you install the disk unit when 1xxx 01xx is not shown in the Function/Data display on the control panel, data may be lost.  
When 1xxx 01xx is shown in the Function/Data display on the control panel, install and latch the disk unit.
  - f. Close the disk unit enclosure cover.
  - g. Install the screw in the disk unit enclosure cover.

Go to the procedure that sent you here and continue.

**This ends the procedure.**

### Disk Unit (Dedicated)

**Attention:** The disk unit is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

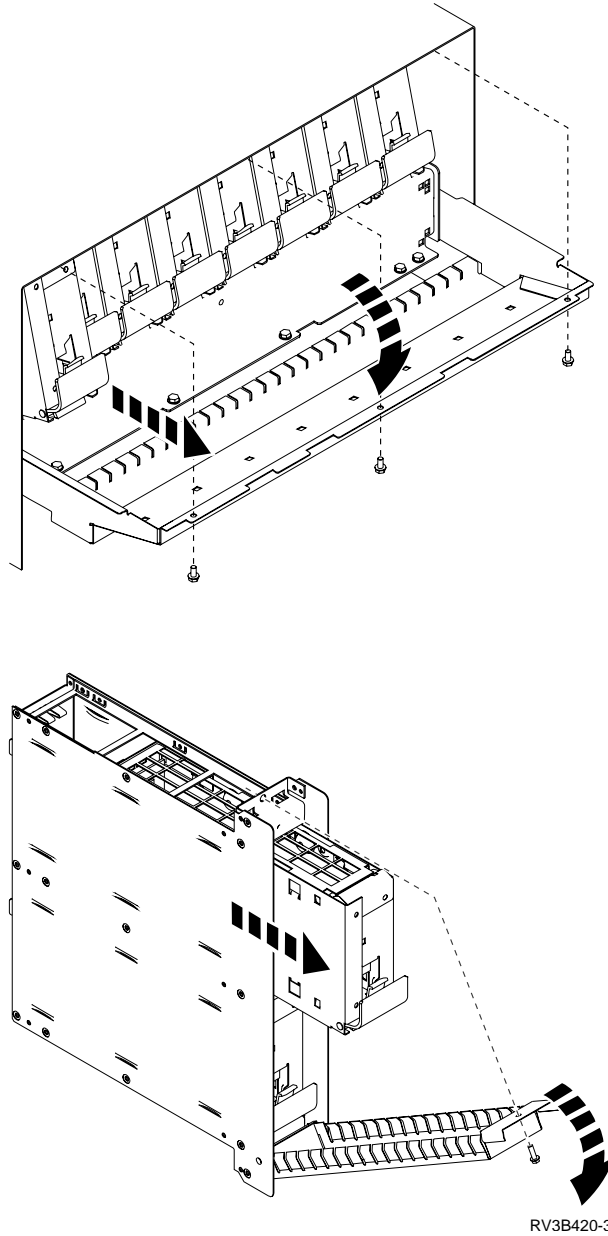
## FC 507x/508x Removal and Installation

**Attention:** Work carefully with the disk unit. Excessive movement may damage the disk unit.

### Procedure

1. Before exchanging a disk drive, you must attempt to save customer data. If you did not come to this procedure from Chapter 7. Recovery Procedures, go to "Start Disk Service Here" on page 919.
2. Power off the system unit or the expansion tower where the disk unit is located. (See "Powering Off and Powering On the System or Expansion Tower" on page 789.)
3. Disconnect the power cord.
4. Remove the cover (see "Covers" on page 892).
5. If the disk unit you are working with is in a storage expansion unit, do the following:
  - a. Remove the screws.
  - b. Pull the cover down as shown.Go to step 8 of this procedure.
6. If the disk unit you are working with is in an upper disk unit enclosure, do the following:
  - a. Remove the screws.
  - b. Pull the cover down as shown.
  - c. Pivot the retainer bar out of the way.Go to step 8 of this procedure.
7. If the disk unit you are working with is in a disk unit enclosure or in a rear disk unit enclosure, do the following:
  - a. Remove the screw from the disk unit enclosure cover.
  - b. Pull the disk unit enclosure cover down as shown.
8. Press the two latch surfaces together, pull the latch down, and remove the disk unit.
9. To remove the disk drive and logic card from the tray, go to "Disk Unit – Removal from Tray" on page 899.
10. Install the disk unit by reversing the removal procedure.

**This ends the procedure.**



## Disk Unit – Removal from Tray

**Attention:** All cards are sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

### CAUTION:

This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

### Procedure

1. If necessary, remove the disk unit from the system or expansion unit. (See the disk unit procedure in “Chapter 6. Removal and Installation Procedures” on page 821.)

## FC 507x/508x Removal and Installation

2. Orient the disk tray with the blue handle towards you and to the left. The tray should be lying horizontally with the shield covers (grids) on each side.
3. Refer to Figure 95 for the following steps.

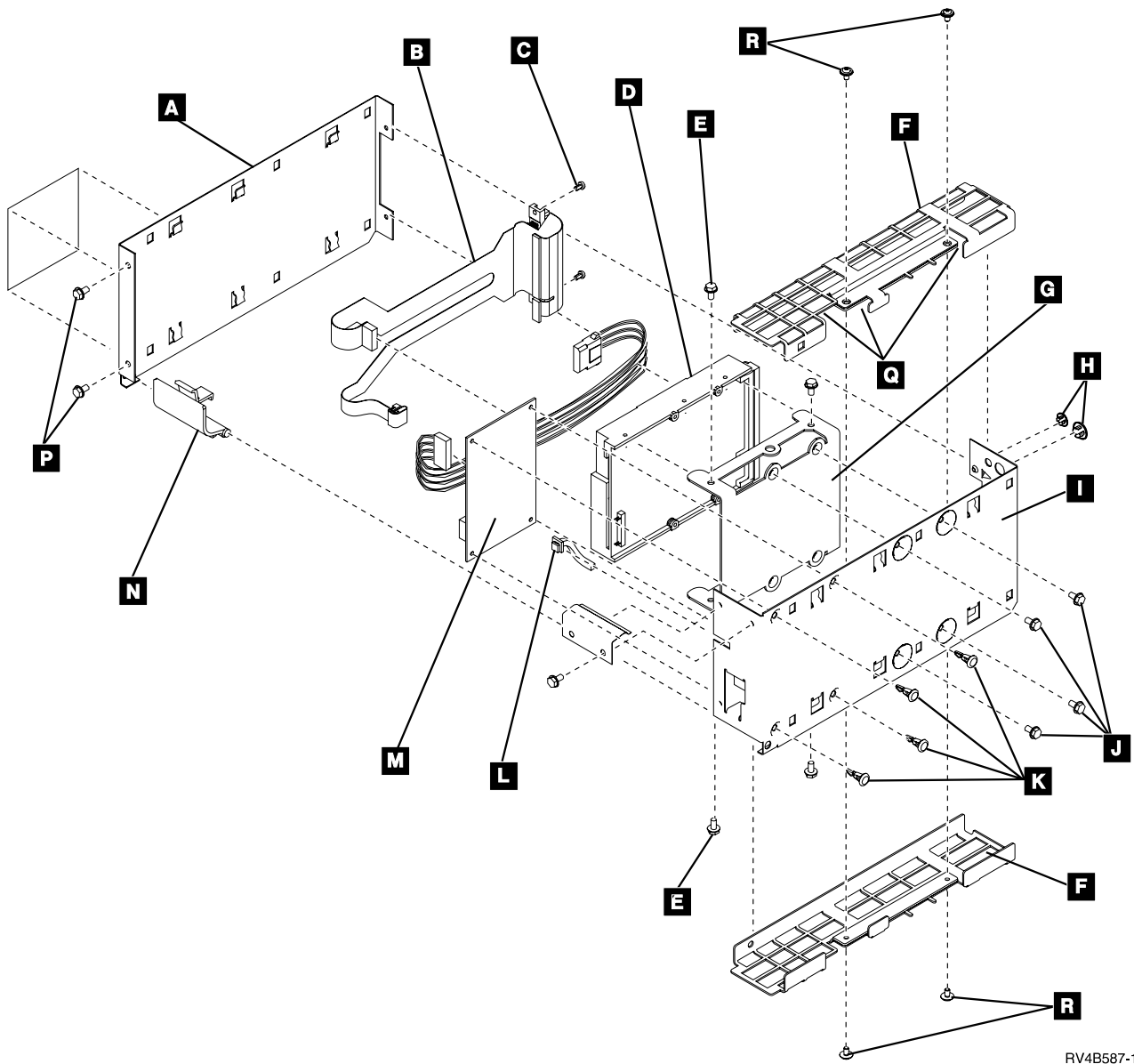


Figure 95. Disk unit holder assembly

4. Loosen the screws **C** on the connector.
5. Loosen the screws **P** on the blue handle end. These screws will be removed in a later step.
6. If the tray has two screws on each of the grid sides **R**, remove them.
7. Remove the grid covers by doing the following:
  - a. Insert the tip of a screwdriver at points **Q**.
  - b. Rotate the screwdriver to push the cover away from the sides.
  - c. Repeat this for the other grid.
8. Remove the screws **P** on the blue handle end.

9. Remove the disk tray side cover and blue handle. Note the position of the handle before removing. Leave the connector on the casing.
10. To remove the disk unit from the open tray assembly, do the following:

**Note:** The disk unit and flex cable may not be exactly the same type as shown in Figure 95 on page 900.

- a. Disconnect the power and address cables from the power card.
- b. Disconnect the power and signal cables from the disk unit.
- c. While supporting the disk unit, remove the 4 screws that secure the disk unit to the holder.
- d. Lift the disk unit from the case.
- e. Some disk units have a bracket installed on them. Refer to Figure 95 on page 900. Remove screws **H** and remove bracket **G**.
- f. To exchange the disk unit logic card, use the instructions included with the new disk unit logic card FRU.

**This ends the procedure.**

**To install disk units into the casing:**

- Refer to Figure 95 on page 900 for the following steps.
- Assemble the disk unit into the tray by reversing the steps in the “Disk Unit – Removal from Tray” on page 899 procedure.
- **Important:** Tighten and torque the screws in the following sequence (see Figure 95 on page 900).
  - **A**
  - **B**
  - **C**
  - **D**
- **Do not over tighten!**

## FC 507x/508x Removal and Installation

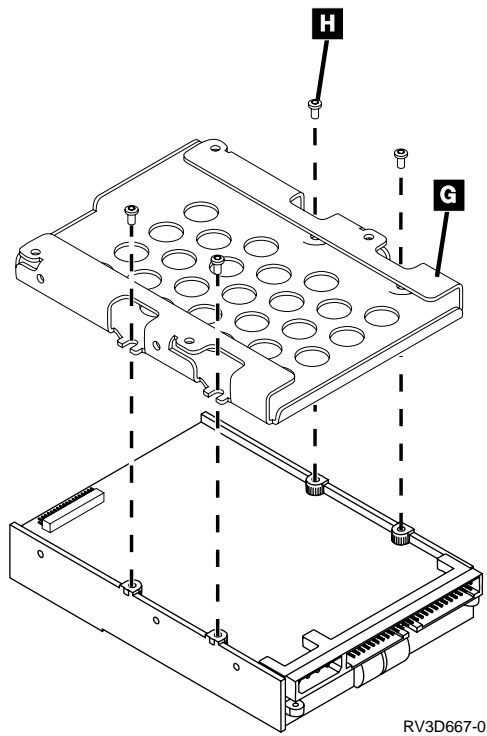


Figure 96. Disk unit case assembly

This ends the procedure.

## File Server IOP - Type 6506

**Attention:** The memory module is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

1. Remove the file server IOP card from the system (see “Cards” on page 887).
2. Place the card assembly on a flat surface with the latches next to the work surface.
3. Release the four clips **A** from the rail assemblies. It may be necessary to use a screwdriver to release the clips.
4. Rotate the top and bottom rail assemblies away from the card as shown. Remove the rails by lifting the cover at the hinge points.
5. Remove the clips **A**.

**Note:** When the clips are installed, the rails must be fully seated against the covers.

6. Remove the three cover screws **B** and the cover.  
Do not remove the two screws that attach the cover to the end cover.
7. Remove the crossover connector **C** by doing the following:
  - a. Turn the screw counterclockwise until the crossover connector separates from the processor card **D** and the adapter card **E**.
  - b. Remove the crossover connector.

**Attention:** When the crossover connector is installed, the corner notch **L** must be located as shown or the card may be damaged.

8. Remove the three screws **F**.



## FC 507x/508x Removal and Installation

9. Remove the three standoff retainers **G**.
10. Remove the adapter card **E**.
11. Remove the crossover connector bracket **N**.

**Note:** The connector bracket must be installed in the same direction as shown.

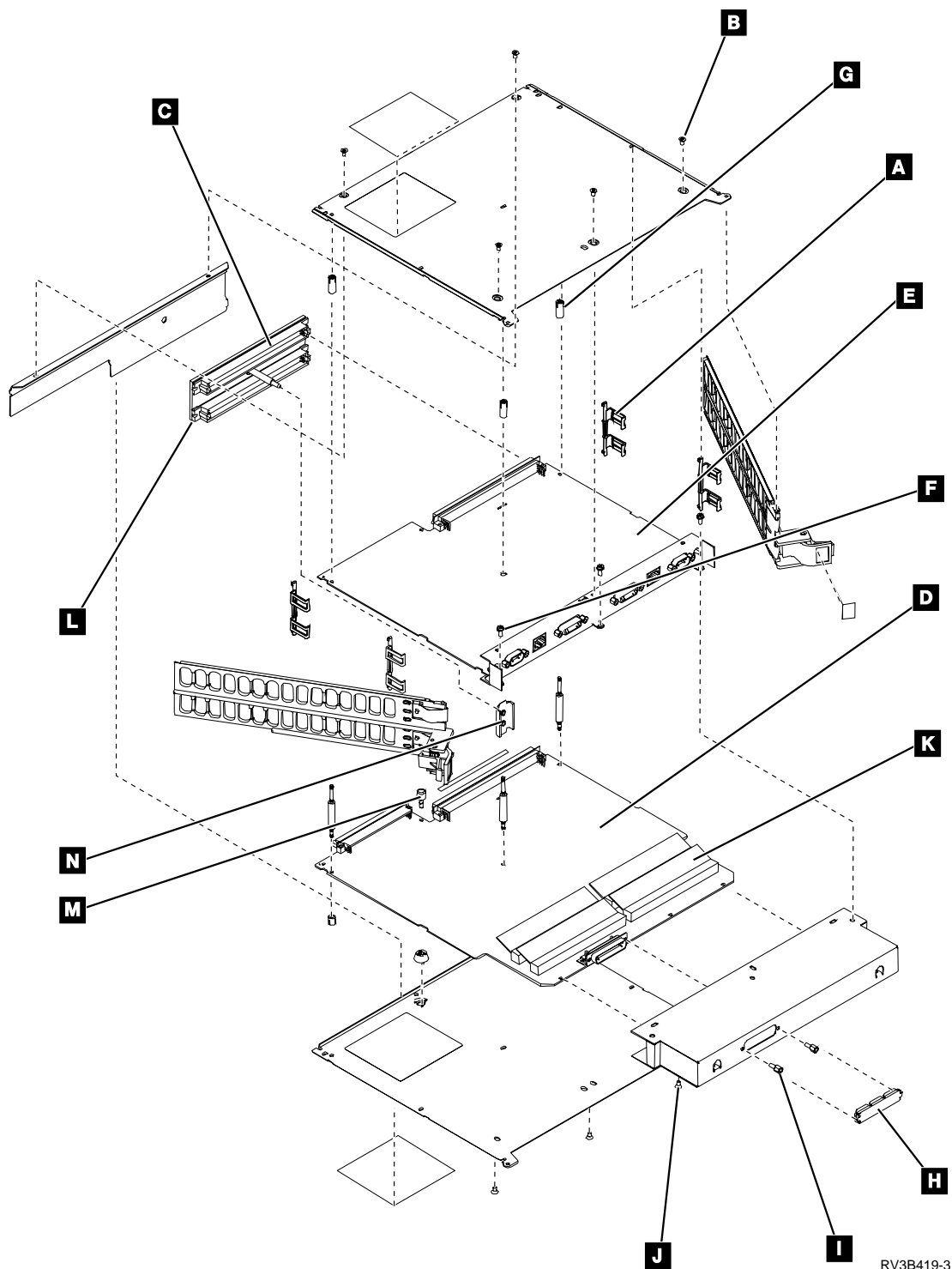
12. Rotate and release **M**.
13. To remove the cover from the I/O processor card, do the following:
  - a. Remove the test port cover **H**.
  - b. Remove the test port connector standoffs **I**.
  - c. Remove the two screws **J** through the access holes in the cover.
14. Slide the I/O processor card out from the cover.

**Note:** If exchanging the I/O processor card, move the standoffs to new card.

15. To remove the memory module card **K** from the processor card, do the following:
  - a. Push outward on the latches located at the end of the card.
  - b. Pull the card from the card socket.

**Note:** The memory module card location is marked next to each card socket on the processor card.

16. Install the parts of the file server IOP by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 806.  
**This ends the procedure.**



RV3B419-3

### Integrated Netfinity Server for AS/400 - Type 6616

**Attention:** The memory module is sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1061).

1. Remove the integrated PC server card from the system (see "Cards" on page 887). It is a double wide card.

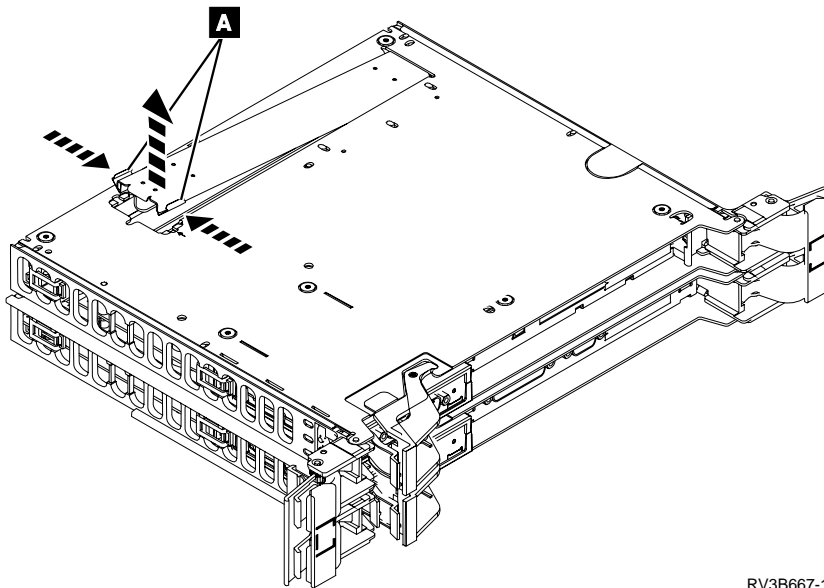
## FC 507x/508x Removal and Installation

2. Place the card assembly on a flat surface with the door facing up.
3. Release the tabs **A** at one end of the door by pressing inward with a screwdriver or similar object.
4. Remove the door.
5. Remove the memory module(s) by opening the clips on each side and lifting it out.
6. If the failing item was the integrated PC server card, install the memory module(s) you removed on the new integrated PC server card and install the card by reversing the removal procedure.

If the failing item was the memory module, install a new memory module on the integrated PC server card and install the card by reversing the removal procedure.

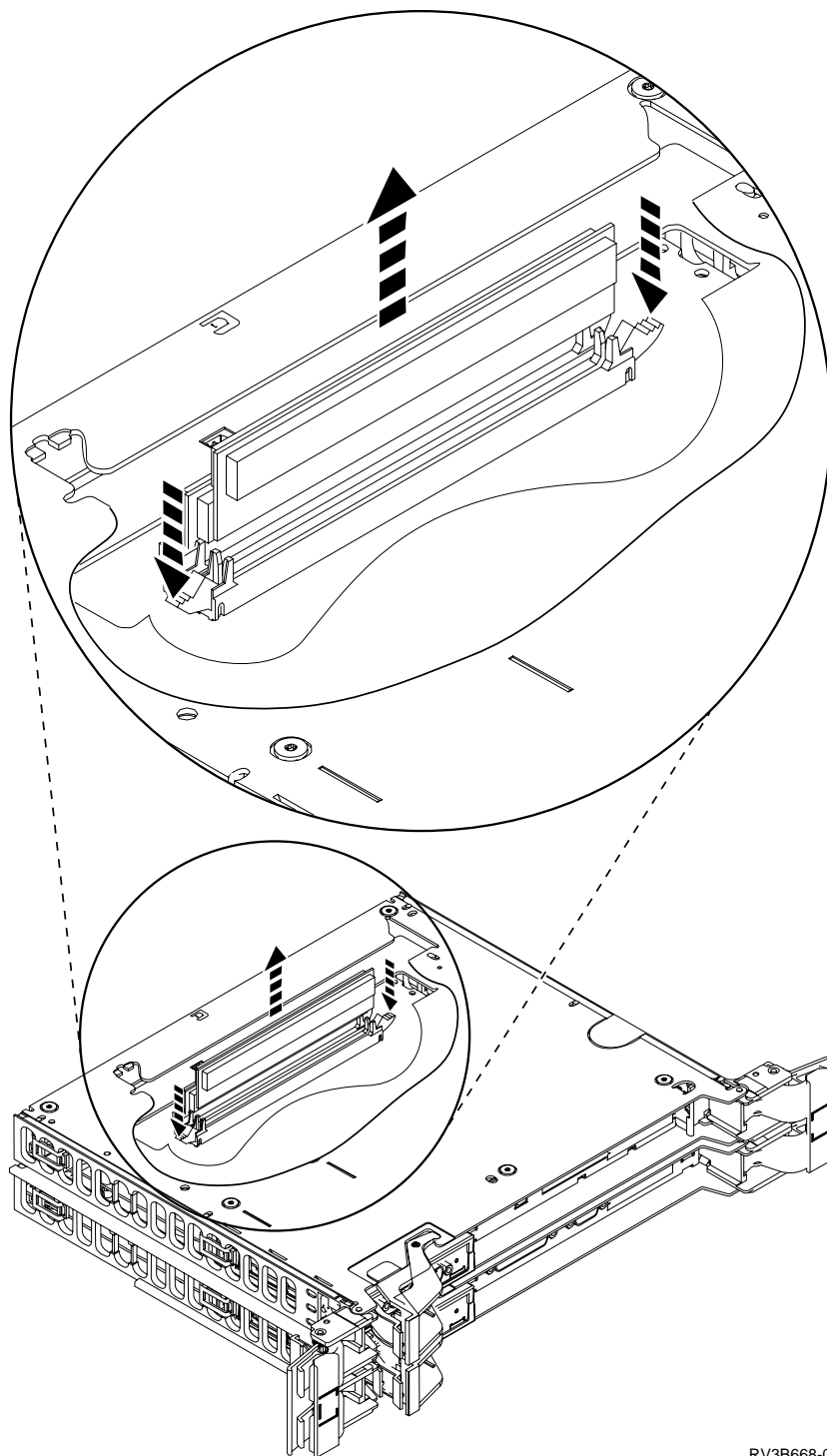
After exchanging an item, go to Verifying the Repair in "Chapter 5. Locations, Addresses, and Service Reference Information" on page 709.

**This ends the procedure.**



RV3B667-1

## FC 507x/508x Removal and Installation



RV3B668-0

### Integrated Netfinity Server for AS/400 (Type 6617)

**Attention:** All cards are sensitive to electrostatic discharge (see "Appendix D. Working with Electrostatic Discharge-Sensitive Parts" on page 1061).

Refer to "Assembly 22: File Server Book Assembly Type 6617" on page 1024 when you perform this procedure.

### Procedure

1. Remove the Integrated Netfinity Server (triple wide) card from the system (see "Cards" on page 887).
2. Is the failing item the 6617 Integrated Netfinity Server card?  
**No      Yes**  
 ↓      Go to step 9.
3. Is the failing item one of the memory modules inside the 6617 Integrated Netfinity Server card?  
**No      Yes**  
 ↓      Go to step 14.
4. To replace one of the I/O adapter cards inside the 6617 Integrated Netfinity Server card, remove the 3 screws from the top of the metal plates on the 6617 Integrated Netfinity Server card.
5. Open the top of the Integrated Netfinity Server card by lifting up on the end opposite the edge connector.
6. Remove the mounting screw from the failing I/O adapter card. See the information for "Assembly 22: File Server Book Assembly Type 6617" on page 1024.
7. Pull up on the I/O adapter card and remove it from the Integrated Netfinity Server card.
8. Install the card by reversing the removal procedure.  
**This ends the procedure.**
9. To replace the Integrated Netfinity Server card, place the card assembly on a flat surface with the right side of the card (as viewed from the back when the card is installed) facing up.
10. Remove the 12 screws holding the metal plate on.
11. Pull up on the memory module card and remove it from the Integrated Netfinity Server card.
12. Install the memory module card you removed in the new Integrated Netfinity Server card.
13. Install the card by reversing the removal procedure.  
**This ends the procedure.**
14. To replace a memory module, place the card assembly on a flat surface with the right side of the card (as viewed from the back when the card is installed) facing up.
15. Remove the 12 screws from the metal plate.
16. Pull up on the memory module card and remove the module card from the Integrated Netfinity Server card.
17. Remove the failing memory module from the memory module card by releasing the tabs on the end of the memory module and pulling the memory module out. See the information for "Assembly 22: File Server Book Assembly Type 6617" on page 1024.
18. Install the memory module card into the new Integrated Netfinity Server card. For location information see "6617" on page 741.
19. Install the card by reversing the removal procedure.  
**This ends the procedure.**

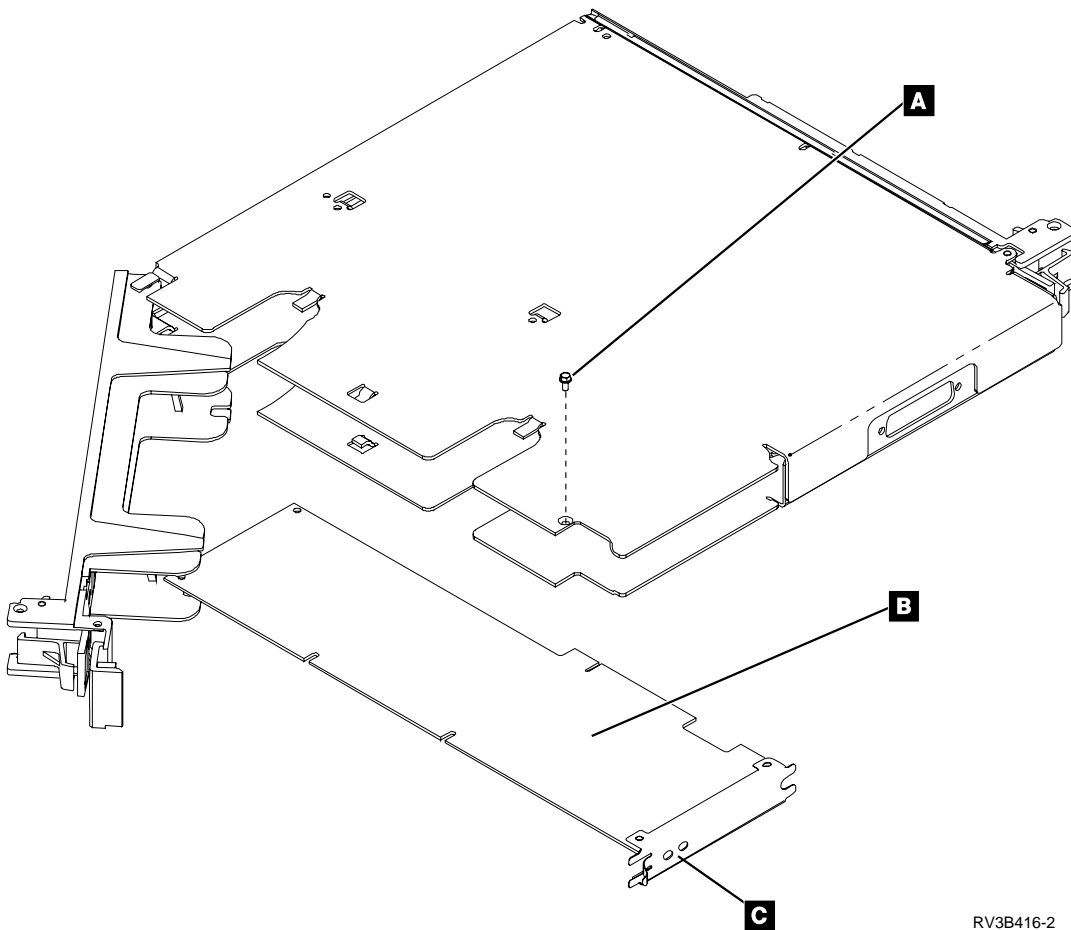
### Micro Channel Adapter for a Wireless LAN IOA or IOP

**Attention:** The micro channel adapter is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

1. Remove the cables **C**.
2. Remove the micro channel adapter assembly from the system (see “Cards” on page 887).
3. Remove the screw **A**.
4. Rotate the bottom rail away from the assembly as shown.
5. Remove the micro channel adapter **B**.
6. Install the micro channel adapter assembly by reversing the removal procedure.

After exchanging an item, go to Verifying the Repair in “Chapter 5. Locations, Addresses, and Service Reference Information” on page 709.

**This ends the procedure.**



### Power Supply

#### Procedure

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
2. Disconnect the power cord.
3. Remove the front cover (see “Covers” on page 892).

4. Loosen the screws **A**.
5. Remove the screws **B**.
6. Pull out and lift to remove the screen.
7. **DANGER**

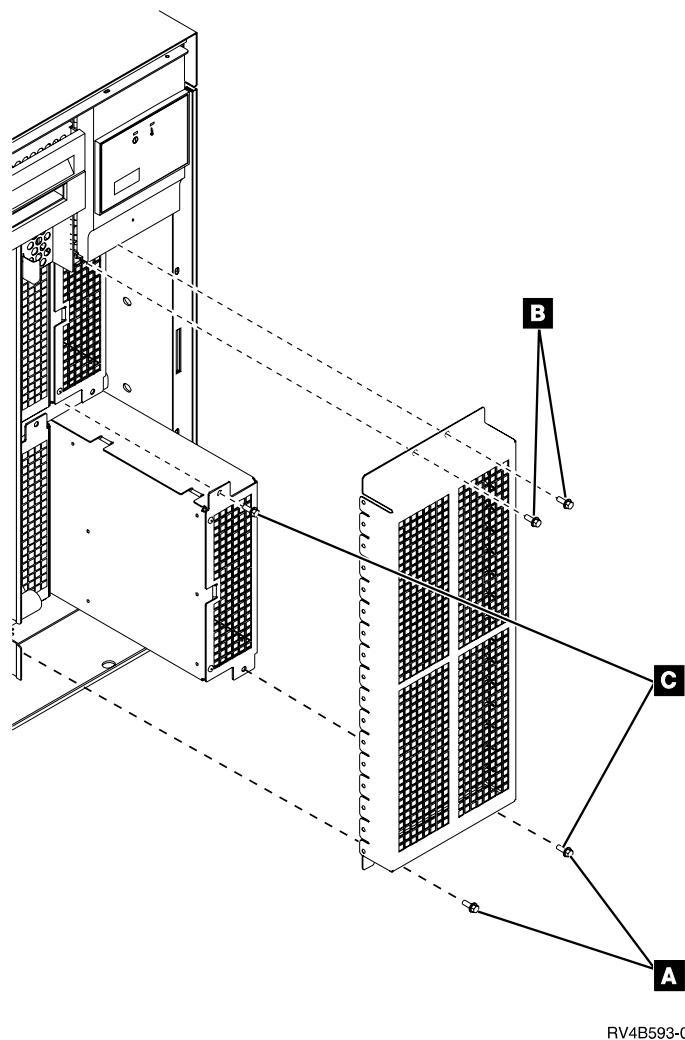
Up to 240 V ac is present at the power module connectors when the main power cord is connected to a power source. (RSFTD010)

Remove the screws **C** to remove the power supply from the frame.

8. Install the power supply by reversing the removal procedure. Note the proper orientation of the power supply notch as shown.

After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the procedure.**



### Removable Media (Concurrent)

**Attention:** The removable media unit is sensitive to electrostatic discharge (see “Appendix D. Working with Electrostatic Discharge-Sensitive Parts” on page 1061).

## FC 507x/508x Removal and Installation

### Procedure

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** If the system has logical partitions, perform this procedure from the logical partition that owns the removable media. (See “Determining Which Logical Partition Owns a FRU or a System I/O Resource” on page 815.)

1. Is the unit you are working with attached to a type 2624 Magnetic Storage I/O Processor?

**No      Yes**

↓      Concurrent repair is not given support. Go to “Removable Media (Dedicated)” on page 911.

**This ends the procedure.**

2. Is the unit you are working with attached to a Model 600 or a Model S10 system?

**No      Yes**

↓      Concurrent repair is not given support. Go to “Removable Media (Dedicated)” on page 911.

**This ends the procedure.**

3. Before exchanging a removable media unit, you must verify that the unit is not in use.
4. Use the figure to determine the location of the internal removable media unit. Record this location for later use.

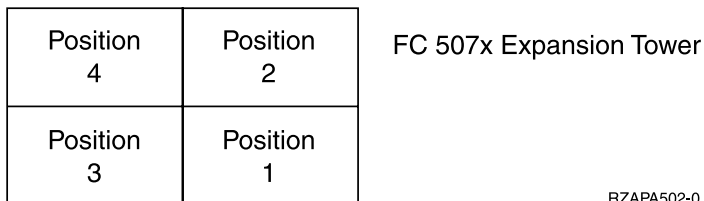


Figure 97. Internal removable media locations

5. Do not power off the system.
6. Remove media (if any) from the device. If the eject button on an optical device is failing and will not open, follow these steps:
  - a. Locate the manual eject hole. The manual eject hole is a small round hole on the face of the unit located next to the eject button.
  - b. Insert a metal rod that is approximately 1.2mm in diameter and at least 35 mm in length (1/16 x 13/8 inches) into the manual eject hole, and push firmly. A straightened paper clip works well.
  - c. The tray will eject out 1/4 to 1/2 inch. Continue by pulling the tray out by hand until the optical media can be removed.
7. Remove the front cover (see “Covers” on page 892).
8. If you are removing a removable media unit, do the following:
  - a. Select System Service Tools (SST).



## FC 507x/508x Removal and Installation

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions* ).

**Note:** Do not IPL the system to get to DST.

- b. On the Service Tools display, select the *Start a service tool* option (see the *AS/400 Service Functions*).
- c. Select the *Hardware Service Manager* option on the Start a Service Tool display.
- d. Select *Concurrent Maintenance* from the Hardware Service Manager display and follow the instructions to remove a device. 1xxx 02xx will appear in the Function/Data display on the control panel for about 8 seconds. Three 8-second periods will occur about 15 seconds apart.
- e. **Attention:** If you remove the removable media unit when 1xxx 02xx is not shown in the Function/Data display on the control panel, data may be lost and the unit may be damaged.

When 1xxx 02xx appears in the Function/Data display on the control panel, remove the removable media unit by pulling the handle down or up and out.

9. If you are installing a removable media unit, do the following:

- a. Select System Service Tools (SST).

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions* ).

**Note:** Do not IPL the system to get to DST.

- b. On the Service Tools display, select the *Start a service tool* option (see the *AS/400 Service Functions*).
- c. Select the *Hardware Service Manager* option on the Start a Service Tool display.
- d. Select *Concurrent Maintenance* from the Hardware Service Manager display and follow the instructions to install a device. 1xxx 01xx will be shown in the Function/Data display on the control panel for about 8 seconds. Three 8-second periods will occur about 15 seconds apart.
- e. **Attention:** If you install the removable media unit when 1xxx 01xx is not shown in the Function/Data display on the control panel, data may be lost.  
When 1xxx 01xx is shown in the Function/Data display on the control panel, install and latch the removable media unit.
- f. Install the front cover (see “Covers” on page 892).

10. Return to the procedure that sent you here.

After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the procedure.**

## Removable Media (Dedicated)

### Procedure

**Note:** It may be possible to exchange the tape or optical unit without powering off the system (see “Removable Media (Concurrent)” on page 909).

1. Remove media (if any) from the device. If the eject button on an optical device is failing and will not open, follow these steps:
  - a. Locate the manual eject hole. The manual eject hole is a small round hole on the face of the unit located next to the eject button.

## FC 507x/508x Removal and Installation

- b. Insert a metal rod that is approximately 1.2mm in diameter and at least 35 mm in length (1/16 x 13/8 inches) into the manual eject hole, and push firmly. A straightened paper clip works well.
  - c. The tray will eject out 1/4 to 1/2 inch. Continue by pulling the tray out by hand until the optical media can be removed.
2. Is the unit you are working with attached to a type 2624 Magnetic Storage I/O Processor?

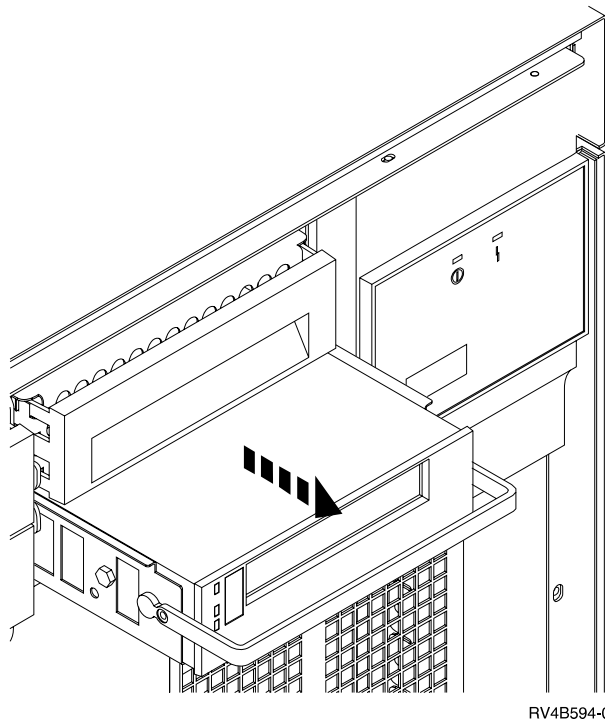
**Yes      No**

↓      Concurrent repair is possible. Go to "Removable Media (Concurrent)" on page 909.

**This ends the procedure.**

3. Power off the system unit or the expansion tower where the removable media is located. (See "Powering Off and Powering On the System or Expansion Tower" on page 789.)
  4. Disconnect the power cord.
  5. Remove the front cover (see "Covers" on page 892).
  6. Remove the unit by pulling the handle down or up and then out.
  7. Install the removable media unit by reversing the removal procedure.
- After exchanging an item, go to "Verifying the Repair" on page 806.

**This ends the procedure.**



RV4B594-0

## Removable Media Enclosure

### Procedure

1. Power off the system (see "Powering Off and Powering On the System or Expansion Tower" on page 789).
2. Disconnect the power cord.

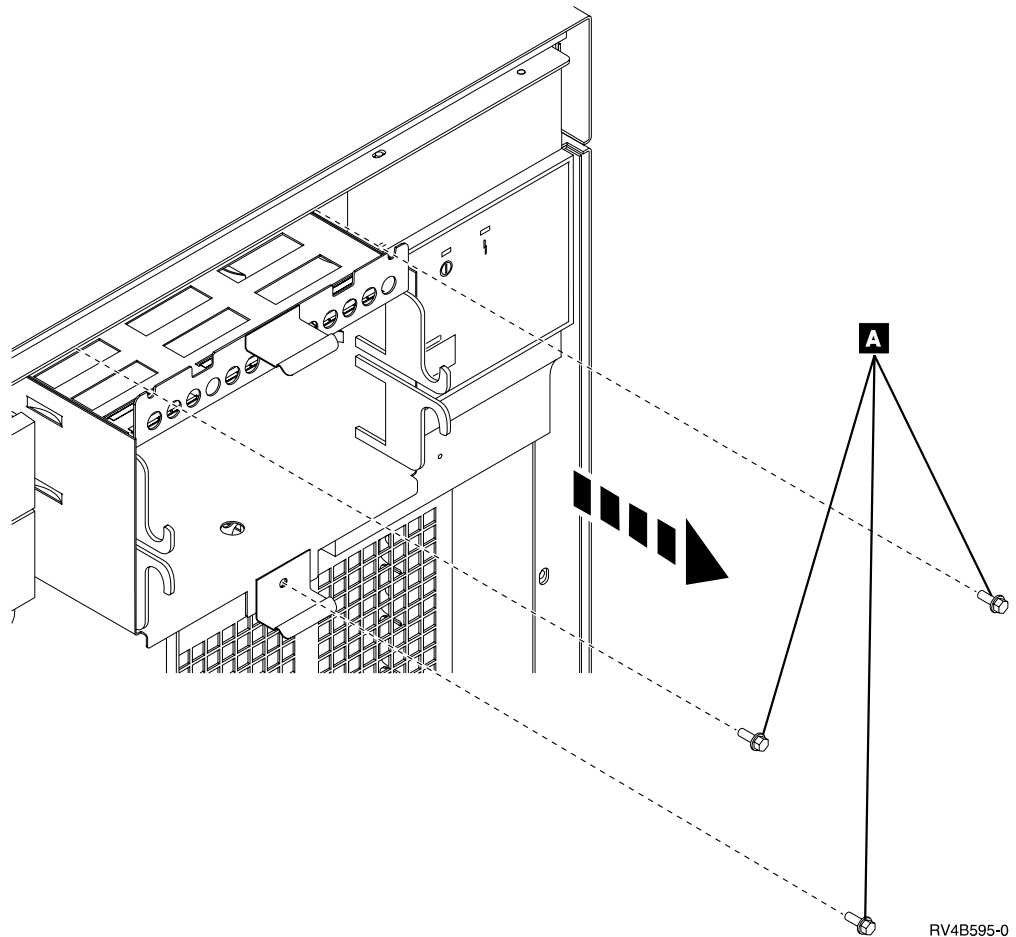
## FC 507x/508x Removal and Installation

3. Remove the front cover (see “Covers” on page 892).
4. Remove the removable media devices (see “Removable Media (Dedicated)” on page 911).
5. Remove the screws **A** to remove the removable media enclosures.

**Note:** If there is a bracket on the rear of the removable media enclosure, remove it and install the bracket on the removable media enclosure you are installing.

6. Install the removable media enclosure by reversing the removal procedure. After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the procedure.**



## SCSI Redrive Card-9251 Base I/O Tower

### Procedure

1. Remove rear AMD. Refer to “AMD” on page 881 and then return here.
2. Refer to page 1012. Remove the terminator retaining bracket.
3. Remove the SCSI terminator.

**This ends the procedure.**

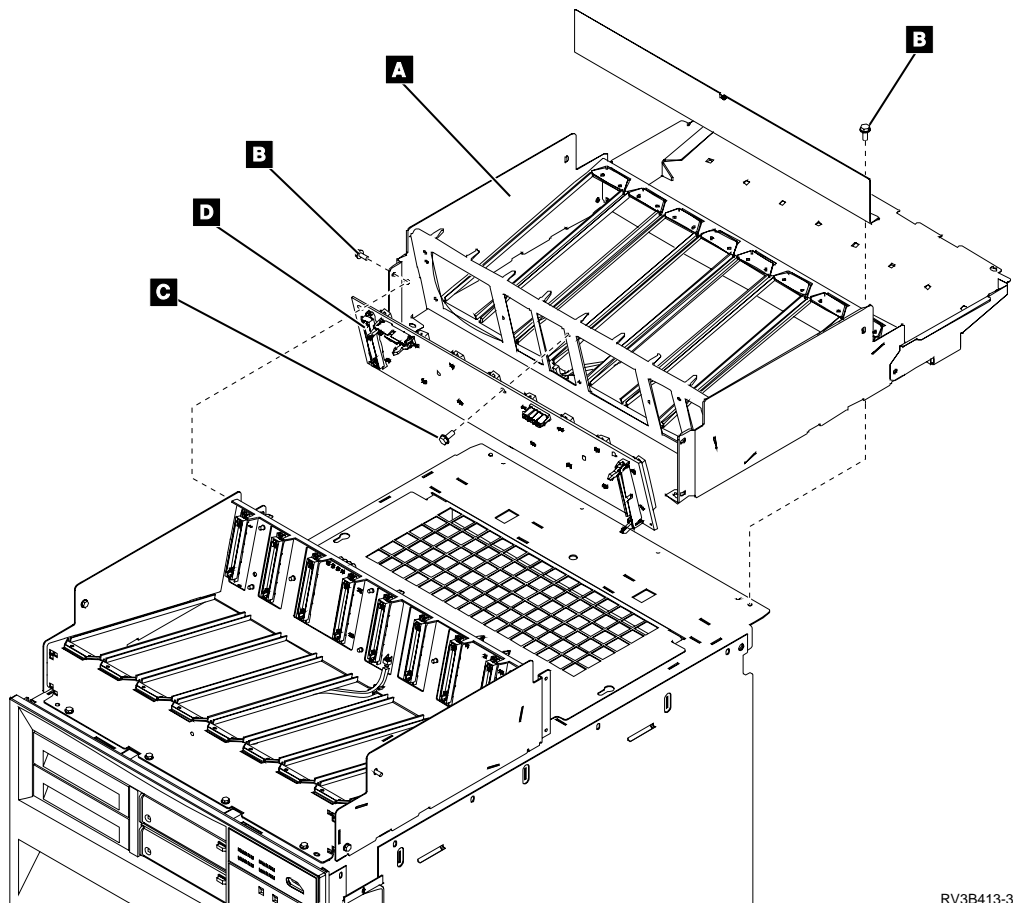
## Storage Expansion Unit Backplane

### Procedure

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
2. Disconnect the power cord.
3. Remove the front, rear, and top covers (see “Covers” on page 892).
4. If there are front and back rail assemblies, remove the back rail assembly **A** by doing the following:
  - a. Remove the screws **B**.
  - b. Disconnect the cables attached to the backplane.
  - c. Remove the rail assembly.
5. Remove the screws **C** holding the backplane to the rail assembly.
6. If a terminating plug is attached to the backplane (at location **D**), remove it and install it on the new backplane.
7. Assemble the parts of the storage expansion unit backplane by reversing the removal procedure.

After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the procedure.**



RV3B413-3

## SPCN Optical Adapter

**Attention:** When removing, installing, or holding an optical cable:

- Do not hold the cable with pliers or similar tools.
- Do not bend the cable to less than a 30 cm (12-inch) radius.
- Do not coil the cable to less than a 16 cm (6.3-inch) diameter.
- Do not attach a rope, string, or wire to the cable connectors.

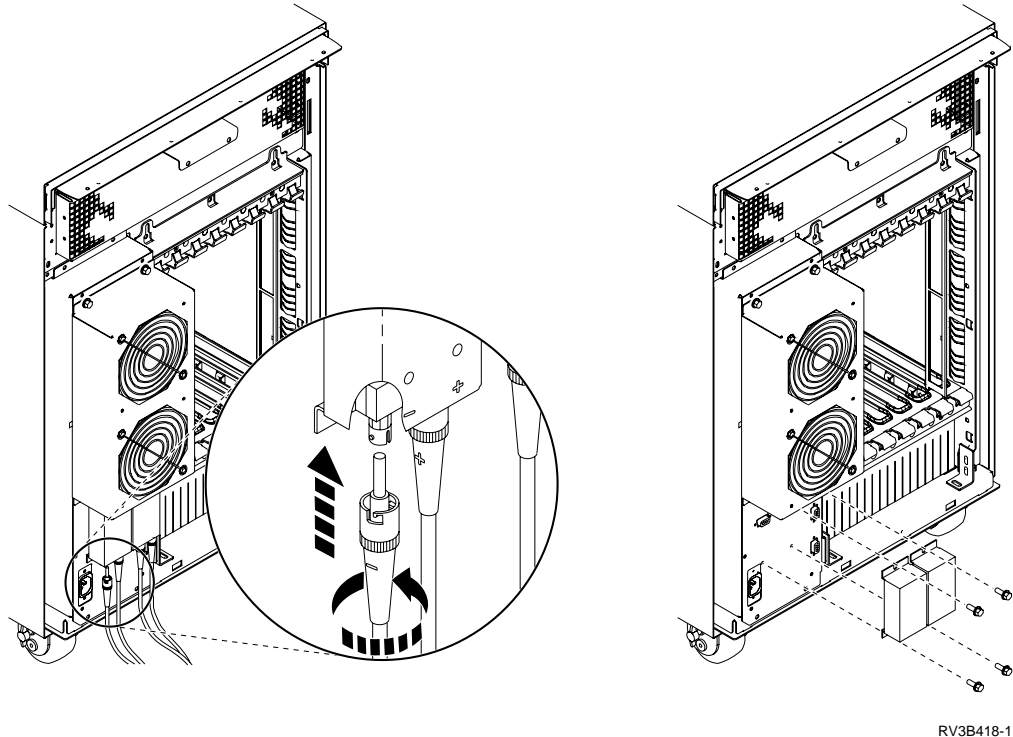
Use care to prevent the optical cable ends from becoming dirty.

### Procedure

1. Power off the system (see “Powering Off and Powering On the System or Expansion Tower” on page 789).
2. Disconnect the power cord.
3. Remove the rear cover (see “Covers” on page 892).
4. Ensure that the SPCN optical cable ends and the SPCN optical adapter terminals are labeled with + and – to ensure that:
  - the + cable end attaches to the + terminal and
  - the – cable end attaches to the – terminal.
5. Disconnect the SPCN optical cable.
6. Remove the mounting screws.
7. Install the SPCN optical adapter by reversing the removal procedure.  
Ensure that the SPCN optical cable ends and the SPCN optical adapter terminals are labeled with + and – to ensure that:
  - the + cable end attaches to the + terminal and
  - the – cable end attaches to the – terminal.

After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the procedure.**



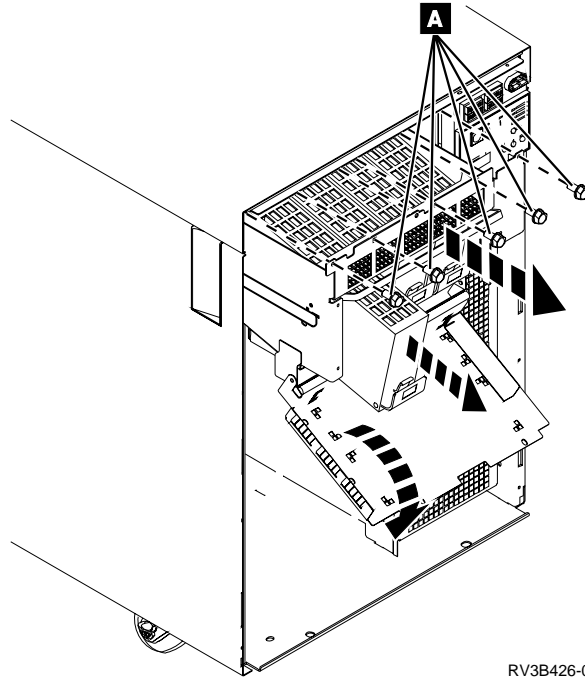
### Upper Disk Unit Enclosure Backplane

#### Procedure

1. Power off the system (see “Powering Off the System” on page 789).
2. Disconnect the power cord.
3. Remove the front cover (see “Covers” on page 892).
4. Remove the screws and pivot the shield down.
5. Remove the disk units in the upper disk unit enclosure (see “Disk Unit (Dedicated)” on page 897).
6. Remove the screws **A**.
7. Pull the upper disk unit enclosure out.
8. Assemble the parts of the upper disk unit enclosure backplane by reversing the removal procedure.

After exchanging an item, go to “Verifying the Repair” on page 806.

**This ends the procedure.**



RV3B426-0





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## Chapter 7. Recovery Procedures

|                                                                |     |                                                      |     |
|----------------------------------------------------------------|-----|------------------------------------------------------|-----|
| Disk Service Support . . . . .                                 | 919 | Resuming Mirrored Protection. . . . .                | 929 |
| Start Disk Service Here . . . . .                              | 919 | Disk Unit Data Save and Initialize . . . . .         | 929 |
| Determining Storage Protection Status . . . . .                | 920 | Disk Unit Initialize and Disk to Disk Copy . . . . . | 938 |
| Exchanging a Disk Unit with Device Parity Protection . . . . . | 921 | DST Procedures . . . . .                             | 946 |
| Exchanging a Disk Unit with Mirrored Protection . . . . .      | 923 | Recover Remote Loadsource . . . . .                  | 946 |
|                                                                |     | Copy the Contents of LIC Log. . . . .                | 947 |

---

### Disk Service Support

This section contains the procedures and information to recover from disk unit failures with a minimum loss of customer data.

The procedures in this section do not give support to rack-mounted disk units such as an IBM 9337. For disk service support on rack-mounted disk units, use the *FC 504x Problem Analysis and Repair and Parts* information.

Start all service actions at “Start Disk Service Here” and follow the steps in the procedures to determine the following:

- The storage protection method that is used by the customer
- When and how to save customer data
- When to exchange a failing disk unit
- How to restore saved data
- How to resume storage protection

---

### Start Disk Service Here

Before exchanging a disk unit, you must attempt to save customer data.

This procedure directs you to the correct recovery procedure to use when attempting to save customer data.

1. Is the disk unit a type 673x?

**No**      **Yes**

↓      Type 673x is a read cache which does **NOT** contain data that needs to be saved. Exchange the read cache using the disk unit procedure in “Chapter 6. Removal and Installation Procedures” on page 821.

**Note:** If you can get to a Dedicated Service Tools (DST) or System Service Tools (SST) screen use the concurrent maintenance procedure.

**This ends the procedure.**

2. Do you know if your system has storage protection for the failing disk unit?

**Yes**      **No**

↓      Perform “Determining Storage Protection Status” on page 920. Then return here and continue with the next step of this procedure.

3. Does your system have mirrored protection for the failing disk unit?

**No**      **Yes**

## Recovery Procedures

- ↓ Go to “Exchanging a Disk Unit with Mirrored Protection” on page 923.

**This ends the procedure.**

4. Does your system have device parity protection for the failing disk unit?

**No      Yes**

- ↓ Go to “Exchanging a Disk Unit with Device Parity Protection” on page 921.

**This ends the procedure.**

5. Are you exchanging one of the following disk unit FRUs?

- Disk unit tray or holder

**No      Yes**

- ↓ Exchange the failing FRU (see “Chapter 6. Removal and Installation Procedures” on page 821).

**This ends the procedure.**

6. You are exchanging the disk unit.

To save the data by copying to tape:

- Go to “Disk Unit Data Save and Initialize” on page 929.

To save the data by copying to another disk:

- Go to “Disk Unit Initialize and Disk to Disk Copy” on page 938.

**This ends the procedure.**

## Determining Storage Protection Status

The customer should know if the system has storage protection configured on it. They should also have kept a printout of the storage protection configuration in the binder for the *Basic System Operation, Administration, and Problem Handling* information. If the customer does, not know if the system has storage protection configured on it, **and** the system does not IPL to dedicated service tool (DST). Contact your next level of support. Otherwise, perform the following procedure.

1. Select the *Work with disk units* option on the System Service Tools (SST) display. If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions* ).

**Note:** Do not IPL the system to get to DST.

Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.

2. Select the *Display disk configuration* option on the Work with Disk Units display.  
3. Select the *Display disk configuration status* option on the Work with Disk Configuration display.

A list of each auxiliary storage pool (ASP) displays, showing the disk units that are members of the ASP. The *Status* column shows one of the following protection statuses for the ASP:

Unprotected

Mirrored

- Disk units in an ASP with a protection status of *Mirrored* are configured for mirrored protection.

If the failing disk unit has mirrored protection, write down the status of the failing disk unit and its mirrored pair. You will need this information later in one of the recovery procedures.

- An ASP that has a status of *Unprotected* may contain disk units that are data parity protected. Look in the *Status* column of the *Display disk configuration status* display. The status column shows one of the following protection status:
  - DPY/Active
  - DPY/Failed
  - DPY/HDW Failure
  - DPY/Degraded
  - DPY/Power Loss
  - DPY/Not Ready
  - DPY/Unknown

A unit with one of these statuses has data parity protection, only if all other units in the array are operational.

A unit with any other status does not have data parity protection. For example, a unit that does not have data parity protection may have a status of:

- DPY/Rebuild
- DPY/Unprotected

### Examples:

- Suppose one unit has a status of DPY/Failed while all other units have a status of DPY/Unprotected. In this case, only the unit with the DPY/Failed status is protected. Servicing the failed unit will not result in data loss. Removing any of the unprotected units could result in data loss.
- If all units have a status of DPY/Active or DPY/Degraded, all units are protected. In this case, exchanging any unit will not result in data loss.

For more information about the meaning of a status for any unit, use the Help key as indicated on the display.

Return to the procedure that sent you here.

**This ends the procedure.**

---

## Exchanging a Disk Unit with Device Parity Protection

1. Does the failing unit have data parity protection that allows service without possible data loss (see “Determining Storage Protection Status” on page 920)?

**Yes      No**

↓      Customer data may be lost if serviced. Ask your next level of support for assistance.

**This ends the procedure.**

2. Record the disk unit location for later use. If you do not already have the disk unit location information, use the location information in the Service Action Log if it is available. If the location is not available, find the address. See “SRC Address Formats” on page 767. Use the address to find the location. See “System Unit and Expansion Unit Locations and Addresses” on page 712.

## Recovery Procedures

Exchange the failing disk unit (see “Chapter 6. Removal and Installation Procedures” on page 821). When finished, continue with the next step of this procedure.

**Note:** If the concurrent procedure fails, go to step 5 of this procedure.

3. Perform the following:
  - a. Select System Service Tools (SST).  
If you cannot get to SST, select dedicated service tool (DST) (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions*).

**Note:** Do not IPL the system to get to DST.

- b. Select the *Work with disk units* option on the Service Tools display.
    - c. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
    - d. Select the *Rebuild disk unit data* option.

Does a disk unit with the S/N of the failing unit appear as a unit that can be rebuilt?

**Yes      No**

- ↓      It can take up to 5 minutes for the input-output processor (IOP) to report the device to the system. Keep trying the *Rebuild Disk Unit Data* option until the device is available. If the “Rebuild Disk Unit Data Failed” screen continues to appear even after 5 minutes, try a different disk unit or ask your next level of support for assistance.

4. Perform the following:
  - a. Select the disk unit that has the same S/N as that of the failing unit.
  - b. Rebuild the disk unit data. When the new disk unit is rebuilt, the display shows that the status is complete (this may take 30 minutes or longer).

**Note:** Once the rebuild has started, it is not necessary to wait to verify the array rebuild completes successfully.

- c. Return to the procedure that sent you here.

**This ends the procedure.**

5. Exchange the failing disk unit (see “Chapter 6. Removal and Installation Procedures” on page 821). When finished, continue with the next step of this procedure.
6. Perform the following:
  - a. Ask the customer to stop all active applications on the system and power the system off with the *Power Down System (PWRDWN SYS)* command.
  - b. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).
  - c. Select the *Work with disk units* option.
  - d. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
  - e. Select the *Rebuild disk unit data* option.
  - f. Select the disk unit on the display that was installed in place of the failing disk unit.
  - g. Rebuild the disk unit data. When the new disk unit is rebuilt, the display shows that the status is complete (this may take 30 minutes or longer).
  - h. Press the Enter key after verifying that the status is complete.

7. Perform the following:
  - a. Return to the Use Dedicated Service Tools (DST) display.
  - b. Select the *Perform an IPL* option to complete the IPL.
8. Return to the procedure that sent you here.

**This ends the procedure.**

---

## Exchanging a Disk Unit with Mirrored Protection

1. Display the disk unit status by performing the following:
  - a. Select system service tools (SST).

If you cannot get to SST, select dedicated service tools (DST) (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions*).

**Note:** If the customer is running applications on the system, do not power off the system or IPL the system to get to DST.

If you cannot get to SST or DST, and the system fails during the IPL to DST, the load source disk unit attached to the MFIOp may be in a failed state. The system requires that the load source disk unit which is read during an IPL to DST must be attached to the MFIOp. SRCB1xx4504 is displayed during the IPL to DST if a functional load source disk unit is not attached to the MFIOp.

Systems that have remote load source mirror protection can be recovered by using the steps in “Recover Remote Loadsource” on page 946 .

If you do know if this system has remote load source mirror protection, contact your next level of support.

- b. Select the *Work with disk units* option on the Service Tools display.
- c. Select the *Display disk configuration* option.
- d. Select the *Display disk configuration status* option.

Does the failing disk unit have a status of “Suspended”?

**No      Yes**

↓      Go to step 17 of this procedure.

2. Does the disk unit that is mirrored to the failing disk unit have a status of “Suspended”?

**Yes      No**

↓      Go to step 14 of this procedure.

3. Is the failing disk unit the loadsource (disk unit 1)?

**Yes      No**

↓      Ask the customer to end all applications that are running on the system and power the system off with the *Power Down System (PWRDWN SYS)* command.

To save the data by copying to tape:

- Go to “Disk Unit Data Save and Initialize” on page 929.

To save the data by copying to another disk:

- Go to “Disk Unit Initialize and Disk to Disk Copy” on page 938.

## Recovery Procedures

4. Is the failing loadsource disk unit attached to the MFIOP?

**No      Yes**

↓      Ask the customer to end all applications that are running on the system and power the system off with the *Power Down System (PWRDWNSYS)* command.

To save the data by copying to tape:

- Go to “Disk Unit Data Save and Initialize” on page 929.

To save the data by copying to another disk:

- Go to “Disk Unit Initialize and Disk to Disk Copy” on page 938.

5. Display the level of protection for the loadsource disk unit.

Does the loadsource disk unit have a mirror protection level of either?

- Remote Bus
- Remote input-output processor (IOP)

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

6. You are at this step because the remote loadsource is failing and the loadsource that is attached to the MFIOP has a state of Suspended.

Perform the following to attempt to repair the loadsource that is attached to the MFIOP. Doing this procedure reduces the duration of the repair time.

- a. Record the location of the loadsource disk unit that is attached to the MFIOP.
- b. Exchange the loadsource disk unit using concurrent maintenance (see “Chapter 6. Removal and Installation Procedures” on page 821).

Was the disk unit exchanged successfully using the concurrent maintenance procedure?

**No      Yes**

↓      Go to step 9 of this procedure.

7. The following criteria was met which is why you are here:

- The concurrent repair of the loadsource disk unit that is attached to the MFIOP did not succeed.
- The system has remote mirrored loadsource protection.

Ask the customer to stop all applications that are running on the system and power the system off with the *Power Down System (PWRDWNSYS)* command.

Was the loadsource disk unit (that is attached to the MFIOP) exchanged using the dedicated maintenance procedures?

**No      Yes**

↓      Go to “Recover Remote Loadsource” on page 946.

**This ends the procedure.**

8. Exchange the failing loadsource disk unit that is attached to the MFIOP by using the dedicated maintenance procedures (see “Chapter 6. Removal and Installation Procedures” on page 821).

After exchanging the disk unit, go to “Recover Remote Loadsource” on page 946.

**This ends the procedure.**

9. Did you exchange the disk unit?

**Yes      No**

↓ You exchanged one of the following FRUs:

- Disk drive logic card
- Disk unit tray or holder

If mirrored protection does not start automatically, go to “Resuming Mirrored Protection” on page 929.

**This ends the procedure.**

10. Perform the following:

- a. Select System Service Tools (SST).

If you cannot get to SST, select DST (see “Accessing Dedicated Service Tools” in the *AS/400 Service Functions* ).

**Note:** Do not IPL the system to get to DST.

- b. Select the *Work with disk units* option.  
 c. Select the *Display disk configuration* option.  
 d. Select the *Display non-configured units* option.

Does the disk unit you just exchanged appear as a non-configured unit on the display?

**Yes      No**

↓ It can take up to 5 minutes for the IOP to report the device to the system. Wait a few minutes. Then, press F5 to refresh the display. When the disk unit you just exchanged appears as a non-configured unit on the display, continue with the next step of this procedure.

11. Format and initialize the disk unit by doing the following:

- a. Select the *Work with disk units* option on the Service Tools display.  
 b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.  
 c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.  
 d. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.  
 e. On the display, select the disk unit you just installed.  
 f. Initialize and format the disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete (this may take 30 minutes or longer).

12. Perform the following:

- a. Return to the Work with Disk Unit Recovery display.  
 b. Select the *Replace configured unit* option on the Work with Disk Unit Recovery display.  
 c. Select the configured disk unit to exchange, on the Select Configured Unit to Replace display.  
 d. Select the replacement disk unit on the Select Replacement Unit display.

13. Return to the procedure that sent you here.

**This ends the procedure.**

## Recovery Procedures

14. Is the disk unit that is mirrored to the failing disk unit, missing?

**Note:** If a disk unit is missing, a note at the bottom of the display with an asterisk (\*) indicates the unit missing from the configuration.

Yes      No

↓      Go to step 16 of this procedure.

15. **Ensure that the customer is not running any jobs before continuing with this step of the procedure.**

Power off the system.

Go to "LIC-PIP11" on page 527 and use cause code 0002.

If you cannot determine why the unit is missing, contact your next level of support.

If you correct the missing disk unit problem, go to "Start Disk Service Here" on page 919 to locate and perform the correct recovery procedure.

**This ends the procedure.**

16. Does the disk unit that is mirrored to the failing disk unit have a status of "Active"?

No      Yes

↓      Suspend mirrored protection on the failing disk unit by performing the following:

- a. Return to the *Work with disk units* menu.
- b. Select the *Work with disk unit recovery* option.
- c. Select the *Suspend mirrored protection* option.
- d. Follow the instructions on the display to suspend mirrored protection on the failing disk unit.

17. Record the disk unit location for later use.

Exchange the failing disk unit (see "Chapter 6. Removal and Installation Procedures" on page 821). When finished, continue with the next step of this procedure.

**Note:** If the concurrent procedure fails, go to step 23 of this procedure.

18. Did you exchange the disk unit?

Yes      No

↓      You exchanged one of the following FRUs:

- Disk drive logic card
- Disk unit tray or holder

If mirrored protection does not start automatically, go to "Resuming Mirrored Protection" on page 929.

**This ends the procedure.**

19. Perform the following:

- a. Select System Service Tools (SST).

If you cannot get to SST, select DST (see "Accessing Dedicated Service Tools" in the *AS/400 Service Functions* ).

**Note:** Do not IPL the system to get to DST.

- b. Select the *Work with disk units* option.



- c. Select the *Display disk configuration* option.
- d. Select the *Display non-configured units* option.

Does the disk unit you just exchanged appear as a non-configured unit on the display?

**Yes      No**

- ↓ It can take up to 5 minutes for the IOP to report the device to the system. Wait a few minutes. Then, press F5 to refresh the display. When the disk unit you just exchanged appears as a non-configured unit on the display, continue with the next step of this procedure.

20. Format and initialize the disk unit by doing the following:
  - a. Select the *Work with disk units* option on the Service Tools display.
  - b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
  - c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.
  - d. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.
  - e. On the display, select the disk unit you just installed.
  - f. Initialize and format the disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete (this may take 30 minutes or longer).
21. Perform the following:
  - a. Return to the Work with Disk Unit Recovery display.
  - b. Select the *Replace configured unit* option on the Work with Disk Unit Recovery display.
  - c. Select the configured disk unit that you are exchanging on the Select Configured Unit to Replace display.
  - d. Select the replacement disk unit on the Select Replacement Unit display.
22. Return to the procedure that sent you here.
- This ends the procedure.**
23. You are at this step because the disk unit-concurrent repair procedures did not work.

Is the failing disk unit the loadsource (disk unit 1)?

**Yes      No**

- ↓ Go to step 28 of this procedure.

24. Is the failing loadsource disk unit attached to the MFIOP?

**Yes      No**

- ↓ Go to step 28 of this procedure.

25. Is the disk unit that is mirrored to the failing disk unit, attached to the MFIOP?

**No      Yes**

- ↓ Go to step 28 of this procedure.

26. You are at this step because the system failure meets the following two conditions:
  - A disk unit that is attached to the MFIOP is failing.

## Recovery Procedures

- The disk unit that is mirrored to the failing disk unit **is not** attached to the MFIOP.

Display the level of protection for the loadsource disk unit.

Does the loadsource disk unit have a mirror protection level of either?

- Remote Bus
- Remote IOP

**Yes      No**

↓      Ask your next level of support for assistance.

**This ends the procedure.**

27. You are at this step because **all** of the following are true:

- The loadsource disk unit that is attached to the MFIOP is failing.
- Concurrent maintenance procedures did not work.
- Remote loadsource protection started.

Ask the customer to end all applications that are running on the system and power the system off with the *Power Down System (PWRDWN SYS)* command.

Go to “Recover Remote Loadsource” on page 946.

**This ends the procedure.**

28. Ask the customer to end all applications that are running on the system and power the system off with the *Power Down System (PWRDWN SYS)* command.

Exchange the failing disk unit (see “Chapter 6. Removal and Installation Procedures” on page 821). When finished, continue with the next step of this procedure.

29. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Did you exchange the disk unit?

**Yes      No**

↓      You exchanged one of the following FRUs:

- Disk drive logic card
- Disk unit tray or holder

Go to “Resuming Mirrored Protection” on page 929.

**This ends the procedure.**

30. Format and initialize the disk unit by doing the following:

- a. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.
- b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
- c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.
- d. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.
- e. On the display, select the disk unit you just installed.

- f. Initialize and format the disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete (this may take 30 minutes or longer).
31. Perform the following:
  - a. Return to the Work with Disk Unit Recovery display.
  - b. Select the *Replace configured unit* option on the Work with Disk Unit Recovery display.
  - c. Select the configured disk unit to exchange on the Select Configured Unit to Replace display.
  - d. Select the replacement disk unit on the Select Replacement Unit display.
32. Perform the following:
  - a. Return to the Use Dedicated Service Tools (DST) display.
  - b. Select the *Perform an IPL* option to complete the IPL. The system copies data to the new disk unit during the IPL.
33. Return to the procedure that sent you here.  
**This ends the procedure.**

---

## Resuming Mirrored Protection

Use this procedure to resume mirrored protection on suspended disk units.

1. Select the *Work with disk units* option on the System Service Tools (system service tool (SST)) display or on the Use Dedicated Service Tools (DST) display.
2. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
3. Select the *Resume mirrored protection* option on the Work with Disk Unit Recovery display.
4. On the Resume Mirrored Protection display, select the disk unit that you just replaced. It has a status of suspended.
5. Are you in SST?

**No      Yes**

↓      The disk unit that you selected will become active when the system is operational.

**This ends the procedure.**

6. Perform the following:
  - a. Return to the Use Dedicated Service Tools (DST) display.
  - b. Perform an IPL.

**Note:** The disk unit you selected becomes active during the IPL.

**This ends the procedure.**

---

## Disk Unit Data Save and Initialize

**Note:** To complete this procedure, you may need the latest set of Save System (SAVSYS) or SAVSTG tapes that were made before the problem occurred. You will also need three blank tapes.

1. Are you exchanging a disk unit because a disk unit failure caused system operations to stop completely?

**Yes      No**

## Recovery Procedures

- ↓ You may be able to use the Remove Units from Configuration function of DST. This function allows you to move all data from the disk unit you want to exchange, to the other disk units in the same auxiliary storage pool (ASP).

Go to step 21 of this procedure.

2. Perform an IPL to dedicated service tool (DST) (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Does the Use Dedicated Service Tools (DST) display appear?

**Yes      No**

- ↓ If any messages regarding missing disk units appear, ignore the message and go to step 3 of this procedure.

Repeat this step.

If the same system reference code (SRC) occurs again, the customer data is not recoverable. Go to step 5 of this procedure.

If a different SRC occurs, use it to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59).

**This ends the procedure.**

3. From the Use Dedicated Service Tools (DST) display, perform the following to save the customer data from the failing disk unit:

- a. Select the *Work with disk units* option.
- b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
- c. Select the *Save disk unit data* option on the Work with Disk Unit Recovery display.
- d. Select the disk unit that you want the data saved from on the Select Disk Unit Data to Save display.

Record the ASP of the disk unit you are saving.

If the disk unit is missing, you cannot save the customer data to tape at this time. Go to step 5 of this procedure.

- e. Install a tape in the tape unit.
- f. The Specify Volume Identifier prompt appears. Enter the volume identifier for the tape. Write down the tape volume identifier here \_\_\_\_\_. You will use the tape volume identifier later in this procedure.
- g. The Select Tape Unit prompt appears.

Select the tape unit that you loaded with a tape.

**Note:** If the tape volume identifier you entered does not match the tape volume identifier on the tape you loaded, the Device Intervention Required prompt appears. The message “Wrong volume loaded” appears at the bottom of the display. Select the Format option and press the Enter key to continue the save operation.

The Function Status display shows the percent of disk data saved.

- h. If the tape is full, the Device Intervention display appears. The message “Load next volume” appears at the bottom of the display.
  - 1) Insert the next tape into the tape unit.
  - 2) Select the option to retry and press the Enter key to continue the save operation.

- i. Continue saving the disk unit data until the status of the save is complete.

Customer data is not recoverable if one of the following occurs:

- The copy operation does not complete.
- There is a large number of unreadable pages to copy from the disk unit.

Continue with the next step of this procedure.

4. Does the display show that the status of the save is complete?

**No      Yes**

↓ Perform the following:

- a. Power off the system.
- b. Exchange the failing disk unit (see “Chapter 6. Removal and Installation Procedures” on page 821).
- c. Go to step 8 of this procedure.

5. Have you already exchanged the disk drive logic card?

**Yes      No**

↓ Perform the following to attempt to save the customer’s data :

- a. Power off the system.
- b. Remove the disk unit (see “Chapter 6. Removal and Installation Procedures” on page 821).
- c. Exchange the failing disk drive logic card (see the instructions that come with the card). If you do not know the part number of the disk drive logic card, see “Disk Unit Type, Model, and Part Number List” on page 387. Locate the type and level of the disk drive to find the part number of the disk drive logic card.
- d. Go to step 2 of this procedure.

6. Have you already exchanged the storage IOA?

**Yes      No**

↓ Perform the following:

- a. Power off the system.
- b. Exchange the storage IOA. If the storage IOA is integrated into the IOP, replace the IOP (see “Chapter 6. Removal and Installation Procedures” on page 821). If you do not know the part number, see “Type, Model, and Part Number List” on page 380.
- c. Perform an IPL to dedicated service tools (DST) (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information). If the same SRC occurs, go to step 7 of this procedure. If a different SRC occurs, use it to correct the problem (see “Chapter 2. Unit Reference Codes” on page 59). If no SRC occurs, then the problem was solved by exchanging the IOA.

**This ends the procedure.**

7. Perform the following:

- a. Power off the system.
- b. Exchange the failing disk unit (see “Chapter 6. Removal and Installation Procedures” on page 821).

8. Did you just exchange disk unit 1 in the system unit?

**No      Yes**

↓ Go to step 12 of this procedure.

## Recovery Procedures

9. Format and initialize the new disk unit by doing the following:
  - a. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).  
If any messages regarding missing disk units appear, ignore the message.
  - b. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.
  - c. Select the *Work with disk unit recovery* option on the Work with Disk Unit display.
  - d. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.
  - e. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.
  - f. Select the disk unit on the display to initialize and format.
  - g. Press the F10 key on the confirmation display.
  - h. The system format and initializes the new disk unit. The display shows when the status is complete (this may take 30 minutes or longer).
10. Is most of the customer data recoverable (see step 3 of this procedure)?

**Yes      No**

↓      Go to step 19 of this procedure.

11. Restore the customer data from the tape to the new disk unit by doing the following:
  - a. Return to the Work With Disk Unit Recovery display.
  - b. Select the *Restore disk unit data* option from the Work with Disk Unit Recovery display.
  - c. Enter the tape volume identifier. This is the volume identifier that you entered during the save procedure.
  - d. Install the first tape that the data was saved to in the tape unit.
  - e. Select the tape unit that you want the data restored from on the Select Tape Unit display.
  - f. Select the disk unit that you want the data restored to on the Restore Disk Unit Data display.
  - g. Press F10 to confirm the restore.  
The Function Status display shows the percent of customer data restored. The system will IPL to the *Use Dedicated Service Tools* (DST) display when the restore has completed.

**Note:** Any damaged objects that were restored must be loaded again by the customer (have the customer see the *Backup and Recovery* information).

The system is ready for the next IPL.

**This ends the procedure.**

12. Is the customer data recoverable (see step 3 of this procedure)?

**Yes      No**

↓      Go to step 16 of this procedure.
13. Perform an IPL from removable media and select the option to install Licensed Internal Code and restore disk unit data. (See “Installing Licensed

Internal Code" in the *AS/400 Service Functions* information, which performs an IPL and installs the Licensed Internal Code.)

14. Did you get a Disk Configuration Error Report with a "Unit has incorrect logical partition configuration" warning?

**No      Yes**

↓ You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:

- a. Enter the Use Dedicated Service Tools (DST) option from the IPL or Install the System display.
- b. Enter the password 22222222.

**Note:** If this password is not valid, ask the customer for the correct password.

- c. Select the Work with system partitions option on the Use Dedicated Service Tools (DST) display.
- d. Select the Recover configuration data option on the Work with System Partitions display.
- e. Select the Recover primary partition configuration data on the Recover Configuration Data display.
- f. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and correct system serial number and press enter. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL.

Continue with the next step of this procedure.

15. Restore the customer data from the tape to the new disk unit by doing the following:

- a. Enter the *Use Dedicated Service Tools (DST)* option from the IPL or Install the System display.
- b. Enter the password 22222222.

**Note:** If this password is not valid, ask the customer for the correct password.

- c. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.
- d. Select the *Work with disk unit recovery* option on the Work with Disk Unit display.
- e. Select the *Restore disk unit data* option on the Work with Disk Unit Recovery display.
- f. Enter the tape volume identifier. This is the volume identifier that you entered during the save procedure.
- g. Install the first tape that the data was saved to in the tape unit.
- h. Select the tape unit that you want the data restored from on the Select Tape Unit display.
- i. Select the disk unit that you want the data restored to on the Restore Disk Unit Data display.
- j. Press F10 to confirm the restore.

The Function Status display shows the percent of customer data restored.

## Recovery Procedures

**Note:** When the load-source disk is restored, the system automatically performs an IPL to the Use Dedicated Service Tools (DST) display. This occurs after the restore operation completes.

When all customer data from the tape to the disk restores successfully, the display shows that the status of the restore operation is complete.

- k. Press the Enter key to complete the restore operation.
- l. Power off the system.

**Note:** Any damaged objects that were restored must be loaded again by the customer (have the customer see the *Backup and Recovery* information).

The system is ready for the next IPL.

**This ends the procedure.**

- 16. Perform an IPL from removable media and select the option to install Licensed Internal Code and recover configuration. (See "Installing Licensed Internal Code" in the *AS/400 Service Functions* information, which performs an IPL and installs the Licensed Internal Code.)
- 17. Did you get a Disk Configuration Error Report with a "Unit has incorrect logical partition configuration" warning?

**No      Yes**

↓ You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:

- a. Enter the Use Dedicated Service Tools (DST) option from the IPL or Install the System display.
- b. Enter the password 22222222.

**Note:** If this password is not valid, ask the customer for the correct password.

- c. Select the Work with system partitions option on the Use Dedicated Service Tools (DST) display.
- d. Select the Recover configuration data option on the Work with System Partitions display.
- e. Select the Recover primary partition configuration data on the Recover Configuration Data display.
- f. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and correct system serial number and press enter. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL.

Continue with the next step of this procedure.

- 18. The system ASP will be cleared because customer data was not recoverable. Recover the configuration to disk unit 1 in the system unit by doing the following:
  - a. Enter the *Use Dedicated Service Tools (DST)* option from the IPL or Install the System display.
  - b. Enter the password 22222222.



**Note:** If this password is not valid, ask the customer for the correct password.

- c. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.
- d. Select the *Work with disk unit recovery* option on the Work with Disk Unit display.
- e. Select the *Recover configuration* option on the Work with Disk Unit Recovery display. This option assembles the system configuration information on disk unit 1 in the system unit.

**Notes:**

- 1) A warning message appears stating that recovering the configuration destroys all system data.
  - 2) If you have a system with only one disk unit, a message may appear stating that your request to recover the configuration was not successful. The recover configuration function cannot be performed on a system with only one disk unit. Continue with the next step of this procedure.
- f. Go to step 20 of this procedure.
19. Because the disk data was not recoverable, clear the auxiliary storage pool (ASP) to which the disk unit is assigned by doing the following:
- a. Return to the Work with Disk Units display.
  - b. Select the *Work with disk configuration* option.
  - c. Select the *Work with ASP configuration* option.
  - d. Select the *Delete ASP data* option.
  - e. Enter the *Delete* option for the ASP you recorded in step 3 of this procedure.
  - f. Confirm the Delete ASP Data.
  - g. Return to the Work with Disk Units display.
  - h. Select the *Work with disk unit recovery* option.
  - i. Select the *Replace configured unit* option.
  - j. Select the configured disk unit to exchange on the Select Configured Unit to Replace display.
  - k. Select the replacement disk unit on the Select Replacement Unit display.
  - l. Press the Enter key to confirm the replace operation (this operation takes 10 to 15 minutes to complete).

**Attention:** The auxiliary storage pool to which the disk unit is assigned is erased. The customer must restore the data to the auxiliary storage pool (have the customer see the *Backup and Recovery* information).

20. The ASP to which the failing disk unit was assigned is cleared. The customer should do the following:
- If the disk unit you exchanged is in ASP 1, have the customer see the *Backup and Recovery* information. The customer must restore the operating system (OS/400 Licensed Program) and all customer data.
  - If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See the *Backup and Recovery* information.

**This ends the procedure.**

21. The remaining steps of this procedure require a dedicated system. Have the customer do a normal power-off procedure of the system.

## Recovery Procedures

22. Perform an IPL to DST (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).

Is the IPL or Install the System display shown, or is DST available?

**Yes      No**

↓      Go to step 2 of this procedure.

23. Select the *Use dedicated service tools (DST)* option on the display or use a function key. You need the customer password to get to the Use Dedicated Service Tools (DST) display.

24. Perform the following:

- a. On the Use Dedicated Service Tools (DST) display, select the *Work with disk units* option.
- b. Select the *Work with disk configuration* option.
- c. Select the *Display disk configuration* option.
- d. Select the *Display disk configuration status* option.
- e. Record the ASP, unit, serial number, type, and resource name of the disk unit.
- f. On the Display Disk Configuration Status display, ensure the following:
  - The disk unit is not the load-source disk unit (disk unit 1).
  - No disk units are missing from the configuration.

**Note:** An asterisk (\*) next to the unit number indicates a missing unit.

- The status field of the disk unit to be removed shows *Configured*.

Are all these conditions true?

**Yes      No**

↓      You cannot use the Remove Units from Configuration function.

Go to step 2 of this procedure.

25. Perform the following:

- a. Return to the Display Disk Configuration display.
- b. Select the *Display disk configuration capacity* option.

Does the % *Used* field for the disk unit to be removed show an asterisk (\*)?

**No      Yes**

↓      You cannot use the Remove Units from Configuration function.

Go to step 2 of this procedure.

26. Return to the Work with Disk Units display.

27. Perform the following:

- a. On the Work with Disk Units display, select the *Work with disk unit recovery* option.
- b. Select the *Disk unit problem recovery procedures* option.
- c. Select the *Analyze disk unit surface* option.
- d. Select the disk unit to analyze.
- e. Press F10 to analyze the disk unit surface.
- f. Wait until the Analyze function is complete.

**Note:** This takes several minutes.

Is the number of pages with errors zero?

**Yes      No**

↓      You cannot use the Remove Units from Configuration function.  
Go to step 2 of this procedure.

28. Return to the Work with Disk Units display.

29. Perform the following:

- a. On the Work with Disk Units display, select the *Work with disk configuration* option.
- b. Select the *Work with ASP configuration* option.
- c. Select the *Remove units from configuration* option.
- d. Select the disk unit to be removed.

**Note:** If the disk unit does not display, go to step 2 of this procedure.

- e. If the Confirm Continuation display appears, press the Enter key to continue. Wait for the next display.
- f. If there is enough storage in the ASP, the Confirm Remove Disk Units display appears. If there is not enough storage, an error message display appears.

Does any error message display appear?

**No      Yes**

↓      Go to step 2 of this procedure.

30. Press the Enter key to verify the Remove Disk Units function.

The Remove Disk Units function takes several minutes. When it is complete, a message appears stating whether it was successful.

Was the Remove Disk Units function successful?

**Yes      No**

↓      Go to step 2 of this procedure.

31. On the Work with ASP Configuration display, select the *Display disk configuration capacity* option.

32. Press F11 twice to display non-configured units.

Is the unit you removed shown as a non-configured unit?

**Yes      No**

↓      Go to step 2 of this procedure.

33. Do you want to exchange the disk unit now?

**Note:** You can exchange the disk unit at a later time because the disk unit is removed from the configuration.

**Yes      No**

↓      **This ends the procedure.**

34. Perform the following:

- a. Power off the system.
- b. Exchange the failing disk unit (see "Chapter 6. Removal and Installation Procedures" on page 821).

35. Format and initialize the new disk unit by doing the following:

- a. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

## Recovery Procedures

- b. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.
  - c. Select the *Work with disk unit recovery* option on the Work with Disk Unit display.
  - d. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.
  - e. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.
  - f. Select the disk unit on the display to initialize and format.
  - g. Press the F10 key on the confirmation display.
  - h. The system initializes and formats the new disk unit. The display shows when the status is complete (this may take 30 minutes or longer).
36. In this step, you use the ASP, unit, serial number, type, and resource name information you recorded in step 24 of this procedure.  
Perform the following:
  - a. Return to the Work with Disk Units display.
  - b. On the Work with Disk Units display, select the *Work with disk configuration* option.
  - c. Select the *Work with ASP configuration* option.
  - d. Select the *Add units to ASPs* option.
  - e. Specify the ASP from which the disk units were removed.
  - f. Select the unit to add to the ASP.
  - g. When the Confirm Add Units display appears, press the Enter key to continue. Wait for the next display.
37. The Add Disk Units function takes several minutes. When it is complete, a message appears stating whether it was successful.  
Was the Add Disk Units function successful?  

|           |                                                                                                                                                                  |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No</b> | <b>Yes</b>                                                                                                                                                       |
| ↓         | On the Work with ASP Configuration display, select the <i>Display disk configuration capacity</i> option. The unit you added should be shown in the correct ASP. |

**This ends the procedure.**
38. Do you have more FRUs to exchange?  

|           |                                  |
|-----------|----------------------------------|
| <b>No</b> | <b>Yes</b>                       |
| ↓         | Go to step 34 of this procedure. |
39. Ask your next level of support for assistance.  
**This ends the procedure.**

---

## Disk Unit Initialize and Disk to Disk Copy

1. Perform an IPL to dedicated service tool (DST) (see “Dedicated Service Tools (DST)” in the *AS/400 Service Functions* information).  
Does the Use Dedicated Service Tools (DST) display appear?  

|            |                   |
|------------|-------------------|
| <b>Yes</b> | <b>No</b>         |
| ↓          | Repeat this step. |

If the same system reference code (SRC) occurs again, the customer data is not recoverable. Go to step 16 on page 941.

If a different SRC occurs, use it to correct the problem.

**This ends the procedure.**

2. Is this a single disk unit system?

**No      Yes**

↓ Perform "Disk Unit Data Save and Initialize" on page 929.

**This ends the procedure.**

3. Is the failing disk unit the load-source disk unit?

**Note:** Disk unit 1 contains the load-source disk unit.

**Yes      No**

↓ Go to step 24 of this procedure.

4. Find another disk unit on the system that is the same type and model as the load-source disk unit.

5. Perform the following to install the new disk drive into a disk unit on the system:

- a. Power off the system.
- b. Slide the disk unit you found in step 4 of this procedure out of the system (see "Chapter 6. Removal and Installation Procedures" on page 821).
- c. Remove the disk drive from the disk unit. Be very careful with the disk enclosure. You will install it again in the disk unit when the service actions to the failing load-source disk unit are complete.
- d. Install the new disk drive in the disk unit.

6. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

Does the Use Dedicated Service Tools (DST) display appear?

**Yes      No**

↓ Repeat step 1 of this procedure.

7. From the Use Dedicated Service Tools (DST) display, perform the following to format and initialize the disk drive you installed in step 5 of this procedure:

- a. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.
- b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
- c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.
- d. Select the *Initialize and format disk unit* option on the Problem Recovery Procedures display.
- e. Select the non-configured unit you installed in step 5 of this procedure as the unit to work with.
- f. Verify the initialization and formatting by pressing F10. The initialization and formatting may take 30 minutes or longer to complete.
- g. Return to the Work with Disk Unit Recovery display.

8. Perform the following to copy data from the load-source disk unit to the disk drive you installed in step 4 of this procedure:

- a. Select the *Copy disk unit data* option on the Work with Disk Unit Recovery display.
- b. Select the load-source disk unit (disk unit 1) as the unit to copy.

## Recovery Procedures

- c. Select the non-configured unit you installed in step 5 of this procedure as the unit to copy to.
- d. The console displays the percent of the data copied. If the number of unreadable pages displays, write down the number of unreadable pages here.

- e. Wait until the status of the copy is *Complete*. Customer data is not recoverable if one of the following occurs:
  - The copy operation does not complete.
  - There is a large number of unreadable pages to copy from the disk unit.

Continue with the next step of this procedure.

9. Does the copy operation complete?

**No      Yes**

↓      Go to step 11 of this procedure.

10. Have you already exchanged the disk drive logic card?

**Yes      No**

↓      Perform the following to attempt to save the customer's data:

- a. Power off the system.
  - b. Remove the disk unit (see "Chapter 6. Removal and Installation Procedures" on page 821).
  - c. Exchange the failing disk drive logic card (see the instructions that come with the card). If you do not know the part number of the disk drive logic card, see "Disk Unit Type, Model, and Part Number List" on page 387. Locate the type and level of the disk drive to find the part number of the disk drive logic card.
  - d. Go to step 1 of this procedure.
11. Perform the following to remove the failing load-source disk drive from the load-source disk unit on the system:
    - a. Power off the system.
    - b. Find the load-source disk unit. Slide the disk unit out of the system (see "Chapter 6. Removal and Installation Procedures" on page 821).
    - c. Remove the load-source disk drive from the disk unit.
  12. Perform the following to move the new disk drive into the load-source disk unit:
    - a. Slide the disk unit you found in step 4 of this procedure out of the system (see "Chapter 6. Removal and Installation Procedures" on page 821).
    - b. Remove the new disk drive from the disk unit. Be very careful with the disk drive. It contains the load-source data.
    - c. Install the new disk drive into the disk unit that used to contain the load-source disk drive.
    - d. Slide the disk unit into the system.
  13. Perform the following to install the disk drive you removed in step 5 of this procedure to make a place for the new disk enclosure:
    - a. Install the disk drive you removed in step 5 of this procedure into the disk unit.

- b. Slide the disk unit into the system.
14. Were any pages unreadable during the copy operation?  
**No      Yes**  
 ↓      Go to step 22 of this procedure.
15. The system is ready for the next IPL.  
**This ends the procedure.**
16. Have you already exchanged the disk drive logic card?  
**Yes      No**  
 ↓      Perform the following to attempt to save the customer's data:
  - a. Power off the system.
  - b. Remove the disk unit (see "Chapter 6. Removal and Installation Procedures" on page 821).
  - c. Exchange the failing disk drive logic card (see the instructions that come with the card). If you do not know the part number of the disk drive logic card, see "Disk Unit Type, Model, and Part Number List" on page 387. Locate the type and level of the disk drive to find the part number of the disk drive logic card.
  - d. Go to step 1 of this procedure.
17. Perform the following to remove the failing load-source disk drive from the load-source disk unit on the system:
  - a. Power off the system.
  - b. Find the load-source disk unit. Slide the disk unit out of the system (see "Chapter 6. Removal and Installation Procedures" on page 821).
  - c. Remove the load-source disk drive from the disk unit.
  - d. Install the new disk drive in the disk unit.
  - e. Slide the disk unit into the system.
18. Perform an IPL from removable media and select the option to install Licensed Internal Code and recover the configuration. (See "Installing Licensed Internal Code" in the *AS/400 Service Functions* information, which performs an IPL and installs the Licensed Internal Code.)
19. Did you get a Disk Configuration Error Report with a "Unit has incorrect logical partition configuration" warning?  
**No      Yes**  
 ↓      You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure.  
 Perform the following:
  - a. Enter the *Use Dedicated Service Tools (DST)* option from the IPL or Install the System display.
  - b. Enter the password 22222222.  

**Note:** If this password is not valid, ask the customer for the correct password.
  - c. Select the *Work with system partitions* option on the Use Dedicated Service Tools (DST) display.
  - d. Select the *Recover configuration data* option on the Work with System Partitions display.

## Recovery Procedures

- e. Select the *Recover primary partition configuration data* option on the Recover Configuration Data display.
- f. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and correct system serial number and press enter.
- g. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL.  
Continue with the next step of this procedure.

20.

The system ASP will be cleared because customer data was not recoverable. Recover the configuration to disk unit 1 in the system unit by doing the following:

- a. Enter the Use Dedicated Service Tools (DST) option from the IPL or Install the System display.
- b. Enter the password 22222222.

**Note:** If this password is not valid, ask the customer for the correct password.

- c. Select the Work with disk units option on the Use Dedicated Service Tools (DST) display.
- d. Select the Work with disk unit recovery option on the Work with Disk Unit display.
- e. Select the Recover configuration option on the Work with Disk Unit Recovery display. This option assembles the system configuration information on disk unit 1 in the system unit.

### Notes:

- a. A warning message appears stating that recovering the configuration destroys all system data.
- b. If you have a system with only one disk unit, a message may appear stating that your request to recover the configuration was not successful. The recover configuration function cannot be performed on a system with only one disk unit.

Continue with the next step of this procedure.

21. The ASP to which the failing disk unit was assigned is cleared. The customer should do the following:
  - If the disk unit you exchanged is in ASP 1, have the customer see the Backup and Recovery information. You must restore the operating system (OS/400 Licensed Program) and all customer data.
  - If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See the Backup and Recovery information.

**This ends the procedure.**

22. Perform an IPL from removable media and restore the Licensed Internal Code (see "Restoring Licensed Internal Code" in the *AS/400 Service Functions* information). This information shows you how to perform an IPL and restore the Licensed Internal Code.

**Note:** Some objects may be damaged. The customer may have to load the damaged objects again (see the *Backup and Recovery* information).

**This ends the procedure.**



23. Is the failing unit missing from the configuration?

**No      Yes**

↓      Go to step 36 of this procedure.

24. Find another disk unit on the system, other than the load-source disk unit, that has the same type and model as the failing disk unit.

**Note:** If the load-source disk unit is the only other disk unit on the system with the same type and model as the failing disk unit, you must use "Disk Unit Data Save and Initialize" on page 929.

25. Perform the following to install a new disk drive into a disk unit on the system:

- a. Power off the system.
- b. Slide the disk unit you found in step 24 of this procedure out of the system (see "Chapter 6. Removal and Installation Procedures" on page 821).
- c. Remove the disk drive from the disk unit. Be very careful with the disk drive. You will install it again in the disk unit when the repair actions to the failing disk unit are complete.
- d. Install the new disk drive in the disk unit.
- e. Slide the disk unit into the system.

26. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information).

Does the Use Dedicated Service Tools (DST) display appear?

**Yes      No**

↓      Repeat step 1 of this procedure.

27. From the Use Dedicated Service Tools (DST) display, perform the following to format and initialize the disk drive you installed in step 25 of this procedure:

- a. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.
- b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
- c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.
- d. Select the *Initialize and format disk unit* option on the Problem Recovery Procedures display.
- e. Select the non-configured disk unit you installed in step 25 of this procedure as the unit to work with.
- f. Verify the initialization and formatting by pressing F10. The initialization and formatting may take 30 minutes or longer to complete.
- g. Return to the Work with Disk Unit Recovery display.

28. Perform the following to copy data from the failing disk drive to the disk drive you installed in step 25 of this procedure:

- a. Select the *Copy disk unit data* option on the Work with Disk Unit Recovery display.
- b. Select the failing unit as the unit to copy.
- c. Select the non-configured unit you installed in step 25 of this procedure as the unit to copy to.

## Recovery Procedures

- d. The console displays the percent of the data copied. If the number of unreadable pages displays, write down the number of unreadable pages here.

|  |
|--|
|  |
|--|

- e. Wait until the status of the copy is *Complete*. Customer data is not recoverable if one of the following occurs:
- The copy operation does not complete.
  - There is a large number of unreadable pages to copy from the disk unit.

Continue with the next step of this procedure.

29. Does the copy operation complete?

**No      Yes**

↓      Go to step 31 of this procedure.

30. Have you already exchanged the disk drive logic card?

**Yes      No**

↓      Perform the following to attempt to save the customer's data:

- Power off the system.
  - Remove the disk unit (see "Chapter 6. Removal and Installation Procedures" on page 821).
  - Exchange the failing disk drive logic card (see the instructions that come with the card). If you do not know the part number of the disk drive logic card, see "Disk Unit Type, Model, and Part Number List" on page 387. Locate the type and level of the disk drive to find the part number of the disk drive logic card.
  - Go to step 1 of this procedure.
31. Perform the following to remove the failing disk drive from the disk unit on the system:
- Power off the system.
  - Find the failing disk unit. Slide the disk unit out of the system.
  - Remove the disk drive from the failing disk unit (see "Chapter 6. Removal and Installation Procedures" on page 821).
32. Perform the following to move the new disk drive into the disk unit that held the failing disk drive:
- Remove the new disk drive from the disk unit you found in step 24 of this procedure. Be very careful with the disk enclosure. It contains the disk unit data.
  - Install the new disk drive into the disk unit that contained the failing disk drive. You removed the failing disk drive in step 31 of this procedure.
  - Slide the disk unit into the system.
33. Perform the following to install the disk drive that you removed to make a place for the new disk drive:
- Install the disk drive you removed in step 25 of this procedure into the disk unit.
  - Slide the disk unit into the system.
34. Were any pages unreadable during the copy operation?

**No      Yes**

- ↓ Some objects may be damaged. The customer may have to load the damaged objects again. Have the customer see the *Backup and Recovery* information.

**This ends the procedure.**

35. The system is ready for the next IPL.

**This ends the procedure.**

36. Are there multiple failing disk units under the same IOA or IOP?

**No      Yes**

- ↓ Perform the following:
- a. Power off the system.
  - b. Exchange the storage IOA. If the storage IOA is integrated into the IOP, replace the IOP (see “Chapter 6. Removal and Installation Procedures” on page 821). If you do not know the part number, see “Type, Model, and Part Number List” on page 380.
  - c. Go to step 1 of this procedure.

37. Have you already exchanged the disk drive logic card?

**Yes      No**

- ↓ Perform the following to attempt to save the customer’s data:
- a. Power off the system.
  - b. Remove the disk unit (see “Chapter 6. Removal and Installation Procedures” on page 821).
  - c. Exchange the failing disk drive logic card (see the instructions that come with the card). If you do not know the part number of the disk drive logic card, see “Disk Unit Type, Model, and Part Number List” on page 387. Locate the type and level of the disk drive to find the part number of the disk drive logic card.
  - d. Go to step 1 of this procedure.

38. Because the disk data was not recoverable, clear the auxiliary storage pool (ASP) to which the disk unit is assigned by doing the following:

- a. Return to the Work with Disk Units display.
- b. Select the Work with disk configuration option.
- c. Select the Work with ASP configuration option.
- d. Select the Delete ASP data option.
- e. Enter the Delete option for the ASP you recorded in step 3 on page 939 of this procedure.
- f. Confirm the Delete ASP Data.
- g. Return to the Work with Disk Units display.
- h. Select the Work with disk unit recovery option.
- i. Select the Replace configured unit option.
- j. Select the configured disk unit to exchange on the Select Configured Unit to Replace display.
- k. Select the replacement disk unit on the Select Replacement Unit display.
- l. Press the Enter key to confirm the replace operation (this operation takes 10 to 15 minutes to complete).

## Recovery Procedures

**Attention:** The auxiliary storage pool to which the disk unit is assigned is erased. The customer must restore the data to the auxiliary storage pool (have the customer see the Backup and Recovery information).

39. The ASP to which the failing disk unit was assigned is cleared. The customer should do the following:
  - If the disk unit you exchanged is in ASP 1, have the customer see the Backup and Recovery information. You must restore the operating system (OS/400 Licensed Program) and all customer data.
  - If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See the Backup and Recovery information.

**This ends the procedure.**

---

## DST Procedures

### Recover Remote Loadsource

1. Have you exchanged the loadsource disk unit that is attached to the MFIOP?

**Yes     No**

↓ Exchange the failing disk unit (see "Chapter 6. Removal and Installation Procedures" on page 821).

2. Perform an alternate IPL to dedicated service tool (DST) (Type D IPL) (see "Dedicated Service Tools (DST)" in the *AS/400 Service Functions* information). The Install Licensed Internal Code display appears on the system console.
3. Select the *Install Licensed Internal Code* option (see "Install Licensed Internal Code Utility" in the *AS/400 Service Functions* information).

When the install is complete, the system automatically performs an IPL from disk. The Disk Configuration Attention Report displays. Press F3 to exit to Dedicated Service Tools (DST). **Do not select F10 from the Disk Configuration Attention Report display when you are performing this Recover Remote Loadsource procedure.**

**Note:** At this time, the loadsource disk is the only configured disk unit in the system. The following steps ensure that the destruction of customer data and programs will not occur.

4. Did you get a Disk Configuration Error Report with a "Unit has incorrect logical partition configuration" warning?

**No     Yes**

↓ You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:

- a. Enter the Use Dedicated Service Tools (DST) option from the IPL or Install the System display.
- b. Enter the password 22222222.

**Note:** If this password is not valid, ask the customer for the correct password.

- c. Select the Work with system partitions option on the Use Dedicated Service Tools (DST) display.
- d. Select the Recover configuration data option on the Work with System Partitions display.

- e. Select the Recover primary partition configuration data on the Recover Configuration Data display.
- f. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and correct system serial number and press enter.
- g. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL. The Disk Configuration Attention Report displays. Press F3 to exit to Dedicated Service Tools (DST). Do not select F10 from the Disk Configuration Attention Report display when you are performing this Recover Remote Loadsource procedure.

**Note:** At this time, the loadsource disk is the only configured disk unit in the system. The following steps ensure that the destruction of customer data and programs will not occur.

Continue with the next step of this procedure.

5. Select the *Start the Dedicated Service Tools* option.
6. Sign on to DST.

Use 22222222 as both the user ID and password. If the customer has changed the ID or password, ask the customer for the correct values.

7. Select the *Work with disk units* option.
8. Select the *Work with disk unit recovery* option.
9. Select the *Recover Mirrored Loadsource* option.

This function, checks the disk units that are attached to the system. If remote mirroring became enabled and a mirror protected, loadsource disk unit is located, a confirmation display appears. If a mirror protected, loadsource disk unit is not located, an error display appears.

10. After the confirmation display appears, press F10 to confirm the selection and begin the recover function.

While the Recover Remote Loadsource function is running, SRC C6xx 4205 (xx represents the percentage of recovery completed) displays on the system control panel.

When the Recover Remote Loadsource function completes. The system automatically performs an IPL from disk to the IPL or Install the System display. All of the system data, user data, and user ASPs are now available to the system.

**This ends the procedure.**

## Copy the Contents of LIC Log

**Attention:** The file does not close until you select the *End Licensed Internal Code* option. If you remove the tape or diskette before selecting this option, do not use the information that is on the tape or diskette.

1. Select the *Start a Service Tool* option on the Use Dedicated Service Tools (DST) display.
2. Select the *Licensed Internal Code log* option.
3. Select either:
  - Dump entries to tape from the LIC log
  - Dump entries to diskette from the LIC log
4. Perform the following:

## Recovery Procedures

- a. At the bottom of the Dump entries to tape (or diskette) from LIC log display, type a 3 (Dump entry header and complete entry).
  - b. Press the Enter key.
5. The system will prompt you through the remainder of the displays that are used in this procedure.

When the copy of the LIC log contents finishes, a message appears indicating that the dump (copy) completed.

- a. Press the Enter key.
- b. Select the *End Licensed Internal Code* option.

**Note:** Remember that the file does not close until you select the *End Licensed Internal Code* option.

**This ends the procedure.**

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## Chapter 8. Parts Listing

|                                                   |     |                                                |      |
|---------------------------------------------------|-----|------------------------------------------------|------|
| How To Use This Parts Listing . . . . .           | 949 | Assembly 13: Cover Assemblies for FC 5065 and  |      |
| Assemblies–System Unit and Expansion Unit. . .    | 950 | FC 5066 Expansion Towers . . . . .             | 992  |
| Assembly 1: Cover Assemblies - 600 or S10 System  |     | Assembly 14: Final Assemblies for FC 5065      |      |
| Unit . . . . .                                    | 952 | expansion tower . . . . .                      | 996  |
| Assembly 2: Models 600 or S10 System Unit . . .   | 954 | Assembly 15: Cover Assemblies - 9251 Base I/O, |      |
| Assembly 3: Control Panel Assembly - 600 or S10   |     | 507x & 508x Expansion Units. . . . .           | 1008 |
| System Unit . . . . .                             | 958 | Assembly 16: Final Assembly - 9251 Base I/O,   |      |
| Assembly 4: Disk Unit/Holder Assembly . . . .     | 960 | 507x & 508x Expansion Towers . . . . .         | 1010 |
| Assembly 5: Processor/Memory Assembly - Model     |     | Assembly 17: Storage Expansion Unit Assembly   | 1014 |
| 600 or S10 . . . . .                              | 962 | Assembly 18: 9251 and 507x, 508x Expansion     |      |
| Assembly 6: Cover Assemblies - Model 620, 720, or |     | Tower(s) Control Panel. . . . .                | 1016 |
| S20 System Unit . . . . .                         | 964 | Assembly 19: Disk Unit Assemblies. . . . .     | 1018 |
| Assembly 7: Model 620, 720, or S20 System Unit    | 966 | Assembly 20: File Server Book Assembly Type    |      |
| Assembly 8: Control Panel Assembly - Models 620,  |     | 6506 . . . . .                                 | 1020 |
| 720, or S20 System Unit (Single Processor). . .   | 972 | Other System Assemblies . . . . .              | 1021 |
| Assembly 9: Cover Assemblies - Models 620, 720,   |     | Assembly 21: File Server Book Assembly Type    |      |
| or S20 System Unit with Exp Unit . . . . .        | 974 | 6616 . . . . .                                 | 1022 |
| Assembly 10: Models 620, 720, or S20 System Unit  |     | Assembly 22: File Server Book Assembly Type    |      |
| with Expansion Unit . . . . .                     | 976 | 6617 . . . . .                                 | 1024 |
| Assembly 11: Models 620, 720, or S20 Expansion    |     | Assembly 23: Internal Cable Assemblies . . . . | 1026 |
| Unit . . . . .                                    | 982 | Assembly 24: External Cable Assemblies . . . . | 1028 |
| Assembly 12: Control Panel Assembly - Model 620,  |     | Assembly 25: Miscellaneous . . . . .           | 1032 |
| 720, or S20 System Unit (N-way Processor) . . .   | 990 | Power Cord Part Numbers and Receptacle         |      |
| Assemblies–Expansion Towers. . . . .              | 991 | Descriptions . . . . .                         | 1034 |

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### How To Use This Parts Listing

- **SIMILAR ASSEMBLIES:** If two assemblies contain a majority of identical parts, they are broken down on the same list. Common parts are shown by one index number. Parts peculiar to one or the other of the assemblies are listed separately and identified by description.
- **AR:** (As Required) in the **Units** column indicates that the quantity is not the same for all machines.
- **NP:** (Non-Procurable) in the **Units** column indicates that the part is non-procurable and that the individual parts or the next higher assembly should be ordered.
- **NR:** (Not Recommended) in the **Units** column indicates that the part is procurable but not recommended for field replacement and that the next higher assembly should be ordered.
- **R:** (Restricted) in the **Units** column indicates that the part has a restricted availability.
- **INDENTURE:** The indenture is marked by a series of dots preceding the parts description. The indenture indicates the relationship of a part to the next higher assembly. For example:

**Indenture**  
**Relationship of Parts**

(No dot)

MAIN ASSEMBLY

(One dot)

- Detail parts of a main assembly

(One dot)

- Sub assembly of the main assembly

(Two dot)

- • Detail part of a one-dot sub assembly

(Two dot)

- • Sub assembly of a one-dot sub assembly

(Three dot)

- • • Detail part of a two-dot sub assembly

| Asm-<br>Index | Part<br>Number | Units | Description                                                                       |
|---------------|----------------|-------|-----------------------------------------------------------------------------------|
| 3-            | 2512667        | 1 1   | Cover Asm, Rear, Red Cover Asm, Rear, White For next higher asm, see assembly 1-2 |
| -1            | 5373637        | 1     | • Seal, Top                                                                       |
| -2            | 5356429        | 2     | • Clip, Retaining                                                                 |
| -3            | 1847630        | 1     | • Finger Stock Asm                                                                |
| -4            | 1847602        | NR    | • • Channel, Finger Stock                                                         |
| -5            | 5373639        | AR    | • Seal, Bottom                                                                    |
| -6            | 5356429        | 2     | • Clip, Retaining                                                                 |
| -7            |                | NP    | • Cover, Rear, Without Paint                                                      |
| -8            | 0416629        | R     | • Screw, Panel                                                                    |

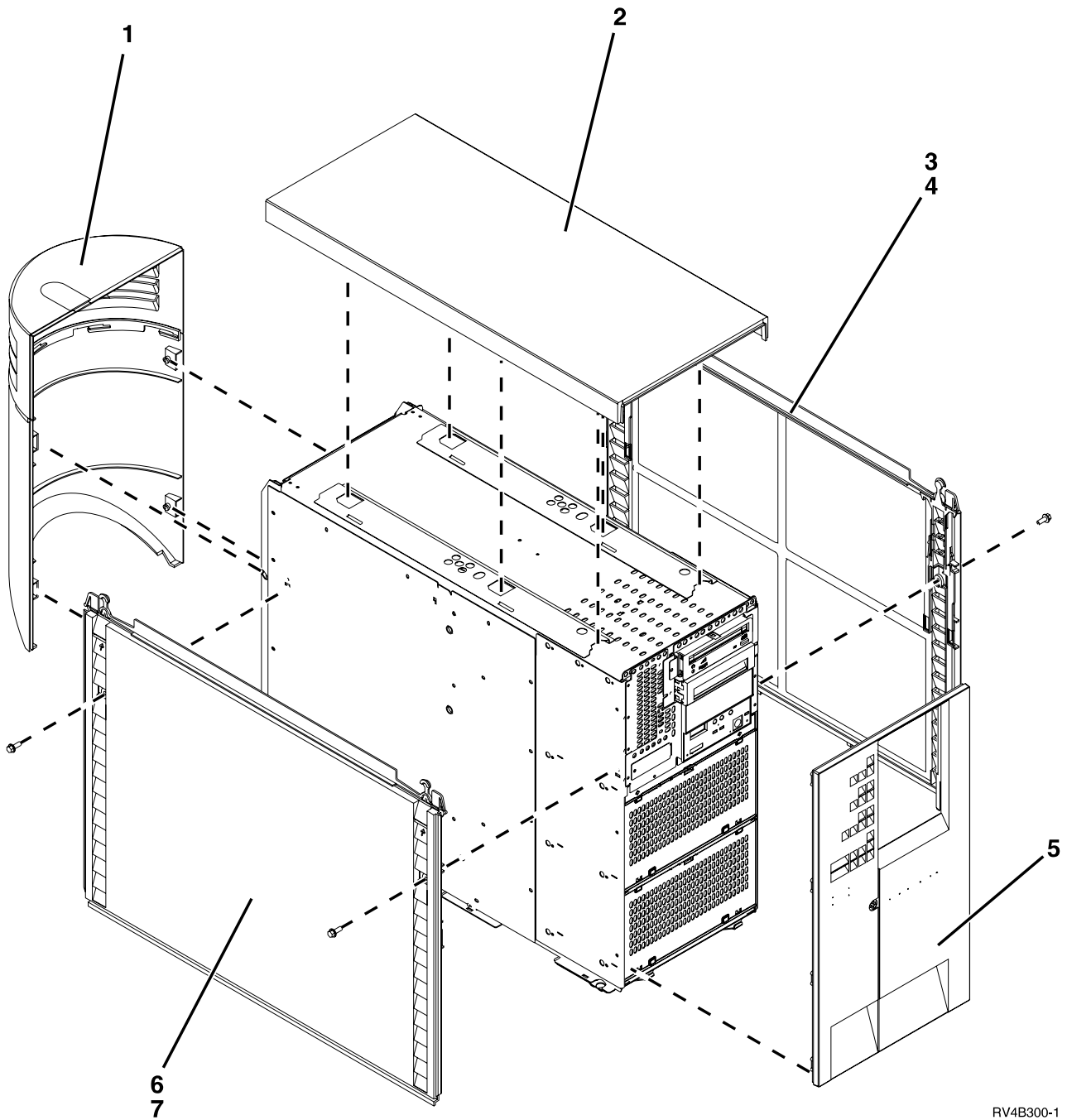
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## Assemblies—System Unit and Expansion Unit





## Assembly 1: Cover Assemblies - 600 or S10 System Unit

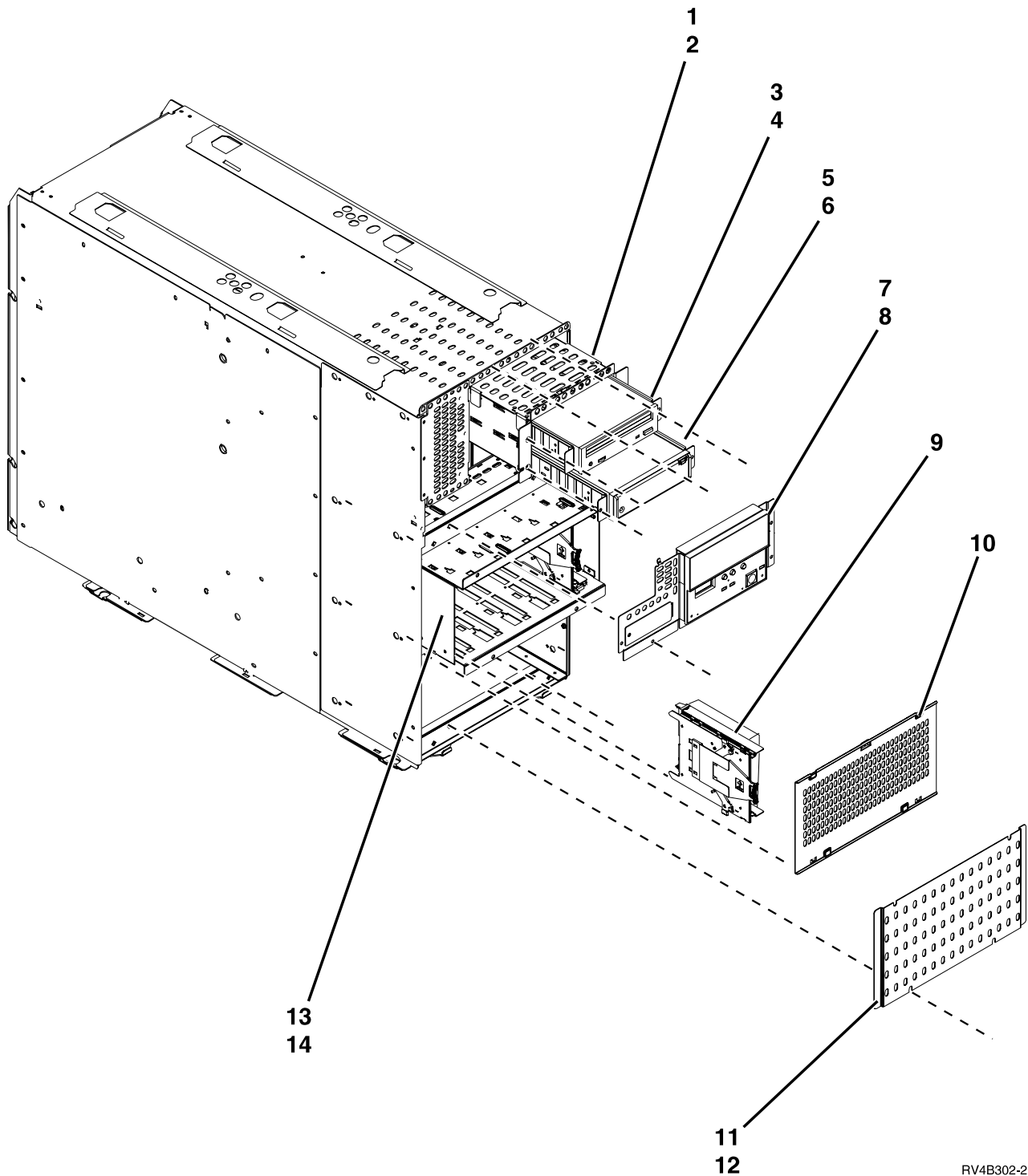


RV4B300-1

**Assembly 1: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>             |
|-----------------------|------------------------|--------------|--------------------------------|
| 1-1                   | 44H8040                | 1            | Cover Asm, Rear for model 600  |
| -1                    | 44H8578                | 1            | Cover Asm, Rear for model S10  |
| -2                    | 44H7742                | 1            | Cover, Top                     |
| -3                    | 44H7743                | 1            | Cover, Side                    |
| -4                    | 1621811                | 2            | Screw                          |
| -5                    | 44H7775                | 1            | Cover Asm, Front for model 600 |
| -5                    | 90H6584                | 1            | Cover Asm, Front for model S10 |
| -6                    | 44H7743                | 1            | Cover, Side                    |
| -7                    | 1621811                | 2            | Screw                          |

## Assembly 2: Models 600 or S10 System Unit

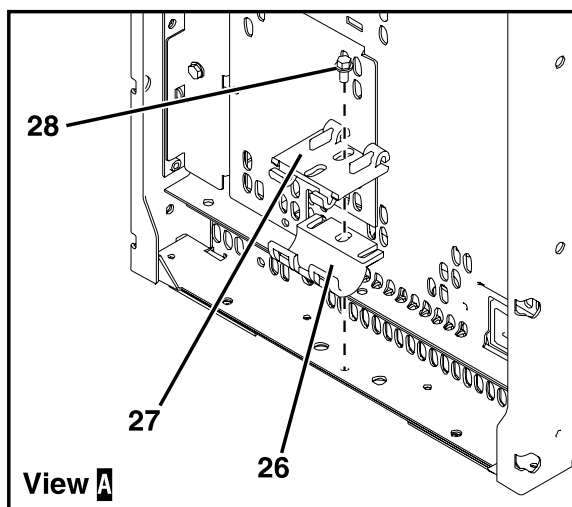
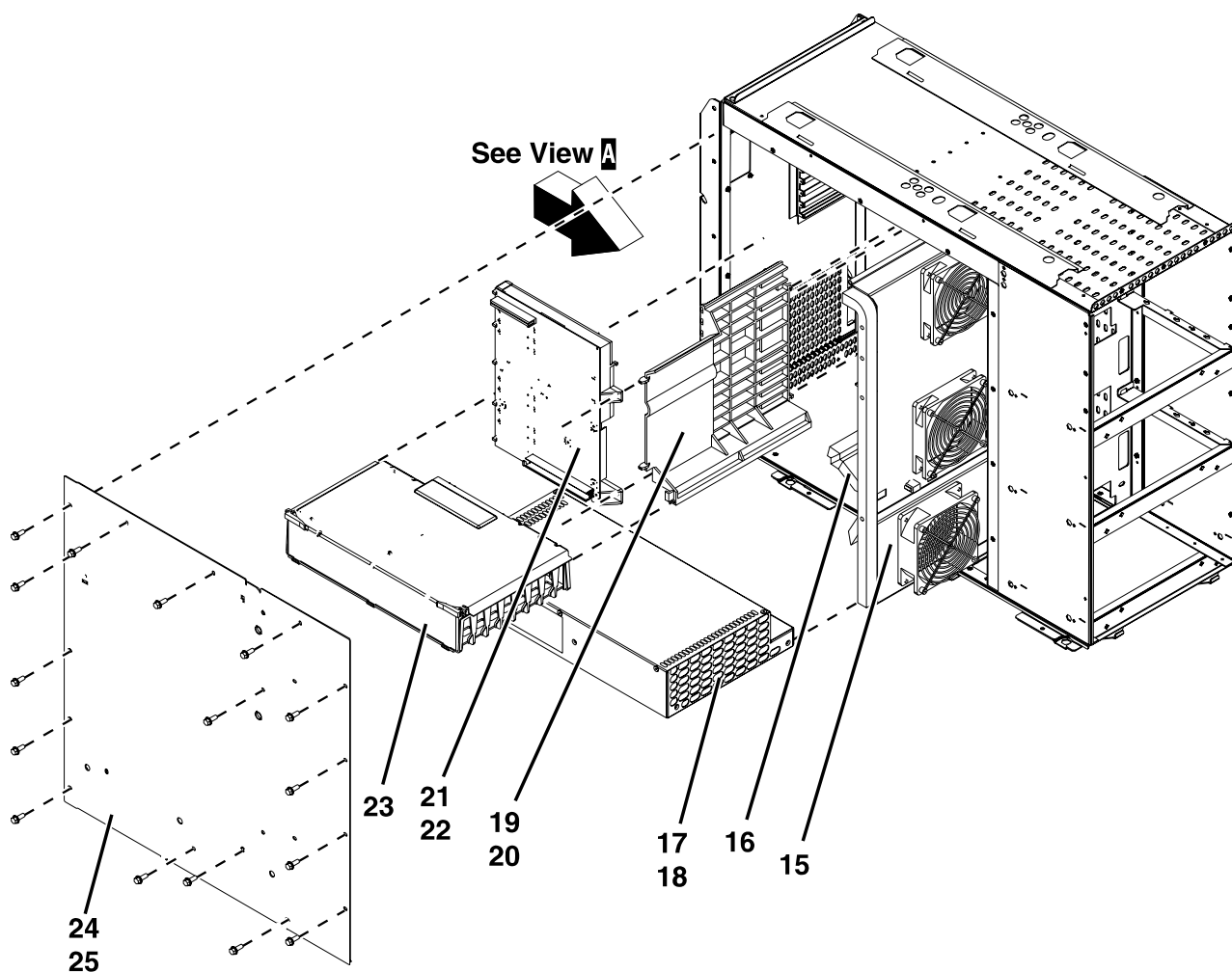


RV4B302-2

## Assembly 2: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                                                                         |
|---------------|----------------|-------|-----------------------------------------------------------------------------------------------------|
| 2-1           | 44H8295        | 1     | Removable Media Frame Asm                                                                           |
| -2            | 1621812        | 4     | Screw                                                                                               |
| -3            |                | 1     | Optical Storage Device<br>See "Type, Model, and Part Number List" on page 380.                      |
| -4            | 44H8681        | 2     | Screw                                                                                               |
| -             | NONUM          | 1     | Bracket Asm for Optical Device/Tape (model 600 and S10)                                             |
| -5            | 86G7623        | 1     | Removable Media Filler Asm                                                                          |
| -5            |                | 1     | Removable Media<br>See "Type, Model, and Part Number List" on page 380.                             |
| -6            | 44H8681        | 2     | Screw                                                                                               |
| -             | NONUM          | 1     | Bracket Asm for Optical Device/Tape (model 600 and S10)                                             |
| -6            | 87G4617        | 2     | Screw for Optical Device/Tape (model 600 and S10) bracket asm.                                      |
| -7            | NONUM          | 1     | Control Panel Asm<br>See "Assembly 3: Control Panel Assembly - 600 or S10 System Unit" on page 958. |
| -8            | 1621812        | 5     | Screw                                                                                               |
| -9            |                | AR    | Disk Unit/Holder Asm<br>See "Disk Unit Type, Model, and Part Number List" on page 387.              |
| -9            | 44H4636        | AR    | Connector Cover (when media is not installed)                                                       |
| -10           | 44H7997        | 1     | Disk Unit EMC access plate                                                                          |
| -11           | 44H7924        | 1     | Disk Unit Blank Cover                                                                               |
| -12           | 1621812        | 4     | Screw                                                                                               |
| -13           | 91H3905        | 1     | Disk Unit Frame Asm, Base                                                                           |
| -13           | 91H3906        | 1     | Disk Unit Frame Asm, Feature                                                                        |
| -14           | 1621812        | 4     | Screw                                                                                               |

## Assembly 2: (continued)

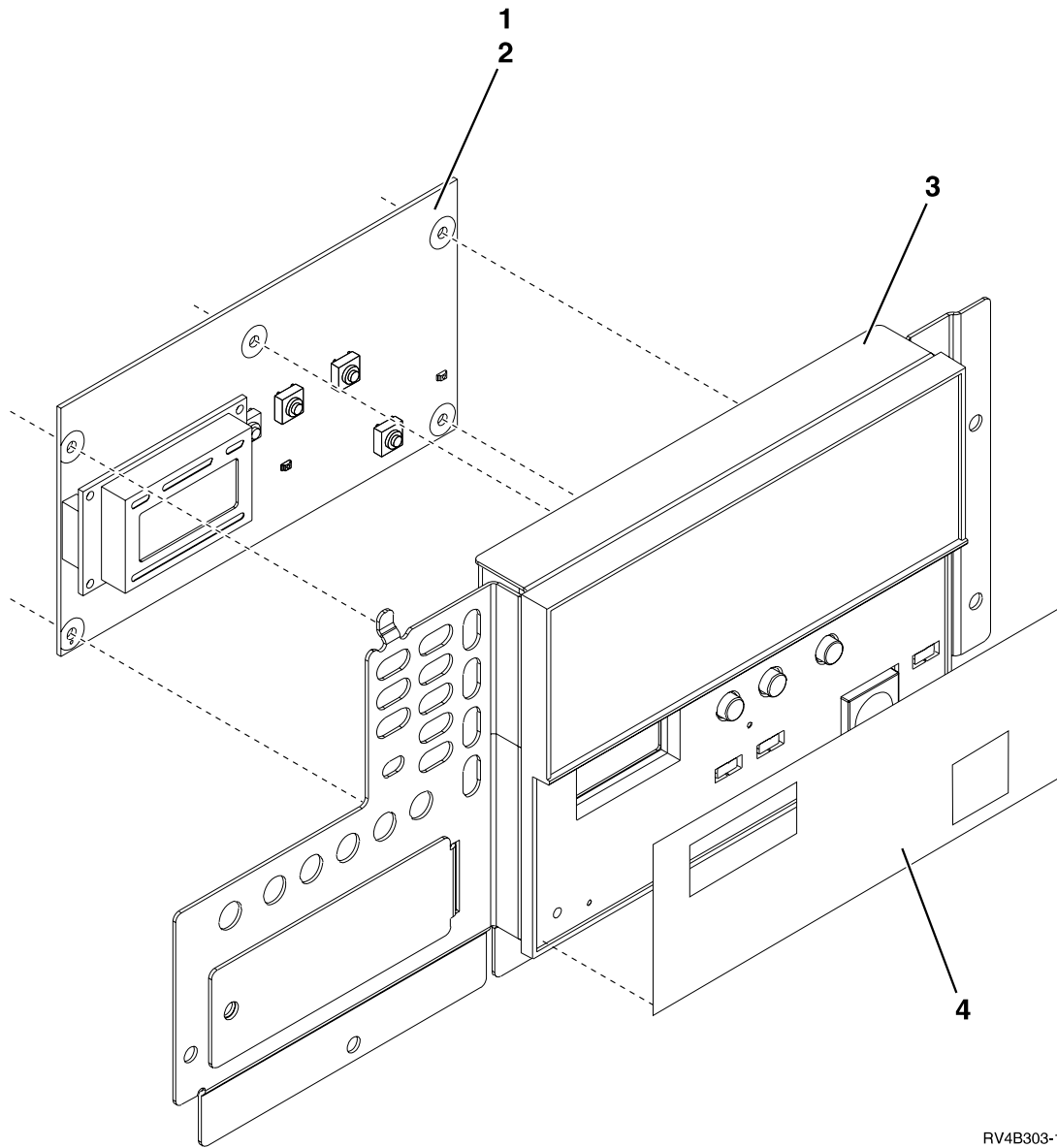


RV4B301-4

## Assembly 2: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                                                                  |
|---------------|----------------|-------|----------------------------------------------------------------------------------------------|
| 2-15          | 44H7756        | 1     | AMDP Asm                                                                                     |
| -16           | 44H8000        | 1     | Air Baffle                                                                                   |
| -17           | 21H9364        | 1     | Power Supply, 480W                                                                           |
| -18           | 1621812        | 4     | Screw                                                                                        |
| -19           | 44H7934        | 1     | Card Guide                                                                                   |
| -20           | 1621812        | 3     | Screw                                                                                        |
| -21           | 45H1226        | 1     | Card/Stiffener Asm, BACKPL2                                                                  |
| -             | 16G8095        | —     | Control Panel Battery, BACKPL2                                                               |
| -22           | 1621812        | 4     | Screw                                                                                        |
| -23           |                | 1     | Processor Asm<br>See "Assembly 5: Processor/Memory Assembly - Model 600 or S10" on page 962. |
| -23           | 44H8167        | 1     | • Main Storage Filler Card                                                                   |
| -24           | 44H4568        | 1     | Side EMC Access Plate                                                                        |
| -25           | 44H8681        | 15    | Screw                                                                                        |
| -26           | 44H8640        | 1     | Power Cord Clamp - Lower                                                                     |
| -27           | 44H8641        | 1     | Power Cord Clamp - Upper                                                                     |
| -28           | 1621811        | 1     | Screw                                                                                        |

## Assembly 3: Control Panel Assembly - 600 or S10 System Unit

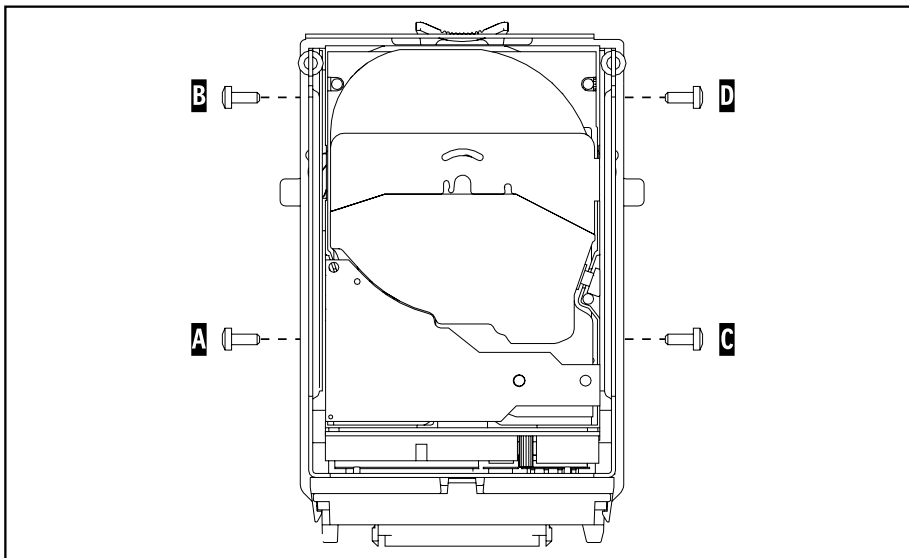
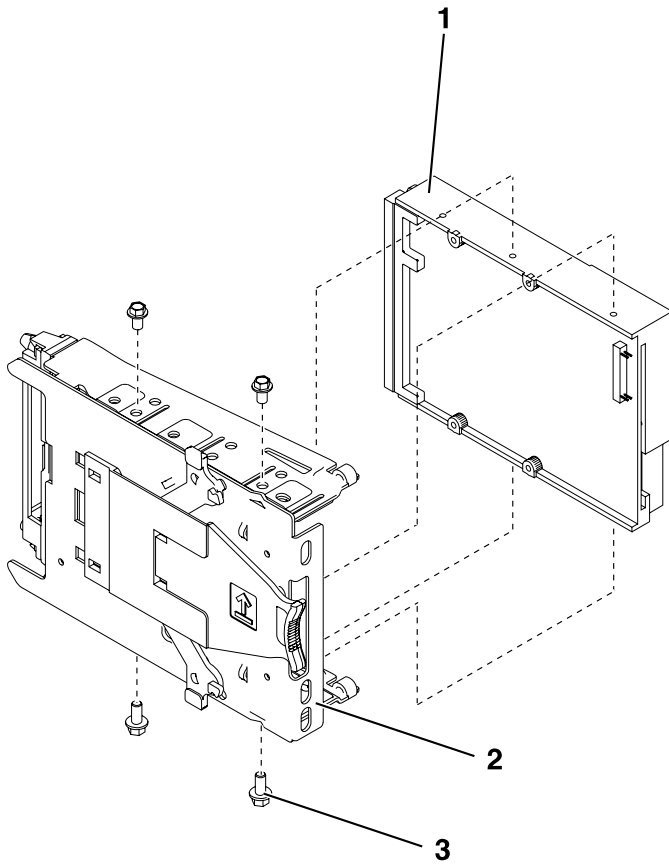




**Assembly 3: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>                     |
|-----------------------|------------------------|--------------|----------------------------------------|
| 3-                    | NONUM                  | 1            | Control Panel Asm                      |
| -1                    | 45H1070                | 1            | • Control Panel Card Asm, Low Function |
| -2                    | 21F9599                | 5            | • Screw, 8mm                           |
| -3                    | NONUM                  | 1            | • Control Panel/Bezel Asm              |
| -4                    | 44H8352                | 1            | Control Panel Overlay - English        |
| -4                    | 44H8353                | 1            | Control Panel Overlay - Italian        |
| -4                    | 44H8354                | 1            | Control Panel Overlay - French         |
| -4                    | 44H8355                | 1            | Control Panel Overlay - German         |
| -4                    | 44H8356                | 1            | Control Panel Overlay - Norwegian      |
| -4                    | 44H8357                | 1            | Control Panel Overlay - Spanish        |
| -4                    | 44H8358                | 1            | Control Panel Overlay - Japanese       |
| -4                    | 44H8359                | 1            | Control Panel Overlay - Korean         |
| -4                    | 44H8360                | 1            | Control Panel Overlay - Chinese T      |
| -4                    | 44H8361                | 1            | Control Panel Overlay - Chinese S      |
| -4                    | 44H8362                | 1            | Control Panel Overlay - Portuguese     |
| -4                    | 44H8363                | 1            | Control Panel Overlay - Russian        |
| -4                    | 44H8364                | 1            | Control Panel Overlay - Czech          |
| -4                    | 44H8365                | 1            | Control Panel Overlay - Polish         |
| -4                    | 44H8366                | 1            | Control Panel Overlay - Hungarian      |

## Assembly 4: Disk Unit/Holder Assembly

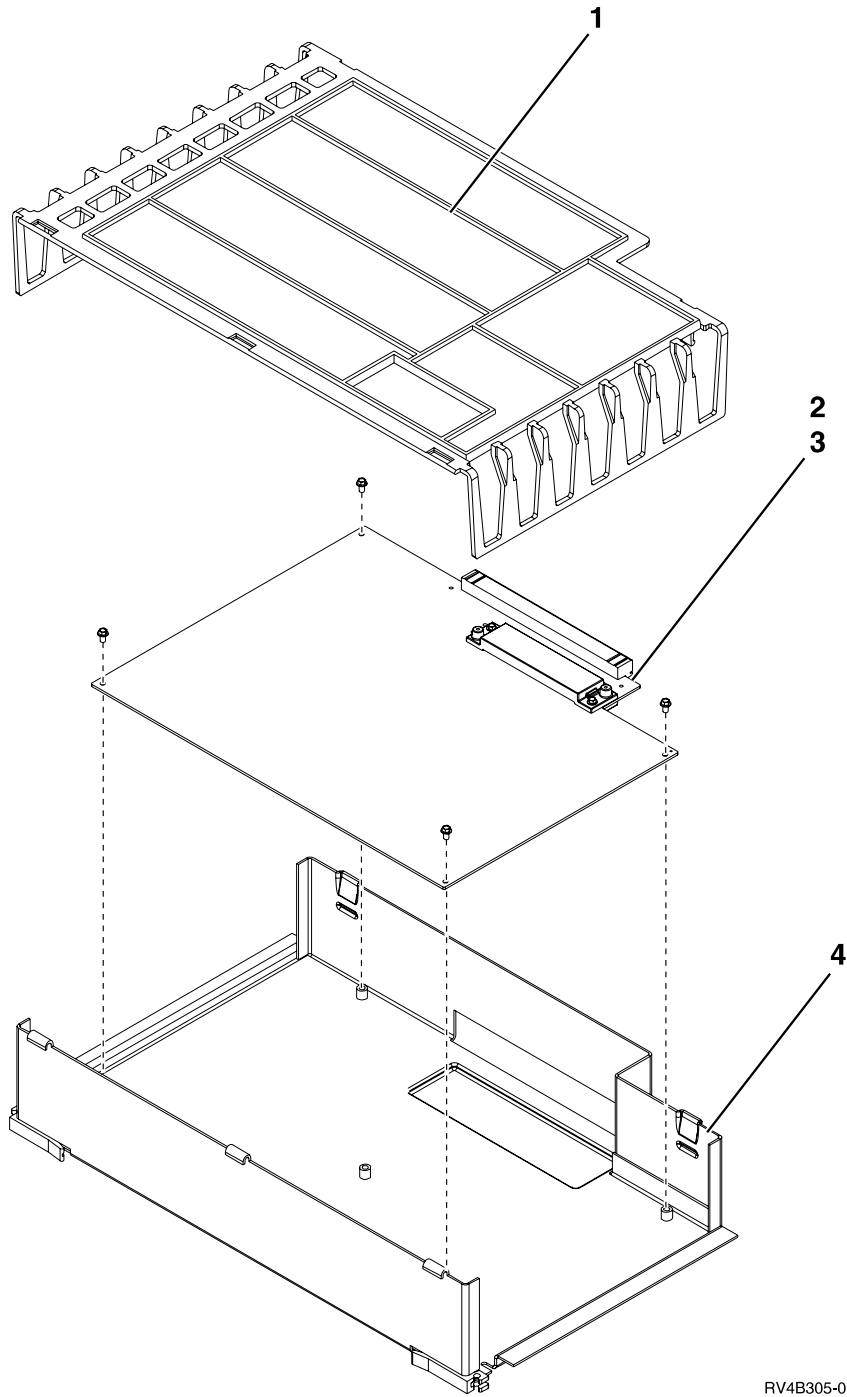


RV4B304-3

**Assembly 4: (continued)**

| Asm-<br>Index | Part<br>Number | Units | Description                                                                                           |
|---------------|----------------|-------|-------------------------------------------------------------------------------------------------------|
| 4-<br>-1      | NONUM          | AR    | Disk Unit/Holder Asm<br>• Disk Unit<br>See "Disk Unit Type, Model, and Part Number List" on page 387. |
| -2            | 44H8974        | 1     | • Holder Asm - Disk Unit, FC 6602-1                                                                   |
| -2            | 44H8995        | 1     | • Holder Asm - Disk Unit, FC 6602-0                                                                   |
| -2            | 44H8996        | 1     | • Holder Asm - Disk Unit, FC 6603-0                                                                   |
| -2            | 44H8998        | 1     | • Holder Asm - Disk Unit, FC 6603-1                                                                   |
| -2            | 44H8999        | 1     | • Holder Asm - Disk Unit, FC — all others                                                             |
| -3            | 44H4266        |       | • Screw, Disk Unit Mount                                                                              |

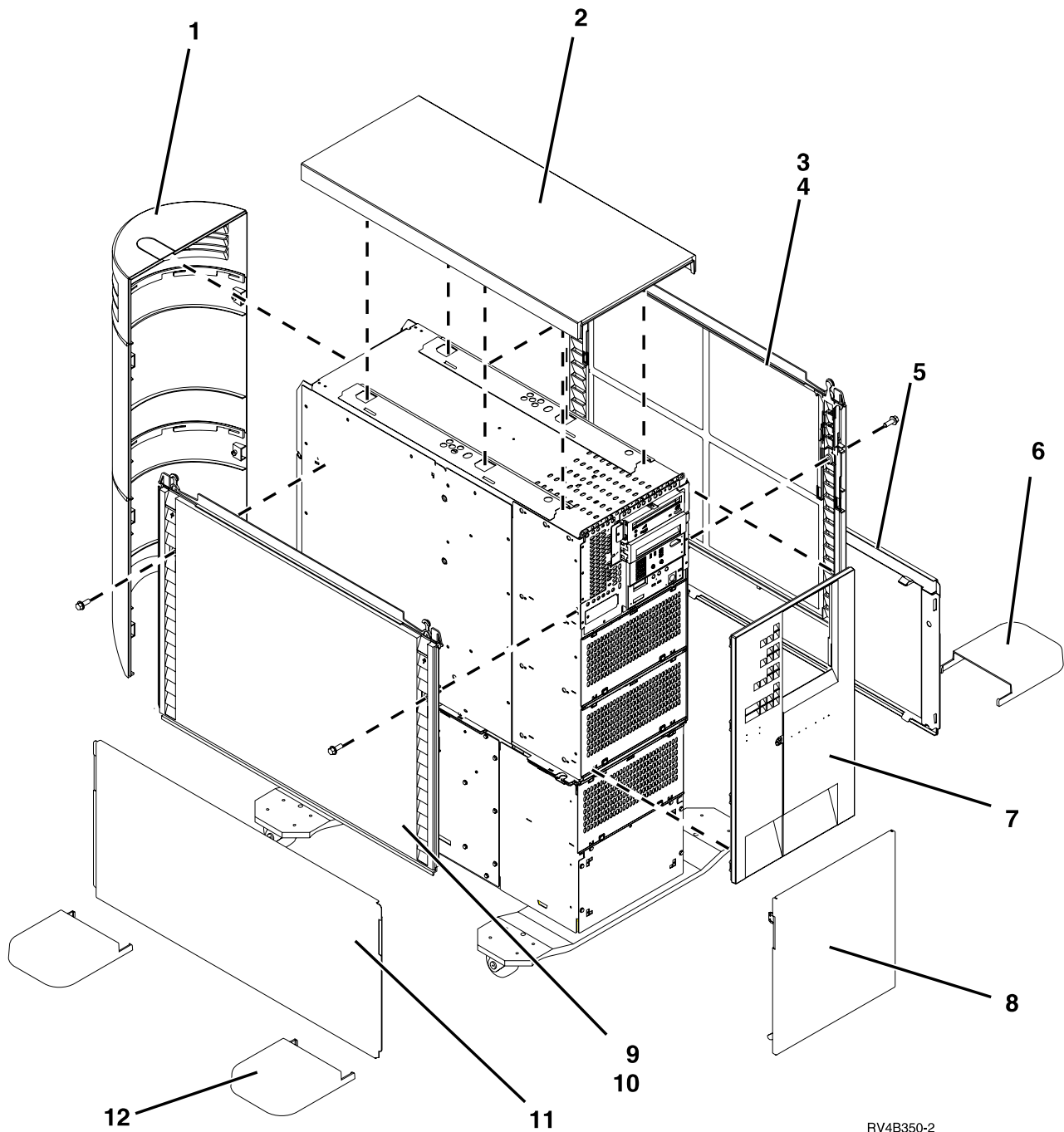
## Assembly 5: Processor/Memory Assembly - Model 600 or S10



**Assembly 5: (continued)**

| Asm-<br>Index | Part<br>Number | Units | Description                                                             |
|---------------|----------------|-------|-------------------------------------------------------------------------|
| 5-            | NONUM          |       | Processor/Memory Assembly                                               |
| -1            | 44H8047        | 1     | • Cover                                                                 |
| -2            |                | 1     | • Processor Asm<br>See "Type, Model, and Part Number List" on page 380. |
| -3            | 44H8203        | 5     | • Screw                                                                 |
| -4            | 44H7945        | 1     | • Base                                                                  |

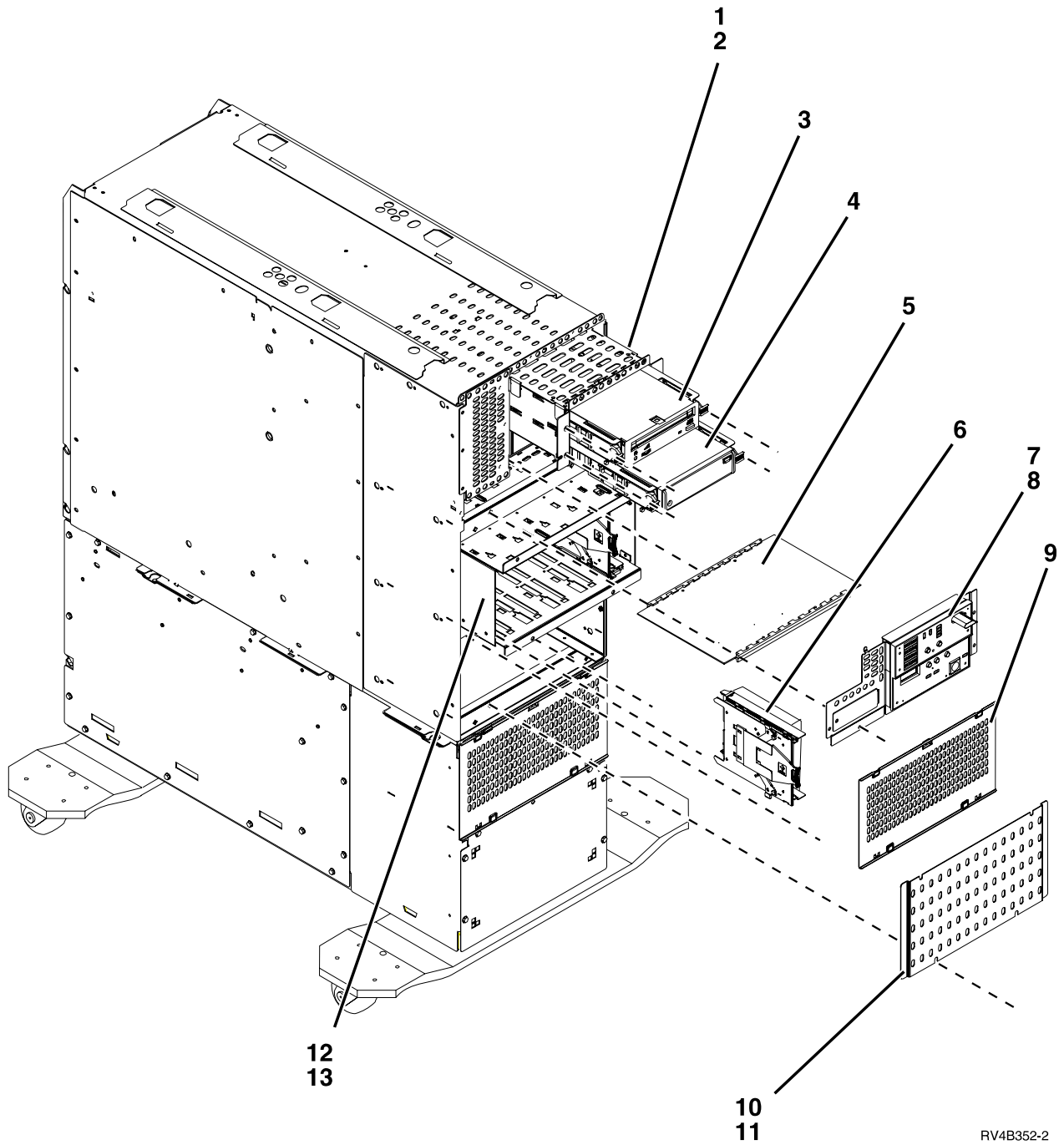
## Assembly 6: Cover Assemblies - Model 620, 720, or S20 System Unit



**Assembly 6: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>                      |
|-----------------------|------------------------|--------------|-----------------------------------------|
| 6-1                   | 44H8582                | 1            | Cover Asm, Rear                         |
| -2                    | 44H7742                | 1            | Cover, Top                              |
| -3                    | 44H7743                | 1            | Cover, Side Upper                       |
| -4                    | 1621811                | 2            | Screw                                   |
| -5                    | 44H7895                | 1            | Cover, Side Lower                       |
| -6                    | 44H7892                | 2            | Cover, Foot                             |
| -7                    | 90H6584                | 1            | Cover Asm, Front for models 620 and S20 |
| -7                    | 97H7769                | 1            | Cover Asm, Front for model 720          |
| -8                    | 44H7880                | 1            | Cover Asm, Front Lower                  |
| -9                    | 44H7743                | 1            | Cover, Side                             |
| -10                   | 1621811                | 2            | Screw                                   |
| -11                   | 44H7895                | 1            | Cover, Side Lower                       |
| -12                   | 44H7892                | 2            | Cover, Foot                             |

## Assembly 7: Model 620, 720, or S20 System Unit

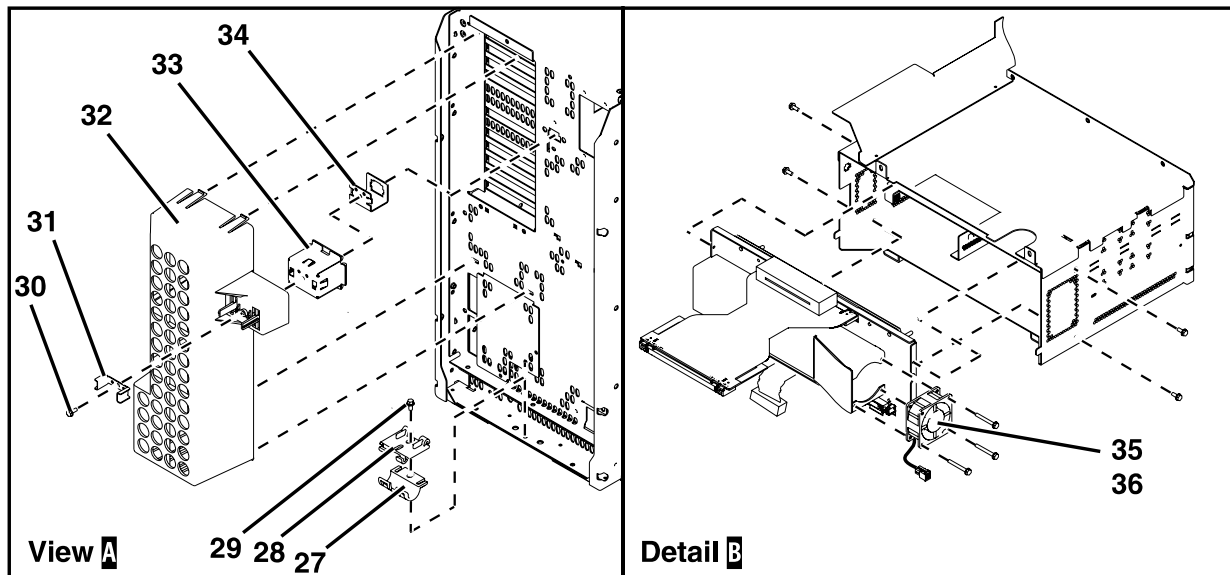
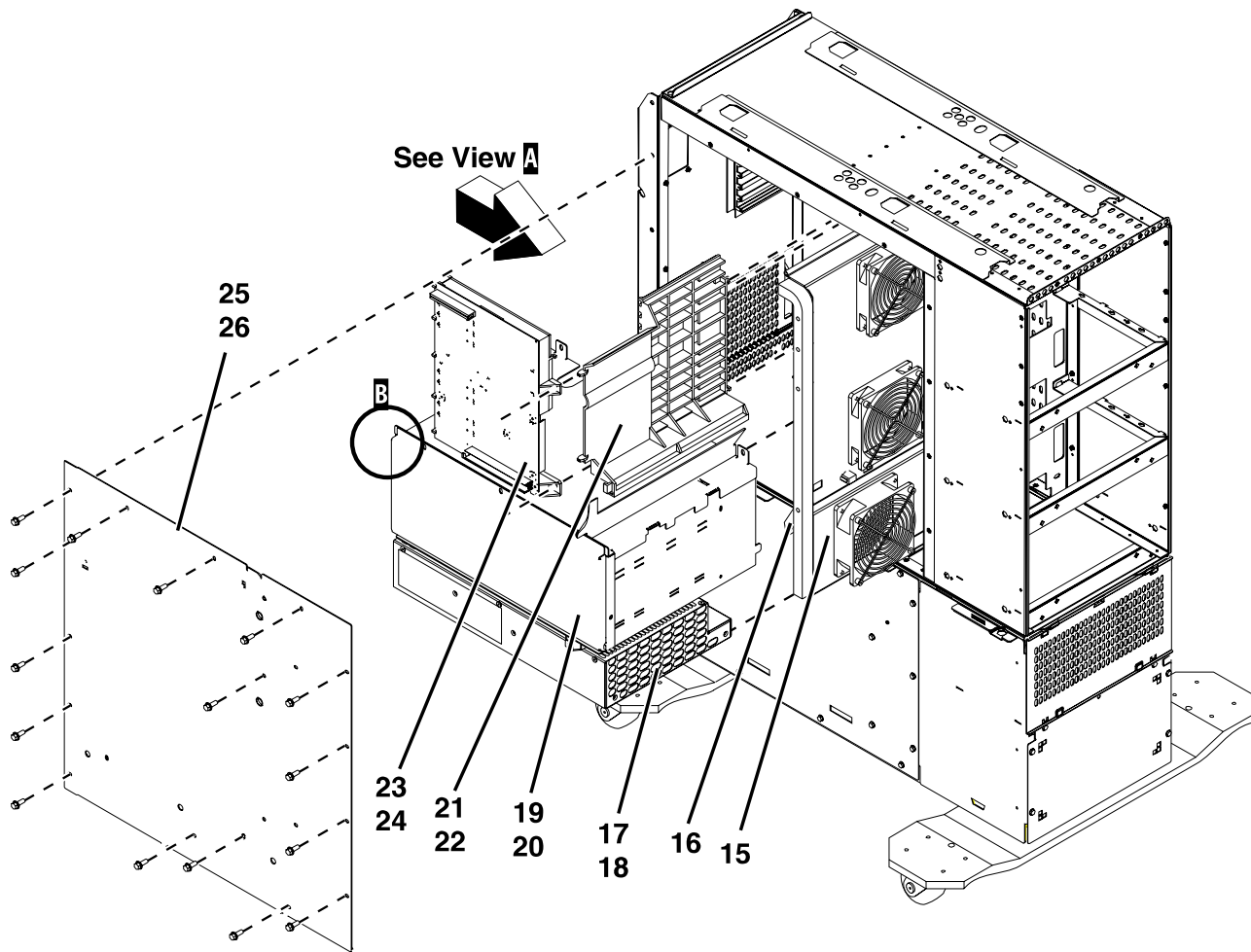




## Assembly 7: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                                                                                                         |
|---------------|----------------|-------|-------------------------------------------------------------------------------------------------------------------------------------|
| 7-1           | 44H8421        | 1     | Removable Media Frame Asm                                                                                                           |
| -2            | 1621811        | 5     | Screw                                                                                                                               |
| -3            |                | 1     | Optical Device/Holder Asm<br>See "Type, Model, and Part Number List" on page 380                                                    |
| -4            | 44H8406        | 1     | Removable Media Filler Asm                                                                                                          |
| -4            |                | 1     | Removable Media/Holder Asm<br>See "Type, Model, and Part Number List" on page 380                                                   |
| -4            | 44H4636        | AR    | Connector Cover (when media is not installed)                                                                                       |
| -5            | 44H8141        | 1     | Card, SPCN panel (control panel with keystick)                                                                                      |
| -5            | 44H8313        | 1     | Card, SPCN panel (control panel without keystick)                                                                                   |
| -6            |                | AR    | Disk Unit/Holder Asm<br>See "Disk Unit Type, Model, and Part Number List" on page 387.                                              |
| -6            | 44H4636        | AR    | Connector Cover (when media is not installed)                                                                                       |
| -7            | NONUM          | 1     | Control Panel Asm<br>See "Assembly 8: Control Panel Assembly - Models 620, 720, or S20 System Unit (Single Processor)" on page 972. |
| -8            | 1621811        | 4     | Screw                                                                                                                               |
| -9            | 44H7997        | 1     | Disk Unit EMC access plate                                                                                                          |
| -10           | 44H7924        | 1     | Disk Unit Blank Cover                                                                                                               |
| -11           | 1621811        | 4     | Screw                                                                                                                               |
| -12           | 91H3905        | 1     | Disk Unit Frame Asm, Base                                                                                                           |
| -12           | 91H3906        | 1     | Disk Unit Frame Asm, Feature                                                                                                        |
| -13           | 1621811        | 4     | Screw                                                                                                                               |

## Assembly 7: (continued)

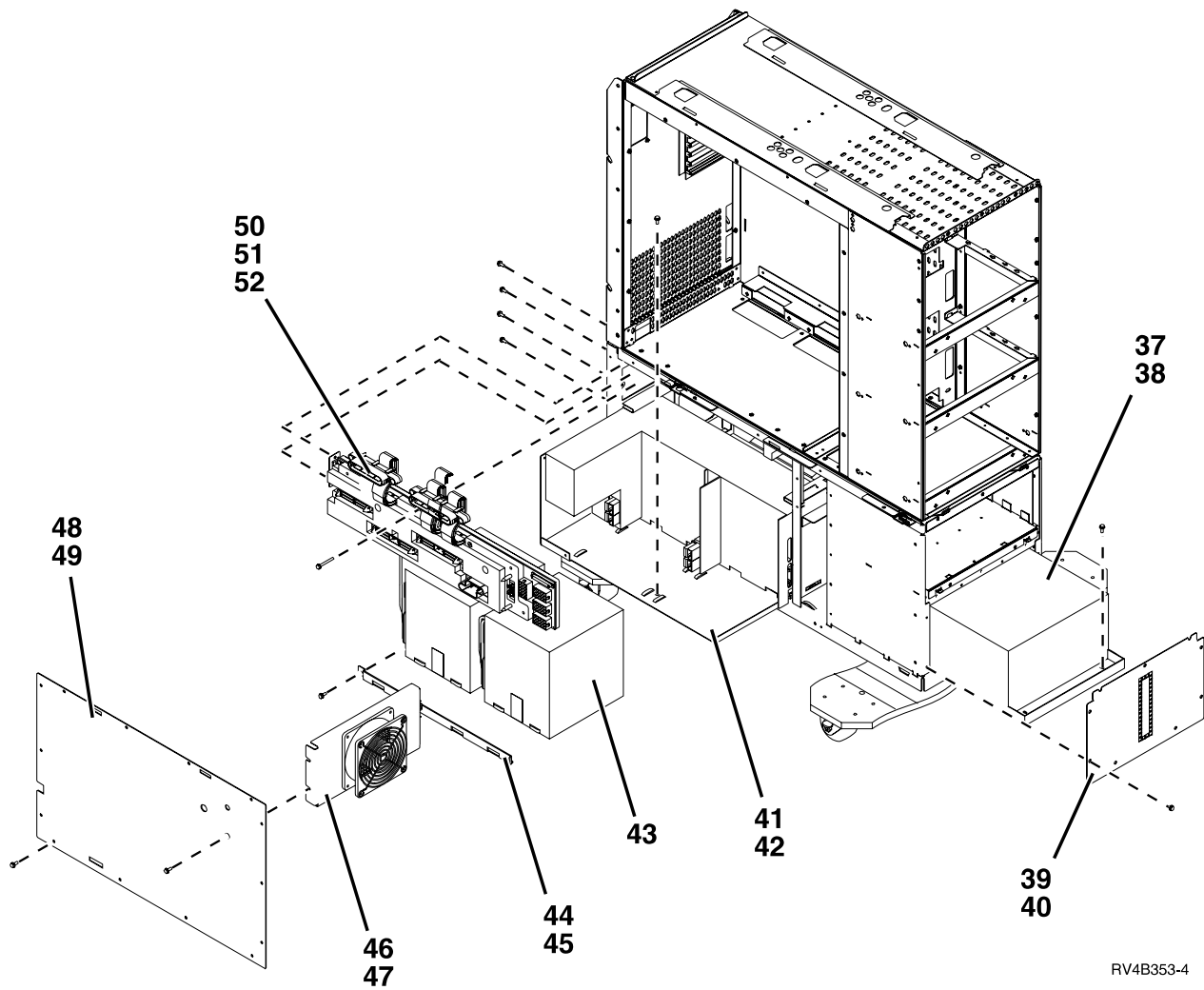


RV4B351-4

## Assembly 7: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                                                  |
|---------------|----------------|-------|------------------------------------------------------------------------------|
| 7-15          | 44H7756        | 1     | AMDP Asm                                                                     |
| -16           | 44H8317        | 1     | Air Baffle                                                                   |
| -17           | 21H9364        | 1     | Power Supply, 480W                                                           |
| -18           | 1621811        | 4     | Screw                                                                        |
| -19           |                | 1     | Processor Asm<br>See "Type, Model, and Part Number List" on page 380.        |
| -19           | 44H8536        | 1     | Main storage card<br>The Main storage card is enclosed in the Processor Asm. |
| -19           | 44H8167        | 1     | • Main Storage Filler Card                                                   |
| -20           | 1621811        | 2     | Screw                                                                        |
| -21           | 44H7934        | 1     | Card Guide                                                                   |
| -22           | 1621811        | 3     | Screw                                                                        |
| -23           | 45H1226        | 1     | Card/Stiffener Asm                                                           |
| -24           | 1621811        | 4     | Screw                                                                        |
| -25           | 44H4568        | 1     | Side EMC Access Plate                                                        |
| -26           | 44H8681        | 15    | Screw                                                                        |
| -27           | 44H8640        | 1     | Power Cord Clamp - Lower                                                     |
| -28           | 44H8641        | 1     | Power Cord Clamp - Upper                                                     |
| -29           | 1621811        | 1     | Screw                                                                        |
| -30           | 1621811        | 1     | Screw*                                                                       |
| -31           | 44H8315        | 1     | Latch Stop*                                                                  |
| -32           | 44H8290        | 1     | Safety Cover*                                                                |
| -33           | 44H8289        | 1     | EMC Shield/Jumper Plug*                                                      |
| -34           | 44H8288        | 1     | Bracket*<br>*— Some models do not have these parts.                          |
| -35           | 44H4650        | 1     | AMD 9                                                                        |
| -36           | 1621816        | 3     | Screw                                                                        |

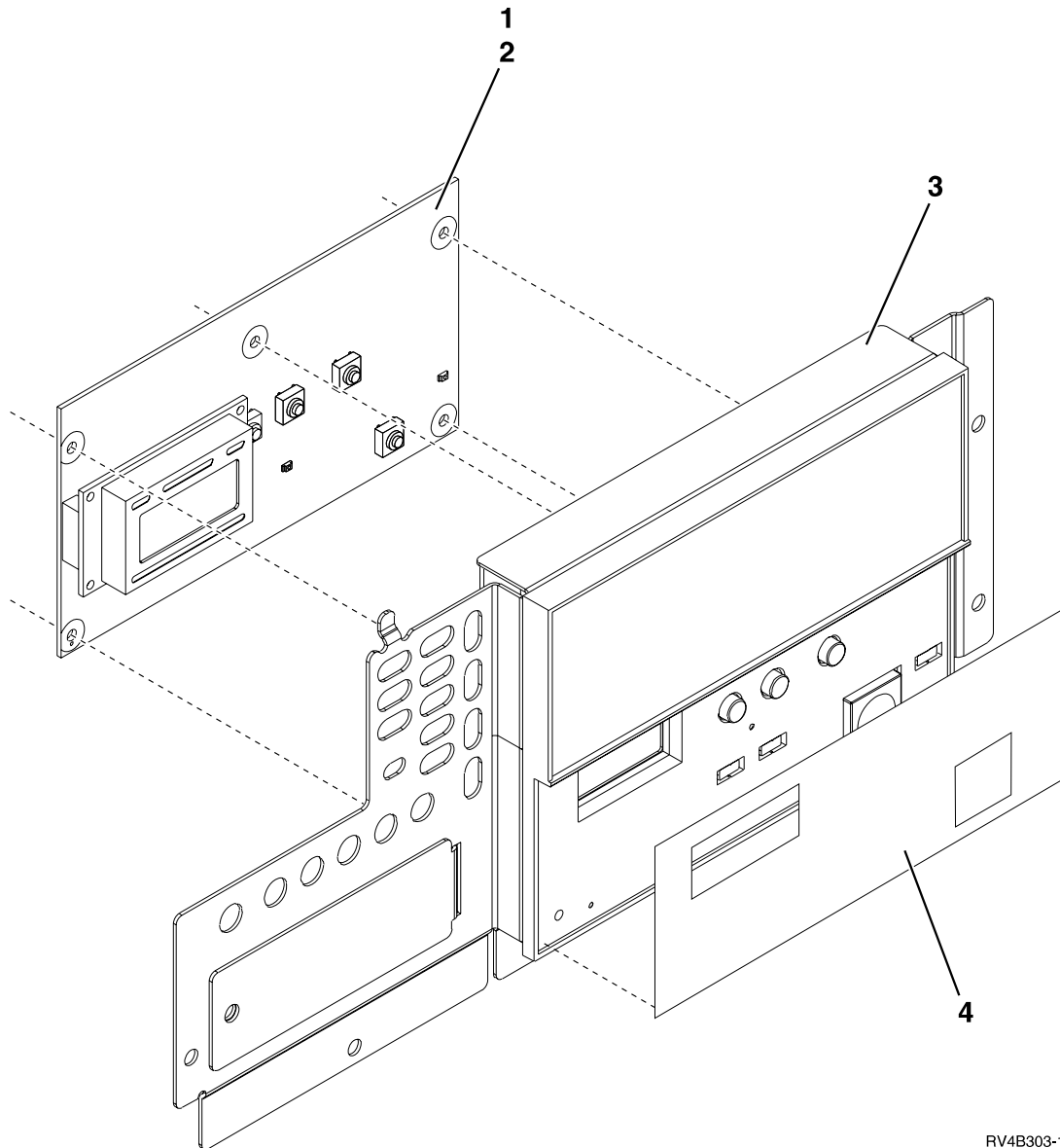
## Assembly 7: (continued)



**Assembly 7: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>          |
|-----------------------|------------------------|--------------|-----------------------------|
| 7-37                  | 44H7786                | 1            | Transformer                 |
| -38                   | 1621811                | 3            | Screw, M4 x 10mm            |
| -39                   | 44H8402                | 1            | Plate, UPS                  |
| -40                   | 1621811                | 9            | Screw, M4 x 10mm            |
| -41                   | 44H7784                | 1            | Power Supply, UPS           |
| -42                   | 1621811                | 9            | Screw, M4 x 10mm            |
| -43                   | 44H7785                | 2            | Battery                     |
| -44                   | 44H8245                | 1            | Bar, Battery pack retaining |
| -45                   | 1621811                | 1            | Screw, M4 x 10mm            |
| -46                   | 44H7889                | 1            | AMD2 Asm                    |
| -47                   | 1621811                | 2            | Screw, M4x 10mm             |
| -48                   | 44H7886                | 1            | Side EMC Access Plate       |
| -49                   | 1621811                | 14           | Screw, M4 x 10mm            |
| -50                   | 44H8400                | 1            | Power Distribution Card     |
| -51                   | 1621811                | 8            | Screw, M4 x 35mm            |
| -52                   | 90H6284                | 4            | Screw, M4 x 8mm             |

## Assembly 8: Control Panel Assembly - Models 620, 720, or S20 System Unit (Single Processor)

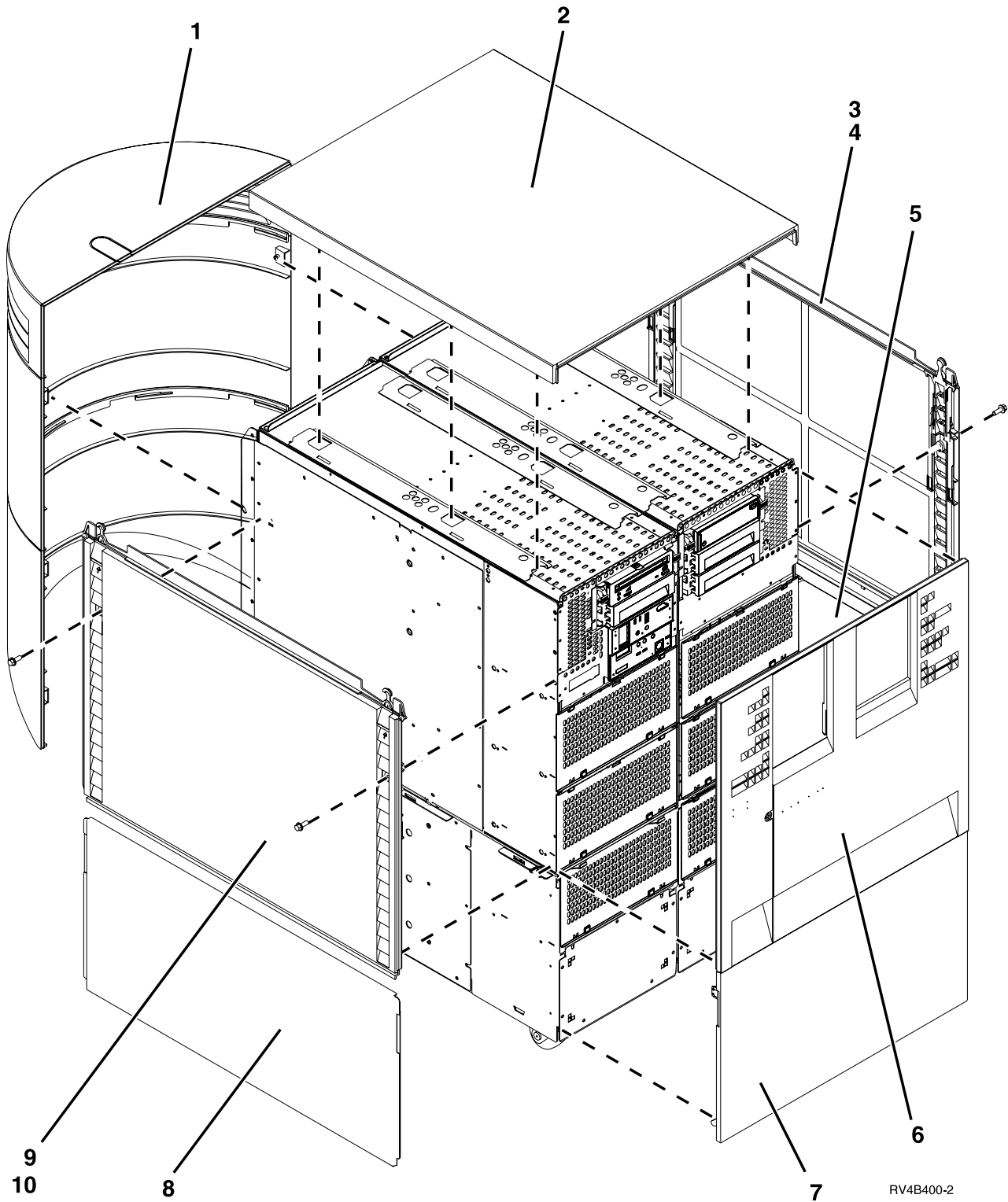


RV4B303-1

## Assembly 8: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                                                            |
|---------------|----------------|-------|----------------------------------------------------------------------------------------|
| 8-            | NONUM          | 1     | Control Panel Asm                                                                      |
| -1            | 44H8310        | 1     | • Control Panel Card Asm                                                               |
| -             | NONUM          | AR    | • SPCN Panel Card<br>See "Assembly 7: Model 620, 720, or S20 System Unit" on page 966. |
| -2            | 21F9599        | 5     | • Screw (8mm)                                                                          |
| -3            | NONUM          | 1     | • Control Panel/Bezel Asm                                                              |
| -4            | 44H8352        | 1     | Control Panel Overlay - English                                                        |
| -4            | 44H8353        | 1     | Control Panel Overlay - Italian                                                        |
| -4            | 44H8354        | 1     | Control Panel Overlay - French                                                         |
| -4            | 44H8355        | 1     | Control Panel Overlay - German                                                         |
| -4            | 44H8356        | 1     | Control Panel Overlay - Norwegian                                                      |
| -4            | 44H8357        | 1     | Control Panel Overlay - Spanish                                                        |
| -4            | 44H8358        | 1     | Control Panel Overlay - Japanese                                                       |
| -4            | 44H8359        | 1     | Control Panel Overlay - Korean                                                         |
| -4            | 44H8360        | 1     | Control Panel Overlay - Chinese T                                                      |
| -4            | 44H8361        | 1     | Control Panel Overlay - Chinese S                                                      |
| -4            | 44H8362        | 1     | Control Panel Overlay - Portuguese                                                     |
| -4            | 44H8363        | 1     | Control Panel Overlay - Russian                                                        |
| -4            | 44H8364        | 1     | Control Panel Overlay - Czech                                                          |
| -4            | 44H8365        | 1     | Control Panel Overlay - Polish                                                         |
| -4            | 44H8366        | 1     | Control Panel Overlay - Hungarian                                                      |

## Assembly 9: Cover Assemblies - Models 620, 720, or S20 System Unit with Exp Unit

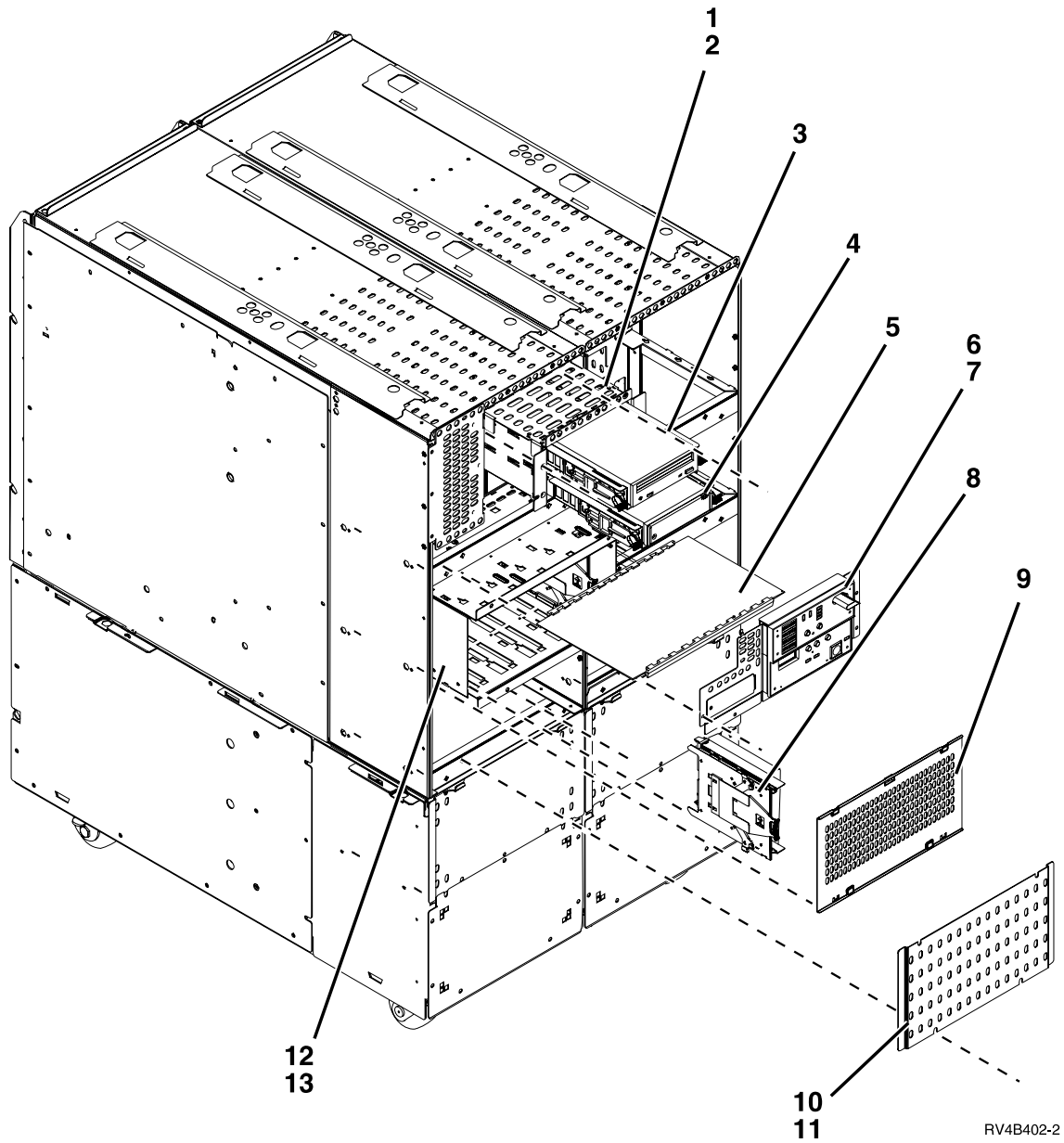




**Assembly 9: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>                     |
|-----------------------|------------------------|--------------|----------------------------------------|
| 9-1                   | 44H8205                | 1            | Cover Asm, Rear for model 620          |
| -1                    | 44H8586                | 1            | Cover Asm, Rear for models S20 and 720 |
| -2                    | 44H7760                | 1            | Cover, Top                             |
| -3                    | 44H7743                | 1            | Cover, Side Upper                      |
| -4                    | 1621811                | 2            | Screw (10mm)                           |
| -5                    | 44H7895                | 1            | Cover, Side Lower                      |
| -6                    | 44H8135                | 1            | Cover Asm, Front for model 620         |
| -6                    | 90H6586                | 1            | Cover Asm, Front for model S20         |
| -6                    | 97H7770                | 1            | Cover Asm, Front for model 720         |
| -7                    | 44H7884                | 1            | Cover, Front Lower                     |
| -8                    | 44H7895                | 1            | Cover, Side Lower                      |
| -9                    | 44H7743                | 1            | Cover, Side                            |
| -10                   | 1621811                | 2            | Screw (10mm)                           |

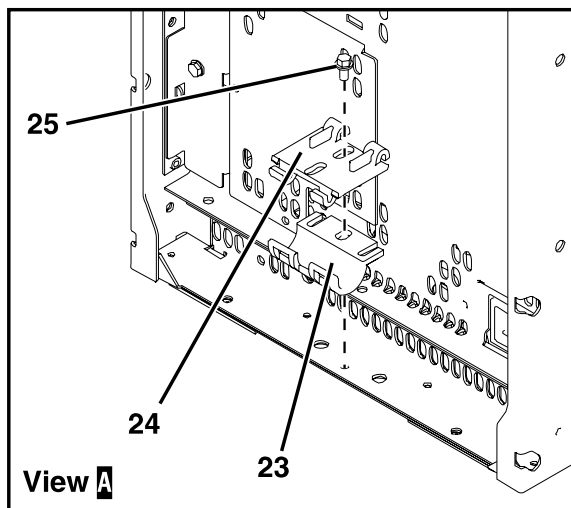
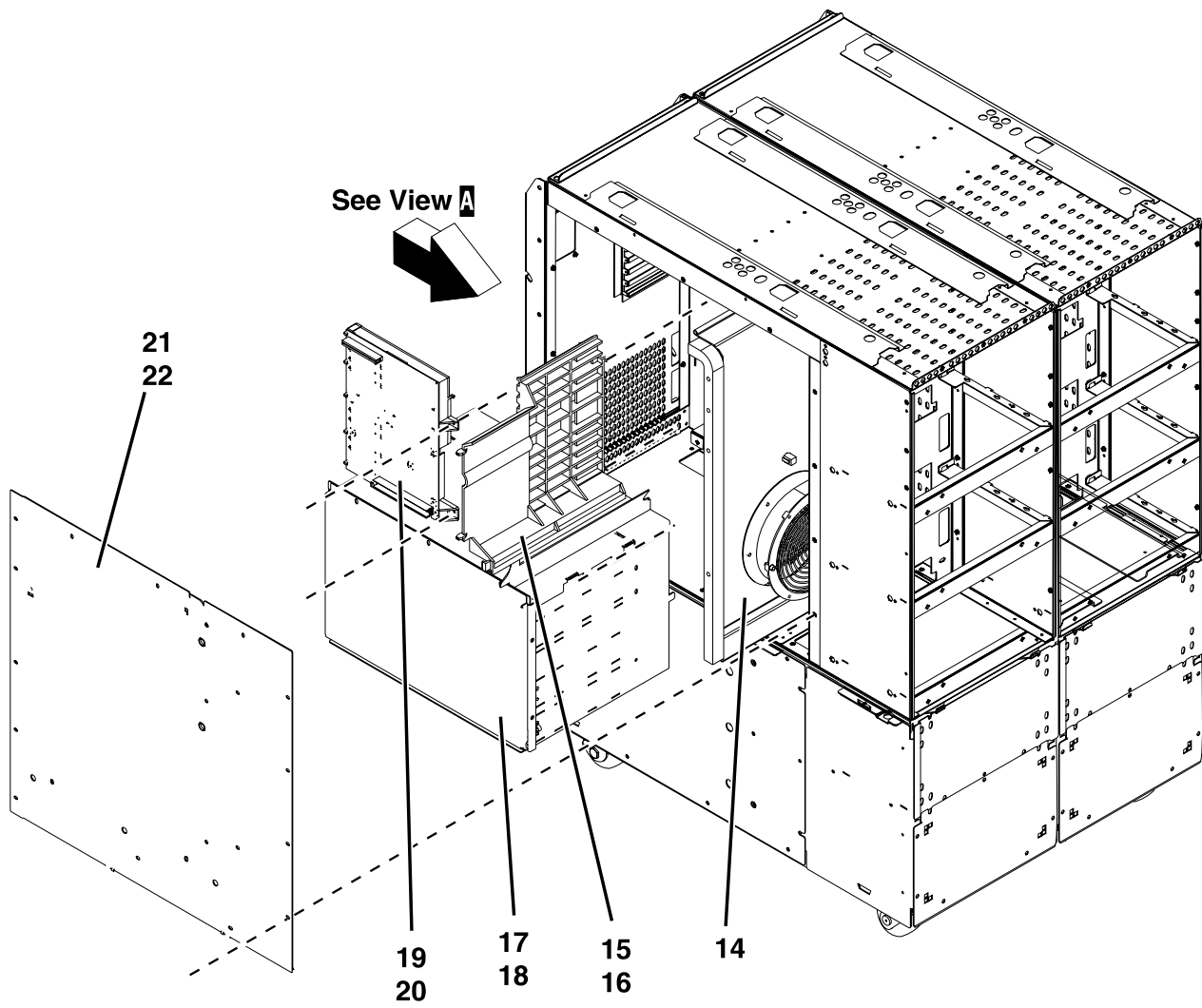
## Assembly 10: Models 620, 720, or S20 System Unit with Expansion Unit



## Assembly 10: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                                                                                                                                                                                                                     |
|---------------|----------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10-1          | 44H8421        | 1     | Removable Media Frame Asm                                                                                                                                                                                                                       |
| -2            | 1621812        | 5     | Screw (8mm)                                                                                                                                                                                                                                     |
| -3            |                | 1     | Optical Device/Holder Asm<br>See "Type, Model, and Part Number List" on page 380.                                                                                                                                                               |
| -4            |                | 1     | Removable Media/Holder Asm<br>See "Type, Model, and Part Number List" on page 380.                                                                                                                                                              |
| -4            | 44H4636        | AR    | Connector Cover (when media is not installed)                                                                                                                                                                                                   |
| -4            | 44H8406        | AR    | Removable Media Filler Asm                                                                                                                                                                                                                      |
| -             |                |       | Optical and tape bracket — model 600                                                                                                                                                                                                            |
| -             |                |       | Screw                                                                                                                                                                                                                                           |
| -5            | 44H8141        | 1     | Card, SPCN panel (Control Panel with keystick)                                                                                                                                                                                                  |
| -5            | 44H8313        | 1     | Card, SPCN panel (Control Panel without keystick)                                                                                                                                                                                               |
| -6            | NONUM          | 1     | Control Panel Asm<br>See "Assembly 8: Control Panel Assembly - Models 620, 720, or S20 System Unit (Single Processor)" on page 972 or "Assembly 12: Control Panel Assembly - Model 620, 720, or S20 System Unit (N-way Processor)" on page 990. |
| -7            | 1621811        | 4     | Screw M4 (10mm)                                                                                                                                                                                                                                 |
| -8            |                | AR    | Disk Unit/Holder Asm<br>See "Disk Unit Type, Model, and Part Number List" on page 387.                                                                                                                                                          |
| -8            | 44H4636        | AR    | Connector Cover (when media is not installed)                                                                                                                                                                                                   |
| -9            | 44H7997        | 1     | Disk Unit EMC access plate                                                                                                                                                                                                                      |
| -10           | 44H7924        | 1     | Disk Unit Blank Cover                                                                                                                                                                                                                           |
| -11           | 1621811        | 4     | Screw M4 (10mm)                                                                                                                                                                                                                                 |
| -12           | 91H3905        | 1     | Disk Unit Frame Asm, Base                                                                                                                                                                                                                       |
| -12           | 91H3906        | 1     | Disk Unit Frame Asm, Feature                                                                                                                                                                                                                    |
| -13           | 1621811        | 4     | Screw (10mm)                                                                                                                                                                                                                                    |

## Assembly 10: (continued)

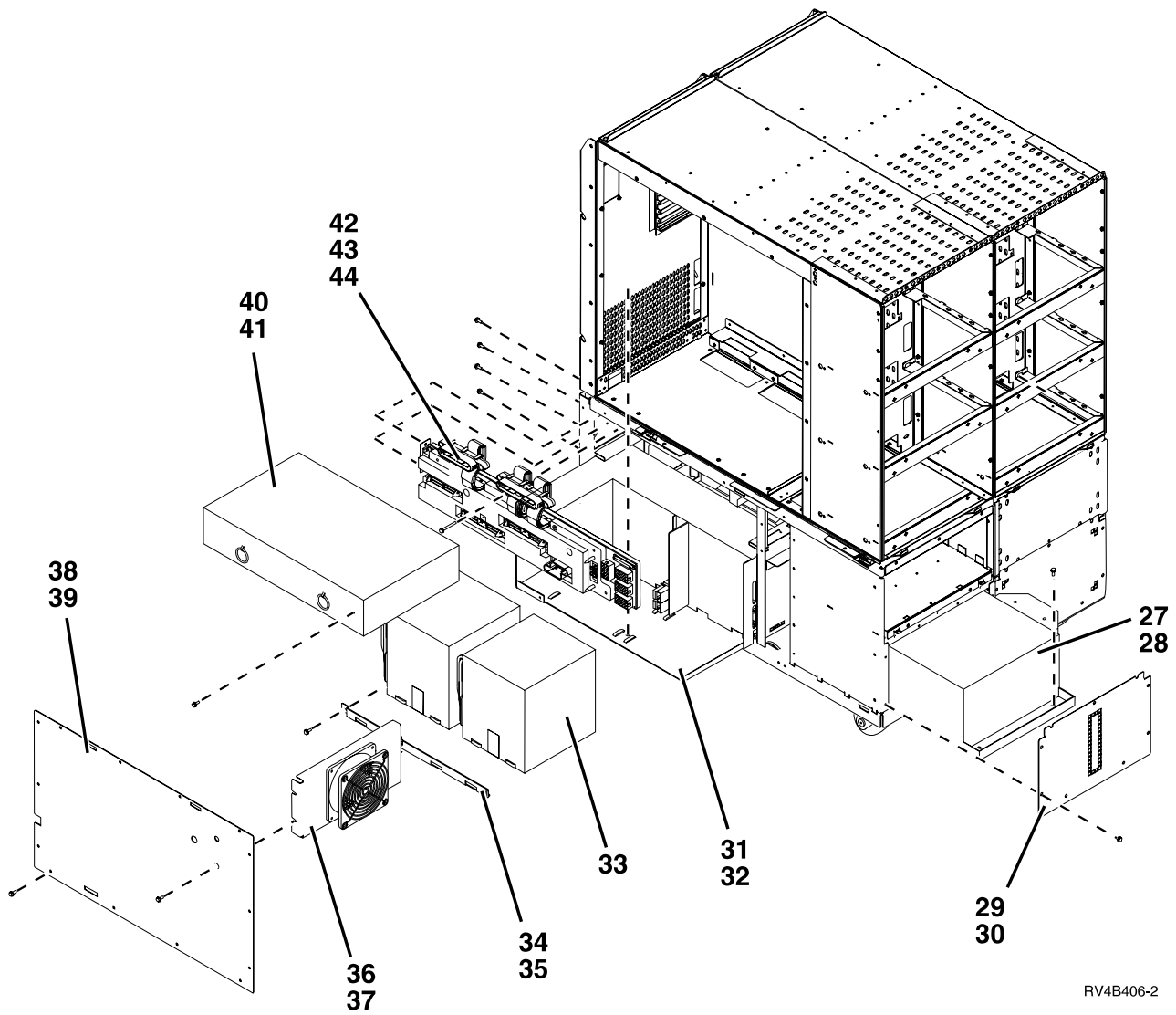


RV4B401-3

## Assembly 10: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                          |
|---------------|----------------|-------|------------------------------------------------------|
| 10-14         | 44H8336        | 1     | AMD1 Asm                                             |
| -15           | 44H7934        | 1     | Card Guide                                           |
| -16           | 1621812        | 3     | Screw (8mm)                                          |
| -17           |                | 1     | Processor Asm                                        |
|               |                |       | See "Type, Model, and Part Number List" on page 380. |
| -17           | 44H8167        | 1     | • Main Storage Filler Card                           |
| -17           | 44H8349        | 1     | • Processor Filler Card                              |
| -18           | 1621811        | 6     | Screw M4 (10mm)                                      |
| -19           | 45H1226        | 1     | Card/Stiffener Asm                                   |
| -20           | 1621812        | 4     | Screw (8mm)                                          |
| -21           | 44H4568        | 1     | Side EMC Access Plate                                |
| -22           | 44H8681        | 15    | Screw (10mm)                                         |
| -23           | 44H8640        | 1     | Power Cord Clamp - Lower                             |
| -24           | 44H8641        | 1     | Power Cord Clamp - Upper                             |
| -25           | 1621811        | 1     | Screw M4 (10mm)                                      |

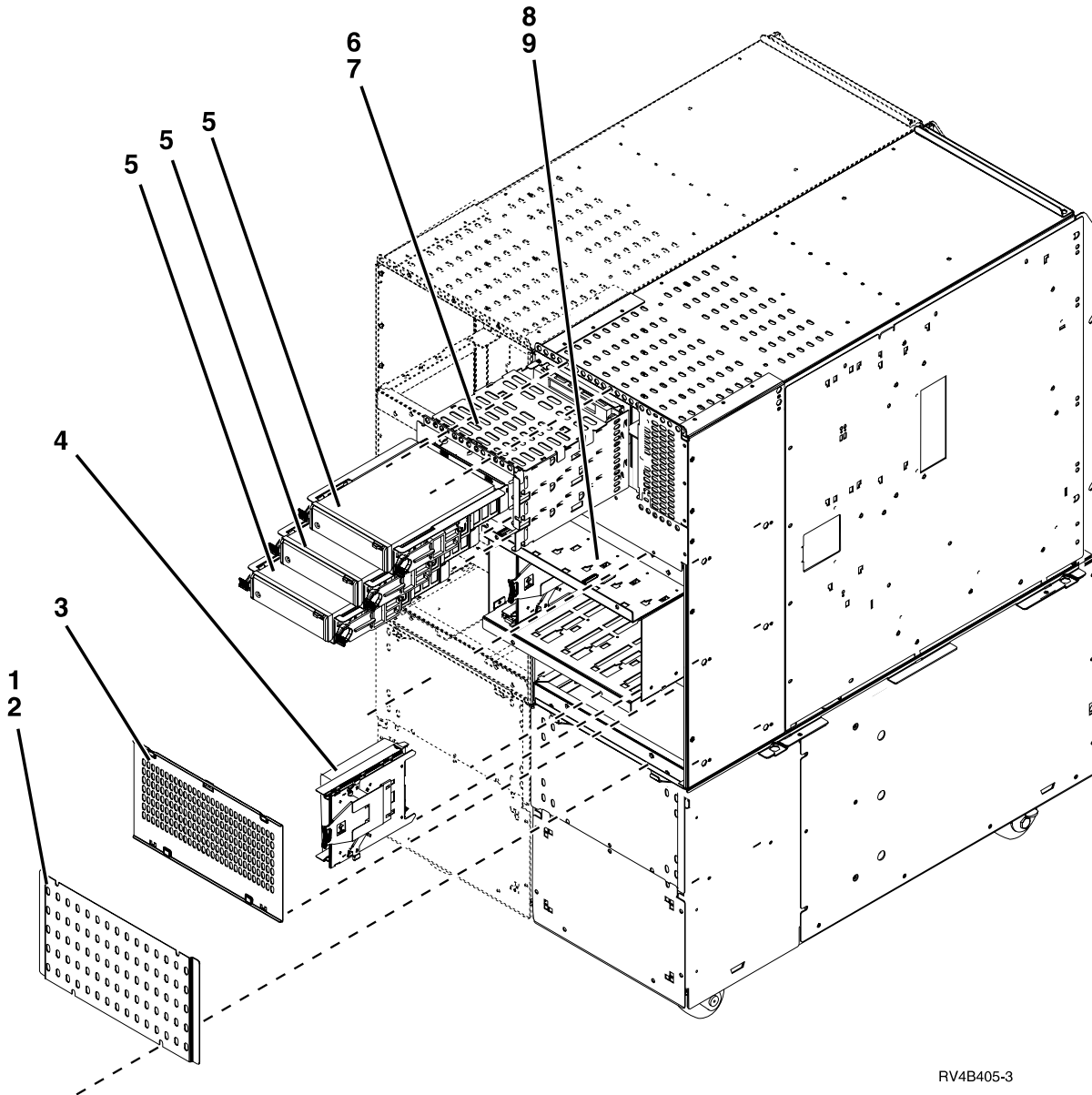
## Assembly 10: (continued)



**Assembly 10: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>          |
|-----------------------|------------------------|--------------|-----------------------------|
| 10-27                 | 44H7786                | 1            | Transformer                 |
| -28                   | 1621811                | 3            | Screw, M4 x 10mm            |
| -29                   | 44H8402                | 1            | Plate, UPS                  |
| -30                   | 1621811                | 9            | Screw, M4 x 10mm            |
| -31                   | 44H7784                | 1            | Power Supply, UPS           |
| -32                   | 1621811                | 9            | Screw, M4 x 10mm            |
| -33                   | 44H7785                | 2            | Battery                     |
| -34                   | 44H8245                | 1            | Bar, Battery pack retaining |
| -35                   | 1621811                | 1            | Screw, M4 x 10mm            |
| -36                   | 44H7889                | 1            | AMD2 Asm                    |
| -37                   | 1621811                | 2            | Screw, M4 x 10mm            |
| -38                   | 44H7886                | 1            | Side EMC Access Plate       |
| -39                   | 1621811                | 14           | Screw, M4 x 10mm            |
| -40                   | 44H7779                | 1            | Power Supply                |
| -41                   | 1621811                | 4            | Screw                       |
| -42                   | 44H8401                | 1            | Power Distribution Card     |
| -43                   | 1621838                | 8            | Screw, M4 x 35mm            |
| -44                   | 90H6284                | 4            | Screw, M4 x 8mm             |

## Assembly 11: Models 620, 720, or S20 Expansion Unit



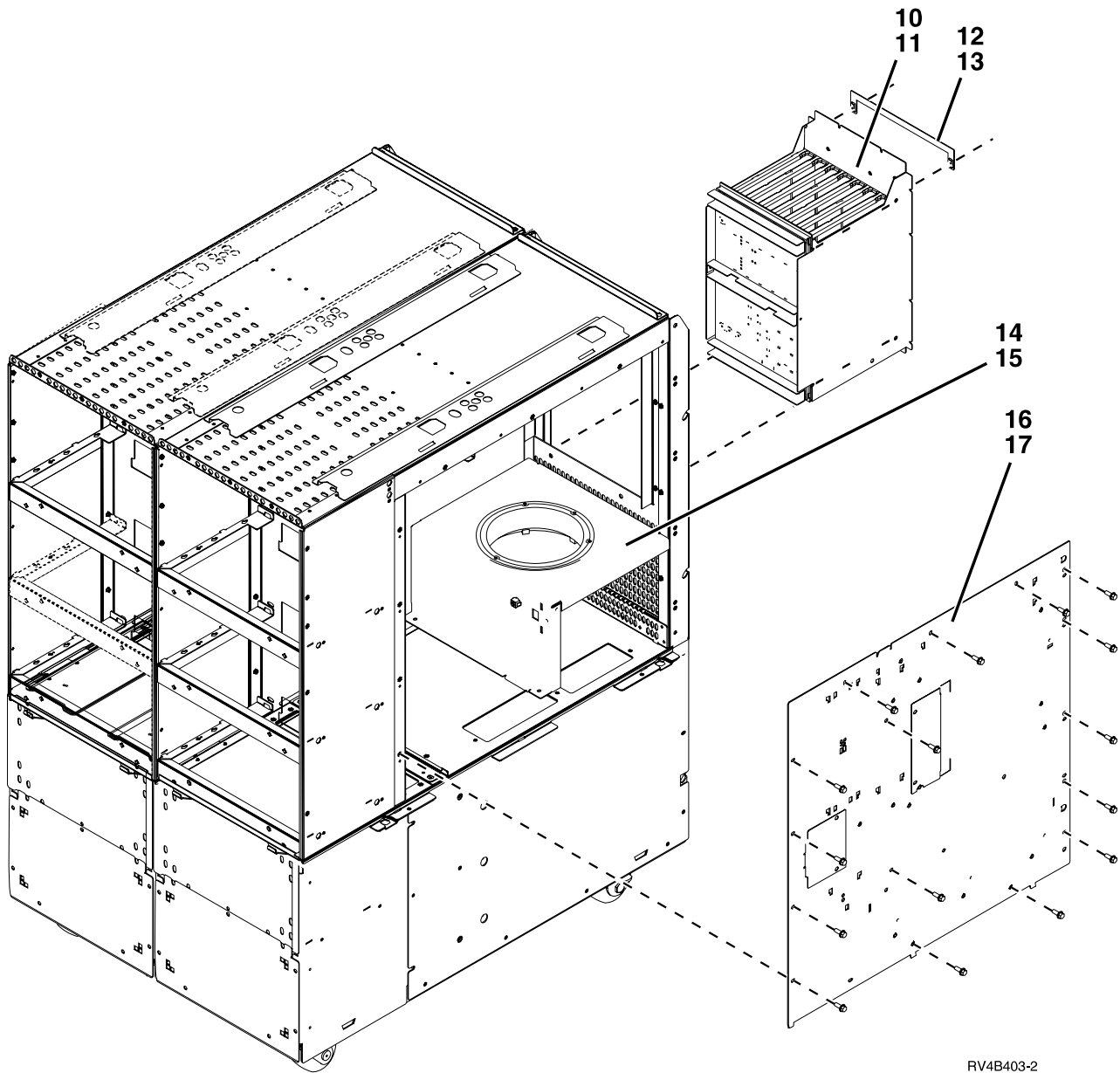
RV4B405-3



## Assembly 11: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                                                            |
|---------------|----------------|-------|----------------------------------------------------------------------------------------|
| 11-1          | 44H7924        | 1     | Disk Unit Blank Cover                                                                  |
| -2            | 1621811        | 4     | Screw, M4 (10mm)                                                                       |
| -3            | 44H7997        | 1     | Disk Unit EMC access plate                                                             |
| -4            |                | AR    | Disk Unit/Holder Asm<br>See "Disk Unit Type, Model, and Part Number List" on page 387. |
| -4            | 44H4636        | AR    | Connector Cover (when media is not installed)                                          |
| -5            |                | 1     | Removable Media/Holder Asm<br>See "Type, Model, and Part Number List" on page 380.     |
| -5            | 44H4636        | AR    | Connector Cover (when media not installed)                                             |
| -5            | 44H8406        | AR    | Removable Media Filler Asm                                                             |
| -6            | 45H1231        | 1     | Removable Media Frame Asm                                                              |
| -7            | 1621811        | 5     | Screw, M4 (10mm)                                                                       |
| -8            | 91H3905        | 1     | Disk Unit Frame Asm, Base                                                              |
| -8            | 91H3906        | 1     | Disk Unit Frame Asm, Feature                                                           |
| -9            | 1621811        | 4     | Screw                                                                                  |

## Assembly 11: (continued)

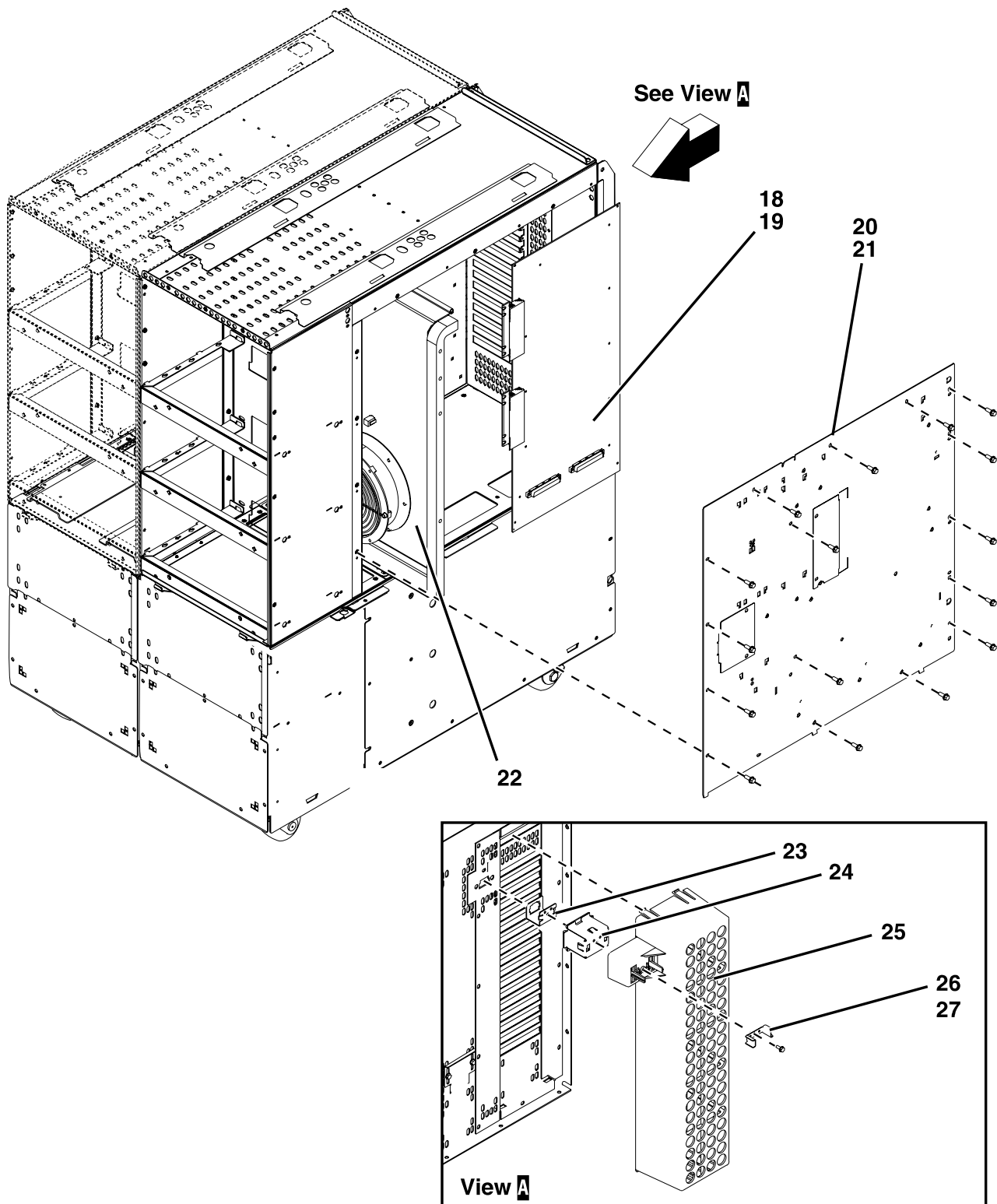


RV4B403-2

**Assembly 11: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>                                                 |
|-----------------------|------------------------|--------------|--------------------------------------------------------------------|
| 11-10                 | 44H7994                | 1            | SPD Board and Stiffener Asm                                        |
| -10                   | 44H7994                | 1            | BACKPL6<br>BACKPL6 is attached to the SPD Board and Stiffener Asm. |
| -11                   | 1621811                | 12           | Screw                                                              |
| -12                   | 45H1148                | 1            | Plate, SPD Cage Asm                                                |
| -13                   | 1621811                | 12           | Screw, M4 (10mm)                                                   |
| -14                   | 44H8259                | 1            | AMD6A Asm                                                          |
| -15                   | 1621811                | 1            | Screw, M4 (10mm)                                                   |
| -16                   | 44H7733                | 1            | Side EMC Access Plate                                              |
| -17                   | 1621811                | 14           | Screw, M4 (10mm)                                                   |

## Assembly 11: (continued)

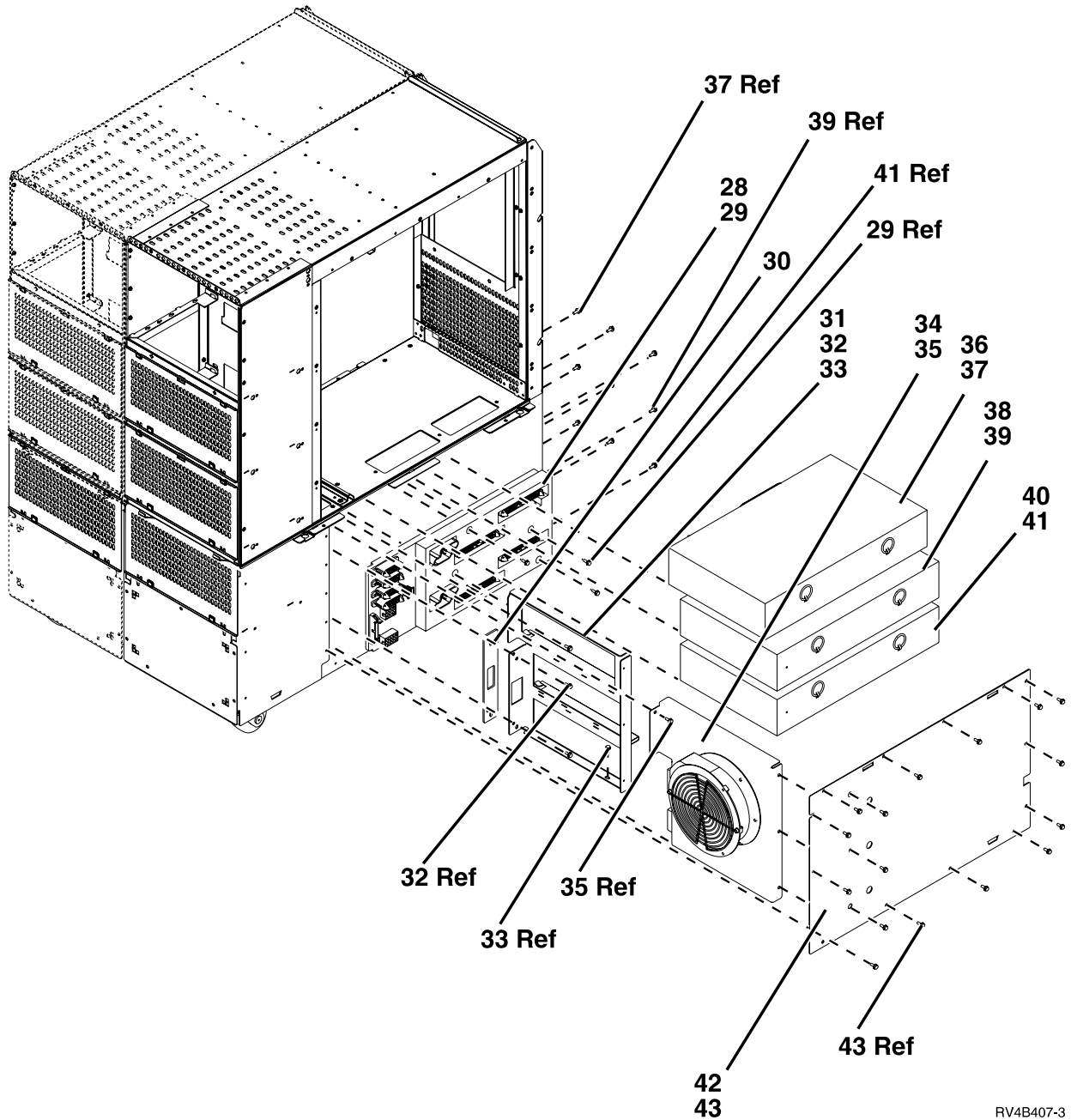


RV4B404-5

## Assembly 11: (continued)

| Asm-<br>Index                           | Part<br>Number | Units | Description             |
|-----------------------------------------|----------------|-------|-------------------------|
| 11-18                                   | 45H1235        | 1     | PCI/Backplane Asm       |
| -19                                     | 1621811        | 12    | Screw                   |
| -20                                     | 44H7733        | 1     | Side EMC Access Plate   |
| -21                                     | 1621811        | 14    | Screw, M4 (10mm)        |
| -22                                     | 44H8336        | 1     | AMD6B Asm               |
| -23                                     | 44H8288        | 1     | Bracket*                |
| -24                                     | 44H8289        | 1     | EMC Shield/Jumper Plug* |
| -25                                     | 44H8291        | 1     | Safety Cover*           |
| -26                                     | 44H8315        | 1     | Latch Stop*             |
| -27                                     | 1621811        | 1     | Screw*, M4 (10mm)       |
| *— Some models do not have these parts. |                |       |                         |

## Assembly 11: (continued)

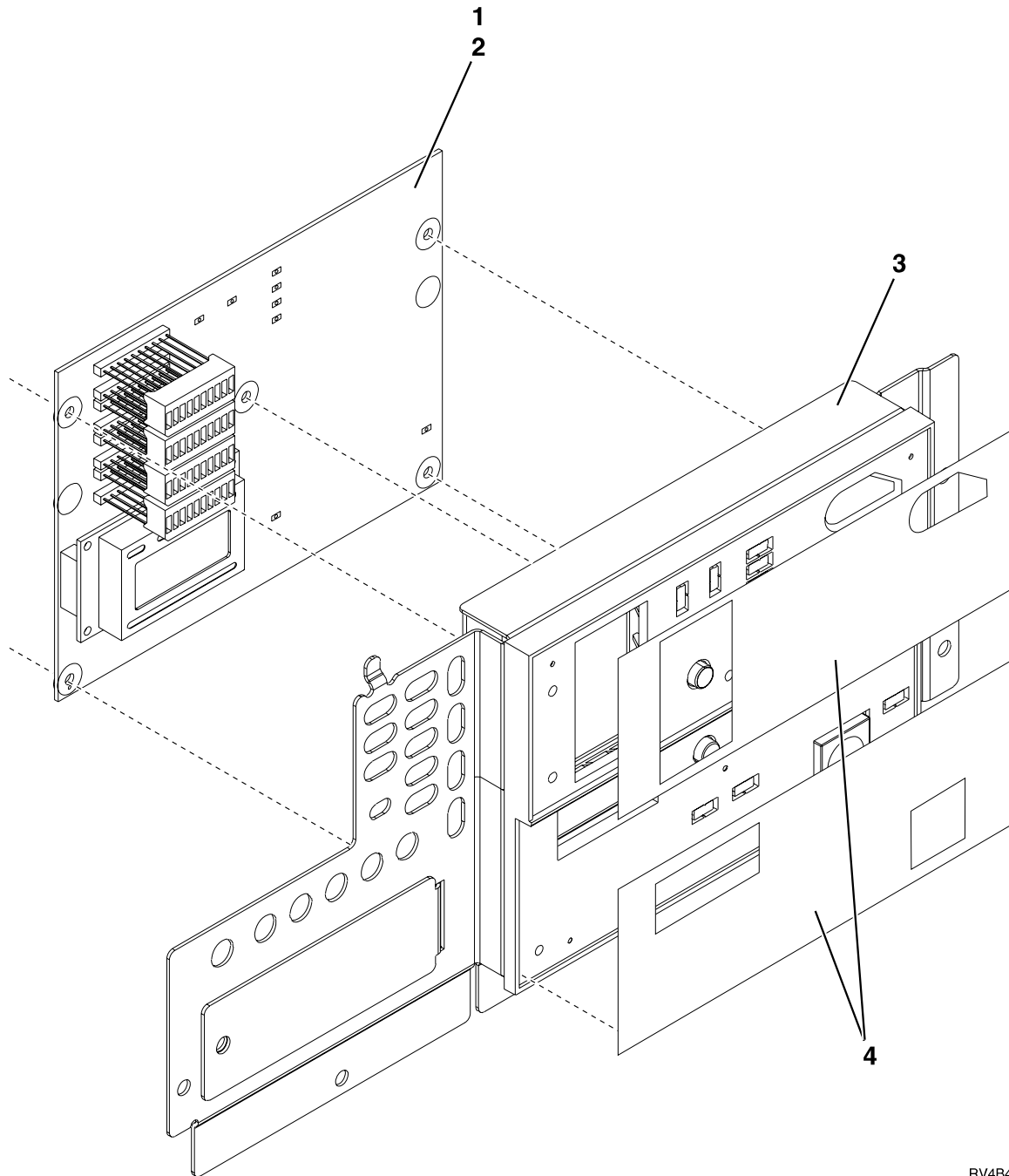


RV4B407-3

**Assembly 11: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>      |
|-----------------------|------------------------|--------------|-------------------------|
| 11-28                 | 44H7910                | 1            | Power Distribution Card |
| -29                   | 1621813                | 4            | Screw, M4 x 16mm        |
| -30                   | NONUM                  | 1            | Spacer                  |
| -31                   | NONUM                  | 1            | Air Flow Plate Asm      |
| -32                   | 1621838                | 2            | Screw, M4 x 25mm        |
| -33                   | 1621811                | 2            | Screw, M4 x 10mm        |
| -34                   | 44H7904                | 1            | AMD5 Asm                |
| -35                   | 1621811                | 4            | Screw, M4 x 10mm        |
| -36                   | 44H7779                | 1            | Power Supply, 845W      |
| -37                   | 1621811                | 3            | Screw, M4 x 10mm        |
| -38                   | 44H7777                | 1            | Power Supply, 650W      |
| -39                   | 1621811                | 3            | Screw, M4 x 10mm        |
| -40                   | 44H7777                | 1            | Power Supply, 650W      |
| -41                   | 1621811                | 3            | Screw, M4 x 10mm        |
| -42                   | 44H7887                | 1            | Side EMC Access Plate   |
| -43                   | 1621811                | 15           | Screw, M4 x 10mm        |

## Assembly 12: Control Panel Assembly - Model 620, 720, or S20 System Unit (N-way Processor)



RV4B408-2

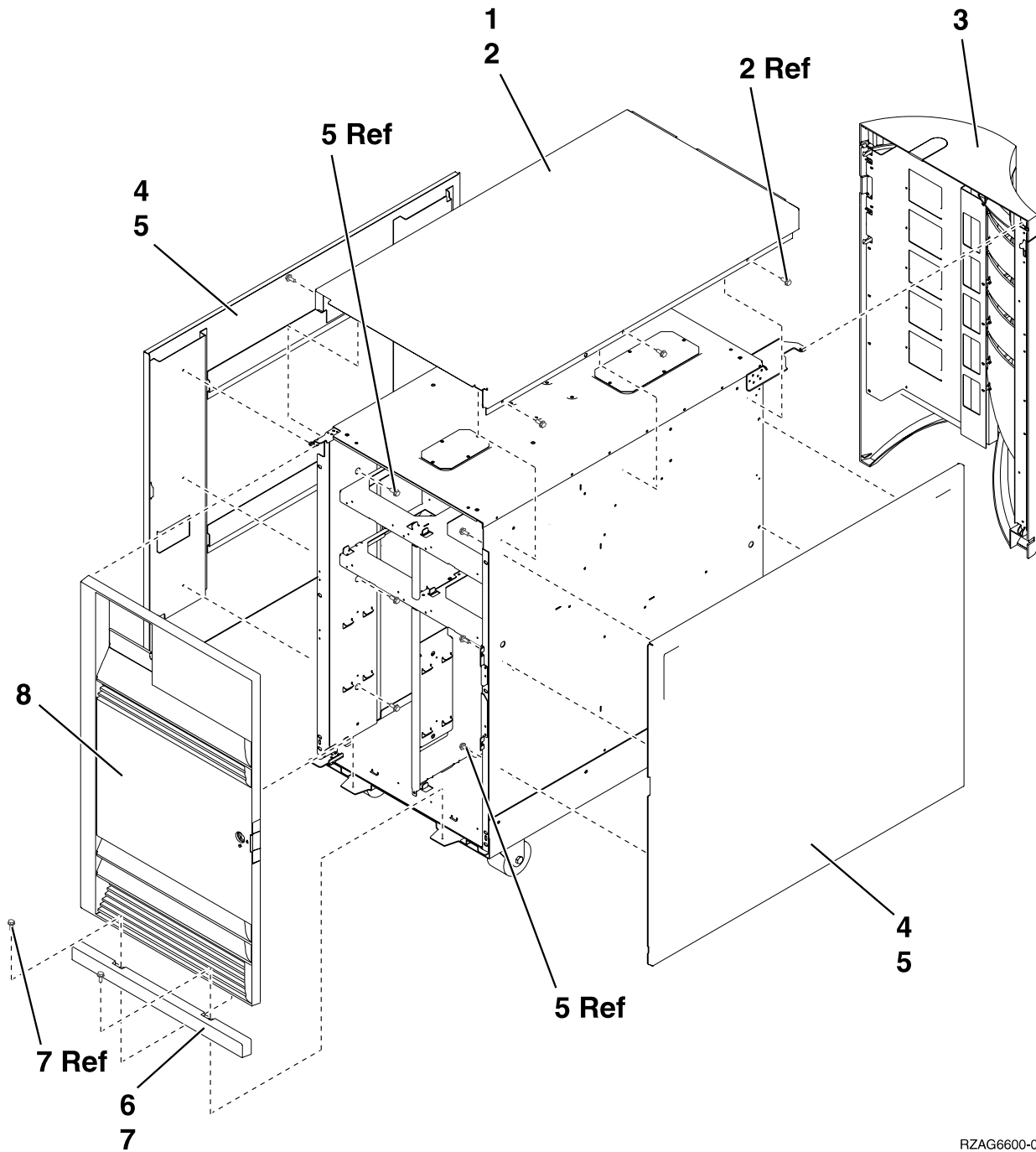


## Assembly 12: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------|----------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12-           | NONUM          | 1     | Control Panel Asm                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| -1            | 44H8142        | 1     | • Control Panel Card Asm                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| -             | NONUM          | AR    | • SPCN Panel Card<br>See "Assembly 10: Models 620, 720, or S20 System Unit with Expansion Unit" on page 976.                                                                                                                                                                                                                                                                                                                                                                      |
| -2            | 21F9599        | 5     | • Screw, 8mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| -3            | NONUM          | 1     | • Control Panel/Bezel Asm                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| -4            | 44H8367        | 1     | Control Panel Overlay - English                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| -4            | 44H8368        | 1     | Control Panel Overlay - Italian                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| -4            | 44H8369        | 1     | Control Panel Overlay - French                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| -4            | 44H8370        | 1     | Control Panel Overlay - German                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| -4            | 44H8371        | 1     | Control Panel Overlay - Norwegian                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| -4            | 44H8372        | 1     | Control Panel Overlay - Spanish                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| -4            | 44H8373        | 1     | Control Panel Overlay - Japanese                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| -4            | 44H8374        | 1     | Control Panel Overlay - Korean                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| -4            | 44H8375        | 1     | Control Panel Overlay - Chinese T                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| -4            | 44H8376        | 1     | Control Panel Overlay - Chinese S                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| -4            | 44H8377        | 1     | Control Panel Overlay - Portuguese                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| -4            | 44H8378        | 1     | Control Panel Overlay - Russian                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| -4            | 44H8379        | 1     | Control Panel Overlay - Czech                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| -4            | 44H8380        | 1     | Control Panel Overlay - Polish                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| -4            | 44H8381        | 1     | Control Panel Overlay - Hungarian                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| -             |                | AR    | Keystick<br><br><b>Ordering Additional Keysticks:</b><br>Cost and ordering information for additional or replacement control panel keysticks may be obtained by following the instructions on the key tag that is attached to the key ring or by writing to the following address. <b>The key tag with the key code stamped on it is required for all control panel keystick orders.</b> Write to:<br><br>Turtle Mountain Corporation<br>First Street South<br>Dunseith, ND 58329 |

## Assemblies-Expansion Towers

## Assembly 13: Cover Assemblies for FC 5065 and FC 5066 Expansion Towers

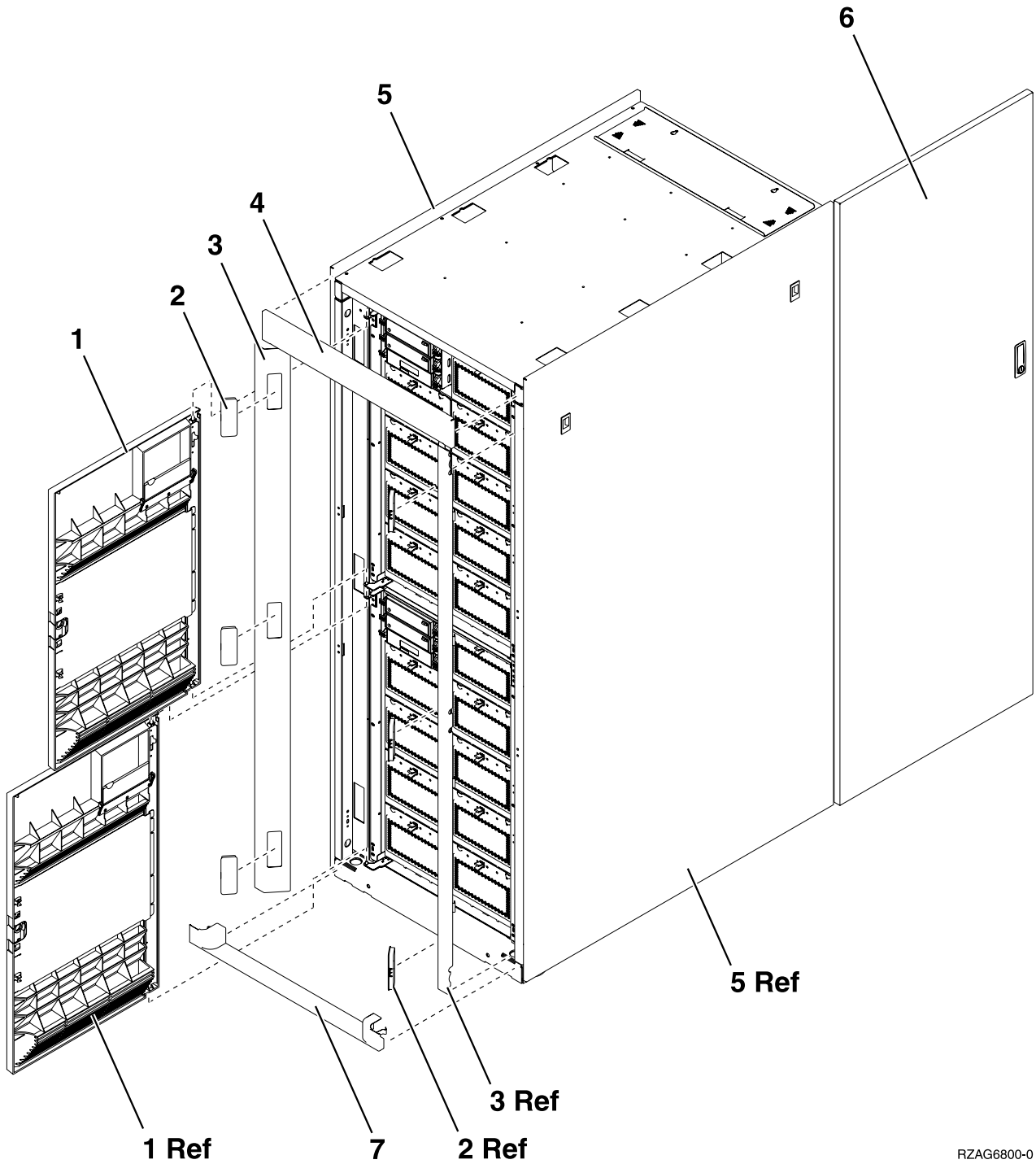


RZAG6600-0

**Assembly 13: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b> |
|-----------------------|------------------------|--------------|--------------------|
| 13-1                  | 24L0825                | 1            | Top cover          |
| -2                    | 1621811                | 4            | Screw              |
| -3                    | 24L1079                | 1            | Rear cover         |
| -4                    | 24L0824                | 1            | Side cover         |
| -5                    | 1621811                | 12           | Screw              |
| -6                    | 24L1078                | 1            | Front filler cover |
| -7                    | 1621811                | 2            | Screw              |
| -8                    | 24L1069                | 1            | Front cover        |

## Assembly 13: (continued)

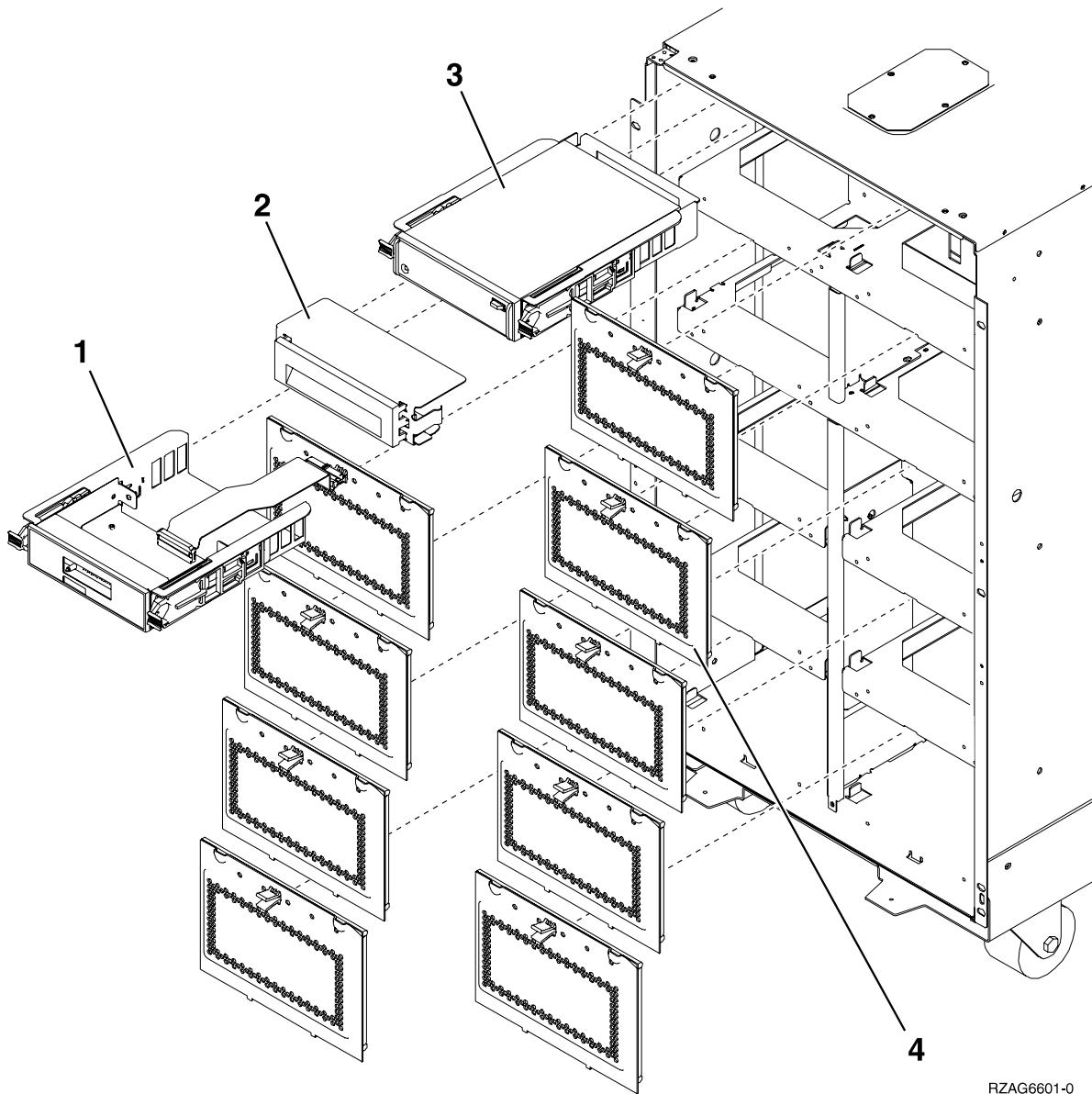


RZAG6800-0

**Assembly 13: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>     |
|-----------------------|------------------------|--------------|------------------------|
| 13-1                  | 24L1069                | 2            | Cover Asm, Front       |
| -2                    | 05N6809                | 6            | Cover, Trim Kit        |
| -3                    | 12K0034                | 2            | Side Bezel, Trim Kit   |
| -4                    | 12K0032                | 1            | Top Bezel, Trim Kit    |
| -5                    | 31L7519                | 2            | Cover, Side            |
| -6                    | 31L7523                | 1            | Cover, Rear            |
| -7                    | 12K0024                | 1            | Bottom Bezel, Trim Kit |

## Assembly 14: Final Assemblies for FC 5065 expansion tower

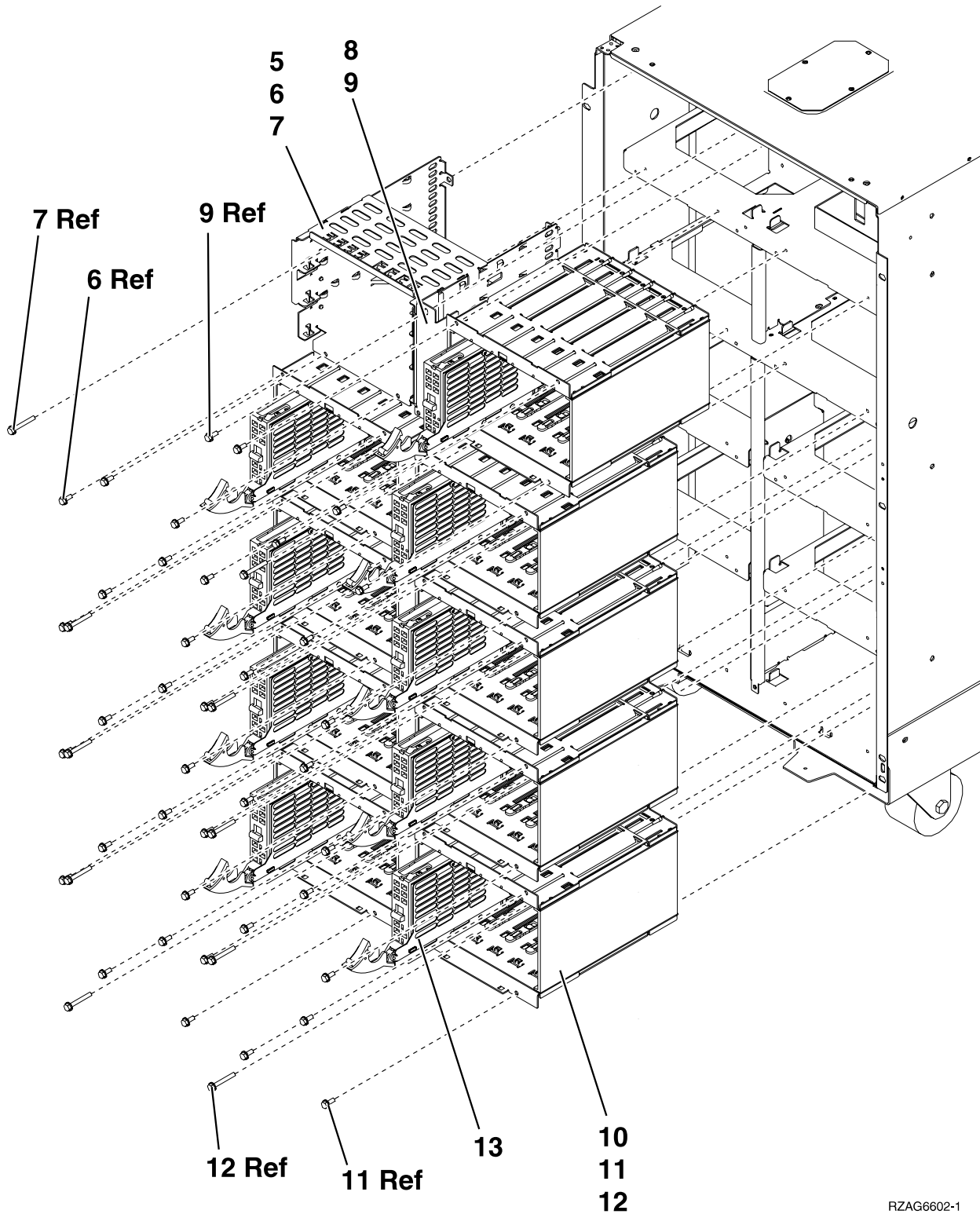


RZAG6601-0

**Assembly 14: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>                                                           |
|-----------------------|------------------------|--------------|------------------------------------------------------------------------------|
| 14-1                  | 24L0946                | 1            | Control Panel                                                                |
| -2                    | 44H8406                | AR           | Filler (Removable media)                                                     |
| -2                    |                        | AR           | Optical Storage Unit<br>See "Type, Model, and Part Number List" on page 380. |
| -3                    |                        | AR           | Removable media<br>See "Type, Model, and Part Number List" on page 380.      |
| -4                    | 24L0821                | AR           | DASD EMC access plate                                                        |

## Assembly 14: (continued)



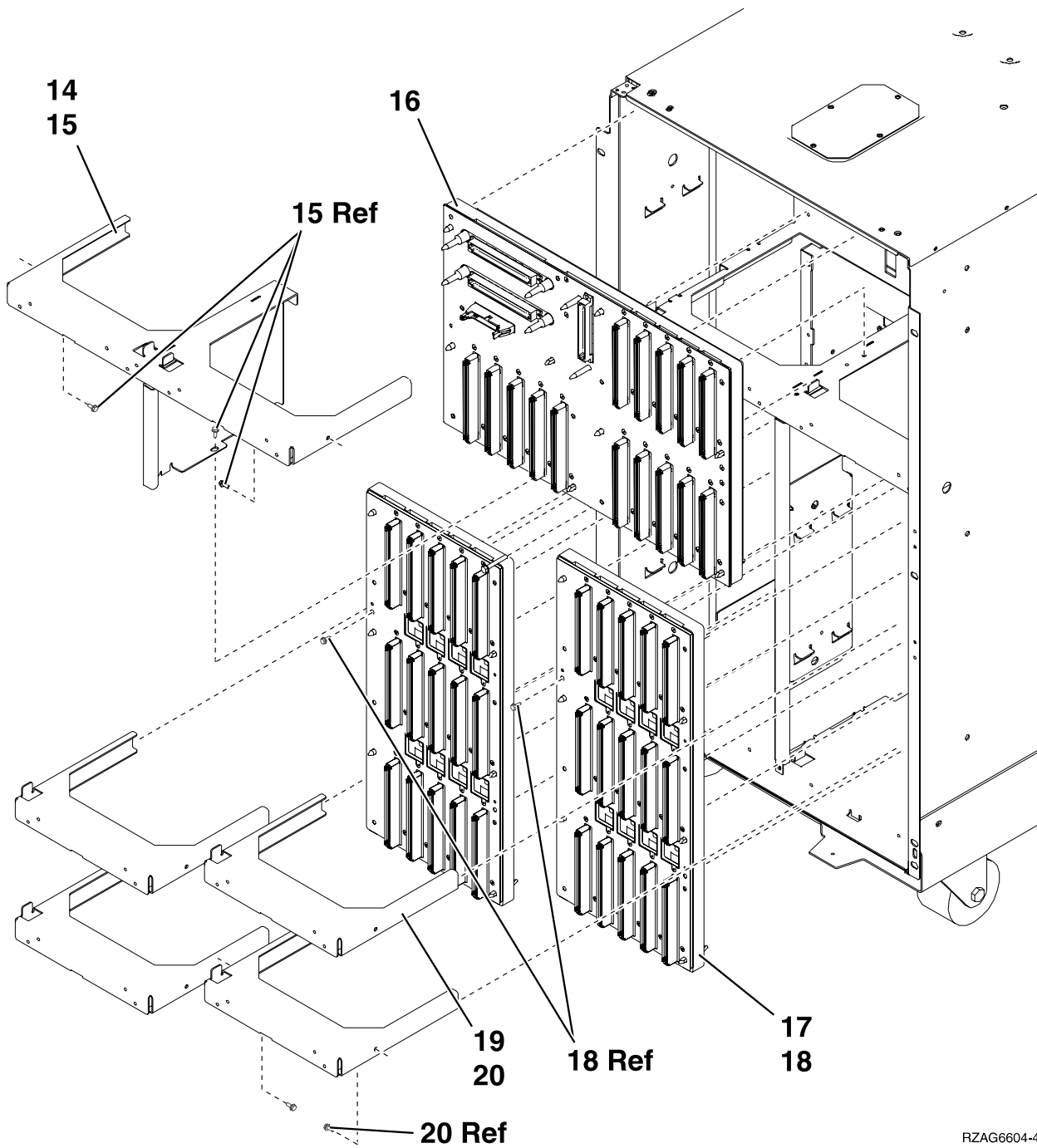
RZAG6602-1



**Assembly 14: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>                                                                   |
|-----------------------|------------------------|--------------|--------------------------------------------------------------------------------------|
| 14-5                  | NONUM                  | 1            | Removable media cage assembly                                                        |
| -6                    | 1621811                | 2            | Screw                                                                                |
| -7                    | 1621817                | 2            | Screw                                                                                |
| -8                    | 24L1067                | 1            | Center Support Bracket                                                               |
| -9                    | 1621811                | 2            | Screw                                                                                |
| -10                   | NONUM                  | AR           | 5 disk unit cage assembly                                                            |
| -11                   | 1621811                | 12           | Screw                                                                                |
| -12                   | 1621817                | 6            | Screw                                                                                |
| -13                   |                        | AR           | Disk unit assembly<br>See "Disk Unit Type, Model, and Part Number List" on page 387. |

## Assembly 14: (continued)

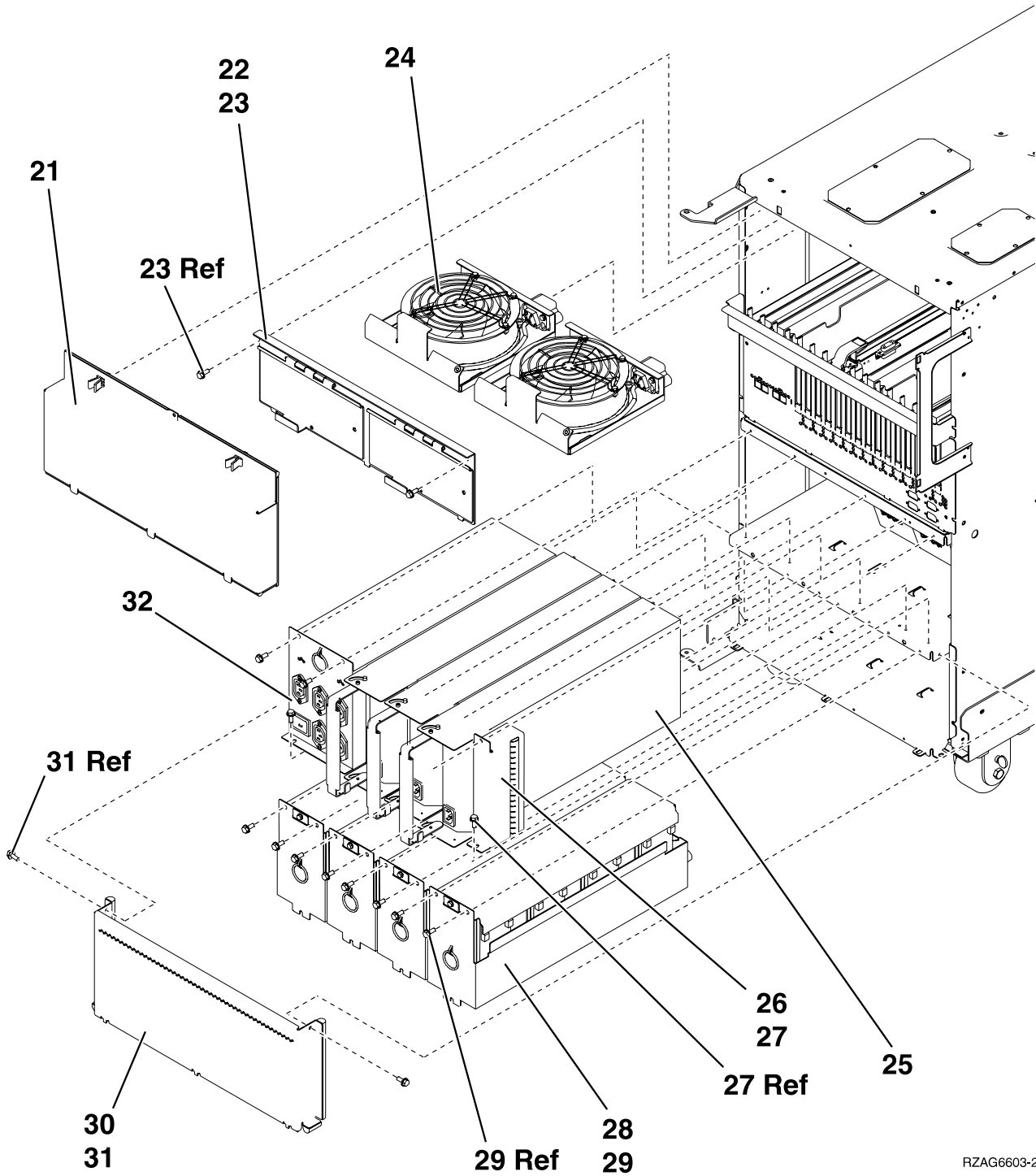


RZAG6604-4

**Assembly 14: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>              |
|-----------------------|------------------------|--------------|---------------------------------|
| 14-14                 | NONUM                  | 1            | Shelf, Base DASD                |
| -15                   | 1621811                | 3            | Screw                           |
| -16                   | 24L0892                | 1            | Base DASD Bd/Stiff. Asm. (DB3)  |
| -17                   | 24L1029                | AR           | DASD Bd/Stiff. Asm. (DB1 & DB2) |
| -18                   | 1621838                | 1            | Screw                           |
| -19                   | NONUM                  | AR           | Shelf, DASD                     |
| -20                   | 162811                 | 2            | Screw                           |

## Assembly 14: (continued)

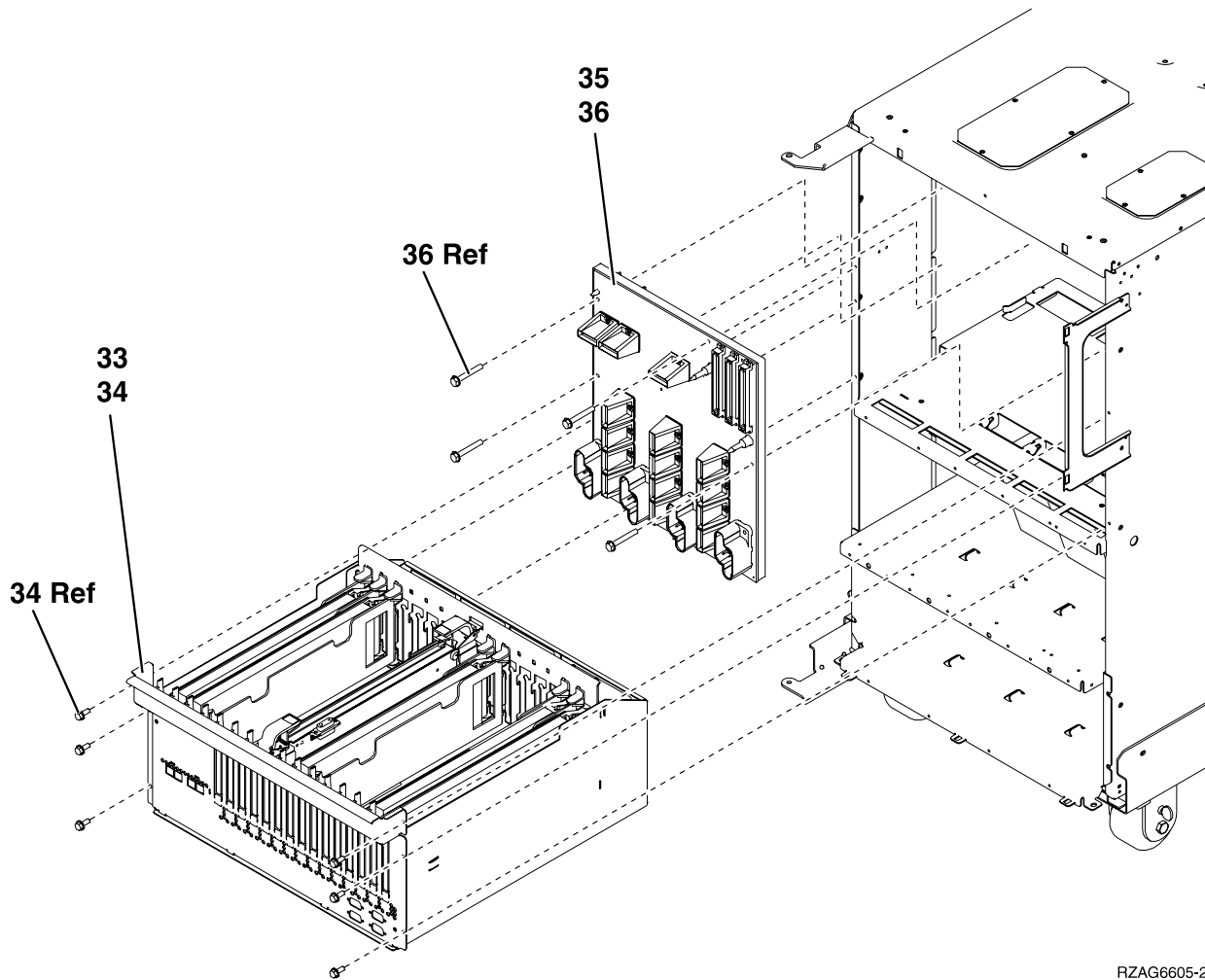


RZAG6603-2

**Assembly 14: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>       |
|-----------------------|------------------------|--------------|--------------------------|
| 14-21                 | 24L0823                | 1            | EMC access plate         |
| -22                   | NONUM                  | 1            | AMD door assembly        |
| -23                   | 1621811                | 2            | Screw                    |
| -24                   | 44L0023                | 2            | AMD                      |
| -25                   | 90H6629                | 3            | Power supply — 765 watts |
| -26                   | 24L0940                | AR           | Filler for power supply  |
| -27                   | 1621811                | 2            | Screw                    |
| -28                   | 97H7320                | 4            | Battery pack             |
| -29                   | 1621811                | 12           | Screw                    |
| -30                   | NONUM                  | 1            | EMC access plate         |
| -31                   | 1621811                | 2            | Screw                    |
| -32                   | 97H7316                | 1            | Battery Charger          |

## Assembly 14: (continued)

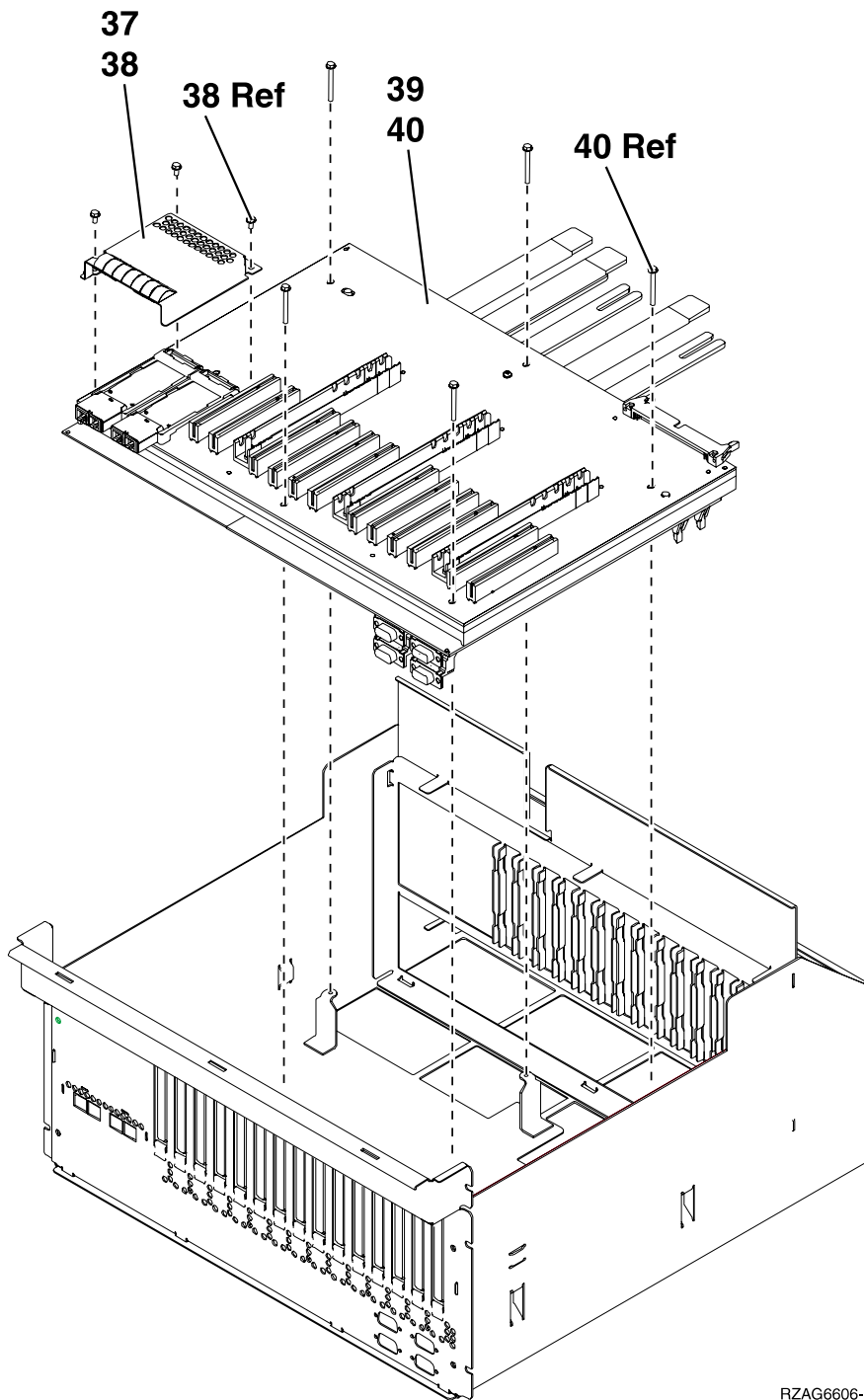


RZAG6605-2

**Assembly 14: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>      |
|-----------------------|------------------------|--------------|-------------------------|
| 14-33                 | NONUM                  | 1            | PCI Card Cage/Asm.      |
| -34                   | 1621811                | 6            | Screw                   |
| -35                   | 24L0891                | 1            | Power Board/Stiff. Asm. |
| -36                   | 1621816                | 6            | Screw                   |

## Assembly 14: (continued)



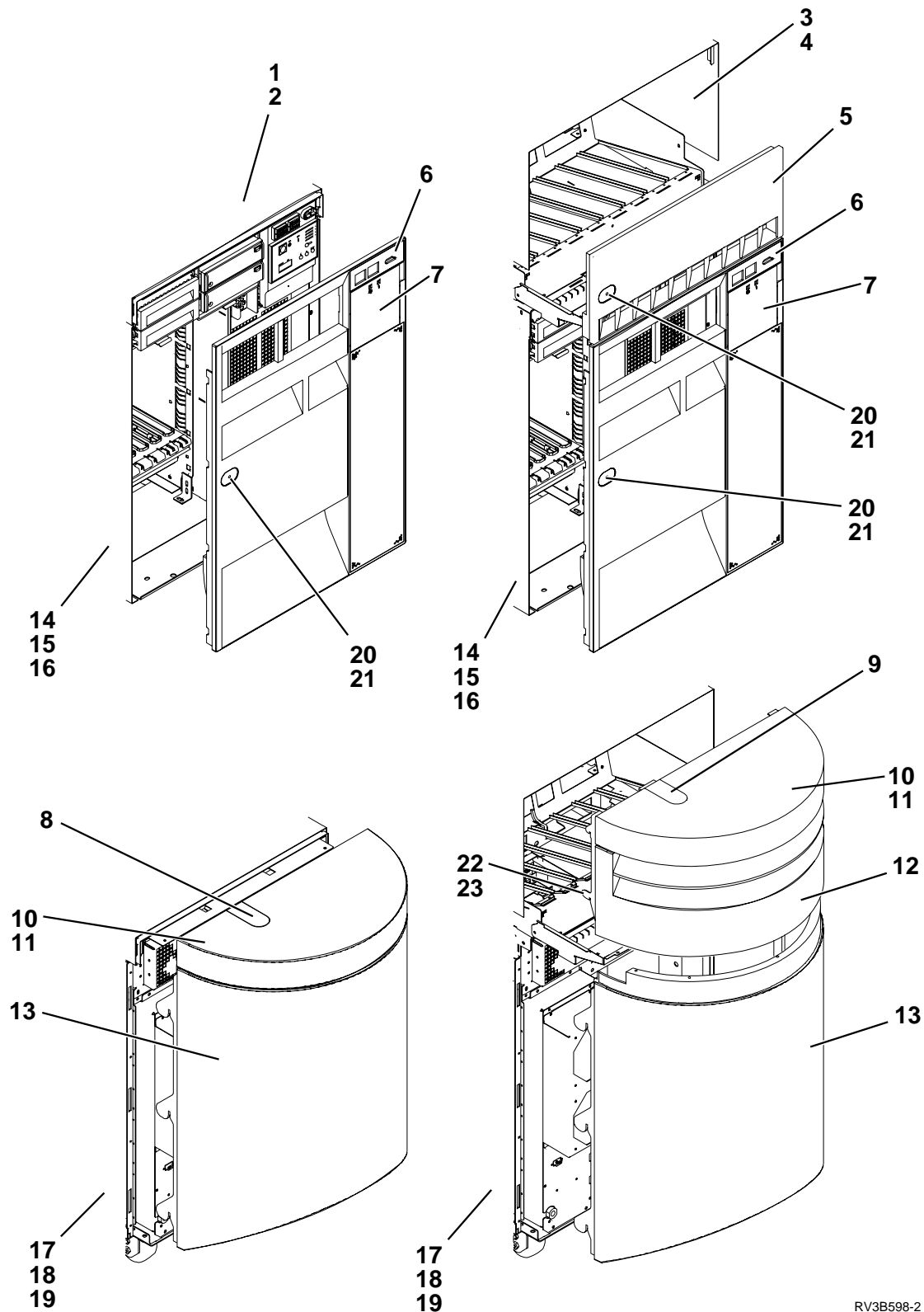
RZAG6606-1



**Assembly 14: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b> |
|-----------------------|------------------------|--------------|--------------------|
| 14-37                 | NONUM                  | 1            | EMC access plate   |
| -38                   | 1621811                | 3            | Screw              |
| -39                   | 97H7532                | 1            | Tower Card Asm.    |
| -40                   | 1621621                | 5            | Screw              |

## Assembly 15: Cover Assemblies - 9251 Base I/O, 507x & 508x Expansion Units

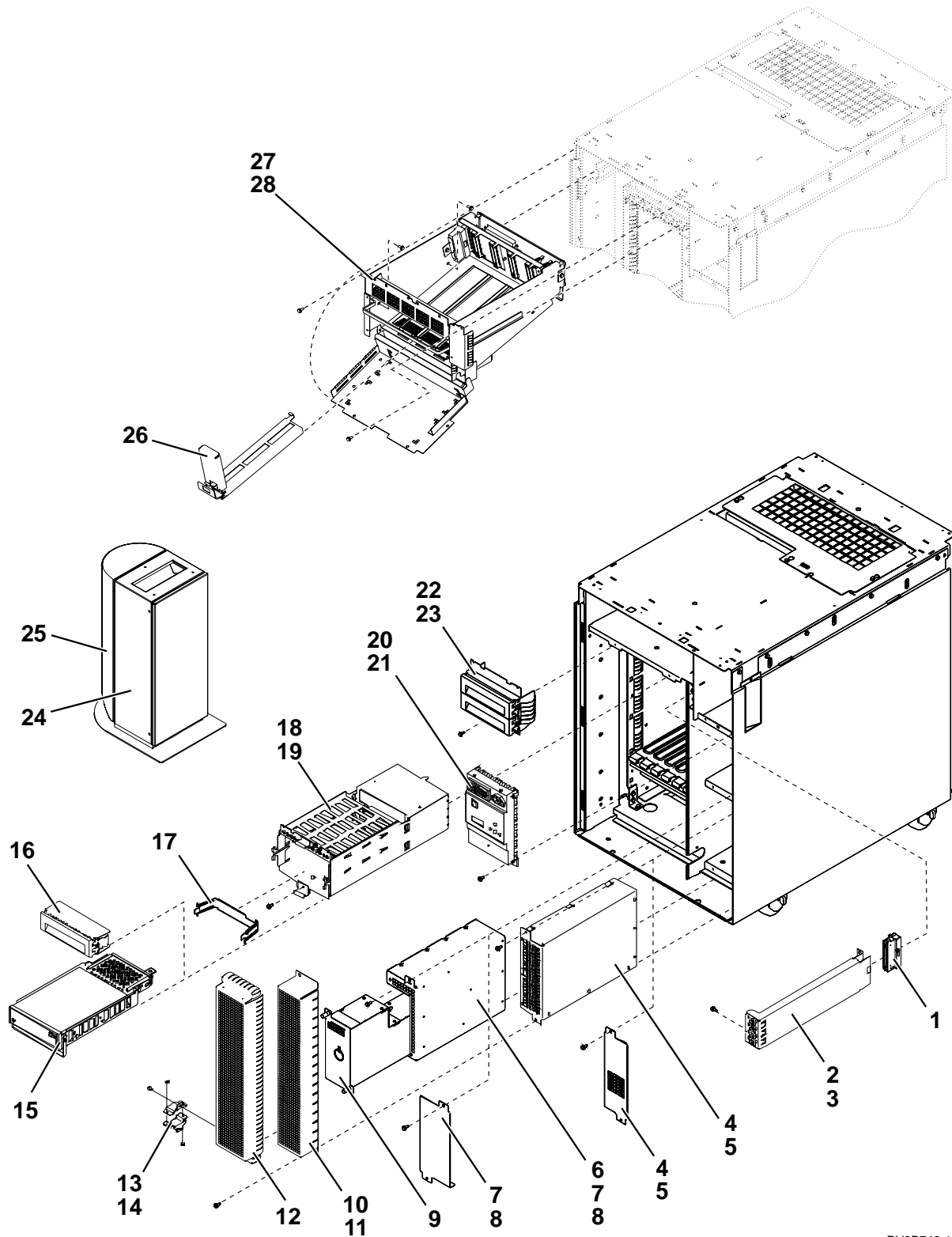


RV3B598-2

## Assembly 15: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                     |
|---------------|----------------|-------|-------------------------------------------------|
| 15-1          | 46G3484        | 1     | • Cover - Top                                   |
| -2            | 1621812        | 3     | • Screw (8mm)                                   |
| -3            | 46G3580        | 1     | • Cover - Top, Storage Expansion Unit           |
| -4            | 1621811        | AR    | • Screw, M4 (10mm)                              |
| -5            | 86G7739        | 1     | • Cover - Front, Storage Expansion Unit         |
| -6            | 46G3478        | 1     | • Cover - Front (black)                         |
| -6            | 90H6507        | 1     | • Cover - Front (blue)                          |
| -6            | 90H6588        | 1     | • Cover - Front (red)                           |
| -7            | 86G7857        | 1     | • • Door - Contol Panel                         |
| -8            | 46G3688        | 1     | • Plug                                          |
| -9            | 46G3670        | 1     | • Plug                                          |
| -10           | 86G7677        | 1     | • Cover - Rear Top Cap                          |
| -11           | 1622677        | 5     | • Screw (12mm)                                  |
| -12           | 86G7738        | 1     | • Cover - Rear, Storage Expansion Unit (black)  |
| -12           | 21H3739        | 1     | • Cover - Rear, Storage Expansion Unit (blue)   |
| -12           | 90H6306        | 1     | • Cover - Rear, Storage Expansion Unit (red)    |
| -13           | 86G7740        | 1     | • Cover - Rear Round                            |
| -14           | 46G3647        | 1     | • Cover - Left Side                             |
| -15           | 1621811        | 17    | • Screw, M4 (10mm)                              |
| -16           | 46G3648        | 1     | • Handle                                        |
| -17           | 46G3542        | 1     | • Cover - Right Side                            |
| -18           | 1621811        | 17    | • Screw, M4 (10mm)                              |
| -19           | 46G3648        | 1     | • Handle                                        |
| -20           | NONUM          | NP    | • Logo, AS/400 Advanced                         |
| -21           | NONUM          | NP    | • Logo, AS/400 Advanced Server                  |
| -22           | 46G3695        | 1     | • Bracket, Rear Storage Expansion Unit Mounting |
| -23           | 1622677        | 7     | • Screw (12mm)                                  |

## Assembly 16: Final Assembly - 9251 Base I/O, 507x & 508x Expansion Towers

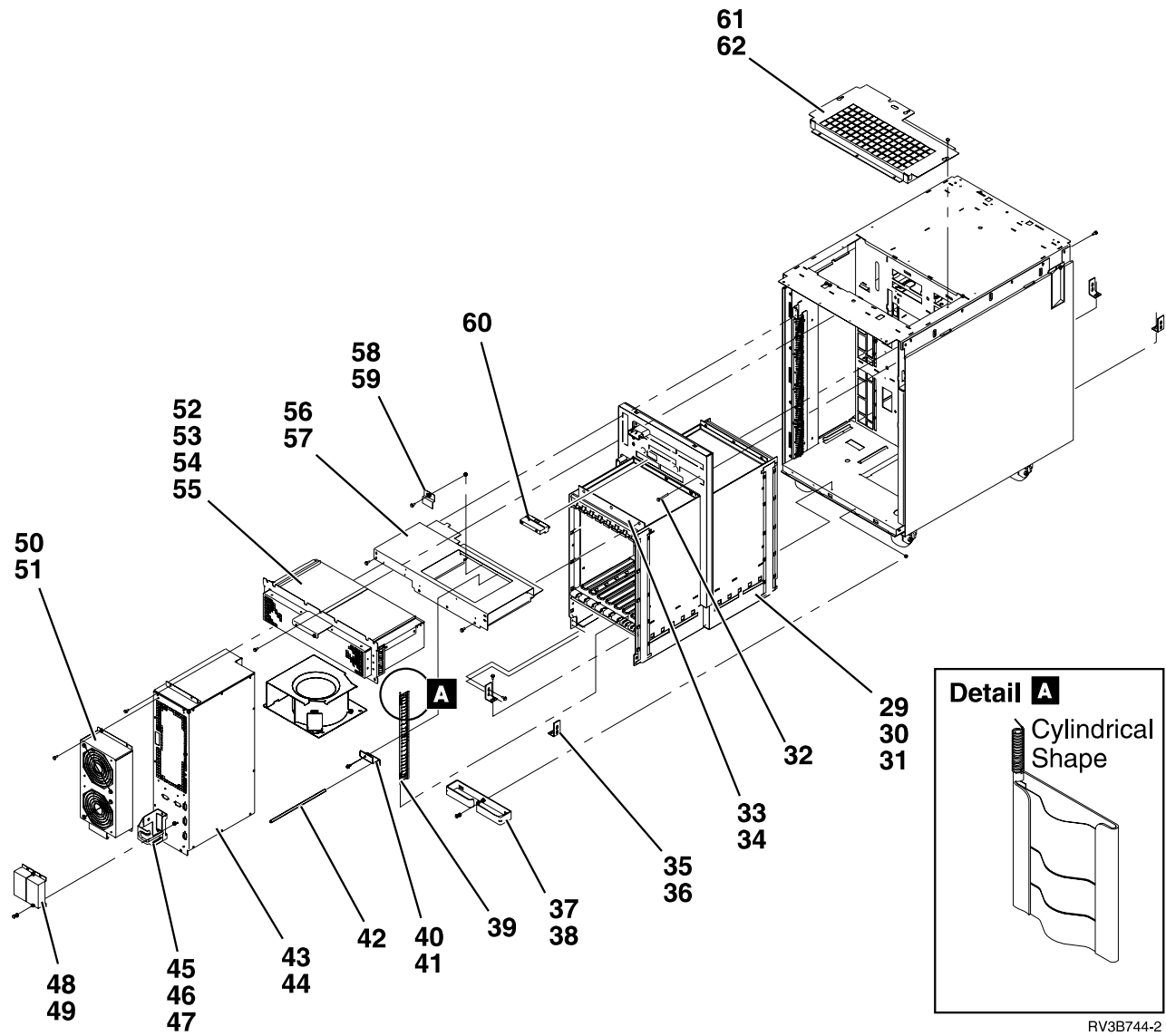


RV3B743-1

## Assembly 16: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                                                                                                   |
|---------------|----------------|-------|-------------------------------------------------------------------------------------------------------------------------------|
| 16-1          | 90H6285        | 1     | • Terminating Plug for FC 5070, 5072, 5080, 5082                                                                              |
| -1            | 90H6285        | 1     | • Terminating Plug (TRM50) for System Units (including 9251) and FC 5071, 5073, 5081, 5083                                    |
| -2            | NONUM          | NP    | • Cover, Terminating Plug                                                                                                     |
| -3            | 1621811        | 1     | • Screw, M4 (10mm)                                                                                                            |
| -4            | 87G6290        | AR    | • Power Supply Asm (FC 5070, 5072, 5080, 5082)                                                                                |
| -4            | 87G6110        | AR    | • Power Supply Asm (FC 5071, 5073, 5081, 5083, 9251)                                                                          |
| -4            | 86G7684        | AR    | • Power Supply Filler Plate                                                                                                   |
| -5            | 1621811        | 2     | • Screw, M4 (10mm)                                                                                                            |
| -6            | 86G8020        | 1     | • Battery Power Unit Charger                                                                                                  |
| -7            | 86G7750        | 1     | • External Battery Power Unit Charger Asm                                                                                     |
| -7            | 86G7685        | AR    | • Battery Power Unit Filler Plate                                                                                             |
| -8            | 1621811        | 2     | • Screw, M4 (10mm)                                                                                                            |
| -9            | 86G8040        | 1     | • Battery Power Unit                                                                                                          |
| -10           | 46G3499        | 1     | • Shield - Power                                                                                                              |
| -11           | 1621811        | 4     | • Screw, M4 (10mm)                                                                                                            |
| -12           | 46G3500        | 1     | • Shield - Battery Power Unit                                                                                                 |
| -13           | 86G7773        | 2     | • Clamp, External Battery Power Unit Charger Cable Asm                                                                        |
| -14           | 1621812        | 3     | • Screw (8mm)                                                                                                                 |
| -15           |                | AR    | • Removable Media (tape)<br>See "Type, Model, and Part Number List" on page 380.                                              |
| -15           |                | AR    | • Optical Storage Unit (632x)<br>See "Type, Model, and Part Number List" on page 380.                                         |
| -16           | 86G7623        | AR    | • Removable Media Filler Bezel                                                                                                |
| -17           | 86G7656        | AR    | • Key - Tape Unit                                                                                                             |
| -18           | 46G3700        | AR    | • Removable Media Tray Asm                                                                                                    |
| -18           | 46G3620        | AR    | • Removable Media Tray Asm, Empty                                                                                             |
| -19           | 1621811        | 6     | • Screw, M4 (10mm)                                                                                                            |
| -20           | 17G0574        | NP    | • Control Panel<br>For detail breakdown, see "Assembly 18: 9251 and 507x, 508x Expansion Tower(s) Control Panel" on page 1016 |
| -21           | 1621811        | 2     | • Screw, M4 (10mm)                                                                                                            |
| -22           | 86G7865        | 1     | • Filler Bezel Asm                                                                                                            |
| -23           | 1621811        | 1     | • Screw, M4 (10mm)                                                                                                            |
| -24           | 86G7714        | 1     | • External Battery Power Unit Battery Asm                                                                                     |
| -25           | 46G0321        | 1     | • External Battery Power Unit Battery Rear Cover Asm                                                                          |
| -26           | 46G3529        | AR    | • Filler Asm, Disk Unit                                                                                                       |
| -27           | 87G4362        | 1     | • Disk Unit Guide Asm, (508x Only)                                                                                            |
| -28           | 1621811        | 8     | • Screw, M4 (10mm)                                                                                                            |
| -29           | 87G6049        | 1     | • 507x Expansion Regulator                                                                                                    |
| -29           | 17G1209        | 1     | • 508x Expansion Regulator                                                                                                    |

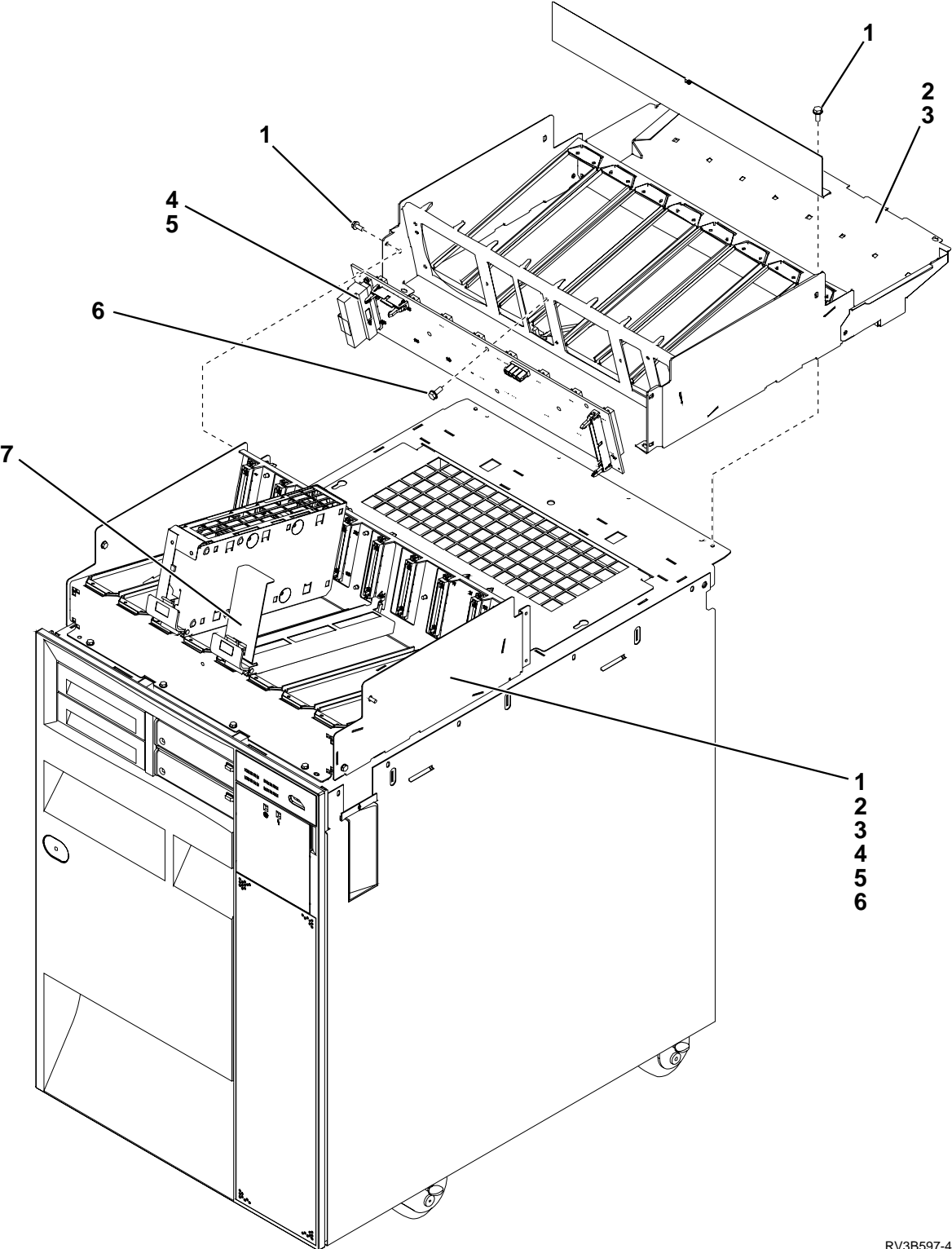
## Assembly 16: (continued)



## Assembly 16: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                                                    |
|---------------|----------------|-------|--------------------------------------------------------------------------------|
| 16-29         | 86G7633        | 1     | • Expansion Unit Card Enclosure Asm, Models 5070 and 5072 (lower)              |
| -29           | 90H6425        | 1     | • Expansion Unit Card Enclosure Asm, Models 5071 and 5073 (lower)              |
| -29           | 87G4357        | 1     | • Expansion Unit Card Enclosure Asm, Models 5080 and 5082 (lower)              |
| -29           | 87G4362        | 1     | • Expansion Unit Card Enclosure Asm, Models 5080, 5081, 5082, and 5083 (upper) |
| -29           | 90H6426        | 1     | • Expansion Unit Card Enclosure Asm, Models 5081 and 5083 (lower)              |
| -29           | 21H7465        | 1     | • Feature 9251 Base I/O Tower Card Enclosure Asm                               |
| -30           | 21H3759        | AR    | • Enclosure Spring                                                             |
| -31           | 1621811        | 11    | • Screw, M4 (10mm)                                                             |
| -32           | 1621838        | 4     | • Screw (35mm)                                                                 |
| -33           | 46G3646        | 2     | • Card Retaining Bar                                                           |
| -34           | 1621811        | 3     | • Screw, M4 (10mm)                                                             |
| -35           | 46G3663        | 4     | • Bracket, Cage Mounting                                                       |
| -36           | 1621811        | 12    | • Screw, M4 (10mm)                                                             |
| -37           | 46G3666        | 1     | • Bracket, Rear I/O cable ret.                                                 |
| -38           | 1621811        | 1     | • Screw, M4 (10mm)                                                             |
| -39           | 91H0250        | AR    | • Card Spring (verticle SPD card separators)                                   |
| -40           | 21H3473        | 1     | • Clamp, Light Pipe                                                            |
| -41           | 1621811        | 1     | • Screw, M4 (10mm)                                                             |
| -42           | 21H3472        | 1     | • Light Pipe                                                                   |
| -43           | 87G6300        | 1     | • AC Module Asm (FC 5070, 5072, 5080, 5082)                                    |
| -43           | 21H7697        | 1     | • AC Module Asm (FC 9251, 5071, 5073, 5081, 5083)                              |
| -44           | 1621811        | 4     | • Screw, M4 (10mm)                                                             |
| -45           | NONUM          | NP    | • Power Cord Retaining Bracket                                                 |
| -46           | NONUM          | NP    | • Power Cord Retaining Clamp                                                   |
| -47           | NONUM          | 4     | • Screw, Torx M3 x 10 Lg                                                       |
| -48           | 90H6287        | 2     | • SPCN Optical Adapter Asm                                                     |
| -49           | 1621811        | 4     | • Screw, M4 (10mm)                                                             |
| -50           | 46G3510        | 1     | • AMD Asm - AC Module (AMD 1 and AMD2)                                         |
| -51           | 1621811        | 4     | • Screw, M4 (10mm)                                                             |
| -52           | 46G3509        | 1     | • AMD Asm (AMD 3 and AMD 4)                                                    |
| -53           | 46G3587        | 2     | • • AMD                                                                        |
| -54           | 1621811        | 4     | • • Screw, M4 (10mm)                                                           |
| -55           | 1621811        | 4     | • Screw, M4 (10mm)                                                             |
| -56           | NONUM          | NP    | • AMD Mounting Asm                                                             |
| -57           | 1621811        | 7     | • Screw, M4 (10mm)                                                             |
| -58           | 46G3667        | 1     | • Bracket - Term Ret                                                           |
| -59           | 1621811        | 1     | • Screw, M4 (10mm)                                                             |
| -60           | NONUM          | NP    | • Terminator/Redrive plug                                                      |
| -61           | 1621811        | 3     | • Screw, M4 (10mm)                                                             |

# Assembly 17: Storage Expansion Unit Assembly



RV3B597-4

| Asm-<br>Index | Part<br>Number | Units | Description        |
|---------------|----------------|-------|--------------------|
| 17-1          | 1621811        | 10    | • Screw, M4 (10mm) |

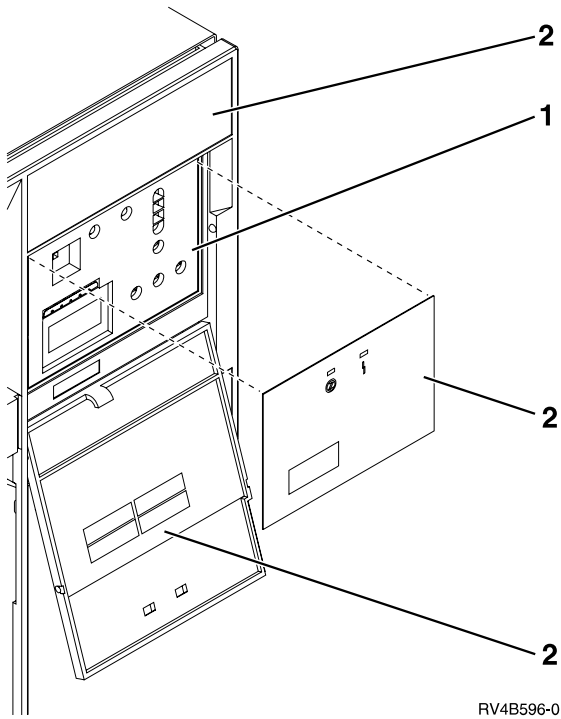


**Assembly 17: (continued)**

| Asm-<br>Index | Part<br>Number | Units | Description                                        |
|---------------|----------------|-------|----------------------------------------------------|
| -2            | 46G3581        | 2     | • Cover                                            |
| -3            | 1621811        | 5     | • Screw, M4 (10mm)                                 |
| -4            | 16G6496        | 1     | • Backplane (front) K1 - K8 FC 5052                |
| -4            | 86G7872        | 1     | • Backplane (rear) K9 - K16 FC 5052                |
| -4            | 21H7750        | 1     | • Backplane (front) K1 - K8 FC 5055                |
| -4            | 21H6938        | 1     | • Backplane (front) K1 - K8 FC 5058                |
| -4            | 21H6940        | 1     | • Backplane (front) K1 - K8 FC 5057                |
| -4            | 21H6940        | 1     | • Backplane (rear) K9 - K16 FC 5057 and 5058       |
| -5            | NONUM          | AR    | • Terminating Plug<br>(See "DEVTERM" on page 404.) |
| -6            | 1621811        | 8     | • Screw, M4 (10mm)                                 |
| -7            | 46G3529        | AR    | • Disk Unit Filler Asm                             |

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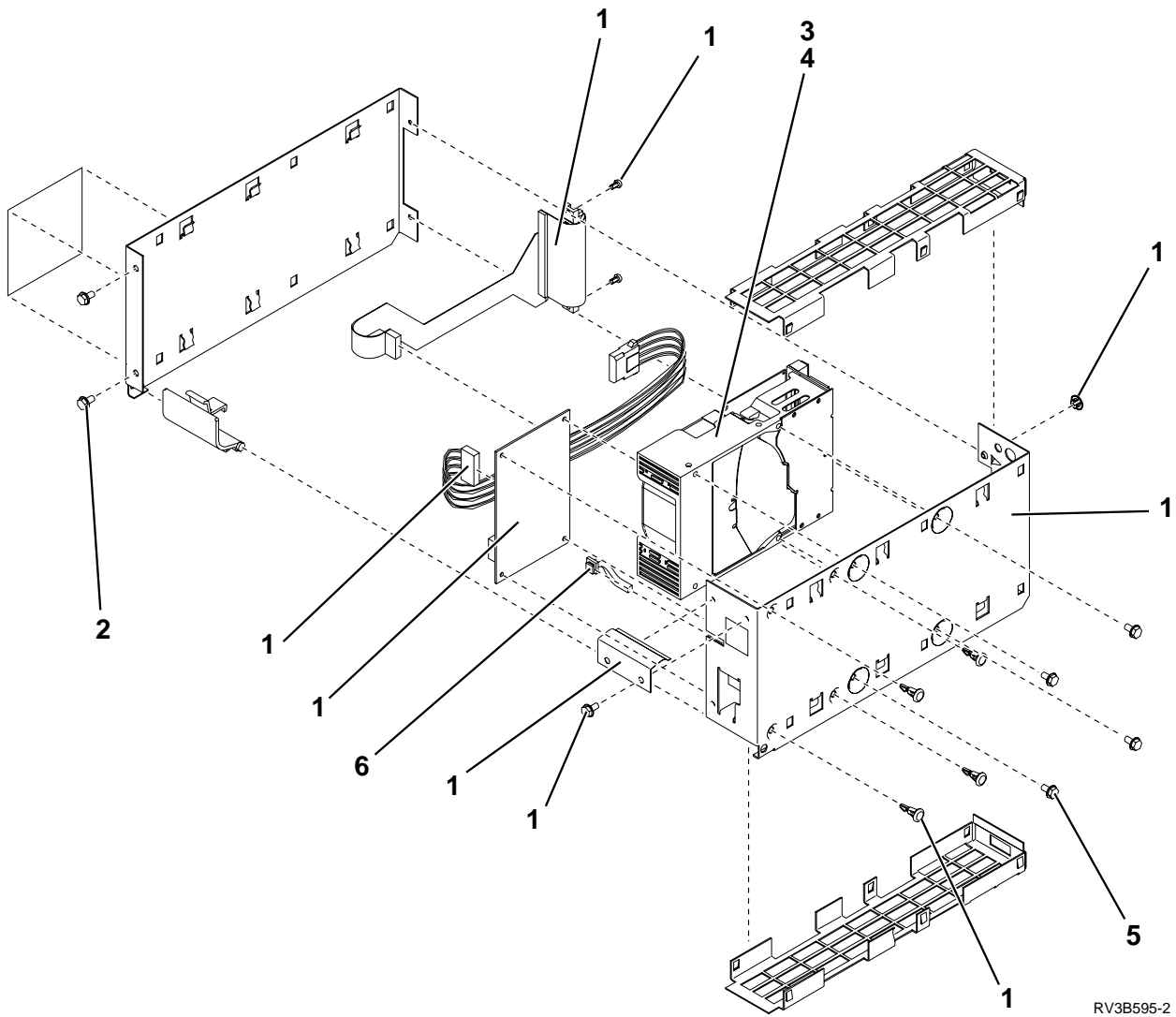
## Assembly 18: 9251 and 507x, 508x Expansion Tower(s) Control Panel



**Assembly 18: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>    |
|-----------------------|------------------------|--------------|-----------------------|
| 18-1                  | NONUM                  | NP           | Control Panel         |
| -                     | 17G0574                | 1            | • Circuit Card        |
| -2                    | 46G3570                | 1            | Control Panel Overlay |

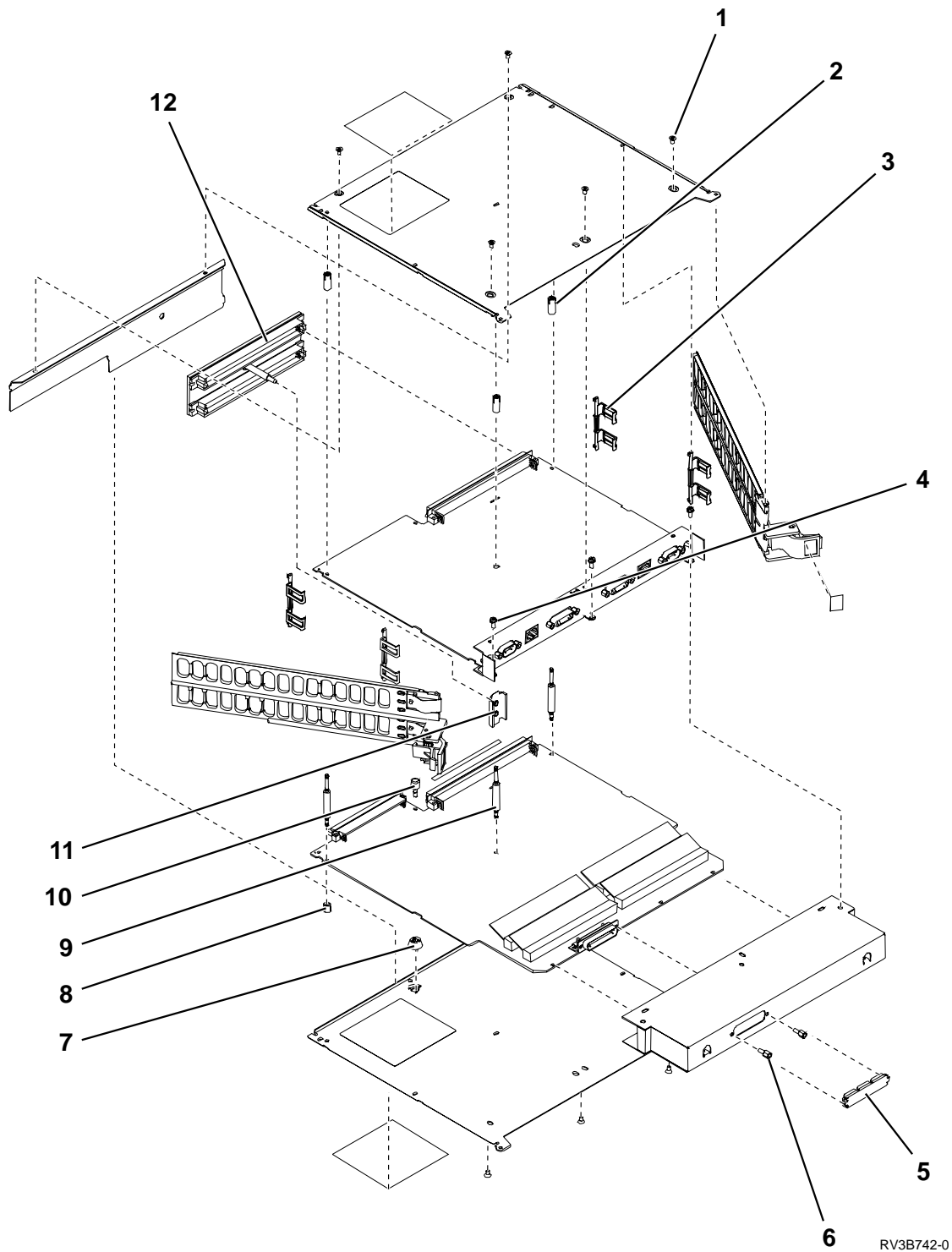
## Assembly 19: Disk Unit Assemblies



**Assembly 19: (continued)**

| Asm-<br>Index | Part<br>Number | Units | Description                                                                                                         |
|---------------|----------------|-------|---------------------------------------------------------------------------------------------------------------------|
| 19-           | NONUM          | NP    | Disk Unit Assembly                                                                                                  |
| -1            | NONUM          | AR    | • Tray Asm *                                                                                                        |
| -2            | 1621811        | 2     | • Screw, M4 (10mm) Thd-Form Hx Wshr Hd                                                                              |
| -3            | NONUM          | AR    | • Disk Drive *                                                                                                      |
| -4            | NONUM          | AR    | • • Disk Drive Logic Card *                                                                                         |
| -5            | 60X8709        | 4     | • • Screw (6mm)                                                                                                     |
| -6            | 46G3530        | 1     | • Light Pipe                                                                                                        |
|               |                |       | * See "Disk Unit Type, Model, and Part Number List" on page 387 for part numbers for Tray Assembly and Disk Drives. |

## Assembly 20: File Server Book Assembly Type 6506



**Assembly 20: (continued)**

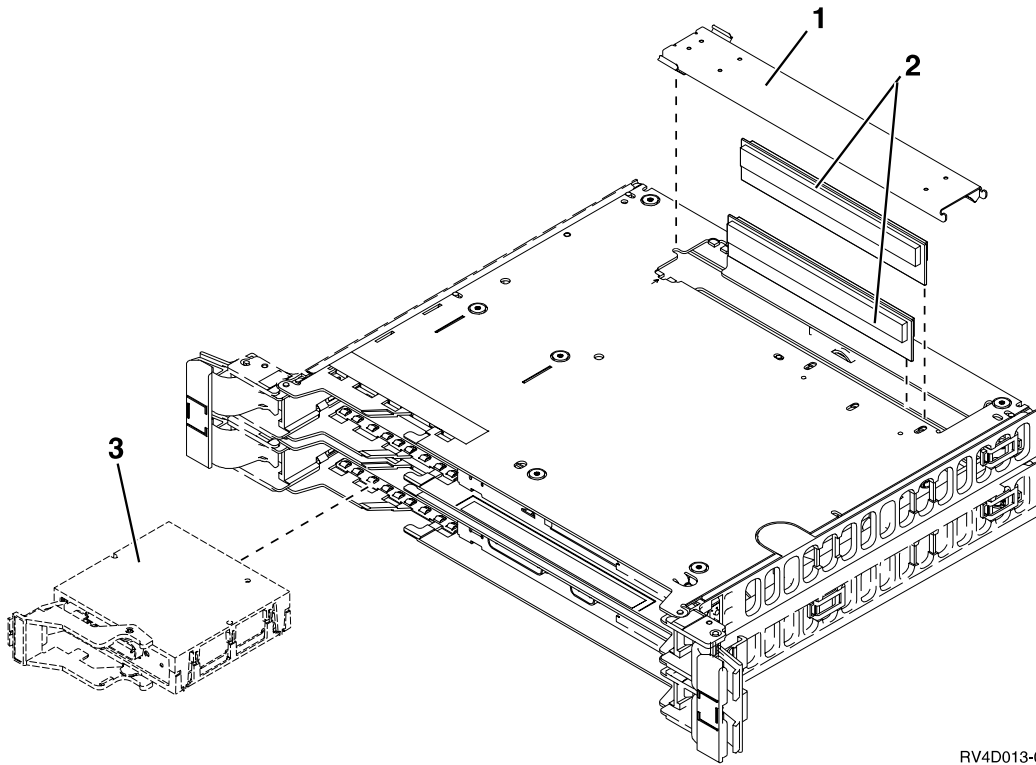
| Asm-<br>Index | Part<br>Number | Units | Description               |
|---------------|----------------|-------|---------------------------|
| 20-           | NONUM          | NP    | File Server Book Asm      |
| -1            | 21F9053        | 8     | • Screw (4.5mm)           |
| -2            | 86G7622        | 3     | • Standoff, Right         |
| -3            | 86G7619        | 4     | • Rail Retainer           |
| -4            | 21F4419        | 5     | • Screw (6mm)             |
| -5            | 17G2534        | 4     | • Cover, Test Port        |
| -6            | 72X6451        | 2     | • Standoff                |
| -7            | 86G7640        | 1     | • Button, Card Support    |
| -8            | 86G7621        | 3     | • Standoff, Left          |
| -9            | 86G7620        | 3     | • Standoff, Middle        |
| -10           | 86G7639        | 1     | • Bow Clip Guide          |
| -11           | 75G5716        | 1     | • Stiffener, Docking      |
| -12           | 86G7681        | 1     | • Crossover Connector Asm |

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**Other System Assemblies**

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## Assembly 21: File Server Book Assembly Type 6616



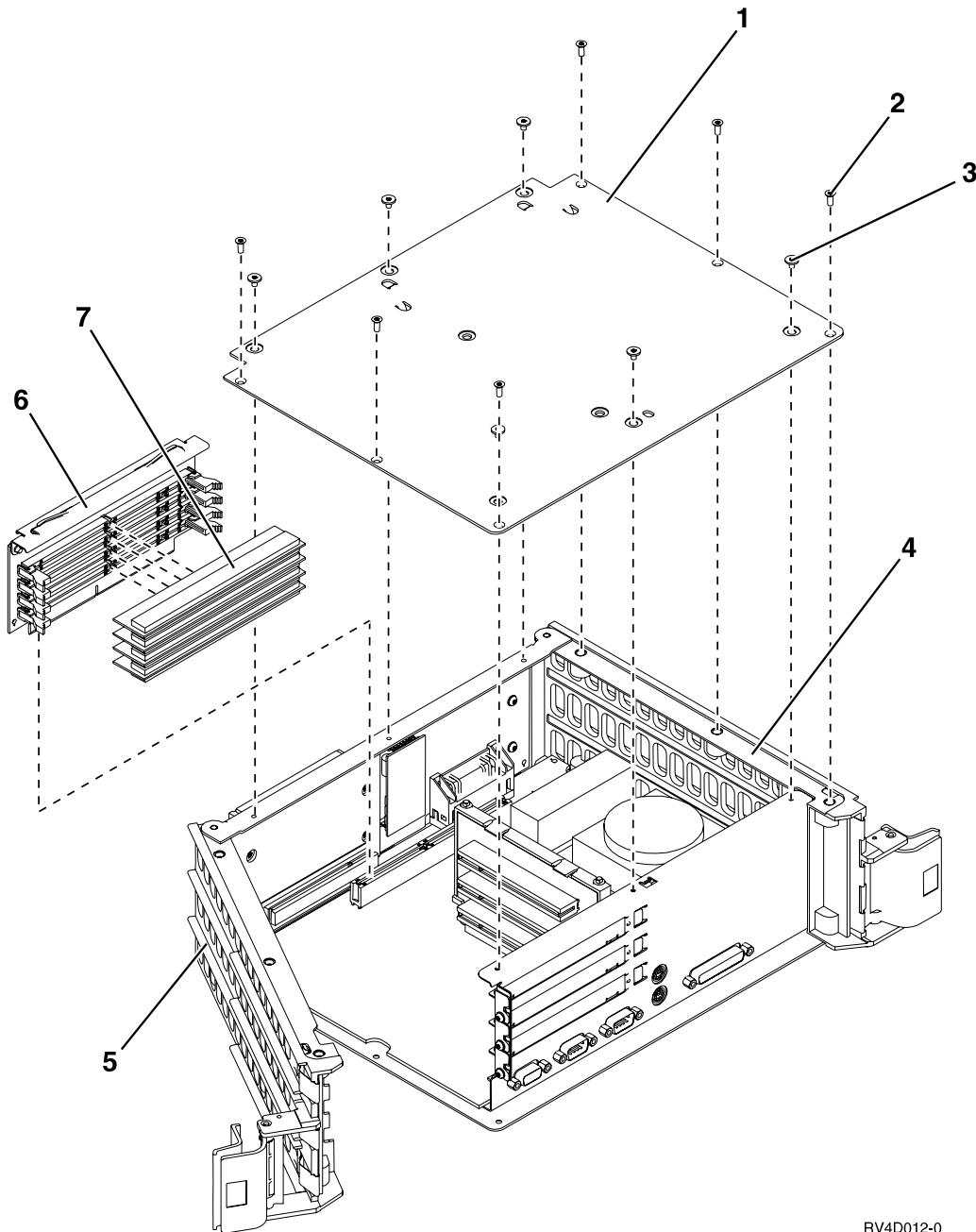
RV4D013-0



**Assembly 21: (continued)**

| Asm-<br>Index | Part<br>Number | Units | Description                                                                                           |
|---------------|----------------|-------|-------------------------------------------------------------------------------------------------------|
| 21-           | 91H0353        | 1     | File Server Book Asm                                                                                  |
| -1            | NONUM          | 1     | • Access cover                                                                                        |
| -2            | 44H7558        | 1     | • 32 MB Memory DIMM                                                                                   |
| -2            | 90H9075        | 1     | • 128 MB Memory DIMM                                                                                  |
| -3            | NONUM          | 1     | • Adapter Card *                                                                                      |
|               |                |       | * See "Type, Model, and Part Number List" on page 380 for part numbers for Adapter Card part numbers. |

## Assembly 22: File Server Book Assembly Type 6617



RV4D012-0

**Assembly 22: (continued)**

| Asm-<br>Index | Part<br>Number | Units | Description                   |
|---------------|----------------|-------|-------------------------------|
| 22-           | 97H7627        | 1     | File Server Book Asm          |
| -1            | NONUM          | 1     | • Access cover                |
| -2            | 56F0346        | 6     | • Cover screw (small, 3.35mm) |
| -3            | 21F9053        | 6     | • Cover screw (large, 4.5mm)  |
| -4            | 90H6464        | 1     | • Lower rail                  |
| -5            | 90H6462        | 1     | • Upper rail                  |
| -6            | NONUM          | 1     | • Riser for Memory DIMM       |
| -7            | 44H7558        | 4     | • 32 MB Memory DIMM           |
| -7            | 90H9075        | 4     | • 128 MB Memory DIMM          |
| -7            | 97H7725        | 4     | • 256 MB Memory DIMM          |

## Assembly 23: Internal Cable Assemblies

| Asm-<br>Index | Part<br>Number | Units | Description<br>System Unit Cables                                      |
|---------------|----------------|-------|------------------------------------------------------------------------|
| 23-           | 44H8029        | 1     | SIG1, IOA to DASD L01 - L05                                            |
| -             | 44H8031        | 1     | SIG2, IOA to DASD F01 - F05                                            |
| -             | 44H8031        | 1     | SIG3, IOA to DASD F11 - F15                                            |
| -             | 44H7835        | 1     | SIG4A, DASD L01 - L05 to tape/Optical D01 - D02                        |
| -             | 44H8036        | 1     | SIG4B, DASD L01 - L05 to tape/Optical D01 - D02                        |
| -             | 44H8017        | 1     | SIG5A, MFIOF to panel                                                  |
| -             | 44H8021        | 1     | SIG5B, MFIOF to panel                                                  |
| -             | 44H8035        | 1     | SIG6B, SIG7 to panel/processor/power supply                            |
| -             | 44H8022        | 1     | SIG6C, Panel to power supply                                           |
| -             | 44H8027        | 1     | SIG7, Internal UPS to SIG6B                                            |
| -             | 44H8027        | 1     | SIG7, Internal UPS to PWRBUS1x                                         |
| -             | 44H8339        | 1     | SIG8A, SPCN to System Expansion Frame — with cover interlock           |
| -             | 87G0785        | 1     | SIG8A, SPCN to System Expansion Frame — without cover interlock        |
| -             | 44H8020        | 1     | SIG8B, Jumper                                                          |
| -             | 44H8016        | 1     | SIG9A, Panel to MI/UPS signal/power supply                             |
| -             | 44H8338        | 1     | SIG9B, Panel to RPO/MI/UPS signal/SPCN/cover — with cover interlock    |
| -             | 87G0784        | 1     | SIG9B, Panel to RPO/MI/UPS signal/SPCN/cover — without cover interlock |
| -             | NONUM          | 1     | Interlock jumper                                                       |
| -             | 44H8026        | 1     | SIG10, Tape/Optical to Manufacturing connector                         |
| -             | 44H8038        | 1     | SIG11, BACKPL9 to BACKPL2                                              |
| -             | 44H8472        | 1     | SIG12, BACKPL8 to SIG6B                                                |
| -             | 44H8039        | 1     | SIG15, MX bus System/expansion                                         |
| -             | 44H8029        | 1     | SIG21, BACKPL6 to DASD F31 - F35 SPD board                             |
| -             | 44H8031        | 1     | SIG22, BACKPL6 to DASD F41 - F45 SPD board                             |
| -             | 44H8031        | 1     | SIG23, BACKPL6 to DASD F51 - F55 SPD board                             |
| -             | 44H8029        | 1     | SIG24A, BACKPL6 to tape D11 - D13 SPD board                            |
| -             | 44H8036        | 1     | SIG24B, F31 - F35 to tape D11 - D13, PCI board                         |
| -             | 44H8037        | 1     | SIG24C, F31 - F35 cable with terminator, PCI board (no tape backplane) |
| -             | 44H4541        | 1     | SIG25, Optical bus card to rear system connectors                      |
| -             | 44H8400        | 1     | PWRBUS1A                                                               |
| -             | 44H8401        | 1     | PWRBUS1B                                                               |
| -             | 44H7910        | 1     | PWRBUS1C                                                               |
| -             | 44H8272        | 1     | PWR1A, Tape D01, DASD L01 - L05, F01 - F05, AMD                        |
| -             | 44H7808        | 1     | PWR1B, Tape/Optical D01/D02, DASD L01 -L05, F01 - F05, AMD             |
| -             | 44H8337        | 1     | PWR1C, Tape/Optical, DASD L01 - L05, AMD                               |
| -             | 44H8424        | 1     | PWR2A, Processor                                                       |
| -             | 44H7817        | 1     | PWR2B, Processor                                                       |
| -             | 44H7809        | 1     | PWR3A, BACKPL2 System PCI Board                                        |
| -             | 44H7825        | 1     | PWR3B, BACKPL2 System PCI Board                                        |
| -             | 44H7811        | 1     | PWR8, DASD F01 - F05, F11 - F15                                        |
| -             | 44H8271        | 1     | PWR9, DASD L01 - L05 to optical D02                                    |
| -             | 44H8388        | 1     | PWR11, UPS to PS power line cord                                       |
| -             | 44H7812        | 1     | PWR21, Tape D11 - D13, DASD F31 - F35, AMD                             |
| -             | 44H7815        | 1     | PWR22, DASD F41 - F45, F51 - F55                                       |
| -             | 44H7814        | 1     | PWR23A, BACKPL6                                                        |
| -             | 44H7816        | 1     | PWR23B, BACKPL7 Expansion PCI Board                                    |
| -             | 44H7822        | 1     | PWR25, BACKPL6 (3 times) SPD Board                                     |
| -             | 44H7823        | 1     | PWR26, BACKPL7 (4x) Expansion PCI Board                                |
| -             | 21H6941        | 1     | PWR50, Card Enclosure to Storage Expansion Unit<br>(Power)             |

## Assembly 23: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description<br>System Unit Cables                                                                                                          |
|---------------|----------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------|
| –             | 21H6942        | 1     | PWR51, Card Enclosure to Storage Expansion Unit (Power)                                                                                    |
| –             | 21H6982        | 1     | PWR52, Card Enclosure to Storage Expansion Unit                                                                                            |
| –             | 97H7469        | 1     | PWR60 (FC 5065 or 5066 Expansion Tower)                                                                                                    |
| –             | 97H7483        | 1     | PWR61 thru PWR64, PWR66 thru PWR69, and PWR71 thru PWR74 (FC 5065 or 5066 Expansion Tower)                                                 |
| –             | 97H7544        | 1     | PWR65, PWR70 (FC 5065 or 5066 Expansion Tower)                                                                                             |
| –             | 97H7475        | 1     | PWR75 (FC 5065 or 5066 Expansion Tower)                                                                                                    |
| –             | 97H7474        | 1     | PWR76 (FC 5065 or 5066 Expansion Tower)                                                                                                    |
| –             | 36L8858        | 1     | PWR77 thru PWR 79 (FC 5065 or 5066 Expansion Tower) (Power)                                                                                |
| –             | 06H6890        | 1     | Converter, 68 pin to 50 pin, tape/Optical                                                                                                  |
|               |                |       | <b>External Tower and Rack Unit Cables</b>                                                                                                 |
| –             | 46G3521        | 1     | SIG30B, Expansion Unit Control Panel                                                                                                       |
| –             | 46G3524        | 1     | SIG41, Card Enclosure to Storage Expansion Unit (Bus 2, Drives 5-8)                                                                        |
| –             | 46G3523        | 1     | SIG42, Card Enclosure to Storage Expansion Unit (Bus 0, Drives 1-4)                                                                        |
| –             | 46G3787        | 1     | SIG43, Card Enclosure to Storage Expansion Unit (Bus 1, Drives 9-16)                                                                       |
| –             | 46G3527        | 1     | SIG44A, Card Enclosure to Storage Expansion Unit (SPCN 1)                                                                                  |
| –             | 46G3525        | 1     | SIG44B, Card Enclosure to Storage Expansion Unit (SPCN 2)                                                                                  |
| –             | 46G3816        | 1     | SIG45, Card Enclosure to Storage Expansion Unit (Model 530 Only)                                                                           |
| –             | 46G3525        | 1     | SIG50, Card Enclosure to Storage Expansion Unit (SPCN 2)                                                                                   |
| –             | 21H6981        | 1     | SIG51, Card Enclosure to Storage Expansion Unit (SCSI)                                                                                     |
| –             | 21H6983        | 1     | SIG52, Card Enclosure to Storage Expansion Unit (SPCN)                                                                                     |
| –             | 46G3523        | 1     | SIG53, Card Enclosure to Storage Expansion Unit (SCSI 0)                                                                                   |
| –             | 46G3524        | 1     | SIG54, Card Enclosure to Storage Expansion Unit (SCSI 2)                                                                                   |
| –             | 46G3787        | 1     | SIG55, Card Enclosure to Storage Expansion Unit                                                                                            |
| –             | 97H7481        | 1     | SIG60, PCI Assembly to DB3 board (FC 5065 or 5066 Expansion Tower)                                                                         |
| –             | 97H7484        | 1     | SIG61, PCI Assembly to DB2 board (FC 5065 or 5066 Expansion Tower)                                                                         |
| –             | 97H7484        | 1     | SIG62, PCI Assembly to DB1 board (FC 5065 or 5066 Expansion Tower)                                                                         |
| –             | 97H7473        | 1     | SIG63, DB3 to Control Panel NB1 (FC 5065 or 5066 Expansion Tower)                                                                          |
| –             | 24L0803        | 1     | SIG64, PCI Assembly to Power Dist. board (FC 5065 or 5066 Expansion Tower)<br>Includes part numbers 97H7476, 97H7477, and 97H7606 (SPCN 1) |
| –             | 46G3528        | 1     | PWR20A, Card Enclosure to Storage Expansion Unit (Power 1)                                                                                 |
| –             | 46G3524        | 1     | PWR20B, Card Enclosure to Storage (FC5052)                                                                                                 |

## Assembly 24: External Cable Assemblies

| Asm-<br>Index | Part<br>Number | Units | Description                                                             |
|---------------|----------------|-------|-------------------------------------------------------------------------|
| 24-           | 92G5195        | AR    | Antenna, wireless 9814, 6 m (20 feet)                                   |
| -             | 92G5196        | AR    | Antenna, wireless 9815, 15.6 m (50 feet)                                |
| -             | 21F5097        | AR    | ASCII, 6 m (20 feet) - 6-Port (9841)                                    |
| -             | 59X3829        | AR    | ASCII, 6 m (20 feet) - 12-Port (9825)                                   |
| -             | 21F4339        | AR    | ASCII, 6 m (20 feet)                                                    |
| -             | 21F4344        | AR    | ASCII, 12 m (40 feet)                                                   |
| -             | 21F9966        | AR    | ASCII, 6 m (20 feet) - PC to Modem                                      |
| -             | 21F9036        | AR    | ASCII, 6 m (20 feet) - PC to ASCII                                      |
| -             | 21F9036        | AR    | ASCII, 6 m (20 feet) - PC to ASCII                                      |
| -             | 21F4405        | AR    | ASCII, Surge Suppress                                                   |
| -             | 59X3833        | AR    | Async, 6 m (20 feet) - Modem                                            |
| -             | 21F2591        | AR    | Async, 6 m (20 feet) - Modem (Germany)                                  |
| -             | 93X0185        | AR    | Async, 6 m (20 feet) - Modem (Japan)                                    |
| -             | 85F8109        | AR    | Cryptographic, 6 m (20 feet) (9848)                                     |
| -             | 87G6236        | AR    | Fax, 10 m (32.8 feet) - US, Canada, Japan, Spain, Taiwan, Philippines   |
| -             | 75G3803        | AR    | Fax, 10 m (32.8 feet) - France                                          |
| -             | 75G3805        | AR    | Fax, 10 m (32.8 feet) - UK                                              |
| -             | 75G3804        | AR    | Fax, 10 m (32.8 feet) - Germany                                         |
| -             | 75G3802        | AR    | Fax, 10 m (32.8 feet) - Italy                                           |
| -             | 75G3806        | AR    | Fax, 10 m (32.8 feet) - Sweden                                          |
| -             | 75G3807        | AR    | Fax, 10 m (32.8 feet) - Australia                                       |
| -             | 21H4903        | AR    | Fax, 10 m (32.8 feet) - Belgium                                         |
| -             | 21H4902        | AR    | Fax, 10 m (32.8 feet) - Austria                                         |
| -             | 75G3812        | AR    | Fax, 10 m (32.8 feet) - Denmark                                         |
| -             | 75G3808        | AR    | Fax, 10 m (32.8 feet) - Hong Kong                                       |
| -             | 21H4905        | AR    | Fax, 10 m (32.8 feet) - Israel                                          |
| -             | 21H4904        | AR    | Fax, 10 m (32.8 feet) - S. Africa                                       |
| -             | 75G3809        | AR    | Fax, 10 m (32.8 feet) - Finland                                         |
| -             | 75G3810        | AR    | Fax, 10 m (32.8 feet) - Netherlands                                     |
| -             | 75G3811        | AR    | Fax, 10 m (32.8 feet) - Switzerland                                     |
| -             | 62X3427        | AR    | I/O Bus Extension, 4 m (12 feet)                                        |
| -             | 62X3428        | AR    | I/O Bus Extension, 8 m (26 feet)                                        |
| -             | 54G3385        | AR    | I/O Bus Exp., 7 m (23 feet) - Optical                                   |
| -             | 54G3386        | AR    | I/O Bus Exp., 13 m (42.6 feet) - Optical                                |
| -             | 54G3387        | AR    | I/O Bus Exp., 22 m (72.2 feet) - Optical                                |
| -             | 45H2433        | AR    | Keyboard/Mouse/Serial for Integrated Netfinity Server for AS/400 (2850) |
| -             | 44H8677        | AR    | Extension for keyboard or mouse 4.9 m (16 feet)                         |
| -             | 44H8676        | AR    | Video for Integrated Netfinity Server for AS/400 (2850) 4.6 m (15 feet) |
| -             | 6495253        | AR    | IPI-3, .6 m (2 feet) (9801)                                             |
| -             | 6495249        | AR    | IPI-3, .75 m (2.5 feet) (98xx)                                          |
| -             | 6495254        | AR    | IPI-3, 1.5 m (4.9 feet) (9802)                                          |
| -             | 6495250        | AR    | IPI-3, 2.5 m (8.2 feet) (9803)                                          |
| -             | 6495252        | AR    | IPI-3, 4 m (13.1 feet) (9804)                                           |
| -             | 6495251        | AR    | IPI-3, 6 m (19.7 feet) (9805)                                           |
| -             | 6495255        | AR    | IPI-3, 10 m (32.8 feet) (9806)                                          |
| -             | 6495256        | AR    | IPI-3, 20 m (65.6 feet) (9807)                                          |
| -             | 6495257        | AR    | IPI-3, 30 m (98.4 feet) (9808)                                          |
| -             | 6495258        | AR    | IPI-3, 40 m (131.2 feet) (9809)                                         |
| -             | 6495264        | AR    | IPI-3, 60 m (196.8 feet) (9810)                                         |
| -             | 6495275        | AR    | IPI-3, 30 m (98.4 feet) - Plenum (9811)                                 |
| -             | 6495276        | AR    | IPI-3, 40 m (131.2 feet) - Plenum (9812)                                |

## Assembly 24: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                                                              |
|---------------|----------------|-------|------------------------------------------------------------------------------------------|
| —             | 6495277        | AR    | IPI-3, 60 m (196.8 feet) - Plenum (9813)                                                 |
| —             | 74F1663        | AR    | ISDN (9844)                                                                              |
| —             | 21H5067        | AR    | ISDN - Canada (9844)                                                                     |
| —             | 75G3980        | AR    | ISDN - New Zealand (9844)                                                                |
| —             | 8191781        | AR    | ISDN - Switzerland (9844)                                                                |
| —             | 8191822        | AR    | ISDN - Euro NIA (9844)                                                                   |
| —             | 72X5643        | AR    | RS366 (AUTOCALL), 6 m (20 feet) (9840)                                                   |
| —             | 21F4415        | AR    | RS366 (AUTOCALL), 6 m (20 feet) - Japan (9840)                                           |
| —             | 21F4348        | AR    | RS422, 30 m (100 feet)                                                                   |
| —             | 6495268        | AR    | SCSI, 4 m (12 feet) (9826)                                                               |
| —             | 6495269        | AR    | SCSI, 12 m (40 feet) (9827)                                                              |
| —             | 21F4980        | AR    | SCSI, 20 m (60 feet) (9846)                                                              |
| —             | NONUM          | AR    | Tape signal cables.<br>(See "EXTSCSI" on page 408.)                                      |
| —             | 6339098        | AR    | Token-Ring LAN                                                                           |
| —             | 22F0097        | AR    | Twinaxial, 25 pin connector to two 9 pin connectors                                      |
| —             | 72X5645        | AR    | Twinaxial, 4 port, 3 m (10 feet)                                                         |
| —             | 21F5093        | AR    | Twinaxial, 6 m (20 feet) - 8-Port Molded                                                 |
| —             | 21F8075        | AR    | Twinaxial Extender, 9 m (30 feet) - 8-Port only                                          |
| —             | 4236482        | AR    | Twinaxial, 6 m (20 feet) - To First W/S Console                                          |
| —             | 94X3698        | AR    | Twinaxial connector shield                                                               |
| —             | 17G3991        | AR    | V.35 - 6 m (20 feet) (9879) for FC 2666                                                  |
| —             | 17G3992        | AR    | V.35 - 24.4 m (80 feet) (9880) for FC 2666                                               |
| —             | 74F1839        | AR    | V.35 - 24.4 m (80 feet) (9870) for FC 2666                                               |
| —             | 17G4000        | AR    | V.36/RS449 - 6 m (20 feet) (9882) for FC 2666                                            |
| —             | 17G4001        | AR    | V.36/RS449 - 24.4 m (80 feet) (9883) for FC 2666*                                        |
| —             | 17G4002        | AR    | V.36/RS449 - 45.7 m (150 feet) (9884) for FC 2666*<br>(* looped clocking modem required) |
| —             | 86G7691        | AR    | Ethernet Cable (9025) for the Integrated PC Server (IOP) Card                            |
| —             | 21F9345        | AR    | 2 Port Adapter Cable                                                                     |
| —             | 21F9043        | AR    | 2 m (6.5 feet) (9870) for FC 6500                                                        |
| —             | 21F9044        | AR    | 4 m (13 feet) (9871) for FC 6500                                                         |
| —             | 56F0382        | AR    | 6 m (20 feet) (9872) for FC 6500                                                         |
| —             | 21F9045        | AR    | 20 m (60 feet) (9873) for FC 6500                                                        |
| —             | 21F9046        | AR    | 1.5 m (4.9 feet) (98xx) for FC 6501                                                      |
| —             | 21F9047        | AR    | 4 m (13 feet) (9876) for FC 6501                                                         |
| —             | 56F0381        | AR    | 6 m (20 feet) (9877) for FC 6501                                                         |
| —             | 21F9048        | AR    | 24 m (78.8 feet) (9878) for FC 6501                                                      |
| —             | 62X3421        | AR    | 370 Tape IOP Adapter (Dual 50-Pin to Bus/Tag)                                            |
| —             | 6473029        | AR    | 370 Tape IOP Adapter (78-Pin to Bus/Tag)                                                 |
| —             | 6473011        | AR    | 370 Tape Internal Channel, 1.7 m (78-Pin to 78-Pin)                                      |
| —             | 6473014        | AR    | 370 Tape Internal Channel, 6.6 m (78-Pin to 78-Pin)                                      |
| —             | 6473016        | AR    | 370 Tape Internal Channel, 24.0 m (78-Pin to 78-Pin)                                     |
| —             | 6473026        | AR    | 370 Tape Device Adapter (Bus/Tag to 78-Pin, 3490E C Models Only)                         |
| —             | 46G3658        | AR    | Diskette, 2.4 m (8 feet) (9886)                                                          |
| —             | 46G3585        | AR    | Diskette and Twinaxial, 2.4 m (8 feet) (9887)                                            |
| —             | 87G6235        | AR    | SPCN, 2 Meter (6.5 feet) - Frame to Frame (9206)                                         |
| —             | 21F9469        | AR    | SPCN, 6 Meter (20 feet) - Frame to Frame (9219)                                          |
| —             | 21F9358        | AR    | SPCN, 15 Meter (50 feet) - Frame to Frame (9213)                                         |
| —             | 21F9359        | AR    | SPCN, 30 Meter (98 feet) - Frame to Frame (9214)                                         |
| —             | 21F9360        | AR    | SPCN, 60 Meter (197 feet) - Frame to Frame (9215)                                        |
| —             | 21F9412        | AR    | SPCN, 60 Meter (197 feet) - Optical (9211)                                               |
| —             | 21F9415        | AR    | SPCN, 100 Meter - Optical (9212)                                                         |

## Assembly 24: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                               |
|---------------|----------------|-------|-----------------------------------------------------------|
| —             | 86G7712        | 1     | External Battery Power Unit Cable (2.4 meters)            |
| —             | 75G5958        | 1     | Filter, RJ-45                                             |
| —             | 97H7385        | 1     | Filter, RJ-45 (2 feet — PCI)                              |
| —             | 21H0197        | 1     | SCSI, Nissay                                              |
|               |                |       | <b>WAN SPD Cables for FC 2609, 2612, 2613, 2614, 6153</b> |
| —             | 22F0149        | AR    | EIA232, 6 m (20 feet) (9022)                              |
| —             | 22F0151        | AR    | EIA232, 6 m (20 feet) - Japan (9022)                      |
| —             | 22F0150        | AR    | EIA232, 6 m (20 feet) - Germany (9022)                    |
| —             | 21F9348        | AR    | EIA232, 15.6 m (50 feet) (9836)                           |
| —             | 21F9349        | AR    | EIA232, 15.6 m (50 feet) - Japan (9836)                   |
| —             | 21F9353        | AR    | EIA232, 15.6 m (50 feet) - Germany (9836)                 |
| —             | 74F1837        | AR    | EIA232, 24.4 meter (80 feet)                              |
| —             | 85F9397        | AR    | EIA232, 24.4 meter (80 feet) — Germany                    |
| —             | 85F9396        | AR    | EIA232, 24.4 meter (80 feet) — Japan                      |
| —             | 22F0152        | AR    | V.24 6 m (20 feet) (9023)                                 |
| —             | 22F0154        | AR    | V.24 6 m (20 feet) - Japan (9023)                         |
| —             | 22F0153        | AR    | V.24 6 m (20 feet) - Germany (9023)                       |
| —             | 21F9350        | AR    | V.24 15.6 m (50 feet) (9835)                              |
| —             | 21F9351        | AR    | V.24 15.6 m (50 feet) - Japan (9835)                      |
| —             | 21F9352        | AR    | V.24 15.6 m (50 feet) - Germany (9835)                    |
| —             | 1749352        | AR    | V.35, French Stub                                         |
| —             | 21F9357        | AR    | V.35 - 15.6 m (50 feet) (9838)                            |
| —             | 72X5641        | AR    | V.35 - 6 m (20 feet) (9020)                               |
| —             | 21F9356        | AR    | X.21 - 15.6 m (50 feet) (9839)                            |
| —             | 72X5640        | AR    | X.21 - 6 m (20 feet) (9021)                               |
| —             | 17G3987        | AR    | X.21 - 6 m (20 feet) (9885) for FC 2666                   |
|               |                |       | <b>WAN SPD Cables for FC 2699</b>                         |
| —             | 21H3764        | AR    | EIA232/V.24 cable 6.1 meter (20 feet)                     |
| —             | 21H3765        | AR    | EIA232/V.24 cable 6.1 meter (20 feet) - Germany           |
| —             | 21H3766        | AR    | EIA232/V.24 cable 6.1 meter (20 feet) - Japan             |
| —             | 21H3767        | AR    | EIA232/V.24 cable 15.2 meter (50 feet)                    |
| —             | 21H3768        | AR    | EIA232/V.24 cable 15.2 meter (50 feet) - Germany          |
| —             | 21H3769        | AR    | EIA232/V.24 cable 15.2 meter (50 feet) - Japan            |
| —             | 97H7389        | AR    | EIA232/V.24 cable 24.4 meter (80 feet)                    |
| —             | 97H7390        | AR    | EIA232/V.24 cable 24.4 meter (80 feet) - Germany          |
| —             | 97H7391        | AR    | EIA232/V.24 cable 24.4 meter (80 feet) - Japan            |
| —             | 21H3787        | AR    | V.36 cable 6.1 meter (20 feet)                            |
| —             | 21H3788        | AR    | V.36 cable 15.2 meter (50 feet)                           |
| —             | 21H3789        | AR    | V.36 cable 45.7 meter (150 feet)                          |
| —             | 21H3792        | AR    | V.35 cable 6.1 meter (20 feet)                            |
| —             | 21H3785        | AR    | V.35 cable 15.2 meter (50 feet)                           |
| —             | 21H3786        | AR    | V.35 cable 24.4 meter (80 feet)                           |
| —             | 21H3782        | AR    | X.21 cable 6.1 meter (20 feet)                            |
| —             | 21H3783        | AR    | X.21 cable 15.2 meter (50 feet)                           |
|               |                |       | <b>WAN PCI Cables</b>                                     |
| —             | 44H7480        | AR    | EIA232/V.24 cable 6.1 meter (20 feet)                     |
| —             | 44H7482        | AR    | EIA232/V.24 cable 6.1 meter (20 feet) - Germany           |
| —             | 44H7484        | AR    | EIA232/V.24 cable 6.1 meter (20 feet) - Japan             |
| —             | 44H7481        | AR    | EIA232/V.24 cable 15.2 meter (50 feet)                    |
| —             | 44H7483        | AR    | EIA232/V.24 cable 15.2 meter (50 feet) - Germany          |
| —             | 44H7485        | AR    | EIA232/V.24 cable 15.2 meter (50 feet) - Japan            |
| —             | 97H7386        | AR    | EIA232/V.24 cable 24.4 meter (80 feet)                    |
| —             | 97H7387        | AR    | EIA232/V.24 cable 24.4 meter (80 feet) — Germany          |



**Assembly 24: (continued)**

| <b>Asm-<br/>Index</b> | <b>Part<br/>Number</b> | <b>Units</b> | <b>Description</b>                                           |
|-----------------------|------------------------|--------------|--------------------------------------------------------------|
| —                     | 97H7388                | AR           | EIA232/V.24 cable 24.4 meter (80 feet) — Japan               |
| —                     | 44H7498                | AR           | V.36 cable 6.1 meter (20 feet)                               |
| —                     | 44H7499                | AR           | V.36 cable 15.2 meter (50 feet)                              |
| —                     | 44H7500                | AR           | V.36 cable 45.7 meter (150 feet)                             |
| —                     | 44H7495                | AR           | V.35 cable 6.1 meter (20 feet)                               |
| —                     | 44H7496                | AR           | V.35 cable 15.2 meter (50 feet)                              |
| —                     | 44H7497                | AR           | V.35 cable 45.7 meter (150 feet)                             |
| —                     | 44H7501                | AR           | X.21 cable 6.1 meter (20 feet)                               |
| —                     | 44H7502                | AR           | X.21 cable 15.2 meter (50 feet)                              |
| —                     | 44H7504                | AR           | Communications Console cable 6.1 meter (20 feet)             |
| —                     | 97H7557                | AR           | Operations Console cable (36 pin) for features 2721 and 2745 |
| —                     | 97H7591                | AR           | Remote Control Panel cable (SAMI)                            |

## Assembly 25: Miscellaneous

| Asm-<br>Index | Part<br>Number | Units | Description                                                  |
|---------------|----------------|-------|--------------------------------------------------------------|
| 25-           | 16G5609        | AR    | Optical bus terminator                                       |
| -             | 16G8095        | AR    | Control Panel Battery                                        |
| -             | 21F9354        | 1     | AA Card Wrap (T-pack)                                        |
| -             | 72X6365        | 1     | BB Card Wrap (universal)                                     |
| -             | 74F1846        | 1     | CC Card Wrap (Enet)                                          |
| -             | 17G4124        | 1     | DD Card Wrap (SDDI)                                          |
| -             | 17G4138        | 1     | EE Card Wrap (Fax)                                           |
| -             | 17G4009        | 1     | FF Card Wrap (High Speed)                                    |
| -             | 92F9003        | 1     | GG Card Wrap (FDDI)                                          |
| -             | 23F5634        | 1     | HH Card Wrap (Crypto)                                        |
| -             | 6165899        | 1     | II Card Wrap (TR lan)                                        |
| -             | 86G7674        | 1     | JJ Card Wrap (for FC 2723, 2724, 6149, 6181, 6510, and 6520) |
| -             | 21H6871        | 1     | KK Card Wrap (WS)                                            |
| -             | 21H3548        | 1     | LL Card Wrap (ATM)                                           |
| -             | 21H3547        | 1     | MM Card Wrap (WS)                                            |
| -             | 42H0540        | 1     | NN Card Wrap (ATM)                                           |
| -             | 45H2364        | 1     | OO Card Wrap (WS PCI)                                        |
| -             | 21H3760        | 1     | PP Card Wrap (WAN SPD)                                       |
| -             | 44H7479        | 1     | QQ Card Wrap (WAN PCI)                                       |
| -             | 90H6024        | 1     | RR Card Wrap (PAR PORT)                                      |
| -             | 21H4811        | 1     | SS RJ45 Card Wrap (for FC 2810, 2838)                        |
| -             | 97H7749        | 1     | UU Card Wrap (ISDN) FC 2750                                  |
| -             | 97H7745        | 1     | VV Card Wrap (ISDN) FC 2751                                  |
| -             | 97H7754        | 1     | WW Card Wrap FC 2761                                         |
| -             | 16G5609        | 1     | YY Card Wrap FC 2743                                         |
| -             | 75G2725        | 1     | Optical BUS Card Wrap/Terminator                             |
| -             | 59X3832        | 1     | ASCII Cable Wrap                                             |
| -             | 56F0307        | 1     | ISDN Cable Wrap                                              |
| -             | 81G3185        | 1     | Optical Cable Wrap                                           |
| -             | 97H7526        | 1     | Optical Cable Wrap (When no ext. optical is used)            |
| -             | 17G2641        | 1     | EIA232 Cable Wrap                                            |
| -             | 17G2642        | 1     | ASYNCR Cable Wrap                                            |
| -             | 17G2643        | 1     | RS366 Cable Wrap                                             |
| -             | 17G2644        | 1     | RS449 Cable Wrap                                             |
| -             | 17G2645        | 1     | V24 Cable Wrap                                               |
| -             | 17G2646        | 1     | X21 Cable Wrap                                               |
| -             | 17G4103        | 1     | X21HS Cable Wrap                                             |
| -             | 17G2647        | 1     | V35HS Cable Wrap                                             |
| -             | 17G2648        | 1     | V35 Cable Wrap                                               |
| -             | 21H3761        | 1     | V.24AD Cable Wrap                                            |
| -             | 21H3762        | 1     | RS232AD Cable Wrap                                           |
| -             | 21H3763        | 1     | V35AD Cable Wrap                                             |
| -             | 21H3790        | 1     | RS449AD Cable Wrap                                           |
| -             | 21H3791        | 1     | X21AD Cable Wrap                                             |
| -             | 59X4262        | 1     | Twinax port tester (93X2040)                                 |
| -             | 21H6806        | AR    | Airflow Card Asm, Processor (263B)                           |
| -             | 21H6950        | AR    | Airflow Card Asm, Memory (263C)                              |
| -             | 46G3556        | AR    | Airflow Card Asm, Full (264A)                                |
| -             | 73F9384        | AR    | Airflow Card Asm, 1/2                                        |
| -             | 75G3907        | AR    | Airflow Card Asm, 1/3                                        |
| -             | 92G5190        | AR    | Antenna, Yagi directional                                    |

## Assembly 25: (continued)

| Asm-<br>Index | Part<br>Number | Units | Description                                                                           |
|---------------|----------------|-------|---------------------------------------------------------------------------------------|
| —             | 92G5195        | AR    | Antenna cable - 20ft. wireless                                                        |
| —             | 92G5196        | AR    | Antenna cable - 50ft. wireless                                                        |
| —             | 92G5194        | AR    | Antenna, directional 90 degrees                                                       |
| —             | 92G5192        | AR    | Antenna, omni-directional, 360 degrees                                                |
| —             | 41F9970        | AR    | Cryptographic key pad, full function                                                  |
| —             | 82F5486        | AR    | Cryptographic key pad, limited function                                               |
| —             | 92G5193        | AR    | 2663 Hemispherical                                                                    |
| —             | 92G5197        | AR    | 2663 485 Balun with line terminator                                                   |
| —             | 71G9988        | AR    | Fax Coupler - US, Canada                                                              |
| —             | 71G9991        | AR    | Fax Coupler - France                                                                  |
| —             | 71G9993        | AR    | Fax Coupler - UK                                                                      |
| —             | 71G9992        | AR    | Fax Coupler - Germany                                                                 |
| —             | 71G9989        | AR    | Fax Coupler - Japan                                                                   |
| —             | 71G9990        | AR    | Fax Coupler - Italy                                                                   |
| —             | 72G0002        | AR    | Fax Coupler - Spain                                                                   |
| —             | 71G9994        | AR    | Fax Coupler - Sweden                                                                  |
| —             | 71G9995        | AR    | Fax Coupler - Australia                                                               |
| —             | 60F0707        | AR    | Fax Coupler - Denmark                                                                 |
| —             | 71G9996        | AR    | Fax Coupler - Hong Kong                                                               |
| —             | 71G9997        | AR    | Fax Coupler - Taiwan                                                                  |
| —             | 71G9998        | AR    | Fax Coupler - Finland                                                                 |
| —             | 71G9999        | AR    | Fax Coupler - Netherlands                                                             |
| —             | 72G0000        | AR    | Fax Coupler - Switzerland                                                             |
| —             | 72G0001        | AR    | Fax Coupler - Philippines                                                             |
| —             |                |       | 1/4-inch cartridge tapes                                                              |
| —             | 46G0298        | AR    | Adapter, 25 pin to 9 pin EIA232                                                       |
| —             | 82F0421        | AR    | 2620 keypad reader                                                                    |
| —             | 82F0422        | AR    | 2628 keypad reader                                                                    |
| —             | 16G8467        | AR    | Cleaning Cartridge, 8mm abrasive                                                      |
| —             | 16G8572        | AR    | Cleaning Cartridge (QIC-120 and QIC-525)                                              |
| —             | 46G2674        | AR    | Cleaning Cartridge (QIC-1000, QIC-2GB, QIC-2GB (DC), QIC-4GB, QIC-5010) all countries |
| —             | 21F8586        | AR    | CE Test Tape, FC 6378, 6342, 6347, 6367 (QIC-120)                                     |
| —             | 92X7518        | AR    | CE Test tape, FC 9346, 6341, 6346, 6366 (QIC-525)                                     |
| —             | 21F8734        | AR    | CE Test Tape, FC 6379, 6343, 6348, 6368 (QIC-1000)                                    |
| —             | 81F8902        | AR    | CE Test Tape, 1.25L (QIC-1000)                                                        |
| —             | 46G2660        | AR    | CE Test Tape, FC 7208 (8mm, off-line)                                                 |
| —             | 21F8577        | AR    | CE Test Tape, FC 6390, 7208 (8mm, on-line)                                            |
| —             | 16G8438        | AR    | CE Test Tape, FC 6381 (QIC-2GB)                                                       |
| —             | 87G1643        | AR    | CE Test Tape, FC 6335 (QIC-Mini test Tape)                                            |
| —             | 59H2677        | AR    | CE Test Tape, FC 7208- model 342                                                      |
| —             | 59H3661        | AR    | CE Test Tape, FC 6382, 7207-122 (QIC-4GB)                                             |
| —             | 87G1626        | AR    | CE Test Tape, FC 6383, 6385 (MLR1)                                                    |
| —             | 59H4127        | AR    | CE Test Tape, FC 6386 (MLR3)                                                          |
| —             | 87G1626        | AR    | CE Test Tape (QIC5010, MLR1)                                                          |

## Power Cord Part Numbers and Receptacle Descriptions

Table 44. AS/400 System Power Cords and Receptacles





| <b>B</b> - FC 5070, 5072, 5080, 5082<br><b>D</b> <sup>1</sup> - Model 620, 720, S20<br><b>E</b> <sup>1</sup> - Model 600, 610<br><b>F</b> - Models 640, 650, 730, 740, S30, S40, SB1<br><b>G</b> - Models 170, 250<br><b>H</b> - FC 5081, 5083, 5071, 5073, 9251 |                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Plug                                                                                                                                                                                                                                                             | Receptacle                                                                                                                                                          | Countries                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Type 4</b><br><br>125V<br>15A                                                                                                                                                |                                                                                    | <i>National Electrical Manufacturers Association</i><br><br><b>NEMA WD-1: 5-15P</b><br><br>Antigua, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Curacao, Dominican Republic, El Salvador, Ecuador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Liberia, Mexico, Montserrat, Netherlands Antilles, Nicaragua, Panama, Philippines, St. Kitts, Taiwan, Tortola (BVI), Trinidad/Tobago, United States, Venezuela         |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>86G7648 (6 ft) <b>B</b><br>76H4865 (6 ft) <b>E</b><br>87G3880 (14 ft) <b>B</b><br>76H4866 (14 ft) <b>E</b><br>75G2695 (9 ft) <b>G</b>         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Type 5</b><br><br>250V<br>15A                                                                                                                                              |                                                                                  | <i>National Electrical Manufacturers Association</i><br><br><b>NEMA WD-1: 6-15P</b><br><br>Antigua, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Canada, Cayman Islands, Costa Rica, Curacao, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Montserrat, Netherlands Antilles, Nevis, Nicaragua, Panama, Philippines, St. Kitts, Taiwan, Thailand, Tortola (BVI), Trinidad/Tobago, Turks and Caicos Islands, United States, Venezuela |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>1838576 (6 ft) <b>B H</b><br>14F1547 (6 ft) <b>D E</b><br>1838573 (14 ft) <b>B H</b><br>14F1548 (14 ft) <b>D E</b><br>1838574 (9 ft) <b>G</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

Table 44. AS/400 System Power Cords and Receptacles (continued)





| <b>B</b> - FC 5070, 5072, 5080, 5082<br><b>D</b> <sup>1</sup> - Model 620, 720, S20<br><b>E</b> <sup>1</sup> - Model 600, 610<br><b>F</b> - Models 640, 650, 730, 740, S30, S40, SB1<br><b>G</b> - Models 170, 250<br><b>H</b> - FC 5081, 5083, 5071, 5073, 9251 |                                                                                                                                  |                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Plug                                                                                                                                                                                                                                                             | Receptacle                                                                                                                       | Countries                                                                                                                                                                                                                |
| <b>Type 6</b><br><br>250V<br>10A                                                                                                                                                |                                                 | <i>International Electrotechnical Commission</i><br><br><b>IEC 83-A5</b><br><br>Argentina, Australia, Brazil, Cape Verde Islands, Fiji Islands, New Zealand, Papua New Guinea, People's Republic of China, Western Samoa |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>13F9939 (6 ft) <b>B H</b><br>13F9940 (9 ft) <b>G</b><br>13F9941 (14 ft) <b>B H</b>                         |                                                                                                                                                                                                                          |
| <b>Type 7</b><br><br>125V<br>15A<br>Locking                                                                                                                                   |                                               | <i>National Electrical Manufacturers Association</i><br><br><b>NEMA WD-1: L5-15P</b><br><br>Canada, United States                                                                                                        |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>86G7874 (6 ft) <b>B</b><br>76H4868 (6 ft) <b>E</b><br>87G3881 (14 ft) <b>B</b><br>76H4869 (14 ft) <b>E</b> |                                                                                                                                                                                                                          |

Table 44. AS/400 System Power Cords and Receptacles (continued)





| <b>B</b> - FC 5070, 5072, 5080, 5082<br><b>D</b> <sup>1</sup> - Model 620, 720, S20<br><b>E</b> <sup>1</sup> - Model 600, 610<br><b>F</b> - Models 640, 650, 730, 740, S30, S40, SB1<br><b>G</b> - Models 170, 250<br><b>H</b> - FC 5081, 5083, 5071, 5073, 9251 |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Plug                                                                                                                                                                                                                                                             | Receptacle                                                                                                                                                                                                                  | Countries                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Type 10</b><br><br>250V<br>15A<br>Locking                                                                                                                                    |                                                                                                                                            | <i>National Electrical Manufacturers Association</i><br><br><b>NEMA WD-5: L6-15P</b><br><br>Canada, Columbia, Japan, Mexico, United States<br><b>Note:</b> Plug Type 10 supports models <b>15x</b> , <b>17x</b> , <b>P0x</b> , <b>2xx</b> , <b>4xx</b> , and <b>9910-080</b> in Colombia and Mexico. Plug Type 10 is <b>not available in Canada, Japan, and the United States</b> for these models. |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>14F1549 (6 ft) <b>D</b> <b>E</b><br>14F1550 (14 ft) <b>D</b> <b>E</b><br>86G7878 (6 ft) <b>B</b> <b>H</b><br>86G7879 (14 ft) <b>B</b><br><b>H</b> [ outside Canada<br>and United States <b>G</b><br>] |                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Type 11</b><br><br>250V<br>20A                                                                                                                                             |                                                                                                                                          | <b>NEMA WD-5: L6-20P</b><br><br>Argentina, Cape Verde Islands                                                                                                                                                                                                                                                                                                                                       |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>14F1553 (14 ft) <b>D</b> <b>E</b>                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                     |

Table 44. AS/400 System Power Cords and Receptacles (continued)



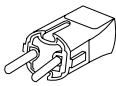

| <b>B</b> - FC 5070, 5072, 5080, 5082<br><b>D</b> <sup>1</sup> - Model 620, 720, S20<br><b>E</b> <sup>1</sup> - Model 600, 610<br><b>F</b> - Models 640, 650, 730, 740, S30, S40, SB1<br><b>G</b> - Models 170, 250<br><b>H</b> - FC 5081, 5083, 5071, 5073, 9251 |                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Plug                                                                                                                                                                                                                                                             | Receptacle                                                                                                                                                  | Countries                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Type 12</b><br><br>250V<br>30A<br>Locking                                                                                                                                    |                                                                            | <i>National Electrical Manufacturers Association</i><br><b>NEMA WD-5: L6-30P</b><br>Afghanistan, Anguilla, Antigua, Argentina, Aruba, Bahamas, Bangladesh, Barbados, Belize, Bermuda, Bolivia, Bonaire, Brunei, Caicos Islands, Chile, Canada, Cape Verde Islands, Cayman Islands, Colombia, Costa Rica, Curacao, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Hong Kong, Indonesia, Japan, Jamaica, Malaysia, Mexico, Montserrat, Myanmar, Netherlands Antilles, Nicaragua, Panama, Paraguay, Peoples Republic of China, Peru, Philippines, St. Kitts & Nevis, Sri Lanka, St. Martin, Suriname, Taiwan, Thailand, Trinidad/Tobago, Tortola (BVI), Turks Island, United States, Uruguay, Venezuela                                                                                                                                                                                                                                                                                                                                               |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>11F0114 (6 ft) <b>F</b><br>11F0113 (14 ft) <b>F</b>                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Type 18</b><br><br>250V<br>16A                                                                                                                                             |                                                                          | <i>International Rule for the Approval of Electrical Equipment</i><br><b>CEE 7 VII</b><br>Afghanistan, Albania, Algeria, Andorra, Angola, Armenia, Austria, Belarus, Belgium, Benin, Bosnia, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chad, Congo, Croatia, Czech Republic, Djibouti, Egypt, Equatorial Guinea, Estonia, Finland, France, French Polynesia, French Guyana, Gabon, Georgia, Germany, Greece, Guadeloupe, Guinea, Guinea-Bissau, Hungary, Iceland, Indonesia, Iran, Ivory Coast, Kazakhstan, Kirghizia, Laos, Latvia, Lebanon, Liberia, Lithuania, Luxembourg, Macau, Macedonia, Mali, Martinique, Mauritania, Moldavia, Monaco, Morocco, Mozambique, Netherlands, New Caledonia, Niger, North Korea, Norway, Paraguay, Peru, Poland, Portugal, Principe, Reunion, Romania, Russia, Rwanda, Sao Thome Island, Saudi Arabia, Senegal, Serbia, Slovenia, Slovakia, South Korea, Spain, Sudan, Suriname, Swaziland, Sweden, Syria, Tahiti, Togo, Tunisia, Turkey, Ukraine, Uruguay, Uzbekistan, Vietnam, Zaire, Zimbabwe |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>13F9978 (6 ft) <b>B</b> <b>H</b><br>13F9979 (9 ft) <b>G</b><br>13F9980 (14 ft) <b>B</b> <b>H</b><br>14F1554 (14 ft) <b>D</b> <b>E</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

Table 44. AS/400 System Power Cords and Receptacles (continued)





| <b>B</b> - FC 5070, 5072, 5080, 5082<br><b>D</b> <sup>1</sup> - Model 620, 720, S20<br><b>E</b> <sup>1</sup> - Model 600, 610<br><b>F</b> - Models 640, 650, 730, 740, S30, S40, SB1<br><b>G</b> - Models 170, 250<br><b>H</b> - FC 5081, 5083, 5071, 5073, 9251 |                                                                                                                                        |                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Plug                                                                                                                                                                                                                                                             | Receptacle                                                                                                                             | Countries                                                                                                                    |
| <b>Type 19</b><br><br>250V<br>10A                                                                                                                                               |                                                       | <i>International Rule for the Approval of Electrical Equipment</i><br><b>CEE</b><br>Denmark                                  |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>13F9996 (6 ft) <b>B H</b><br>13F9997 (9 ft) <b>G</b><br>13F9998 (14 ft) <b>B H</b>                               |                                                                                                                              |
| <b>Type 22</b><br><br>250V<br>16A                                                                                                                                             |                                                     | <i>South African Bureau of Standards</i><br><b>SABS 164 BS 546</b><br>Bangladesh, Myanmar, Pakistan, South Africa, Sri Lanka |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>14F0014 (6 ft) <b>B H</b><br>14F0015 (9 ft) <b>G</b><br>14F0016 (14 ft) <b>B H</b><br>14F1557 (14 ft) <b>D E</b> |                                                                                                                              |



Table 44. AS/400 System Power Cords and Receptacles (continued)





| <b>B</b> - FC 5070, 5072, 5080, 5082<br><b>D</b> <sup>1</sup> - Model 620, 720, S20<br><b>E</b> <sup>1</sup> - Model 600, 610<br><b>F</b> - Models 640, 650, 730, 740, S30, S40, SB1<br><b>G</b> - Models 170, 250<br><b>H</b> - FC 5081, 5083, 5071, 5073, 9251 |                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Plug                                                                                                                                                                                                                                                             | Receptacle                                                                                                                             | Countries                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Type 23</b><br><br>250V<br>13A                                                                                                                                               |                                                       | <i>British Standards Institution</i><br><b>BS 1363A</b><br>Abu Dhabi, Antigua, Bahrain, Botswana, Brunei, Cyprus, Dominica, Gambia, Ghana, Grenada, Grenadines, Guyana, Hong Kong, India, Iraq, Ireland, Jordan, Kenya, Kuwait, Lesotho, Malawi, Malaysia, Malta, Namibia, Nepal, Nigeria, Oman, Qatar, Sierra Leone, Singapore, St. Lucia, Tanzania, Uganda, United Arab Emirates, United Kingdom, Yemen, Zambia |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>14F0032 (6 ft) <b>B H</b><br>14F0033 (9 ft) <b>G</b><br>14F0034 (14 ft) <b>B H</b><br>12J5988 (14 ft) <b>D E</b> |                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Type 24</b><br><br>250V<br>10A                                                                                                                                             |                                                     | <i>Schweizerischer Elektrotechnischer Verein</i><br><b>SEV 24507</b><br>Liechtenstein, Switzerland                                                                                                                                                                                                                                                                                                                |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>14F0050 (6 ft) <b>B H</b><br>14F0051 (9 ft) <b>G</b><br>14F0052 (14 ft) <b>B H</b>                               |                                                                                                                                                                                                                                                                                                                                                                                                                   |

Table 44. AS/400 System Power Cords and Receptacles (continued)





| <b>B</b> - FC 5070, 5072, 5080, 5082<br><b>D</b> <sup>1</sup> - Model 620, 720, S20<br><b>E</b> <sup>1</sup> - Model 600, 610<br><b>F</b> - Models 640, 650, 730, 740, S30, S40, SB1<br><b>G</b> - Models 170, 250<br><b>H</b> - FC 5081, 5083, 5071, 5073, 9251 |                                                                                                                                        |                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Plug                                                                                                                                                                                                                                                             | Receptacle                                                                                                                             | Countries                                                                                              |
| <b>Type 25</b><br><br>250V<br>10A/16A                                                                                                                                           |                                                       | <i>Comitato Electtrotecnico Italiano</i><br><b>CEI 23-16</b><br>Chile, Ethiopia, Italy, Libya, Somalia |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>14F0068 (6 ft) <b>B H</b><br>14F0069 (9 ft) <b>G</b><br>14F0070 (14 ft) <b>B H</b><br>14F1560 (14 ft) <b>D E</b> |                                                                                                        |
| <b>Type 32</b><br><br>250V<br>10A/16A                                                                                                                                         |                                                     | <i>Standards Institution of Israel</i><br><b>SII 32-1971</b><br>Israel                                 |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>14F0086 (6 ft) <b>B H</b><br>14F0087 (9 ft) <b>G</b><br>14F0088 (14 ft) <b>B H</b><br>14F1561 (14 ft) <b>D E</b> |                                                                                                        |

Table 44. AS/400 System Power Cords and Receptacles (continued)

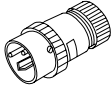

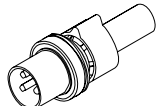

| <b>B</b> - FC 5070, 5072, 5080, 5082<br><b>D</b> <sup>1</sup> - Model 620, 720, S20<br><b>E</b> <sup>1</sup> - Model 600, 610<br><b>F</b> - Models 640, 650, 730, 740, S30, S40, SB1<br><b>G</b> - Models 170, 250<br><b>H</b> - FC 5081, 5083, 5071, 5073, 9251 |                                                                                                                                          |                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Plug                                                                                                                                                                                                                                                             | Receptacle                                                                                                                               | Countries                                                                                                                                  |
| <b>Type 34</b><br><br>250V<br>10A/15A<br>Water Resistant                                                                                                                        |                                                         | <i>Manufacturer's Number Russel/Stoll</i><br>Plug 3720U-2<br>Connector 3913U-2<br>Receptacle 3743U-2<br>Canada, Japan, United States       |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>73F4931 (6 ft) <b>B H</b><br>14F1551 (6 ft) <b>D E</b><br>73F4932 (14 ft) <b>B H</b><br>14F1552 (14 ft) <b>D E</b> |                                                                                                                                            |
| <b>Type 40</b><br><br>250V<br>30A<br>Water Resistant                                                                                                                          |                                                       | <i>Manufacturer's Number Russel / Stoll</i><br>Plug 3750 (Duraguard 9R33U0W)<br>Connector 3933<br>Receptacle 3753<br>Canada, United States |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>46F4593 (6 ft) <b>F</b><br>46F4594 (14 ft) <b>F</b>                                                                |                                                                                                                                            |

Table 44. AS/400 System Power Cords and Receptacles (continued)

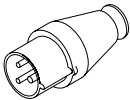

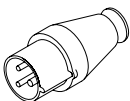

| <b>B</b> - FC 5070, 5072, 5080, 5082<br><b>D</b> <sup>1</sup> - Model 620, 720, S20<br><b>E</b> <sup>1</sup> - Model 600, 610<br><b>F</b> - Models 640, 650, 730, 740, S30, S40, SB1<br><b>G</b> - Models 170, 250<br><b>H</b> - FC 5081, 5083, 5071, 5073, 9251 |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Plug                                                                                                                                                                                                                                                             | Receptacle                                                                          | Countries                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Type 46 (P+N+G)</b><br><br>250V<br>32A                                                                                                                                       |    | <i>International Electrotechnical Commission</i><br><b>IEC 309</b><br>Abu Dubai, Albania, Algeria, Andorra, Angola, Armenia, Bahrain, Belarus, Belgium, Benin, Bosnia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chad, Congo, Croatia, Cyprus, Djibouti, Dominica, Egypt, Equatorial Guinea, Ethiopia, France, French Guyana, French Polynesia, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Grenada, Grenadines, Guadeloupe, Guinea, Guinea-Bissau, Guyana, Hungary, Iceland, India, Iran, Iraq, Ireland, Italy, Ivory Coast, Jordan, Kazakhstan, Kenya, Kirghizia, Kuwait, Laos, Lesotho, Lebanon, Liberia, Libya, Luxembourg, Macau, Macedonia, Malawi, Mali, Malta, Martinique, Mauritania, Moldavia, Monaco, Morocco, Mozambique, Namibia, Nepal, Netherlands, New Caledonia, Niger, Nigeria, Norway, Oman, Pakistan, Poland, Principe, Qatar, Reunion, Romania, Rwanda, Sao Thome Island, Saudi Arabia, Senegal, Serbia, Sierra Leone, Singapore, Slovakia, Slovenia, Somalia, Spain, St. Lucia, St. Vincent, Sudan, Swaziland, Syria, Tanzania, Togo, Tunisia, Uganda, Ukraine, United Arab Emirates, United Kingdom, Uzbekistan, Vietnam, Western Samoa, Yemen, Zaire, Zambia, Zimbabwe |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>21H7693 (14 ft) <b>F</b>                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Type 46 (P+N+G)</b><br><br>250V<br>16A                                                                                                                                     |  | <i>International Electrotechnical Commission</i><br><b>IEC 309</b><br>Denmark, Liechtenstein, Switzerland                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>14F1555 (14 ft) <b>D</b> <b>E</b>                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

Table 44. AS/400 System Power Cords and Receptacles (continued)

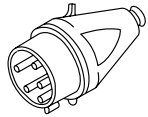

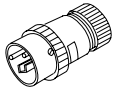



| <b>B</b> - FC 5070, 5072, 5080, 5082<br><b>D</b> <sup>1</sup> - Model 620, 720, S20<br><b>E</b> <sup>1</sup> - Model 600, 610<br><b>F</b> - Models 640, 650, 730, 740, S30, S40, SB1<br><b>G</b> - Models 170, 250<br><b>H</b> - FC 5081, 5083, 5071, 5073, 9251 |                                                                                                                                  |                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Plug                                                                                                                                                                                                                                                             | Receptacle                                                                                                                       | Countries                                                                                                                                                                                                                       |
| <b>Type 46 (3P+N+G)</b><br><br>250V<br>16A                                                                                                                                      |                                                 | <i>International Electrotechnical Commission</i><br><b>IEC 309</b><br>Austria, Czech Republic, Denmark, Estonia, Finland, Israel, Latvia, Liechtenstein, Lithuania, Portugal, Russia, South Africa, Sweden, Switzerland, Turkey |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>21H7691 (14 ft) <b>F</b><br>Dual Phase                                                                     |                                                                                                                                                                                                                                 |
| <b>Type 51</b><br><br>125V<br>13A/15A<br>Water Resistant                                                                                                                      |                                               | <i>Manufacturer's Number Russel/Stoll</i><br>Plug 3720U-1<br>Receptacle 3743U-1<br>Inline 3913U-1<br>Canada, United States                                                                                                      |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>46F5893 (6 ft) <b>B</b><br>12J6005 (6 ft) <b>E</b><br>46F5894 (14 ft) <b>B</b><br>12J6007 (14 ft) <b>E</b> |                                                                                                                                                                                                                                 |
| <b>Type 54</b><br><br>250V<br>15A                                                                                                                                             |                                               | <i>International Electrotechnical Commission</i><br><b>SAA-AS 3112</b><br>Australia, Brazil, Fiji, New Zealand, Papua New Guinea, People's Republic of China, Western Samoa                                                     |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>14F1559 (14 ft) <b>D</b> <b>E</b>                                                                          |                                                                                                                                                                                                                                 |

Table 44. AS/400 System Power Cords and Receptacles (continued)

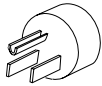



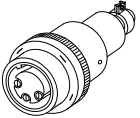

| <b>B</b> - FC 5070, 5072, 5080, 5082<br><b>D</b> <sup>1</sup> - Model 620, 720, S20<br><b>E</b> <sup>1</sup> - Model 600, 610<br><b>F</b> - Models 640, 650, 730, 740, S30, S40, SB1<br><b>G</b> - Models 170, 250<br><b>H</b> - FC 5081, 5083, 5071, 5073, 9251 |                                                                                                            |                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Plug                                                                                                                                                                                                                                                             | Receptacle                                                                                                 | Countries                                      |
| <b>Type 59</b><br><br>125V<br>20A                                                                                                                                               |                           | <i>JIS C-8303-1983</i><br><br>Japan            |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>34G0222 (6 ft) <b>B</b><br>34G0224 (14 ft) <b>B</b>                                  |                                                |
| <b>Type KP</b><br><br>250V<br>30A                                                                                                                                             |                         | North Korea, South Korea                       |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>87G6067 (14 ft) <b>F</b>                                                             |                                                |
| <b>Type PDL</b><br><br>250V<br>30A                                                                                                                                            |                         | Australia, Fiji, New Zealand, Papua New Guinea |
|                                                                                                                                                                                                                                                                  | <b>Part Number</b><br>11F0106 (14 ft) <b>F</b><br>(Australia)<br>11F0107 (14 ft) <b>F</b><br>(New Zealand) |                                                |

Table 44. AS/400 System Power Cords and Receptacles (continued)

| <b>B</b> - FC 5070, 5072, 5080, 5082                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------|
| <b>D</b> <sup>1</sup> - Model 620, 720, S20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |           |
| <b>E</b> <sup>1</sup> - Model 600, 610                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |           |
| <b>F</b> - Models 640, 650, 730, 740, S30, S40, SB1                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |           |
| <b>G</b> - Models 170, 250                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |           |
| <b>H</b> - FC 5081, 5083, 5071, 5073, 9251                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |           |
| Plug                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Receptacle | Countries |
| <p><b>Note:</b><sup>1</sup> When connecting the power line cord to the Models 600, S10, 620, 720, and S20 system unit, you must do the following to have a secure connection:</p> <ul style="list-style-type: none"> <li>• Ensure that the power cord is properly routed through the strain relief on the back of the system.</li> <li>• Ensure that the power cord is fully inserted in the power receptacle inlet on the back of the system unit. This may require another push with a minimum amount of force.</li> </ul> |            |           |





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## **Part 3. Appendixes**



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## Appendix A. Problem Summary Form

Use this problem summary form in this appendix to record information displayed on the control panel when a problem occurs on the system.

**Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 809, before continuing with this procedure.

If the system has logical partitions, then use this form to record information displayed on either the control panel or the *Work with Partition Status* screen. To access the panel functions of a logically partitioned system go to "Accessing a Logical Partition's Panel Functions" on page 815.

**Note:** You may copy this form as necessary.

1. Describe the problem.
2. Record the date and time.
3. Record any control panel lights that are on.
  - Power Active
  - Processor Active
  - Attention
4. Does the system have logical partitions?

**No**      **Yes**



Record the following information:

| Partition Information                                                          |  |
|--------------------------------------------------------------------------------|--|
| Partition's ID                                                                 |  |
| Partition's Name<br>(Not Req'd)                                                |  |
| Partition's State<br>Examples: Failed, Hold, etc.                              |  |
| Partition's OS/400 Version<br>and Release<br>Example: V4R4                     |  |
| Record the Date and Time<br>system values set in the<br>partition if possible. |  |

5. Record the information shown for functions 01, 05, SRC words 1 through 9 (which are in functions 11 - 19), and function 20-3.

**Note:** If the system has logical partitions and the problem is in a secondary partition, then some of the functions may not be available. Use the system control panel or option 20 on the *Work with Partition Status* screen to record function 20 information.

**Note:** All functions may not display, depending on the failure.

- Function 1 (This is the IPL Mode/Type)

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

- Function 5 (This is the power SRC, if applicable)

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

- Function 11 – 3 (This is SRC word 1)

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

- Function 12 – 3 (This is SRC word 2)

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

- Function 13 – 3 (This is SRC word 3)

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

- Function 14 – 3 (This is SRC word 4)

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

- Function 15 – 3 (This is SRC word 5)

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

- Function 16 – 3 (This is SRC word 6)

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

- Function 17 – 3 (This is SRC word 7)

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

- Function 18 – 3 (This is SRC word 8)

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

- Function 19 – 3 (This is SRC word 9)

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

|       |       |       |       |
|-------|-------|-------|-------|
| _____ | _____ | _____ | _____ |
|-------|-------|-------|-------|

- Function 20 – 3 (This is the System Type, Model, and Processor Feature)

\_\_\_\_\_

\_\_\_\_\_

6. Return to the procedure that sent you here.



---

## Appendix B. System Safety Inspection

---

### Introduction

**A safety inspection for the system should be performed:**

- When it is inspected for an IBM maintenance agreement
- When IBM service is requested and no service has recently been performed by IBM
- When an alterations and attachments review is performed
- When changes have been made to the equipment that might affect its safety

If the inspection indicates safety conditions that are not acceptable, the conditions must be corrected before IBM services the machine.

**Note:** The correction of any unsafe condition is the responsibility of the owner of the system.

**While performing this inspection, special attention must be given to these areas:**

- Feature and model changes and engineering change (EC) upgrades
- Additions of non-IBM power supplies or attachments
- Missing safety covers
- Removed, faded, or painted-over safety labels
- Replacement requirements concerning parts for primary power
- Any other items relating to the product's safety

**Before you start**, you must have completed the *Electrical Safety Education Course for IBM Service Representatives* (self-study course 77170 or equivalent).

**You will need these items:**

- An IBM service representative tool kit (or equivalent)
- A copy of AS/400 Service Memorandums (SMs), which include engineering change announcements (ECAs) and service aids (SAs) documents for the system
- Latest machine history, if possible
- *Electrical Safety for IBM Service Representatives*, S229-8124
- A Fluke\*\* 8060A digital voltmeter (part 8496278) or equivalent

Perform each safety check on the following pages and place a check mark in front of each item as you complete it.

---

### Covers

#### All Models

1. Check for damaged or missing covers.
2. Check covers for sharp edges.

---

## AC Power Cord(s)

### All Models

1. With machine powered off, remove the power cord from the electrical outlet.
2. Check the power cord and power plug for visible cracks, wear, or damage.
3. Check for 1.0 ohm or less of resistance between the power cord ground and the power supply frame.
4. Ensure that the power cord is fully inserted and secured into position on the machine end.
5. Ensure that the power cord required for your country and system is installed.

---

## AC Safety Grounds

### 600, 620, 720, S10, S20, and Feature Towers 507x and 508x

1. Ensure that all power supply mounting screws are tight.
2. Ensure that the mounting screws of the ac module or internal UPS are tight.

---

## Safety Labels

Ensure that all the safety labels are visible and readable:

### Feature Tower 507x and 508x

1. Main power rating attached to the right side frame at the back of the machine.
2. 240 V ac attached to each 23 pin connector (J2 and J3) on ac modules that have SPCN connectors (J15 and J16) (46G3576).
3. Danger up to 240 V ac attached to the bottom frame under the power supplies (46G3575).
4. Weight restriction label attached under the handle on the cover of the External Battery Backup Unit (74F9976).

### Models 600 and S10

1. Main power rating attached to the inside of the right side flange on the rear of the frame under the rear cover.

### Models 620, 720 and S20

1. Main power rating attached to the rear of the internal UPS under the output connector panel.
2. Caution Lead Acid Battery on side of UPS battery trays (21H7089).
3. 240V ac near the connectors at the back of the UPS transformer compartment (46G3576).

---

## Power Off and On (System Unit)

### All Models

1. Ensure that the system powers off correctly.
2. Ensure that the system powers on correctly.



---

## Internal Mechanical Inspection

### Feature Towers 507x and 508x

1. Ensure that AMD shields are installed on the ac module AMD assembly.
2. Ensure that the EMC access plate is installed over the power supplies.
3. Ensure that the card retainers are installed on the front and back of the card enclosure.
4. Ensure that the latch to lock the bottom adapter card is installed on all Magnetic Storage IOP (2624) cards with part number 21F4863.
5. Ensure that the safety shield is installed over the left side of the expansion unit AMD assembly.
6. Check the external battery backup power supply cable (if present) for visible cracks, wear, or damage.

### Models 600 and S10

1. Ensure that finger guards are in place on both sides of all AMDs in the PCI card areas.
2. Ensure that finger guards are in place on both sides of the AMD in the UPS compartment.
3. Ensure that finger guards are in place on both sides of the AMD in the expansion pedestal.
4. Ensure that finger guards are in place on both sides of the AMD under the SPD Book cage (if installed).

### Models 620, 720 and S20

1. Ensure that finger guards are in place on both sides of all AMDs in the PCI card areas.
2. Ensure that finger guards are in place on both sides of the AMD in the UPS compartment.
3. Ensure that finger guards are in place on both sides of the AMD in the expansion pedestal.
4. Ensure that finger guards are in place on both sides of the AMD under the SPD Book cage (if installed).
5. Check the jumper cables between UPS and system power supplies for visible cracks, wear, or damage to insulation.
6. Ensure that the jumper cables between the UPS and the system power supplies are fully inserted in their connectors at each end.
7. Check that the cables attached to the battery packs show no visible sign of insulation damage, cracks or wear.
8. Verify that only the following parts (and no others) are attached with slotted-head screws and that they are attached with only slotted-head screws. (No non-slotted head screws are to be used to attach these parts.)
  - a. Plastic side covers, processor and expansion sides.
  - b. Side EMC access plates on both processor and expansion sides.
  - c. All PCI cards.
  - d. EMC access plates on front of Disk Drive compartments.
  - e. Processor cage cover.
9. Verify that all AMDs stop when any of the following parts are removed.

- a. Processor side EMC access plate.
- b. Expansion side EMC access plate.
- c. Processor side plastic rear PCI access cover.
- d. Expansion side plastic rear PCI access cover.

---

## Appendix C. Preventive Maintenance (PM) Checklist

Complete all items in the following list during every PM call.

1. PM is performed on systems that have been installed for longer than one year.

**Note: Do not perform PM on systems during the warranty period.**

2. Review the PTF level:

- a. PTFs correct problems that look like hardware failures. Discuss with the customer the importance of installing PTFs on a regular basis to decrease possible system down time. Refer the Customer to *Basic System Operation, Administration, and Problem Handling*, SC41-5206-04 book or Web page <http://as400service.ibm.com> for latest PTF Maintenance Strategy and details on PTF management and application.

- b. Review the following procedures with the system operators:

- 1) Check for the last cumulative PTF package that was installed:

- For OS/400, use the command DSPPTF 5769SS1 (the Display PTF command).

You will see a PTF TCxxyyy. This indicates that the presently installed cumulative PTF package is xxyyy, where xx is the year and yyy is the day of the year that the cumulative PTF package was built. For example, in PTF TC95012, the 95 in the entry indicates 1995; the 012 indicates day 12 of the year.

- For SSP, use the command PTF LIST,,CRT.

In the upper right corner of the display, you will see xyyy, where x is the last digit of the year and yyy is the day of the year that the cumulative PTF package was built. For example, in 5034, the 5 in the entry indicates 1995; the 034 indicates day 34 of the year.

- 2) If the installed cumulative PTF package is more than four months old, recommend that the customer order and install the latest cumulative PTF package (the following instructions are for ordering a cumulative PTF package in the United States, similar options are available for other countries):

- a) To order the latest cumulative PTF package:

- By Electronic Customer Support (if available), use the command **SNDPTFORD SF99vrm** where **vrm** is the version, release, and modification of the PTF package you order. For example, SF99420 is used to order a V4R2M0 PTF package.
- By mail, order from

IBM Corporation  
Dept 909  
3605 Highway 52 North  
Rochester, MN 55901

- By FAX, dial **1-800-288-9584**
- By telephone (if entitled), dial **1-800-274-0015**
- By IBM Link (if available), use Service Link - Electronic Trouble Reporting (ETR)

- b) To install the latest cumulative PTF package:

Each cumulative PTF package is shipped with installation instructions. These must be followed to ensure correct installation.

3. Review the Problem Log (WRKPRB) for possible problems (see “Online Problem Analysis and Resolution” in the *AS/400 Service Functions* information).
4. Check the product activity log sizes and make them larger, if necessary, to hold older errors in the log (see “Product Activity Log” in the *AS/400 Service Functions* information).
5. Review the system configuration list (see “Hardware Service Manager” in the *AS/400 Service Functions* information).
  - Visually inspect the system hardware and compare it to the system configuration list.
  - Correct the system configuration list if necessary.  
Check for any missing or failed hardware.
  - Compare the serial number on the system to the serial number on the system configuration list. If they do not match, ask your next level of support for assistance.
6. Inspect all installed frames to ensure that there are **no** open card slots. If only one card slot is open, the airflow through the system will be reduced enough to possibly cause intermittent problems or hardware failures. Install airflow cards where any are missing (see Chapter 8. Parts Listing in “Chapter 6. Removal and Installation Procedures” on page 821).
7. With system power on, inspect the AMDs on the support box, if installed, to ensure that the AMDs are operating correctly. When system power is off, the AMD on the right does not operate. Exchange any AMDs that are not operating correctly (see “Chapter 6. Removal and Installation Procedures” on page 821).
8. Inspect the system for safety hazards such as loose cables, open doors, and bent covers.
9. Inspect the site environment where the system is kept.  
Recommend that the customer correct items that do not meet IBM specifications. These items include:
  - The system is in a limited service area
  - Poor ventilation
  - Blocked air vents
  - The environment is hot
  - The environment has dust
10. Perform any necessary PM on the I/O units and show the procedures to any new system operators.  
Use the I/O service information, when necessary, to determine the PM needs and procedures for the following:
  - IBM disk units; for example, clean dust from the front air vent, ensure that all AMDs are working.
  - IBM tape units; for example, clean the heads and the tape path.
  - IBM diskette units; for example, clean the heads.
  - IBM printers; for example, clean the print mechanism.
11. **Notice Regarding Tape Drive Environment and Use:**  
IBM’s goal is to provide you with a product that you can configure and use reliably. Tape drives require specific maintenance and environmental conditions to operate well over time. Using high quality, data grade media, handling and storing this media properly, operating the tape drive in a clean

environment and keeping the tape drive properly cleaned can help you to avoid problems with your IBM tape drive.

**Media Grades:** IBM uses two different grades of media. We supply Program Transmittal Fixes (PTFs) on a tape that is designed to be written to only once and read from a few times. This tape is not designed to be used as a backup medium. IBM also sells media designed to be used for storage. IBM supports the tape that we sell. If IBM service personnel analysis indicates a problem with non-IBM media it may be necessary for the customer to replace the media

**Tape Handling and Storage:** Most tape is supplied in a sealed cartridge. It is provided this way so that the tape will remain in a clean environment. Opening the cartridge allows dirt and airborne particles to enter and then become a source of contamination. The cartridge should only be opened by the tape drive and not an operator. The tape also is held under proper tension inside the cartridge. If the cartridge is dropped, this tension will be relaxed. Inserting a dropped cartridge into a tape drive can cause incorrect loading and result in a jam. This will ruin the tape and can cause physical damage if the cartridge is not removed properly. When the tapes are stored, they must be replaced in their protective containers and stored on their end. The storage area must be clean, dry, normal room temperature and away from any magnetic fields.

**Environmental Issues:** Tape drives are designed to operate in a clean environment. Problem factors are dirt, dust, fibers and airborne particles. Airborne particles are the most difficult to address. When a tape is installed in the tape drive, the clearance between the heads and the tape is measured in microns. Particles can damage the tape or the head if they come in contact with either. IBM offers a tape drive filter enclosure for some systems to solve this problem. The enclosure draws air in through a filter and supplies the tape drive with clean air. Customers are responsible to provide a clean operating environment for the tape drive and system.

**Tape Drive Cleaning:** No matter how clean the environment, debris may build up on the heads of any tape drive. Customers are responsible to clean the tape drive in accordance with the cleaning information provided with the tape drive. Every time tape motion occurs, some of the media surface comes off on the heads. Over time, this builds up and causes errors in reading and writing. We only recommend that you use IBM cleaning cartridges for IBM tape drives. Cleaning cartridges can be used a limited number of times. Once a cleaning cartridge has been used to its maximum number of times, the cartridge is considered expired. When cartridges expire, they must be replaced. Never reuse an expired cleaning cartridge. Doing so allows previously removed dirt to be reintroduced to the tape drive. When you have cleaned the tape drive, mark the usage on the cartridge in order to best determine when your IBM cleaning cartridge has expired.

**SCSI Hardware Issues:** SCSI bus cables and terminators may affect tape drive performance. IBM cables and terminators are designed specifically to keep the SCSI bus as free of noise as possible. Use of non-IBM cables or terminators may adversely affect the SCSI bus performance. If IBM service personnel analysis indicates a problem with non-IBM cables, it may be necessary for the customer to replace them with the appropriate IBM cables.

**Microcode Updates:** IBM constantly works to provide the best possible tape drive products. To make certain that the drives work their very best, IBM occasionally releases changed microcode for the tape drives. When a microcode change is developed, IBM makes it available to you through the service organization or by electronic delivery. RS/6000 customers Microcode

changes are available from the following IBM Web site:  
<http://www.rs6000.ibm.com/support/micro> Microcode can be installed by your IBM CSR or your system administrator. AS/400 customers Microcode changes are available from the following IBM Web site:  
<http://www.as400service.ibm.com> Microcode is also available by downloading and installing PTFs using Electronic Customer Support or by ordering and installing cumulative PTF packages from IBM Global Services.

**Summary:** Your tape drive must be installed in the cleanest possible environment. Additionally, IBM tape drives require high quality, data grade tapes and cleaning on a regular basis. Media must also be stored and handled properly. Improper use, storage or handling of tape drives or media may void your IBM warranty or service agreement. If a tape drive stops functioning due to a component failure during the tape drive warranty or maintenance time, IBM will replace the tape drive unit. IBM will replace any defective tape drive under the terms and conditions of the IBM warranty or service agreement. It is our objective to work with you to identify the cause of any tape drive problems and provide a solution.

12. Vacuum and clean, if necessary.
13. Ensure that all system accessories are available (for example, service information and wrap connectors). You should normally store these items in the system service kit. Ensure that the customer knows the location of all these items.
14. Verify that all engineering changes for the system and I/O units have been installed.
15. Fill out the "Appendix E. Service Log" on page 1063 or in the *Account Management Planning Guide*.
16. Inform the customer of any problems you found on the system (hardware, software, performance).  
Inform IBM personnel in other functions as suitable (Marketing Representative, Systems Engineering, Software Support, Administration, Field Manager).
17. Discuss with the customer the importance and benefits of maintaining a valid backup, using Electronic Customer Support, managing the Problem Log, and performing problem determination.
18. Review your PM actions and analysis with the customer:
  - Explain what you performed.
  - Describe any problems you found (and corrected).
  - Answer questions.
  - Address concerns.
  - Take action as needed.
  - Thank the customer for the maintenance business.

---

## How to Record Your Time (Service Code–SC)

- Record SC 01 against the device that was repaired.
- Record SC 08 against any device for which PM was completed.
- Record SC 48 for any Account Management actions.

---

## Appendix D. Working with Electrostatic Discharge-Sensitive Parts

When holding or installing electrostatic discharge-sensitive (ESD) parts, use the ESD handling kit (IBM\* part 6428316) or similar. Read the instructions inside the top cover of the carrying case.

All system logic cards are sensitive to electrostatic discharge (ESD). To prevent damage to ESD-sensitive logic cards, follow these instructions:

- Switch off power to the system or device before removing logic cards.
- Keep the ESD-sensitive card in the original shipping container until you install the card in the machine.
- When holding logic cards, move your body as little as possible to prevent an increase of static electricity from clothing fibers, carpet fibers, and furniture.
- Just before touching the ESD-sensitive card, discharge any static electricity in your body by touching the metal frame or cover of the machine. If possible, keep one hand on the frame when, for example, you are installing or removing a logic card.
- Hold the ESD-sensitive card by the edge or connector shroud cover. Do not touch the pins. If you are removing a field-replaceable module, use the correct tool.
- Return the card to the special container when it is not being used. Do not place the ESD-sensitive card on the machine cover or on a metal table. Machine covers and metal tables are electrical grounds. They make a discharge path from the ESD-sensitive card through your body to ground, increasing the risk of damage to the card. Large metal objects can be discharge paths without being grounded.
- Prevent ESD-sensitive cards from being touched accidentally by other persons. Reinstall machine covers when you are not working on the machine. Do not place unprotected ESD-sensitive cards on a table.
- Be careful when working with ESD-sensitive cards during cold weather heating. Cold weather heating causes low humidity and increases the risk of static electricity.





## Appendix E. Service Log

Machine Type and Serial Number: -

[illegible]



## Appendix F. OptiConnect Table

**Note:** Determine if the system has logical partitions. Go to “Determining if the System Has Logical Partitions” on page 809, before continuing with this procedure.

**Note:** Within this table the terms "system" and "logical partition" are interchangeable where used together.

To determine which logical partition owns a bus see “Determining Which Logical Partition Owns a FRU or a System I/O Resource” on page 815.

To locate the console of a secondary partition see “Locating a Secondary Partition’s Console” on page 811.

Complete this table with the WRKHDWRSC \*CSA command and use the *Display Resource Details* and the cabling diagram for your site. Make one copy for each system you will be working with.

Table 45. System Name:

[illegible]

Table 45. System Name: (continued)

| Status | Resource Name | Type | System DSA | Host System/<br>Logical Partition | Host Card In DSA | Host Card Out DSA | Attached System/<br>Logical Partition | Attached Resource Name |
|--------|---------------|------|------------|-----------------------------------|------------------|-------------------|---------------------------------------|------------------------|
|        |               |      |            |                                   |                  |                   |                                       |                        |
|        |               |      |            |                                   |                  |                   |                                       |                        |
|        |               |      |            |                                   |                  |                   |                                       |                        |
|        |               |      |            |                                   |                  |                   |                                       |                        |
|        |               |      |            |                                   |                  |                   |                                       |                        |
|        |               |      |            |                                   |                  |                   |                                       |                        |

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## Glossary

This glossary includes terms and definitions from:

- The *American National Dictionary for Information Systems* ANSI X3.172-1990, copyright 1990 by the American National Standards Institute (ANSI). Copies may be purchased from the American National Standards Institute, 1430 Broadway, New York, New York 10018. Definitions are identified by the symbol (A) after the definition.
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**ac.** Alternating current.

**adapter card.** A smaller card that attaches to a full-size card.

**allocate.** To assign.

**alternative console.** A display device assigned by the operating system to function as the console if the console is not working.

**American National Standards Institute.** An organization sponsored by the Computer and Business Equipment Manufacturers Association for establishing voluntary industry standards.

**ANSI.** American National Standards Institute. An organization sponsored by the Computer and Business Equipment Manufacturers Association for establishing voluntary industry standards.

**APAR.** Authorized program analysis report. A request for correction of a problem in a release of an IBM-supplied program.

**ASC.** Asynchronous.

**ASP.** Auxiliary storage pool. A group of disk units defined from the auxiliary storage devices. See also *system ASP* and *user ASP*.

**authorized program analysis report.** A request for correction of a problem in a release of an IBM-supplied program.

**auxiliary storage pool.** A group of disk units defined from the auxiliary storage devices. See also *system ASP* and *user ASP*.

**backplane.** A hardware part that has (in one or more planes) logic paths, low-voltage distribution paths, and grounding paths of a section of a machine.

**basic assurance test.** An automatic testing of a machine when the power is switched on.

**BAT.** basic assurance test. An automatic testing of a machine when the power is switched on.

**battery power unit.** A source of electrical power that can be used when the normal utility power fails.

**BBBBCCbb.** Addressing scheme for the bus (BBBB), card (Cc), and board (bb).

**bring up.** The process of starting a computer system or a subsystem that is to operate under the control of the system.

**BSC.** Bisynchronous.

**card enclosure.** The area in the system unit that contains the logic cards.

**CCM.** Concurrent maintenance. The process of removing or replacing hardware while the system is in use.

**CD.** Compact disk; an optical storage medium.

**CFIOP.** Combined Function Input Output Processor.

**checksum.** A utility that writes data in a sector for error detection purposes.

**checksum protection.** A function that protects data stored in an auxiliary storage pool from being lost because of the failure of a single disk. When checksum protection is in effect and a disk failure occurs, the system automatically reconstructs the data when the system program is loaded after the device is repaired.

**concurrent maintenance.** The process of removing or replacing hardware while the system is in use.

**configure.** To describe to a system the devices, optional features, and programs installed on the system.

## Glossary

**cryptography.** A method of transforming customer data to conceal its meaning. Cryptographic services include data encryption and message authentication.

**DASD.** Direct access storage device. Also referred to as disk unit.

**dc.** Direct current.

**debug.** To check, diagnose, and remove errors in programs.

**dedicated service tools.** The part of the service function used to service the system when the operating system is not working.

**device parity protection.** A function that protects data stored on a disk unit subsystem from being lost because of the failure of a single disk unit in the disk unit subsystem. When a disk unit subsystem has device parity protection and one of the disk units in the subsystem fails, the system continues to run. The disk unit subsystem reconstructs the data after the disk unit in the subsystem is repaired or exchanged.

**DFCI.** Disk file control interface.

**DIMM.** Dual in-line memory module.

**disk enclosure.** The part of a disk unit that contains the read and write heads, the magnetic disks, and the actuators.

**download.** To transfer data from a processing unit to an attached device, such as a microcomputer, for processing.

**DST.** Dedicated service tools. The part of the service function used to service the system when the operating system is not working.

**DVD.** Digital versatile disk.

**EMC.** Electromagnetic compatibility.

**EMI.** Electromagnetic interference.

**EPO.** Emergency power-off.

**ERC.** Extended reference code

**ESD.** Electrostatic discharge.

**expansion unit.** An expansion unit contains I/O hardware such as cards, tapes and disk units. The system may have multiple expansion units.

An expansion unit can be bolted directly to the side of a system unit and is contained within the system unit covers.

An expansion unit can also be mounted on top of a rack or tower and has its own covers.

Internal signal cables interconnect the expansion unit to the system unit, rack, or tower.

**FAX.** Facsimile machine.

**FC.** Feature code.

**FDS.** Flexible distribution system.

**FRU.** Field-replaceable unit.

**GND.** Ground (electrical).

**ID.** Identification.

**input/output processor.** A device that processes programmed instructions and controls one or more I/O devices or adapters.

**INS.** Integrated Netfinity Server for AS/400

**I/O.** Input/output.

**IOA.** Input/output adapter.

**IOP.** Input/output processor. A device that processes programmed instructions and controls one or more I/O devices or adapters.

**IPL.** Initial program load.

**LAN.** Local area network. A computer network located on a user's premises within a limited geographical area.

**LIC.** Licensed Internal Code.

**license.** A permission granted by competent authority to engage in a business or occupation or in an action otherwise unlawful.

**Licensed Internal Code.** Programming that defines logical operations on data.

**LICTR.** Licensed Internal Code trouble report.

**local area network.** A computer network located on a user's premises within a limited geographical area.

**logo.** An identifying statement.

**media.** Magnetic disks, tapes, compact disks (CD), or digital versatile disk (DVD).

**MES.** Miscellaneous equipment specification.

The process of either an upgrade of your existing system or moving parts from an existing system to a new system, are called miscellaneous equipment specification (MES).

**MFIOF.** Multiple Function I/O Processor.

**mirrored protection.** A function that protects data by duplicating all disk unit data on one storage unit in an auxiliary storage pool to another storage unit in the same auxiliary storage pool.

**MSD.** Main store dump.



**MSIOP.** Magnetic Storage I/O Processor.

**OEM.** Original equipment manufacturer.

**odd/even bus pair.** An optical link card supports a pair of buses; one has an even number and the other has an odd number (for example, bus 2 and 3).

**optical redundancy.** A second optical path used to keep the system operational when a hardware failure occurs.

**overview.** A general survey or summary.

**PAR.** Problem analysis and resolution.

**PCC.** Power control compartment.

**PIP.** Problem isolation procedure. Written information used by service representatives to repair IBM equipment. A problem isolation procedure contains actions and yes/no questions that send the user to the failing part of the equipment.

**plenum.** A space used for environmental air.

**PM.** Preventive maintenance.

**pool.** (1) A readily available supply. (2) A designated place to store data.

**power off.** To turn off the power.

**power on.** To turn on the power.

**primary link.** The optical connection between a local optical link card and a remote bus adapter card.

**problem isolation procedure.** Written information used by service representatives to repair IBM equipment. A problem isolation procedure contains actions and yes/no questions that send the user to the failing part of the equipment.

**program temporary fix.** A temporary solution to, or bypass of, a problem in a licensed program.

**PTF.** Program temporary fix. A temporary solution to, or bypass of, a problem in a licensed program.

**rack.** Used on early models of the AS/400, such as models C, D, E, and F, as either a system unit or for I/O hardware such as cards, tapes and disk units. External signal cables interconnect the system unit to the racks that contain I/O hardware.

A rack can be either 1.0 meters or 1.6 meters in height and usually has white covers for AS/400 systems.

Typically, feature codes with numbers less than 5050 are considered "racks" and codes greater than 5050 are considered "towers."

**reallocate.** To allocate again.

**restore.** To return to an original value or image; for example, to restore data to main storage from auxiliary storage.

**SAL.** Service action log

**SAVSYS tape.** A tape that is generated by the SAVSYS command, on which system data is recorded and saved.

**SCSI.** Small Computer System Interface

**SDIOP.** Storage Device I/O Processor.

**secondary link.** The optical connection between two remote bus adapter cards.

**sign-on.** The procedure by which the user starts working at a workstation.

**SIMM.** Single in-line memory module.

**single bus connection.** Only one bus is connected to the optical link card. One connector is not used.

**SPCN.** System Power Control Network.

**SPD bus.** An AS/400 input/output bus architecture.

**SRC.** System reference code. A group of characters that identifies the machine status or a specific error condition. The system reference code can be displayed on the console from the problem log.

**system ASP.** The auxiliary storage pool where system programs and data reside. It is the storage pool used if a storage pool is not defined by the user. See also *auxiliary storage pool* and *user ASP*.

**system reference code.** A group of characters that identifies the machine status or a specific error condition. The system reference code can be displayed on the console from the problem log.

**tower.** A frame-like structure that, since the introduction of the 3xx/4xx models, has been used to repackage devices formerly housed in racks. Towers provide the equivalent function of racks and have since replaced racks.

A tower can be used for either the system unit or for system expansion. The system unit always contains the processor(s). Towers are standalone and usually have black covers. Like racks, towers can vary in height.

**UEPO.** Unit emergency power-off.

**upgrade.** To change the system configuration to a later level.

**URC.** Unit reference code. Last 4 characters of SRC.

**user ASP.** One or more auxiliary storage pools used to isolate journals, journal receivers, and save files from

## Glossary

the other system objects stored in the system ASP. See also *auxiliary storage pool* and *system ASP*.

**vital product data.** A structured description of a device or program. For devices, it is recorded in the device at manufacture and includes at least the type, model, serial number, and installed features. It may include the manufacturer's ID and other fields. For programs, it is compiled as a data area accompanying the program and includes the name of the licensed program or Licensed Internal Code group, the release and modification, the program module names, the national language or languages selected, and possibly other fields. Vital product data is transferred from the device to the system and is retained for display. Vital product data is also visible on the device name plate or a similar tag.

**VLIC.** Vertical Licensed Internal Code.

**VPD.** See *vital product data*.

**workstation I/O processor.** An I/O processor card in the card enclosure that provides the direct connection of local workstations to the system.

**WSIOP.** Workstation I/O processor. An I/O processor card in the card enclosure that provides the direct connection of local workstations to the system.

**X.25.** In data communications, a specification of the CCITT that defines the interface to an X.25 (packet-switching) network.

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## Bibliography

You may need to use the following books for more specific information about a problem.

- *FC 504x Problem Analysis and Repair and Parts*
- *ASCII Work Station Reference*
- *AS/400 Service Functions*
- *Backup and Recovery*
- *AS/400 Licensed Internal Code Diagnostic Aids - Volume 1*
- *AS/400 Licensed Internal Code Diagnostic Aids - Volume 2*
- *Physical Planning Reference*
- *Port Tester Use*
- *Security - Reference*
- *Software Installation*
- *Basic System Operation, Administration, and Problem Handling*
- *Twinaxial Cabling Troubleshooting Guide , SY31-0703*
- *AS/400e Handbook*
- *IBM AS/400 Integration for Windows Server -- Setup, SC41-5439-03*

See the following IBM device books:

- *3422 Magnetic Tape Subsystem Maintenance Information, SY32-5058*
- *3422 Magnetic Tape Subsystem Operator's Guide , SA32-0090*
- *3430 Magnetic Tape Subsystem Maintenance Information, SY32-5053*
- *3430 Magnetic Tape Subsystem Operator's Guide , SA32-0079*
- *3480 Magnetic Tape Subsystem Maintenance Information, SY32-5048, SY32-5049, SY32-5050, SY32-5055, SY32-5061*
- *3480 Magnetic Tape Subsystem Operator's Guide , SA32-0066*
- *3490 Magnetic Tape Subsystem Models D31 and D32 Maintenance Information , SY32-7015*
- *3490 Magnetic Tape Subsystem Enhanced Capability Models C10, C11, and C22 Maintenance Information , 94F7378*
- *3490 Magnetic Tape Subsystem Operator's Guide , SA32-0124*
- *3494 Tape Library Dataserver Maintenance Information, SA37-0270*
- *3570 Magnetic Tape Subsystem Maintenance Information, P/N 05H9395*
- *3570 Magnetic Tape Subsystem User's Guide , GA32-0345*
- *3590 High Performance Tape Subsystem Maintenance Information , P/N 05H9928*
- *3590 High Performance Tape Subsystem User's Guide , GA32-0330*
- *3995 AS/400 Compact Optical Library Dataserver Maintenance Information Manual Model 042 , SY32-7034 or SA37-0245*
- *3995 AS/400 Compact Optical Library Dataserver Parts Catalog Model 042 , S132-0024 or S132-0035*
- *3995 AS/400 Optical Library Dataserver Maintenance Information Manual Models 142 and 143 , SA37-0244*
- *3995 AS/400 Optical Library Dataserver Parts Catalog Models 142 and 143 , S132-0027*
- *3995 AS/400 Optical Library Dataserver Maintenance Information Manual Model A43 , GA32-0295*
- *3995 AS/400 Optical Library Dataserver: Maintenance Information for Model Cn0 , 05H5540*
- *3995 AS/400 Optical Library Dataserver: Maintenance Information for Model Cn2 , 05H5541*
- *3995 AS/400 Optical Library Dataserver: Maintenance Information for Models Cn4, Cn6, and Cn8 , 05H5542*
- *5250 Information Display System - Planning and Site Preparation Guide , SA21-9337*
- *7208 Model 002 8 mm Tape Drive Operator's Guide, SA23-2675*
- *7208 Model 002 8 mm Tape Drive Service Guide , SA23-2640*
- *7208 Model 012 8 mm Tape Drive Operator's Guide, SA26-7036*
- *7208 Model 012 8 mm Tape Drive Service Guide , SA26-7037*
- *9331 Diskette Unit Service Information: Service Guide and Reference Code Guide , SY31-0677*
- *9337 Disk Array Service Information, Models 0xx and 1xx , SY44-0009*
- *9337 Disk Array Service Information, Models 2xx , SY44-0031*
- *9337 Disk Unit Customer Information , SA41-0014*
- *9348 Tape Unit Customer Information , SA21-9567*

- *9348 Tape Unit Service Information* , SY31-0697
- *9427 8-mm Tape Cartridge Library Service Guide* , SA26-7109
- *9427 8-mm Tape Cartridge Library Operator Guide* , SA26-7108

For information regarding other units attached to the system, see the service information for the specific unit.

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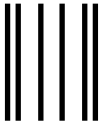


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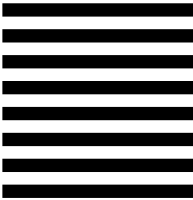
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