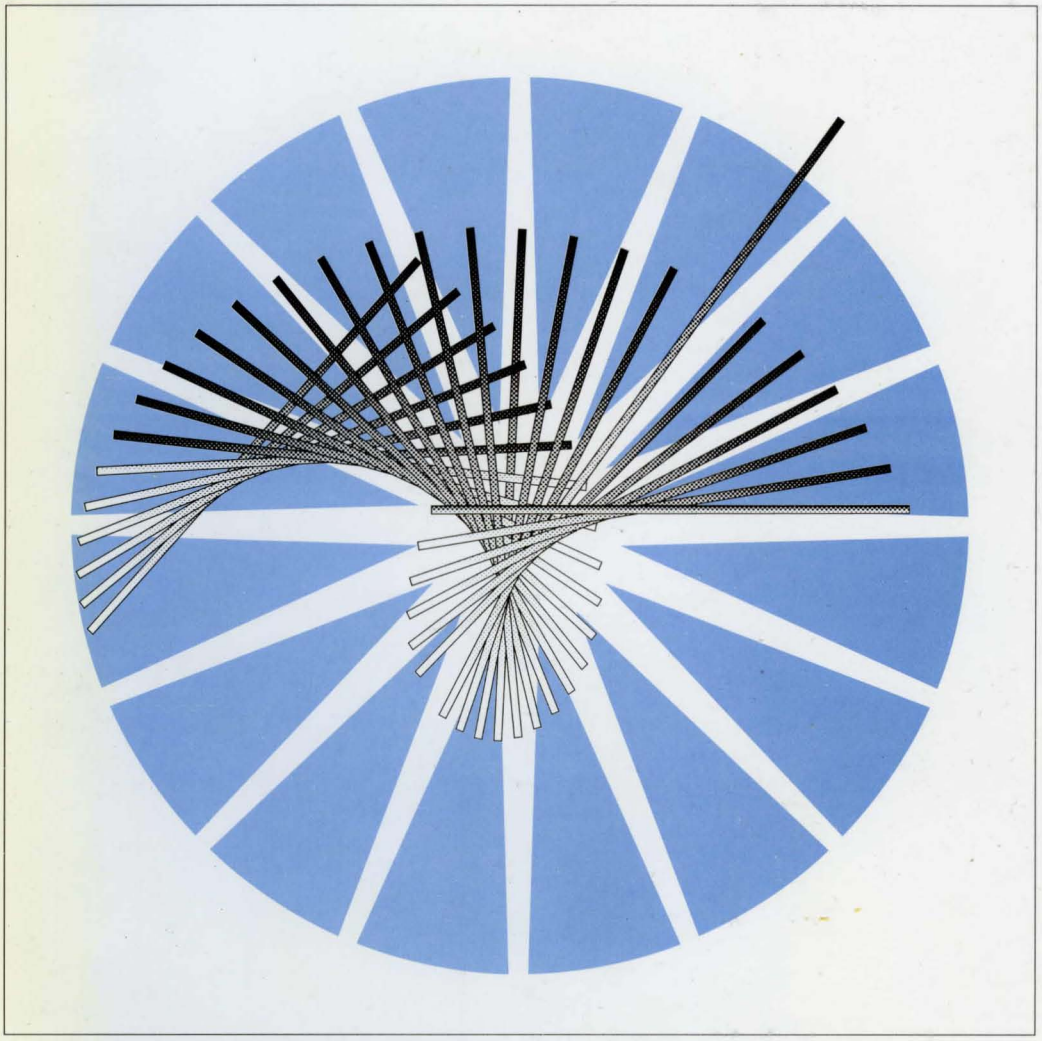
3745 Communication Controller
Models 210 to 61A

IBM

Maintenance Information Procedures



SY33-2054-15

3745 Communication Controller
Models 210 to 61A

Maintenance Information Procedures

SY33-2054-15

Note!

Before using this information and the product it supports, be sure to read the general information under "Notices" on page xv.

Sixteenth Edition (June 1997)

The information contained in this manual is subject to change from time to time. Any such changes will be reported in subsequent revisions.

Changes have been made throughout this edition, and this manual should be read in its entirety.

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Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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Industry Canada Compliance Statement

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Avis de conformité aux normes d'Industrie Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Japanese Voluntary Control Council For Interference (VCCI) Statement

This equipment is in the 1st Class category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Control Council for Interference by Information Technology Equipment aimed at preventing radio interference in commercial and industrial areas.

Consequently, when used in a residential area or in an adjacent area thereto, radio interference may be caused to radios and TV receivers, and so on.

Read the instructions for correct handling.

Korean Communications Statement

Please note that this device has been approved for business purpose with regard to electromagnetic interference. If you find this is not suitable for your use, you may exchange it for a non-business one.

New Zealand Radiocommunications (Radio) Regulations

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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Tektronix	Tektronix, Incorporated.

Product Safety Information

General Safety

This product meets IBM safety standards.

For more information, see the following manual:

IBM 3745 Communication Controller All Models
IBM 3746 Nways Multiprotocol Controller Models 900 and 950
Safety Information, GA33-0400.

Service Inspection Safety Procedures

Service Inspection Safety Procedures for the 3745, 3746-900, and Controller Expansion - English ***xviii***
Sicherheitsüberprüfungen für IBM 3745, 3746-900 und die Erweiterung der Steuereinheit - Deutsch ***xxxiii***
服务检查安全程序一简体中文版 ***xlvii***

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Service Inspection Safety Procedures for the 3745, 3746-900, and Controller Expansion

Important

This procedure addresses the 3745, 3746-900, and the controller expansion. If one of these machines is not present, ignore the statement concerning this machine in the following procedure.

Introduction

A safety inspection procedure for the 3745, 3746-900, and controller expansion should be performed:

- When it is inspected for an IBM 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 unacceptable safety conditions, 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 equipment.

The 3745, 3746-900, and controller expansion areas and functions checked through these procedures are:

1. External covers
2. Safety labels
3. Safety covers and shields
4. Grounding (earthing)
5. Circuit breaker and protector rating
6. Input power voltage
7. Power control switch
8. Power ON indicator.

Important Notes:

1. The 3746s are powered ON and OFF through the basic 3745 frame.
2. The 3746-900 is powered ON and OFF through the basic 3745 frame, from a host, locally, or from the service processor.

Hazardous voltages are still present in some areas of the 3745 and the 3746-900 when power is OFF.

Steps 1 through 6 must be performed after **power OFF** as follows:

- **CB1s** are switched OFF on the 3745 and 3746-900.
- **All equipment installed in the controller expansion (if present) is powered OFF.**
- **Power supplies for the 3745, 3746-900, and controller expansion at customer's premises are switched OFF.**

  Do not remove the power cord and ground strap **A** of the controller expansion in order to maintain the ground protection (see Figure 0-2 on page xxi, Figure 0-3 on page xxii, Figure 0-4 on page xxiii, or Figure 0-5 on page xxiv).

1 External Covers

Check that:

- They are all present on the 3745, 3746s, and controller expansion.

- They are locked with two kinds of locks: flat blade screw for the IBM access area and hex head for the customer access area (refer to the *IBM 3745 Communication Controller Models 210 to 61A Parts Catalog*, S135-2010).
- They can be fully opened.
- Appropriate service clearance and accesse are provided around the frames with external covers opened.

  Leave all external covers opened to allow further safety inspection steps.

2 Safety Labels

Check that:

- All the safety labels are at the places indicated by letters in "Safety Label Locations" on page lxv.
- Each label is of the model corresponding to the letter as shown on "Safety Label Identifications" on page lxix.

3 Safety Covers and Shields

Referring to the FRU location (Chapter 4) check that:

- All the safety covers are present and secured with screws.
- All the voltage terminal boards (TBs) are protected by a plastic shield screwed on top of the TB.

4 Grounding (Earthing)

a Grounding on the 3745

Note

In this manual, "ground" means that the equipment must be connected to the earth.

Refer to page YZ110 to YZ114 for grounding jumper locations.

Check that:

- **Electrical continuity is assured, within each frame, between the frame ground and the terminals indicated on the ground distribution diagrams.**
- Electrical continuity is assured between the 3745, frame grounds, and to the premises grounding system, through the 3745 power cords.

b Grounding on the 3746-900 and Controller Expansion to the Premises Grounding System

- Electrical continuity is assured between their frame ground and premises grounding system through their power cords.
- The 3746-900 is grounded to the 3745 via the UEPO cable (see Figure 0-1 on page xx).
- For controller expansion, an additional ground wire **A** is also used (see Figure 0-2 on page xxi, Figure 0-3 on page xxii, Figure 0-4 on page xxiii, or Figure 0-5 on page xxiv).

1 3745/3746-900 UEPO Cable

Check that the UEPO cable is correctly connected in the 3745 **D** and in the 3746-900 **C**.

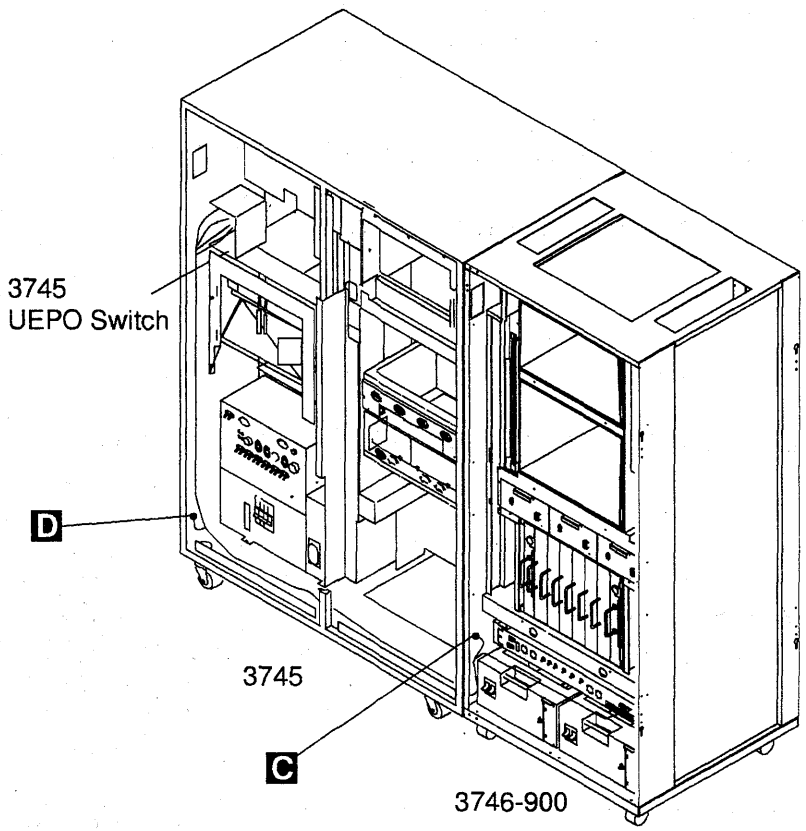


Figure 0-1. 3746-900 UEPO Cable Routing

Notes:

a) D Screw (PN 2665527) and lock washer (PN 1622346).

b) C Screw (PN 61F4511), star washer (PN 17G5852), and lock washer (PN 1622318).

2 Controller Expansion Ground Wire Cable

- If you have only one controller expansion installed, check that the ground wire A is installed (see Figure 0-2 on page xxi).
- If you have several controller expansions installed, check that the ground wires A are installed according to your configuration (see Figure 0-3 on page xxii, Figure 0-4 on page xxiii, or Figure 0-5 on page xxiv).

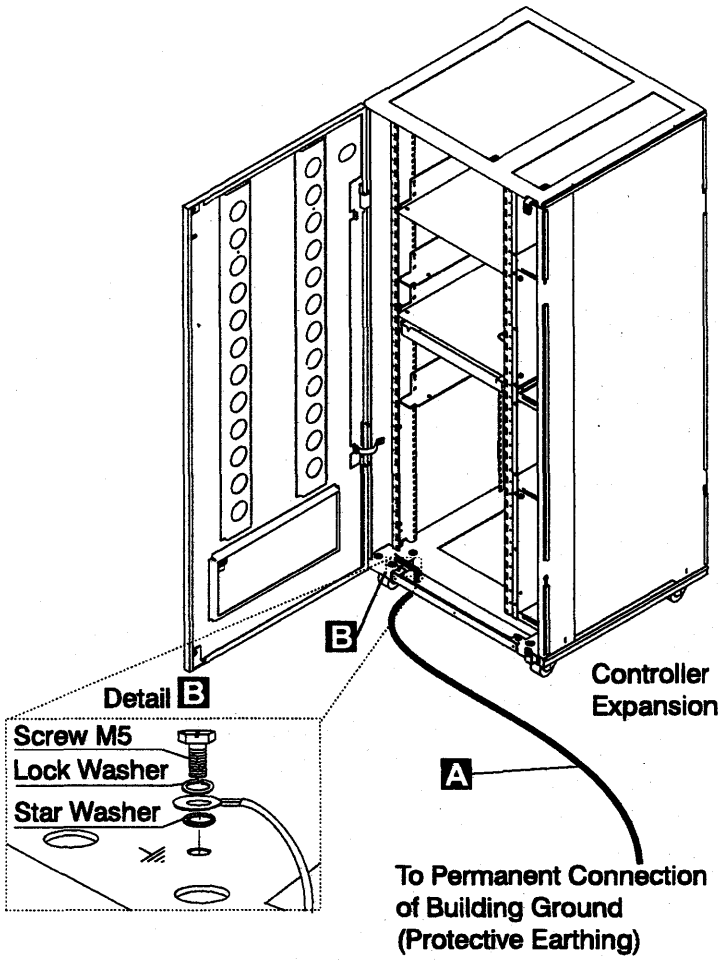


Figure 0-2. Ground Wire Connection on Controller Expansion

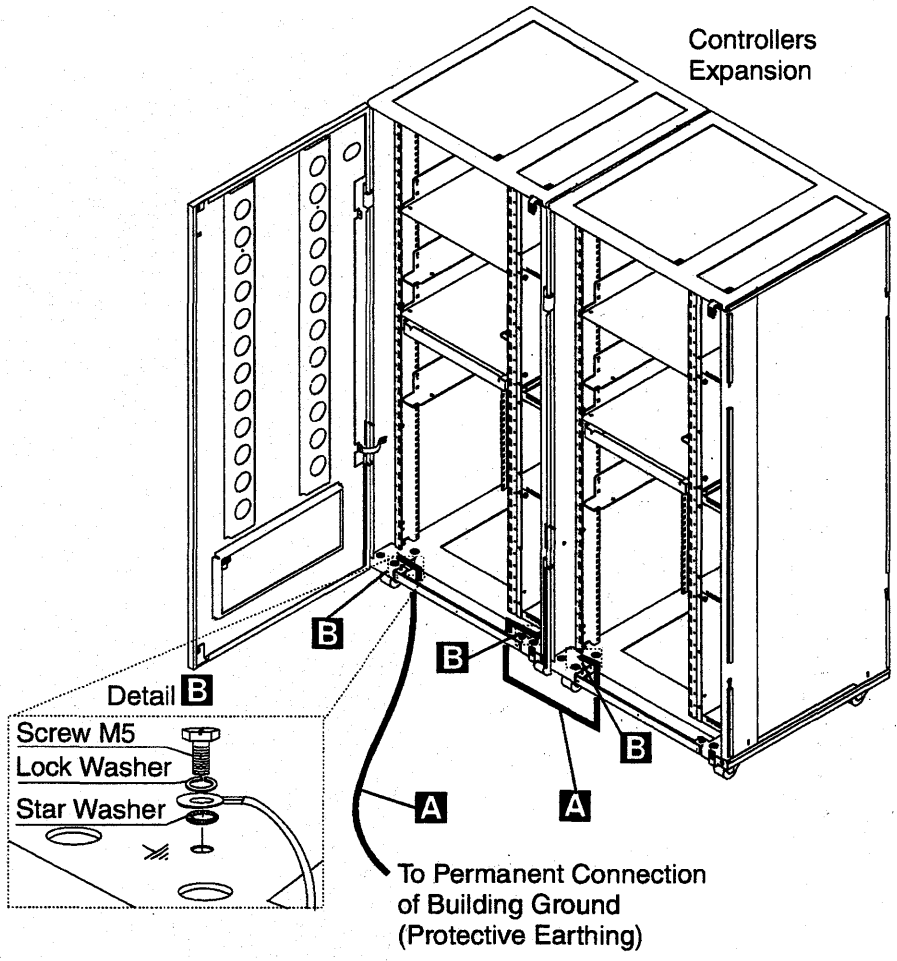


Figure 0-3. Ground Wire Connection Between Attached Controller Expansions

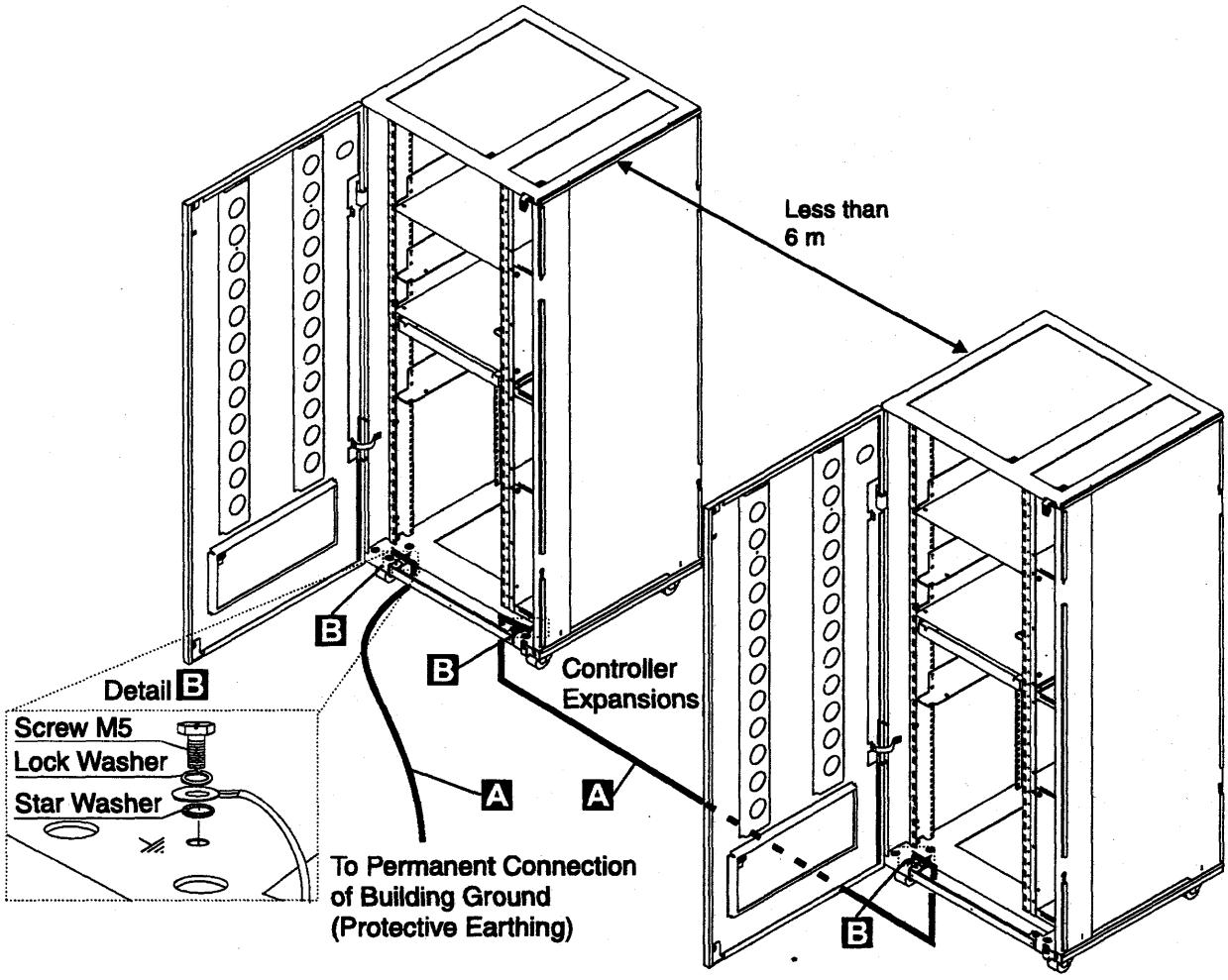


Figure 0-4. Ground Wire Connection Between Controller Expansions at Less than Six Meters

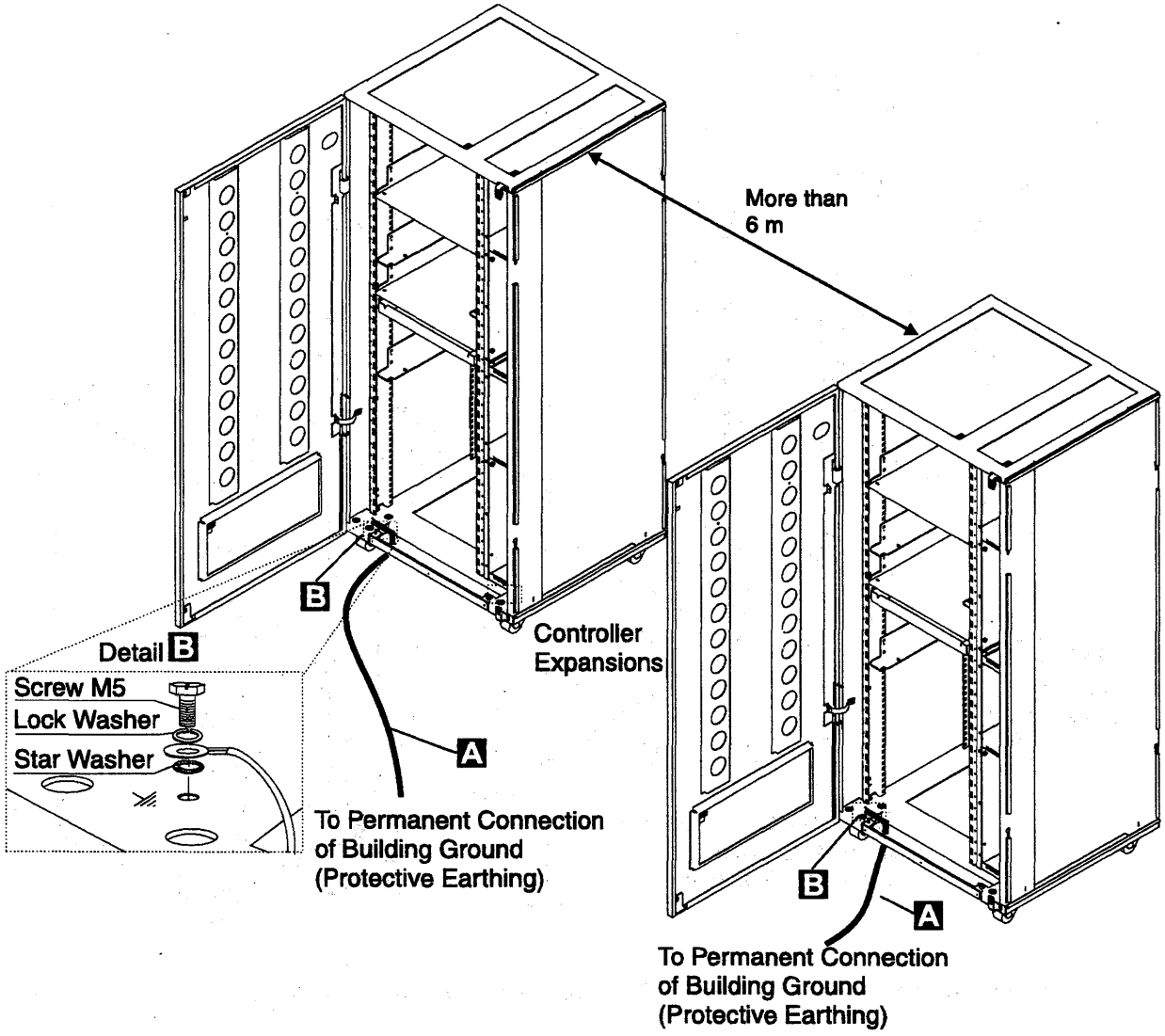


Figure 0-5. Ground Wire Connection Between Controller Expansions at More than Six Meters

Notes:

a) A Ground wire (PN 58G5691)

b) B Screw (PN 61F4513), star washer (PN 1622347) or (PN 17G5853), and lock washer (PN 1622319).

3 ac/dc Power Cable Ground Wire

- Check the mainline ac/dc power cable for damaged or burned pins and broken insulation.
- Measure the resistance of the disconnected mainline ac/dc power cable from ground pin on one end to the ground pin on the other end.

The measurement should be 0.1 ohm or less.

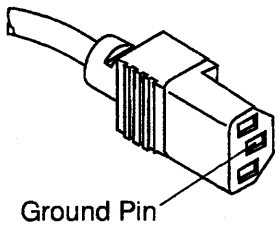


Figure 0-6. Ground Pin on Mainline ac/dc Power Cable

c Internal Grounding in the 3746-900 and Controller Expansion

On the 3746-900

- Check that electrical continuity is assured between the LCB housing and 3746-900 frame, if LCBs are present. This operation must be performed before any network connection.

On the Controller Expansion

- Check that electrical continuity is assured between each machine installed in the controller expansion (service processor, network node processor, modem, optical disk drive, and so on) and the ground pin of the ac outlet distribution box (see Figure 0-7).
- Check that electrical continuity is assured between the ground pin of the ac outlet distribution box and the controller expansion mount frame.

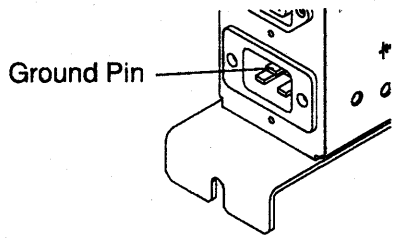


Figure 0-7. Ground Pin of the Controller Expansion ac Outlet Distribution Box

- Check that electrical continuity is assured between the LCB housing and the controller expansion frame, if LCBs are present. This operation must be performed before any network connection (see Figure 0-8 on page xxvi).

  Note: All the previous measurements should indicate 0.1 ohm or less.

d Grounding of Line Connection Boxes (LCBs) not Installed in the 3746-900 or Controller Expansion

Check that electrical continuity is assured between the LCB housing and the premises grounding system.

There are two ways to ensure proper grounding of the LCB depending on where it is installed:

1) Grounding is ensured by the four screws which secure the LCB on the rack if the frame of the rack is connected to the premises ground system.

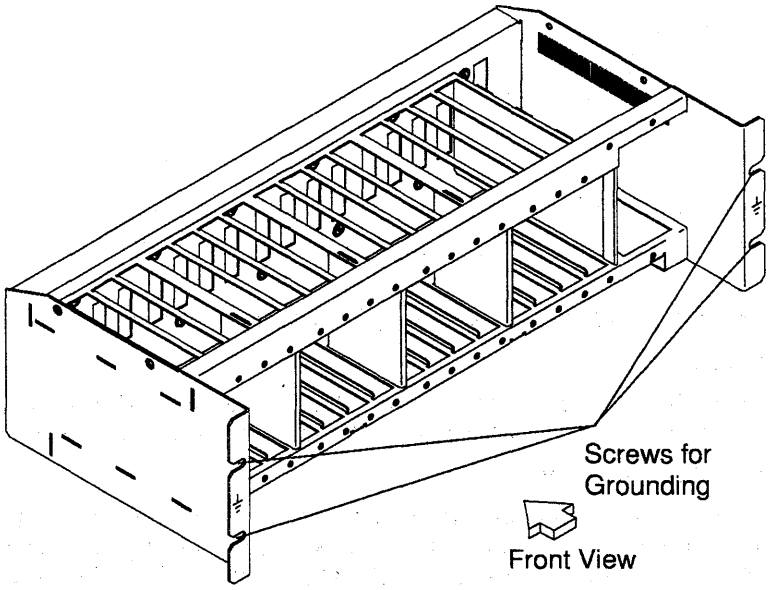


Figure 0-8. LCB Grounding Via Screws

2) Grounding is ensured by a wire connected from the LCB to the premises ground system.

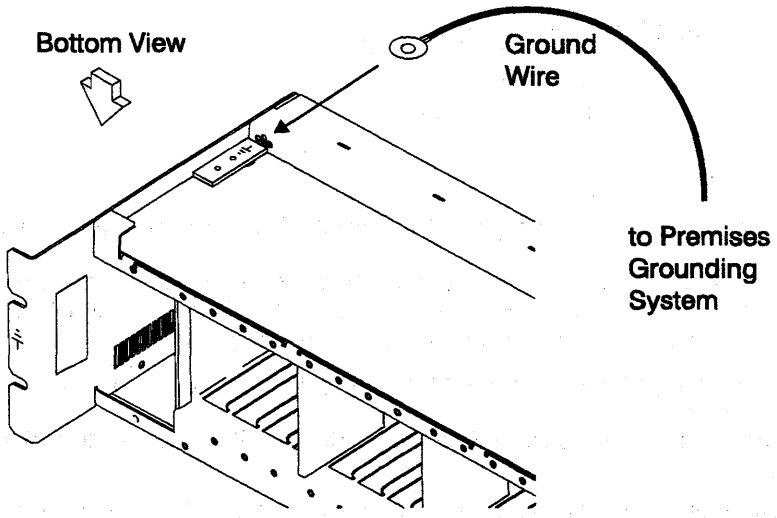


Figure 0-9. LCB Grounding Via Ground Wire

IBM does not provide this wire. In order to ensure correct grounding, this ground wire must be made using a wire AWG 12 (minimum 2.5 square millimeters).

Screw: 5 mm in diameter, length from 6 to 10 mm (refer to Figure 0-10 on page xxvii).

Connection of Ground Wire to LCB

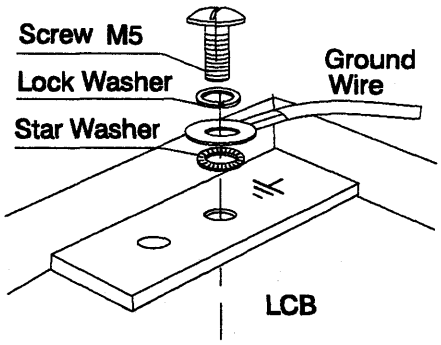


Figure 0-10. Ground Wire Connection

This operation must be performed before any network connection.

Note: All the previous measurements should indicate 0.1 ohm or less.

e Building Grounding

Check that there is less than 1 V ac between the metal housings of plugs, connectors, receptacles, and so on, and any grounded point in the building. This can be any grounded metal structure, such as the stanchions of a raised floor (if they are electrically connected to building ground), a metal water pipe, building steel, and so on.

Notes:

1) When probing a painted metal part, ensure that the meter probe tip penetrates the paint.
2) Also check plugs of incoming cables.

5 Circuit Breaker and Protector Rating

Refer to Table 0-3 on page xxxi for CB and CP locations.

Check that:

- All CBs and CPs in the 3745 and 3746-900 are rated at the indicated value in Table 0-3 on page xxxi. If the rating is not indicated, check the part number against one of the following:
  - *IBM 3745 Communication Controller Models 210 to 61A Parts Catalog*, S135-2010
  - *IBM 3746 Expansion Unit Model 900 Parts Catalog*, S135-2013
  - *IBM 3746 Nways Multiprotocol Controller Model 900 and 950 Parts Catalog*, S135-2015.
- The fuses in the controller expansion ac outlet distribution box must be 7 A, 250 V slow (PN 58G5782).

6 Input Power Voltage

The power rating plate indicates the voltage ranges available (200/220/240 or 346/380/415).

3745 Input Power Voltage

The voltage label (label E) indicates the input voltage for which the 3745 is wired.

Performing a Power Conversion Inspection.

- A power conversion inspection must be performed on any 3745 Communication Controller that has been converted from 50 Hz to 60 Hz, from 60 Hz to 50 Hz, from 220 V to 380 V, or from 380 V to 220 V.
- The following procedure is only used for frame 01 (base frame) which contains the Primary Power Box (PPB). Each component must be inspected as described.
  Refer to Figure 4-2 on page 4-5 to locate frame 01 and the PPB.
- Inspection
  - Check Table 0-4 on page xxxii for the correct primary power part numbers for the specified 50 Hz or 60 Hz use.

- Check for the correct PS Type 8:

  50 Hz (PN 6495884). This may be verified with the part number (PN 6495880) on the top of the transformer.

  60 Hz (PN 6495898). This may be verified by the part number (PN 6495881) on the top of the transformer.

  In case of discrepancy, contact your support structure.

Refer to Figure 0-21 on page lxv and Figure 0-25 on page lxviii for power rating plate locations and voltage labels and:

- Page YZ561 for the primary power box voltage adjustment
- Page YZ576 for the power box PS Type 6 voltage adjustment
- Page YZ578. for the power supply PS Type 8 voltage adjustment.

Check that:

- The power rating plate of the 3745 is consistent with the voltage level measured at the customer's power supply. If they are inconsistent, inform your branch office.

3746-900 Input Power Voltage

The power rating plate indicates the voltage range available (200/220/240) and the frequency (50/60 Hz). See Table 0-5 on page xxxii for the correct primary power part numbers for the specified 50 Hz or 60 Hz use.

The 3746-900 voltage range is 200/220/240.

Check that:

- The power rating plate of the 3746-900 is consistent with the frequency and the voltage measured at the customer's power supply. If they are inconsistent, inform your branch office. Refer to "Safety Label Identifications" on page lxix for the power rating plate location.

  dc Input Voltage

  For dc input, the customer's voltage must be within -40.0 V to -60.0 V. There is **no adjustment** for the optional dc input.

  ac Input Voltage

  For ac input, the customer's voltage must be within 180 V to 260 V.

  Adjustment of the input voltage can be done according to the customer voltage on TB1 of the transformers located at the rear of the 3746-900.

Table 0-1. ac Input Adjustment

Voltage Measured	Wire Position	Nominal Voltage
From 180 to 210 Volts	TB1-2	200/208 Volts
From 210 to 230 Volts	TB1-3	220 Volts
From 230 to 260 Volts	TB1-4	240 Volts

Important Note:

Since the 3745 can be remotely powered ON, all the following procedures must be performed with the Power Control function on the 3745 and the 3746-900 control panel set to **Local mode**.

Controller Expansion Input Power Voltage

The power rating plate indicates the voltage range available (200/240) and the frequency (50/60 Hz).

Check that the power rating plate of the controller expansion is consistent with the frequency and the voltage measured at the customer's power supply. If they are inconsistent, inform your branch office. Refer to "Controller Expansion Label Location" on page lxxi for the power rating plate location.

7 Test of the Emergency Power OFF

a. Ask the customer to connect the power cords to the customer's mains supply.
b. Put CB1s ON.
c. Power ON the 3745 and 3746-900 (Power Control function to Local on the control panel).
d. Operate the EMERGENCY switch to POWER OFF (**O**) and check that:
   1) The 3745 and the 3746-900 are powered OFF.

> **Note**
>
> In the 3746-900, the primary powers (ACDC) or filters section (DCDC) stay energized.
>
> For total disconnection:
>
> 1. Turn the CBs OFF.
> 2. Remove all the power plugs from supply outlets or shutdown installation.

   2) The diskette and disk drives are stopped.
   3) All the fans are stopped, except the MOSS fan which is supplied by the PS6 24 V.
   4) The convenience outlets on the 3745 are not supplied with ac power.
e. Relatch the EMERGENCY switch, then power ON the controller.

8 Power ON Indicator

Once the controller is powered ON, check that:

a. The 3745 control panel is lit
b. The Ready LED and the Standby LED (on the 3746-900 control panel) are lit according to the table shown in "Control Panel LED Status Versus 3746-900 States" on page xxx.

Control Panel LED Status Versus 3746-900 States

Table 0-2. LED Status Versus 3746-900 States

Standby LED	Ready LED	3746-900 State	Comment
Blinking	OFF	AC ON	Initialization of the CBSP hardware, and the 3746-900 waits for first recognition by the MOSS-E on LAN connection.
ON	OFF	Standby	The 3746-900, initially recognized by the MOSS-E, waits for a power ON condition (only the CBSP EEPROM code is running).
OFF	Blinking	Power ON	IML loading in all 3746-900 processors.
OFF	ON	Ready	The 3746-900 is now available.

3745/3746-900 Power Supply CP/CB Reference

Table 0-3. 3745 Power Supply CP/CB Reference

Frame	CB/CP	Location	Rating	PS
Frame 1	CB1	01E	40 A/220 V	
	CB1	01E	25 A/380 V	
	CP1	01E	3 A	PSTY8
	CP1	01F	1.5 A	PSTY6
	CP2	01F	1.5 A	PSTY6
	CP3	01F	1.5 A	PSTY6
	CP3	01E	6 A	PSTY1-A
	CP4	01E	3 A	PSTY5/7
	CP5	01E	3 A	PSTY3
	CP6	01E	3 A	PSTY2
	CP7	01E	6 A	PSTY4
	CP8	01E	6 A	PSTY1-B
	CP9	01E	3 A	Outlet
Frame 2	CP1	02J-A0	6 A	PSTY4
	CP2	02J-A0	3 A	PSTY3
	CP3	02J-A0	6 A	PSTY4
Frame 3	CP	03J-A0	6 A	PSTY4
Frame 4	CP1	04A-A0	6 A	PSTY5/7
	CP2	04A-A0	6 A	PSTY5/7
Frame 5	CP1	05A-A0	6 A	PSTY5/7
	CP2	05A-A0	6 A	PSTY5/7
Frame 6	CP1	06A-A0	6 A	PSTY7
	CP2	06A-A0	6 A	PSTY7
Frame 7: 3746-900	CB1 ac	07K-A1/07J-A1	15 A/220 V	ac Power
	CB1 dc	07J-A1	50 A	dc Power
	CP1	07K-A1/07J-A1	5 A	dc Power
	CP2	07H-A1	12 A	dc Power
	CP3	07H-A1	12 A	dc Power
	CP4	07H-A1	12 A	dc Power
	CP5	07H-A1	12 A	dc Power

Controller Expansion Fuse Reference

The ac outlet distribution box of the controller expansion contains two fuses: 7 A 250 V slow.

3745 Primary Power Part Number

Table 0-4. Part Numbers

Primary Power Assembly	Power Cord	Convenience Outlet Voltage
PN 6496105 U.S.A. and Canada 208, 220, 240 V 60 Hz	PN 6495844	117 V Outlet PN 357995 Transformer PN 826102 or 1859339
PN 6496106 Japan 200, 220 V 50 Hz	PN 6495845	100 V Outlet PN 357995 Transformer PN 1859339
PN 65X8688 Japan 200, 208, 240 V 60 Hz	PN 6495845	100 V Outlet PN 357995 Transformer PN 1859339
PN 6496107 All countries 200, 220 V 50 Hz	PN 6495845	200 V Outlet PN 418835
PN 65X8689 All countries 200, 208, 220, 240 V 60 Hz	PN 6495845	220 V Outlet PN 418835
PN 6495688 All countries 380, 400, 415 V 50 Hz	PN 6495846	220 V Outlet PN 418835
PN 65X8690 All countries 380 60 Hz	PN 6495846	220 V Outlet PN 418835

3746-900 Primary Power Part Number

Table 0-5. Part Numbers

Primary Power Assembly	Power Cord	Convenience Outlet Voltage
PN 03F7609 3746-900 ac box 60 Hz	Country dependent	
PN 03F7610 3746-900 ac box 50 Hz	Country dependent	
PN 03F7620 3746-900 dc box	PN 34F1416	

Sicherheitsüberprüfungen für IBM 3745, 3746-900 und die Erweiterung der Steuereinheit

Wichtige Informationen

Dieses Verfahren bezieht sich auf IBM 3745, 3746-900 und die Erweiterung der Steuereinheit. Sollte eine dieser Maschinen nicht vorhanden sein, die diesbezügliche Anweisung im folgenden Verfahren ignorieren.

Einführung

Sicherheitsüberprüfungen für 3745, 3746-900 und die Erweiterung der Steuereinheit sind in folgenden Fällen erforderlich:

- Bei einer Prüfung nach Absprache mit IBM
- Wenn eine IBM Wartungsleistung angefordert wird und in der letzten Zeit keine Wartung durch IBM durchgeführt worden war.
- Wenn Änderungen am Gerät oder Anschlüsse überprüft werden.
- Wenn Änderungen am Gerät vorgenommen worden sind, die möglicherweise die Sicherheit beeinträchtigen.

Wenn bei der Überprüfung ein unzureichender Sicherheitszustand festgestellt wird, müssen die Mängel behoben werden, bevor IBM das Gerät wartet.

Anmerkung: Für die Behebung von Sicherheitsmängeln ist der Besitzer des Geräts verantwortlich.

Folgende Bereiche und Funktionen der 3745, 3746-900 und der Erweiterung der Steuereinheit werden geprüft:

1. Äußere Abdeckungen
2. Sicherheitsaufkleber
3. Sicherheitsabdeckungen
4. Erdung
5. Sicherungsautomat und Überstromschutzschalter
6. Netzeingangsspannung
7. Netzkontrollschalter
8. Betriebsanzeige

Wichtige Hinweise:

1. Die Geräte der Reihe 3746 werden über den Grundrahmen der IBM 3745 ein- und ausgeschaltet.
2. Die IBM 3746-900 wird über den Grundrahmen der IBM 3745, von einem Host, lokal oder vom Serviceprozessor aus ein- und ausgeschaltet.

Auch nach dem Ausschalten liegt in einigen Bereichen der 3745 und 3746-900 eine gefährliche Spannung an.

Vor der Ausführung der Schritte 1-6 muß die Stromzufuhr wie folgt **unterbrochen** werden:

- Die **Sicherungsautomaten (CB1)** der 3745 und 3746-900 ausschalten (Stellung: OFF).
- **Alle Geräte in der Erweiterung der Steuereinheit (wenn vorhanden) ausschalten.**
- **Stromversorgung der 3745, 3746-900 und der controller expansion beim Kunden ausschalten**

  Netzkabel und Schutzleiter **A** der Erweiterung der Steuereinheit nicht entfernen, damit die Erdung gewährleistet ist (siehe Figure 0-12 on page xxxvi, Figure 0-13 on page xxxvii, Figure 0-14 on page xxxviii bzw. Figure 0-15 on page xxxix).

1 Äußere Abdeckungen

Prüfen, ob

- alle äußeren Abdeckungen an der 3745, den Geräten der Reihe 3746 und an der Erweiterung der Steuereinheit angebracht sind.
- die äußeren Abdeckungen auf zwei Arten verschlossen sind: mit Schlitzschrauben im IBM Zugriffsbereich und mit Sechskantschrauben im Zugriffsbereich des Kunden (siehe *IBM 3745 Communication Controller Models 210 to 61A Parts Catalog*, S135-2010).
- die Abdeckungen vollständig geöffnet werden können.
- um die Rahmen genügend Raum und Zugänge für Wartungsarbeiten sind, wenn die äußeren Abdeckungen geöffnet sind.

  Alle äußeren Abdeckungen für weitere Überprüfungen offen lassen.

2 Sicherheitsaufkleber

Prüfen, ob

- sich alle Sicherheitsaufkleber an den mit Buchstaben gekennzeichneten Stellen befinden, wie unter "Safety Label Locations" on page lxv beschrieben.
- die Aufkleber den jeweiligen Buchstaben gemäß "Safety Label Identifications" on page lxix entsprechen.

3 Sicherheitsabdeckungen

Bezüglich des Standorts der durch den Kundendienst austauschbaren Funktionseinheit (Kapitel 4) prüfen, ob

- alle Sicherheitsabdeckungen vorhanden und mit Schrauben gesichert sind.
- alle Spannungsklemmleisten durch eine Plastikabdeckung an der Oberseite der Klemmleiste geschützt sind.

4 Erdung

a Erdung der 3745

Hinweis

Im vorliegenden Handbuch bedeutet "erden", daß das Gerät mit der Schutzerdung verbunden werden muß.

Die Positionen der Erdungsbrücken sind den Seiten YZ110 bis YZ114 zu entnehmen.

Prüfen, ob

- **in jedem Rahmen der elektrische Durchgang zwischen der Rahmenerdung und den Anschlüssen, die auf den Schemazeichnungen für Erdung eingezeichnet sind, sichergestellt ist.**
- der elektrische Durchgang zwischen 3745, den Rahmenerdungen und dem Erdungssystem des Gebäudes durch die Netzkabel der 3745 sichergestellt wird.

b Schutzleiterverbindung der 3746-900 und der Erweiterung der Steuereinheit an das Erdungssystem des Gebäudes

- Der elektrische Durchgang zwischen der Rahmenerdung und dem Erdungssystem des Gebäudes wird über die Netzkabel sichergestellt.
- Der 3746-900 wird über das UEPO-Kabel an der 3745 geerdet (siehe Figure 0-11 on page xxxv).
- Bei der Erweiterung der Steuereinheit wird zusätzlich ein Schutzleiter **A** verwendet (siehe Figure 0-12 on page xxxvi, Figure 0-13 on page xxxvii, Figure 0-14 on page xxxviii bzw. Figure 0-15 on page xxxix).

1 UEPO-Kabel für 3745/3746-900

Prüfen, ob das UEPO-Kabel ordnungsgemäß an die 3745 (D) und die 3746-900 (C) angeschlossen ist.

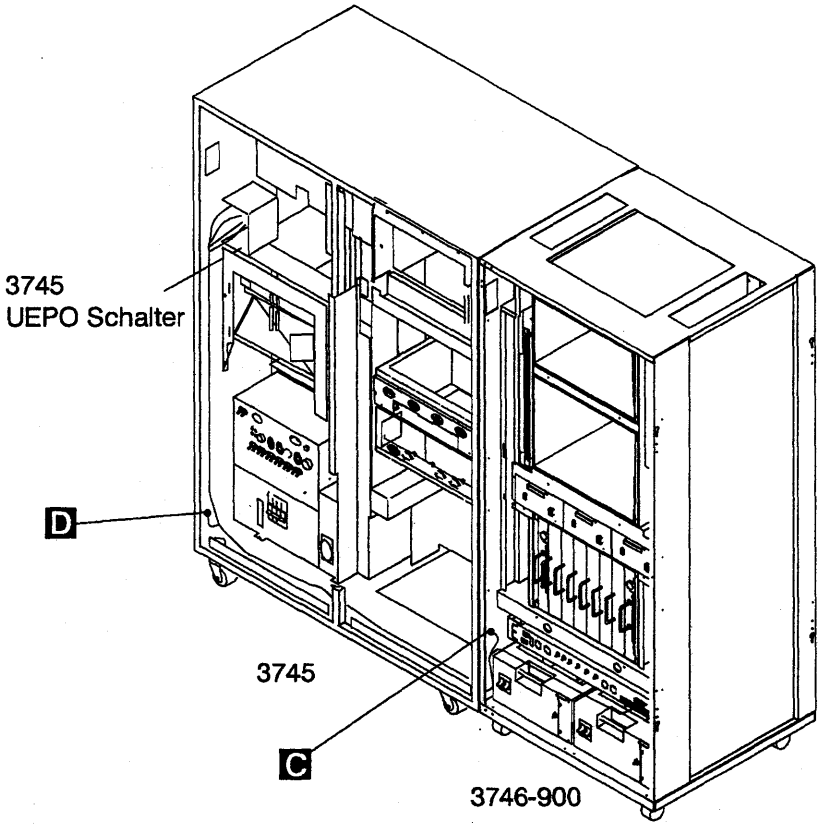


Figure 0-11. UEPO-Kabelführung bei der 3746-900

Anmerkungen:

a) D Schraube (Teilenummer 2665527) und Sicherungsring (Teilenummer 1622346).
b) C Schraube (Teilenummer 61F4511), Zahnscheibe (Teilenummer 17G5852) und Sicherungsring (Teilenummer 1622318)

2 Schutzleiter für die Erweiterung der Steuereinheit

- Wenn nur eine Erweiterung der Steuereinheit installiert ist, prüfen, ob der Schutzleiter A angeschlossen ist (siehe Figure 0-12 on page xxxvi).
- Wenn mehrere Erweiterungen der Steuereinheit installiert sind, prüfen, ob die Schutzleiter A gemäß Konfiguration angebracht wurden (siehe Figure 0-13 on page xxxvii, Figure 0-14 on page xxxviii bzw. Figure 0-15 on page xxxix).

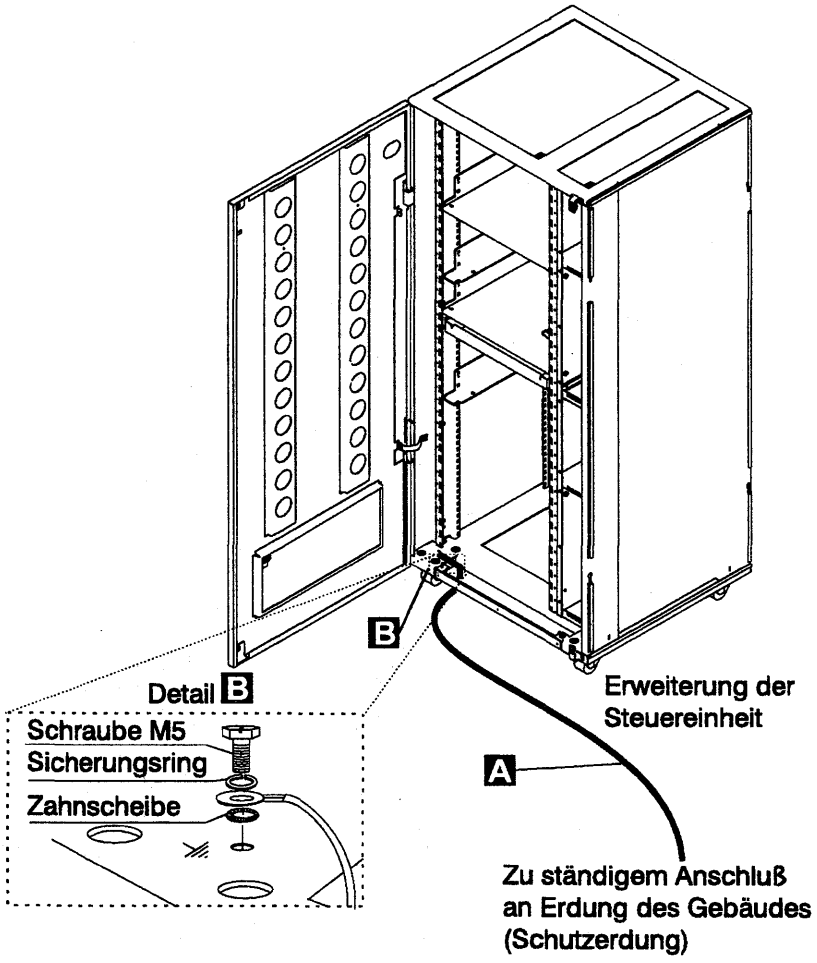


Figure 0-12. Schutzleiteranschluß an der Erweiterung der Steuereinheit

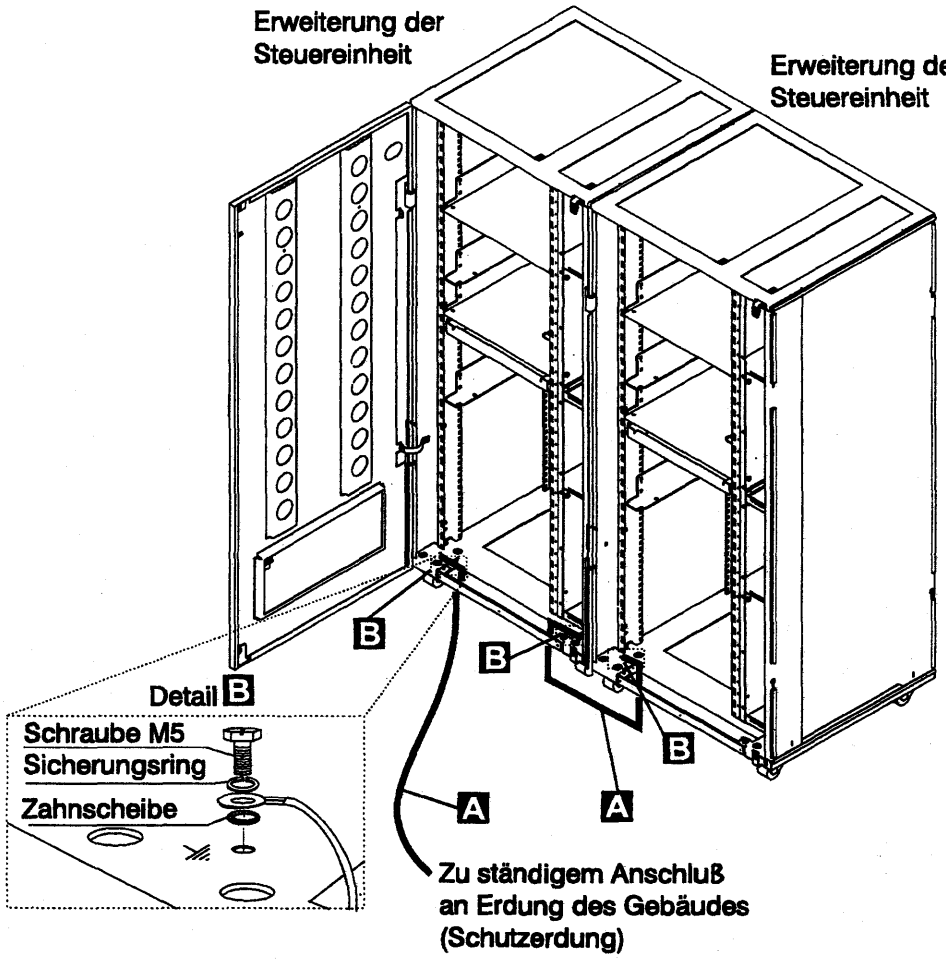


Figure 0-13. Schutzleiteranschluß zwischen angeschlossenen Erweiterungen der Steuereinheit.

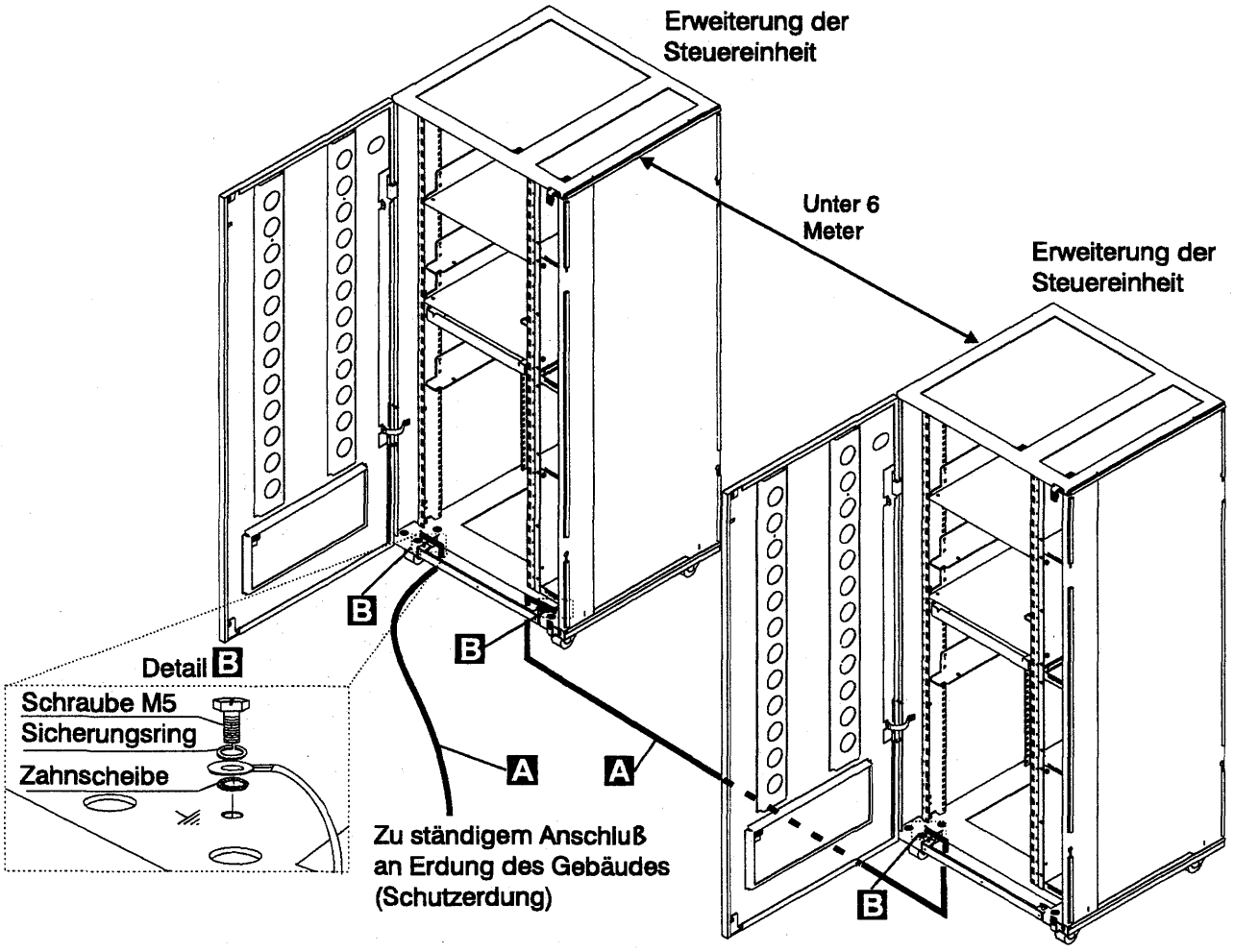


Figure 0-14. Schutzleiteranschluß bei einem Abstand von weniger als 6 Meter zwischen den Erweiterungen der Steuereinheit.

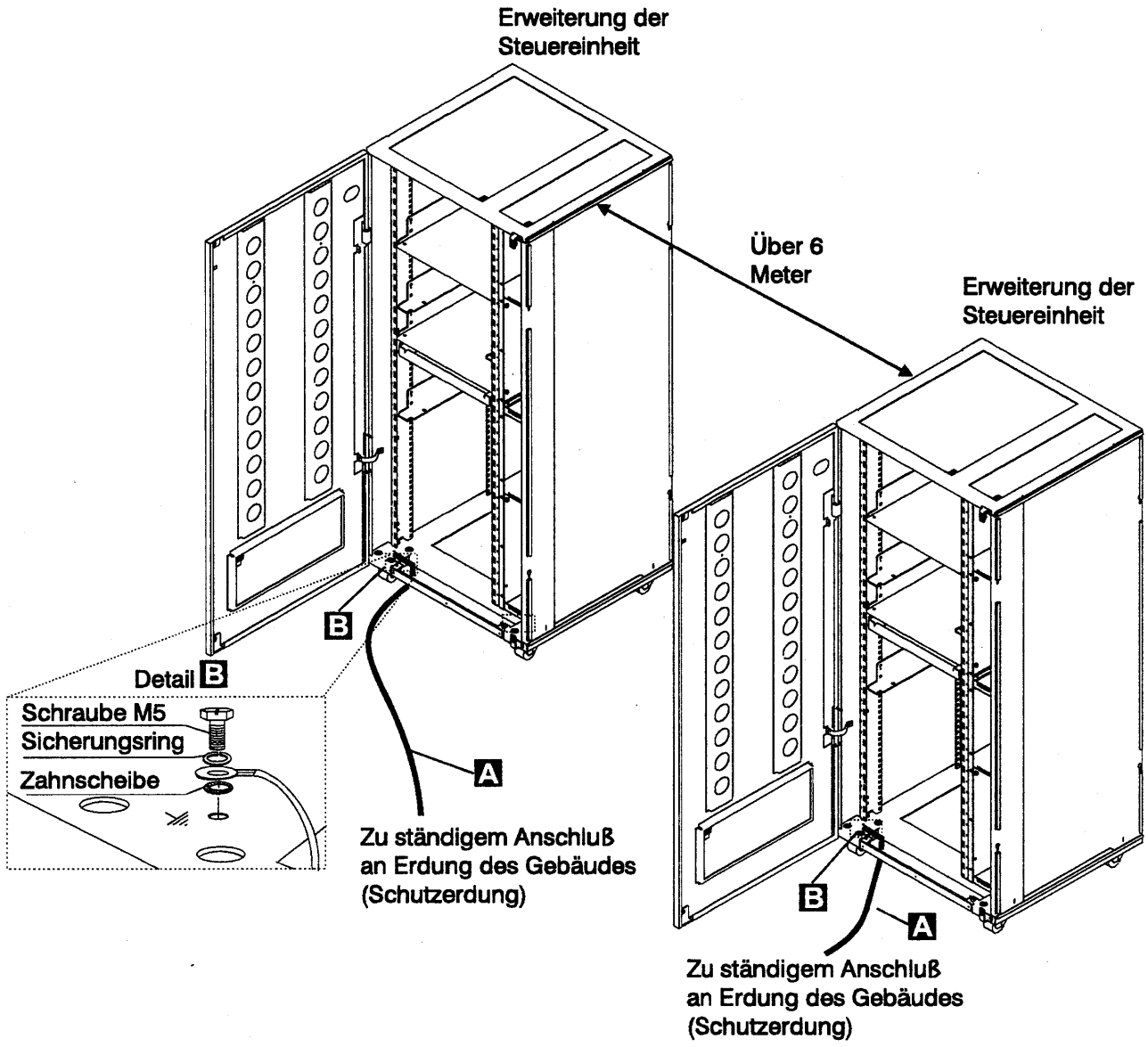


Figure 0-15. Schutzleiteranschluß bei einem Abstand über 6 Metern zwischen den Erweiterungen der Steuereinheit.

Anmerkungen:

a) A Schutzleiter (Teilenummer 58G5691)
b) B Schraube (Teilenummer 61F4513), Zahnscheibe (Teilenummer 1622347) oder (Teilenummer 17G5853) und Sicherungsring (Teilenummer 1622319).

3 Schutzleiter des AC/DC Stromversorgungskabels

- Hauptstromversorgungskabel auf beschädigte oder verbrannte Kontakte und beschädigte Isolierung prüfen.
- Den Widerstand des nicht angeschlossenen Hauptstromversorgungskabels zwischen dem Schutzleiterkontakt am einen und dem Schutzleiterkontakt am anderen Ende messen.

Der Widerstand darf maximal 0,1 Ohm betragen.

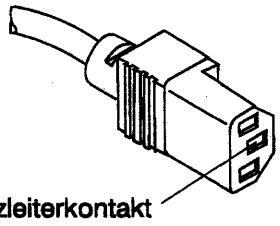


Figure 0-16. Schutzleiterkontakt am Hauptstromversorgungskabel

C Interne Erdung in der 3746-900 und der Erweiterung der Steuereinheit

An der 3746-900

- Prüfen, ob der elektrische Durchgang zwischen dem Gehäuse des Verteilerkastens und dem Rahmen der 3746-900 gewährleistet ist, sofern Verteilerkästen vorhanden sind. Dieser Schritt muß vor dem Anschluß von Signalkabeln erfolgen.

An der Erweiterung der Steuereinheit

- Prüfen, ob der elektrische Durchgang zwischen allen in der Erweiterung der Steuereinheit installierten Einheiten (Serviceprozessor, Netzknotenprozessor, Modem, optisches Plattenlaufwerk usw.) und dem Schutzleiterkontakt des Wechselstromverteilerkastens (siehe Figure 0-17) gewährleistet ist.
- Prüfen, ob der elektrische Durchgang zwischen dem Schutzleiterkontakt des Wechselstromverteilerkastens und dem Montagerahmen der Erweiterung der Steuereinheit gewährleistet ist.

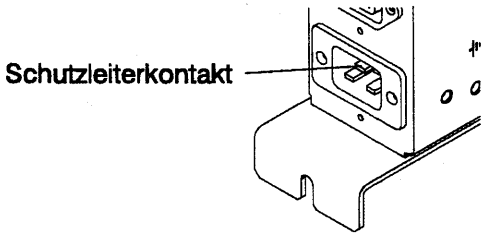


Figure 0-17. Schutzleiterkontakt des Wechselstromverteilerkastens der Erweiterung der Steuereinheit

- Prüfen, ob der elektrische Durchgang zwischen dem Gehäuse des Verteilerkastens und dem Rahmen der Erweiterung der Steuereinheit gewährleistet ist, sofern Verteilerkästen vorhanden sind. Dieser Schritt muß vor dem Anschluß von Signalkabeln erfolgen (siehe Figure 0-18 on page xli).

  Anmerkung: Bei allen vorherigen Prüfungen sollten maximal 0,1 Ohm gemessen werden.

d Erdung der nicht in der 3746-900 oder in der Erweiterung der Steuereinheit installierten Verteilerkästen

Prüfen, ob der elektrische Durchgang zwischen dem Gehäuse des Verteilerkastens und dem Erdungssystem des Gebäudes gewährleistet ist.

Je nach Installationsort kann der Verteilerkasten auf zweierlei Arten geerdet werden:

1) Erdung über die vier Schrauben, mit denen der Verteilerkasten am Gehäuse befestigt ist, falls der Gehäuserahmen mit dem Erdungssystem des Gebäudes verbunden ist.

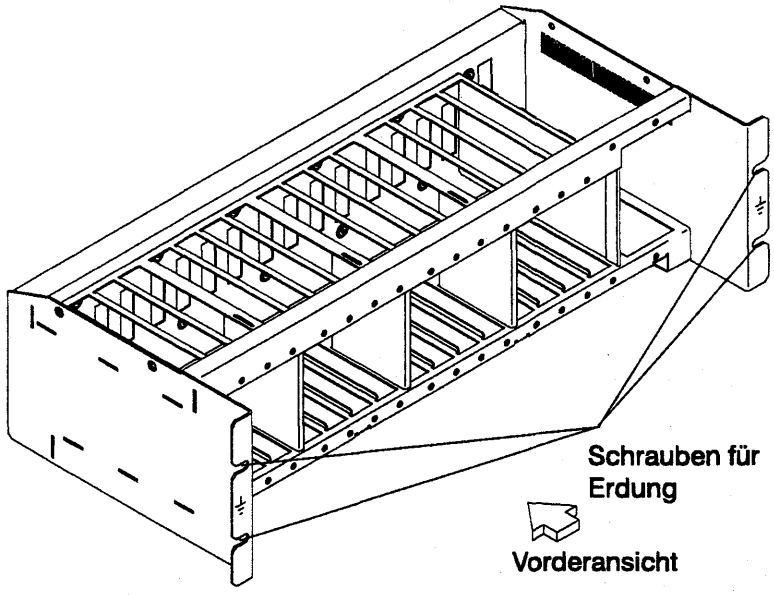


Figure 0-18. Erdung des Verteilerkastens über Schrauben

2) Erdung über ein Kabel, das den Verteilerkasten mit dem Erdungssystem des Gebäudes verbindet.

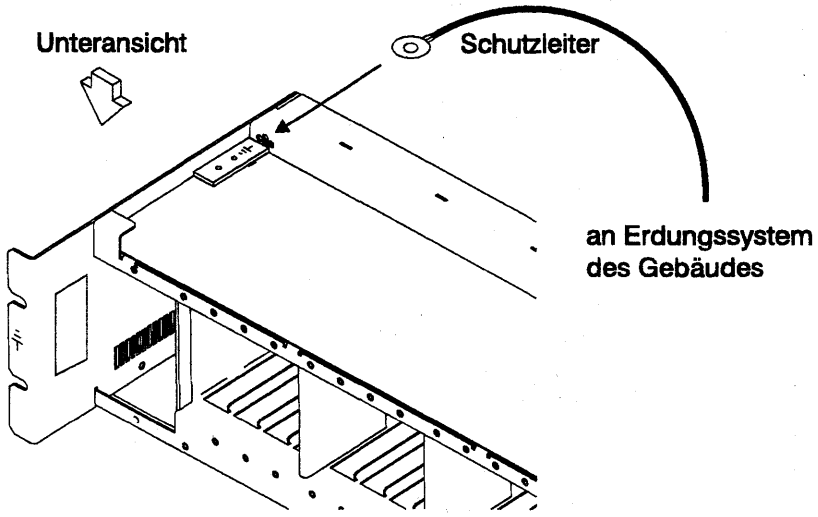


Figure 0-19. Erdung des Verteilerkastens über Schutzleiter

IBM liefert diesen Schutzleiter nicht mit. Der Schutzleiter muß aus einem AWG12-Leiter (mind. 2,5 mm2) bestehen, damit eine korrekte Erdung gewährleistet ist.

Schraube: 5 mm Durchmesser, Länge 6 bis 10 mm (siehe Figure 0-20 on page xlii).

Verbindung des Schutzleiters mit dem Verteilerkasten

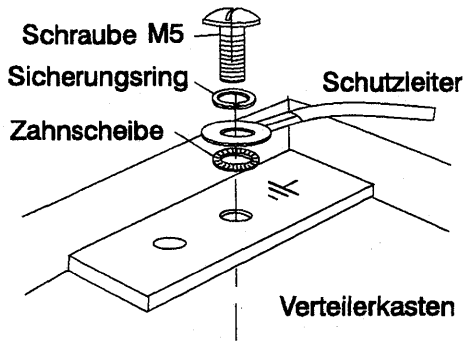


Figure 0-20. Schutzleiteranschluß

Dieser Schritt muß vor dem Anschluß von Signalkabeln erfolgen.

Anmerkung: Bei allen vorherigen Prüfungen sollten maximal 0,1 Ohm gemessen werden.

e Gebäudeerdung

Sicherstellen, daß zwischen den Metallgehäusen von Steckern, Buchsen usw. und jeder geerdeten Stelle im Gebäude eine Wechselspannung von weniger als 1V anliegt. Dies kann jedes geerdete Metallteil sein, wie z.B. die Stützen eines Doppelbodens (wenn sie mit dem Gebäudeerder verbunden sind), ein metallisches Wasserrohr, Baustahl usw..

Anmerkungen:

1) Beim Prüfen an einem lackierten Metallteil sicherstellen, daß die Prüfspitze die Farbe durchbohrt.
2) Stecker der anzuschließenden Kabel ebenfalls prüfen.

5 Sicherungsautomat und Überstromschutzschalter

Positionen der Sicherungsautomaten (CB) und Überstromschutzschalter (CP) siehe Table 0-8 on page xlvi.

Prüfen, ob

- alle Sicherungsautomaten und Überstromschutzschalter in der 3745 und 3746-900 die unter Table 0-8 on page xlvi angegebene Leistung haben. Wenn die Leistung nicht aufgeführt ist, die Teilenummer in einem der folgenden Kataloge prüfen:
  - *IBM 3745 Communication Controller Models 210 to 61A Parts Catalog*, S135-2010
  - *IBM 3746 Expansion Unit Model 900 Parts Catalog*, S135-2013
  - *IBM 3746 Nways Multiprotocol Controller Model 900 and 950 Parts Catalog*, S135-2015.
- Bei den Sicherungen im Wechselstromverteilerkasten der Erweiterung der Steuereinheit muß es sich um träge Sicherungen mit 7 A, 250 V handeln (Teilenummer 58G5782).

6 Eingangsspannung

Der zulässige Spannungsbereich (200/220/240 oder 346/380/415) ist dem Typenschild zu entnehmen.

Eingangsspannung der 3745

Der Aufkleber für die Versorgungsspannungen (Aufkleber E) gibt die Eingangsspannung für die 3745 an.

Stromumwandlung prüfen

- Die Stromumwandlung muß bei jeder DFV-Steuereinheit IBM 3745 geprüft werden, die von 50 Hz auf 60 Hz, von 60 Hz auf 50 Hz, von 220 V auf 380 V oder von 380 V auf 220 V umgerichtet wurde.
- Das folgende Verfahren wird nur bei Rahmen 01 (Grundrahmen), der das Netzteil enthält, angewandt. Jede Komponente muß wie beschrieben geprüft werden.
  Die Position des Rahmens 01 und des Netzteils ist Figure 4-2 on page 4-5 zu entnehmen.
- Prüfung

- Die Teilenummern für das entsprechende Netzteil für die Verwendung bei 50 oder 60 Hz sind Table 0-9 on page xlvii zu entnehmen.
- Prüfen, ob das richtige Netzteil PS Typ 8 : vorhanden ist

  50 Hz (Teilenummer 6495884). Kann anhand der Teilenummer (6495880) an der Oberseite des Transformators überprüft werden.

  60 Hz (Teilenummer 6495898). Kann anhand der Teilenummer (6495881) an der Oberseite des Transformators überprüft werden.

  Bei Unstimmigkeiten das KD-Unterstützungspersonal benachrichtigen.

Positionen des Typenschildes und der Aufkleber für die Netzspannungen siehe Figure 0-21 on page lxv und Figure 0-25 on page lxviii.

- Anpassung der Spannung im Netzteil siehe Seite YZ561.
- Anpassung der Spannung im Netzteil PS Typ 6 siehe Seite YZ576
- Anpassung der Spannung im Netzteil PS Typ 8 siehe Seite YZ578.

Prüfen, ob

- die Angaben auf dem Typenschild der 3745 mit der am Netzteil des Kunden gemessenen Spannungshöhe übereinstimmen. Wenn dies nicht der Fall ist, zuständige Geschäftsstelle informieren.

Eingangsspannung bei 3746-900

Der zulässige Spannungsbereich (200/220/240V) und die Frequenz (50/60 Hz) sind dem Typenschild zu entnehmen. Teilenummern für das entsprechende Netzteil für die Verwendung bei 50 oder 60 Hz sind Table 0-10 on page xlvii zu entnehmen.

Der Spannungsbereich für die 3746-900 liegt bei 200/220/240V.

Prüfen, ob

- die Angaben auf dem Etikett für Anschlußwerte an der 3746-900 mit der am Netzteil des Kunden gemessenen Spannung und Frequenz übereinstimmen. Wenn dies nicht der Fall ist, zuständige Geschäftsstelle informieren. Die Position des Etiketts für Anschlußwerte ist "Safety Label Identifications" on page lxix zu entnehmen.

  Spannung am Gleichstromeingang

  Am Gleichstromeingang muß die Spannung beim Kunden zwischen -40,0 V und -60,0 V liegen. Der optionale Gleichstromeingang **kann nicht eingestellt werden**.

  Spannung am Wechselstromeingang

  Am Wechselstromeingang muß die Spannung beim Kunden zwischen 180 V und 260 V liegen.

  Die Einstellung der Eingangsspannung gemäß der Spannung beim Kunden kann an der Klemmleiste 1 der Transformatoren an der Rückseite der 3746-900 erfolgen.

Table 0-6. Einstellung

Gemessene Spannung am Wechselstromeingang	Position des Leiters	Nenn-spannung
180 bis 210 Volt	Klemmleiste TB 1-2	200/208 Volt
210 bis 230 Volt	Klemmleiste TB 1-3	220 Volt
230 bis 260 Volt	Klemmleiste TB 1-4	240 Volt

Wichtiger Hinweis:

Die 3745 kann über Fernsteuerung eingeschaltet werden. Deshalb muß bei Ausführung der folgenden Verfahren die Stromsteuerfunktion am Bedienungsfeld der 3745 und 3746-900 auf **Lokal** eingestellt sein.

Eingangsspannung der Erweiterung der Steuereinheit

Der zulässige Spannungsbereich (200/240) und die Frequenz (50/60 Hz) sind dem Typenschild zu entnehmen.

Prüfen, ob die Angaben auf dem Etikett für Anschlußwerte an der Erweiterung der Steuereinheit mit der am Netzteil des Kunden gemessenen Spannung und Frequenz übereinstimmen. Wenn dies nicht der Fall ist, zuständige Geschäftsstelle informieren. Die Position des Etiketts für Anschlußwerte ist "Controller Expansion Label Location" on page lxxi zu entnehmen.

7 Prüfung des Notaus-Schalters

a. Den Kunden bitten, die Netzkabel an die Netzstromversorgung anzuschließen.

b. Die Sicherungsautomaten (CB1) einschalten.

c. Die 3745 und 3746-900 einschalten (Stromsteuerfunktion am Bedienungsfeld muß auf **Lokal** stehen).

d. Den NOTSCHALTER ausschalten (**O**) und prüfen, ob:

1) die 3745 und die 3746-900 ausgeschaltet sind.

> **Hinweis**
>
> In der 3746-900 stehen die primären Versorgungs- (ACDC) oder Filterbereiche (DCDC) weiterhin unter Spannung.
>
> Komplettes Abschalten:
>
> 1. Die Sicherungsautomaten (CBs) ausschalten.
> 2. Alle Netzstecker aus den Steckdosen ziehen oder die Netzstromversorgung abschalten.

2) die Disketten- und Plattenlaufwerke angehalten sind.

3) alle Ventilatoren gestoppt sind, bis auf den MOSS, der von PS6 24 V versorgt wird.

4) die Servicesteckdosen an der 3745 nicht mit Wechselstrom versorgt werden.

e. Notschalter entriegeln und Steuereinheit einschalten.

8 Betriebsanzeige

Nach Einschalten der Steuereinheit, prüfen, ob

a. das Bedienungsfeld der 3745 leuchtet

b. die Betriebs-LED und die Bereitschafts-LED im Bedienungsfeld der 3746-900 gemäß den Angaben der Tabelle "Bedeutung der LEDs am Bedienungsfeld der 3746-900" on page xlv leuchten.

Bedeutung der LEDs am Bedienungsfeld der 3746-900

Table 0-7. Bedeutung der LEDs am Bedienungsfeld der 3746-900

LED Bereitschaft	LED Betrieb	Status 3746-900	Kommentar
Blinken	AUS	Wechselstrom EIN	Initialisierung der CBSP-Hardware. Die 3746-900 wartet auf erste Erkennung durch den MOSS-E beim LAN-Anschluß.
EIN	AUS	Bereitschaft	Die eingangs vom MOSS-E erkannte 3746-900 wartet auf das Einschalten (nur das CBSP EEPROM-Programm ist aktiv).
AUS	Blinken	Einschalten	Alle 3746-900-Prozessoren werden hochgefahren (IML)
AUS	EIN	Betrieb	Die 3746-900 ist nun betriebsbereit.

Stromversorgung der 3745/3746-900, Überstromschutzschalter (CP) und Sicherungsautomaten (CB)

Table 0-8. Stromversorgung der 3745, Überstromschutzschalter (CP) und Sicherungsautomaten (CB)

Rahmen	CB/CP	Position	Nennwerte	PS (Stromversorgung)
Rahmen 1	CB1	01E	40 A/220 V	
	CB1	01E	25 A/380 V	
	CP1	01E	3 A	PSTY8
	CP1	01F	1,5 A	PSTY6
	CP2	01F	1,5 A	PSTY6
	CP3	01F	1,5 A	PSTY6
	CP3	01E	6 A	PSTY1-A
	CP4	01E	3 A	PSTY5/7
	CP5	01E	3 A	PSTY3
	CP6	01E	3 A	PSTY2
	CP7	01E	6 A	PSTY4
	CP8	01E	6 A	PSTY1-B
	CP9	01E	3 A	Steckdose
Rahmen 2	CP1	02J-A0	6 A	PSTY4
	CP2	02J-A0	3 A	PSTY3
	CP3	02J-A0	6 A	PSTY4
Rahmen 3	CP	03J-A0	6 A	PSTY4
Rahmen 4	CP1	04A-A0	6 A	PSTY5/7
	CP2	04A-A0	6 A	PSTY5/7
Rahmen 5	CP1	05A-A0	6 A	PSTY5/7
	CP2	05A-A0	6 A	PSTY5/7
Rahmen 6	CP1	06A-A0	6 A	PSTY7
	CP2	06A-A0	6 A	PSTY7
Rahmen 7: 3746-900	CB1 AC	07K-A1/07J-A1	15 A/220 V	Wechselstrom
	CB1 DC	07J-A1	50 A	Gleichstrom
	CP1	07K-A1/07J-A1	5 A	Gleichstrom
	CP2	07H-A1	12 A	Gleichstrom
	CP3	07H-A1	12 A	Gleichstrom
	CP4	07H-A1	12 A	Gleichstrom
	CP5	07H-A1	12 A	Gleichstrom

Sicherungen der Erweiterung der Steuereinheit

Der Wechselstromverteilerkasten der Erweiterung der Steuereinheit enthält zwei Sicherungen: 7 A 250 V träge.

Teilenummern der Netzteile der 3745

Table 0-9. Teilenummern

Netz-teil	Netz-kabel	Spannung Servicesteckdose
6496105 USA und Kanada 208, 220, 240V 60 Hz	6495844	117 V Steckdose 357995 Transformator 826102 oder 1859339
6496106 Japan 200, 220 50 Hz	6495845	100 V Steckdose 357995 Transformator 1859339
65X8688 Japan 200, 208, 240 60 Hz	6495845	100 V Steckdose 357995 Transformator 1859339
6496107 Alle Länder 200, 220 50 Hz	6495845	200 V Steckdose 418835
65X8689 Alle Länder 200, 208, 220, 240 60 Hz	6495845	220 V Steckdose 418835
6495688 Alle Länder 380, 400, 415 50 Hz	6495846	220 V Steckdose 418835
65X8690 Alle Länder 380 60 Hz	6495846	220 V Steckdose 418835

Teilenummern der Netzteile der 3746-900

Table 0-10. Teilenummern

Netz-teil	Netz-kabel	Spannung Servicesteckdose
03F7609 Netz-teil (Wechselstrom) 3746-900 60 Hz	länderspezifisch	
03F7610 Netz-teil (Wechselstrom) 3746-900 50 Hz	länderspezifisch	
03F7620 Netz-teil (Gleichstrom) 3746-900	34F1416	

3745，3746-900 和控制器扩展的安全检测服务程序

重要

这个程序是针对3745，3746-900 和控制器扩展的。如果这些机器中有一个不存在，请忽略下列程序中有关这个机器的叙述。

介绍

在下列条件下有关3745，3746-900 和控制器扩展的安全检测程序应该被执行：

- 当进行IBM协议检测时
- 当请求IBM服务并且最近没有进行IBM服务时
- 当执行设备或附件改变时
- 当对设备进行改变时可能会影响安全性时。

如果检测出不可接受的不安全性因素时，在IBM为机器服务前必须被改正。

注：　设备的主人必须负责改正不安全因素。

3745，3746-900 和控制器扩展范围和功能通过这些程序检查：

1. 外壳
2. 安全标记
3. 安全遮盖和屏蔽
4. 接地
5. 电路冲击和保险丝额定值
6. 输入电压
7. 电源控制开关
8. 电源打开指示器。

重要指示：

1. 3746的打开和关闭是通过基本的3745机柜。
2. 3746-900的打开和关闭是通过基本的3745机柜，或者是一个本地的主机，或者是服务处理器。

在某些地方当3745和3746-900电源关闭时也会有危险的电压。

在电源关闭后必须做如下第一步到第六步：

- 在3745和3746-900之上CB1s已关闭。
- 所有安装在控制器扩展上的设备（如果存在的话）都已关闭。
- 对3745，3746-900和控制器扩展在用户条件下的电源供应被关闭。

  为了保持接地保护，不要移动控制器扩展中的电源线和接地线 A（参照第4页的图2，第5页的图3，第6页的图4，或第7页的图5）。

1 外壳

检查：

- 它们在3745，3746和控制器扩展上都存在。
- 它们被两种锁锁定：在IBM进入处是遍平带刃的螺丝而在用户进入处是六角形的头（参考IBM3745通讯控制器型号210到61A，部件目录，S135-2010）。
- 它们能被彻底地打开。
- 在外壳打开时对机柜提供适当的服务界面。
  让所有的外壳打开以允许进一步的安全检测。

2 安全标签

检查：

- 在所有标有“Safety Label Locations”的地方都有安全标签。
- 每个标签的型号都和“Safety Label Identifications”上显示的一致。

3 安全遮盖和屏蔽

参考FRU（第四章）的位置检查：

- 所有的安全遮盖都完好并被螺丝加固。
- 所有的终端板上的电压处都有塑料的遮盖并用螺丝固定。

4 接地

a 在3745上接地

> 指示
> 在这本书中，“接地”指的是设备必须连接到地上。

参考从页YZ110到YZ114的接地跳线位置。

检查：

- 各机柜间，各机柜的接地和分布图所指的终端间保证电路连通。
- 通过3745的电源线，3745，机柜接地和前导接地系统间的电路保证连通。

b 在3746-900和控制器扩展的接地到前导接地系统

- 通过电源线机柜地到前导接地系统的电路保证连通。
- 通过UEPO线3746-900接地到3745（参照第3页的图1）。
- 对控制器扩展，附加的接地线 A 也被采用（参照第4页的图2，第5页的图3，第6页的图4，或第7页的图5）。

1 3745/3746-900 UEPO线

检查 UEPO 线在3745上 D 和在3746-900上 C 正确地连接。

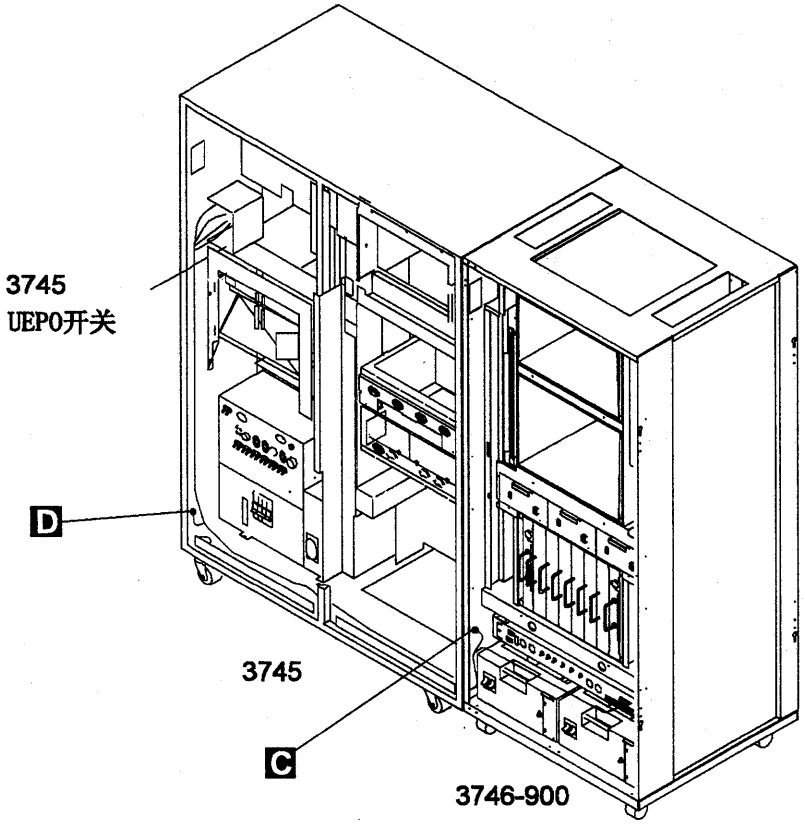


图 1. 3746-900 UEPO 线路由

注：

a） D 螺丝（PN 2665527）和锁定垫圈（PN 1622346）。

b） C 螺丝（PN 61F4511），星型垫圈（PN 17G5852），和锁定垫圈（PN 1622318）。

2 控制器扩展接地

- 如果你只安装了一个控制器扩展的话，检查地线 A 是否被安装了（参照第4页的图2）。
- 如果你安装了一些控制器扩展的话，检查地线 A 是不是根据你的配置安装的（参照第5页的图3，第6页的图4，或第7页的图5）。

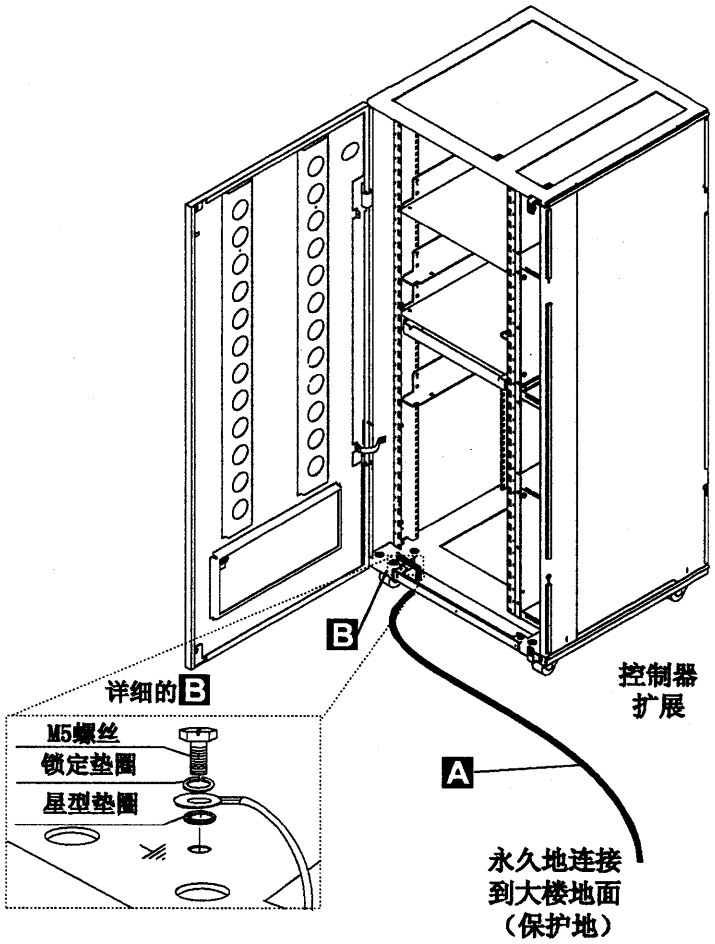


图 2. 在控制器扩展上的地线连接

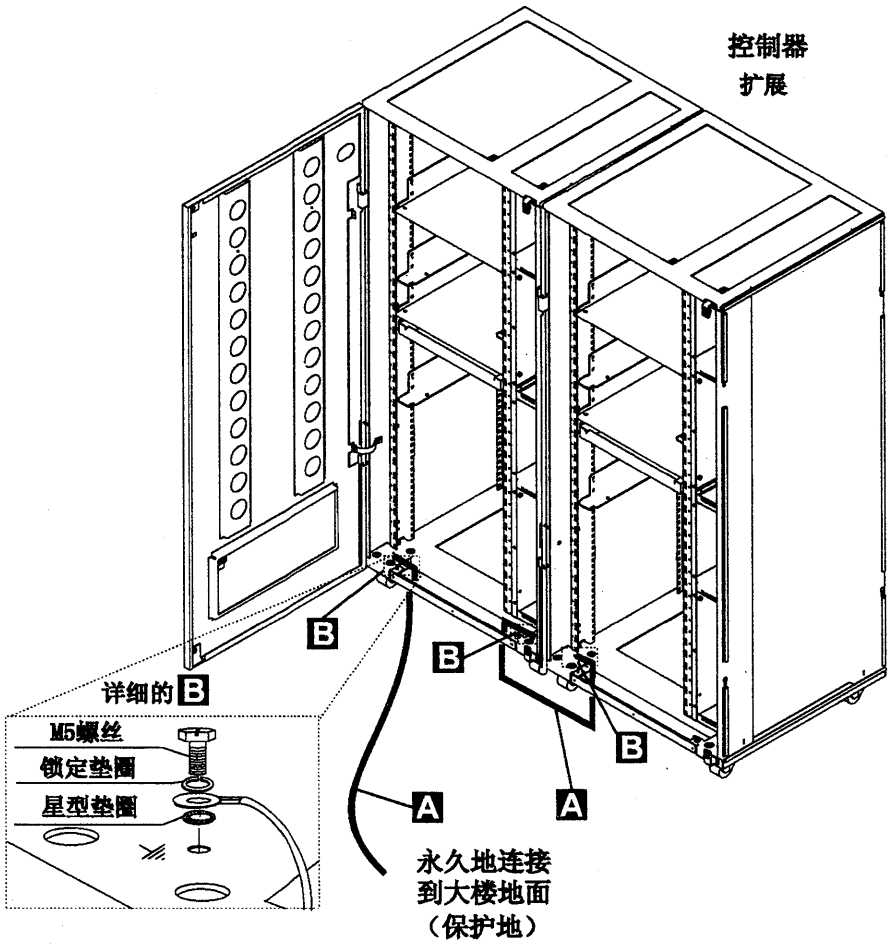


图 3. 在附加控制器扩展间的地线连接

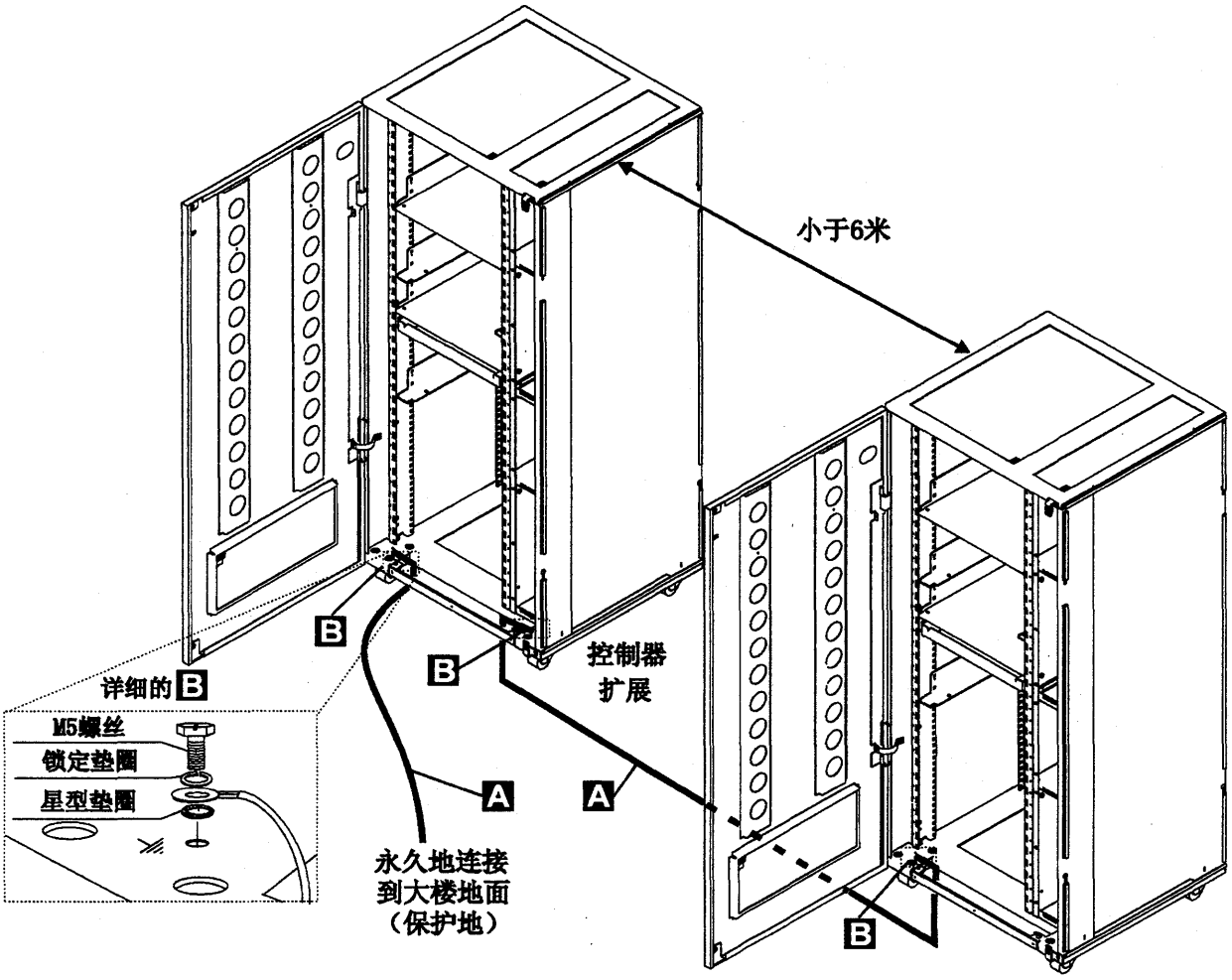


图 4. 小于6米的控制器扩展之间的地线连接

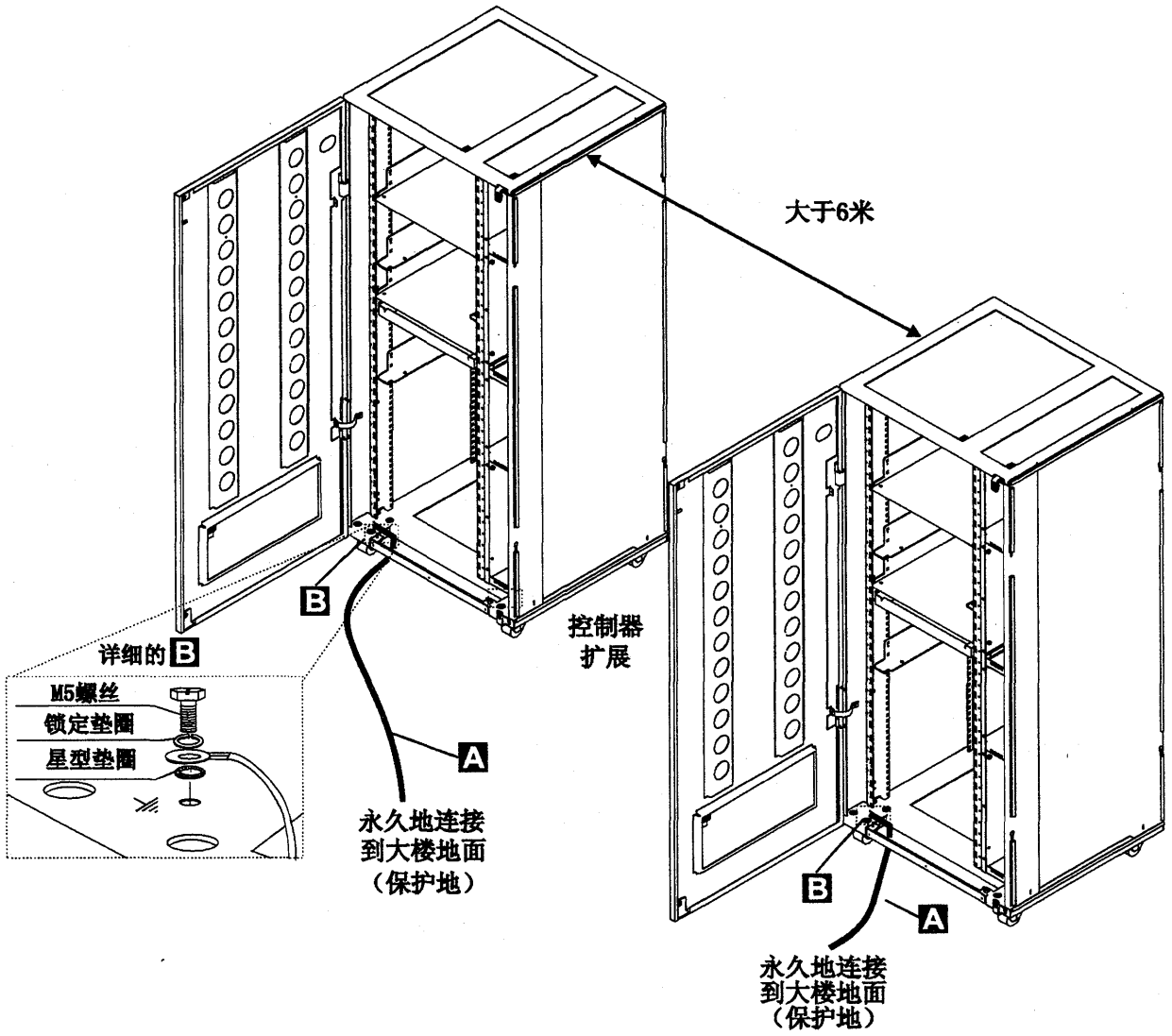


图 5. 大于6米的控制器扩展之间的地线连接

注：

a） A 地线（PN 58G5691）

b） B 螺丝（PN 61F4513），星型垫圈（PN 1622347）或（PN 17G5853），和锁定垫圈（PN 1622319）。

3 ac/dc 电源线接地

- 检查主导ac/dc电源线是否损坏或烧坏引脚和损坏绝缘。
- 测量挂断主导ac/dc电源线从一个接地端到另一个接地端的电阻。

测量值必须小于或等于 0.1欧姆。

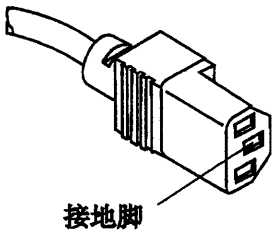


图 6. 在主导ac/dc电源线上的接地脚

c 在3746-900和控制器扩展的内部接地

在3746-900上

- 如果有LCB的话，检查LCB外壳和3746-900机柜间保证电路连通。这个操作必须在网络连接之前做。

在控制器扩展上

- 检查在控制器扩展上安装的机器保证电路连通（服务处理器，网络节点处理器，调制解调器，驱动器等等）以及ac引线分配盒的接地脚（参照图7）。
- 检查在引线分配盒的接地脚和控制器扩展的支持机柜间的电路保证连通。

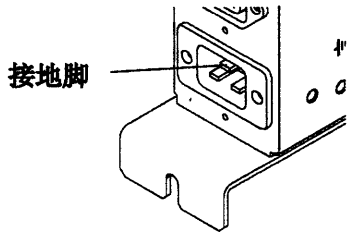


图 7. 控制器扩展ac引线分配盒的接地脚

- 如果有LCB的话，检查LCB外壳和控制器扩展机柜之间的电路保证连通。这个操作必须在网络连接之前做（参照第9页的图8）。

注： 所有前面的操作应该显示小于或等于0.1欧姆。

d 没有安装在3746-900或控制器扩展上的线路连接盒（LCBs）的接地

检查LCB外壳和前导接地系统间的电路保证连通。

依据LCB安装在哪里有两种方法确保适当的接地：

1）如果机柜支架连接到前导接地系统上，由四颗螺丝把LCB固定在支架上，接地是确保的。

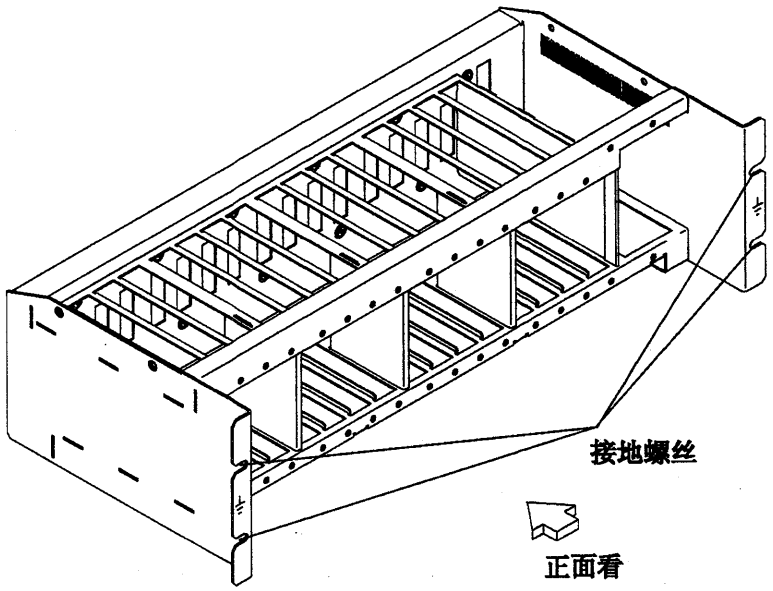


图 8. LCB 接地通过螺丝

2）用一根线连接LCB和前导接地系统可确保接地。

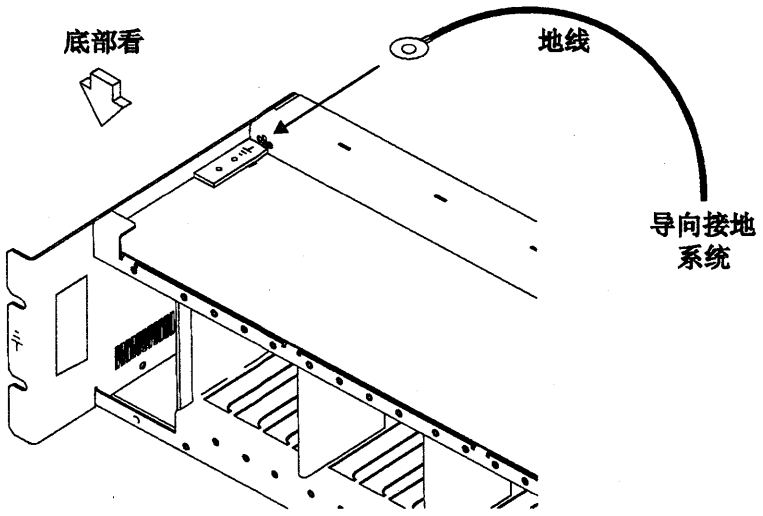


图 9. LCB 接地通过地线

IBM不提供这根电线。为了确保正确接地，这种地线必须用线AWG 12（最小2.5平方毫米）制作。

螺丝：直径 5mm，长6到 10mm（参考第10页的图10）。

地线连接到LCB

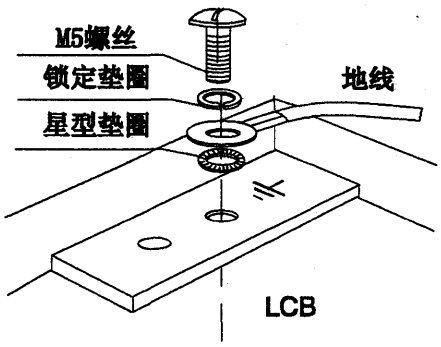


图 10. 地线连接

这个操作必须在网络连接之前做。

注： 所有前面的测量应该显示小于或等于0.1欧姆。

e 大楼接地

检查大楼内金属壳插头，连接头，插座等和接地点之间的电压小于1V ac。接地点可以是任何金属接地结构，如地板支柱（如果能接大楼地），金属水管，大楼钢筋等。

注：

1）如果检测到有漆的部分，应确保检测表头穿过漆层接触到金属。

2）也检测一下输入线插头。

5 电路冲击和保险丝额定值

参考第15页的表3 CB和CP的位置。

检查：

- 在3745和3746-900中所有的CBs和CPs都有指定的额定值（见第15页的表3）。如果额定值未指定，检查以下的部件号：
  - —— IBM3745通讯控制器型号210到61A，部件目录，S135-2010
  - —— IBM3746扩展部件型号900，部件目录，S135-2013
  - —— IBM3746扩展部件型号900，IBM3746 N路多协议控制器型号950，部件目录，S135-2015。
- 在控制器扩展ac引线分配盒中的保险丝必须为 7A，250V（PN 58G5782）慢速。

6 输入电源电压

电源额定牌指示的电压范围（200/220/240 或 346/380/415）。

3745输入电源电压

电压标记（标记E）指出3745连接的输入电压。

进行电源转换检测。

- 当任何3745通讯控制器被转换成从50Hz到60Hz，从60Hz到50Hz，从220V到380V，或从380V到220V时，电源转换检测必须执行。
- 以下程序只有包含主电源盒（PPB）的01结构（基本结构）使用。每个部件必须符合描述标准。

  参考第四章来查找01结构和PPB。
- 检验
  - 检查第17页的表4中50Hz或60Hz主电源使用的部件号。
  - 检查PS类型8：

    50Hz（PN 6495884）。验证变压器顶端的部件号（PN 6495880）。
    60Hz（PN 6495898）。验证变压器顶端的部件号（PN 6495881）。
    如有不符合，请与你的服务支持部门联系。

  参照“Safety Label Locations”找电源额定牌的位置和电压标记和：
  - 页YZ561为主电源盒的电压调整
  - 页YZ576为主电源盒PS类型6的电压调整
  - 页YZ578为供电PS类型8的电压调整。

  检查：
  - 3745的电源额定牌应与用户电源供应的电压标记一致。如果不是的话，通知捏分支机构。

  3746-900输入电源电压

  电源额定牌指出可供电压范围（200/220/240）和频率（50/60Hz）。参照第18页的表5中50Hz和60Hz主电源使用的部件号。
  3746-900电压范围为200/220/240。

  检查：
  - 3746-900的电源额定牌应与用户电源供应的频率和电压一致。如果不是的话，通知你的分支机构。参考“Safety Labels Locations”可见电源额定牌的位置。

    dc输入电压

    对dc输入来说，用户电压必须在-40.0V到-60.0V之间。就是说没有调整可选dc输入。

    ac输入电压

    对ac输入来说，用户电压必须在180V到260V之间。

    根据3746-900的背面变压器TB1上的用户电压可调整输入电压。

表 1. ac 输入调整

电压 测量	电线 位置	名义上的 电压
从 180 到 210 伏	TB1-2	200/208 伏
从 210 到 230 伏	TB1-3	220 伏
从 230 到 260 伏	TB1-4	240 伏

重要的提示：

因为3745能被远程打开，所有以下有关3745和3746-900控制板的电源控制功能的程序必须设置为本地模式（Local mode）。

控制器扩展输入电源电压

电源额定牌指明可供电压范围（200/240V）频率（50/60Hz）。

检查控制器扩展的电源额定牌应与用户电源供应的频率和电压一致。如果不是的话，通知你的分支机构。参考“Controller Expansion Label Location”可见电源额定牌的位置。

7 测试紧急电源关闭

a. 要求用户把电源线接到用户主供应电源上。

b. 打开CB1s。

c. 打开3745和3746-900（控制板上电源控制功能为本地 Local）。

d. 把紧急开关关闭（0）并检查：

1）3745和3746-900已被关闭。

> 指示
>
> 在3746-900里，主电源（ACDC）或过滤部分（DCDC）保持正常。
> 全部断连：
> 1. 关闭CBs
> 2. 拔下所有插座上的插头或关闭设备。

2）磁盘和磁盘驱动器停止工作。

3）除PS6 24V供电的MOSS之外，所有的风扇停止工作。

4）3745上的插座不由ac电源供电。

e. 打开紧急开关，打开控制器。

8 打开指示器

一旦控制器打开后，检查：

a. 3745控制板点亮

b. 3746-900控制板上的工作LED和备用LED是否根据第14页的“控制板LED状态比较3746-900状态”的表上显示点亮。

控制板LED状态比较3746-900状态

表 2. LED 状态比较3746-900状态

备用LED	工作LED	3746-900状态	注解
闪烁	关闭	AC 打开	初始化CBSP硬件，3746-900等待LAN连接上的MOSS-E的第一次识别。
打开	关闭	备用	3746-900在初始化被MOSS-E识别后，等待电源打开（只运行CBSP EEPROM代码）。
关闭	闪烁	电源打开	在所有的3746-900处理器中加载IML。
关闭	打开	准备好了	现在3746-900已可用了。

3745/3746-900 电源供应CP/CB参考

表 3(1/2). 3745 电源供应CP/CB参考

结构	CB/CP	位置	额定值	PS
结构 1	CB1	01E	40A/220V	
	CB1	01E	25A/380V	
	CP1	01E	3A	PSTY8
	CP1	01F	1.5A	PSTY6
	CP2	01F	1.5A	PSTY6
	CP3	01F	1.5A	PSTY6
	CP3	01E	6A	PSTY1-A
	CP4	01E	3A	PSTY5/7
	CP5	01E	3A	PSTY3
	CP6	01E	3A	PSTY2
	CP7	01E	6A	PSTY4
	CP8	01E	6A	PSTY1-B
	CP9	01E	3A	输出
结构 2	CP1	02J-A0	6A	PSTY4
	CP2	02J-A0	3A	PSTY3
	CP3	02J-A0	6A	PSTY4
结构 3	CP	03J-A0	6A	PSTY4
结构 4	CP1	04A-A0	6A	PSTY5/7
	CP2	04A-A0	6A	PSTY5/7
结构 5	CP1	05A-A0	6A	PSTY5/7
	CP2	05A-A0	6A	PSTY5/7
结构 6	CP1	06A-A0	6A	PSTY7
	CP2	06A-A0	6A	PSTY7

表 3(2/2). 3745 电源供应CP/CB参考				
结构	CB/CP	位置	额定值	PS
结构 7：3746-900	CB1 ac	07K-A1/07J-A1	15A/220V	ac 电源
	CB1 dc	07J-A1	50A	dc 电源
	CP1	07K-A1/07J-A1	5A	dc 电源
	CP2	07H-A1	12A	dc 电源
	CP3	07H-A1	12A	dc 电源
	CP4	07H-A1	12A	dc 电源
	CP5	07H-A1	12A	dc 电源

控制器扩展保险丝参考

控制器扩展的ac输出分配盒包括两个保险丝：7A 250V 慢速。

3745 主电源部件号

表 4. 部件号

主电源 装置	电源 线	合适的输出 电压
PN 6496105 美国和加拿大 208，220，240V 60Hz	PN 6495844	117V 输出 PN 357995 变压器 PN 826102 或 1859339
PN 6496106 日本 200，220V 50Hz	PN 6495845	100V 输出 PN 357995 变压器 PN 1859339
PN 65X8688 日本 200，208，240V 60Hz	PN 6495845	100V 输出 PN 357995 变压器 PN 1859339
PN 6496107 所有的国家 200，220V 50Hz	PN 6495845	200V 输出 PN 418835
PN 65X8689 所有的国家 200，208，220，240V 60Hz	PN 6495845	200V 输出 PN 418835
PN 6495688 所有的国家 380，400，415V 50Hz	PN 6495846	200V 输出 PN 418835
PN 65X8690 所有的国家 380V 60Hz	PN 6495846	200V 输出 PN 418835

3746-900 主电源部件号

表 5. 部件号

主电源 装置	电源 线	合适的输出 电压
PN 03F7609 3746-900 ac盒 60Hz	依赖于国家	
PN 03F7610 3746-900 ac盒 50Hz	依赖于国家	
PN 03F7620 3746-900 dc盒	PN 34F1416	

Safety Label Locations

Safety Label on the 3745

On the following figures, labels are designated by letters. A particular wording corresponds to each letter (see "Safety Label Identifications" on page lxix).

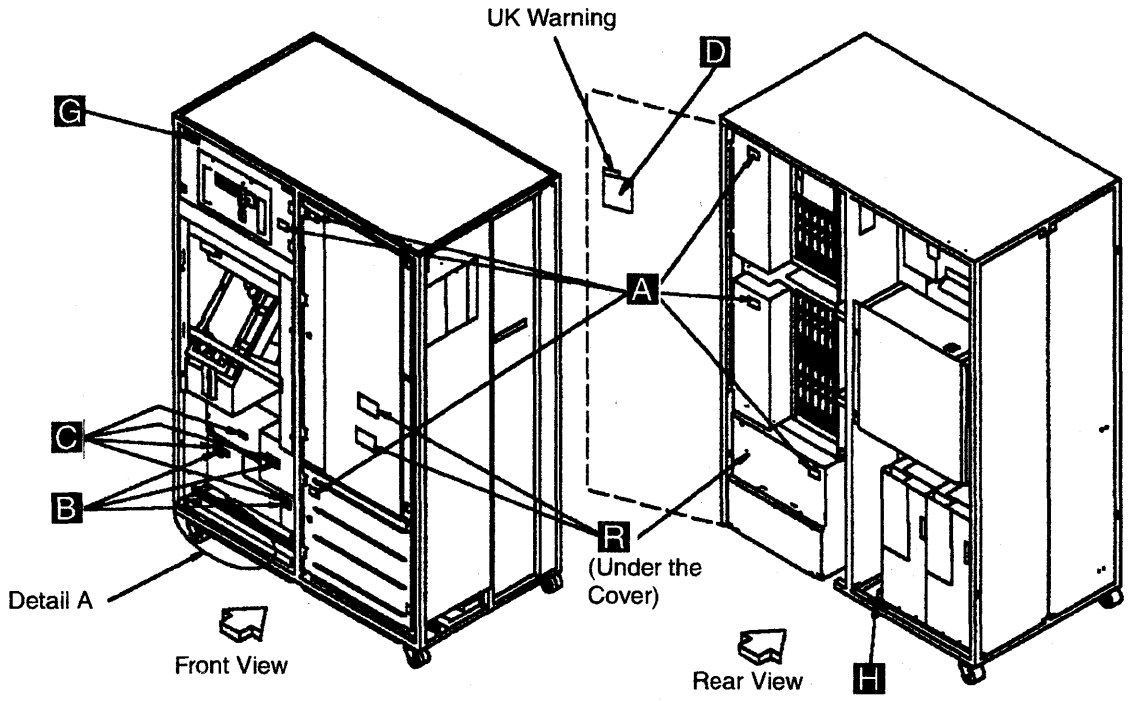


Figure 0-21. 3745 (Basic Frame 01) Label and Power Rating Plate Locations

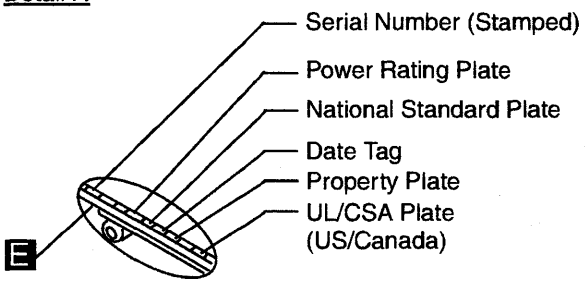


Figure 0-22. 3745 (Basic Frame 01) Label and Power Rating Plate Locations. (Detail).

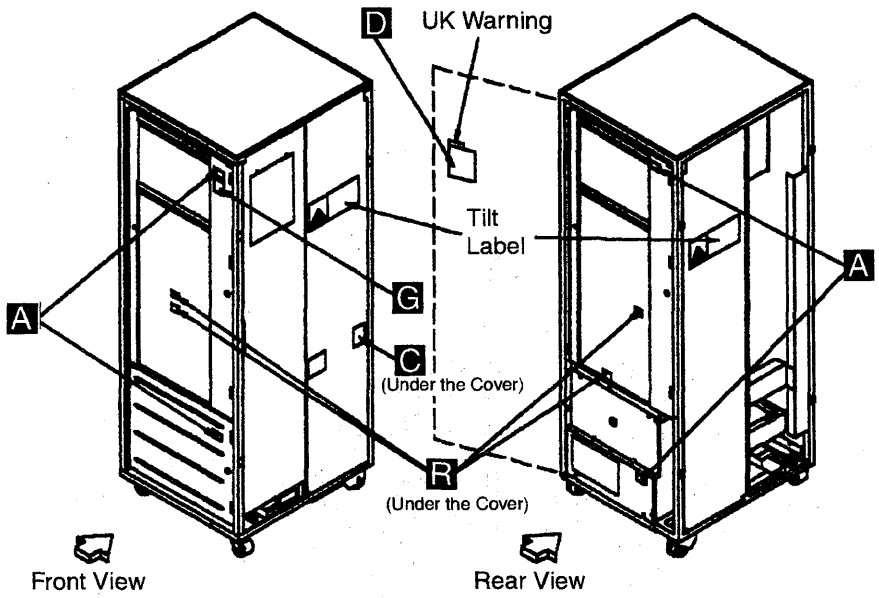


Figure 0-23. 3746-A11 (Frame 02) or 3746-A12 (Frame 03) Label Locations

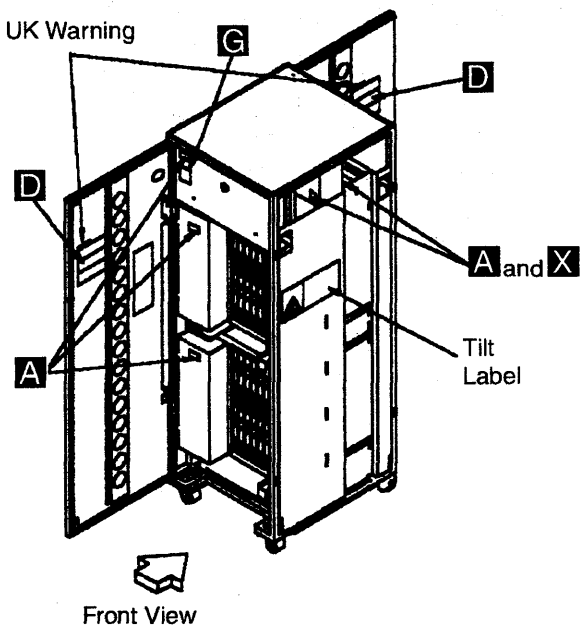


Figure 0-24 (Part 1 of 2). 3746-L13 (Frame 04) 3746-L14 (Frame 05) 3746-L15 (Frame 06) Label Locations

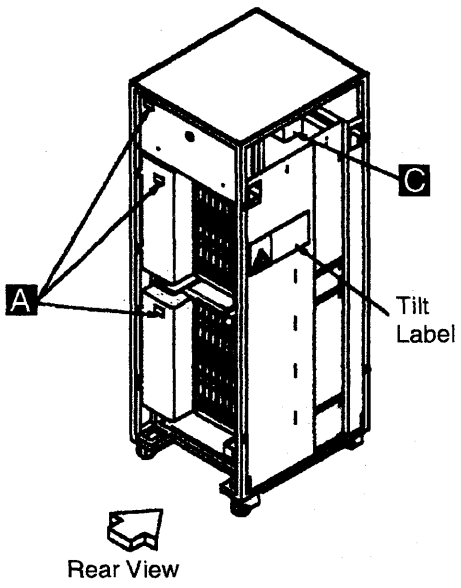


Figure 0-24 (Part 2 of 2). 3746-L13 (Frame 04) 3746-L14 (Frame 05) 3746-L15 (Frame 06) Label Locations

Safety Label on the 3746-900

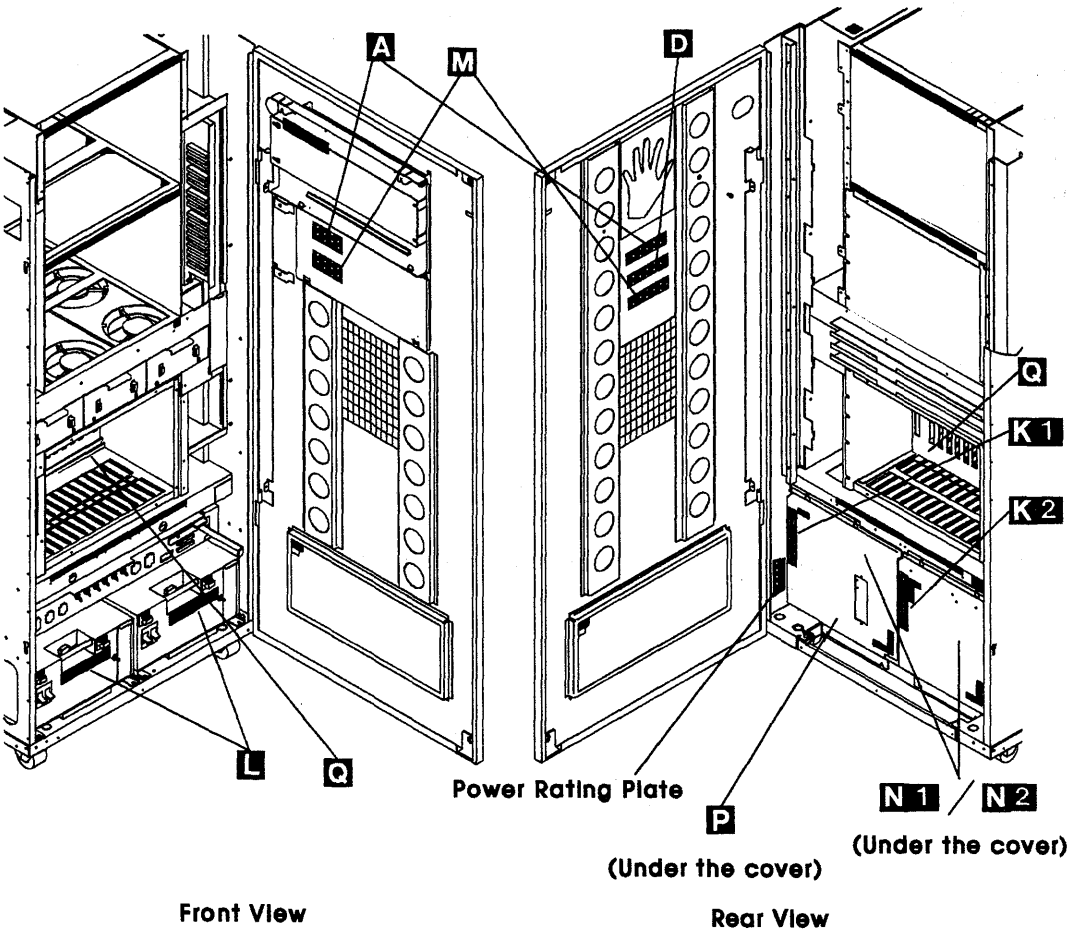


Figure 0-25. 3746 Model 900 (Frame 07) Label Locations

Safety Label on the LCB

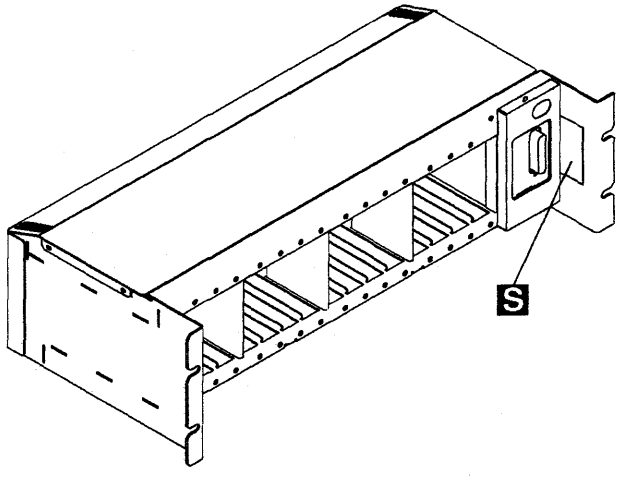


Figure 0-26. LCB Safety Label Location

Safety Label Identifications

The safety labels shown in Figure 0-27 are in English. They are also available in other languages. See "Safety Label Part Numbers by Country" on page lxxii for ordering.

LABEL A

HAZARDOUS AREA
TRAINED SERVICE
PERSONNEL ONLY

LABEL G

This equipment has been tested with a class a computing device and has been found to comply with part 15 FFC rules. See instruction manual. Operation in a residential area may cause unacceptable interference to radio and tv reception requiring the operator to take whatever steps are necessary to correct the interference

LABEL B

LINE VOLTAGE
PRESENT WITH
MACHINE POWER
OFF

LABEL H

WARNING
High grounding conductor current. Grounding circuit continuity is vital for safe operation of machine. Never operate machine with grounding conductor disconnected

LABEL C

TURN MAIN
LINE SWITCH
"OFF" BEFORE
REMOVING

TILT LABEL

CAUTION

USE CARE WHEN MOVING ON ROUGH SURFACES.

DO NOT TIP MORE THAN 10 DEGREES.

DO NOT REMOVE THIS LABEL.

LABEL E

THIS MACHINE IS WIRED FOR V
See logic drawings for alternate voltage insn

LABEL R

CAUTION

REMOVE PRIMARY POWER BEFORE REMOVING COVER

UK WARNING

WARNING
CONNECT ONLY APPARATUS COMPLYING WITH BS 6301 TO THESE PORTS

LABEL D

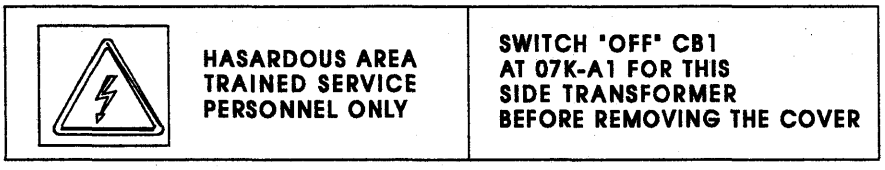
CAUTION
DUE TO CONNECTED EQUIPMENT
HAZARDOUS VOLTAGES
MAY BE PRESENT AT ANY TIME

LABEL X

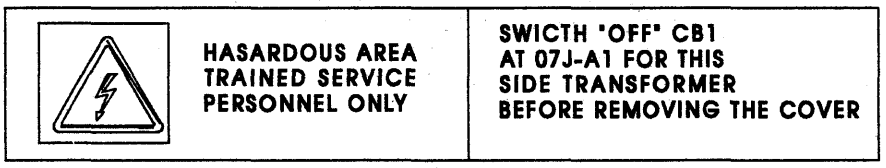
TO DISCONNECT THIS UNIT COMPLETELY, CB1 ON MAIN FRAME MUST BE IN THE OFF POSITION

Figure 0-27 (Part 1 of 2). 3745/3746-900 Safety Labels

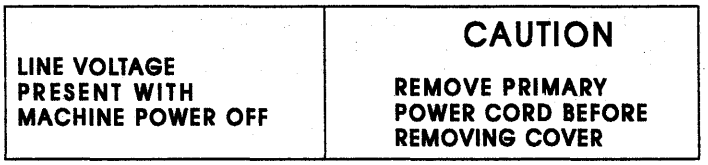
LABEL K1



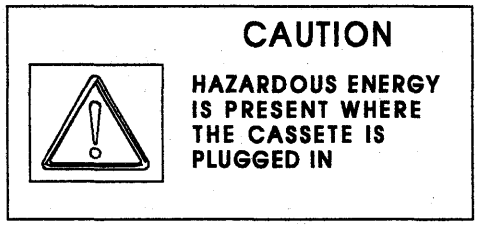
LABEL K2



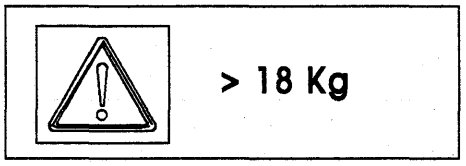
LABEL L



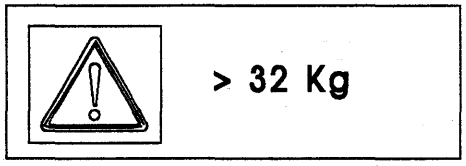
LABEL M



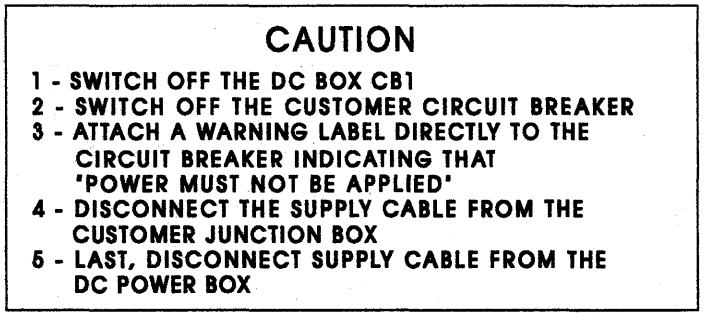
LABEL N1



LABEL N2



LABEL P



LABEL Q

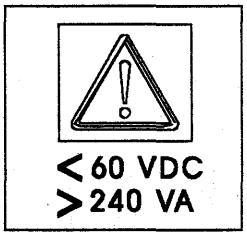


Figure 0-27 (Part 2 of 2). 3745/3746-900 Safety Labels

LCB Safety Label

LABEL S

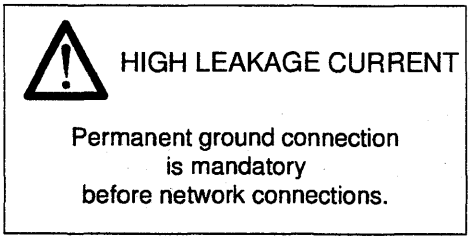


Figure 0-28. LCB Safety Label (PN 80G3928)

Controller Expansion Label Location

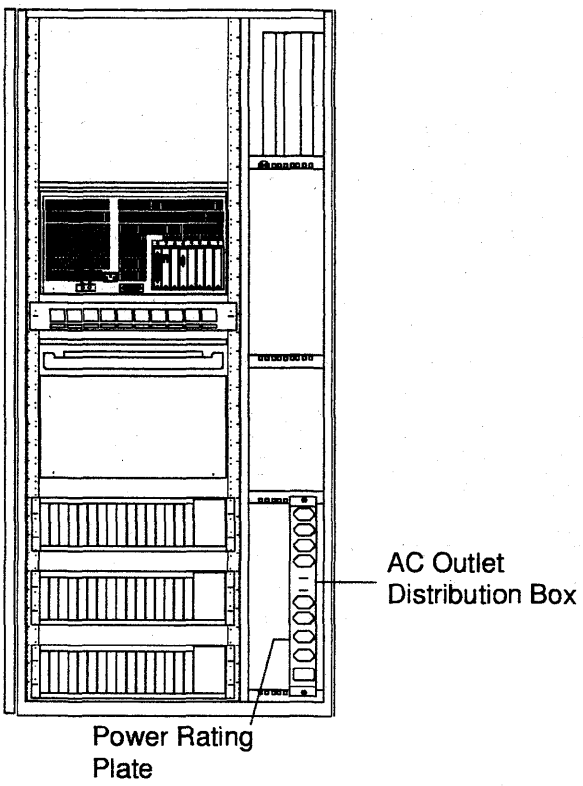


Figure 0-29. Controller Expansion Power Rating Plate Location

Safety Label Part Numbers by Country

The following table gives the label group part number for each frame according to the language(s) of the country in which the 3745 is installed.

Table 0-11. Safety Label Numbers by Country

Language	Frame 01 Part Number	Frame 02 or 03 Part Number	Frame 04 or 05 Part Number	Tilt Label Part Number	3746-900	3746-900 Label Q
Belgium					72F0675	17G5876
Brazil					72F0678	17G5876
Danish	03F4314	03F4334	03F4349	03F4462	72F0673	17G5876
Dutch	03F4316	03F4336	03F4351	03F4464	72F0676	17G5876
English	03F4302	03F4322	03F4337	03F4417	72F0664	17G5876
UK only	03F7770	03F7770	03F7770		72F0664	17G5876
Finnish	03F4305	03F4325	03F4340	03F4453	72F0674	17G5876
French	03F4304	03F4324	03F4339	03F4452	72F0665	17G5876
French/Dutch	03F4306	03F4326	03F4341	03F4454		17G5876
French/German/Italian	03F4315	03F4335	03F4350	03F4463		17G5876
Canadian French	03F4303	03F4323	03F4338	03F4451		17G5876
German	03F4307	03F4327	03F4342	03F4455	72F0666	17G5876
Italian	03F4308	03F4328	03F4343	03F4456	72F0667	17G5876
Japanese	03F4313	03F4333	03F4348	03F4461	72F0670	17G5876
Norwegian	03F4309	03F4329	03F4344	03F4457	72F0671	17G5876
Portuguese	03F4310	03F4330	03F4345	03F4458	72F0668	17G5876
Spanish	03F4311	03F4331	03F4346	03F4459	72F0669	17G5876
Swedish	03F4312	03F4332	03F4347	03F4460	72F0677	17G5876
US/English/French/Span					72F0663	17G5876
Switzerland					72F0672	17G5876

About This Manual

This MIP is a guide for fault isolation and repair of the 3745 Communication Controller. It is expected that the customer has used the *IBM 3745 Communication Controller Problem Determination Guide*, SA33-0096, or the 3745 Models 21A-61A, *Problem Analysis Guide* (online document) prior to calling IBM for service. The MIP does not duplicate the tasks specified by the *Problem Determination Guide* or by the *Problem Analysis Guide*.

The MIP gives the service representative the information needed to:

- Analyze problems or symptoms reported by the system user.
- Restore normal 3745 operation.

Who Should Read this Manual

The person using this manual should be:

- Trained to service the 3745 and 3746 Expansion frames.
- Familiar with the configuration of the system to which the 3745 is connected.
- Familiar with the operation of the 3745, as described in the *IBM 3745 Communication Controller Maintenance Information Reference*, SY33-2056 and *IBM 3745 Communication Controller Models 210, 310, 410, and 610 Service Functions*, SY33-2055, which are part of this Maintenance Library.

The intended audience for this manual are Product-Trained Customer Engineers (PT CE). The Product Support-Trained Customer Engineer (PST CE) is also expected to refer to this manual when he is required to perform the same tasks as the PT CE.

How this Manual Is Organized

This manual is organized as follows:

- Safety information is at the start of the manual.
- From Chapter 1 through Chapter 4, this manual is designed so that the information is presented to the user in the same order as he will require it for most service calls. The user is told where to go next for each path through this part of the manual.
- At the back of the manual are:
  - Appendix A: 3745 MOSS Control Panel Codes
  - Appendix B: Maintenance Aids
  - Appendix C: Bibliography and related documents
  - Appendix X: Abbreviation list and glossary.

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Summary of Changes

All MAPs, exchange procedures, and so on referring to the 3746-900, have been removed in this edition except for the "Service Inspection Safety Procedures".

All information concerning the 3746-900 are available in the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.

Corrections and improvements relating to the previous edition have also been inserted.

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Chapter 1. START: How to Begin Troubleshooting

Important

- Your personal safety can never be over-emphasized.
- You have been taught safety procedures since the earliest phase of your IBM training.
- Your safety is part of every maintenance call.
- You are the only one who can make a maintenance call safe.
- Specific information can be found in "Product Safety Information" on page xvii and "Safety Label Locations" on page lxv.

Start here when you use this manual to repair a 3745/3746 hardware failure.

- **Remember that the 3745/3746 are machines which are designed to be repaired while the customer is still using the operational areas. This is called Concurrent Maintenance. Before changing FRUs, you will be directed to ensure that you have the correct area of the machine ready for maintenance.**
- **When a power supply is shared between adapters, the disabling procedures apply to both 'suspected' and 'associated' adapters.**
- **During a call for service, it will normally be necessary to use the 3745 console. To log on at a 3745 console, proceed as directed in "Console Use for Maintenance."**

Console Use for Maintenance

001

Is the 3745 a Model 21A, 31A, 41A, or 61A?

Yes **No**

002

The 3745 is a Model 210-610.

The 3745 has password protection for functions controlled via a console. Several types of password exist for different activities. They are described in the *IBM 3745 Communication Controller All Models Advanced Operations Guide*, SA33-2097.

Obtain the maintenance password from the customer so that you can log ON at the 3745 console (local, remote, or alternate). This password will give you access to Menu 3 **Maintenance Functions**, in addition to Menu 1 and Menu 2.
If the 3745 failure prevents correct operation of the 3745 console, continue at **"Selection Table" on page 1-4** .

Log ON at the 3745 console as follows:

1. Ensure that the customer is not using the console and that he has logged OFF. The channel enable/disable screen is displayed.
2. Press **F4**: MOSS FUNCTIONS.
3. The password screen is displayed.
4. Enter the maintenance password.

(Step **002** continues)

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002 (continued)

Note: Remember to log OFF the console and to re-IML the MOSS at the end of the service call. See "CE Leaving Procedure" on page 4-180 for more information.

Continue with "Selection Table" on page 1-4 .

003

The 3745 is a Model 21A, 31A, 41A, or 61A.

Is the service processor operational?

Yes **No**

004

Continue with "Selection Table" on page 1-4.

005

Obtain the service processor maintenance password from the customer so that you can logon at the service processor console.

To log ON:

1. In the **MOSS-E View** window, click on **Program** (in the action bar).
2. Click on **Log On MOSS-E**.
3. Enter the password.

Are you here to investigate an RSF problem? If you do not know, continue with Step 006.

Yes **No**

006

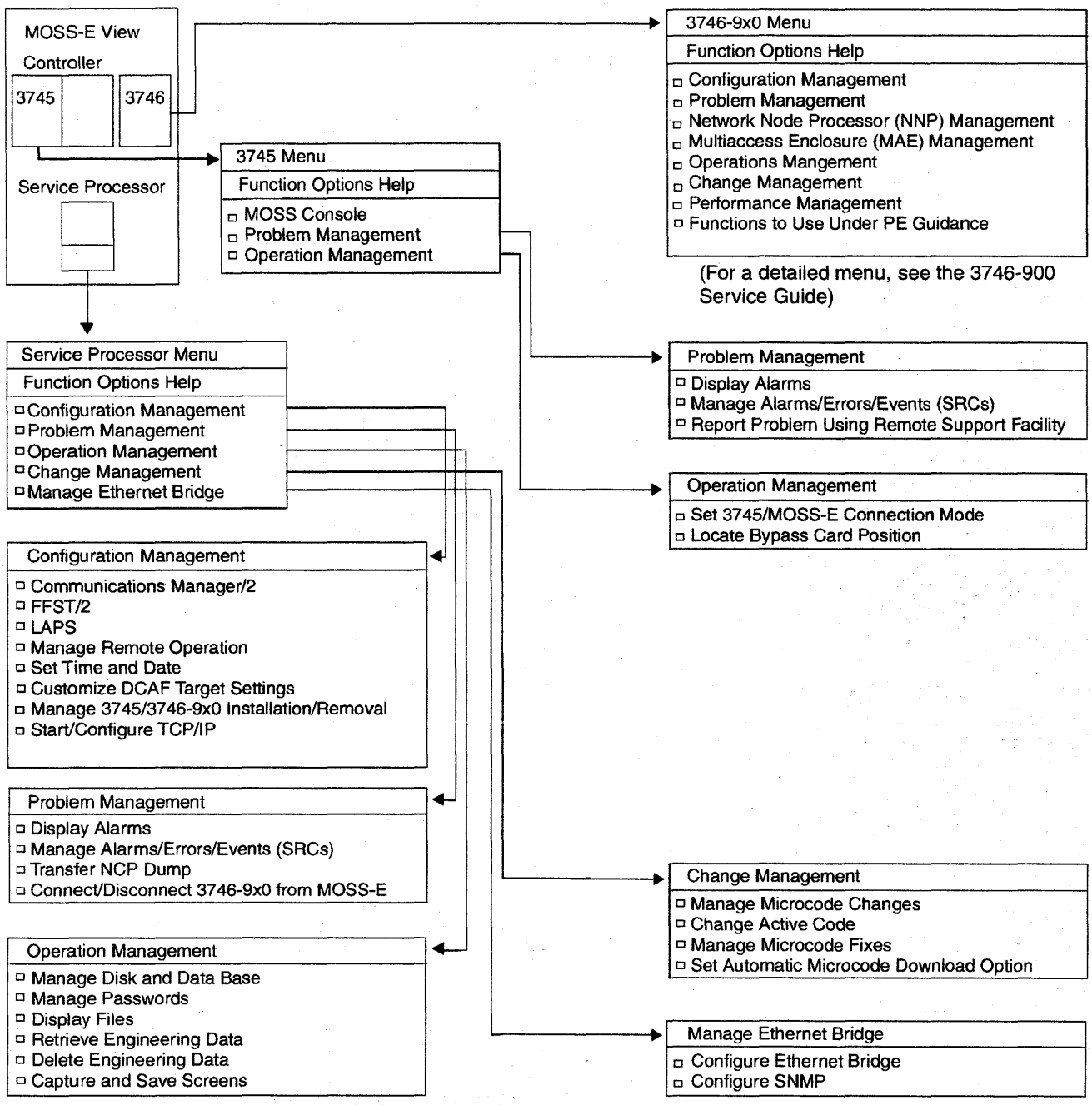
- In the **MOSS-E View** window, double-click on the service processor icon.
- The **Service Processor Menu** window is displayed.
- Click on the **Configuration Management** option.
- Double-click on the **Manage Remote Operations** option.
- In the **Remote Operation Management** window, select the **Remote operations authorization** option and click on **OK**.
- In the **Remote Support Facility** window, select the following two options:
  - **Disable Remote Support Facility**
  - **Do not generate alerts**
- Click on **OK**.
- Continue with Step 007.

007

Continue with "Selection Table" on page 1-4 .

See the "Service Processor Window Overview" on page 1-3 for the main panels used to perform the procedures documented in this manual.

Service Processor Window Overview



Selection Table

Going from top to bottom in the table, select the first entry point which fits your situation.

If you Have a:	Then Go to:
General Verbal Symptoms	The "General Verbal Symptoms" on page 1-9.
Color symptom for 3745/3746-900 icons on "MOSS-E View" window	"MAP 5200: 3745/3746-900/Service Processor/Network Node Processor Icon Color Symptoms" on page 2-56.
Customer problem number (CPN)	The "3745 and Service Processor Maintenance Using a CPN" on page 1-43.
Maintenance actions	The "3745 Maintenance Actions" on page 1-6.
Problem during installation	The "Problems During Machine, EC, or MES Installation" on page 1-7.
Problem while installing an EC or MES	The "Problems During Machine, EC, or MES Installation" on page 1-7.
3745 power symptom	The "3745 Power Symptoms" on page 1-15.
3745 reference code	"Using Reference Codes" on page 1-17.
3745 FRU group number to exchange	"Using the MIP FRU Group Table" on page 1-35.
3745 FRU list to exchange	The "3745 FRU List" on page 1-39.
3745 control panel code reported	The "3745 Control Panel Codes" on page 1-19.
3745 control panel symptoms	The "3745 Control Panel Symptoms" on page 1-13.
3745 service processor link symptom	"MAP 5600: LAN Problem on the LAN Attached to the Service Processor" on page 2-61.
3745 IOC bus symptom	The "3745 IOC Bus MAP" on page 2-41.
3745 console symptom	"3745 Console Symptoms" on page 1-12.
3745 error detected by 3745 OLTs	"OLT Detected Errors" on page 1-16.
3745 'Disk not ready' message on the 3745 console or 'Disk error' message or 'Diskette error' message	"3745 Control Panel Use" on page 1-117, perform a MOSS IML. Restart the problem determination, using the control panel code reported.
3745 console message displayed	Most messages are self explanatory. If necessary, go to the "3745 Problem Determination Guide", "3745 Service Functions", or "Advanced Operation Guide".
Alarm reported on the 3745 Models 21A-61A	The *Problem Analysis Guide* (online book).
3745-XXA apply a microcode fix	The *Service Processor Installation and Maintenance* manual. Use the "Handling the Microcode Change Level" procedure in the chapter "Maintaining the Code Loaded on the Service Processor"
3745-XXA RSF link down	"MAP 4510: 3745 Models 21A-61A Manual Call" on page 2-52.
Service processor symptom	The "Service Processor Problem Determination" in the corresponding *Service Processor Installation and Maintenance* manual.
Network node processor symptom	The "Network Node Processor Problem Determination" in the corresponding *Network Node Processor Installation and Maintenance* manual.

If you Have a:	Then Go to:
Service processor system reference code sequence number	The "Service Processor Maintenance Using an SRC Sequence Number" on page 1-45.
Service processor FRU list to exchange	The "Service Processor Problem Determination" in the corresponding *Service Processor Installation and Maintenance* manual.
Service processor apply a microcode change	The *Service Processor Installation and Maintenance* manual. Use the "Handling the Microcode Change Level" procedure in the chapter "Maintaining the Code Loaded on the Service Processor"
Problem on the external modem attached at the service processor	The modem documentation. • For the IBM 7855, refer to the problem determination chapter in the *7855 Modem Model 10, Guide to Operation* GA33-0160. • For the IBM 7857, refer to the problem determination chapter in the *IBM 7857 Modem Guide to Operation* GA13-1839. • For the Hayes** modem, refer to the corresponding manual.
Problem with the integrated modem	"How to Run the Service Processor Diagnostics" in the corresponding *Service Processor Installation and Maintenance* manual. Run the integrated V.32 modem test, or refer to the *IBM Asynchronous/SDLC V.32 Modem/A, Installation, Operation, and Problem Determination Guide.*
Problem on the 3746-900, or attached features	The *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.

3745 Maintenance Actions

If you Want to:	Then Go to:
Run 3745 diagnostics in offline mode (ODG)	The "3745 Diagnostic Requirements" on page 1-94.
Run 3745 diagnostics in concurrent maintenance mode (CDG)	The "3745 Diagnostic Requirements" on page 1-94.
Run the 3745/3746-900 LIC wrap test (WTT)	"How to Run the Wrap Test (WTT) for TSS, HPTSS, or 3746-900" on page 3-34.
Find information about using the 3745 control panel	The "3745 Control Panel Use" on page 1-117.
Know the definition of a 3745 control panel code	Appendix A, "Control Panel Code Definitions" on page A-1.
Install a 3745	The *3745 Installation Guide*, SY33-2057.
Find information about using the 3745 MOSS console	The *3745 Service Functions*, SY33-2055.
Find information about connected consoles	The *3745 Connection and Integration Guide*, SA33-0129.
Find the level of a FRU installed.	The *3745 Service Functions*, SY33-2055.
Check voltages on the 3745	The 3745 YZ pages.
3745 change parameters for LIC type 5 or 6.	Appendix B, "PKD Maintenance Aids" on page B-1.
Apply a microcode fix on 3745-x1A	The *Service Processor Installation and Maintenance* manual. Use the "Handling the Microcode Change Level" procedure in the chapter "Maintaining the Code Loaded on the Service Processor"
Find information about using the service processor console	The *3745 Models 21A to 61A Basic Operations Guide*, SA33-0177.
Test the 3745-XXA RSF link	"MAP 4510: 3745 Models 21A-61A Manual Call" on page 2-52.
Find information about customer console on 3745-x1A	The *3745 Console Setup Guide*, SA33-0158.
Perform engineering data transfer	The "Engineering Data Transfer" on page 1-46.
Run diagnostics on the service processor	"How to Run the Service Processor Diagnostics" in the corresponding *Service Processor Installation and Maintenance* manual.
Run diagnostics on the network node processor	The corresponding *Network Node Processor Installation and Maintenance* manual.
Apply a microcode change on a service processor	"Handling the Microcode Change Level" in the chapter "Maintaining the Code Loaded on the Service Processor" in the corresponding *Service Processor Installation and Maintenance* manual.
Find the modem setting for RSF	The *Service Processor Installation and Maintenance* manual. Use the "Installing and Connecting the RSF Modem to the Service Processor" procedure according to your modem type.

Problems During Machine, EC, or MES Installation

When installing a 3745, the *IBM 3745 Communication Controller Models 210 to 61A Installation Guide*, SY33-2057 should be used.

When installing a 3746-900, the *IBM 3746 Expansion Unit Model 900 Installation Guide*, SY33-2114 should be used.

When installing an EC, or MES, the supplied instructions should be used.

It is possible that the task or diagnostic you were asked to perform during the installation detected an error, and you were requested to start troubleshooting using this manual.

The primary purpose of this manual is to resolve problems that occur in an operational environment after a successful installation. That is, the machine has worked previously and is now failing.

At installation time, or after an EC or MES is installed, it is possible that errors may occur due to conditions which would not exist in an operational environment.

- Cables plugged incorrectly
- Terminators missing
- Mismatch between CDF and machine configuration
- Mismatch between line characteristics and set ups
- Wrong address set
- Top card connectors incorrectly installed
- Loose cards.

During your path through the MIP, you should remember these possibilities and, when the failing area is identified, check with the aid of the *IBM 3745 Communication Controller Maintenance Information Reference*, SY33-2056 and YZ pages that these conditions do not exist prior to changing FRUs.

Now, starting at the top of the "Installation Selection Table" on page 1-8, work down until you find an entry that matches the symptom detected during the installation.

Be sure to read "Exchange Precautions" on page 4-1 before removing any FRUs from this machine.

Installation Selection Table

If you Have a:	Then Go to:
Reference code (see the "3745 Problem Determination/Analysis Guide", Alarms)	"Using Reference Codes" on page 1-17.
3745 control panel code reported	The "3745 Control Panel Codes" on page 1-19.
IOC bus symptom	The "3745 IOC Bus MAP" on page 2-41.
3745 console symptom	The "3745 Console Symptoms" on page 1-12.
3745 control panel symptom	The "3745 Control Panel Symptoms" on page 1-13.
General verbal symptoms	"General Verbal Symptoms" on page 1-9.
Error detected by diagnostics on 3745	"Diagnostic Result Analysis" on page 3-48.
Error detected by the 3745 OLTs	"OLT Detected Errors" on page 1-16.
3745 console message displayed	Most messages are self explanatory. If needed, go to the "3745 Problem Determination Guide", "3745 Service Functions", or "Advanced Operation Guide".
CDF undefined error	Correct the CDF using the manual update function (option 'S'). Refer to the *IBM 3745 Communication Controller Models 210, 310, 410, and 610 Service Functions*, SY33-2055.

Symptom Index

General Verbal Symptoms

Table 1-1 (Page 1 of 3). General Symptoms

If the:	Symptom:	Then:
Host	Has detected channel errors on the 3745	Go to "MAP 3700: 3745 CA Isolation Procedure" on page 2-19.
	Has detected channel errors on the 3746-900	Refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
3745 using a channel	Is unable to load/dump the control program via a 3745 CA	Go to "MAP 3700: 3745 CA Isolation Procedure" on page 2-19.
	Is unable to load/dump the control program via a 3746-900 ESCA	Refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
	Unable to activate an ESCA or there is no traffic on the ESCA	Refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
3745 using an IPL link	Is unable to load/dump the control program	Go to "MAP 3510: Unable to Load/Dump Control Program in Link-Attached 3745" on page 2-13.
3745 using the MOSS HDD	Is unable to load/dump the control program	• Refer to "How to Run MOSS Diagnostics" on page 3-20 and continue with the error detected. • If no error is detected, go to the "3745 Service Functions" for HDD problems.

Table 1-1 (Page 2 of 3). General Symptoms

If the:	Symptom:	Then:
3745	Is unable to activate (start) a line or has errors while running a line connected to a TSS	Go to "MAP 3500: 3745 Activate/Deactivate Line Problem or Line Errors on the TSS" on page 2-12.
	Is unable to activate (start) a line or has errors while running a line connected to a HPTSS	Go to "MAP 3530: 3745 Activate/Deactivate Line Problems or Line Errors on the HPTSS" on page 2-16.
	Is unable to activate (start) a line or has errors while running a line connected to an ESS	Go to "MAP 3540: 3745 Activate/Deactivate Line Problem or Line Errors on ESS" on page 2-17.
	Is unable to activate (start) a ring or has errors while running a ring connected to a TRSS	Go to "MAP 3520: 3745 Activate/Deactivate Ring Problem or Ring Errors on the TRSS" on page 2-15.
	Is unable to activate (start) a ring or has errors while running a ring connected to a 3746-900	Refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
	Is unable to activate or has a problem on all the lines of a 3746-900 CLP.	Refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
	Is unable to activate or a has problem on all the lines of a 3746-900 LIC11	Refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
	Is unable to activate or has a problem on all the lines of the same ARC group	Refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
	Is unable to activate or has a problem on all the lines of the same line connection box expansion (LCBE)	Refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
	Is unable to activate or has a problem on all the lines of a 3746-900 LIC12	Refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
	Is unable to activate or has a problem on all the lines of a 3746-900 LIC16	Refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
	Has a suspected program loop	Contact your support structure for assistance with this problem. Refer to "Contacting Support" on page B-2.
	Has a suspected hang condition	Contact your support structure for assistance with this problem. Refer to "Contacting Support" on page B-2.
	Has unexpected re-IPLs	• If a message with a reference code is generated, go to "Using Reference Codes" on page 1-17. • If no message with a reference code is generated at the re-IPL, contact your support structure for assistance. Refer to "Contacting Support" on page B-2.

Table 1-1 (Page 3 of 3). General Symptoms

If the:	Symptom:	Then:
Hardware central service	On the 3745 Models 210-610, is unable to activate an RSF link	• Run the RSF console link test. Refer to "How to Run the Console Link Test on 3745 Models 210-610" on page 3-23. • If no error is detected, suspect the modem or line. Ask the customer to perform problem determination or call the appropriate service representative.
	On the 3745 Models 21A-61A, has the RSF link down	Go to "MAP 4510: 3745 Models 21A-61A Manual Call" on page 2-52
The service processor	Is unable to establish a link with a 3745 or 3746-900	Go to "MAP 5600: LAN Problem on the LAN Attached to the Service Processor" on page 2-61.

3745 Console Symptoms

Table 1-2. 3745 Console Symptoms

If a:	Then:
Local or alternate console appears not to function or functions incorrectly	• If the 'MOSS Inop' indicator on the control panel is ON, run MOSS diagnostics, refer to "How to Run MOSS Diagnostics" on page 3-20. • If the indicator is OFF run the console link test, refer to "How to Run the Console Link Test on 3745 Models 210-610" on page 3-23. If no trouble is found, suspect the console itself, and request the customer to run the console internal tests. If a 7427 console switch is installed, go to the "Console Switching Unit, Maintenance Information Manual".
On 3745 Models 210-610 the remote/RSF console appears not to function or functions incorrectly	• If the 'MOSS Inop' indicator on the control panel is ON, run MOSS diagnostics, refer to "How to Run MOSS Diagnostics" on page 3-20. • If the indicator is OFF run the console link test, refer to "How to Run the Console Link Test on 3745 Models 210-610" on page 3-23. If no trouble is found, suspect the modems, TP line, or the console itself, and request the customer to perform problem determination or call the appropriate service representative.
On 3745 Models 21A-61A, the RSF link is down	Refer to the *Service Processor Installation and Maintenance* manual
Service processor is failing	"Service Processor Problem Determination" in the corresponding *Service Processor Installation and Maintenance* manual.

3745 Control Panel Symptoms

Table 1-3 (Page 1 of 2). 3745 Control Panel Symptoms

If the 3745:	Then:
Control panel displays any wrong character or all segments of all characters are ON	• Run the Control Panel test. Refer to "How to Run the 3745 Panel Test" on page 3-22. • When a FRU group is called for an error, go to "Using the MIP FRU Group Table" on page 1-35. • If no error is detected and the problem still exists, contact your support structure for a possible microcode problem. Refer to "Contacting Support" on page B-2.
Control panel display has a missing character	• Run the Control Panel test. Refer to "How to Run the 3745 Panel Test" on page 3-22. • When a FRU group is called for an error, go to "Using the MIP FRU Group Table" on page 1-35. • If no error is detected and the problem still exists, contact your support structure for a possible microcode problem. Refer to "Contacting Support" on page B-2.
Has one or more control panel keys that do not work	• Run the Control Panel test. Refer to "How to Run the 3745 Panel Test" on page 3-22. • When a FRU group is called for an error, go to "Using the MIP FRU Group Table" on page 1-35. • If no error is detected and the problem still exists, contact your support structure for a possible microcode problem. Refer to "Contacting Support" on page B-2.
MOSS message indicator is always ON	• Ensure that there are no pending console messages. • Run the Control Panel test. Refer to "How to Run the 3745 Panel Test" on page 3-22. When a FRU group is called for an error, go to "Using the MIP FRU Group Table" on page 1-35. • If no error is detected and the problem still exists, contact your support structure for a possible microcode problem. Refer to "Contacting Support" on page B-2.
MOSS inoperative indicator is always ON	• Run the Control Panel test. Refer to "How to Run the 3745 Panel Test" on page 3-22. • When a FRU group is called for an error, go to "Using the MIP FRU Group Table" on page 1-35. • If no error is detected, go to "How to Run MOSS Diagnostics" on page 3-20.
Control panel display is blank	Go to "Power MAP 3900: 3745 Power Control Subsystem Problems" on page 2-21.
Has an "All Channel Adapters Disabled" indicator that does not go ON	• Run the Control Panel test. Refer to "How to Run the 3745 Panel Test" on page 3-22. • When a FRU group is called for an error, go to "Using the MIP FRU Group Table" on page 1-35. • If no error is detected, go to "How to Run MOSS Diagnostics" on page 3-20.

Table 1-3 (Page 2 of 2). 3745 Control Panel Symptoms

If the 3745:	**Then:**
Console in use indicator shows the wrong console	• Refer to "How to Run MOSS Diagnostics" on page 3-20 and continue with the error detected. • If no error is detected, exchange FRU group 1244 on page 1-37. Go to page 1-35
Power On indicator is not ON	Go to "Power MAP 3900: 3745 Power Control Subsystem Problems" on page 2-21.

3745 Power Symptoms

Table 1-4. Power Symptoms

If the:	Symptom:	Then:
3745	Will not power ON	Go to "Power MAP 3900: 3745 Power Control Subsystem Problems" on page 2-21.
	Will not perform a scheduled power ON	Go to "Power MAP 3940: 3745 Scheduled Power ON Problems" on page 2-36.
	Host power ON sequence stops at the 3745	Go to "Power MAP 3930: 3745 Power ON Problem in Host Mode" on page 2-34.
	Power On indicator is not ON	Go to "Power MAP 3900: 3745 Power Control Subsystem Problems" on page 2-21.
	Control panel display is blank	Go to "Power MAP 3900: 3745 Power Control Subsystem Problems" on page 2-21.
	Will not power OFF	Go to "Power MAP 3950: 3745 Power OFF Not Possible in Host Mode" on page 2-37.
	Will not power OFF when a power OFF command is sent by the control program	Go to "Power MAP 3970: 3745 Power OFF Not Possible in Network Mode" on page 2-39.
	A power supply will not power ON (dash displayed in the power configuration screen) when creating a power configuration table	Do one of the following: • Check that the CP is ON • Check the power bus connector • Replace the power supply
	Any CP tripped on PS type 6	Go to "Power MAP 3900: 3745 Power Control Subsystem Problems" on page 2-21.

OLT Detected Errors

For the interface on which the OLTs have detected an error, find the FRUs to be exchanged using the following table. Then go to "Requirements List 0040: For the CA" on page 1-54.

Interface	First FRU	Second FRU
1A	CADR 01L-A1-A2	CAL 01L-A1-B2
1B	CADR 01L-A1-C2	CAL 01L-A1-B2
2A	CADR 01L-A1-D2	CAL 01L-A1-E2
3A	CADR 01L-A1-F2	CAL 01L-A1-G2
3B	CADR 01L-A1-H2	CAL 01L-A1-G2
4A	CADR 01L-A1-J2	CAL 01L-A1-K2
5A	CADR 01L-A1-M2	CAL 01L-A1-N2
5B	CADR 01L-A1-P2	CAL 01L-A1-N2
6A	CADR 01L-A1-Q2	CAL 01L-A1-R2
7A	CADR 01L-A1-S2	CAL 01L-A1-T2
7B	CADR 01L-A1-U2	CAL 01L-A1-T2
8A	CADR 01L-A1-V2	CAL 01L-A1-W2
9A	CADR 02E-A1-A2	CAL 02E-A1-B2
9B	CADR 02E-A1-C2	CAL 02E-A1-B2
10A	CADR 02E-A1-D2	CAL 02E-A1-E2
11A	CADR 02E-A1-F2	CAL 02E-A1-G2
11B	CADR 02E-A1-H2	CAL 02E-A1-G2
12A	CADR 02E-A1-J2	CAL 02E-A1-K2
13A	CADR 02E-A1-M2	CAL 02E-A1-N2
13B	CADR 02E-A1-P2	CAL 02E-A1-N2
14A	CADR 02E-A1-Q2	CAL 02E-A1-R2
15A	CADR 02E-A1-S2	CAL 02E-A1-T2
15B	CADR 02E-A1-U2	CAL 02E-A1-T2
16A	CADR 02E-A1-V2	CAL 02E-A1-W2

Using Reference Codes

Reference Codes (8 digits) are always displayed at the rightmost position of the alarm on the 3745 console. They are generated by the microcode which runs within the MOSS to provide an automatic analysis of box event records (BERs). This function is known as auto-BER and is part of the automaint facility. Reference Codes are also generated when diagnostics detect an error.

If several alarms have been generated for the same problem, resulting in multiple reference codes, use the reference code beginning with BX, if any. If there are no BX codes, use the reference code given by the earliest alarm.

To analyze a reference code to find the correct action to take, use the following procedure on the 3745 console:

1. Ensure that at least one of the CCUs has been IPLed.

   If not, you must IPL one of the CCUs to the end of phase 1 (step-by-step IPL will allow a ready stop at the end of phase 1). Then cancel the IPL. This action will initialize the switch and the adapter buses.

2. From the Maintenance Functions on Menu 3, select **BRC** function.

   The reference code screen will be displayed.

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085
CCU-B
RUN-REQ
------------------------------------------------------------------ 03/01/87 01:22
FUNCTION ON SCREEN: BER CORRELATION
                              REFERENCE CODE INTERPRETATION

  ENTER REFERENCE CODE  ==>



===>

F1:END  F2:MENU2  F3:ALARM   F5:BER CORRELATION    F6:ADDITIONAL INFO
```

Figure 1-1. Reference Code Screen

3. Type in the 8-digit reference code you want to analyze in the input area of the screen. Refer to Figure 1-1.
4. Press **SEND/ENTER**.
5. When the FRU list is given, record the types and location.

   Note

   When the microcode is a possible cause of the error, it is recommended that you check:

   - If you have the highest level of microcode for your machine
   - That any applicable MCFs are installed.

   Your support structure will have this information.

6. **Hit F6 for additional information** (on associated components and customer resources for TSS and HPTSS), and record the data for later usage.

   Note: If the CDF is not correct, this information can be wrong.

7. Go to "3745 FRU List" on page 1-39.

If the reference code is reported as 'INVALID' or 'DUMMY', check that you have entered the same code as reported. If so, contact your support structure for assistance. See "Contacting Support" on page B-2. An error in the BER analysis or BER logging has occurred.

3745 Control Panel Codes

For the 3746 Model 900 panel code, refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.

Note

When the microcode is a possible cause of the error, it is recommended that you check if you have the highest level of microcode for your machine and that any applicable MCFs are installed. Your support structure will have this information.

Table 1-5 (Page 1 of 16). 3745 Control Panel Code Table

Panel Code	Action to be Taken
000	Successful IPL completion: The control program is loaded and MOSS is operational.
001	Go to "MAP 3100: MOSS Control Panel Code 001" on page 2-1.
002	Exchange FRU Group 1251 on page 1-37, go to page 1-35.
003	Progression code. If permanently displayed exchange FRU Group 1003 on page 1-36, go to page 1-35.
004	Power Bus Test. Looping on successful completion.
005	Power Bus Test. Go to "Power MAP 3920: 3745 Power Bus Test Failure" on page 2-32.
006	An ac Input fault has been detected. An alarm and reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
007	Exchange FRU Group 4078 on page 1-38, go to page 1-35.
008	Perform a POS create. If not corrected by POS create: • Check the battery for correct voltage – Exchange it if necessary – Or Exchange FRU Group 1117 on page 1-37, go to page 1-35.
009 to 00C	Go to "Power MAP 3910: 3745 Power Hex Codes" on page 2-26.
00D	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
00E	Exchange FRU Group 3565 on page 1-37, go to page 1-35.
00F to 02F	A power or cooling problem has been detected while MOSS is down. The specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1 Recover MOSS and IML. An alarm and reference code will then be produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
030 to 034	A power or cooling problem has been detected while MOSS is down. The specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1 Recover MOSS and IML. If an alarm and refcode is produced on the 3745 console, go to "Using Reference Codes" on page 1-17. If no reference code is produced, go to "Power MAP 3910: 3745 Power Hex Codes" on page 2-26.
035	Exchange FRU Group 3728 on page 1-38, go to page 1-35.
036	Exchange FRU Group 3729 on page 1-38, go to page 1-35.
037	Exchange FRU Group 3730 on page 1-38, go to page 1-35.
038	Exchange FRU Group 3731 on page 1-38, go to page 1-35.
039	Exchange FRU Group 3732 on page 1-38, go to page 1-35.
03A	Exchange FRU Group 3733 on page 1-38, go to page 1-35.

Table 1-5 (Page 2 of 16). 3745 Control Panel Code Table	
Panel Code	**Action to be Taken**
03B	Exchange FRU Group 3734 on page 1-38, go to page 1-35.
03C to 044	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
045 to 046	A power or cooling problem has been detected while MOSS is down. The specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1 Recover MOSS and IML. An alarm and reference code will then be produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
047 to 04F	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
050	Exchange FRU Group 1250 on page 1-37, go to page 1-35.
051	Exchange FRU Group 2004 on page 1-37, go to page 1-35.
052	Progression code. If permanently displayed exchange FRU Group 1003 on page 1-36, go to page 1-35.
053 to 059	Go to "MAP 3110: MOSS Control Panel Codes 053 to 059" on page 2-3.
05A	Exchange FRU Group 1248 on page 1-37, go to page 1-35.
05B	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
05C to 05D	Exchange FRU Group 1248 on page 1-37, go to page 1-35.
05E	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
05F to 060	Exchange FRU Group 1248 on page 1-37, go to page 1-35.
061	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
062	Exchange FRU Group 1003 on page 1-36, go to page 1-35.
063 to 065	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
066	Exchange FRU Group 1003 on page 1-36, go to page 1-35.
067 to 079	Go to "MAP 3120: MOSS Control Panel Codes 067 to 079 or 08B to 092" on page 2-5.
07A to 082	Exchange FRU Group 1101 on page 1-36, go to page 1-35.
083 to 089	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
08A	Progression code. If permanently displayed exchange FRU Group 1003 on page 1-36, go to page 1-35.
08B to 092	Go to "MAP 3120: MOSS Control Panel Codes 067 to 079 or 08B to 092" on page 2-5.
093 to 096	Exchange FRU Group 1101 on page 1-36, go to page 1-35.
097	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
098	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
099	Progression code. If permanently displayed exchange FRU Group 1003 on page 1-36, go to page 1-35.
09A to 09C	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
09D	Exchange FRU Group 1118 on page 1-37, go to page 1-35.
09E	Console link test not supported on 3745 Models 21A-61A.
09F	Exchange FRU Group 1003 on page 1-36, go to page 1-35.
0A0	Progression code. If permanently displayed exchange FRU Group 1011 on page 1-36, go to page 1-35.
0A1	Exchange FRU Group 1281 on page 1-37, go to page 1-35.
0A2	Exchange FRU Group 1281 on page 1-37, go to page 1-35.

Table 1-5 (Page 3 of 16). 3745 Control Panel Code Table

Panel Code	Action to be Taken
0A3	Exchange FRU Group 1118 on page 1-37, go to page 1-35.
0A4 to 0A5	Exchange FRU Group 1011 on page 1-36, go to page 1-35.
0A6	Exchange FRU Group 1281 on page 1-37, go to page 1-35.
0A7	Exchange FRU Group 1003 on page 1-36, go to page 1-35.
0A8	Exchange FRU Group 1011 on page 1-36, go to page 1-35.
0A9	Exchange FRU Group 1281 on page 1-37, go to page 1-35.
0AA	Exchange FRU Group 1011 on page 1-36, go to page 1-35.
0AB to 0AC	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
0AD	Exchange FRU Group 1011 on page 1-36, go to page 1-35.
0AE	Exchange FRU Group 1011 on page 1-36, go to page 1-35.
0AF	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
0B0	Exchange FRU Group 1011 on page 1-36, go to page 1-35.
0B1	Exchange FRU Group 1281 on page 1-37, go to page 1-35.
0B2	Exchange FRU Group 1011 on page 1-36, go to page 1-35.
0B3	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
0B4	Exchange FRU Group 1281 on page 1-37, go to page 1-35.
0B5	Exchange FRU Group 1011 on page 1-36, go to page 1-35.
0B6	Exchange FRU Group 1118 on page 1-37, go to page 1-35.
0B7	Exchange FRU Group 1011 on page 1-36, go to page 1-35.
0B8 to 0BE	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
0BF	Progression code. If permanently displayed exchange FRU Group 1003 on page 1-36, go to page 1-35.
0C0	Exchange FRU Group 1216 on page 1-37, go to page 1-35.
0C1	Exchange FRU Group 1003 on page 1-36, go to page 1-35.
0C2	Exchange FRU Group 1011 on page 1-36, go to page 1-35.
0C3	Exchange FRU Group 1281 on page 1-37, go to page 1-35.
0C4 to 0C5	Exchange FRU Group 1011 on page 1-36, go to page 1-35.
0C6	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
0C7	Progression code. If permanently displayed exchange FRU Group 1003 on page 1-36, go to page 1-35.
0C8 to 0CF	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
0D0	Progression code. If permanently displayed exchange FRU Group 1003 on page 1-36, go to page 1-35.
0D1	Exchange FRU Group 1056 on page 1-36, go to page 1-35.
0D2 to 0D3	Exchange FRU Group 1005 on page 1-36, go to page 1-35.
0D4	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
0D5 to 0E3	Exchange FRU Group 1005 on page 1-36, go to page 1-35.
0E4	If loading from diskette (function '*9*' from the control panel), check that the diskette is installed correctly in the drive. If OK, Exchange FRU Group 1005 on page 1-36, go to page 1-35.

Table 1-5 (Page 4 of 16). 3745 Control Panel Code Table	
Panel Code	**Action to be Taken**
0E5	Exchange FRU Group 1005 on page 1-36, go to page 1-35.
0E6 to 0EB	Exchange FRU Group 1238 on page 1-37, go to page 1-35.
0EC	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
0ED to 0EF	Exchange FRU Group 1238 on page 1-37, go to page 1-35.
0F0	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
0F1 to 0FD	Exchange FRU Group 1238 on page 1-37, go to page 1-35.
0FE	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
0FF	Exchange FRU Group 1238 on page 1-37, go to page 1-35.
100	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
101	Hard disk initial state not ready. Recovery in process.
102	Exchange FRU Group 1238 on page 1-37, go to page 1-35.
103 to 110	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
111 to 13E	Exchange FRU Group 1238 on page 1-37, go to page 1-35.
13F	Exchange FRU Group 1157 on page 1-37, go to page 1-35.
140	Exchange FRU Group 1239 on page 1-37, go to page 1-35.
141	Exchange FRU Group 1240 on page 1-37, go to page 1-35.
142	Exchange FRU Group 1239 on page 1-37, go to page 1-35.
143	Exchange FRU Group 1240 on page 1-37, go to page 1-35.
144	Exchange FRU Group 1239 on page 1-37, go to page 1-35.
145	Exchange FRU Group 1240 on page 1-37, go to page 1-35.
146	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
147	Exchange FRU Group 1239 on page 1-37, go to page 1-35.
148	Exchange FRU Group 1240 on page 1-37, go to page 1-35.
149	Exchange FRU Group 1107 on page 1-36, go to page 1-35.
14A to 14D	If loading from diskette (function '*9*' from the control panel), check that the diskette is installed correctly in the drive. If OK, Exchange FRU Group 1020 on page 1-36, go to page 1-35.
14E	Exchange FRU Group 1239 on page 1-37, go to page 1-35.
14F	Exchange FRU Group 1240 on page 1-37, go to page 1-35.
150	Exchange FRU Group 1239 on page 1-37, go to page 1-35.
151	Exchange FRU Group 1240 on page 1-37, go to page 1-35.
152 to 154	Exchange FRU Group 1020 on page 1-36, go to page 1-35.
155	Exchange FRU Group 1239 on page 1-37, go to page 1-35.
156	Exchange FRU Group 1240 on page 1-37, go to page 1-35.
157	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
158	Exchange FRU Group 1239 on page 1-37, go to page 1-35.
159	Exchange FRU Group 1240 on page 1-37, go to page 1-35.
15A	Exchange FRU Group 1239 on page 1-37, go to page 1-35.
15B	Exchange FRU Group 1240 on page 1-37, go to page 1-35.

Table 1-5 (Page 5 of 16). 3745 Control Panel Code Table	
Panel Code	**Action to be Taken**
15C to 15E	Exchange FRU Group 1020 on page 1-36, go to page 1-35.
15F	Progression code. If permanently displayed exchange FRU Group 1003 on page 1-36, go to page 1-35.
160 to 16F	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
170 to 171	Exchange FRU Group 1250 on page 1-37, go to page 1-35.
172 to 177	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
178	Exchange FRU Group 1108 on page 1-36, go to page 1-35.
179 to 17A	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
17B	Exchange FRU Group 1109 on page 1-36, go to page 1-35.
17C	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
17D	Exchange FRU Group 1281 on page 1-37, go to page 1-35.
17E	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
17F	Progression code. If permanently displayed exchange FRU Group 1110 on page 1-36, go to page 1-35.
180	Progression code. If permanently displayed exchange FRU Group 1111 on page 1-36, go to page 1-35.
181	Exchange FRU Group 1111 on page 1-36, go to page 1-35.
182	Progression code. If permanently displayed exchange FRU Group 1111 on page 1-36, go to page 1-35.
183 to 187	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
188 to 189	Exchange FRU Group 1111 on page 1-36, go to page 1-35.
18A	Progression code. If permanently displayed exchange FRU Group 1111 on page 1-36, go to page 1-35.
18B	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
18C	Exchange FRU Group 1533 on page 1-37, go to page 1-35.
18D	Progression code. If permanently displayed exchange FRU Group 1003 on page 1-36, go to page 1-35.
18E to 18F	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
190	Progression code. If permanently displayed exchange FRU Group 1112 on page 1-36, go to page 1-35.
191	Exchange FRU Group 1112 on page 1-36, go to page 1-35.
192	Exchange FRU Group 1113 on page 1-37, go to page 1-35.
193	Exchange FRU Group 1114 on page 1-37, go to page 1-35.
194	Exchange FRU Group 1113 on page 1-37, go to page 1-35.
195	Exchange FRU Group 1114 on page 1-37, go to page 1-35.
196	Exchange FRU Group 1112 on page 1-36, go to page 1-35.
197	Exchange FRU Group 1113 on page 1-37, go to page 1-35.
198	Exchange FRU Group 1114 on page 1-37, go to page 1-35.
199	Exchange FRU Group 1113 on page 1-37, go to page 1-35.
19A	Exchange FRU Group 1114 on page 1-37, go to page 1-35.

Table 1-5 (Page 6 of 16). 3745 Control Panel Code Table

Panel Code	Action to be Taken
19B	Exchange FRU Group 1112 on page 1-36, go to page 1-35.
19C	Exchange FRU Group 1113 on page 1-37, go to page 1-35.
19D	Exchange FRU Group 1114 on page 1-37, go to page 1-35.
19E	Exchange FRU Group 1113 on page 1-37, go to page 1-35.
19F	Exchange FRU Group 1114 on page 1-37, go to page 1-35.
1A0 to 1A2	Console link test. Go to map "MAP 3140: 3745 Console Link Procedure" on page 2-9.
1A3 to 1A5	Console link test. Go to map "MAP 3140: 3745 Console Link Procedure" on page 2-9.
1A6 to 1A8	Console link test. Go to map "MAP 3140: 3745 Console Link Procedure" on page 2-9.
1A9 to 1AF	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
1B0	Progression code. If permanently displayed exchange FRU Group 1003 on page 1-36, go to page 1-35.
1B1	Information only: Start of Local console link test.
1B2	Local link test successful.
1B3	Information only: Start of Remote/Alternate console link test.
1B4	Remote/Alternate link test successful.
1B5	Information only: Start of RSF console link test.
1B6	RSF link test successful.
1B7 to 1CF	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
1D0	Progression code. If permanently displayed exchange FRU Group 1003 on page 1-36, go to page 1-35.
1D1	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
1D2 to 1D3	Exchange FRU Group 1014 on page 1-36, go to page 1-35.
1D4	Exchange FRU Group 1245 on page 1-37 for models 210 or 410 or 1255 on page 1-37 for models 310 or 610 go to page 1-35.
1D5 to 1D6	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
1D7 to 1D8	Exchange FRU Group 1014 on page 1-36, go to page 1-35.
1D9 to 1DA	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
1DB	Exchange FRU Group 1014 on page 1-36, go to page 1-35.
1DC	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
1DD	Exchange FRU Group 1014 on page 1-36, go to page 1-35.
1DE to 1E1	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
1E2	Exchange FRU Group 1014 on page 1-36, go to page 1-35.
1E3 to 1E4	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
1E5 to 1E8	Exchange FRU Group 1014 on page 1-36, go to page 1-35.
1E9 to 1EE	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
1EF	Progression code. If permanently displayed exchange FRU Group 1003 on page 1-36, go to page 1-35.
1F0 to 1FD	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
1FE	Exchange FRU Group 1111 on page 1-36, go to page 1-35.

Table 1-5 (Page 7 of 16). 3745 Control Panel Code Table

Panel Code	Action to be Taken
1FF	Progression code. If permanently displayed exchange FRU Group 1003 on page 1-36, go to page 1-35.
200 to 9FF	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
A00	Exchange FRU Group 1004 on page 1-36, go to page 1-35. If problem still exists then the reference code that will have been produced on the 3745 console will have to be used to identify further suspected FRUs. Refer to "Using Reference Codes" on page 1-17.
A01 to A0F	Exchange FRU Group 1112 on page 1-36, go to page 1-35.
A10 to A12	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
A13 to A15	Exchange FRU Group 1245 on page 1-37 for models 210 or 410 or 1255 on page 1-37 for models 310 or 610 go to page 1-35.
A16 to A17	Exchange FRU Group 1243 on page 1-37, go to page 1-35.
A18 to A1E	Exchange FRU Group 1004 on page 1-36, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
A1F to A23	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
A24 to A27	Exchange FRU Group 1245 on page 1-37 for models 210 or 410 or 1255 on page 1-37 for models 310 or 610 go to page 1-35.
A28 to A2C	Exchange FRU Group 1007 on page 1-36, go to page 1-35.
A2D	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
A2E to A30	Exchange FRU Group 1245 on page 1-37 for models 210 or 410 or 1255 on page 1-37 for models 310 or 610 go to page 1-35.
A31 to A33	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
A34 to A3B	Exchange FRU Group 1245 on page 1-37 for models 210 or 410 or 1255 on page 1-37 for models 310 or 610 go to page 1-35.
A3C to A3E	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
A3F to A41	Exchange FRU Group 1247 on page 1-37 for models 210 or 410 or 1256 on page 1-37 for models 310 or 610 go to page 1-35.
A42 to A43	Exchange FRU Group 1243 on page 1-37, go to page 1-35.
A44 to A4A	Exchange FRU Group 1004 on page 1-36, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
A4B to A4F	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
A50 to A53	Exchange FRU Group 1247 on page 1-37 for models 210 or 410 or 1256 on page 1-37 for models 310 or 610 go to page 1-35.
A54 to A58	Exchange FRU Group 1007 on page 1-36, go to page 1-35.
A59	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
A5A to A5C	Exchange FRU Group1247 on page 1-37 for models 210 or 410 or 1256 on page 1-37 for models 310 or 610 go to page 1-35.
A5D to A5F	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
A60 to A67	Exchange FRU Group 1247 on page 1-37 for models 210 or 410 or 1256 on page 1-37 for models 310 or 610 go to page 1-35.
A68 to A83	Exchange FRU Group 1004 on page 1-36, go to page 1-35. If problem still exists then the reference code that will have been produced on the 3745 console will have to be used to identify further suspected FRUs. Refer to "Using Reference Codes" on page 1-17.

Table 1-5 (Page 8 of 16). 3745 Control Panel Code Table	
Panel Code	**Action to be Taken**
A84 to A8C	Exchange FRU Group 1004 on page 1-36, go to page 1-35.
A8D to A8F	If loading from diskette (function 9 from the control panel) then exchange FRU Group 1019 on page 1-36; if loading from HDD then exchange FRU Group 1018 on page 1-36, go to page 1-35.
A90 to A91	Exchange FRU Group 1242 on page 1-37, go to page 1-35.
A92 to A98	Exchange FRU Group 1005 on page 1-36, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
A99 to AA5	If loading from diskette (function 9 from the control panel) then exchange FRU Group 1019 on page 1-36; if loading from HDD then exchange FRU Group 1018 on page 1-36, go to page 1-35.
AA6 to AAA	Exchange FRU Group 1003 on page 1-36, go to page 1-35.
AAB	Exchange FRU Group 1118 on page 1-37, go to page 1-35.
AAC to AAD	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
AAE	Exchange FRU Group 1118 on page 1-37, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
AAF	Exchange FRU Group 1118 on page 1-37, go to page 1-35.
AB0	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
AB1	Exchange FRU Group 1102 on page 1-36 and 1027 on page 1-36 go to page 1-35.
AB2 to AB5	Exchange FRU Group 1281 on page 1-37, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
AB6 to AB8	Exchange FRU Group 1281 on page 1-37, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
AB9 to AC8	Exchange FRU Group 1003 on page 1-36, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
AC9	Exchange FRU Group 1004 on page 1-36, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
ACA to ACE	Exchange FRU Group 1003 on page 1-36, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
ACF	Exchange FRU Group 1003 on page 1-36, go to page 1-35. Suspect the DFA card also. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
AD0 to AD2	Exchange FRU Group 1003 on page 1-36, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
AD3 to AE7	Exchange FRU Group 1281 on page 1-37, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.

Table 1-5 (Page 9 of 16). 3745 Control Panel Code Table	
Panel Code	**Action to be Taken**
AE8	Exchange FRU Group 2003 on page 1-37, go to page 1-35.
AE9 to AFF	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
B01	Exchange FRU Group 2001 on page 1-37, go to page 1-35.
B02	Exchange FRU Group 2002 on page 1-37, go to page 1-35.
B03	Exchange FRU Group 2003 on page 1-37, go to page 1-35.
B8D to B8E	Exchange FRU Group 2001 on page 1-37, go to page 1-35 or a MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
B8F	Exchange FRU Group 2001 on page 1-37, go to page 1-35.
B90	Exchange FRU Group 2001 on page 1-37, go to page 1-35.
B91	A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
B92	Check LAN cable connections, if problem persists: Exchange FRU Group 2001 on page 1-37, go to page 1-35.
B93	A LAN ring problem is suspected. Use the *Token-Ring Network, Problem Determination Guide* SX27-3710.
B94	Check the LAN cable connections, if the problem persists: A LAN ring problem is suspected. Use the *Token-Ring Network, Problem Determination Guide* SX27-3710.
B95 to B98	A LAN ring problem is suspected. Use the *Token-Ring Network, Problem Determination Guide* SX27-3710.
B99	Duplicate Node address. Exchange FRU Group 2001 on page 1-37, go to page 1-35, or a MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
B9A to B9D	A LAN ring problem is suspected. Use the *Token-Ring Network, Problem Determination Guide* SX27-3710.
B9E	Check the LAN cable connections, if the problem persists: Exchange FRU Group 2001 on page 1-37, go to page 1-35.
B9F	Check that the service processor is powered On, if yes: there was a LAN time out or a LAN problem or a service processor problem is suspected. Go to *Service Processor Installation and Maintenance* manual, chapter "Service Processor Problem Determination".
BB0	Communication lost between MOSS and MOSS-E. • Check the physical connection between the 3745 and the service processor. • Check that the service processor is powered ON. • Review the configuration of stations connected to the LAN. The MOSS-to-MOSS-E connection will be automatically recovered when the number of broadcast frames goes under 200 per second. If the problem continues a Service Processor problem is suspected, go to *Service Processor Installation and Maintenance* manual, chapter "Service Processor Problem Determination" or a MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
BB1 to BB6	A Service Processor problem is suspected, go to *Service Processor Installation and Maintenance* manual, chapter "Service Processor Problem Determination" or a MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
BC0	A LAN ring problem is suspected. Use the *Token-Ring Network, Problem Determination Guide* SX27-3710.

Table 1-5 (Page 10 of 16). 3745 Control Panel Code Table

Panel Code	Action to be Taken
BC1	Check the LAN cable connections, if the problem persists: Exchange FRU Group 2001 on page 1-37, go to page 1-35.
BC2	Exchange FRU Group 2001 on page 1-37, go to page 1-35.
BC3	A LAN problem is suspected. Use the *Token-Ring Network, Problem Determination Guide* SX27-3710.
BC4	Check the LAN cable connections, if the problem persists: Exchange FRU Group 2001 on page 1-37, go to page 1-35.
BD0	A Service Processor problem is suspected. Go to *Service Processor Installation and Maintenance* manual, chapter "Service Processor Problem Determination".
BE0	A Service Processor problem is suspected. Go to *Service Processor Installation and Maintenance* manual, chapter "Service Processor Problem Determination".
BFF	Exchange FRU Group 1003 on page 1-36, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
C00 to C03	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
C04 to C12	A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
C0A	Refer to logged BERs leading to overflow or: Exchange FRU Group 1018 on page 1-36, go to page 1-35.
C0B	A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
C13	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
C14	A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
C15 to C16	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
C17	A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
C18	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
C19	A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
C1A	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
C1B to C23	A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
C24	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
C25 to C2A	A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
C2B to C2D	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
C2E	A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
C2F to C30	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
C31 to C56	A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
C57 to C61	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.

Table 1-5 (Page 11 of 16). 3745 Control Panel Code Table

Panel Code	Action to be Taken
C62 to C7A	A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
C7B to D00	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
C57 to D00	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
D01 to D02	Exchange FRU Group 1027 on page 1-36, go to page 1-35.
D03 to D04	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
D05 to D06	Exchange FRU Group 1027 on page 1-36, go to page 1-35.
D07	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
D08	Exchange FRU Group 1019 on page 1-36, go to page 1-35.
D09	Exchange FRU Group 1018 on page 1-36, go to page 1-35.
D0A to D0E	Exchange FRU Group 1027 on page 1-36, go to page 1-35.
D0F to D10	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
D11 to D13	Exchange FRU Group 1027 on page 1-36, go to page 1-35.
D14 to D1F	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
D20	Exchange FRU Group 1027 on page 1-36, go to page 1-35.
D21	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
D22	If loading from diskette (function 9 from the control panel) then exchange FRU Group 1019 on page 1-36; if loading from HDD then exchange FRU Group 1018 on page 1-36, go to page 1-35.
D23 to D27	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
D28	Exchange FRU Group 1027 on page 1-36, go to page 1-35.
D29 to D2F	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
D30	If loading from diskette (function 9 from the control panel) then ensure the diskette is correctly inserted and that the diskette drive operator handle is closed. If no problem in this area, then exchange FRU Group 1019 on page 1-36 if loading from diskette (function 9 from the control panel); if loading from HDD then exchange FRU Group 1018 on page 1-36 go to page 1-35.
D31	If loading from diskette (function 9 from the control panel) then exchange FRU Group 1019 on page 1-36; if loading from HDD then exchange FRU Group 1018 on page 1-36 go to page 1-35.
D32	Exchange FRU Group 1027 on page 1-36, go to page 1-35.
D33 to D34	If loading from diskette (function 9 from the control panel) then exchange FRU Group 1019 on page 1-36; if loading from HDD then exchange FRU Group 1018 on page 1-36 go to page 1-35.
D35	The installed diskette is 'Write protected'. Replace the diskette with an equivalent which permits writing.
D36	Go to "3745 Service Functions" "Hard Disk Trouble Analysis and Replacement".
D37 to D38	Exchange FRU Group 1021 on page 1-36, go to page 1-35.
D39 to D3A	Exchange FRU Group 1027 on page 1-36, go to page 1-35.
D3B	If loading from diskette (function 9 from the control panel) then exchange FRU Group 1019 on page 1-36; if loading from HDD then exchange FRU Group 1018 on page 1-36 go to page 1-35.
D3C	Exchange FRU Group 1027 on page 1-36, go to page 1-35.

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Panel Code	Action to be Taken
D3D	If loading from diskette (function 9 from the control panel) then exchange FRU Group 1020 on page 1-36 go to page 1-35; if loading from HDD then go to "3745 Service Functions" Hard Disk Trouble Analysis and Replacement.
D3E	If loading from diskette (function 9 from the control panel) then exchange FRU Group 1019 on page 1-36; if loading from HDD then exchange FRU Group 1018 on page 1-36 go to page 1-35.
D3F	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
D40 to D44	Go to "3745 Service Functions" "Hard Disk Trouble Analysis and Replacement".
D45	Exchange FRU Group 1106 on page 1-36, go to page 1-35.
D46 to D4F	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
D50	If loading from diskette (function 9 from the control panel) then ensure the diskette is correctly inserted and that the diskette drive operator handle is closed. If no problem in this area, then exchange FRU Group 1019 on page 1-36 if loading from diskette (function 9 from the control panel); if loading from HDD then exchange FRU Group 1018 on page 1-36 go to page 1-35.
D51 to D75	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
D76	Exchange FRU Group 1021 on page 1-36, go to page 1-35.
D77 to DF5	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
DF6	Exchange FRU Group 1021 on page 1-36, go to page 1-35.
DF7	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
DF8	If loading from diskette (function 9 from the control panel) then the problem may be a possible incorrect diskette type in the drive. Check the type. If OK then try the backup diskette. If problem still exists then exchange FRU Group 1157 on page 1-37 go to page 1-35. OR If loading is from the disk then restore the disk. Refer to "3745 Service Functions". If problem still exists then exchange FRU Group 1156 on page 1-37 go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
DF9 to DFA	Restore the disk. Refer to "3745 Service Functions". If problem still exists then exchange FRU Group 1156 on page 1-37, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
DFB to DFD	If loading from diskette (function 9 from the control panel) then the problem may be a possible incorrect diskette type in the drive. Check the type. If OK then try the backup diskette. If problem still exists then exchange FRU Group 1157 on page 1-37 go to page 1-35. OR If loading is from the disk then restore the disk. Refer to "3745 Service Functions". If problem still exists then exchange FRU Group 1156 on page 1-37 go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
DFE	Exchange FRU Group 1018 on page 1-36, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
DFF	Exchange FRU Group 1019 on page 1-36, go to page 1-35. Record the following action for use if the problem is not corrected by the FRU exchange; A MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
E00 to EFF	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.

Table 1-5 (Page 13 of 16). 3745 Control Panel Code Table

Panel Code	Action to be Taken
F00	Normal progression code. If this code is displayed for more than 2 minutes, then a MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
F01	Successful completion code. Refer to Appendix A, "Control Panel Code Definitions" on page A-1.
F02 to F05	Normal progression code. If this code is displayed for more than 2 minutes, then a MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
F06 to F07	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
F08 to F0A	Normal progression code. If this code is displayed for more than 2 minutes, then a MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
F0B	Normal progression code. If this code is displayed during the 1st installation, a manual intervention is required to exchange the wrap block.
F0C	Normal progression code. If this code is displayed for more than two minutes, then suspect any adapters attached to the MOSS, or microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
F0D	MOSS diagnostics detected an error during the IML. Normally a reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17. This code may be caused by a console problem which prevents the display of the reference code. If this is the case, go to "3745 Console Symptoms" on page 1-12.
F0E to F0F	Successful completion code. Refer to Appendix A, "Control Panel Code Definitions" on page A-1.
F10 to F14	An error has been detected during IPL (Specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
F15	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
F16	An error has been detected during IPL (Specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
F17	If this code is displayed during IML, run IOC bus diagnostics to ensure that there is no adapter problem, then run CCU diagnostics.
F18 to F21	An error has been detected during IPL (Specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
F22 to F23	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
F24	No scanner IMLed after scanner IML routine (phase 3). Run IOC bus diagnostics to ensure that there is no adapter problem, then run CCU diagnostics.
F25	No valid scanner in CDS. Verify CDS validity.
F26 to F35	An error has been detected during IPL (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
F36 to F47	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
F48 to F4B	An error has been detected during IPL/Switchback/Fallback. (Specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.

Table 1-5 (Page 14 of 16). 3745 Control Panel Code Table

Panel Code	Action to be Taken
F4C	An error has been detected during IPL (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
F4D to F58	An error has been detected during IPL/Switchback/Fallback. (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
F59	IPL not possible on one of the CCUs due to error detected by MOSS diagnostics during IML. A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
F5A	Channel configuration from CDF does not match the actual configuration during IPL phase 1A/1B. A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17. Verify: • CA are powered On. • CDF with actual configuration
F60	IPL not possible on either of the CCUs due to error detected by MOSS diagnostics during IML. A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
F61	An error has been detected during IPL (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
F62	IPL cancelled after a stop in phase 1 diag. A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
F63	IPL cannot read CCU type from CDF. Exchange FRU Group 1258 on page 1-37, go to page "Using the MIP FRU Group Table" on page 1-35
F64	NCP does not support PUC type of CCU. Check NCP generation.
F65	Memory size of stand-by CCU too small for load module. Check compatibility between memory size and load module size.
F66	Memory size is 16 MB and NCP does not support.
F67 to FCF	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
FD0	Successful completion code. Refer to Appendix A, "Control Panel Code Definitions" on page A-1.
FD1	An error has been detected during Fallback (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
FD2	Successful completion code. Refer to Appendix A, "Control Panel Code Definitions" on page A-1.
FD3	An error has been detected during Switchback (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
FD4 to FD5	Normal progression code. If this code is displayed for more than 2 minutes, then a MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
FD6 to FD9	Normal progression code. If this code is displayed for more than 2 minutes, when the load/dump is via the disk, then refer to "How to Run MOSS Diagnostics" on page 3-20 to aid problem isolation and refer to the "3745 Service Functions" "Hard disk trouble analysis".
FDA	Information Code. Refer to Appendix A, "Control Panel Code Definitions" on page A-1.

Table 1-5 (Page 15 of 16). 3745 Control Panel Code Table

Panel Code	Action to be Taken
FDB to FE0	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
FE1 to FE2	An error has been detected during IML (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17. Record "3745 Service Functions", "Hard Disk Trouble Analysis", for future use.
FE3 to FE4	An error has been detected during IML (Specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A refcode will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
FE5	An error has been detected during IML (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17. Record "How to Run the 3745 Panel Test" on page 3-22 which may assist problem isolation.
FE6 to FE7	An error has been detected during IML (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
FE8	An error has been detected during IML (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17. Record "3745 Service Functions", "Hard Disk Trouble Analysis", for future use.
FE9 to FEA	An error has been detected during IML (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17. Record "3745 Service Functions" "Configuration Data File" and "3745 Service Functions" "Hard Disk Trouble Analysis", for future use to assist problem resolution.
FEB to FEC	An error has been detected during IML (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17. Record whether this code can be resolved by use of the Problem Determination Guide, SA33-0096. Perform a MOSS IML but if problem occurs again contact your support structure.
FED	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
FEE	An error has been detected during IML (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17. Record whether this code can be resolved by use of the Problem Determination Guide, SA33-0096. Perform a MOSS IML but if problem occurs again contact your support structure.
FEF	An error has been detected during IML (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17. Record "3745 Service Functions", "Hard Disk Trouble Analysis", for future use.
FF0 to FF3	Normal progression code. If this code is displayed for more than 2 minutes, then a MOSS microcode problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.

Table 1-5 (Page 16 of 16). 3745 Control Panel Code Table

Panel Code	Action to be Taken
FF4	Normal progression code. If this code is displayed for more than 2 minutes when: 1. The load/dump is via a channel, then go to "MAP 3700: 3745 CA Isolation Procedure" on page 2-19. 2. The load/dump is via the disk, then run "How to Run MOSS Diagnostics" on page 3-20 to aid problem isolation and refer to the "3745 Service Functions", "Hard Disk Trouble Analysis". OR if more than 10 - 20 minutes (depending on IPL link speed) when: 3. The load/dump is via a link, then go to "MAP 3510: Unable to Load/Dump Control Program in Link-Attached 3745" on page 2-13.
FF5	Normal progression code. If this code is displayed for more than 2 minutes, then go to "MAP 3700: 3745 CA Isolation Procedure" on page 2-19.
FF6	Normal progression code. If this code is displayed for more than 10 - 20 minutes (depending on IPL link speed) then go to "MAP 3510: Unable to Load/Dump Control Program in Link-Attached 3745" on page 2-13.
FF7	Normal progression code. If this code is displayed for more than 2 minutes, then the CCU failed to initialize the control program. A control program problem is suspected. Contact your support structure, refer to "Contacting Support" on page B-2.
FF8	Go to "MAP 3130: 3745 Undefined Panel Message" on page 2-7.
FF9	Successful completion code. Refer to Appendix A, "Control Panel Code Definitions" on page A-1.
FFA	A problem was detected during IPL with the local console adapter. Go to "How to Run the Console Link Test on 3745 Models 210-610" on page 3-23 and run the local console link test. Record: Exchange FRU Group 1113 on page 1-37 for possible exchange if problem still exists.
FFB to FFC	Information code. Refer to Appendix A, "Control Panel Code Definitions" on page A-1.
FFD	Successful completion code. Refer to Appendix A, "Control Panel Code Definitions" on page A-1.
FFE	An error has been detected during IPL (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.
FFF	An error has been detected during IPL (specific problem is defined in Appendix A, "Control Panel Code Definitions" on page A-1). A reference code will have been produced on the 3745 console. Refer to "Using Reference Codes" on page 1-17.

Using the MIP FRU Group Table

Very important

The MIP FRU group table lists the FRU groups likely to be called in this manual.

This table covers MOSS/POWER FRU group failures that prevent correct operation of the BRC function.

- Each FRU group contains from one to three FRUs, listed by name and location.
- The "1st FRU" is the most likely to be failing. The "3rd FRU" is the least likely.
- Usually, only one FRU in an FRU group is failing, and you should **try to reduce the FRU group to the one failing FRU.**
- If you can reproduce the 3745 failure, exchange FRUs one at a time until the failing FRUs are isolated.
- ***As soon as you have recorded the FRU and Location in the FRU group, go to "3745 FRU List" on page 1-39.***

Always

1. Ensure that the failing area of the machine is available for service.
2. Consult the "Exchange Precautions" on page 4-1 before removing any FRUs.
3. Check for loose cards, cables, and crossovers before exchanging FRUs.
4. Run diagnostics after any repair action.
5. Follow the 'CE leaving' procedure before returning the machine to the customer.

The FRU group table starts on the next page.

3745 FRU Group

Table 1-6 (Page 1 of 3). 3745 FRU Table

FRU Group	1st FRU Name Location	2nd FRU Name Location	3rd FRU Name Location
1003	MPC/MPC2 01A-X0-D1[2]		
1004	MAC/MAC2 01A-X0-H1	MPC/MPC2 01A-X0-D1[2]	
1005	DFA 01A-X0-F1	MPC/MPC2 01A-X0-D1[2]	
1006	MPC/MPC2 01A-X0-D1[2]	MAC/MAC2 01A-X0-H1	DFA 01A-X0-F1
1007	MPC/MPC2 01A-X0-D1[2]	MAC/MAC2 01A-X0-H1	
1011	MPC/MPC2 01A-X0-D1[2]	MSC/MSC2 01A-X0-C1[3]	
1012	MSC/MSC2 01A-X0-C1[3]		
1014	MAC/MAC2 01A-X0-H1		
1018	DFA 01A-X0-F1	HDD 01X	
1019	DFA 01A-X0-F1	FDD 01W-D1	
1020	Diskette	DFA 01A-X0-F1	FDD 01W-D1
1021	DFA 01A-X0-F1	MPC/MPC2 01A-X0-D1[2]	MAC/MAC2 01A-X0-H1
1023	MAC/MAC2 01A-X0-H1	DFA 01A-X0-F1	MPC/MPC2 01A-X0-D1[2]
1027	DFA 01A-X0-F1		
1053	Diskette	FDD 01W-D1	
1054	Diskette	FDD 01W-D1	DFA 01A-X0-F1
1055	MAC 01A-X0-H1	MCA 01A-X0-G1[1]	MPC/MPC2 01A-X0-D1[2]
1056	DFA 01A-X0-F1	MPC/MPC2 01A-X0-D1[2]	MSC/MSC2 01A-X0-C1[3]
1100	PLC 01A-X0-A1	MPC/MPC2 01A-X0-D1[2]	MAC/MAC2 01A-X0-H1
1101	MCA 01A-X0-G1[1]	MPC/MPC2 01A-X0-D1[2]	MAC/MAC2 01A-X0-H1
1102	MPC/MPC2 01A-X0-D1[2]	MAC/MAC2 01A-X0-H1	MCA 01A-X0-G1[1]
1103	DFA 01A-X0-F1	MCA 01A-X0-G1[1]	MPC/MPC2 01A-X0-D1[2]
1104	MAC/MAC2 01A-X0-H1	MCA 01A-X0-G1[1]	
1105	DFA 01A-X0-F1	MPC/MPC2 01A-X0-D1[2]	HDD 01X
1106	FDD 01W-D1	DFA 01A-X0-F1	
1107	DFA 01A-X0-F1	MPC/MPC2 01A-X0-D1[2]	FDD 01W-D1
1108	MPC/MPC2 01A-X0-D1[2]	PLC 01A-X0-A1	MSC/MSC2 01A-X0-C1[3]
1109	MPC/MPC2 01A-X0-D1[2]	MSC/MSC2 01A-X0-C1[3]	PLC 01A-X0-A1
1110	MPC/MPC2 01A-X0-D1[2]	DFA 01A-X0-F1	MSC/MSC2 01A-X0-C1[3]
1111	MPC/MPC2 01A-X0-D1[2]	MSC/MSC2 01A-X0-C1[3]	DFA 01A-X0-F1
1112	MCA 01A-X0-G1[1]	MPC/MPC2 01A-X0-D1[2]	

[1] On 3745 Models 210-610 only.

[2] MPCs are used on 3745 Models 210 to 610, while MPC2s are used on 3745 Models 21A to 61A.

[3] MSCs are used on 3745 Models 210 to 610, while MSC2s are used on 3745 Models 21A to 61A.

[4] PUCs are used on 3745 Models 310 and 610, while PUC1s are used on 3745 Models 21A and 41A after EC: D5657.

Table 1-6 (Page 2 of 3). 3745 FRU Table

FRU Group	1st FRU Name Location	2nd FRU Name Location	3rd FRU Name Location
1113	MCA 01A-X0-G1[1]		
1114	MCA 01A-X0-G1[1]	MAC/MAC2 01A-X0-H1	MPC/MPC2 01A-X0-D1[2]
1115	PLC 01A-X0-A1	MPC/MPC2 01A-X0-D1[2]	MSC/MSC2 01A-X0-C1[3]
1116	PLC 01A-X0-A1	Control Panel Card-01W	
1117	PLC 01A-X0-A1		
1118	PLC 01A-X0-A1	MPC/MPC2 01A-X0-D1[2]	
1156	HDD 01X		
1157	FDD 01W-D1		
1216	MPC/MPC2 01A-X0-D1[2]	PLC 01A-X0-A1	
1238	DFA 01A-X0-F1	HDD 01X	MPC/MPC2 01A-X0-D1[2]
1239	DFA 01A-X0-F1	FDD 01W-D1	MPC/MPC2 01A-X0-D1[2]
1240	FDD 01W-D1	DFA 01A-X0-F1	MPC/MPC2 01A-X0-D1[2]
1241	Diskette	FDD 01W-D1	MPC/MPC2 01A-X0-D1[2]
1242	MSC/MSC2 01A-X0-C1[3]	DFA 01A-X0-F1	MPC/MPC2 01A-X0-D1[2]
1243	MSC/MSC2 01A-X0-C1[3]	MAC/MAC2 01A-X0-H1	MPC/MPC2 01A-X0-D1[2]
1244	MPC/MPC2 01A-X0-D1[2]	PLC 01A-X0-A1	MCA 01A-X0-G1[1]
1245	MAC 01A-X0-H1	MPC/MPC2 01A-X0-D1[2]	TCM 01C-A1-B3
1247	MAC 01A-X0-H1	MPC/MPC2 01A-X0-D1[2]	TCM 01D-A1-B3
1248	MPC/MPC2 01A-X0-D1[2]	PROM 01A-X0-E4	
1250	PLC 01A-X0-A1	MPC/MPC2 01A-X0-D1[2]	MLA 01A-X0-E1
1251	MPC/MPC2 01A-X0-D1[2]	PLC 01A-X0-A1	MLA 01A-X0-E1
1252	MPC/MPC2 01A-X0-D1[2]	DFA 01A-X0-F1	MCA 01A-X0-G1[1]
1253	MAC 01A-X0-H1	DFA 01A-X0-F1	MCA 01A-X0-G1[1]
1255	MAC2 01A-X0-H1	MPC/MPC2 01A-X0-D1[2]	PUC/PUC1 01B-A1-E0[4]
1256	MAC2 01A-X0-H1	MPC/MPC2 01A-X0-D1[2]	PUC/PUC1 01B-A1-Q0[4]
1257	PUC/PUC1 01B-A1-Q0[4]	MSC/MSC2 01A-X0-C1[3]	
1258	PUC/PUC1 01B-A1-Q0[4]	MAC2 01A-X0-H1	Cables (MOSS-CCU)
1281	MSC/MSC2 01A-X0-C1[3]	MPC/MPC2 01A-X0-D1[2]	
1424	MAC/MAC2 01A-X0-H1	MPC/MPC2 01A-X0-D1[2]	DFA 01A-X0-F1
1533	MPC/MPC2 01A-X0-D1[2]	DFA 01A-X0-F1	MAC/MAC2 01A-X0-H1
2001	MLA 01A-X0-E1		
2002	MLA 01A-X0-E1	MPC/MPC2 01A-X0-D1[2]	
2003	MLA 01A-X0-E1	MPC/MPC2 01A-X0-D1[2]	MOSS board 01A-X0
2004	MLA 01A-X0-E1	MPC/MPC2 01A-X0-D1[2]	PLC 01A-X0-A1
3565	PSTY2 ID=01 01V		
3566	PSTY2 ID=01 01V	CP06 01E-A1	
3567	CP06 01E-A1		
3610	PSTY6 01F		

Table 1-6 (Page 3 of 3). 3745 FRU Table			
FRU Group	**1st FRU Name Location**	**2nd FRU Name Location**	**3rd FRU Name Location**
3611	PSTY8 01E		
3612	PSTY6 01F	PAC 01A-X0-B1	
3728	LIC FAN ID=18/19 01N	PAC 01A-X0-B1	
3729	LIC FAN ID=20/21 04C	PAC 01A-X0-B1	
3730	LIC FAN ID=22/23 04F	PAC 01A-X0-B1	
3731	LIC FAN ID=24/25 05C	PAC 01A-X0-B1	
3732	LIC FAN ID=26/27 05F	PAC 01A-X0-B1	
3733	LIC FAN ID=28/29 06C	PAC 01A-X0-B1	
3734	LIC FAN ID=30/31 06F	PAC 01A-X0-B1	
4077	Control Panel Card-01W	PLC 01A-X0-A1	
4078	Battery 01W-F0	PAC 01A-X0-B1	
4083	Control Panel Card-01W		
4201	Moss BLOWER 01A-Z0		
4203	Moss BLOWER 01A-Z0	PAC 01A-X0-B1	
4204	BLOWER 01J-A0		
4205	BLOWER 02C-A0		
4206	BLOWER 02H-A0		
4207	BLOWER 03H-A0		
6074	MPC/MPC2 01A-X0-D1[2]	MAC/MAC2 01A-X0-H1	MCA 01A-X0-G1[1]
6381	PAC 01A-X0-B1		
6383	PLC 01A-X0-A1	K2 Relay 01E	K2 Diode 01E
6384	K2 Relay 01E		

3745 FRU List

The FRU codes for the 3745 are listed in alphabetical order in the following list. **Identify** the FRU you are going to work with and **go to the page shown**.

FRU Code	Type	FRU Name	Text
AIRF	01C	Air filters	It is not necessary to disable any part of the machine or run diagnostics. Go to Chapter 4, "FRU Exchange" on page 4-1.
ABP1	52C		Use "ABP1 and ABP2 Exchange Procedure" on page 4-84.
ABP2	53C		Use "ABP1 and ABP2 Exchange Procedure" on page 4-84.
AMD	02C	AMD	Air moving device. Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
AMD2	03C	AMD2	Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
BATT	04C	Battery	It is not necessary to disable any part of the machine or run diagnostics. Go to Chapter 4, "FRU Exchange" on page 4-1.
		Board replacement	The total machine is required. When available, proceed with Chapter 4, "FRU Exchange" on page 4-1.
		CA tailgate replacement	The total machine is required. When available, proceed with Chapter 4, "FRU Exchange" on page 4-1.
CADR	06C	CADR	Channel adapter driver receiver card. Use "Requirements List 0040: For the CA" on page 1-54.
CAL6	07C	CAL	Channel adapter logic card. Use "Requirements List 0040: For the CA" on page 1-54.
CAL7	08C	CAL	Channel adapter logic card. Use "Requirements List 0040: For the CA" on page 1-54.
CBC	09C	CBC	3746-900 controller bus coupler for CCU A or CCU B. Refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
CBSP	0AC	CBSP CBSP2 CBSP3	3746-900 controller bus and service processor. Refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
		Control Panel	Use "Requirements List 0030: For the MOSS" on page 1-52.
CSP	0EC	CSP	Communication scanner processor. Use "Requirements List 0050: For TSS, HPTSS, or ESS" on page 1-58.
DFA	0FC	DFA	Disk file adapter card. Use "Requirements List 0030: For the MOSS" on page 1-52.
DICO	54C	DICO	DMA IOC connection card. Use "Requirements List 0020: For DICO/DTER/ITER/LTC1/2 Cards" on page 1-50.
DMSW	11C	DMSW	Direct memory access switch card. Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
DMUX	12C	DMUX	Double multiplex card for board on LIC unit 1. Use "Requirements List 0100: For DMUX" on page 1-89.
DSKTE	10C	Diskette	Remove the diskette from the FDD and exchange it.
DTER	13C	DTER	DMA bus terminator. Use "Requirements List 0020: For DICO/DTER/ITER/LTC1/2 Cards" on page 1-50.

FRU Code	Type	FRU Name	Text
EAC	14C	EAC	Ethernet adapter card. Use "Requirements List 0050: For TSS, HPTSS, or ESS" on page 1-58.
		ESS	Ethernet subsystem. Use "Requirements List 0050: For TSS, HPTSS, or ESS" on page 1-58.
ETG	15C	ETG	Ethernet tailgate. Use "Requirements List 0050: For TSS, HPTSS, or ESS" on page 1-58.
FALC	16C	FALC	Front end scanner low speed card (FALC) for ALC lines. Refer to *Airline Line Control Scanner RPQ 7L1092 Supplement to Service Information*, SY33-2072.
FDD	17C	FDD	Flexible disk drive. Use "Requirements List 0030: For the MOSS" on page 1-52.
FESH	18C	FESH	Front-end scanner (high-speed). Use "Requirements List 0050: For TSS, HPTSS, or ESS" on page 1-58.
FESL	19C	FESL	Front-end scanner (low speed). Use "Requirements List 0050: For TSS, HPTSS, or ESS" on page 1-58.
HDD	1AC	HDD	Hard disk drive. Use "Requirements List 0030: For the MOSS" on page 1-52.
IOSW	1BC	IOSW	Input/output switch card for 3745 Models 21A and 41A. Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
IOSW2	1CC	IOSW2	Input/output switch card for 3745 Models 31A and 61A. Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
ITER	1DC	ITER	IOC bus terminator. Use "Requirements List 0020: For DICO/DTER/ITER/LTC1/2 Cards" on page 1-50.
LIC1	20C	LIC1	Line interface coupler type 1 card. Use "Requirements List 0090: For LIC Types 1, 3, 4, 5, and 6" on page 1-74.
LIC3	22C	LIC3	Line interface coupler type 3 card. Use "Requirements List 0090: For LIC Types 1, 3, 4, 5, and 6" on page 1-74.
LIC4	23C	LIC4	Line interface coupler type 4 card. Use "Requirements List 0090: For LIC Types 1, 3, 4, 5, and 6" on page 1-74.
LIC5	24C	LIC5	Line interface coupler type 5 card. Use "Requirements List 0090: For LIC Types 1, 3, 4, 5, and 6" on page 1-74.
LIC6	25C	LIC6	Line interface coupler type 6 card. Use "Requirements List 0090: For LIC Types 1, 3, 4, 5, and 6" on page 1-74.
LICF	1FC	LIC fan	It is not necessary to disable any part of the machine or run diagnostics. Go to Chapter 4, "FRU Exchange" on page 4-1.
		LTC1/2	Line terminator card for CAB1 or CAB2 addressing. Use "Requirements List 0020: For DICO/DTER/ITER/LTC1/2 Cards" on page 1-50.
MAC	27C	MAC	MOSS adapter card for 3745 Models 21A and 41A. Use "Requirements List 0030: For the MOSS" on page 1-52.
MAC2	28C	MAC2	MOSS adapter card for 3745 Models 31A and 61A. Use "Requirements List 0030: For the MOSS" on page 1-52.
MCA	29C	MCA	MOSS console adapter card. Use "Requirements List 0030: For the MOSS" on page 1-52.

FRU Code	Type	FRU Name	Text
MLA	44C	MLA	MOSS LAN adapter. Use "Requirements List 0030: For the MOSS" on page 1-52.
MBLWR	2AC	MOSS blower	Use "Requirements List 0030: For the MOSS" on page 1-52.
MPC	2BC	MPC	MOSS processor card. Use "Requirements List 0030: For the MOSS" on page 1-52.
MPC2	2CC	MPC2	MOSS processor card. Use "Requirements List 0030: For the MOSS" on page 1-52.
MSC	2DC	MSC	MOSS storage card. Use "Requirements List 0030: For the MOSS" on page 1-52.
MSC2	2EC	MSC2	MOSS storage card. Use "Requirements List 0030: For the MOSS" on page 1-52.
PAC	30c	PAC	Power analog card. Use "Requirements List 0030: For the MOSS" on page 1-52.
PANEL	31C	Control Panel	Use "Requirements List 0030: For the MOSS" on page 1-52.
PLC	32C	PLC	Power logic card. Use "Requirements List 0030: For the MOSS" on page 1-52.
PROM	33C	PROM	Programmable read-only memory. Use "Requirements List 0030: For the MOSS" on page 1-52.
PSFA	34C	PS Fan	It is not necessary to disable any part of the machine or run diagnostics. Go to Chapter 4, "FRU Exchange" on page 4-1.
PSTY	35C	PSTY	Power supply type. Use "Requirements List 0080: For PS Type 1, 2, 3, 5, and 7" on page 1-70.
PSY1	36C	PSTY 1	Power supply type 1. Use "Requirements List 0080: For PS Type 1, 2, 3, 5, and 7" on page 1-70.
PSY1B	37C	PSTY 1B	Power supply type 1b. Use "Requirements List 0080: For PS Type 1, 2, 3, 5, and 7" on page 1-70.
PSY2	61C	PSTY 2	Power supply type 2. Use "Requirements List 0080: For PS Type 1, 2, 3, 5, and 7" on page 1-70.
PSY3	62C	PSTY 3	Power supply type 3. Use "Requirements List 0080: For PS Type 1, 2, 3, 5, and 7" on page 1-70.
PSY4	63C	PSTY 4	Power supply type 4. Use "Requirements List 0070: For PS Type 4" on page 1-67.
PSY5	64C	PSTY 5	Power supply type 5. Use "Requirements List 0080: For PS Type 1, 2, 3, 5, and 7" on page 1-70.
PSY6	65C	PSTY 6	Power supply type 6. The total machine is required. When available, proceed with Chapter 4, "FRU Exchange" on page 4-1.
PSY7	66C	PSTY 7	Power supply type 7. Use "Requirements List 0080: For PS Type 1, 2, 3, 5, and 7" on page 1-70.
PSY8	67C	PSTY 8	Power supply type 8. The total machine is required. When available, proceed with Chapter 4, "FRU Exchange" on page 4-1.
		PTER	Power bus terminator. Go to Chapter 4, "FRU Exchange" on page 4-1.
PUC	38C	PUC	Processor unit card. Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.

FRU Code	Type	FRU Name	Text
PUC1	88C	PUC1	Processor unit card for 3745 Models 21A and 41A after EC: D55657. Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
SCTL	3AC	SCTL	Storage control card for 3745 Models 21A and 41A. Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
SCTL2	3BC	SCTL2	Storage control card for 3745 Models 310, 31A, 610, and 61A. Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
SCTL3	3CC	SCTL3	Storage control card for 3745 Models 31A and 61A with 16 MB. Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
SMUXA	3DC	SMUXA	Single multiplex card for lower board on LIC2. Use "Requirements List 0110: For SMUXA and SMUXB" on page 1-91.
SMUXB	3DC	SMUXB	Single multiplex card for upper board on LIC2. Use "Requirements List 0110: For SMUXA and SMUXB" on page 1-91.
STER	3EC	STER	Switch terminator. Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
STOA1	3FC	STOA1	Storage (card). Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
STOA2	40C	STOA2	Storage (card). Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
STOB1	41C	STOB1	Storage card. Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
STOB2	42C	STOB2	Storage card. Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
TCM	43C	TCM	Thermal conduction module. Use "Requirements List 0010: For CCU, Adapter, or DMA Buses" on page 1-48.
TIC1	45C	TIC1	Token-ring interface coupler type 1. Use "Requirements List 0060: For TRSS" on page 1-65.
TIC2	46C	TIC2	Token-ring interface coupler type 2. Use "Requirements List 0060: For TRSS" on page 1-65.
TRM	47C	TRM	Token-ring multiplexer card. Use "Requirements List 0060: For TRSS" on page 1-65.
TRP	0BC	TRP	3746-900 token-ring processor. Go to the 3746-900 FRU List in the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.

3745 and Service Processor Maintenance Using a CPN

The service processor console should be logged ON. If it is not, go to "Console Use for Maintenance" on page 1-1 for logging ON and return here.

1. In the **MOSS-E View** window, click on **Program** (on the action bar).
2. Click on **Search CPN**.
3. Enter the CPN.
4. The controller icon corresponding to the CPN is highlighted. On the bottom line of the MOSS-E VIEW, the type of controller (3745 or 3746-900) and its serial number are displayed.
5. Note the type of controller and double-click on the highlighted controller icon.

001

Was a 3745 Controller icon highlighted?

Yes **No**

002

Was a 3746-900 Controller icon highlighted?

Yes **No**

003

Go to Step 008 on page 1-44.

004

Refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.

005

The selected machine is either a 3745 or a 3746 Model A11, A12, L13, L14, or L15.

Are you here for a hardware problem (with FRU)?

Yes **No**

006

For a 3745 microcode problem refer to the *Service Processor Installation and Maintenance* manual. Use the **Handling the Microcode Change Levels** procedure in the **Maintaining the Code Loaded on the Service Processor** chapter.

007

- The **3745 Menu** window is displayed.
- Click on the **Problem Management** option.
- Double-click on the **Display Alarms** option.
- In the next window, double-click on the alarm which has the CPN corresponding to your call.
- You obtain an FRU or a list of FRUs with the FRU location.
- Note this information and go to "3745 FRU List" on page 1-39 for FRU replacement.

008

The service processor icon is highlighted.

Are you here for a hardware problem (with FRU)?

Yes **No**

No → 009

For a service processor microcode problem, refer to the *Service Processor Installation and Maintenance* manual. Use the **Handling the Microcode Change Levels** procedure in the **Maintaining the Code Loaded on the Service Processor** chapter.

Yes → 010

- In the **MOSS-E View** window, double click on the service processor.
- The **Service Processor Menu** window is displayed.
- Click on the **Problem management** option.
- Double-click on the **Display Alarms** option.
- The **Display Alarms** window is displayed.
- Record the SRC number of the alarm which has the CPN corresponding to your call.
- Return to the **Problem management** window.
- Double-click on the **Manage Alarms/Errors/Events (SRCs)**.
- Select **Alarms** then click on **OK**.
- Double-click on the alarm which has the SRC number previously recorded.
- An FRU or a list of FRUs with the FRU location is displayed.
- Record this FRU list with each card fault probability.
- Go to the **Service Processor Problem Determination** in the corresponding *Service Processor Installation and Maintenance* manual.

Service Processor Maintenance Using an SRC Sequence Number

The service processor console should be logged ON. If it is not, go to "Console Use for Maintenance" on page 1-1 for logging ON and return here.

1. In the **MOSS-E View** window, double click on the service processor icon.
2. The **Service Processor Menu** window is displayed.
3. Click on the **Problem management** option.
4. Double-click on the **Manage Alarms/Errors/Events (SRCs)** option.
5. Select the **Alarm** option, then click on **OK**.
6. In the next window, double-click on the alarm which has the SRC number that you want.
7. An FRU or a list of FRUs with the FRU location is displayed.
8. Record this FRU list with each card fault probability.
9. Go to the **Service Processor Problem Determination** in the corresponding *Service Processor Installation and Maintenance* manual.

Engineering Data Transfer

Overview

The engineering data can be transferred in two main ways:

- Optical disk or diskettes
- DCAF (Distributed Console Access Facility) via LAN or SDLC.

The transfer can be done from:

- The local service processor using optical disk or diskettes
- The remote service processor using DCAF.

Transferring Engineering Data from the Local Service Processor

- You should be logged ON.
- In the **MOSS-E View** window, double-click on the service processor icon.
- In the **Service Processor Menu**, click on the **Operation Management** option.
- Double-click on the **Retrieve Engineering Data** option.
- The **Retrieve Engineering Data** window is displayed, asking if you have transferred the 3745 engineering data.
  - If you click on **YES**:
    The **Engineering Data Retrieval** window is displayed with a wait message. The **Save/Transfer Engineering Data** window becomes available for selection.
    - Click on your **Copy to Diskette** or **Copy to Optical Disk** option. Then follow the information displayed.
    - At the end of the copy, double click on the **Delete Engineering data** window to delete the engineering data file on MOSS-E.
  - If you click on **NO**, you are directed to the MIP: **Start page - 3745/3746-900 Maintenance Actions**. See "Transferring 3745 Engineering Data to MOSS-E."

Transferring 3745 Engineering Data to MOSS-E

- From the **MOSS-E View** window, double-click on the 3745 icon.
- In the **3745 Menu** window, click on the **MOSS Console** option.
- A MOSS window is displayed. Enter the **PEM** command and press **Enter**.
- Enter the **SD** (Super Diagnostic) function and press **Enter**.
- In the **Super Diagnostic** window, select **function 5** (transfer file to MOSS-E).
- Enter the file names to be transferred as specified hereafter and press **Enter**.
  - CHGCDF for CDF
  - CHGCIL for BERs

  For other dump files, type **DDD** in menu 3 to check their availability:
  - CHGDMP
  - CHHDMPA
  - CHHDMPB
  - CHGTRSSA
  - CHGTRSSB
  - CHGCADSA
  - CHGCADSB
- Enter **PEM** and press **Enter**.

Logon on the Remote Service Processor

Note

Before continuing, establish the physical connection with the local service processor.

- On the desk top screen, double-click on the **Distributed Console Access Facility** icon.
- A **Distributed Console Access Facility-Icon View** is displayed.
- Double-click on the **Controlling for the DCAF** option.
- In the **Product Information** window, click on **OK**.
- On the **Distributed Console Access Facility** window, click on **Services** in the action bar.
- Click on the **Select a link Record** option.
- In the **DCAF Link Record Directory** window, double-click on the desired link (LAN or SDLC).
- In the **DCAF Target Password** window, enter the password and click on **OK**.
- The **DCAF Target/Monitoring/ALT+T** is displayed.
- Return to the **SDLC State Monitoring** and click on **Session** in the action bar.
- Click on **Active**.

Transferring Engineering Data to the Remote Service Processor

- In the **SDLC State Active- Key Stroke Remote** window, click on **Services** in the action bar.
- Click on **Start File Transfer**.
- The **DCAF - File Transfer Utilities** window is displayed.
- In this window:
  - Enter the source file name:
    K:|pedat|xxxxxxxx.zip (Note)
  - Enter the destination file name (which can be the same).
  - Do **not** select the **compress** option.
  - Click on **Receive**.
- A **DCAF - File Transfer Utility** window is displayed showing the status.
- When the transfer is done, the message **File Transfer Performed successfully** is displayed.
- Click on **OK**.
- Click on the **Delete Engineering Data** to delete the engineering data file on MOSS-E.

Note: xxxxxxxx = Manufacturing plant and serial number of the service processor.

Requirements List 0010: For CCU, Adapter, or DMA Buses

Ensure that the following information has been recorded (from the reference code screen).

- FRU and location
- Adapter/DMA bus number, if applicable.

Using the table (Table 1-7 on page 1-49) locate the:

- Power supply id
- Diagnostics to be run
- Suspected area.

The power supply is a PS Type 1 or 1B. Record this information for use during this service call.

For the physical location, refer to Figure 4-2 on page 4-5.

What you should do next:

001

– If the machine is a 3745-21x or 3745-31x (one CCU), the customer will not be able to use the machine which will be available for maintenance.

Is the suspected area of the machine disabled from customer operation (No 'RUN' status in MSA area), or the 3745 fully available for maintenance?

Yes **No**

002

- If the suspected area is the CCU only:

  Go to "Disabling Procedure 0010: Preparing a CCU and Switch for Maintenance" on page 1-95.

- If the suspected area includes an adapter or DMA bus. Go to "Disabling Procedure 0080: Preparing a CCU with Adapter and DMA Buses for Maintenance" on page 1-114.

003

– If the FRU is the AMD, continue with Chapter 4, "FRU Exchange" on page 4-1.

(Step **003** continues)

003 (continued)

Have the preceding diagnostics been run just before entering this section?

Yes **No**

004

Run the diagnostics. Refer to "How to Run Internal Function Tests" on page 3-30, then go to "Diagnostic Result Analysis" on page 3-48.

005

Did the diagnostics run without detecting an error?

Yes **No**

006

Go to Chapter 4, "FRU Exchange" on page 4-1.

007

Is the FRU the last one in the suspected FRU group?

Yes **No**

008

For the next FRU called, continue with the "3745 FRU List" on page 1-39.

009

All parts of the machine required for FRU exchange will now be available for service.

Change all FRUs called using Chapter 4, "FRU Exchange" on page 4-1.

Table 1-7. Requirements for CCU, Adapter,or DMA Buses

FRU	Location	Power Supply	Diagnostic to be Run	Suspected Area
AMD/AMD2	01C	PS Type 8 (see Note)	N/A	CCU A
	01D	PS Type 8 (see Note)	N/A	CCU B
DMSW	01B-A1-G0	ID=02	CCU + HPTSS	CCU A + DMA bus 5
	01B-A1-P0	ID=03	CCU + HPTSS	CCU B + DMA bus 6
IOSW/IOSW2	01B-A1-H0	ID=02	CCU + IOC	CCU A + adapter buses 1 and 2
	01B-A1-N0	ID=03	CCU + IOC	CCU B + adapter buses 3 and 4
PUC	01B-A1-E0	ID=02	CCU	CCU A
	01B-A1-Q0	ID=03	CCU	CCU B
SCTL	01B-A1-F0	ID=02	CCU	CCU A
	01B-A1-Q0	ID=03	CCU	CCU B
SCTL2/3	01B-A1-C0	ID=02	CCU	CCU A
	01B-A1-S0	ID=03	CCU	CCU B
STO for Models 21x and 41x	01B-A1-D0	ID=02	CCU	CCU A
	01B-A1-E0	ID=02	CCU	CCU A
	01B-A1-R0	ID=03	CCU	CCU B
	01B-A1-S0	ID=03	CCU	CCU B
STO for Models 31x and 61x	01B-A1-A0	ID=02	CCU	CCU A
	01B-A1-B0	ID=02	CCU	CCU A
	01B-A1-U0	ID=03	CCU	CCU B
	01B-A1-V0	ID=03	CCU	CCU B
TCM	01C-A1	ID=02	CCU	CCU A
	01D-A1	ID=03	CCU	CCU B
STER	01B-A1-M0	ID=02	HPTSS on any adapter or IOC	CCU A + adapter buses 1 and 2 + DMA bus 5
	01B-A1-J0	ID=03	HPTSS on any adapter or IOC	CCU B + adapter buses 3/4 + DMA bus 6

Note: The CCU cooled by the AMD must be powered OFF before replacing the AMD.
For CCU A, power supply ID=02.
For CCU B, power supply ID=03.

Requirements List 0020: For DICO/DTER/ITER/LTC1/2 Cards

Ensure that the following information has been recorded (from the reference code screen).

- FRU and location.

Using the table (Table 1-8 on page 1-51), locate the:

- Diagnostics to be run
- Suspected area.

Record the information for use during this service call.

What you should do next:

001

The DICO, DTER, ITER, LTC1 or LTC2 cards are connected to the buses of installed CCUs. It is necessary to have the whole machine for maintenance before exchanging these cards.

Have the preceding diagnostics been run just before entering this section?

Yes **No**

002

Run the diagnostics. Refer to "How to Run Internal Function Tests" on page 3-30, then go to "Diagnostic Result Analysis" on page 3-48.

003

Did the diagnostics run without detecting an error?

Yes **No**

004

Go to Chapter 4, "FRU Exchange" on page 4-1.

005

Is the FRU the last one in the suspected FRU group?

Yes **No**

006

(Step **006** continues)

006 (continued)

For the next FRU called, continue with "3745 FRU List" on page 1-39.

007

All parts of the machine required for FRU exchange will now be available for service.

Change all FRUs called using Chapter 4, "FRU Exchange" on page 4-1.

Table 1-8. Requirements for DICO, DTER, ITER, LTC1, or LTC2

FRU	Location	Diagnostic to Be Run	Suspected Area
DICO	01G-A1-W2	HPTSS/ESS/CBA on an installed adapter	DMA buses
	01G-A1-X2	IOC	IOC buses
DTER	01G-A1-W2	HPTSS/ESS on an installed adapter	DMA bus 5 or 6
ITER	01G-A1-X2	IOC	Adapter bus 1 or 4
	01L-A1-X2	IOC	Adapter bus 2 or 3
	02A-A1-X2	IOC	Adapter bus 1 or 4
	02E-A1-X2	IOC	Adapter bus 2 or 3
	02F-A1-X2	IOC	Adapter bus 1 or 4
	03F-A1-X2	IOC	Adapter bus 1 or 4
LTC1	01L-A1-L4	CA 1-8	CA 1-8
LTC2	02E-A1-L4	CA 9-16	CA 9-16

Requirements List 0030: For the MOSS

Before using this section you should know the:

- FRU and location.

Using the table (Table 1-9 on page 1-53), locate the:

- Diagnostics to be run
- Power supply
- Suspected area
- Associated area, if applicable.

Record the information for use during this service call.

What you should do next:

001

Is the MOSS area of the machine disabled from customer operation ('MOSS OFFLINE' or 'MOSS ALONE' in MSA area), or the 3745 fully available for maintenance?

Yes **No**

002

Go to "Disabling Procedure 0020: How to Put the MOSS Offline" on page 1-99.

003

Do you have a diagnostic to run for the FRU?

Yes **No**

004

Go to Chapter 4, "FRU Exchange" on page 4-1.

005

Have the preceding diagnostics been run just before entering this section?

Yes **No**

006

Run the diagnostics. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1, then go to "Diagnostic Result Analysis" on page 3-48.

007

Did the diagnostics run without detecting an error?

Yes **No**

008

Go to Chapter 4, "FRU Exchange" on page 4-1.

009

Is the FRU the last one in the suspected FRU group?

Yes **No**

010

For the next FRU called, continue with the "3745 FRU List" on page 1-39.

011

All parts of the machine required for FRU exchange will now be available for service.

Change all FRUs called using Chapter 4, "FRU Exchange" on page 4-1.

Table 1-9. Requirements for the MOSS

FRU	Location	Power Supply	Diagnostic to Be Run	Suspected Area	Associated Area
DFA	01A-X0F1	PS Type 2 ID=01	MOSS	MOSS	N/A
FDD	01W-D0	PS Type 2 ID=01	MOSS	MOSS	N/A
HDD	01X-A1	PS Type 2 ID=01	MOSS	MOSS	N/A
MAC/MAC2	01A-X0H1	PS Type 2 ID=01	MOSS	MOSS	N/A
MCA	01A-X0G1	PS Type 2 ID=01	MOSS and console link test	MOSS	N/A
MLA	01A-X0E1	PS Type 2 ID=01	MOSS	MOSS	LAN
MPC	01A-X0D1	PS Type 2 ID=01	MOSS	MOSS	N/A
MSC	01A-X0C1	PS Type 2 ID=01	MOSS	MOSS	N/A
PAC	01A-X0B1	PS Type 6	No diagnostic	PCSS	MOSS
PLC	01A-X0A1	PS Type 6	MOSS and panel test	PCSS	MOSS
PROM	01A-X0E1	PS Type 2 ID=01	MOSS	MOSS	N/A
Control Panel	01W-B0	PS Type 6	Panel test	PCSS	MOSS
MOSS Blower	01A-Z0	PS Type 8	No diagnostic	Cooling	MOSS

Requirements List 0040: For the CA

Ensure that the following information has been recorded (from the reference code screen).

- FRU and location.

Using the table (1-56 and 1-57), locate the:

- Power supply id
- Diagnostics to be run
- Suspected area
- Associated area, if applicable (No TPS)
- Adapter bus affected.

The power supply is a PS Type 3.
Record the information for use during this service call.

What you should do next:

001

- NCP level 5.1 does not support concurrent maintenance for channel adapters.
- In this case, the affected adapter bus and CCU must be available for maintenance.

Has "Disabling Procedure 0030: Preparing a CA for Maintenance" on page 1-100 already been performed?

Yes **No**

002

Is at least one CCU running (RUN status displayed in the MSA area)?

Yes **No**

003

Run the identified diagnostics using the ODG option. Refer to "How to Run Internal Function Tests" on page 3-30, then go to "Diagnostic Result Analysis" on page 3-48.

004

Is MOSS ONLINE displayed in the MSA area for this CCU?

Yes **No**

005

(Step **005** continues)

005 (continued)

– Set MOSS online. If necessary refer to "How to Put the MOSS Online" on page 4-183.

Go to Step 006.

006

Ask the customer if the involved NCP is at level 5.2 or higher (Option 4 available in CAS function)?

Yes **No**

007

The concurrent maintenance for the CA is not available on your machine. You need the full configuration of the 3745. When the 3745 is available run the identified diagnostics using the ODG option. Refer to "How to Run Internal Function Tests" on page 3-30. then go to "Diagnostic Result Analysis" on page 3-48.

008

Go to "Disabling Procedure 0030: Preparing a CA for Maintenance" on page 1-100.

009

Have the preceding diagnostics been run just before entering this section?

Yes **No**

010

Run the diagnostics. Refer to "How to Run Internal Function Tests" on page 3-30, then go to "Diagnostic Result Analysis" on page 3-48.

011

(Step **011** continues)

011 (continued)

Did the diagnostics run without detecting an error?

Yes **No**

012

Go to Chapter 4, "FRU Exchange" on page 4-1.

013

Is the FRU the last one in the suspected FRU group?

Yes **No**

014

For the next FRU called, continue with the Requirement Procedure for this FRU.

015

All parts of the machine required for FRU exchange will now be available for service.

Change all FRUs called using Chapter 4, "FRU Exchange" on page 4-1.

CADR

Table 1-10. Requirements for CADR.

Location	Power Supply	Installed Feature	Diagnostics to Be Run	Suspected Area	Associated Area	Adapter Bus Affected
01L-A1-A2	ID=04	CA01 w/o TPS	CA	CA01	CA02	2
01L-A1-C2	ID=04	CA01 with TPS	CA	CA01	N/A	2
01L-A1-D2	ID=04	CA02	CA	CA02	CA01	2
01L-A1-F2	ID=05	CA03 w/o TPS	CA	CA03	CA04	2
01L-A1-H2	ID=05	CA03 with TPS	CA	CA03	N/A	2
01L-A1-J2	ID=05	CA04	CA	CA04	CA03	2
01L-A1-M2	ID=06	CA05 w/o TPS	CA	CA05	CA06	3
01L-A1-P2	ID=06	CA05 with TPS	CA	CA05	N/A	3
01L-A1-Q2	ID=06	CA06	CA	CA06	CA05	3
01L-A1-S2	ID=07	CA07 w/o TPS	CA	CA07	CA08	3
01L-A1-U2	ID=07	CA07 with TPS	CA	CA07	N/A	3
01L-A1-V2	ID=07	CA08	CA	CA08	CA07	3
02E-A1-A2	ID=14	CA09 w/o TPS	CA	CA09	CA10	2
02E-A1-C2	ID=14	CA09 with TPS	CA	CA09	N/A	2
02E-A1-D2	ID=14	CA10	CA	CA10	CA09	2
02E-A1-F2	ID=15	CA11 w/o TPS	CA	CA11	CA12	2
02E-A1-H2	ID=15	CA11 with TPS	CA	CA11	N/A	2
02E-A1-J2	ID=15	CA12	CA	CA12	CA11	2
02E-A1-M2	ID=16	CA13 w/o TPS	CA	CA13	CA14	3
02E-A1-P2	ID=16	CA13 with TPS	CA	CA13	N/A	3
02E-A1-Q2	ID=16	CA14	CA	CA14	CA13	3
02E-A1-S2	ID=17	CA15 w/o TPS	CA	CA15	CA16	3
02E-A1-U2	ID=17	CA15 with TPS	CA	CA15	N/A	3
02E-A1-V2	ID=17	CA16	CA	CA16	CA15	3

CAL

Table 1-11. Requirements for CAL.

Location	Power Supply	Diagnostics to Be Run	Suspected Area	Associated Area	Adapter Bus Affected
01L-A1-B2	ID=04	CA	CA01	CA02	2
01L-A1-E2	ID=04	CA	CA02	CA01	2
01L-A1-G2	ID=05	CA	CA03	CA04	2
01L-A1-K2	ID=05	CA	CA04	CA03	2
01L-A1-N2	ID=06	CA	CA05	CA06	3
01L-A1-R2	ID=06	CA	CA06	CA05	3
01L-A1-T2	ID=07	CA	CA07	CA08	3
01L-A1-W2	ID=07	CA	CA08	CA07	3
02E-A1-B2	ID=14	CA	CA09	CA10	2
02E-A1-E2	ID=14	CA	CA10	CA09	2
02E-A1-G2	ID=15	CA	CA11	CA12	2
02E-A1-K2	ID=15	CA	CA12	CA11	2
02E-A1-N2	ID=16	CA	CA13	CA14	3
02E-A1-R2	ID=16	CA	CA14	CA13	3
02E-A1-T2	ID=17	CA	CA15	CA16	3
02E-A1-W2	ID=17	CA	CA16	CA15	3

Requirements List 0050: For TSS, HPTSS, or ESS

Ensure that the following information has been recorded (from the reference code screen and from the additional information using (PF6).

- FRU and location
- Suspected adapter (LAxx)
- Associated adapter (LAxx)
- Addresses of affected lines (that is, lines driven by suspected and associated adapters).

Using the tables on the following pages locate the:

- Power supply id
- Diagnostics to be run

The suspected and associated adapters are in the table.

Record the information for use during this service call.

What you should do next:

001

– From the 3745 console, find the status of the power supply as follows:

a. On the 3745 console (from MENU 1) select POWER SERVICES by entering **POS**.

b. Use the following table to identify the involved frame.

FRU Location	Frame
01x	Base frame
02x	Expansion unit A11
03x	Expansion unit A12

c. From the power services screen, select the option for the frame identified in the previous step.

d. On the power information screen for the frame, locate (in the SUPPLY column) the ID number of the power supply .

e. Locate (on the same row) the STATUS column.

(Step **001** continues)

001 (continued)

Is the status shown as UP?

Yes **No**

002

Status is down or there is an error condition.

Go to Chapter 4, "FRU Exchange" on page 4-1, and exchange all the FRUs (given by the reference code) at the same time.

003

Is the FRU an FESL, FESH, or EAC card?

Yes **No**

004

Go to "Disabling Procedure 0040: Preparing a TSS, HPTSS, or ESS for Maintenance" on page 1-101.

005

Has "Disabling Procedure 0040: Preparing a TSS, HPTSS, or ESS for Maintenance" on page 1-101 already been performed or is the 3745 fully available?

Yes **No**

006

Go to "Disabling Procedure 0040: Preparing a TSS, HPTSS, or ESS for Maintenance" on page 1-101.

007

Have the preceding diagnostics been run just before entering this section?

Yes **No**

008

Run the diagnostics using the **suspected adapter** number. Refer to Figure 1-2 on page 1-59. If necessary, refer to "How to Run Internal Function Tests" on page 3-30, then go to "Diagnostic Result Analysis" on page 3-48.

009

Did the diagnostics run without detecting an error?

Yes **No**

010

Go to Chapter 4, "FRU Exchange" on page 4-1.

011

Is the FRU the last one in the suspected FRU group?

Yes **No**

012

For the next FRU called, continue with "3745 FRU List" on page 1-39.

013

All parts of the machine required for FRU exchange will now be available for service.

Change all FRUs called using Chapter 4, "FRU Exchange" on page 4-1.

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------------ 03/01/87 01:22
FUNCTION ON SCREEN: OFFLINE DIAGS
GROUP :ADP# :LINE :
1 ALL             :
2 CCU : A- B:     :
3 IOCB: 1- 4:     :
4 CA  : 1-16:     :
5 TSS : 1-32: 0-31:
6 TRSS: 1- 6: 1- 2:
7 HTSS: 1- 8:     :
8 OLT : 1-16:     :
9 ESS : 1- 8:     :
OPT=  Y IF MODIFY :
OPTION REQUIRED   :
                  : ENTER REQUEST ACCORDING TO THE DIAG MENU
                  : DIAG==>(A)      ADP#==>(B)    LINE==>     OPT==>
===>

F1:END  F2:MENU2  F3:ALARM              F6:QUIT
```

(A) Enter **5** for TSS diagnostics or **7** for HPTSS.

(B) Enter the number of the **Suspected adapter**.

Figure 1-2. TSS, HPTSS, or ESS Diagnostic Selection Screen

CSP When Board Type Is TSST

Table 1-12. Requirements for the CSP When Board Type Is TSST

Location	Power Supply	Feature Installed	Diagnostics to Be Run	Suspected Adapter	Associated Adapter
01G-A1-G2	ID=09	LA03 is a TSS	TSS	LA03	LA04
		LA03 is a HPTSS	HPTSS	LA03	LA04
		LA03 is a ESS	ESS	LA03	LA04
01G-A1-J2	ID=09	LA04 is a TSS	TSS	LA04	LA03
		LA04 is a HPTSS	HPTSS	LA04	LA03
		LA04 is a ESS	ESS	LA04	LA03
01G-A1-S2	ID=11	LA07 is a TSS	TSS	LA07	LA08
		LA07 is a HPTSS	HPTSS	LA07	LA08
		LA07 is a ESS	ESS	LA07	LA08
01G-A1-U2	ID=11	LA08 is a TSS	TSS	LA08	LA07
		LA08 is a HPTSS	HPTSS	LA08	LA07
		LA08 is a ESS	ESS	LA08	LA07

CSP When Board Type Is TSSB

Table 1-13. Requirements for the CSP When Board Type Is TSSB

Location	Power Supply	Feature Installed	Diagnostics to be Run	Suspected Adapter	Associated Adapter
01G-A1-E2	ID=08	LA01 is a TSS	TSS	LA01	LA02
		LA01 is a HPTSS	HPTSS	LA01	LA02
		LA01 is a ESS	ESS	LA01	LA02
01G-A1-G2	ID=08	LA02 is a TSS	TSS	LA02	LA01
		LA02 is a HPTSS	HPTSS	LA02	LA01
		LA02 is a ESS	ESS	LA02	LA01
01G-A1-J2	ID=09	LA03 is a TSS	TSS	LA03	LA04
		LA03 is a HPTSS	HPTSS	LA03	LA04
		LA03 is a ESS	ESS	LA03	LA04
01G-A1-L2	ID=09	LA04 is a TSS	TSS	LA04	LA03
		LA04 is a HPTSS	HPTSS	LA04	LA03
		LA04 is a ESS	ESS	LA04	LA03

Table continues on next page

CSP When Board Type Is TSSB (continued)

Table 1-14. Requirements for the CSP When Board Type Is TSSB (continued)

Location	Power Supply	Feature Installed	Diagnostics to Be Run	Suspected Adapter	Associated Adapter
01G-A1-N2	ID=10	LA05 is a TSS	TSS	LA05	LA06
		LA05 is a HPTSS	HPTSS	LA05	LA06
		LA05 is a ESS	ESS	LA05	LA06
01G-A1-Q2	ID=10	LA06 is a TSS	TSS	LA06	LA05
		LA06 is a HPTSS	HPTSS	LA06	LA05
		LA06 is a ESS	ESS	LA06	LA05
01G-A1-S2	ID=11	LA07 is a TSS	TSS	LA07	LA08
		LA07 is a HPTSS	HPTSS	LA07	LA08
		LA07 is a ESS	ESS	LA07	LA08
01G-A1-U2	ID=11	LA08 is a TSS	TSS	LA08	LA07
		LA08 is a HPTSS	HPTSS	LA08	LA07
		LA08 is a ESS	ESS	LA08	LA07
02A-A1-E2	ID=18	LA09 is a TSS	TSS	LA09	LA10
02A-A1-G2	ID=18	LA10 is a TSS	TSS	LA10	LA09
02A-A1-J2	ID=19	LA11 is a TSS	TSS	LA11	LA12
02A-A1-L2	ID=19	LA12 is a TSS	TSS	LA12	LA11
02A-A1-N2	ID=20	LA13 is a TSS	TSS	LA13	LA14
02A-A1-Q2	ID=20	LA14 is a TSS	TSS	LA14	LA13
02A-A1-S2	ID=21	LA15 is a TSS	TSS	LA15	LA16
02A-A1-U2	ID=21	LA16 is a TSS	TSS	LA16	LA15
02F-A1-E2	ID=22	LA17 is a TSS	TSS	LA17	LA18
02F-A1-G2	ID=22	LA18 is a TSS	TSS	LA18	LA17
02F-A1-J2	ID=23	LA19 is a TSS	TSS	LA19	LA20
02F-A1-L2	ID=23	LA20 is a TSS	TSS	LA20	LA19
02F-A1-N2	ID=24	LA21 is a TSS	TSS	LA21	LA22
02F-A1-Q2	ID=24	LA22 is a TSS	TSS	LA22	LA21
02F-A1-S2	ID=25	LA23 is a TSS	TSS	LA23	LA24
02F-A1-U2	ID=25	LA24 is a TSS	TSS	LA24	LA23
03F-A1-E2	ID=26	LA25 is a TSS	TSS	LA25	LA26
03F-A1-G2	ID=26	LA26 is a TSS	TSS	LA26	LA25
03F-A1-J2	ID=27	LA27 is a TSS	TSS	LA27	LA28
03F-A1-L2	ID=27	LA28 is a TSS	TSS	LA28	LA27
03F-A1-N2	ID=28	LA29 is a TSS	TSS	LA29	LA30
03F-A1-Q2	ID=28	LA30 is a TSS	TSS	LA30	LA29
03F-A1-S2	ID=29	LA31 is a TSS	TSS	LA31	LA32
03F-A1-U2	ID=29	LA32 is a TSS	TSS	LA32	LA31

FESH When Board Type Is TSST

Table 1-15. Requirements for the FESH When Board Type Is TSST

Location	Power Supply	Diagnostics to Be Run	Suspected Adapter	Associated Adapter
01G-A1-H2	ID=09	HPTSS	LA03	LA04
01G-A1-K2	ID=09	HPTSS	LA04	LA03
01G-A1-T2	ID=11	HPTSS	LA07	LA08
01G-A1-V2	ID=11	HPTSS	LA08	LA07

FESH When Board Type Is TSSB

Table 1-16. Requirements for the FESH When Board Type Is TSSB

Location	Power Supply	Diagnostics to Be Run	Suspected Adapter	Associated Adapter
01G-A1-F2	ID=08	HPTSS	LA01	LA02
01G-A1-H2	ID=08	HPTSS	LA02	LA01
01G-A1-K2	ID=09	HPTSS	LA03	LA04
01G-A1-M2	ID=09	HPTSS	LA04	LA03
01G-A1-P2	ID=10	HPTSS	LA05	LA06
01G-A1-R2	ID=10	HPTSS	LA06	LA05
01G-A1-T2	ID=11	HPTSS	LA07	LA08
01G-A1-V2	ID=11	HPTSS	LA08	LA07

EAC When Board Type Is TSST

Table 1-17. Requirements for the EAC When Board Type Is TSST

Location	Power Supply	Diagnostics to Be Run	Suspected Adapter	Associated Adapter
01G-A1-H2	ID=09	ESS	LA03	LA04
01G-A1-K2	ID=09	ESS	LA04	LA03
01G-A1-T2	ID=11	ESS	LA07	LA08
01G-A1-V2	ID=11	ESS	LA08	LA07

EAC When Board Type Is TSSB

Table 1-18. Requirements for the EAC When Board Type Is TSSB

Location	Power Supply	Diagnostics to Be Run	Suspected Adapter	Associated Adapter
01G-A1-F2	ID=08	ESS	LA01	LA02
01G-A1-H2	ID=08	ESS	LA02	LA01
01G-A1-K2	ID=09	ESS	LA03	LA04
01G-A1-M2	ID=09	ESS	LA04	LA03
01G-A1-P2	ID=10	ESS	LA05	LA06
01G-A1-R2	ID=10	ESS	LA06	LA05
01G-A1-T2	ID=11	ESS	LA07	LA08
01G-A1-V2	ID=11	ESS	LA08	LA07

FESL When Board Type Is TSST

Table 1-19. Requirements for the FESL When Board Type Is TSST

Location	Power Supply	Diagnostics to Be Run	Suspected Adapter	Associated Adapter
01G-A1-H2	ID=09	TSS	LA03	LA04
01G-A1-K2	ID=09	TSS	LA04	LA03
01G-A1-T2	ID=11	TSS	LA07	LA08
01G-A1-V2	ID=11	TSS	LA08	LA07

FESL When Board Type Is TSSB

Table 1-20. Requirements for the FESL When Board Type Is TSSB

Location	Power Supply	Diagnostics to Be Run	Suspected Adapter	Associated Adapter
01G-A1-F2	ID=08	TSS	LA01	LA02
01G-A1-H2	ID=08	TSS	LA02	LA01
01G-A1-K2	ID=09	TSS	LA03	LA04
01G-A1-M2	ID=09	TSS	LA04	LA03
01G-A1-P2	ID=10	TSS	LA05	LA06
01G-A1-R2	ID=10	TSS	LA06	LA05
01G-A1-T2	ID=11	TSS	LA07	LA08
01G-A1-V2	ID=11	TSS	LA08	LA07
02A-A1-F2	ID=18	TSS	LA09	LA10
02A-A1-H2	ID=18	TSS	LA10	LA09
02A-A1-K2	ID=19	TSS	LA11	LA12
02A-A1-M2	ID=19	TSS	LA12	LA11
02A-A1-P2	ID=20	TSS	LA13	LA14
02A-A1-R2	ID=20	TSS	LA14	LA13
02A-A1-T2	ID=21	TSS	LA15	LA16
02A-A1-V2	ID=21	TSS	LA16	LA15
02F-A1-F2	ID=22	TSS	LA17	LA18
02F-A1-H2	ID=22	TSS	LA18	LA17
02F-A1-K2	ID=23	TSS	LA19	LA20
02F-A1-M2	ID=23	TSS	LA20	LA19
02F-A1-P2	ID=24	TSS	LA21	LA22
02F-A1-R2	ID=24	TSS	LA22	LA21
02F-A1-T2	ID=25	TSS	LA23	LA24
02F-A1-V2	ID=25	TSS	LA24	LA23
03F-A1-F2	ID=26	TSS	LA25	LA26
03F-A1-H2	ID=26	TSS	LA26	LA25
03F-A1-K2	ID=27	TSS	LA27	LA28
03F-A1-M2	ID=27	TSS	LA28	LA27
03F-A1-P2	ID=28	TSS	LA29	LA30
03F-A1-R2	ID=28	TSS	LA30	LA29
03F-A1-T2	ID=29	TSS	LA31	LA32
03F-A1-V2	ID=29	TSS	LA32	LA31

Requirements List 0060: For TRSS

Ensure that the following information has been recorded (from the reference code screen).

- FRU and location.

Using the tables (Table 1-21 on page 1-66 and Table 1-22 on page 1-66) locate the:

- Power supply id
- Diagnostics to be run
- Suspected adapter
- Associated adapter
- Addresses of affected lines (that is, lines driven by suspected and associated adapters).

Record the information for use during this service call.

What you should do next:

001

Has "Disabling Procedure 0050: Preparing a TRSS for Maintenance" on page 1-105 already been performed or is the 3745 fully available?

Yes **No**

002

Go to "Disabling Procedure 0050: Preparing a TRSS for Maintenance" on page 1-105.

003

Have the preceding diagnostics been run just before entering this section?

Yes **No**

004

Run the TRSS diagnostics using the **suspected adapter** number. Refer to Figure 1-3 on page 1-66. If necessary, refer to "How to Run Internal Function Tests" on page 3-30, then go to "Diagnostic Result Analysis" on page 3-48.

005

(Step **005** continues)

005 (continued)

Did the diagnostics run without detecting an error?

Yes **No**

006

Go to Chapter 4, "FRU Exchange" on page 4-1.

007

Is the FRU the last one in the suspected FRU group?

Yes **No**

008

For the next FRU called, continue with "3745 FRU List" on page 1-39.

009

All parts of the machine required for FRU exchange will now be available for service.

Change all FRUs called using Chapter 4, "FRU Exchange" on page 4-1.

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------ 03/01/87 01:22
FUNCTION ON SCREEN: OFFLINE DIAGS
GROUP :ADP# :LINE :
1 ALL             :
2 CCU : A- B:     :
3 IOCB: 1- 4:     :
4 CA  : 1-16:     :
5 TSS : 1-32: 0-31:
6 TRSS: 1- 6: 1- 2:
7 HTSS: 1- 8:     :
8 OLT : 1-16:     :
9 ESS : 1 -8:     :
OPT=  Y IF MODIFY :
OPTION REQUIRED   :
                  : ENTER REQUEST ACCORDING TO THE DIAG MENU
                  : DIAG==>(A)      ADP#==>(B)    LINE==>     OPT==>
===>

F1:END  F2:MENU2  F3:ALARM              F6:QUIT
```

(A) Enter **6** for TRSS diagnostics.

(B) Enter the number of the **Suspected adapter**.

Figure 1-3. TRSS Diagnostic Selection Screen

TIC

Table 1-21. Requirements for a TIC

Location	Power Supply	Diagnostics to Run	Suspected Adapter	Associated Adapter	Lines
01G-A1-B2	ID=08	TRSS	TRA01	TRA02	1088-1091
01G-A1-C2	ID=08	TRSS	TRA01	TRA02	1088-1091
01G-A1-E2	ID=08	TRSS	TRA02	TRA01	1088-1091
01G-A1-F2	ID=08	TRSS	TRA02	TRA01	1088-1091
01G-A1-M2	ID=10	TRSS	TRA05	TRA06	1092-1095
01G-A1-N2	ID=10	TRSS	TRA05	TRA06	1092-1095
01G-A1-Q2	ID=10	TRSS	TRA06	TRA05	1092-1095
01G-A1-R2	ID=10	TRSS	TRA06	TRA05	1092-1095

TRM

Table 1-22. Requirements for a TRM

Location	Power Supply	Diagnostics to Run	Suspected Adapter	Associated Adapter	Lines
01G-A1-A2	ID=08	TRSS	TRA01	TRA02	1088-1091
01G-A1-D2	ID=08	TRSS	TRA02	TRA01	1088-1091
01G-A1-L2	ID=10	TRSS	TRA05	TRA06	1092-1095
01G-A1-P2	ID=10	TRSS	TRA06	TRA05	1092-1095

Requirements List 0070: For PS Type 4

Ensure that the following information has been recorded (from the reference code screen and from the additional information using (PF6)).

- FRU and location
  PSTYa bb ccccc =
  PS Type a ID bb Location ccccc
- Suspected adapter (LAxx)
- Associated adapter (LAxx)
- Addresses of affected lines (that is, lines driven by suspected and associated adapters).

  Using the table on page 1-68 locate the:

  – Power supply id

  – Diagnostics to be run.

  The suspected and associated adapters are in the table.

Record the information for use during this service call.

What you should do next:

001

– From the 3745 console, find the status of the power supply as follows:

a. On the 3745 console (from MENU 1) select POWER SERVICES by entering **POS**.

b. Use the following table to identify the involved frame.

FRU Location	FRAME
01x	Base frame
02x	Expansion unit A11
03x	Expansion unit A12

c. From the power services screen, select the option for the frame identified in the previous step.

d. On the power information screen for the frame, locate (in the SUPPLY column) the ID number of the power supply .

e. Locate (on the same row) the STATUS column.

(Step **001** continues)

001 (continued)

Is the status shown as UP?
Yes **No**

002

Status is down or there is an error condition.

Go to Chapter 4, "FRU Exchange" on page 4-1.

003

Is the FRU location either 01H-A1 or 01H-C1?
Yes **No**

004

Continue at Step 010 on page 1-68.

005

– The LAB type TSSB can be identified by the presence of a board address card in 01G-A1-B2. This is a small single-position wide card. If a four-wide card or no card is present, then the board is a TSST type board.

Is the 01G-A1 board a TSST type?
Yes **No**

006

Continue at Step 010 on page 1-68.

007

Has "Disabling Procedure 0050: Preparing a TRSS for Maintenance" on page 1-105 already been performed or is the 3745 fully available?
Yes **No**

008

Go to "Disabling Procedure 0050: Preparing a TRSS for Maintenance" on page 1-105.

009

Go to Chapter 4, "FRU Exchange" on page 4-1.

010

Has "Disabling Procedure 0040: Preparing a TSS, HPTSS, or ESS for Maintenance" on page 1-101 already been performed or is the 3745 fully available?

Yes **No**

011

Go to "Disabling Procedure 0040: Preparing a TSS, HPTSS, or ESS for Maintenance" on page 1-101.

012

Go to Chapter 4, "FRU Exchange" on page 4-1.

PS Type 4

Table 1-23 (Page 1 of 2). Requirements for a PS Type 4

Location	Power Supply	Feature Installed	Diagnostics to Be Run	Suspected Adapter	Associated Adapter
01H-A1	ID=08	LA01+02 are TSS	TSS	LA01	LA02
		LA01+02 are HPTSS	HPTSS	LA01	LA02
		LA01+02 are ESS	ESS	LA01	LA02
		LA01+02 are TRSS	TRSS	LA01	LA02
01H-B1	ID=09	LA03+04 are TSS	TSS	LA03	LA04
		LA03+04 are HPTSS	HPTSS	LA03	LA04
		LA03+04 are ESS	ESS	LA03	LA04
01H-C1	ID=10	LA05+06 are TSS	TSS	LA05	LA06
		LA05+06 are HPTSS	HPTSS	LA05	LA06
		LA05+06 are ESS	ESS	LA05	LA06
		LA05+06 are TRSS	TRSS	LA05	LA06
01H-D1	ID=11	LA07+08 are TSS	TSS	LA07	LA08
		LA07+08 are HPTSS	HPTSS	LA07	LA08
		LA07+08 are ESS	ESS	LA07	LA08
02B-A1	ID=18	LA09+10 are TSS	TSS	LA09	LA10
02B-B1	ID=19	LA11+12 are TSS	TSS	LA11	LA12
02B-C1	ID=20	LA13+14 are TSS	TSS	LA13	LA14
02B-D1	ID=21	LA15+16 are TSS	TSS	LA15	LA16
02G-A1	ID=22	LA17+18 are TSS	TSS	LA17	LA18
02G-B1	ID=23	LA19+20 are TSS	TSS	LA19	LA20
02G-C1	ID=24	LA21+22 are TSS	TSS	LA21	LA22

Table 1-23 (Page 2 of 2). Requirements for a PS Type 4

Location	Power Supply	Feature Installed	Diagnostics to Be Run	Suspected Adapter	Associated Adapter
02G-D1	ID=25	LA23+24 are TSS	TSS	LA23	LA24
03G-A1	ID=26	LA25+26 are TSS	TSS	LA25	LA26
03G-B1	ID=27	LA27+28 are TSS	TSS	LA27	LA28
03G-C1	ID=28	LA29+30 are TSS	TSS	LA29	LA30
03G-D1	ID=29	LA31+32 are TSS	TSS	LA31	LA32

Requirements List 0080: For PS Type 1, 2, 3, 5, and 7

Ensure that the following information has been recorded (from the reference code screen or FRU group):

- FRU and location
  PSTYa bb ccccc =
  PS Type a ID bb Location ccccc

Ensure that the additional information has been recorded using (PF6) for PS type 5 and 7:

- Line Adapters and lines driven by them (maximum four line adapters). The first line adapter is classed as the suspected adapter and the others are associated adapters.

Using the tables (1-71, 1-71, 1-71, 1-72, and 1-73) locate the:

- Power supply id
- Diagnostics to run
- Suspected area
- Associated area.

Record the information for use during this service call.

What you should do next:

001

– From the 3745 console, find, the status of the power supply as follows: (if a PS Type 2 failure prevents use of the console, continue with Chapter 4, "FRU Exchange" on page 4-1).

a. On the 3745 console (from MENU 1) select POWER SERVICES by entering **POS**.

b. Use the following table to identify the involved frame.

FRU Location	Frame
01x	Base frame
02x	Expansion unit A11
04x	Expansion unit L13
05x	Expansion unit L14
06x	Expansion unit L15

c. From the power services screen, select the option for the frame identified in the previous step.

d. On the power information screen for the frame, locate (in the SUPPLY column) the ID number of the power supply .

e. Locate (on the same row) the STATUS column.

Is the status shown as UP?
Yes **No**

002

Status is down or there is an error condition.

If the FRU is PS Type 1,2, or 3, go to Chapter 4, "FRU Exchange" on page 4-1.

If the FRU is PS Type 5 or 7, go to Step 003.

003

Has the disabling procedure for the area supplied by this power supply already been performed?
Yes **No**

004

If the FRU is a PS Type 1 or 1B, go to "Disabling Procedure 0010: Preparing a CCU and Switch for Maintenance" on page 1-95.

If the FRU is a PS Type 2, go to "Disabling Procedure 0020: How to Put the MOSS Offline" on page 1-99.

If the FRU is a PS Type 3, go to "Disabling Procedure 0030: Preparing a CA for Maintenance" on page 1-100.

If the FRU is a PS Type 5 or 7, go to "Disabling Procedure 0060: Preparing a PS Type 5 or 7 for Maintenance" on page 1-108.

005

Go to Chapter 4, "FRU Exchange" on page 4-1.

PS Type 1/1B

Table 1-24. Requirements for a PS Type 1 and 1B

Location	Power Supply	Diagnostic to be Run	Suspected Area
01Q	ID=02	CCU	CCU A
01R	ID=03	CCU	CCU B

PS Type 2

Table 1-25. Requirements for a PS Type 2

Location	Power Supply	Diagnostic to Be Run	Suspected Area	Associated Area
01V	ID=01	MOSS	Power	MOSS

PS Type 3

Table 1-26. Requirements for a PS Type 3

Location	Power Supply	Diagnostics to Be Run	Suspected Area	Associated Area
01K-A1	ID=04	CA	Power	CA01 CA02
01K-B1	ID=05	CA	Power	CA03 CA04
01K-C1	ID=06	CA	Power	CA05 CA06
01K-D1	ID=07	CA	Power	CA07 CA08
02D-A1	ID=14	CA	Power	CA09 CA10
02D-B1	ID=15	CA	Power	CA11 CA12
02D-C1	ID=16	CA	Power	CA13 CA14
02D-D1	ID=17	CA	Power	CA15 CA16

PS Type 5

Table 1-27. Requirements for a PS Type 5

Location	Power Supply	Diagnostics to Be Run	Suspected Area	Affected Lines
01M-A1	ID=13	TSS	Power	064-127
01P-A1	ID=12	TSS	Power	000-063
04B-A1	ID=32	TSS	Power	256-319
04D-A1	ID=30	TSS	Power	128-191
04E-A1	ID=33	TSS	Power	320-383
04G-A1	ID=31	TSS	Power	192-255
05B-A1	ID=36	TSS	Power	512-575
05D-A1	ID=34	TSS	Power	384-447
05E-A1	ID=37	TSS	Power	576-639
05G-A1	ID=35	TSS	Power	448-511
06B-A1	ID=40	TSS	Power	768-831
06D-A1	ID=38	TSS	Power	640-703
06E-A1	ID=41	TSS	Power	832-895
06G-A1	ID=39	TSS	Power	704-767

PS Type 7

Table 1-28. Requirements for a PS Type 7

Location	Power Supply	Diagnostics to Be Run	Suspected Area	Affected Lines
01M-A1	ID=13	TSS	Power	064-095
04B-A1	ID=32	TSS	Power	256-287
04D-A1	ID=30	TSS	Power	128-159
04E-A1	ID=33	TSS	Power	320-351
04G-A1	ID=31	TSS	Power	192-223
05B-A1	ID=36	TSS	Power	512-543
05D-A1	ID=34	TSS	Power	384-415
05E-A1	ID=37	TSS	Power	576-607
05G-A1	ID=35	TSS	Power	448-479
06B-A1	ID=40	TSS	Power	768-799
06D-A1	ID=38	TSS	Power	640-671
06E-A1	ID=41	TSS	Power	832-863
06G-A1	ID=39	TSS	Power	704-735

Requirements List 0090: For LIC Types 1, 3, 4, 5, and 6

Ensure that the following information has been recorded (from the reference code screen and from the additional information using (PF6)).

- FRU and location
- Suspected adapter
- Affected lines.

If necessary, use the LIC/line address tables on page 1-78 to find the affected lines (for LIC types 5 and 6, all lines of both LICs of the pair must be stopped).

What you should do next:

001

– Ask the customer to deactivate the lines connected to the suspected LIC (or pair of LICs for LIC types 5 and 6).

– Run the automatic wrap test on the LIC unit (option 1) and the wrap test at tailgate level (option 2). Refer to "How to Run the Wrap Test (WTT) for TSS, HPTSS, or 3746-900" on page 3-34.

Did the wrap test run without detecting errors?

Yes **No**

002

Go to Chapter 4, "FRU Exchange" on page 4-1, then exchange the LIC card.

003

Has "Disabling Procedure 0040: Preparing a TSS, HPTSS, or ESS for Maintenance" on page 1-101 already been performed or is the 3745 fully available?

Yes **No**

004

– Display the CDF for the suspected LA (CDF function option **7** + LA number) and record the CCU on which the LA is connected.

(Step **004** continues)

004 (continued)

Is RUN status displayed in the MSA area for this CCU?

Yes **No**

005

Go to Step 009 on page 1-75.

006

Is MOSS ONLINE displayed in the MSA area for this CCU?

Yes **No**

007

– Set the MOSS online. If necessary, refer to "How to Put the MOSS Online" on page 4-183.

Continue with next step.

008

Ask the operator to deactivate all the lines attached to the suspected adapter.

- Wait until the operator has completed deactivating the lines.

Using the 3745 console, disconnect the line adapter from the NCP as follows:

a. From Menu 3, select **TSS Services** by entering **TSS** in the selection area.

b. From the **TSS Services** screen, choose **select/release** by entering **1** in the selection area. See Figure 1-5 on page 1-85.

c. In the input area, enter an **S** followed by the suspected adapter number. See Figure 1-6 on page 1-85.

d. Enter **3** in the selection area to choose **Mode Control**. See Figure 1-5 on page 1-85.

e. On the **Mode Control** screen, enter **DS** to disconnect the line adapter. See Figure 1-7 on page 1-86.

If deactivation of all the lines driven

by this line adapter was not done, the screen will display the lines that are still active.. If the operator is unable to deactivate these lines, ask for his approval to force deactivation for these lines.
To force deactivation, enter **F** on the displayed screen.
Continue with the next action only when all lines have been deactivated and the line adapter has been disconnected.

f. Enter **1** in the selection area to choose **select/release**. See Figure 1-5 on page 1-85.

g. Enter **REL** in the input area to release the disconnected line adapter. See Figure 1-7 on page 1-86.

Continue with Step 009.

009

– Run the TSS diagnostics using the number of the **suspected adapter**. Refer to Figure 1-4 on page 1-77.
If necessary, refer to "How to Run Internal Function Tests" on page 3-30.

Did the diagnostics run error free?
Yes **No**

010

Go to "Diagnostic Result Analysis" on page 3-48.

011

– Note their positions and remove the modem or line cables from the LIC.

– If the LIC is type 1 or 4, install the wrap plug (PN 65X8927) on the uppermost socket. See Figure 1-11 on page 1-87 and Figure 1-8 on page 1-86.

– If the LIC is type 3, install the LIC wrap cable (PN 65X8928) between the two sockets. See Figure 1-11 on page 1-87 and Figure 1-9 on page 1-86.

(Step **011** continues)

011 (continued)

– If the LIC is type 5 or 6:

- Install the wrap plug (PN 11F4815) on the uppermost socket of the cassette, see Figure 1-12 on page 1-88 and Figure 1-10 on page 1-87.
- If necessary, unplug the line cable at the customer wall frame (for telephone line loading reason).

Is the LIC type 1, 3, or 4?
Yes **No**

012

– Using the **LID** function, enter the line address in the input area of the displayed screen and record the line number displayed on the next screen.

– Run only the **RH59** routine of the TSS diagnostics, using the number of the **suspected adapter**, and the line number previously recorded. Refer to Figure 1-4 on page 1-77.
If necessary refer to "How to Run Internal Function Tests" on page 3-30.

Did the diagnostics run error free?
Yes **No**

013

Go to "Diagnostic Result Analysis" on page 3-48.

014

– Change the wrap plug to the other socket, if any (LIC type 5).

– Rerun the **RH59** routine of the TSS diagnostics.

Did the diagnostics run error free?
Yes **No**

015

Go to "Diagnostic Result Analysis" on page 3-48.

016

(Step **016** continues)

016 (continued)

No trouble was found with this LIC.

– Remove the wrap plug.

Go to "Diagnostic Result Analysis" on page 3-48.

017

– Using the **LID** function, enter the line address in the input area of the displayed screen and record the line number displayed on the next screen.

– Run only the **RC01** routine of the TSS diagnostics, using the number of the **suspected adapter**, and the line number previously recorded. Refer to Figure 1-4 on page 1-77. If necessary, refer to "How to Run Internal Function Tests" on page 3-30.

Did the diagnostics run error free?

Yes **No**

018

Go to "Diagnostic Result Analysis" on page 3-48.

019

Is the LIC type other than 3?

Yes **No**

020

Go to Step 028.

021

Is the LIC type 1 or 4A?

Yes **No**

022

No trouble was found with this LIC.

– Remove the wrap plug and reconnect the modem cable.

Go to "Diagnostic Result Analysis" on page 3-48.

023

(Step **023** continues)

023 (continued)

– Change the wrap plug to the next downward socket of the LIC.

– Rerun the **RC01** routine of the concurrent TSS diagnostics, using the number of the **suspected adapter**. Refer to Figure 1-4 on page 1-77. If necessary, refer to "How to Run Internal Function Tests" on page 3-30.

Did the diagnostics run error free?

Yes **No**

024

Go to "Diagnostic Result Analysis" on page 3-48.

025

Have you tested all the ports of this LIC with the wrap plug on it?

Yes **No**

026

Go to Step 023.

027

No trouble was found with this LIC.

– Remove the wrap plug.

Go to "Diagnostic Result Analysis" on page 3-48.

028

– Turn the wrap cable around between the LIC sockets.

– Rerun the **RC01** routine of the concurrent TSS diagnostics using the number of the **suspected adapter**. Refer to Figure 1-4 on page 1-77. If necessary, refer to "How to Run Internal Function Tests" on page 3-30.

Did the diagnostics run error free?

Yes **No**

029

– Remove the wrap cable.

Go to "Diagnostic Result Analysis" on page 3-48.

030

No trouble was found with this LIC.

– Remove the wrap cable.

Go to "Diagnostic Result Analysis" on page 3-48.

```
CUSTOMER ID:                          3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE     X71:020415
                                        X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 03/01/87 01:22
FUNCTION ON SCREEN: OFFLINE DIAGS
GROUP :ADP# :LINE :
1 ALL             :
2 CCU : A- B:     :
3 IOCB: 1- 4:     :
4 CA  : 1-16:     :
5 TSS : 1-32: 0-31:
6 TRSS: 1- 6: 1- 2:
7 HTSS: 1- 8:     :
8 OLT : 1-16:     :
9 ESS : 1- 8:     :
OPT=  Y IF MODIFY :
OPTION REQUIRED   :
                  : ENTER REQUEST ACCORDING TO THE DIAG MENU
                  : DIAG==>(A)      ADP#==>(B)    LINE==>(C)    OPT==>
===>

F1:END  F2:MENU2  F3:ALARM              F6:QUIT
```

(A) Enter **5** for TSS diagnostics or **7** for HPTSS.

(B) Enter the number of the **Suspected adapter**.

(C) Enter the number of the **LINE**(00-15) or (00-31).

Figure 1-4. TSS, HPTSS, or ESS Diagnostic Selection Screen

LIC/Lines Address Tables

Location	Line Address for LIC Type				
	1 - 4	5	6 LS	6 HS	
01M-B1-C1	N/A	080-081	080	080	← Pair of LICs 5/6
01M-B1-D1	096-099	082-083	082	080	←
01M-B1-E1	100-103	084-085	084	084	←
01M-B1-F1	104-107	086-087	086	084	←
01M-B1-G1	108-111	088-089	088	088	←
01M-B1-H1	112-115	090-091	090	088	←
01M-B1-J1	116-119	092-093	092	092	←
01M-B1-K1	120-123	094-095	094	092	←
01M-B1-L1	124-127	N/A	N/A	N/A	
01M-B2-C1	N/A	064-065	064	064	←
01M-B2-D1	064-067	066-067	066	064	←
01M-B2-E1	068-071	068-069	068	068	←
01M-B2-F1	072-075	070-071	070	068	←
01M-B2-G1	076-079	072-073	072	072	←
01M-B2-H1	080-083	074-075	074	072	←
01M-B2-J1	084-087	076-077	076	076	←
01M-B2-K1	088-091	078-075	078	076	←
01M-B2-L1	092-095	N/A.	N/A	N/A	
01P-B1-C1	N/A	N/A	N/A	N/A	
01P-B1-D1	032-035	N/A	N/A	N/A	
01P-B1-E1	036-039	N/A	N/A	N/A	
01P-B1-F1	040-043	N/A	N/A	N/A	
01P-B1-G1	044-047	N/A	N/A	N/A	
01P-B1-H1	048-051	N/A	N/A	N/A	
01P-B1-J1	052-055	N/A	N/A	N/A	
01P-B1-K1	056-059	N/A	N/A	N/A	
01P-B1-L1	060-063	N/A	N/A	N/A	
01P-B2-C1	N/A	N/A	N/A	N/A	
01P-B2-D1	000-003	N/A	N/A	N/A	
01P-B2-E1	004-007	N/A	N/A	N/A	
01P-B2-F1	008-011	N/A	N/A	N/A	
01P-B2-G1	012-015	N/A	N/A	N/A	
01P-B2-H1	016-019	N/A	N/A	N/A	
01P-B2-J1	020-023	N/A	N/A	N/A	
01P-B2-K1	024-027	N/A	N/A	N/A	
01P-B2-L1	028-031	N/A	N/A	N/A	

Location	Line address for LIC Type				
	1 - 4	5	6 LS	6 HS	
04B-B1-C1 04B-B1-D1	N/A 288-291	272-273 274-275	272 274	272 272	Pair of LICs 5/6
04B-B1-E1 04B-B1-F1	292-295 296-299	276-277 278-279	276 278	276 276	
04B-B1-G1 04B-B1-H1	300-303 304-307	280-281 282-283	280 282	280 280	
04B-B1-J1 04B-B1-K1 04B-B1-L1	3086311 312-315 316-319	284-285 286-287 N/A	284 286 N/A	284 284 N/A	
04B-B2-C1 04B-B2-D1	N/A 256-259	256-257 258-259	256 258	256 256	
04B-B2-E1 04B-B2-F1	260-263 264-267	260-261 262-263	260 262	260 260	
04B-B2-G1 04B-B2-H1	268-271 272-275	264-265 266-267	264 266	264 264	
04B-B2-J1 04B-B2-K1 04B-B2-L1	276-279 280-283 284-287	268-269 270-271 N/A	268 270 N/A	268 268 N/A	
04D-B1-C1 04D-B1-D1	N/A 160-163	144-145 146-147	144 146	144 144	
04D-B1-E1 04D-B1-F1	164-167 168-171	148-149 150-151	148 150	148 148	
04D-B1-G1 04D-B1-H1	172-175 176-179	152-153 154-155	152 154	152 152	
04D-B1-J1 04D-B1-K1 04D-B1-L1	180-183 184-187 188-191	156-157 158-159 N/A	156 158 N/A	156 156 N/A	
04D-B2-C1 04D-B2-D1	N/A 128-131	128-129 130-131	128 130	128 128	
04D-B2-E1 04D-B2-F1	132-135 136-139	132-133 134-135	132 134	132 132	
04D-B2-G1 04D-B2-H1	140-143 144-147	136-137 138-139	136 138	136 136	
04D-B2-J1 04D-B2-K1 04D-B2-L1	148-151 152-155 156-159	140-141 142-143 N/A	140 142 N/A	140 140 N/A	

Location	Line Address for LIC Type				
	1 - 4	5	6 LS	6 HS	
04E-B1-C1	N/A	336-337	336	336	↵ Pair of LICs 5/6
04E-B1-D1	352-355	338-339	338	336	↵
04E-B1-E1	356-359	340-341	340	340	↵
04E-B1-F1	360-363	342-343	342	340	↵
04E-B1-G1	364-367	344-345	344	344	↵
04E-B1-H1	368-371	346-347	346	344	↵
04E-B1-J1	372-375	348-349	348	348	↵
04E-B1-K1	376-379	350-351	350	348	↵
04E-B1-L1	380-383	N/A	N/A	N/A	
04E-B2-C1	N/A	320-321	320	320	↵
04E-B2-D1	320-323	322-323	322	320	↵
04E-B2-E1	324-327	324-325	324	324	↵
04E-B2-F1	328-331	326-327	326	324	↵
04E-B2-G1	332-335	328-329	328	328	↵
04E-B2-H1	336-339	330-331	330	328	↵
04E-B2-J1	340-343	332-333	332	332	↵
04E-B2-K1	344-347	334-335	334	332	↵
04E-B2-L1	348-351	N/A	N/A	N/A	
04G-B1-C1	N/A	208-209	208	208	↵
04G-B1-D1	224-227	210-211	210	208	↵
04G-B1-E1	228-231	212-213	212	212	↵
04G-B1-F1	232-235	214-215	214	212	↵
04G-B1-G1	236-239	216-217	216	216	↵
04G-B1-H1	240-243	218-219	218	216	↵
04G-B1-J1	244-247	220-221	220	220	↵
04G-B1-K1	248-251	222-223	222	220	↵
04G-B1-L1	252-255	N/A	N/A	N/A	
04G-B2-C1	N/A	192-193	192	192	↵
04G-B2-D1	192-195	194-195	194	192	↵
04G-B2-E1	196-199	196-197	196	196	↵
04G-B2-F1	200-203	198-199	198	196	↵
04G-B2-G1	204-207	200-201	200	200	↵
04G-B2-H1	298-211	202-203	202	200	↵
04G-B2-J1	212-215	204-205	204	204	↵
04G-B2-K1	216-219	206-207	206	204	↵
04G-B2-L1	220-223	N/A	N/A	N/A	

Location	Line Address for LIC Type				
	1 - 4	5	6 LS	6 HS	
05B-B1-C1	N/A	528-529	528	528	← Pair of LICs 5/6
05B-B1-D1	544-547	530-531	530	528	←
05B-B1-E1	548-551	532-533	532	532	←
05B-B1-F1	552-555	534-535	534	532	←
05B-B1-G1	556-559	536-537	536	536	←
05B-B1-H1	560-563	538-539	538	536	←
05B-B1-J1	564-567	540-541	540	540	←
05B-B1-K1	568-571	542-543	542	540	←
05B-B1-L1	572-575	N/A	N/A	N/A	
05B-B2-C1	N/A	512-513	512	512	←
05B-B2-D1	512-515	514-515	514	512	←
05B-B2-E1	516-519	516-517	516	516	←
05B-B2-F1	520-523	518-519	518	516	←
05B-B2-G1	524-527	520-521	520	520	←
05B-B2-H1	528-531	522-523	522	520	←
05B-B2-J1	532-535	524-525	524	524	←
05B-B2-K1	536-539	526-527	526	524	←
05B-B2-L1	540-543	N/A	N/A	N/A	
05D-B1-C1	N/A	400-403	400	400	←
05D-B1-D1	416-419	404-405	402	400	←
05D-B1-E1	420-423	406-407	404	404	←
05D-B1-F1	424-427	408-409	406	404	←
05D-B1-G1	428-431	410-411	408	408	←
05D-B1-H1	432-435	412-413	410	408	←
05D-B1-J1	436-439	414-415	412	412	←
05D-B1-K1	440-443	416-417	414	412	←
05D-B1-L1	444-447	N/A	N/A	N/A	
05D-B2-C1	N/A	384-385	384	384	←
05D-B2-D1	384-387	386-387	386	384	←
05D-B2-E1	388-391	388-389	388	388	←
05D-B2-F1	392-395	390-391	390	388	←
05D-B2-G1	396-399	392-393	392	392	←
05D-B2-H1	400-403	394-395	394	392	←
05D-B2-J1	404-407	396-397	396	396	←
05D-B2-K1	408-411	398-399	398	396	←
05D-B2-L1	412-415	N/A	N/A	N/A	

Location	Line Address for LIC Type				
	1 - 4	5	6 LS	6 HS	
05E-B1-C1	N/A	592-593	592	592	↵ Pair of LICs 5/6
05E-B1-D1	608-611	594-595	594	592	↵
05E-B1-E1	612-615	596-597	596	596	↵
05E-B1-F1	616-619	598-599	598	596	↵
05E-B1-G1	620-623	600-601	600	600	↵
05E-B1-H1	624-627	602-603	602	600	↵
05E-B1-J1	628-631	604-605	604	604	↵
05E-B1-K1	632-635	606-607	606	604	↵
05E-B1-L1	636-639	N/A	N/A	N/A	
05E-B2-C1	N/A	576-577	576	576	↵
05E-B2-D1	576-579	578-579	578	576	↵
05E-B2-E1	580-583	580-581	580	580	↵
05E-B2-F1	584-587	582-583	582	580	↵
05E-B2-G1	588-591	584-585	584	584	↵
05E-B2-H1	592-595	586-587	586	584	↵
05E-B2-J1	596-599	588-589	588	588	↵
05E-B2-K1	600-603	590-591	590	588	↵
05E-B2-L1	604-607	N/A	N/A	N/A	
05G-B1-C1	N/A	464-465	464	464	↵
05G-B1-D1	480-483	466-467	466	464	↵
05G-B1-E1	484-487	468-469	468	468	↵
05G-B1-F1	489-491	470-471	470	468	↵
05G-B1-G1	492-495	472-473	472	472	↵
05G-B1-H1	496-499	474-475	474	472	↵
05G-B1-J1	500-503	476-477	476	476	↵
05G-B1-K1	504-507	478-479	478	476	↵
05G-B1-L1	508-511	N/A	N/A	N/A	
05G-B2-C1	N/A	448-449	448	448	↵
05G-B2-D1	448-451	450-451	450	448	↵
05G-B2-E1	452-455	452-453	452	452	↵
05G-B2-F1	456-459	454-455	454	452	↵
05G-B2-G1	460-463	456-457	456	456	↵
05G-B2-H1	464-467	458-459	458	456	↵
05G-B2-J1	468-471	460-461	460	460	↵
05G-B2-K1	472-475	462-463	462	460	↵
05G-B2-L1	476-479	N/A	N/A	N/A	

Location	Line Address for LIC Type				
	1 - 4	5	6 LS	6 HS	
06B-B1-C1	N/A	784-785	784	784	↵ Pair of LICs 5/6
06B-B1-D1	800-803	786-787	786	784	↵
06B-B1-E1	804-807	788-789	788	788	↵
06B-B1-F1	808-811	690-791	790	788	↵
06B-B1-G1	812-815	792-793	792	792	↵
06B-B1-H1	816-819	794-795	794	792	↵
06B-B1-J1	820-823	796-797	796	796	↵
06B-B1-K1	824-827	798-799	798	796	↵
06B-B1-L1	828-831	N/A	N/A	N/A	
06B-B2-C1	N/A	768-769	768	768	↵
06B-B2-D1	768-771	770-771	770	768	↵
06B-B2-E1	772-775	772-773	772	772	↵
06B-B2-F1	776-779	774-775	774	772	↵
06B-B2-G1	780-783	776-777	776	776	↵
06B-B2-H1	784-787	778-779	778	776	↵
06B-B2-J1	788-791	780-781	780	780	↵
06B-B2-K1	792-795	782-783	782	780	↵
06B-B2-L1	796-799	N/A	N/A	N/A	
06D-B1-C1	N/A	656-657	656	656	↵
06D-B1-D1	672-675	658-659	658	656	↵
06D-B1-E1	676-679	660-661	660	660	↵
06D-B1-F1	680-683	662-663	662	660	↵
06D-B1-G1	684-687	664-665	664	664	↵
06D-B1-H1	688-691	666-667	666	664	↵
06D-B1-J1	692-695	668-669	668	668	↵
06D-B1-K1	696-699	670-671	670	668	↵
06D-B1-L1	700-703	N/A	N/A	N/A	
06D-B2-C1	N/A	640-641	640	640	↵
06D-B2-D1	640-643	642-643	642	640	↵
06D-B2-E1	644-647	644-645	644	644	↵
06D-B2-F1	648-651	646-647	646	644	↵
06D-B2-G1	652-655	648-649	648	648	↵
06D-B2-H1	655-659	650-651	650	648	↵
06D-B2-J1	660-663	652-653	652	652	↵
06D-B2-K1	664-667	654-655	654	652	↵
06D-B2-L1	668-671	N/A	N/A	N/A	

Location	Line Address for LIC Type				
	1 - 4	5	6 LS	6 HS	
06E-B1-C1	N/A	848-849	848	848	← Pair of LICs 5/6
06E-B1-D1	864-867	850-851	850	848	←
06E-B1-E1	868-871	852-853	852	852	←
06E-B1-F1	872-875	854-855	854	852	←
06E-B1-G1	876-879	856-857	856	856	←
06E-B1-H1	880-883	858-859	858	856	←
06E-B1-J1	884-887	860-861	860	860	←
06E-B1-K1	888-891	862-863	862	860	←
06E-B1-L1	892-895	N/A	N/A	N/A	
06E-B2-C1	N/A	832-833	832	832	←
06E-B2-D1	832-835	834-835	834	832	←
06E-B2-E1	836-839	836-837	836	836	←
06E-B2-F1	840-843	838-839	838	836	←
06E-B2-G1	844-847	844-841	840	840	←
06E-B2-H1	848-851	842-843	842	840	←
06E-B2-J1	852-855	844-845	844	844	←
06E-B2-K1	856-859	846-847	846	844	←
06E-B2-L1	860-863	N/A	N/A	N/A	
06G-B1-C1	N/A	720-721	720	720	←
06G-B1-D1	736-739	722-723	722	720	←
06G-B1-E1	740-743	724-725	724	724	←
06G-B1-F1	744-747	726-727	726	724	←
06G-B1-G1	748_751	728-729	728	728	←
06G-B1-H1	752-755	730-731	730	728	←
06G-B1-J1	756-759	732-733	732	732	←
06G-B1-K1	760-763	734-735	734	732	←
06G-B1-L1	764-767	N/A	N/A	N/A	
06G-B2-C1	N/A	704-705	704	704	←
06G-B2-D1	704-707	706-707	706	704	←
06G-B2-E1	708-711	708-709	708	708	←
06G-B2-F1	712-715	710-711	710	708	←
06G-B2-G1	716-719	712-713	712	712	←
06G-B2-H1	720-723	714-715	714	712	←
06G-B2-J1	724-727	716-717	716	716	←
06G-B2-K1	728-731	718-719	718	716	←
06G-B2-L1	732-735	N/A	N/A	N/A	

```
CUSTOMER ID:                          3745-xxx        SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE     X71:020415
                                        X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 02/14/87 00:15
FUNCTION ON SCREEN: TSS SERVICES
 1 SELECT/RELEASE :
 2 DUMP/IML       :
 3 MODE CONTROL   :
 4 DPLY/ALT STORE :
 5 DPLY/ALT BLOCKS:
 6 DPLY/ALT LSR   :
 7 DPLY/ALT XREG  :
 8 ADDRESS COMPARE:
 9 CHK-POINT TRACE:
10 D/ALT HPTSS/ESS:
                  :
                  :
                  :
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-5. TSS Service Screen

```
CUSTOMER ID:                          3745-xxx        SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE     X71:020415
                                        X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 04/13/87 05:20
FUNCTION ON SCREEN: TSS SERVICES
 1 SELECT/RELEASE :
 2 DUMP/IML       : - TO SELECT A SCANNER, ENTER:
 3 MODE CONTROL   :
 4 DPLY/ALT STORE :       THE LINE ADAPTER NUMBER PRECEDED BY S (S1 TO S32)
 5 DPLY/ALT BLOCKS:       OR
 6 DPLY/ALT LSR   :       THE LINE ADDRESS
 7 DPLY/ALT XREG  :          (TSS: 0 TO 895,  HPTSS: 1024 TO 1039)
 8 ADDRESS COMPARE:          (ESS: 1056 to 1071                  )     ==>
 9 CHK-POINT TRACE: - TO RELEASE SELECTED SCANNER, ENTER REL
10 D/ALT HPTSS/ESS:
                  :
                  :
                  :
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-6. Select/Release Screen

```
CUSTOMER ID:                              3745-xxx        SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------ 03/01/87 01:22
FUNCTION ON SCREEN: TSS SERVICES
 1 SELECT/RELEASE :
 2 DUMP/IML       :
 3 MODE CONTROL   : - SELECT SCANNER CONTROL COMMAND(SP, ST, CT, DS, RT) ==>
 4 DPLY/ALT STORE :
 5 DPLY/ALT BLOCKS:      SP = STOP
 6 DPLY/ALT LSR   :      ST = START
 7 DPLY/ALT XREG  :      CT = CONNECT
 8 ADDRESS COMPARE:      DS = DELAYED DISCONNECT
 9 CHK-POINT TRACE:      RT = RESET
10 D/ALT HPTSS/ESS:
                  :
                  :
                  :
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-7. Mode Control Screen

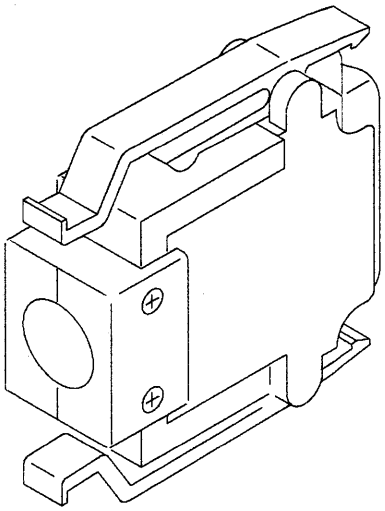


Figure 1-8. LIC Types 1 and 4 Wrap Plug (PN 65X8927)

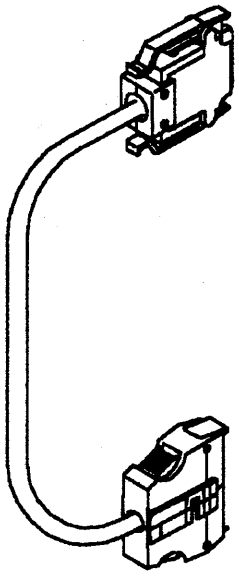


Figure 1-9. LIC Type 3 Wrap Cable (PN 65X8928)

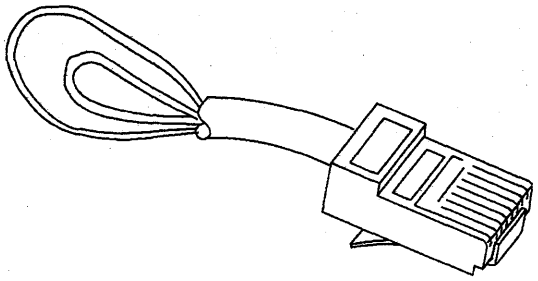
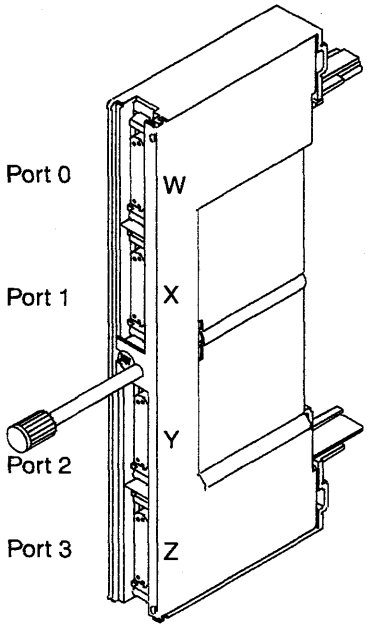
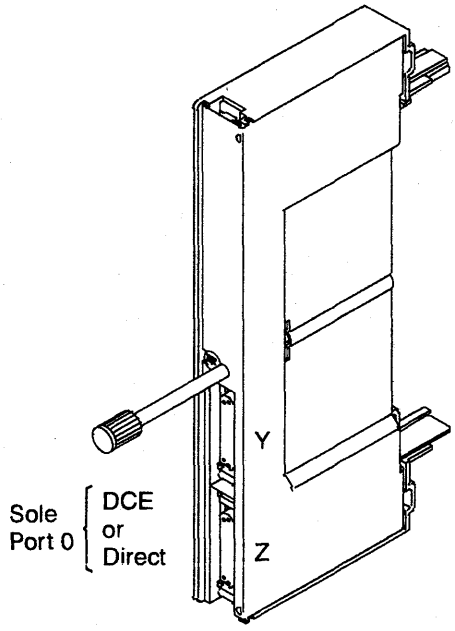


Figure 1-10. LIC Types 5 and 6 Wrap Plug (PN 11F4815)

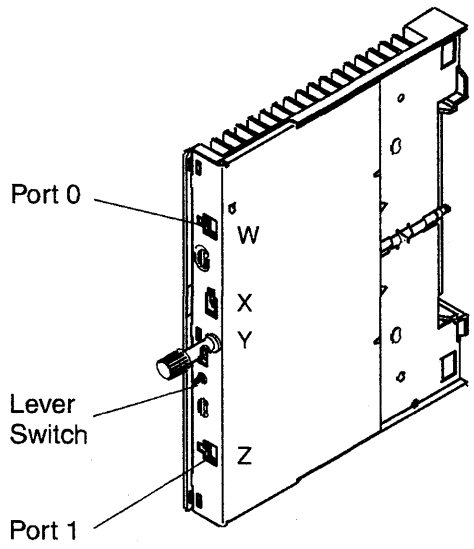


TYPE	Knob Color
LIC1	Brown
LIC4A	Green
LIC4B	Green

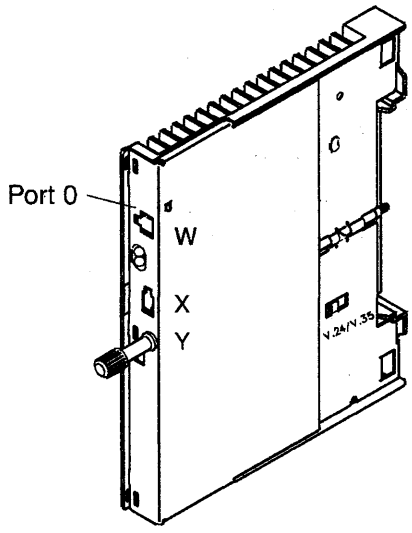


TYPE	Knob Color
LIC3	Blue

Figure 1-11. LIC Types 1, 3 and 4



TYPE	Knob Color
LIC5	Black



TYPE	Knob Color
LIC6	Black

Figure 1-12. LIC Types 5 and 6

Requirements List 0100: For DMUX

Ensure that the following information has been recorded (from the reference code screen and from the additional information using (PF6)).

- FRU and location
- Suspected adapters
- Addresses of affected lines.

The diagnostics to be run are TSS.

The affected lines are in the DMUX tables (see Table 1-29 on page 1-90 and Table 1-30 on page 1-90).

What you should do next:

001

Has "Disabling Procedure 0070: Preparing a DMUX, SMUXA, or SMUXB for Maintenance" on page 1-111 already been performed or is the 3745 fully available?

Yes **No**

002

Go to "Disabling Procedure 0070: Preparing a DMUX, SMUXA, or SMUXB for Maintenance" on page 1-111.

003

Have the preceding diagnostics been run just before entering this section?

Yes **No**

004

Run the concurrent TSS diagnostics on the **suspected adapters**. Refer to Figure 1-13 on page 1-90. If necessary refer to "How to Run Internal Function Tests" on page 3-30. Go to "Diagnostic Result Analysis" on page 3-48.

005

(Step **005** continues)

005 (continued)

Did the diagnostics run without detecting an error?

Yes **No**

006

Go to Chapter 4, "FRU Exchange" on page 4-1.

007

Is the FRU the last one in the suspected FRU group?

Yes **No**

008

For the next FRU called, continue with "3745 FRU List" on page 1-39.

009

All parts of the machine required for FRU exchange will now be available for service.

Change all FRUs called using Chapter 4, "FRU Exchange" on page 4-1.

DMUX

Table 1-29. DMUX Line Location

Location	Affected Lines
01M-B1-B1	096-127
01M-B2-B1	064-095
01P-B1-B1	032-063
01P-B2-B1	000-031
04B-B1-B1	288-319
04B-B2-B1	256-287
04D-B1-B1	160-191
04D-B2-B1	128-159
04E-B1-B1	352-383
04E-B2-B1	320-351
04G-B1-B1	224-255
04G-B2-B1	192-223
05B-B1-B1	544-575
05B-B2-B1	512-543

Table 1-30. DMUX Line Location

Location	Affected Lines
05D-B1-B1	416-447
05D-B2-B1	384-415
05E-B1-B1	608-639
05E-B2-B1	576-607
05G-B1-B1	480-511
05G-B2-B1	448-479
06B-B1-B1	800-831
06B-B2-B1	768-799
06D-B1-B1	672-703
06D-B2-B1	640-671
06E-B1-B1	864-895
06E-B2-B1	832-863
06G-B1-B1	736-767
06G-B2-B1	704-735

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 03/01/87 01:22
FUNCTION ON SCREEN: OFFLINE DIAGS
GROUP :ADP# :LINE :
1 ALL             :
2 CCU : A- B:     :
3 IOCB: 1- 4:     :
4 CA  : 1-16:     :
5 TSS : 1-32: 0-31:
6 TRSS: 1- 6: 1- 2:
7 HTSS: 1- 8:     :
8 OLT : 1-16:     :
9 ESS : 1- 8:     :
OPT=  Y IF MODIFY :
OPTION REQUIRED   :
                  : ENTER REQUEST ACCORDING TO THE DIAG MENU
                  : DIAG==>(A)      ADP#==>(B)    LINE==>     OPT==>
===>

F1:END  F2:MENU2  F3:ALARM                F6:QUIT
```

(A) Enter **5** for TSS diagnostics
or **7** for HPTSS.

(B) Enter the number of the **Suspected adapter**.

Figure 1-13. TSS, HPTSS, and ESS Diagnostic Selection Screen

Requirements List 0110: For SMUXA and SMUXB

Ensure that the following information has been recorded (from the reference code screen and from the additional information using (PF6)).

- FRU and location
- Suspected adapters
- Addresses of affected lines.

The diagnostics to be run are TSS.

The affected lines are defined in the SMUXA/B tables (1-92, 1-92, or 1-93).

What you should do next:

001

Has "Disabling Procedure 0070: Preparing a DMUX, SMUXA, or SMUXB for Maintenance" on page 1-111 already been performed, or is the 3745 fully available?

Yes **No**

002

Go to "Disabling Procedure 0070: Preparing a DMUX, SMUXA, or SMUXB for Maintenance" on page 1-111.

003

Have the preceding diagnostics been run just before entering this section?

Yes **No**

004

Run the concurrent TSS diagnostics on the **suspected adapter(s)**. Refer to Figure 1-14 on page 1-93. If necessary, refer to "How to Run Internal Function Tests" on page 3-30. Go to "Diagnostic Result Analysis" on page 3-48.

005

(Step **005** continues)

005 (continued)

Did the diagnostics run without detecting an error?

Yes **No**

006

Go to Chapter 4, "FRU Exchange" on page 4-1.

007

Is the FRU the last one in the suspected FRU group?

Yes **No**

008

For the next FRU called, continue with "3745 FRU List" on page 1-39.

009

All parts of the machine required for FRU exchange will now be available for service.

Change all FRUs called using Chapter 4, "FRU Exchange" on page 4-1.

SMUXA or SMUXB for LIC Type 5

Table 1-31. SMUX Location	
Location	**Affected Lines**
01M-B1-B1	080-095
01M-B2-B1	064-079
01P-B1-B1	N.A.
01P-B2-B1	N.A.
04B-B1-B1	272-287
04B-B2-B1	256-271
04D-B1-B1	144-159
04D-B2-B1	128-143
04E-B1-B1	336-351
04E-B2-B1	320-335
04G-B1-B1	208-223
04G-B2-B1	192-207
05B-B1-B1	528-543
05B-B2-B1	512-527

Table 1-32. SMUX Location	
Location	**Affected Lines**
05D-B1-B1	400-415
05D-B2-B1	384-399
05E-B1-B1	592-607
05E-B2-B1	576-591
05G-B1-B1	464-479
05G-B2-B1	448-463
06B-B1-B1	784-799
06B-B2-B1	768-783
06D-B1-B1	656-671
06D-B2-B1	640-655
06E-B1-B1	848-863
06E-B2-B1	832-847
06G-B1-B1	720-735
06G-B2-B1	704-719

SMUXA and SMUXB for LIC Type 6 Low Speed

Table 1-33. SMUX Location	
Location	**Affected Lines**
01M-B1-B1	080-094
01M-B2-B1	064-078
01P-B1-B1	N.A.
01P-B2-B1	N.A.
04B-B1-B1	272-286
04B-B2-B1	256-270
04D-B1-B1	144-158
04D-B2-B1	128-142
04E-B1-B1	336-350
04E-B2-B1	320-334
04G-B1-B1	208-222
04G-B2-B1	192-206
05B-B1-B1	528-542
05B-B2-B1	512-526

Table 1-34. SMUX Location	
Location	**Affected Lines**
05D-B1-B1	400-414
05D-B2-B1	384-398
05E-B1-B1	592-606
05E-B2-B1	576-590
05G-B1-B1	464-478
05G-B2-B1	448-462
06B-B1-B1	784-798
06B-B2-B1	768-782
06D-B1-B1	656-670
06D-B2-B1	640-654
06E-B1-B1	848-862
06E-B2-B1	832-846
06G-B1-B1	720-734
06G-B2-B1	704-718

SMUXA and SMUXB for LIC Type 6 High Speed

Table 1-35. SMUX Location

Location	Affected Lines
01M-B1-B1	080-092
01M-B2-B1	064-076
01P-B1-B1	N.A.
01P-B2-B1	N.A.
04B-B1-B1	272-284
04B-B2-B1	256-268
04D-B1-B1	144-156
04D-B2-B1	128-140
04E-B1-B1	336-348
04E-B2-B1	320-332
04G-B1-B1	208-220
04G-B2-B1	192-204
05B-B1-B1	528-540
05B-B2-B1	512-524

Table 1-36. SMUX Location

Location	Affected Lines
05D-B1-B1	400-412
05D-B2-B1	384-396
05E-B1-B1	592-604
05E-B2-B1	576-588
05G-B1-B1	464-476
05G-B2-B1	448-460
06B-B1-B1	784-796
06B-B2-B1	768-780
06D-B1-B1	656-668
06D-B2-B1	640-652
06E-B1-B1	848-860
06E-B2-B1	832-844
06G-B1-B1	720-732
06G-B2-B1	704-716

```
CUSTOMER ID:                              3745-xxx        SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 03/01/87 01:22
FUNCTION ON SCREEN: OFFLINE DIAGS
GROUP :ADP# :LINE :
1 ALL             :
2 CCU : A- B:     :
3 IOCB: 1- 4:     :
4 CA  : 1-16:     :
5 TSS : 1-32: 0-31:
6 TRSS: 1- 6: 1- 2:
7 HTSS: 1- 8:     :
8 OLT : 1-16:     :
9 ESS : 1- 8:     :
OPT=  Y IF MODIFY :
OPTION REQUIRED   :
                  : ENTER REQUEST ACCORDING TO THE DIAG MENU
                  : DIAG==>(A)      ADP#==>(B)    LINE==>     OPT==>
===>

F1:END  F2:MENU2  F3:ALARM              F6:QUIT
```

(A) Enter **5** for TSS diagnostics
or **7** for HPTSS.

(B) Enter the number of the **Suspected adapter**.

Figure 1-14. TSS, HPTSS, and ESS Diagnostic Selection Screen

3745 Diagnostic Requirements

To run the diagnostics ensure that the area to be tested by the diagnostics is correctly disabled from customer resources.

The following list gives the disabling procedure required for each group of diagnostics.

Diagnostic	Where You Should Go
ALL	Only very rarely should it be necessary to run all diagnostics. If the customer is using the machine, consider if it is **really necessary** to run all. If so ask the customer to stop using the machine and go to Chapter 3, "How to Run the Diagnostics" on page 3-1.
CA	"Disabling Procedure 0030: Preparing a CA for Maintenance" on page 1-100.
CA Wrap Tests	"Disabling Procedure 0030: Preparing a CA for Maintenance" on page 1-100.
CAOLTS	"Disabling Procedure 0080: Preparing a CCU with Adapter and DMA Buses for Maintenance" on page 1-114.
CBA	The whole 3745 must be powered ON and in offline mode, while the 3746-900 must be powered ON, error free, setted in online mode with the CBC(s) and their respective CBSP or TRP available in the CDF-E and **not** in concurrent mode. To run the requested diagnostics, refer to "How to Run Internal Function Tests" on page 3-30. Then go to "Diagnostic Result Analysis" on page 3-48.
CCU	"Disabling Procedure 0010: Preparing a CCU and Switch for Maintenance" on page 1-95.
ESS	"Disabling Procedure 0040: Preparing a TSS, HPTSS, or ESS for Maintenance" on page 1-101.
HPTSS	"Disabling Procedure 0040: Preparing a TSS, HPTSS, or ESS for Maintenance" on page 1-101.
IOC/DMA	"Disabling Procedure 0080: Preparing a CCU with Adapter and DMA Buses for Maintenance" on page 1-114.
MOSS	"Disabling Procedure 0020: How to Put the MOSS Offline" on page 1-99.
TSS	"Disabling Procedure 0040: Preparing a TSS, HPTSS, or ESS for Maintenance" on page 1-101.
TRSS	"Disabling Procedure 0050: Preparing a TRSS for Maintenance" on page 1-105.
LIC Wrap Test (WTT)	"How to Run the Wrap Test (WTT) for TSS, HPTSS, or 3746-900" on page 3-34.
LIC Wrap Test (IFT)	"Requirements List 0090: For LIC Types 1, 3, 4, 5, and 6" on page 1-74.

Disabling Procedure 0010: Preparing a CCU and Switch for Maintenance

001

Is the 3745 a Model 41x or 61x (two CCUs)?
Yes **No**

002

The entire configuration is needed.

a. Ask the customer for complete control of the 3745:

b. If the FRU is a PS Type 1 or 1B, go to Chapter 4, "FRU Exchange" on page 4-1.
If it is not, run the CCU diagnostics. Refer to "How to Run Internal Function Tests" on page 3-30, then go to "Diagnostic Result Analysis" on page 3-48.

003

– Check at the MSA area on all displayed screens and locate the status of both CCUs (Run, Reset, Ready, Stop, or Down).

Is the CCU to be repaired in RUN state?
Yes **No**

004

If the FRU is a PS Type 1 or 1B, go to Chapter 4, "FRU Exchange" on page 4-1.
If it is not, run the CCU diagnostics on the CCU to be tested. Refer to "How to Run Internal Function Tests" on page 3-30, then go to "Diagnostic Result Analysis" on page 3-48.

005

- At the 3745 console, type **CDF** in the selection area to display the DISPLAY/UPDATE FUNCTION menu (see Figure 1-16 on page 1-97).
- Type **9** in the input area to display the CCU operating mode (see Figure 1-17 on page 1-98).

Are you in TWIN-DUAL mode?
Yes **No**

006

(Step **006** continues)

006 (continued)

Are you in TWIN-STANDBY mode?
Yes **No**

007

You are in **TWIN-BACKUP** mode.

Go to Step 014 on page 1-96.

008

Is the CCU to be repaired ACTIVE (MOSS - ONLINE)?
Yes **No**

009

– If the FRU is a PS Type 1 or 1B, go to Chapter 4, "FRU Exchange" on page 4-1.
If, not:

- Type **CSR** in the selection area to display the CCU SEL/RELEASE screen.
- Enter **1** for CCU A or **2** for CCU B to select the CCU to be tested.
- Press **PF1**.
- Type **RST** to reset the CCU.
- Run the requested diagnostics. Refer to "How to Run Internal Function Tests" on page 3-30, then go to "Diagnostic Result Analysis" on page 3-48.

010

– Ask the customer to perform a fallback procedure.

– If the FRU is a PS Type 1 or 1B, go to Chapter 4, "FRU Exchange" on page 4-1.
If, not:

- Type **CSR** in the selection area to display the CCU SEL/RELEASE screen.
- Enter **1** for CCU A or **2** for CCU B to select the CCU you want to work with.
- Press **PF1**.
- Type **RST** to reset the CCU.
- Run the requested diagnostics. Refer to "How to Run Internal Function Tests" on page 3-30. Then go to

"Diagnostic Result Analysis" on page 3-48.

011

– Ask the customer the following question:

Does the NCP generation for each CCU support the entire configuration?
Yes **No**

012

- Tell the customer that you need the complete CSS (CCU and associated CAs and LAs) and that you want to test it offline.
- Ask him to disable all the lines and channels connected to this CSS (CCU and associated CAs and LAs) and to deactivate the NCP.
- Ensure that this operation has completed (because it can take a long time to complete).
- If the FRU is a PS Type 1 or 1B, go to Chapter 4, "FRU Exchange" on page 4-1.
  If it is not:
  – Type **CSR** in the selection area to display the CCU SEL/RELEASE screen.
  – Enter **1** for CCU A or **2** for CCU B to select the CCU to be tested.
  – Press **PF1**.
  – Type **RST** to reset the CCU.
  – Run the requested diagnostics. Refer to "How to Run Internal Function Tests" on page 3-30, then go to "Diagnostic Result Analysis" on page 3-48.

013

– Ask the customer to put the 3745 in **TWIN-BACKUP** mode. Continue with Step 014.

014

– Ask the customer to put the 3745 in **FALLBACK** mode.

Was fallback successful?
Yes **No**

015

(Step **015** continues)

015 (continued)

The entire configuration is needed.

– Ask the customer for the complete control of the 3745.

If the FRU is a PS Type 1, go to Chapter 4, "FRU Exchange" on page 4-1.
If it is not, run the CCU diagnostics on both CCUs. Refer to "How to Run Internal Function Tests" on page 3-30, then go to "Diagnostic Result Analysis" on page 3-48.

016

– Ask the customer to reactivate all the resources.

If the FRU is a PS Type 1 or 1B, go to Chapter 4, "FRU Exchange" on page 4-1.
If it is not,

- Type **CSR** in the selection area to display the CCU SEL/RELEASE screen.
- Enter **1** for CCU A or **2** for CCU B to select the CCU to be tested.
- Press **PF1**.
- Type **RST** to reset the CCU.
- Run the CCU diagnostics on the CCU to be tested. Refer to "How to Run Internal Function Tests" on page 3-30, then go to "Diagnostic Result Analysis" on page 3-48.

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 04/08/87 02:35
FUNCTION ON SCREEN: CONFIG DATA FILE
                          CDF  FUNCTIONS


- SELECT ONE CDF FUNCTION (1 TO 4), THEN PRESS SEND/ENTER ==>

    1 = DISPLAY/UPDATE
    2 = CREATE
    3 = UPGRADE
    4 = VERIFY


===>

F1:END            F3:ALARM
```

Figure 1-15. CDF Function Menu

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 03/12/87 05:15
FUNCTION ON SCREEN: CONFIG DATA FILE
                    CDF - DISPLAY/UPDATE FUNCTION


- SELECT ONE OPTION (1 TO 9), THEN PRESS SEND/ENTER   ==>

    DISPLAY               DISPLAY/UPDATE

    1 = MOSS              6 = CHANNEL ADAPTERS (CA)
    2 = LSSD              7 = LINE ADAPTERS (LA)
    3 = FRAMES            8 = PORTS
    4 = CCU               9 = CCU OPERATING MODE
    5 = SWITCH

===>

F1:END            F3:ALARM                        F6:RETURN
```

Figure 1-16. CDF Display/Update Function Menu

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B           PROCESS MOSS-ON LINE
RUN-REQ
------------------------------------------------------------------ 03/01/87 01:22
FUNCTION ON SCREEN: CONFIG DATA FILE
                    CDF - DISPLAY/UPDATE : CCU OPERATING MODE


 CCU OPERATING MODE (1 TO 4)            :  x
     1 = TWIN DUAL
     2 = TWIN STANDBY
     3 = TWIN BACKUP
     4 = SINGLE

 TWIN STANDBY MODE ONLY: OPERATIONAL CCU (A OR B) : x


===>

F1:END             F3:ALARM            F5:UPDATE     F6:RETURN
```

Figure 1-17. CCU Operating Menu

Disabling Procedure 0020: How to Put the MOSS Offline

The MOSS can be disabled via the 3745 console or via the control panel. It is best to use the console to put the MOSS offline but if this is not possible, the control panel can be used.

Using the 3745 Console or 3745 Service Processor

1. Ensure that the customer is not using any of the 3745 consoles or the control panel.
2. On the control panel, check if the **MOSS Inop** indicator is ON or (***B***) is displayed. If so, it is not necessary to take the MOSS offline. Go to 18.
3. If you are working on a 3745-21x or 3745-31x, select MENU 2 and go to step 16.
4. When working on a 3745-41x or 3745-61x, from MENU 2, select CCU SEL/RELEASE by entering **CSR**.
5. Press **SEND/ENTER**.
6. On the CCU selection screen, enter **2** to select CCU B.
7. Press **SEND/ENTER**.
8. Press PF1.
9. Enter **MOF** to put MOSS offline from CCU B.
10. Press **SEND/ENTER**.
11. Type **CSR**.
12. Press **SEND/ENTER**.
13. On the CCU SEL/RELEASE screen, enter **1** to select CCU A.
14. Press **SEND/ENTER**.
15. Press PF1.
16. Enter **MOF** to put MOSS offline from CCU A.
17. Press **SEND/ENTER**.

    (**MOSS OFF LINE** will be displayed on the console screen).
18. If you were referring to this procedure from another procedure, return there now.

    a. If the FRU is a PS Type 2, go to Chapter 4, "FRU Exchange" on page 4-1.

    b. If the the panel test or console link test were used to detect the FRU to be exchanged, go to Chapter 4, "FRU Exchange" on page 4-1.

    c. If none of the preceding are true, run the diagnostics recorded in the requirements list, refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. (MOSS diagnostics will started if a MOSS IML was done).
    Go to "Diagnostic Result Analysis" on page 3-48.
    If no diagnostic were called by the requirement list, go to Chapter 4, "FRU Exchange" on page 4-1.

Using the Control Panel

1. Ensure that the customer is not using any of the 3745 consoles or the control panel.
2. IML MOSS

    a. Select function **1** on the control panel.

    b. Press the valid key.

    When the MOSS IML starts, the MOSS will automatically become disabled and MOSS diagnostics will be run.
3. FRU and test

    a. If the FRU is a PS Type 2, go to Chapter 4, "FRU Exchange" on page 4-1.

    b. If the the panel test or console link test were used to detect the FRU to be exchanged, go to Chapter 4, "FRU Exchange" on page 4-1.
    If they were not used, run the diagnostics recorded in the requirements list. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. (MOSS diagnostics will start if a MOSS IML was done). Go to "Diagnostic Result Analysis" on page 3-48.

Disabling Procedure 0030: Preparing a CA for Maintenance

001

Note: To exchange a PS type 3, this procedure must be run for the channel adapter and associated channel adapter connected to the PS.
For any other cases, follow the procedure for the channel adapter you are working on. If you must exchange an adapter card, you will be asked to repeat this procedure for the associated adapter (depending on the configuration).

- Ask the customer to stop all activity on the channel adapter.
- On the 3745 console, display the CID function
- Enter **D** on the **CHANGE E/D REQ** field for the interface A (and B if TPS is installed) for the channel adapter you are working on.
- Press **SEND/ENTER** and wait a few seconds until the **status** changes to **DISABLED**.

Is the status DISABLED?
Yes **No**

002

Is the CA detached from the system?
Yes **No**

003

- Ask the customer to detach the CA from the system and continue with Step 005

004

- The CA cannot execute the concurrent maintenance commands. The full configuration of the 3745 is needed.

005

- Press **PF1** and call the **CAS** function for channel adapter services.
- Press **SEND/ENTER**.
- Type **4** for concurrent maintenance commands.
- Press **SEND/ENTER**.
- Type the channel adapter number (corresponding to the suspected CA), in the CA number ===> field.
- Press **SEND/ENTER**.

(Step **005** continues)

005 (continued)

(For more details about messages, refer to "3745 Service Functions" *manual)*
Is the message 'Concurrent Maintenance not supported by the control program owning the CA' displayed?
Yes **No**

006

- Type **SHT** (shutdown) in the command ===> field.
- Press **SEND/ENTER**.
- After the message requesting you to stop the traffic press **SEND/ENTER** (to execute).

Is there a PS type 3 or an adapter card to be exchanged?
Yes **No**

007

Call **CDG** and run the requested diagnostics (CA diagnostics or wrap test) using the **suspected CA** number. If necessary refer to "How to Run Internal Function Tests" on page 3-30 and to "How to Run the Channel Wrap Test" on page 3-47. Go to "Diagnostic Result Analysis" on page 3-48

008

Repeat this procedure for the associated CA, if any, and go to "PS Type 3 Exchange Procedure" on page 4-115.

009

Call **ODG** and run the requested diagnostics (CA diagnostics or wrap test) using the **suspected CA** number. If necessary refer to "How to Run Internal Function Tests" on page 3-30 and to "How to Run the Channel Wrap Test" on page 3-47. Go to "Diagnostic Result Analysis" on page 3-48

Disabling Procedure 0040: Preparing a TSS, HPTSS, or ESS for Maintenance

Notes:

1. The **Suspected adapter** is the adapter on which a problem was reported or on which the CE was asked to run the diagnostics.
2. The **Associated adapter** is the adapter driven by the same power block. Refer to Table 1-23 on page 1-68.

001

- Display the CDF for the suspected LA (CDF function option **7** + LA number).
- Record the CCU on which the LA is connected.

Is RUN status displayed in the MSA area for this CCU?

Yes **No**

002

– Run the requested diagnostics (TSS, HPTSS, or ESS) using the 'suspected adapter' number. Refer to Figure 1-21 on page 1-104. If necessary, refer to "How to Run Internal Function Tests" on page 3-30, then go to "Diagnostic Result Analysis" on page 3-48.

003

Is MOSS ONLINE displayed in the MSA area for this CCU?

Yes **No**

004

– Set the MOSS online. If necessary, refer to "How to Put the MOSS Online" on page 4-183.

Continue with next step.

005

Note: To run diagnostics, only the suspected adapter needs to be disconnected. To change a FRU, both the suspected and the associated LA must be disconnected.

1. Ask the operator to deactivate all the lines attached to the suspected adapter.
   - Wait until the operator has completed deactivating the lines.
2. Using the 3745 console, **disconnect** the suspected line adapters from the NCP as follows:

(Step **005** continues)

005 (continued)

a. From MENU 3, enter **TSS** (**TSS Services**) in the selection area.

b. From the **TSS Services** screen, enter **1** (**select/release**) in the selection area. See Figure 1-18 on page 1-103.

c. In the input area, enter an **S** followed by the suspected adapter number. See Figure 1-19 on page 1-103.

d. Enter **3** (**Mode Control**) in the selection area. See Figure 1-18 on page 1-103. If in the MSA display (upper part of the screen), the status of the scanner is not **CONNECTED**, enter **RT** on the **Mode Control** screen. Go to 2f.

e. On the **Mode Control** screen, enter **DS** to disconnect the line adapter. See Figure 1-20 on page 1-104.

If deactivation of all the lines driven by this line adapter was not done, a screen showing the still active lines will be displayed. If the operator is unable to deactivate these lines, request his approval to force deactivation.
To force deactivation, enter **F** on the displayed screen.
Continue with the next step only when all lines have been deactivated and the line adapter has been disconnected.

f. Enter **1** (**select/release**) in the selection area. See Figure 1-18 on page 1-103.

g. Enter **REL** in the input area to release the disabled line adapter. See Figure 1-19 on page 1-103.

3. If the associated LA is to be disabled,continue with the next step. If not,go to Step 006 on page 1-102.
4. Ask the operator to deactivate all the lines attached to the associated adapter.
   - Wait until the operator has completed deactivating the lines.
5. Disconnect the associated adapter as follows:

a. Enter **1** (**select/release**) in the selection area. See Figure 1-18 on page 1-103.

b. In the input area, enter an **S** followed by the associated adapter number. See Figure 1-19 on page 1-103.

c. Enter **3** (**Mode Control**) in the selection area. See Figure 1-18 on page 1-103. If in the MSA display (upper part of the screen), the status of the scanner is

Unknown Mode, enter **RT** on the **Mode Control** screen Go to 5e.

d. On the **Mode Control** screen, enter **DS** to disconnect the line adapter. See Figure 1-20 on page 1-104.

   If deactivation of all the lines driven by this line adapter was not done, a screen showing the still active lines will be displayed. If the operator is unable to deactivate these lines, request his approval to force deactivation.
   To force deactivation, enter **F** on the displayed screen.
   Continue with the next step only when all lines have been deactivated and the line adapter has been disconnected.

e. Enter **1** (**select/release**) in the selection area. See Figure 1-18 on page 1-103.

f. Enter **REL** in the input area to release the disabled line adapter. See Figure 1-19 on page 1-103.
   Continue with the next step.

006

Is the FRU a PS Type 4?
Yes **No**

007

Is the FRU a CSP card?
Yes **No**

008

– Run the requested diagnostics (TSS, HPTSS, or ESS) using the **suspected adapter** number. Refer to Figure 1-21 on page 1-104. If necessary, refer to "How to Run Internal Function Tests" on page 3-30, then go to "Diagnostic Result Analysis" on page 3-48.

009

Go to Chapter 4, "FRU Exchange" on page 4-1. Exchange (together) the CSP with its associated FESL/H if this one is given in the FRU list,

Note: You must never run the TSS diagnostics under concurrent maintenance before exchanging a probably defective CSP card. This would lead to other line adapters on the same bus going down.

010

Go to Chapter 4, "FRU Exchange" on page 4-1.

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------------ 02/14/87 00:15
FUNCTION ON SCREEN: TSS SERVICES
 1 SELECT/RELEASE :
 2 DUMP/IML       :
 3 MODE CONTROL   :
 4 DPLY/ALT STORE :
 5 DPLY/ALT BLOCKS:
 6 DPLY/ALT LSR   :
 7 DPLY/ALT XREG  :
 8 ADDRESS COMPARE:
 9 CHK-POINT TRACE:
10 D/ALT HPTSS/ESS:
                  :
                  :
                  :
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-18. TSS Service Screen

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------------ 04/13/87 05:20
FUNCTION ON SCREEN: TSS SERVICES
 1 SELECT/RELEASE :
 2 DUMP/IML       : - TO SELECT A SCANNER, ENTER:
 3 MODE CONTROL   :
 4 DPLY/ALT STORE :       THE LINE ADAPTER NUMBER PRECEDED BY S (S1 TO S32)
 5 DPLY/ALT BLOCKS:       OR
 6 DPLY/ALT LSR   :       THE LINE ADDRESS
 7 DPLY/ALT XREG  :          (TSS: 0 TO 895,  HPTSS: 1024 TO 1039)
 8 ADDRESS COMPARE:          (ESS: 1056 TO 1071                  )     ==>
 9 CHK-POINT TRACE: - TO RELEASE SELECTED SCANNER? ENTER REL
10 D/ALT HPTSS/ESS:
                  :
                  :
                  :
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-19. Select/Release Screen

```
CUSTOMER ID:                          3745-xxx        SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE     X71:020415
                                        X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 03/01/87 01:22
FUNCTION ON SCREEN: TSS SERVICES
 1 SELECT/RELEASE :
 2 DUMP/IML       :
 3 MODE CONTROL   : - SELECT SCANNER CONTROL COMMAND(SP, ST, CT, DS, RT) ==>
 4 DPLY/ALT STORE :
 5 DPLY/ALT BLOCKS:      SP = STOP
 6 DPLY/ALT LSR   :      ST = START
 7 DPLY/ALT XREG  :      CT = CONNECT
 8 ADDRESS COMPARE:      DS = DELAYED DISCONNECT
 9 CHK-POINT TRACE:      RT = RESET
10 D/ALT HPTSS/ESS:
                  :
                  :
                  :
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-20. Mode Control Screen

```
CUSTOMER ID:                          3745-xxx        SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE     X71:020415
                                        X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 03/01/87 01:22
FUNCTION ON SCREEN: OFFLINE DIAGS
GROUP :ADP# :LINE :
1 ALL             :
2 CCU : A- B:     :
3 IOCB: 1- 4:     :
4 CA  : 1-16:     :
5 TSS : 1-32: 0-31:
6 TRSS: 1- 6: 1- 2:
7 HTSS: 1- 8:     :
8 OLT : 1-16:     :
9 ESS : 1- 8:     :
OPT=  Y IF MODIFY :
OPTION REQUIRED   :
                  : ENTER REQUEST ACCORDING TO THE DIAG MENU
                  : DIAG==>(A)      ADP#==>(B)    LINE==>     OPT==>
===>

F1:END  F2:MENU2  F3:ALARM              F6:QUIT
```

(A)
Enter **5** for TSS diagnostics, **7** for HPTSS or **9** for ESS.

(B) Enter the number of the **Suspected adapter**.

Figure 1-21. TSS, HPTSS, and ESS Diagnostic Selection Screen

Disabling Procedure 0050: Preparing a TRSS for Maintenance

Notes:

1. The **Suspected adapter** is the adapter on which a problem was reported or on which the CE was asked to run the diagnostics.
2. The **Associated adapter** is the adapter driven by the same power block. Refer to Table 1-23 on page 1-68.

001

- Display the CDF for the suspected TRA (CDF function option **7** + LA number).
- Record the CCU on which the TRA is connected.

Is RUN status displayed in the MSA area for this CCU?

Yes **No**

002

– Run the TRSS diagnostics using the **suspected adapter** number. Refer to Figure 1-25 on page 1-107. If necessary, refer to "How to Run Internal Function Tests" on page 3-30. Go to "Diagnostic Result Analysis" on page 3-48.

003

Is MOSS ONLINE displayed in the MSA area for this CCU?

Yes **No**

004

– Set the MOSS online. If necessary, refer to "How to Put the MOSS Online" on page 4-183.

Then continue with next step.

005

Note: To run diagnostics, only the suspected adapter needs to be disconnected. To change a FRU, both the suspected and the associated TRA must be disconnected.

1. Ask the operator to deactivate all the rings attached to the suspected adapter.
   - Wait until the operator has completed deactivating the rings.
2. Using the 3745 console, **disconnect** the suspected TRA from the NCP as follows:
   a. From menu 3 (**TRSS Services**) enter **TRS** in the selection area.

(Step **005** continues)

005 (continued)

   b. From the **TRSS Services** screen enter **1** (**select**) in the selection area. See Figure 1-22 on page 1-106.
   c. In the input area, enter the number of the suspected adapter. See Figure 1-23 on page 1-106.
   d. Enter **2** (**Connect/Disc**) in the selection area. See Figure 1-22 on page 1-106.
   e. On the **Connect/Disc** screen, enter **DS** to disconnect the TRA. See Figure 1-24 on page 1-107.
3. If the associated TRA is to be disabled, continue with the next step. If not, go to Step 006.
4. Ask the operator to deactivate all the rings attached to the associated adapter.
   - Wait until the operator has completed deactivating the rings.
5. Disconnect the associated TRA from the NCP as follows:
   a. Enter **1** (**select**) in the selection area. See Figure 1-22 on page 1-106.
   b. In the input area, enter the number of the associated adapter. See Figure 1-23 on page 1-106.
   c. Enter **2** (**Connect/Disc**) in the selection area. See Figure 1-22 on page 1-106.
   d. On the **Connect/Disc** screen, enter **DS** to disconnect the TRA. See Figure 1-24 on page 1-107.

   Continue with the next step.

006

Is the FRU a PS Type 4?

Yes **No**

007

Run the concurrent TRSS diagnostics using the **suspected adapter** number. Refer to Figure 1-25 on page 1-107. If necessary, refer to "How to Run Internal Function Tests" on page 3-30. Go to "Diagnostic Result Analysis" on page 3-48.

008

Go to Chapter 4, "FRU Exchange" on page 4-1.

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 03/01/87 01:22
FUNCTION ON SCREEN: TRSS SERVICES
 1 SELECT          :
 2 CONNECT/DISC    :
 3 TRM REGS        :
 4 TIC INTR REG    :
 5 DPLY STORAGE    :
 6 DUMP            :
 7 DPLY SCB, SSB   :
 8 DPLY PARM BLK   :
 9 TIC ERR STAT    :
                   :
                   :
                   :
                   :
===>1

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-22. TRSS Services Screen

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 02/10/87 03:30
FUNCTION ON SCREEN: TRSS SERVICES
 1 SELECT          :                            TRA SELECTION
 2 CONNECT/DISC    :
 3 TRM REGS        :  ENTER THE TRA # ==>2   TRA#   LINE ADDRESS  TIC  CCU
 4 TIC INTR REG    :                          1      1088  1089    YY   B
 5 DPLY STORAGE    :                          2      1090  1090    YN   B
 6 DUMP            :
 7 DPLY SCB, SSB   :
 8 DPLY PARM BLK   :
 9 TIC ERR STAT    :
                   :
                   :
                   :  PRESS SEND/ENTER TO CONFIRM
                   :
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-23. Select Screen

```
CUSTOMER ID:                              3745-xxx        SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 10/19/90 09:32
FUNCTION ON SCREEN: TRSS SERVICES
 1 SELECT         :                    TRA CONNECT/DISCONNECT
 2 CONNECT/DISC   :
 3 TRM REGS       :
 4 TIC INTR REG   :
 5 DPLY STORAGE   :    TYPE CT TO CONNECT
 6 DUMP           :         DS TO DISCONNECT ==>
 7 DPLY SCB, SSB  :
 8 DPLY PARM BLK  :
 9 TIC ERR STAT   :
                  :
                  :
                  :    PRESS SEND/ENTER TO CONFIRM
                  :
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-24. Connect/Disconnect Screen

```
CUSTOMER ID:                              3745-xxx        SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 03/01/87 01:22
FUNCTION ON SCREEN: OFFLINE DIAGS
GROUP :ADP# :LINE :
1 ALL             :
2 CCU : A- B:     :
3 IOCB: 1- 4:     :
4 CA  : 1-16:     :
5 TSS : 1-32: 0-31:
6 TRSS: 1- 6: 1- 2:
7 HTSS: 1- 8:     :
8 OLT : 1-16:     :
9 ESS : 1- 8:     :
OPT=  Y IF MODIFY :
OPTION REQUIRED   :
                  : ENTER REQUEST ACCORDING TO THE DIAG MENU
                  : DIAG==>(A)      ADP#==>(B)    LINE==>     OPT==>
===>

F1:END  F2:MENU2  F3:ALARM              F6:QUIT
```

(A) Enter **6** for TRSS diagnostics.

(B) Enter the number of the **Suspected adapter**.

Figure 1-25. TRSS Diagnostic Selection Screen

Disabling Procedure 0060: Preparing a PS Type 5 or 7 for Maintenance

001

- Display the CDF for the suspected LA (CDF function option **7** + LA number).
- Record the CCU on which the LA is connected.

Is RUN status displayed in the MSA area for this CCU?

Yes **No**

002

Go to Chapter 4, "FRU Exchange" on page 4-1.

003

Is MOSS ONLINE displayed in the MSA area for this CCU?

Yes **No**

004

– Set the MOSS online. If necessary refer to "How to Put the MOSS Online" on page 4-183.

Continue with next step.

005

1. Ask the operator to deactivate all the affected lines that you recorded from the reference code interpretation screen.

   Ensure that this operation has completed (it can take a long time to complete).

2. Using the 3745 console, disconnect the line adapters from the NCP as follows:

   a. From menu 3, enter **TSS** (**TSS Services**) in the selection area.

   b. From the **TSS Services** screen, enter **1** (**select/release**) in the selection area. See Figure 1-26 on page 1-109.

   c. In the input area, enter an **S** followed by the line adapter number. See Figure 1-27 on page 1-109.

   d. Enter **3** (**Mode Control**) in the selection area. See Figure 1-26 on page 1-109. If in the MSA display (upper part of the screen), the status of scanner is **Unknown Mode**, on the **Mode Control** screen enter **RT**. Go to 2f.

   e. On the **Mode Control** screen, enter **DS** to disconnect the line adapter. See Figure 1-28 on page 1-110.

      If deactivation of all the lines driven by this line adapter was not done, a screen showing the still active lines will be displayed. If the operator is unable to deactivate these lines, request his approval to force deactivation.
      To force deactivation, enter **F** on the displayed screen.
      Continue with the next step only when all lines have been deactivated and the line adapter has been disconnected.

   f. Enter **1** (**select/release**) in the selection area. See Figure 1-26 on page 1-109.

   g. Enter **REL** in the input area to release the disabled line adapter. See Figure 1-27 on page 1-109.

   h. Repeat Steps 2b to 2g until all suspected and associated line adapters are disconnected. The maximum number of line adapters in this procedure is 4.

   i. Go to Chapter 4, "FRU Exchange" on page 4-1.

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 02/14/87 00:15
FUNCTION ON SCREEN: TSS SERVICES
 1 SELECT/RELEASE :
 2 DUMP/IML       :
 3 MODE CONTROL   :
 4 DPLY/ALT STORE :
 5 DPLY/ALT BLOCKS:
 6 DPLY/ALT LSR   :
 7 DPLY/ALT XREG  :
 8 ADDRESS COMPARE:
 9 CHK-POINT TRACE:
10 D/ALT HPTSS/ESS:
                  :
                  :
                  :
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-26. TSS Service Screen

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 04/13/87 05:20
FUNCTION ON SCREEN: TSS SERVICES
 1 SELECT/RELEASE :
 2 DUMP/IML       : - TO SELECT A SCANNER, ENTER:
 3 MODE CONTROL   :
 4 DPLY/ALT STORE :       THE LINE ADAPTER NUMBER PRECEDED BY S (S1 TO S32)
 5 DPLY/ALT BLOCKS:       OR
 6 DPLY/ALT LSR   :       THE LINE ADDRESS
 7 DPLY/ALT XREG  :          (TSS: 0 TO 895,  HPTSS: 1024 TO 1039)
 8 ADDRESS COMPARE:          (ESS: 1056 TO 1071                  )     ==>
 9 CHK-POINT TRACE: - TO RELEASE SELECTED SCANNER, ENTER REL
10 D/ALT HPTSS/ESS:
                  :
                  :
                  :
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-27. Select/Release Screen

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 03/01/87 01:22
FUNCTION ON SCREEN: TSS SERVICES
 1 SELECT/RELEASE :
 2 DUMP/IML       :
 3 MODE CONTROL   : - SELECT SCANNER CONTROL COMMAND(SP, ST, CT, DS, RT) ==>
 4 DPLY/ALT STORE :
 5 DPLY/ALT BLOCKS:      SP = STOP
 6 DPLY/ALT LSR   :      ST = START
 7 DPLY/ALT XREG  :      CT = CONNECT
 8 ADDRESS COMPARE:      DS = DELAYED DISCONNECT
 9 CHK-POINT TRACE:      RT = RESET
10 D/ALT HPTSS/ESS:
                  :
                  :
                  :
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-28. Mode Control Screen

Disabling Procedure 0070: Preparing a DMUX, SMUXA, or SMUXB for Maintenance

001

- Display the CDF for the suspected adapter (CDF function option **7** + LA number)
- Record the CCU on which the LA is connected.

Is RUN status displayed in the MSA area for this CCU?

Yes **No**

002

– Run the TSS diagnostics using the **suspected adapter** number. Refer to Figure 1-32 on page 1-113. If necessary, refer to "How to Run Internal Function Tests" on page 3-30. Go to "Diagnostic Result Analysis" on page 3-48.

003

Is MOSS ONLINE displayed in the MSA area for this CCU?

Yes **No**

004

– Set the MOSS online. If necessary, refer to "How to Put the MOSS Online" on page 4-183.

Continue with next step.

005

1. Ask the operator to deactivate all the lines attached to the suspected adapter and associated adapter.
   - Wait until the operator has completed deactivating the lines.
2. Using the 3745 console, disconnect the line adapters from the NCP as follows:
   a. From menu 3, enter **TSS** (**TSS Services**) in the selection area.
   b. From the **TSS Services** screen, enter **1** (**select/release**) in the selection area. See Figure 1-29 on page 1-112.
   c. In the input area, enter an **S** followed by the suspected adapter number. See Figure 1-30 on page 1-112.
   d. Enter **3** in the selection area to choose **Mode Control**. See Figure 1-29 on page 1-112. If in the MSA display (upper part of the screen), the status of scanner is **Unknown Mode**, enter **RT** on the (**Mode Control**) screen. Go to 2f.
   e. On the **Mode Control** screen enter **DS** to disconnect the line adapter. See Figure 1-31 on page 1-113.

      If deactivation of all the lines driven by this line adapter was not done, a screen showing the still active lines will be displayed. If the operator is unable to deactivate these lines, request his approval to force deactivation.
      To force deactivation, enter **F** on the displayed screen.
      Continue with the next step only when all lines have been deactivated and the line adapter has been disconnected.
   f. Enter **1** (**select/release**) in the selection area. See Figure 1-29 on page 1-112.
   g. Enter **REL** in the input area to release the disabled line adapter. See Figure 1-31 on page 1-113.
   h. If you have an associated adapter, repeat Steps 2b to 2g using the associated adapter number.
3. Run the concurrent TSS diagnostics using the **suspected adapter** number. Refer to Figure 1-32 on page 1-113. If necessary, refer to "How to Run Internal Function Tests" on page 3-30. Go to "Diagnostic Result Analysis" on page 3-48.

```
CUSTOMER ID:                          3745-xxx        SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE     X71:020415
                                        X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------ 02/14/87 00:15
FUNCTION ON SCREEN: TSS SERVICES
 1 SELECT/RELEASE :
 2 DUMP/IML       :
 3 MODE CONTROL   :
 4 DPLY/ALT STORE :
 5 DPLY/ALT BLOCKS:
 6 DPLY/ALT LSR   :
 7 DPLY/ALT XREG  :
 8 ADDRESS COMPARE:
 9 CHK-POINT TRACE:
10 D/ALT HPTSS/ESS:
                  :
                  :
                  :
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-29. TSS Service Screen

```
CUSTOMER ID:                          3745-xxx        SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE     X71:020415
                                        X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------ 04/13/87 05:20
FUNCTION ON SCREEN: TSS SERVICES
 1 SELECT/RELEASE :
 2 DUMP/IML       : - TO SELECT A SCANNER, ENTER:
 3 MODE CONTROL   :
 4 DPLY/ALT STORE :       THE LINE ADAPTER NUMBER PRECEDED BY S (S1 TO S32)
 5 DPLY/ALT BLOCKS:       OR
 6 DPLY/ALT LSR   :       THE LINE ADDRESS
 7 DPLY/ALT XREG  :          (TSS: 0 TO 895,  HPTSS: 1024 TO 1039)
 8 ADDRESS COMPARE:          (ESS: 1056 TO 1071                )     ==>
 9 CHK-POINT TRACE: - TO RELEASE SELECTED SCANNER, ENTER REL
10 D/ALT HPTSS/ESS:
                  :
                  :
                  :
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-30. Select/Release Screen

```
CUSTOMER ID:                              3745-xxx        SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 03/01/87 01:22
FUNCTION ON SCREEN: TSS SERVICES
 1 SELECT/RELEASE :
 2 DUMP/IML       :
 3 MODE CONTROL   : - SELECT SCANNER CONTROL COMMAND(SP, ST, CT, DS, RT) ==>
 4 DPLY/ALT STORE :
 5 DPLY/ALT BLOCKS:      SP = STOP
 6 DPLY/ALT LSR   :      ST = START
 7 DPLY/ALT XREG  :      CT = CONNECT
 8 ADDRESS COMPARE:      DS = DELAYED DISCONNECT
 9 CHK-POINT TRACE:      RT = RESET
10 D/ALT HPTSS/ESS:
                  :
                  :
                  :
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 1-31. Mode Control Screen

and ESS Diagnostic Selection Screen'
and ESS Diagnostic Selection Screen'
and ESS Diagnostic Selection Screen'

```
CUSTOMER ID:                              3745-xxx        SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 03/01/87 01:22
FUNCTION ON SCREEN: OFFLINE DIAGS
GROUP :ADP# :LINE :
1 ALL             :
2 CCU : A- B:     :
3 IOCB: 1- 4:     :
4 CA  : 1-16:     :
5 TSS : 1-32: 0-31:
6 TRSS: 1- 6: 1- 2:
7 HTSS: 1- 8:     :
8 OLT : 1-16:     :
9 ESS : 1- 8:     :
OPT=  Y IF MODIFY :
OPTION REQUIRED   :
                  : ENTER REQUEST ACCORDING TO THE DIAG MENU
                  : DIAG==>(A)      ADP#==>(B)    LINE==>     OPT==>
===>

F1:END  F2:MENU2  F3:ALARM              F6:QUIT
```

(A)
Enter **5** for TSS diagnostics, **7** for HPTSS,
or **9** for ESS.

(B) Enter the number of the **suspected adapter**.

Figure 1-32. TSS, HPTSS

Disabling Procedure 0080: Preparing a CCU with Adapter and DMA Buses for Maintenance

Note: You can not have only one adapter bus attached to one CCU. Therefore, you need the two adapter buses and the DMA bus connected to that CCU.

001

Is the 3745 a Model 41x or 61x (two CCUs)?
Yes **No**

002

The entire configuration is needed.

- Ask the customer for the complete control of the 3745
- Run the requested diagnostics. Refer to "How to Run Internal Function Tests" on page 3-30. Go to "Diagnostic Result Analysis" on page 3-48.

003

- Depending on which bus you want to work with, locate in the following table the CCU you must select.

BUS Type	BUS Number	CCU
Adapter Bus	1	A
	2	A
	3	B
	4	B
DMA	5	A
	6	B

- At the 3745 console, type **CDF** in the selection area to display the CDF functions menu (see Figure 1-33 on page 1-115).
- When a CP is running in the 3745 this step is not required. Continue with the next action.

  When no CP is running, select option = DISPLAY/UPDATE. from the CDF functions menu.
- Type **9** in the input area for CCU operating mode (see Figure 1-34 on page 1-116 and Figure 1-35 on page 1-116).

Are you in another mode than TWIN-DUAL?
Yes **No**

004

Go to Step 008.

005

(Step **005** continues)

005 (continued)

Are you in TWIN-BACKUP mode?
Yes **No**

006

You are in **TWIN-STANDBY** mode.

- Ask the customer to re-IPL in twin-backup mode.
- Ask the customer for the complete CSS (CCU and associated CAs and LAs) that you need to test (with all lines and channels connected to it).
- Run the requested diagnostics. Refer to "How to Run Internal Function Tests" on page 3-30. Go to "Diagnostic Result Analysis" on page 3-48.

007

– Look at the MSA area on any displayed screen and locate the status of both CCU,s (Run, Reset, Ready, Stop, or Down).

Are any of the CCUs in READY state?
Yes **No**

008

- Ask the customer for the complete CSS (CCU and associated CAs and LAs) that you need to test (with all lines and channels connected to it).
- On the 3745 console, terminate the preceding operation by hitting PF1.
- Type **CSR** in the selection area to display the CCU SEL/RELEASE screen.
- Enter **1** for CCU A or **2** for CCU B to select the CCU to be tested.
- Press PF1.
- Type **RST** to reset the CCU.
- Run the requested diagnostics. Refer to "How to Run Internal Function Tests" on page 3-30. Go to "Diagnostic Result Analysis" on page 3-48.

009

You are in **FALLBACK** mode.

- Ask the customer to **SWITCH BACK**.
- Ask the customer for the complete CSS (CCU and associated CAs and LAs) that you need to test (with all lines and channels connected

to it).

- Run the requested diagnostics. Refer to "How to Run Internal Function Tests" on page 3-30. Go to "Diagnostic Result Analysis" on page 3-48.

```
CUSTOMER ID:                          3745-xxx        SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE     X71:020415
                                        X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 04/08/87 02:35
FUNCTION ON SCREEN: CONFIG DATA FILE
                        CDF  FUNCTIONS


- SELECT ONE CDF FUNCTION (1 TO 4), THEN PRESS SEND/ENTER ==>


    1 = DISPLAY/UPDATE
    2 = CREATE
    3 = UPGRADE
    4 = VERIFY



===>

F1:END            F3:ALARM
```

Figure 1-33. CDF Function Menu

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------ 03/12/87 05:15
FUNCTION ON SCREEN: CONFIG DATA FILE
                    CDF - DISPLAY/UPDATE FUNCTION


- SELECT ONE OPTION (1 TO 9), THEN PRESS SEND/ENTER   ==>

    DISPLAY               DISPLAY/UPDATE

    1 = MOSS              6 = CHANNEL ADAPTERS (CA)
    2 = LSSD              7 = LINE ADAPTERS (LA)
    3 = FRAMES            8 = PORTS
    4 = CCU               9 = CCU OPERATING MODE
    5 = SWITCH

===>

F1:END            F3:ALARM                        F6:RETURN
```

Figure 1-34. CDF Menu

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------ 03/01/87 01:22
FUNCTION ON SCREEN: CONFIG DATA FILE
                    CDF - DISPLAY/UPDATE : CCU OPERATING MODE


 CCU OPERATING MODE (1 TO 4)           :  4
     1 = TWIN DUAL
     2 = TWIN STANDBY
     3 = TWIN BACKUP
     4 = SINGLE

 TWIN STANDBY MODE ONLY: OPERATIONAL CCU (A OR B) : x


===>

F1:END            F3:ALARM          F5:UPDATE    F6:RETURN
```

Figure 1-35. CCU Operating Menu

3745 Control Panel Use

Attention: Providing the UEPO switch has not been activated, the control panel always has power and will display information on power control and service even though the 3745 is powered OFF.

Purpose of the Control Panel

The control panel allows the execution of functions which:

1. Are not possible via the console.
2. Must be operational before the MOSS is IMLed.

Uses of the Control Panel

The control panel is used to:

- Control the power

  Operations from the panel for power are:

  - Set Power Control Mode to Network, Local, or Remote
  - Power ON/Power ON reset
  - Power OFF
  - Unit Emergency Power OFF
- Perform basic functions which are:
  - General IPL from disk
  - MOSS IML from disk
  - MOSS dump
  - Request local console
  - Force local console
  - Panel test
  - Remote/alternate console link test
  - RSF console link test
  - Local console link test (Models 210-610)
  - Load from diskette
  - Loop on MOSS diagnostics
  - MOSS power OFF
  - Power bus test
- Indicate the machine status via indicators which show:
  - Function selected
  - Hex code displayed
  - Current service mode
  - Power control mode
  - Console in use
  - All channel adapters disabled
  - MOSS inoperative
  - MOSS message waiting
  - Power On Indicator ON
- Sound an audible alarm if an invalid action is attempted.

Explanation of 3745 Panel Keys, LEDs, and Switches

Refer to Figure 1-36 on page 1-119 for the location of the keys and switches.

The following three keys allow the operator to scroll the different options available.

1. Function
2. Service Mode
3. Power Control.

Each scrolled digit is set blinking on the panel display.

Validate Key: After pressing this key, the selected digit stops blinking and the chosen option is performed.

Any options not validated disappear after a time out of 60 seconds.

Exit Key: Pressing this key will cancel the scrolled option.

Power ON/Reset Key: When the function digit is **0** and service mode is **0** or **1**, this key will start a power ON reset sequence followed by a general IPL. Power On should not be pressed until after a 10-second delay from Power Off.

Power OFF Key: This key initiates a **power OFF** sequence.

Unit Emergency Power OFF (UEPO) Switch When this switch is positioned downwards, power is removed from the machine and a mechanical interlock locks the switch in the **OFF** position. The machine can not be powered ON until a CE resets the interlock and positions the switch upwards which enables power ON.

Power ON Indicator

This indicator is a green LED. It turns ON when the 3745 starts to power ON and turns OFF as soon as the machine powers down. Refer to Figure 1-36 on page 1-119. It is located to the right of the Power ON/Reset key.

Control Panel Display Description

The control panel display is a gas panel with various fields that can have different values. The meaning of each value is given in Table 1-37 on page 1-120.

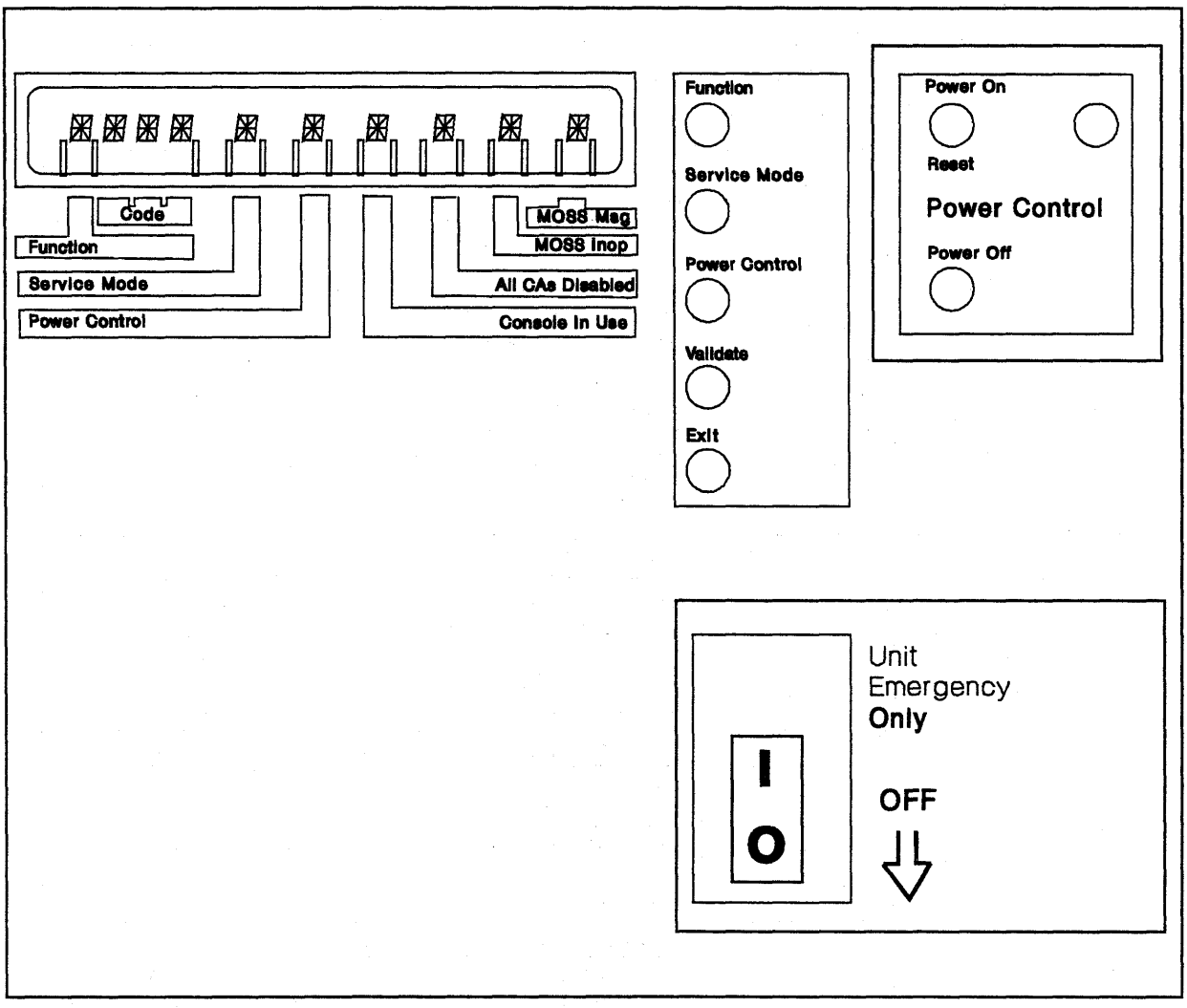


Figure 1-36. 3745 Control Panel Layout

Table 1-37. Panel Display Values

Indicator	Display	Description
Function	0	General IPL.
	1	MOSS IML.
	2	MOSS dump.
	3	Request local console.
	4	Force local console.
	5	Panel test.
	6	Remote/Alternate console link test.
	7	RSF console link test.
	8	Local console link test.
	9	Load from diskette.
	A	Loop on MOSS diagnostics.
	B	MOSS power OFF.
	C	Power Buses test.
Code	000 to FFF	A three hexadecimal character code which shows function progress codes and error codes. A code which blinks indicates an error condition has been detected. For more information on the meaning of these codes, refer to Appendix A, "Control Panel Code Definitions" on page A-1.
Service Mode	0	Normal: the functions from 0 to 9 are available.
	1	Maintenance 1: the functions from 0 to C are available.
	2	Maintenance 2: for functions 1, 2, and 9, MOSS diagnostics will be bypassed.
	3	Maintenance 3: used for installation. Allows function 9 only.
	A	Used during the Power Bus Test.
	B	Used during the Power Bus Test.
Power Control	1	Host: the 3745 is powered ON or OFF from the host systems. If ac power is lost then restored, an *Auto Restart* will be performed.
	2	Network: the 3745 is powered ON by either a scheduled power ON or the **Power On Reset** key on the control panel. If ac power is lost then restored, an *Auto Restart* will be performed. The 3745 is powered OFF by a command received via NCP.
	3	Local: the 3745 is powered ON from the **Power ON Reset** key and powered OFF from the **Power OFF** key on the control panel.
Console in Use	1	The remote or alternate console is in use.
	2	The RSF modem-to-console connection is in use.
	3	The local console is in use.
All CAs Disabled	✳	Indicator ON: indicates all channel adapters are disabled.
	Blank	Indicator OFF: indicates that at least one channel adapter is enabled.
MOSS Inoperative	✳	Indicator ON: the MOSS is not available for a CCU.
	B	The MOSS is powered OFF.
	Blank	Indicator OFF: the MOSS is powered ON and available.
MOSS Message	✳	Indicator ON: a message is displayed on the 3745 console.
	Blank	Indicator OFF: no messages are waiting to be displayed on the 3745 console.

How to Perform 3745 Control Panel Operations

Important

Before working on non-customer access areas of the 3745, power control should be set to Local Mode. This can be done as follows:

1. Using **Power Control**, scroll till the value is **3**, Local Mode.
2. Press **Validate**.

Power ON Reset

To perform this function:

Start from machine power OFF with the **Service Mode** either **0** or **1** and the default value for the **Function** digit at **0**.

1. Allow a 10-second delay from power OFF.
2. Press **Power ON Reset**.

A Power ON Reset sequence will execute followed by a general IPL. At successful completion of the operation, the display will be as follows:

0FF4	x 3	x x x x

Or, when NCP is IPLed from the hard disk:

0000	x 3	x x x x

x = variable values.

General IPL

1. Using **Function**, scroll till the value is **0**, General IPL.
2. Press **Validate**.

A general reset, MOSS IML, CCU A IPL, CCU B IPL, and a scanner IML is executed and the CLDP is loaded.

At successful completion of the operation, the display will be as follows:

0FF4	x 3	x x x x

Or, when NCP is IPLed from the hard disk:

0000	x 3	x x x x

x = variable values.

MOSS IML

1. Using **Function**, scroll till the value is **1**, MOSS IML.
2. Press **Validate**.

This initiates a MOSS reset followed by a MOSS IML. At successful completion of the operation, the display will be as follows:

When MOSS was alone prior to the IML:

1F0E	x 3	x x x x

Or, when MOSS was not alone prior to the IML:

1F0F	x 3	x x x x

x = variable values.

MOSS Dump

1. Using **Function**, scroll till the value is **2**, MOSS DUMP.
2. Press **Validate**.

A MOSS reset and dump of MOSS microcode onto disk will be executed. At successful conclusion of the operation, the display will be as follows:

2F01	x 3	x x x x

x = variable values.

Request Local Console

1. Using the **Function** key, scroll till the value is **3**, REQUEST LOCAL CONSOLE.
2. Press **Validate**.

A message is sent to inform the remote/alternate or RSF console operator that the local console operator wants to log on at the local console.

Force Local Console

1. Using the **Function** key, scroll till the value is **4**, FORCE LOCAL CONSOLE.
2. Press **Validate**.

The link to the remote/alternate or RSF console is disconnected to allow the local console operator to log on.

Power Bus Test, Panel Test, and Console Link Tests

See the separate detailed procedures in Chapter 3, "How to Run the Diagnostics" on page 3-1.

Load from Diskette

1. Insert diskette 1 into the diskette drive.
2. Close the diskette drive (by turning or pulling the door latch).
3. Two options are available:

Option A:

1. Using the **Service Mode** key, scroll till the value is **0**, Normal mode.
2. Press **Validate**.
3. Using the **Function** key, scroll till the value is **9**, LOAD FROM DISKETTE.
4. Press **Validate**.

A general reset, MOSS IML, CCU A IPL, CCU B IPL and a scanner IML is executed and the CLDP is loaded.

Option B:

1. Using the **Service Mode** key, scroll till the value is **1**, maintenance 1 mode.
2. Press **Validate**.
3. Using the **Function** key, scroll till the value is **9**, LOAD FROM DISKETTE.
4. Press **Validate**.

A MOSS reset followed by a MOSS IML will be executed.

Loop on MOSS Diagnostics

1. Using the **Service Mode** key, scroll till the value is **1**, maintenance 1 mode.
2. Press **Validate**.
3. Using the **Function** key, scroll till the value is **A**, LOOP ON MOSS DIAGNOSTICS.
4. Press **Validate**.

The diagnostic MOSS code loops until an error is detected and the error code will be displayed.

Press **Exit** to terminate the diagnostic loop.

MOSS Power OFF

1. Using the **Service Mode** key, scroll till the value is **1**, maintenance 1 mode.
2. Press **Validate**.
3. Using the **Function** key, scroll till the value is **B**, MOSS power OFF.
4. Press **Validate**.

A MOSS power down sequence will be executed. The MOSS Inoperative indicator will display the character **B**.

MOSS Power ON

When only the MOSS is powered OFF, and to power the MOSS back ON, proceed as described for "MOSS IML" on page 1-121.

Chapter 2. MAPs for FRU Isolation

MOSS MAPs

MAP 3100: MOSS Control Panel Code 001

Symptom Explanation	Conditions That Could Cause This Symptom
001 displayed on control panel	• PLC card failing • MOSS power supply failing • MPC or MCA or MAC/MAC2 or DFA card failing • PROM card failing

001

This MAP should be used only if the problem can be reproduced.

If the problem is intermittent, consider that any of the conditions given in the above table can cause the problem.

If the nature of the fault does not allow control panel actions, exchange FRU group 1116 on page 1-37. Go to page 1-35.

– There is a LED mounted on the MPC card (01A-X0-D1). Figure 4-8 on page 4-12 or Figure 4-9 on page 4-13.

Is the MPC LED permanently ON or blinking?

Yes **No**

002

Go to Step 012 on page 2-2.

003

Is the MPC LED permanently ON?

Yes **No**

004

Exchange FRU group 1250 on page 1-37. Go to page 1-35.

005

– Press **Service** on the control panel until **1** is displayed in the service window.
– Press **Validate**.
– Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
– Press **Validate**.
– **Attention: Use the ESD kit and procedures.**
– Refer to Figure 4-8 on page 4-12 or Figure 4-9 on page 4-13.
– Unplug the MCA card (01A-X0-G1) and DFA card (01A-X0-F1).
– **Attention: The following sequence should always be observed.**

(Step **005** continues)

005 (continued)

– Remove the cable attached to the MAC/MAC2 card (01A-X0-H1) if present.
– Unplug the MAC/MAC2 card (01A-X0-H1).
– Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
– Press **Validate**.

Is code 08C displayed?

Yes **No**

006

– Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
– Press **Validate**.
– Replug all cards and re-install the cable to the MAC/MAC2 card if present.

Exchange FRU group 1251 on page 1-37, go to page 1-35.

007

– Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
– Press **Validate**.
– Replug the MAC/MAC2 card (01A-X0-H1).
– Install the cable to the MAC/MAC2 card if present.
– Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
– Press **Validate**.

Is code 08D displayed?

Yes **No**

008

– Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
– Press **Validate**.
– Remove the cable attached to the MAC/MAC2 card (01A-X0-H1) if present.

Exchange the MAC/MAC2 card. Install the cable to the MAC/MAC2 card if present. Go to Step 015 on page 2-2.

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009

– Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
– Press **Validate**.
– Replug the DFA card (01A-X0-F1).
– Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
– Press **Validate**.

Is code 093 displayed?

Yes **No**

010

– Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
– Press **Validate**.

Exchange the DFA card (01A-X0-F1). Go to Step 015.

011

– Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
– Press **Validate**.

Exchange the MCA card (01A-X0-G1). Go to Step 015.

012

– Check MOSS board voltage coming from the PS type 2.
– Refer to Figure 2-1.

Are all the voltages within tolerance?

Yes **No**

013

Check the voltage distribution for the MOSS board. If the output of PS type 2 is not correct, exchange the power supply.

014

Exchange FRU group 1118 on page 1-37. Go to page 1-35.

015

– Reinstall any remaining unplugged cards.
– Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
– Press **Validate**.

Is an error detected during IML?

Yes **No**

016

Go to "CE Leaving Procedure" on page 4-180.

017

(Step **017** continues)

017 (continued)

Is panel code 001 displayed?

Yes **No**

018

Go to "3745 Control Panel Codes" on page 1-19 and follow the procedure given in the table.

019

Go to "Contacting Support" on page B-2.

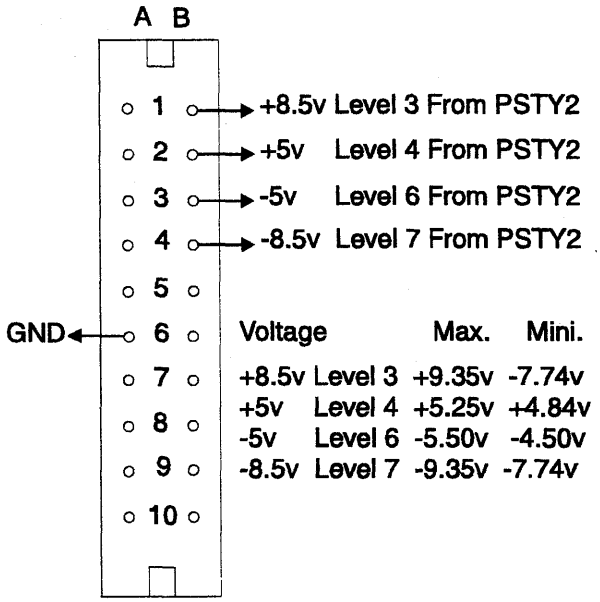


Figure 2-1. MOSS Voltage Test Points

MAP 3110: MOSS Control Panel Codes 053 to 059

Symptom Explanation	Conditions That Could Cause This Symptom
053 to 059 displayed on the control panel	• PLC card failing • MPC or MCA or MAC/MAC2 or DFA card failing

This MAP should be used only if the problem can be reproduced.

If the problem is intermittent, locate the FRU group to be exchanged in the following table. Go to "Using the MIP FRU Group Table" on page 1-35.

Hex Code	FRU Group
053-054	1424
055	1100
056	1101
057	1424
058	1021
059	1006

001

- Press **Service** on the control panel until **1** is displayed in the service window.
- Press **Validate**.
- Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
- Press **Validate**.
- **Attention: Use the ESD kit and procedures.**
- Refer to Figure 4-8 on page 4-12 or Figure 4-9 on page 4-13.
- Unplug the MCA card (01A-X0-G1) and DFA card (01A-X0-F1).
- **Attention: The following sequence should always be observed.**
- Remove the cable attached to the MAC/MAC2 card (01A-X0-H1) if present.
- Unplug the MAC/MAC2 card (01A-X0-H1).
- Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
- Press **Validate**.

Is code 08C displayed?

Yes **No**

002

- Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
- Press **Validate**.
- Replug all cards and reinstall the cable to the MAC/MAC2 card if present.
- Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
- Press **Validate**.

Exchange FRU group 1118 on page 1-37. Go to page 1-35.

003

- Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
- Press **Validate**.
- Replug the MAC/MAC2 card (01A-X0-H1).
- Install the cable to the MAC/MAC2 card (01A-X0-H1) if present.
- Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
- Press **Validate**.

Is code 08D displayed?

Yes **No**

004

- Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
- Press **Validate**.
- Remove the cable attached to the MAC/MAC2 card (01A-X0-H1) if present.

Exchange the MAC/MAC2 card. Install the cable to the MAC/MAC2 card if present. Go to Step 008 on page 2-4.

005

- Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
- Press **Validate**.
- Replug the DFA card (01A-X0-F1).
- Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
- Press **Validate**.

Is code 093 displayed?

Yes **No**

006

- Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
- Press **Validate**.

Exchange the DFA card. Go to Step 008 on page 2-4.

007

- Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
- Press **Validate**.

Exchange the MCA card (01A-X0-G1). Continue with Step 008 on page 2-4.

008

- Reinstall any remaining unplugged cards.
- Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
- Press **Validate**.

Is an error detected during IML?

Yes **No**

009

Go to "CE Leaving Procedure" on page 4-180.

010

Is the panel code displaying the same code as when you started this MAP?

Yes **No**

011

Go to "3745 Control Panel Codes" on page 1-19 and follow the procedure given in the table.

012

Go to "Contacting Support" on page B-2.

MAP 3120: MOSS Control Panel Codes 067 to 079 or 08B to 092

Symptom Explanation	Conditions That Could Cause This Symptom
067 to 079 or 08B to 092 displayed on the control panel	• MPC or MCA or MAC/MAC2 or DFA card failing

This MAP should be used only if the problem can be reproduced.

If the problem is intermittent, locate the FRU group to be exchanged in the following table. Go to "Using the MIP FRU Group Table" on page 1-35.

Hex Code	FRU Group
067-06A	1006 or 1113
06B-06D	1021
06E-079	1424
08B	1102
08C	1253
08D	1103
08E-092	1055

001

– Press **Service** on the control panel until **1** is displayed In the service window.
– Press **Validate**.
– Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
– Press **Validate**.
– **Attention: Use the ESD kit and procedures.**
– Refer to Figure 4-8 on page 4-12 or Figure 4-9 on page 4-13.
– Unplug the MCA card (01A-X0-G1).
– Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
– Press **Validate**.

Is code 093 displayed?

Yes **No**

002

Go to Step 004.

003

– Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
– Press **Validate**.

Exchange the MCA card (01A-X0-G1). Go to Step 010.

004

– Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
– Press **Validate**.
– **Attention: The following sequence should always be observed.**

(Step **004** continues)

004 (continued)

– Remove the cable attached to the MAC/MAC2 card (01A-X0-H1) if present.
– Unplug the MAC/MAC2 card.
– Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
– Press **Validate**.

Is code 08E displayed?

Yes **No**

005

Go to Step 007.

006

– Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
– Press **Validate**.

Exchange the MAC/MAC2 card (01A-X0-H1). Go to Step 010.

007

– Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
– Press **Validate**.
– Unplug the DFA card (01A-X0-F1).
– Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
– Press **Validate**.

Is code 08C displayed?

Yes **No**

008

– Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
– Press **Validate**.

Exchange the MPC card (01A-X0-D1). Go to Step 010.

009

– Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
– Press **Validate**.

Exchange the DFA card (01A-X0-F1). Continue with Step 010.

010

– Reinstall any remaining unplugged cards and the cable to the MAC/MAC2 card, if present.

(Step **010** continues)

010 (continued)
- Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
- Press **Validate**.

Is an error detected during IML?

Yes **No**

011

Go to "CE Leaving Procedure" on page 4-180.

012

Is the panel code displaying the same code as when you started this MAP?

Yes **No**

013

Go to "3745 Control Panel Codes" on page 1-19 and follow the procedure given by the table.

014

Go to "Contacting Support" on page B-2.

MAP 3130: 3745 Undefined Panel Message

Symptom Explanation	Conditions That Could Cause This Symptom
The message on the control panel is undefined	• Loose cables/cards • PLC card failing • Control panel failing • MPC card failing • Microcode update

001

You may have loose cables and or cards.

If the nature of the fault does not allow control panel actions, exchange FRU group 1116 on page 1-37. Go to page 1-35.

- Press **Service** on the control panel until **1** is displayed on the service window.
- Press **Validate**.
- Press **Function** on the control panel until the **MOSS Power Off** function **B** is displayed.
- Press **Validate**.
- Locate the **Maintenance SW1** on PS type 6. See Figure 2-2 on page 2-8. Pull the lever outwards into the **test position**. Locate the **Maintenance SW2** on PS type 6 and switch it to the **T1** position.
- **Attention: Use the ESD kit and procedures.**
- Refer to Figure 4-8 on page 4-12 or Figure 4-9 on page 4-13.
- Carefully check and reseat any loose cables or cards, especially the MPC card (01A-X0-D1), PLC card (01A-X0-A1), and MSC card (01A-X0-C1).
- Return the **Maintenance SW2** to the T2 position.

Are the Power Control and Service Mode indicators displayed on the control panel?

Yes **No**

002

- The initial power checkouts on the PLC card did not complete successfully.

Exchange FRU group 1116 on page 1-37. Go to page 1-35.

003

- Push the **Maintenance SW1** to the normal position.
- Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
- Press **Validate**.
- When the IML is complete, retry the operation that displayed the unexpected hex display code.

(Step **003** continues)

003 (continued)

Is the unexpected hex display code problem resolved?

Yes **No**

004

Referring to "How to Run the 3745 Panel Test" on page 3-22, run diagnostic. If an FRU group is called, go to "Using the MIP FRU Group Table" on page 1-35.
If no errors are detected, go to Step 008.

005

Did the unexpected hex code occur while you were using the MIP for another reason?

Yes **No**

006

Go to Step 012.

007

Restart with Chapter 1, "START: How to Begin Troubleshooting" on page 1-1.

008

- Consult the Support Center for any microcode update which may not be reflected in the MIP.

Do you need more information or help from your support center?

Yes **No**

009

Exchange FRU group 1011 on page 1-36. Go to page 1-35.

010

- Follows the instruction as directed.

Is the problem solved?

Yes **No**

011

Exchange FRU group 1011 on page 1-36. Go to page 1-35.

012

(Step **012** continues)

012 (continued)
– In the CE leaving procedure you will be instructed to recreate the power configuration, set the time of day clock, and set any required power ON time.

Go to page "CE Leaving Procedure" on page 4-180.

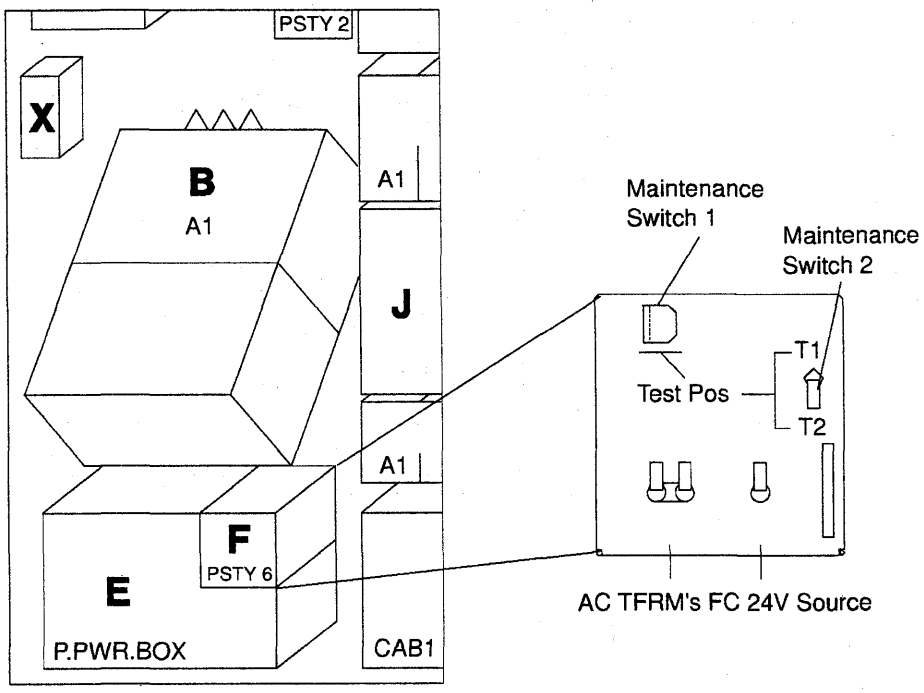


Figure 2-2. PS Type 6 SW1 Actuator

MAP 3140: 3745 Console Link Procedure

The display code that sent you to this procedure defines the connector or cable referred to in this procedure.

- 1A0, 1A1, or 1A2 local
- 1A3, 1A4, or 1A5 remote
- 1A6, 1A7, or 1A8 RSF.

001

– A console wrap plug should be installed on the 3745 console connector, (see Figure 2-3). , or at the far end of the cable which should be disconnected from the relevant console/modem.
– **Important:** The cable going to the alternate console must be tested on the **Local** output with the test option **8**.

Is there a console switch (7427) between the 3745 and the console/modem?
Yes **No**

002

There is no console switch.
Is a console wrap plug installed?
Yes **No**

003

Install a console wrap plug. Go to Step 4 on page 3-23 of "How to Run the Console Link Test on 3745 Models 210-610."

004

Is the console wrap plug installed on the cable?
Yes **No**

005

The console wrap plug is installed on the 3745 console connector.

Exchange FRU group 1113 on page 1-37. Go to page 1-35.
– or –
The internal cable between the MOSS board and the tailgate may be faulty. Refer to Figure 4-8 on page 4-12 for the cable location on the MOSS board. (01A-W0B1, 01A-W0C1, or 01A-W0C2 according to the console tested).
– or –
The console wrap plug may be faulty.

006

(Step **006** continues)

006 (continued)

– Install a console wrap plug on the 3745 console connector (see Figure 2-3). Use wrap plug PN 6398697. Refer to Step 6 on page 3-23 to repeat the test. Return here.

Is the code displayed the same as the one with which you entered this procedure?
Yes **No**

007

Is the code displayed 1B2, 1B4, or 1B6?
Yes **No**

008

Go to "3745 Control Panel Codes" on page 1-19 and follow the instructions.

009

The cable from the 3745 is faulty. Repair or exchange the cable, and verify the repair by re-running the console link test with the wrap plug installed on the cable.

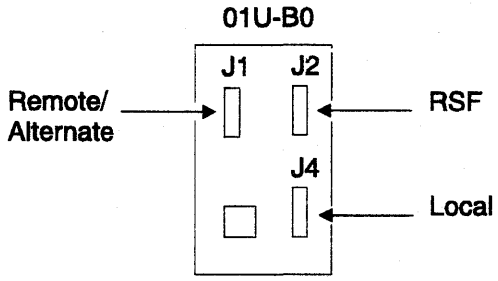


Figure 2-3. Console Output

010

Exchange FRU group 1113 on page 1-37. Go to page 1-35.
– or –
The internal cable between the MOSS board and the tailgate may be faulty. Refer to Figure 4-8 on page 4-12 for the cable location on the MOSS board. (01A-W0B1, 01A-W0C1, or 01A-W0C2 according to the console tested).
– or –
The console wrap plug may be faulty.

011

(Step **011** continues)

011 (continued)
A console switch (7427) is present between the 3745 and the console/modem.
Is a console wrap plug installed?
Yes **No**

012
Install a console wrap plug. Go to Step 4 on page 3-23 of "How to Run the Console Link Test on 3745 Models 210-610."

013
Is the console wrap plug installed on the cable going from the console switch (7427) to the console/modem?
Yes **No**

014
Is the console wrap plug installed on the cable going from the 3745 to the console switch (7427)?
Yes **No**

015
The console wrap plug is installed on the 3745 console connector.

Exchange FRU group 1113 on page 1-37. Go to page 1-35.
– or –
The internal cable between the MOSS board and the tailgate may be faulty. Refer to Figure 4-8 on page 4-12 for the cable location on the MOSS board. (01A-W0B1, 01A-W0C1, or 01A-W0C2 according to the console tested).
– or –
The console wrap plug may be faulty.

016
The console wrap plug is installed on the cable going from the 3745 to the console switch (7427).

– Note the code displayed.
– Install a console wrap plug on the 3745 console connector (see Figure 2-3 on page 2-9). Use wrap plug PN 6398697. Refer to Step 6 on page 3-23 to repeat the test. Return here.

Is the code displayed the same as the one with which you entered this procedure?
Yes **No**

017
(Step **017** continues)

017 (continued)
Is the code displayed 1B2, 1B4, or 1B6?
Yes **No**

018
Go to "3745 Control Panel Codes" on page 1-19 and follow the instructions.

019
The cable from the 3745 to the console switch (7427) is faulty. Repair or exchange the cable, and verify the repair by re-running the console link test with the wrap plug installed on the cable.

020
Exchange FRU group 1113 on page 1-37. Go to page 1-35.
– or –
The internal cable between the MOSS board and the tailgate may be faulty. Refer to Figure 4-8 on page 4-12 for the cable location on the MOSS board. (01A-W0B1, 01A-W0C1, or 01A-W0C2 according to the console tested).
– or –
The console wrap plug may be faulty.

021
The console wrap plug is installed on the cable going from the console switch (7427) to the console/modem.

– Note the code displayed.
– Install a console wrap plug on the cable going from the 3745 to the console switch (7427). Use wrap plug PN 2667737. Refer to step 6 on page 3-23 to repeat the test, then return here.

Is the code displayed the same as the one with which you entered this procedure?
Yes **No**

022
Is the code displayed 1B2, or 1B4, or 1B6?
Yes **No**

023
Go to "3745 Control Panel Codes" on page 1-19 and follow the instructions.

024
The cable from the console switch (7427) to the console/modem may be faulty. Repair or exchange the cable, and verify the repair by

re-running the console link test with the wrap plug installed on this cable.
– or –
The console switch (7427) may be faulty.

025

– Install a console wrap plug on the 3745 console connector (see Figure 2-3 on page 2-9). Use wrap plug PN 6398697. Refer to step 6 on page 3-23 to repeat the test. Return here.

Is the code displayed the same as the one with which you entered this procedure?

Yes **No**

026

Is the code displayed 1B2, 1B4, or 1B6?

Yes **No**

027

Go to "3745 Control Panel Codes" on page 1-19 and follow the instructions.

028

The cable from the 3745 is faulty. Repair or exchange the cable, and verify the repair by re-running the console link test with the wrap plug installed on the cable.

029

Exchange FRU group 1113 on page 1-37. Go to page 1-35.
– or –
The internal cable between the MOSS board and the tailgate may be faulty. Refer to Figure 4-8 on page 4-12 for the cable location on the MOSS board. (01A-W0B1, 01A-W0C1, or 01A-W0C2 according to the console tested).
– or –
The console wrap plug may be faulty.

Line Adapter MAPs

MAP 3500: 3745 Activate/Deactivate Line Problem or Line Errors on the TSS

Symptom Explanation	Conditions That Could Cause This Symptom
You are unable to activate or deactivate a line, or errors occur while lines are running.	• See below

001

– Ensure that the customer has completed his problem determinatin guide procedure. If not done, follow this problem determination procedure yourself before continuing this MAP.

Does the problem still exist?
Yes **No**

002

– Problem is solved.

003

– Using the 3745 console, determine the number of the line adapter driving the suspected line as follows:

1. From menu 3, enter **TSS(TSS Services)** in the selection area.
2. From the TSS Services screen, enter **1 (Select/Release)** in the selection area.
3. On the displayed **Select/Release** screen, enter the address of the suspected line.

   The line adapter number will be displayed in the machine status area (MSA) and in the selection area.
4. Enter **REL** in the input area to release the line adapter

Is the line adapter available for diagnostics?
Yes **No**

004

Go to Step 009.

005

Go to "Disabling Procedure 0040: Preparing a TSS, HPTSS, or ESS for Maintenance" on page 1-101 and follow the procedure until you have run the TSS diagnostics for this line adapter (scanner). Use the procedure given for suspected adapters only. Return here.
(Step **005** continues)

005 (continued)

Did the diagnostics run error free?
Yes **No**

006

Diagnostics have detected an error. With the diagnostic reference code, go to "Diagnostic Result Analysis" on page 3-48.

007

– Go to "Requirements List 0090: For LIC Types 1, 3, 4, 5, and 6" on page 1-74 Step 011. Follow the procedure until you have run the **RC01**(for LIC type 1-4) or **RH59** (for LIC type 5,6) routine of the TSS diagnostics with the appropriate wrap plug/cable installed. Return here.

Did the diagnostics run error free?
Yes **No**

008

Diagnostics have detected an error. With the diagnostic reference code, go to "Diagnostic Result Analysis" on page 3-48.

009

The problem has not been resolved. Collect any related RECMS (MDR) records and contact your support structure for assistance. Refer to "Contacting Support" on page B-2.

MAP 3510: Unable to Load/Dump Control Program in Link-Attached 3745

Symptom Explanation	Conditions That Could Cause This Symptom
You are unable to load or dump the control program for a link-attached 3745.	• See below

001

The following question is asked to determine if you are working on a remote 3745 (that is trying to receive a control program load), or at a local channel-attached 3745 (that is transmitting the control program to a remote 3745).

Are you at the LOCAL 3745 site?

Yes **No**

002

Go to Step 005.

003

Is the 3745 available for diagnostics?

Yes **No**

004

Go to Step 009.

005

– Determine the line adapter number and location of the suspected line.

– Run TSS diagnostics for this line adapter. Refer to "How to Run Internal Function Tests" on page 3-30, Return here if no error is detected.

– If the LIC is type 1 or 4, remove the modem cable on the failing port and install the wrap plug (PN 65X8927). Run the **RC01** section of the TSS diagnostics for this line adapter. Return here if no error is detected. Remove the wrap plug. Reinstall the modem cable. Ask the customer to use the modem's self-test and end-to-end tests to verify correct modem operation (if available).

– If the LIC is type 3, remove the modem cable from the failing port and from the other port. Install the wrap cable (PN 65X8928). Run the **RC01** section of the TSS diagnostics for this line adapter. If no error is detected, reverse the wrap cable end to end and rerun the test. If no error is detected, remove the wrap cable. Reinstall the modem cables. Ask the customer to use the modem's self-test and end-to-end tests to verify correct modem operation (if available).

– If the LIC is type 5 or 6, unplug the line cable at the customer wall frame. Remove the line cable on the failing port and install the wrap plug (PN 11F4815). Run the **RH59** section of the TSS diagnostics for this line adapter again. Return here if no error is detected. Remove the wrap plug. Reinstall the line cable, Ask the customer to run the **LLAP** diagnostics using the PKD and refer to the "3745 Problem Determination Guide" to verify correct operation.

Are you at the local 3745 site?

Yes **No**

006

– Verify (with the customer) that the IPL port matches the control program generation for the local machine.

– Use the line interface display (LID) while attempting to load or dump the control program. Refer to the "Advanced Operation Guide". Return here if no error is detected.

Has the problem been found?

Yes **No**

007

You have exhausted the *Maintenance Information Procedure* portion of the 3745 Maintenance Package. Contact your 3745 support structure for assistance in resolving this problem. Refer to "Contacting Support" on page B-2.

008

Go to "CE Leaving Procedure" on page 4-180.

009

– Run the wrap test procedure . Return here if no error is detected, refer to the "Advanced Operation Guide".

(Step **009** continues)

009 (continued)
– Use the line interface display (LID) while attempting to load or dump the control program. Refer to the "Advanced Operation Guide". Return here if no error is detected.

– Ask the customer to verify that his IPL port definition is correct (refer to the Control Program generation listing).

If the problem is solved, go to "CE Leaving Procedure" on page 4-180.
– or –
If the problem is not solved, collect any RECMS (MDR) records related to the problem and contact your support structure for assistance. Refer to "Contacting Support" on page B-2.

MAP 3520: 3745 Activate/Deactivate Ring Problem or Ring Errors on the TRSS

Symptom Explanation	Conditions That Could Cause This Symptom
You are unable to activate or deactivate a ring, or errors are occurring while rings are running.	• See below

001

– Ensure that the customer has completed his problem determination guide procedure. If not, follow this problem determination procedure yourself before continuing this MAP.

Does the problem still exist?
Yes **No**

002

– Problem is solved.

003

– Using the 3745 console, determine the number of the TRA driving the suspected ring as follows:

1. From menu 3, enter **TRS** (**TRSS Services**) in the selection area.
2. From the **TRSS Services** screen enter **1** (**select**).

The TRA numbers will be displayed with the ring addresses connected to them.

Is the TRA available for diagnostics?
Yes **No**

004

Go to Step 007.

005

– Using the 3745 console, continue the preceding procedure to disconnect the suspected TRA from the NCP as follows:

1. In the input area; enter the number of the suspected adapter.
2. Enter **2**(**Connect/Disc**) in the selection area.
3. On the **Connect/Disc** screen, enter **DS** to disconnect the TRA.

– Run the concurrent TRSS diagnostics using the **suspected adapter** number. If necessary, refer to "How to Run Internal Function Tests" on page 3-30,
Return here.
(Step **005** continues)

005 (continued)

Did the diagnostics run error free?
Yes **No**

006

Diagnostics have detected an error. With the diagnostic reference code go to "Diagnostic Result Analysis" on page 3-48.

007

The problem has not been resolved. Collect any related RECMS (MDR) records and contact your support structure for assistance. Refer to "Contacting Support" on page B-2.

MAP 3530: 3745 Activate/Deactivate Line Problems or Line Errors on the HPTSS

Symptom Explanation	Conditions That Could Cause This Symptom
You are unable to activate or deactivate a line, or errors occur while lines are running.	• See below

001

– Ensure that the customer has completed his problem determination guide procedure. If not done, follow this problem determination procedure yourself before continuing this MAP.

Does the problem still exist?
Yes **No**

002

– Problem is solved.

003

– Using the 3745 console, determine the number of the line adapter driving the suspected Line as follows:

1. From menu 3, enter **TSS** (**TSS Services**) in the selection area.
2. From the TSS Services screen, enter **1** (**Select/Release**) in the selection area.
3. On the displayed Select/Release screen, enter the address of the suspected line.

   The line adapter number will be displayed on the machine status area (MSA) and in the selection area.
4. Enter **REL** in the input area to release the line adapter

Is the line adapter available for diagnostics?
Yes **No**

004

Go to Step 009.

005

Go to "Disabling Procedure 0040: Preparing a TSS, HPTSS, or ESS for Maintenance" on page 1-101. Follow the procedure until you have run the HPTSS diagnostics for this line adapter. Use the procedure given for suspected adapter only. Return here.
(Step **005** continues)

005 (continued)

Did the diagnostics run error free?
Yes **No**

006

Diagnostics have detected an error. With the diagnostic reference code, go to "Diagnostic Result Analysis" on page 3-48.

007

– Replace the modem cable on the failing port with the wrap plug PN 58X9349 (for V.35) or PN 58X9354 (for X.21).

– Update the CDF and run the **VI** and **VK** (for V.35) or **VJ** and **VK** (for X.21) routines of the HPTSS diagnostics. Return here.

Did the diagnostics run error free?
Yes **No**

008

Diagnostics have detected an error. With the diagnostic reference code, go to "Diagnostic Result Analysis" on page 3-48.

009

The problem has not been resolved. Collect any related RECMS (MDR) records and contact your support structure for assistance. Refer to "Contacting Support" on page B-2.

MAP 3540: 3745 Activate/Deactivate Line Problem or Line Errors on ESS

Symptom Explanation	Conditions That Could Cause This Symptom
You are unable to activate or deactivate a line, or errors occur while lines are running.	• See below

001

– Ensure that the customer has completed his problem determination guide procedure If not done, follow this problem deytermination procedure yourself before continuing this MAP.

Does the problem still exist?

Yes **No**

002

– Problem is solved.

003

– Using the 3745 console, determine the number of the line adapter driving the suspected Line as follows:

1. From menu 3, enter **TSS** (**TSS Services**) in the selection area.
2. From the TSS Services screen, entering **1** (**Select/Release**) in the selection area.
3. On the displayed Select/Release screen enter the address of the suspected line.

   The line adapter number will be displayed on the machine status area (MSA) and in the selection area.
4. Enter **REL** in the input area to release the line adapter

Is the line adapter available for diagnostics?

Yes **No**

004

Go to Step 013 on page 2-18.

005

Is the green lamp lighting on the related tailgate (refer to Figure 4-32 on page 4-50, Figure 4-33 on page 4-51, or Figure 4-34)?

Yes **No**

006

Go to Step 014 on page 2-18.

007

Go to "Disabling Procedure 0040: Preparing a TSS, HPTSS, or ESS for Maintenance" on page 1-101 and follow the procedure until you have run the ESS diagnostics for this line adapter. Use the procedure given for suspected adapters only. Return here.

Did the diagnostics run error free?

Yes **No**

008

Diagnostics have detected an error. With the diagnostic reference code go to "Diagnostic Result Analysis" on page 3-48.

009

– Run the wrap test routine:

- UF03 if the failing port is J1.
- UF02 if the failing port is J2.

Return here.

Did the diagnostic run error free?

Yes **No**

010

Diagnostics have detected an error. With the diagnostic reference code, go to "Diagnostic Result Analysis" on page 3-48.

011

– Replace the external cable on the failing port with the wrap plug PN 70X8670.

– Run the wrap test routine:

- UF03 if the failing port is J1.
- UF02 if the failing port is J2.

Return here.

Did the diagnostics run error free?

Yes **No**

012

Diagnostics have detected an error. With the diagnostic reference code, go to "Diagnostic Result Analysis" on page 3-48.

013

The problem has not been resolved. Collect any related RECMS (MDR) records and contact your support structure for assistance. Refer to "Contacting Support" on page B-2.

014

– Unplug the AUI cable and tranceiver.

Is the green lamp lighting on the related tailgate (refer to Figure 4-32 on page 4-50, Figure 4-33 on page 4-51, or Figure 4-34)?

Yes **No**

015

Exchange the EAC card and ETG.

016

Exchange the AUI cable and tranceiver.

Channel Adapter MAPs

MAP 3700: 3745 CA Isolation Procedure

You are here for a **channel reported problem** at the host console or you are unable to load/dump the control program for a channel-attached 3745.

Symptom Explanation	Conditions That Could Cause This Symptom
Condition code 3 (CC3) Interface control check Channel data check CPU hang Load/dump CP problem CA enable not possible	• Channel disabled • Channel cable • CADR card • CAL card • PS type 3 • External conditions

If you have an intermittent problem, consider that any of the conditions given in the above table can cause the problem.

If the 3745 is stopped in IPL phase 4 and **U** is displayed in the MSA area:

1. Check the status of the power supply feeding this adapter.
2. Exchange the CAL card.

001

Is an interface control check or channel data check reported?

Yes **No**

002

On the 3745 console, select the CID function and check at the E/D request field for the involved channel adapter.

Is E displayed?

Yes **No**

003

Enter **E** in CHANGE E/D REQUEST ==> area. Press **SEND/ENTER**, and reinitiate the operation.

004

Go to Step 006.

005

Go to Step 021 on page 2-20.

006

– Check the physical path (channel switch, host channel, and channel cables).

(Step **006** continues)

006 (continued)

Is everything OK?

Yes **No**

007

Correct the problem and reinitiate the unit.

008

– Call the CAS function with option **1** (display CA statuses).
– Check at the **Internal Status** field.

Is another status than INIT displayed?

Yes **No**

009

Go to Step 016 on page 2-20.

010

Is OFF status displayed?

Yes **No**

011

Is ERRTPS displayed?

Yes **No**

012

Go to Step 019 on page 2-20.

013

– Using the 3745 console, turn the affected power supply ON as follows:

1. Type **POS** on any displayed screen selection area. Press **SEND/ENTER**.
2. In the power services menu, select the appropriate service frame and press **SEND/ENTER**.
3. Type **uxx** and press **SEND/ENTER**. (xx for PS id):

(Step **013** continues)

013 (continued)

- CA01 CA02 PS id 04
- CA03 CA04 PS id 05
- CA05 CA06 PS id 06
- CA07 CA08 PS id 07
- CA09 CA10 PS id 14
- CA11 CA12 PS id 15
- CA13 CA14 PS id 16
- CA15 CA16 PS id 17

Is the PS status up?
Yes **No**

014
Exchange the power supply.

015
Reinitiate the operation.

016
– Refer to the "3745 Service Functions" and check the CDF for a correct configuration.
Is the CDF OK?
Yes **No**

017
Correct the CDF and reinitiate the operation.

018
Go to Step 021.

019
Is ERRXXX or * displayed?**
Yes **No**

020
For any other status displayed see the "3745 Service Functions" and contact your support structure if the problem cannot be corrected.

021
– Ask the customer to disable the channel adapter.
Is the NCP loaded?
Yes **No**

022
Referring to '"How to Run Internal Function Tests" on page 3-30'run diagnostics on the channel adapter.
Did the diagnostics run error free?
Yes **No**

023
(Step **023** continues)

023 (continued)
With the diagnostic reference code, go to "Diagnostic Result Analysis" on page 3-48.

024
–

- Ask the customer to put the channel offline from the host.
- Remlove the interface cables from the 3745.

Run routines LG02, LI03, LI04, LJ03, LK02 and LO01 which need manual intervention. Refer to "How to Run Internal Function Tests" on page 3-30 and "How to Run the Channel Wrap Test" on page 3-47.
Did routines run error free?
Yes **No**

025
With the diagnostic reference code, go to "Diagnostic Result Analysis" on page 3-48.

026
– Reconnect the interface cables.
If you are here for an interface control check, try to determine if the channel works properly from the host when you set the **select out bypass switch** to the **bypass** position.
Is the channel working properly?
Yes **No**

027
You probably have an external problem. Check the interface cables and the other control units, if any.

028
Exchange the CADR first, then the CAL cards. Go to "Exchange Precautions" on page 4-1.

029
– At the 3745 console, display Menu 3 and enter **CAS** for channel adapter services.
– Enter **4** for concurrent mode commands.
– Enter the channel adapter number corresponding to the suspected CA, (in the CA number ===> field). Enter **SHT** for shutdown in the command ===> field.
– Repeat the same procedure for the associated CA (belonging to the same PS), if any.
– Go to Step 022.

3745 Power MAPs

Power MAP 3900: 3745 Power Control Subsystem Problems

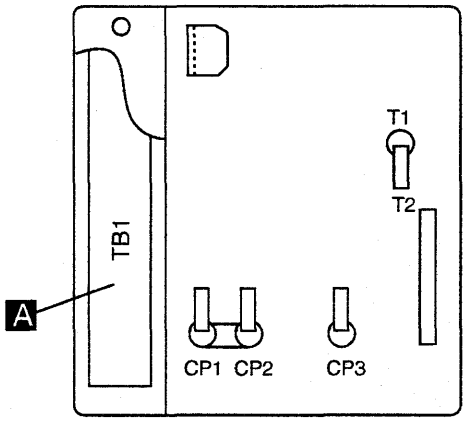
Symptom Explanation	Conditions That Could Cause This Symptom
Panel display or power indicator not lit. Machine will not power ON.	• UEPO • CB1 or any CP tripped • PS type 6 • Control panel, PLC card or PAC card.

Attention

Power may be present when nothing is displayed on the control panel .

001

– Check at the PS type 6. Refer to the figure bellow. Check that the maintenance switch 1 is pushed in and the maintenance switch 2 is in T2 position (normal positions).



– Check CP1 and CP2.
Is only one CP in the ON position?
Yes **No**

002
Continue with Step 004.

003
The PSTY6 is a dual power supply. Each CP1 and CP2 feed one side of the power supply. If one side is failing, the corresponding CP may trip. Try only to reset the CP if the 3745 is not running. A PSTY6 with a tripping CP must be exchanged as a scheduled action.

004
– Check at the control panel.
(Step **004** continues)

004 (continued)
Are all indicators OFF?
Yes **No**

005
Go to Step 024 on page 2-23.

006
Are both CPs in the OFF position?
Yes **No**

007
Go to Step 011.

008
– Reset the CPs and try to power ON again.
Is the problem fixed?
Yes **No**

009
– There is another problem or the CPs have tripped again. If so:
Exchange FRU group 3610 on page 1-37.
Go to "Using the MIP FRU Group Table" on page 1-35.

010
Go to "CE Leaving Procedure" on page 4-180.

011
– Check the position of CB1 on the primary power box. See Figure 2-6 on page 2-25.
Is CB1 in the ON position?
Yes **No**

012
– Switch CB1 to the ON position.
– Try to power ON again.
Is the 3745 powering ON now?
Yes **No**

013
Check if the machine is correctly wired for the customers input voltage

or if you have a short circuit in the primary control box.

014

Go to "CE Leaving Procedure" on page 4-180.

015

– Check the ac main voltage as follows:

- Remove the three screws maintaining the cover on the PSTY6.
- Remove the cover.
- Measure the AC input on TB01 pins 1, 6, 10, and 14.

For more details on the location and wiring refer to YZ076 and YZ576.

Is the voltage correct?

Yes **No**

016

The customer supply is defective.

017

– Check pins 14 and 15 of the PSTY6 test points for voltages of +28V (+25V to +31V) and +5V (+4.92V to +5.25V), respectively. Refer to Figure 2-4.

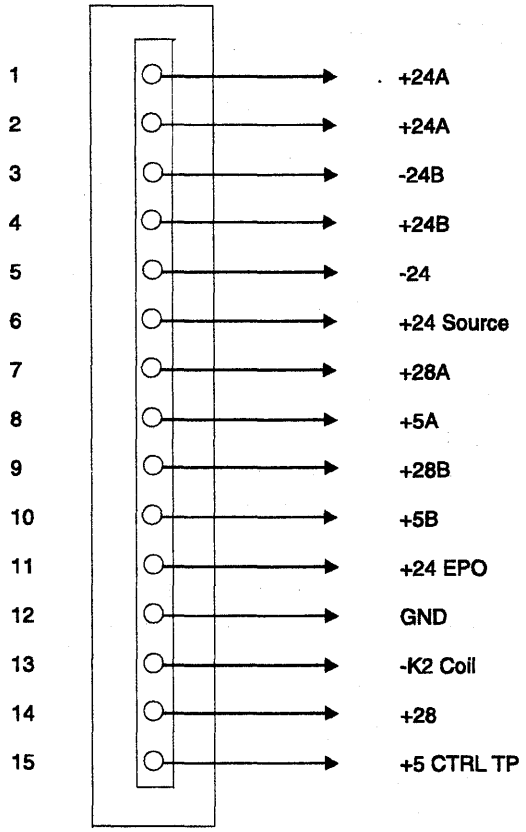


Figure 2-4. PSTY6 Test Points.

Are one or both voltages missing?

Yes **No**

018

Are one or both voltages out of tolerances?

Yes **No**

019

Exchange FRU group 4077 on page 1-38. Go to "Using the MIP FRU Group Table" on page 1-35.

020

Exchange FRU group 3610 on page 1-37. Go to "Using the MIP FRU Group Table" on page 1-35.

021

– Remove the connector W0-D5 from the MOSS board. Refer to Figure 4-8 on page 4-12 or Figure 4-9 on page 4-13.
– Switch the main CB1 OFF for at least 15 seconds and then ON.
– Check voltages for +28 V and +5 V.

(Step **021** continues)

021 (continued)
Are the voltages correct?
Yes **No**

022
Exchange FRU group 3610 on page 1-37. Go to "Using the MIP FRU Group Table" on page 1-35.

023
A short circuit is present on either the control panel, PLC card, or PAC card.
– Try the same procedure with the connector plugged in normal position and remove one FRU at a time to isolate the defective component.

024
.
– Look at the power control window and check the mode validity.
Is the power mode in accordance with the customer requirements?
Yes **No**

025
Correct the power mode and try again.

026
Is the power mode in local 3 displayed in the power window?
Yes **No**

027
– Press **Power Control** until the correct mode is displayed in the power control window. Press **Validate**.
Continue with Step 028.

028
.
– Press **Power ON**.
Is the 3745 failing to Power ON?
Yes **No**

029
– There may be an intermittent problem. Before continuing perform another Power OFF/ON to check that the problem still exists in that mode.
If it does not, go to "Power MAP 3930: 3745 Power ON Problem in Host Mode" on page 2-34.

030
(Step **030** continues)

030 (continued)
Are only the power mode and service mode indicators ON?
Yes **No**

031
Go to Step 041 on page 2-24

032
– Check for the presence of 24 V on the UEPO Switch (see Figure 2-5 on page 2-24). Use a CE meter and check for 24 V between the ground and the two wires connected to:
- Positions 5 and 6 of the switch on 3745 Models 210-610
- Positions A2 and A3 of the switch on 3745 Models 21A-61A.

Is 24 V missing on both pins?
Yes **No**

033
Only one pin at 24 V?
Yes **No**

034
Exchange FRU group 1116 on page 1-37. Go to "Using the MIP FRU Group Table" on page 1-35.

035
.
– Put the UEPO switch in the **I** position as follows (See Figure 2-5 on page 2-24):
- Loosen the two screws.
- Move the metal slider all the way to the left.
- Set the switch to the **I** position.
- Move the metal slider to the right.
- Secure the screws again.

Retry the operation that brought you here.

036
– Check the position of the CP3 on PS type 6.
Is the CP3 ON?
Yes **No**

037
– Put the CP3 on PS type 6 in the ON position and try to power ON again.
(Step **037** continues)

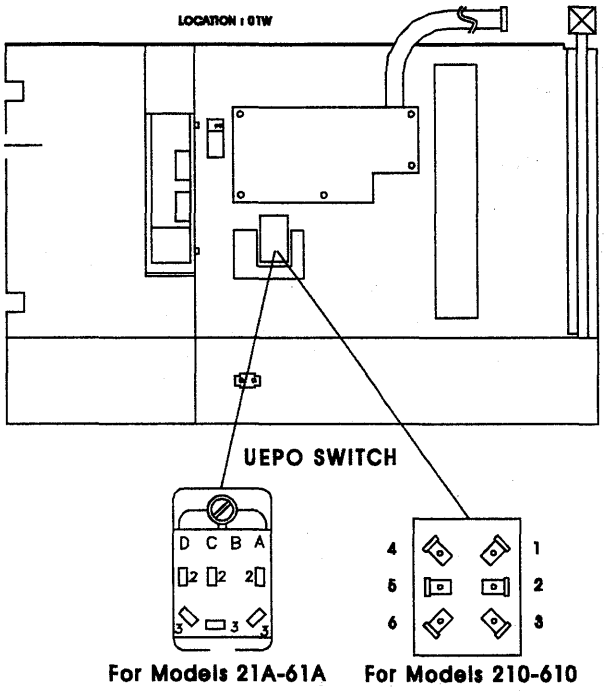


Figure 2-5. UEPO Switch

037 (continued)
Is the 3745 powering ON now?
Yes **No**

038

– There is another problem. If the CP3 trips again, the failure seems to be in the load.
Go to "Contacting Support" on page B-2.

039

Go to "CE Leaving Procedure" on page 4-180.

040

Exchange FRU group 3610 on page 1-37. Go to "Using the MIP FRU Group Table" on page 1-35.

041

Normally when the power On Indicator is lit, the K2 relay in the primary control box is closed and the ac voltages are distributed to the rest of the machine.
Nevertheless, in case of a severe under voltage of the ac mains, the power ON command may be memorized but not fully executed.
The power On lamp is turned ON but the K2 remains OFF.
Consequently, all power supplies and blowers remain OFF.
(Step **041** continues)

041 (continued)
Measure 24 V on pin 6 of PS type 6 as shown in Figure 2-4 on page 2-22.
Is the voltage on pin 6 between 16.6 V and 31.2 V?
Yes **No**

042

– Check the ac main voltage as follows:

- Remove the three screws maintaining the cover on the PSTY6.
- Remove the cover.
- Measure the AC input on TB01 pins 1, 6, 10, and 14.

For more details on the location and wiring refer to YZ076 and YZ576.
If the input voltage is correct, exchange FRU group 3610 on page 1-37. Go to "Using the MIP FRU Group Table" on page 1-35.

043

Are the fans running?
Yes **No**

044

Exchange FRU group 6383 on page 1-38. Go to "Using the MIP FRU Group Table" on page 1-35.

045

Does the control panel display a hexadecimal code?
Yes **No**

046

Exchange FRU group 1116 on page 1-37. Go to "Using the MIP FRU Group Table" on page 1-35.

047

– Record the value of the hexadecimal code at the control panel.
Go to "3745 Control Panel Codes" on page 1-19 and follow the action to be taken.

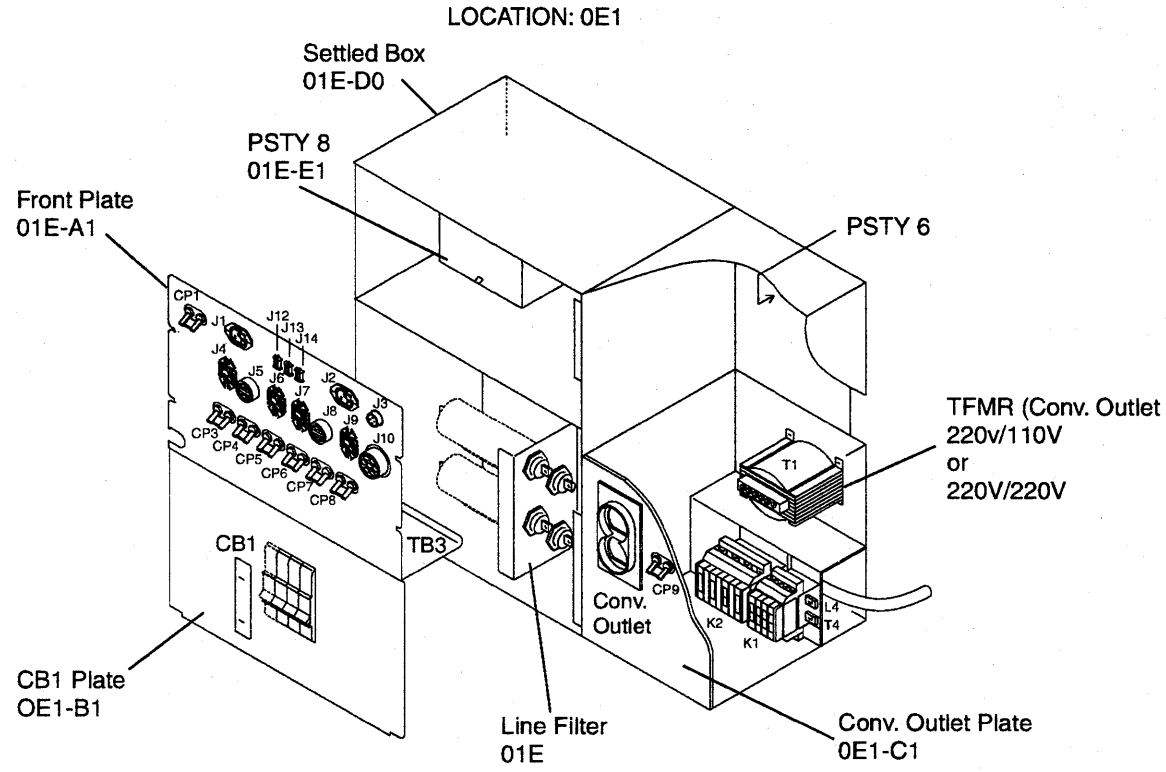


Figure 2-6. Primary Power Box

Power MAP 3910: 3745 Power Hex Codes

Symptom Explanation	Conditions That Could Cause This Symptom
Codes 009, 00A, 00B, 00C, 030, 031, 032, 033, or 034 displayed at the control panel. Cooling problem.	• PS type 2 (OV/UV OC). • Any blower. • PS type 6 or PS type 8. • HDD or FDD. • PLC or PAC card. • Any MOSS card. • Tripped CP.

Attention

Power may be present when nothing is displayed on the control panel.

Power supplies are sealed replaceable units.

Note: This MAP should be used only if the problem can be reproduced.

001

Is the power control set to local 3 at the control panel?

Yes **No**

002

– Set the local mode.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.

– Re-apply power as follows:

1. Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
2. Press **Validate**.

Note: This action will also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in code **F0E**, **F0F**, or **000**. If any other code is displayed, then an error was detected.

Continue with Step 003.

003

Is a Hex code 009, 00A, or 00C displayed?

Yes **No**

004

(Step **004** continues)

004 (continued)

Is a Hex code 00B displayed?

Yes **No**

005

Go to Step 020 on page 2-27.

006

– Check that the 3745 is still operational.

Has the NCP failed to continue?

Yes **No**

007

Go to Step 048 on page 2-30.

008

Go to Step 029 on page 2-28

009

– Check at the primary power box located at 01E. See Figure 2-6 on page 2-25.

Is CP6 ON?

Yes **No**

010

– Restore the CP.

– Re-apply power as follows:

1. Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
2. Press **Validate**.

Note: This action will also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in code **F0E**, **F0F**, or **000**. If any other code is displayed, then an error was detected.

If CP6 drops again, exchange FRU group 3566 on page 1-37. Go to "Using the MIP FRU Group Table" on page 1-35.

011

– Remove the connector P7 of the Primary Power Box. Refer to Figure 4-36 on page 4-53 and check the ac voltage on J7.

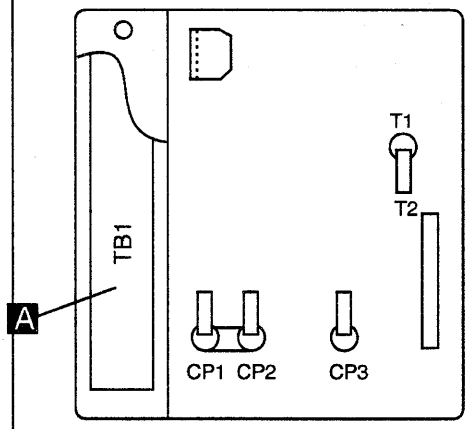
Is ac present?
Yes **No**

012

– Check the ac main voltage as follows:

- Remove the three screws maintaining the cover on the PSTY6.
- Remove the cover.
- Measure the ac input on TB01 pins 1, 6, 10 and 14.

For more details on location and wiring refer to YX076 and YZ576. See figure below.



Is the voltage correct?
Yes **No**

013

One phase may be missing. Check the customer power or ac line filter can be blown.

014

– Check the K2 coil line as follows:

Measure the voltage on the PSTY6 test points,with a meter on pin 13. See figure bellow.

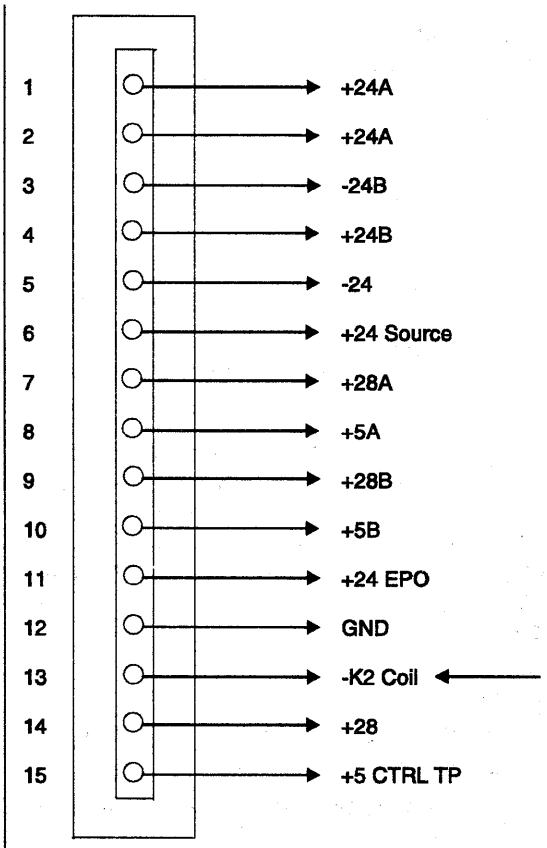
Is 0 V present?
Yes **No**

015

Exchange FRU group 3612 on page 1-38. Go to "Using the MIP FRU Group Table" on page 1-35.

016

Exchange FRU group 6384 on page 1-38. Go to "Using the MIP FRU Group Table" on page 1-35.



TEST POINTS (15X)

017

– Disconnect the PS type 2 connector J3. Referring to "How to Run the Power Control Bus Test" on page 3-25, run the diagnostic on bus 1, (with the wrap block fitted on the bus connector removed from the PS type 2).

Is the test running without any problem?
Yes **No**

018

Go to "Power MAP 3920: 3745 Power Bus Test Failure" on page 2-32.

019

Exchange FRU group 3565 on page 1-37. Go to "Using the MIP FRU Group Table" on page 1-35.

020

– Check at the Primary Power Box.

Is the CP1 in the normal position?
Yes **No**

021

– Try to reset the CP1.
(Step **021** continues)

021 (continued)
Is the CP1 OK?
Yes **No**

022
Exchange the PSTY8.

023
Press Power ON Reset to reset the panel code.
Continue with Step 024

024
– Measure the +48 V DC from the PSTY8 between the pin 2 (+48 V) and pin 1 (return) of the 01A-Z0P1 connector removed from the MOSS blower (front side, behind the panel). See YZ561 page. Check the value and ripple.

Is +48 V correct?
Yes **No**

025
– Check that no ac input phase is missing as follows:
- Remove the three screws maintaining the cover on the PSTY6.
- Remove the cover.
- Measure the AC input on TB01 pins 1, 6, 10 and 14.

For more details on the location and wiring, refer to YX076 and YZ576.
If one phase is missing, the ac line filter can be blown.
– or –
If not, exchange FRU group 3611 on page 1-38. Go to "Using the MIP FRU Group Table" on page 1-35.

026
Is a Hex code 030 displayed?
Yes **No**

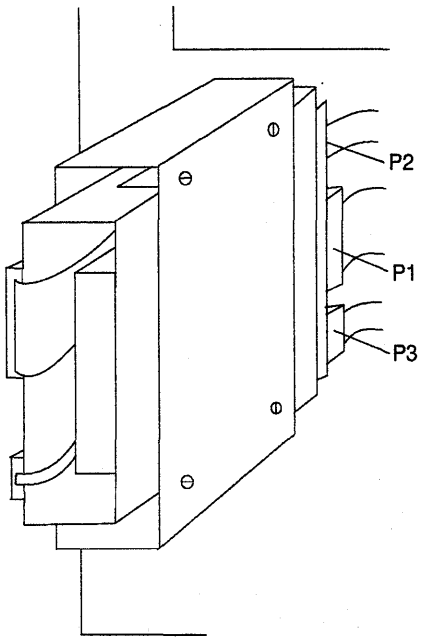
027
– Check (at the MOSS console(if there is a reference code pointing to a cooling problem and follow the indications given by the reference code. If there is no reference code pointing to a problem, there may be an intermittent problem. Try to reproduce the error or go to "CE Leaving Procedure" on page 4-180.

028
Exchange FRU group 4203 on page 1-38. Go to "Using the MIP FRU Group Table" on page 1-35.

029
– Remove the power as follows:
1. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
2. Press **Validate**.
3. Observe the MOSS inoperative display on the control panel. At completion of power OFF, it will display the character **B**.

– Disconnect the HDD power connector 01X-A1P3 as shown in the following figure.

Re-apply power as follows:
1. Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
2. Press **Validate**.



Is the code displayed 00B?
Yes **No**

030
Is the code displayed 101 or 102?
Yes **No**

031
Go to "3745 Control Panel Codes" on page 1-19 and follow the instructions.

032
Exchange FRU group 1156 on page 1-37. Go to "Using the MIP FRU Group Table" on page 1-35.

033

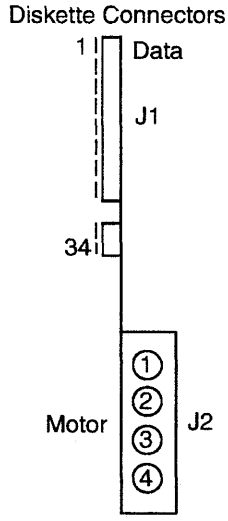
– Remove the power as follows:

a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.

b. Press **Validate**.

c. Observe the MOSS inoperative display on the control panel. At completion of power OFF, it will display the character **B**.

– Reinstall the HDD power connector.
– Disconnect the FDD power connector 01W-J2 as shown in the following figure.
– Re-apply power. If necessary, see the procedure at the beginning of this MAP.



Do you still have the problem?

Yes **No**

034

Exchange FRU group 1157 on page 1-37. Go to "Using the MIP FRU Group Table" on page 1-35.

035

– Remove the power as follows:

a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.

b. Press **Validate**.

c. Observe the MOSS inoperative display on the control panel. At completion of power OFF, it will display the character **B**.

(Step **035** continues)

035 (continued)

– Reinstall the FDD power connector.
– Unplug the MOSS card MSC located at 01A-X0-C1.

Re-apply power. If necessary see the procedure at the beginning of this MAP.

Do you still have the problem?

Yes **No**

036

Exchange the MSC card. Go to "Repair Verification Procedure" on page 4-178.

037

– Remove the power as follows:

a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.

b. Press **Validate**.

c. Observe the MOSS Inoperative display on the control panel. At completion of power OFF, it will display the character **B**.

– Reinstall the MSC card.
– Unplug the MOSS card MPC located at 01A-X0-D1.

Re-apply power. If necessary see the procedure at the beginning of this MAP.

Do you still have the problem?

Yes **No**

038

Exchange the MPC card. Go to "Repair Verification Procedure" on page 4-178.

039

– Remove the power as follows:

a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.

b. Press **Validate**.

c. Observe the MOSS Inoperative display on the control panel. At completion of power OFF, it will display the character **B**.

– Reinstall the MPC card.
– Unplug the MOSS MAC/MAC2 card located at 01A-X0-H1.

Re-apply power. If necessary see the procedure at the beginning of this MAP.

(Step **039** continues)

039 (continued)
Do you still have the problem?
Yes **No**

040
Exchange the MAC/MAC2 card. Go to "Repair Verification Procedure" on page 4-178.

041
– Remove the power as follows:
  a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
  b. Press **Validate**.
  c. Observe the MOSS Inoperative display on the control panel. At completion of power OFF, it will display the character **B**.
– Reinstall the MAC/MAC2 card.
– Unplug the MOSS MCA card located at 01A-X0-G1.

Re-apply the power. If necessary see the procedure at the beginning of this MAP.
Do you still have the problem?
Yes **No**

042
Exchange the MCA card. Go to "Repair Verification Procedure" on page 4-178.

043
– Remove the power as follows:
  a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
  b. Press **Validate**.
  c. Observe the MOSS Inoperative display on the control panel. At completion of power OFF, it will display the character **B**.
– Reinstall the MCA card.
– Unplug the MOSS card DFA located at 01A-X0-F1.

Re-apply the power. If necessary see the procedure at the beginning of this MAP.
Do you still have the problem?
Yes **No**

044
Exchange the DFA card. Go to "Repair Verification Procedure" on page 4-178.

045
– Remove the power as follows:
  a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
  b. Press **Validate**.
  c. Observe the MOSS Inoperative display on the control panel. At completion of power OFF, it will display the character **B**.
– Reinstall the DFA card.
– Exchange the PSTY2.
Do you still have the problem?
Yes **No**

046
Go to "CE Leaving Procedure" on page 4-180.

047
– Remove the power as follows:
  a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
  b. Press **Validate**.
  c. Observe the MOSS Inoperative display on the control panel. At completion of power OFF, it will display the character **B**.
– Reinstall the PSTY2.
– You may have a problem with the MOSS board or PS type 2 power distribution.

Go to "Contacting Support" on page B-2

048
Execute a MOSS power down sequence as follows:

1. Using **Service**, scroll until the value is **1** (maintenance 1 mode).
2. Press **Validate**.
3. Using **Function** scroll until the value is **B** (MOSS power OFF).
4. Press **Validate**.

Execute a MOSS IML (MOSS will power ON) as follows:

1. Using **Function**, scroll until the value is **1** (MOSS IML).
2. Press **Validate**.
   This initiates a MOSS reset followed by a MOSS IML.

(Step **048** continues)

048 (continued)
Is IML successful (panel codes 000, F0E, or F0F)?
Yes **No**

049

Is code 00B displayed?
Yes **No**

050

Follow the instructions given by the new panel code. Go to "3745 Control Panel Codes" on page 1-19

051

Go to Step 029 on page 2-28.

052

– You may have an intermittent problem. Check if a BER has been generated together with a reference code, and has been included in an alarm/alert.

Go to "Selection Table" on page 1-4.

Power MAP 3920: 3745 Power Bus Test Failure

Symptom Explanation	Conditions That Could Cause This Symptom
Any problem during power bus test.	• PLC card. • Power bus. • Any power supply.

Attention

Power may be present when nothing is displayed on the control panel.

Power supplies are sealed replaceable units.

Note: Keep in mind that the test is permanently running in no error condition (004 displayed on the control panel.).

001

During this procedure, you will be instructed to power OFF the 3745, (the full machine configuration is needed).
– Referring to Figure 4-8 on page 4-12 or Figure 4-9 on page 4-13, disconnect (from the MOSS board) the cable of the bus you were testing. Using the power control Bus link cable (PN 6495722), plug the wrap card side A to the connector of the MOSS board.

Bus	Address
1	01A-W0-A5
2	01A-W0-B5
3	01A-W0-C5
4	01A-Y0-A4
5	01A-Y0-A7

– Referring to "How to Run the Power Control Bus Test" on page 3-25 , restart the test at Step 6 on page 3-25

Is 004 displayed?

Yes **No**

002

Exchange FRU group 1117 on page 1-37.
Go to "Using the MIP FRU Group Table" on page 1-35.

003

You have a cable or PS problem.
– Press **Exit**. If the 3745 is power ON, ensure that the 3745 is in local mode and press **Power OFF**.
– Reconnect the cable to the MOSS board connector (removed in Step 001) and plug the wrap tool in place of the terminator.
(Step **003** continues)

003 (continued)
– Restart the test at Step "Start:" on page 3-25.

Is 005 displayed?

Yes **No**

004

A power supply disturbs the bus when it is powered up.
Go to Step 024 on page 2-33.

005

Is your bus number 1, 2, or 3?

Yes **No**

006

Go to Step 022 on page 2-33

007

For the connectors J7, J8, and J9 location, refer to Figure 3-16 on page 3-28, Figure 4-124 on page 4-134, and Figure 4-134 on page 4-145.
– Unplug the J8 connector of the first group of power supplies.
– Plug the wrap card on the power bus cable connector you have just removed.
– Restart the test at Step 6 on page 3-25

Is 004 displayed?

Yes **No**

008

Go to Step 020 on page 2-33.

009

– Remove the wrap card and plug the previously removed connector back to J8.
– Unplug the power bus cable from the J9 connector of the power group (of power supplies) and insert the power control bus link and wrap card on it.
– Restart the test at Step 6 on page 3-25

Is 005 displayed?

Yes **No**

010

(Step **010** continues)

010 (continued)
Is it the last power supply group?
Yes **No**

011

– Remove the cable and wrap card. Reconnect the previously removed cable to the power group.
– Unplug the input connector of the following group of power supplies (J7 for PS3s, J8 for PS4s).
– Plug the wrap card to the power bus cable connector you have just removed.

Is 004 displayed?
Yes **No**

012

There is a power bus cable problem between two power groups.

013

– Remove the wrap card and replug the previously removed connector.
– Unplug the power bus cable from the output connector of the power supplies group (J8 for PS3s and J9 for PS4s). Plug the power control bus link and wrap card on it.
– Restart the test at Step 6 on page 3-25

Is 005 displayed?
Yes **No**

014

Go to Step 010 on page 2-32.

015

The problem is in the power rack.
Go to Step 017.

016

The problem is in the last part of the cable.
Go to Step 020.

017

– Disconnect all the PSs of the power group as follows:

1. Loosen the two tab screws.
2. Unlock the retaining screw.
3. Slide the power supply assembly out approximately 5 cm, using the handle.

– Restart the test at Step 6 on page 3-25
(Step **017** continues)

017 (continued)
Is 004 displayed?
Yes **No**

018

There is a problem in the power distribution board.

019

A power supply disturbs the bus.
Try to determine which power supply is involved and exchange it.

020

Is your bus number 1?
Yes **No**

021

There is a problem with part of the cable you were testing.

022

– If the wrap card is not installed in place of the terminator card, install it and reconnect the power control bus to where it was before.
– Disconnect the involved power control bus from all the power supplies not seated in the racks.
– Restart the test at step 6 on page 3-25

Is 004 displayed?
Yes **No**

023

There is a problem with the cable itself.
– If the control bus is number 4 or 5 determine which part is failing by moving the wrap card to the interframe connector and restarting the test.

024

– Press **Exit**.
– Remove the wrap plug and reinstall the terminator card.
– Switch OFF the CPs of all the power supplies connected to this bus except the nearest to the MOSS.
– Power the 3745 ON.
– Check (at the 3745 console using the POS function) if the status of this PS is correct.
– Reset the CP of the second PS and turn that power supply ON using the POS function. Check the status.
– Repeat this action until the failing power supply is isolated.

Exchange the failing PS.

Power MAP 3930: 3745 Power ON Problem in Host Mode

Symptom Explanation	Conditions That Could Cause This Symptom
Power ON is not possible in host mode. The host system stops during power ON sequence.	• The Power Control is not in host mode. • Problem with the host cable. • Host problem. • Power Complete signal is not received by the host.

Attention

Power may be present when nothing is displayed on the control panel.

001

When the power control is in host mode, a **1** is displayed on the control panel.

Is the power control in host mode?

Yes **No**

002

– If the control panel is blank, go to "Power MAP 3900: 3745 Power Control Subsystem Problems" on page 2-21.
– Using **Power Control** scroll until the value is **1**.
– Press **Validate**.
– Reinitiate the command.

If successful, go to "CE Leaving Procedure" on page 4-180.

– or –

If not successful, continue with Step 004.

003

Is the power On indicator ON (green LED)?

Yes **No**

004

– Power ON in local mode.
– Using **Power Control**, scroll until the value is **3**.
– Press **Validate**.
– Press **Power On**.

Go to Step 012

005

– Check for +24 V between frame ground and the back of the host connector which initiated the command at EPO 01S (pin 3 and 4).

Is +24 V present on pin 3?

Yes **No**

006

There is a 3745 or 3746-900 host problem, or an external host cable problem.
(Step **006** continues)

006 (continued)
If no problem found, contact your support structure. Refer to "Contacting Support" on page B-2.

007

Is +24 V present on pin 4?

Yes **No**

008

Is +24 V present on the drive sequence complete line on 01S AOP1 (pin 5)?

Yes **No**

009

The problem is in the remote power control box 01S.

010

Exchange the PAC card (01A-X0-B)1 and PLC card (01A-X0-A1).

011

There is a 3745 or 3746-900 host cable problem, or a host problem.

012

Is power ON possible in local mode?

Yes **No**

013

Go to "Power MAP 3900: 3745 Power Control Subsystem Problems" on page 2-21

014

– Press **Power Off**.
– Using **Power Control**, scroll until the value is **1**.
– Press **Validate**.
– Reinitiate the host command.

Is power ON now possible in the host mode?

Yes **No**

015

– Check for +24 V between frame ground and power hold and power pick lines on any EPO connector of the remote power

control. (pins 5 and 6).

Are the two lines up?

Yes **No**

016

There is a 3745 or 3746-900 host cable problem, or a host problem.

017

Exchange the PAC card (01A-X0-B1) and PLC card (01A-X0-A1).

018

There is an intermittent problem. The 3745 or 3746-900 host, host cable, PAC card, or PLC card can be suspected.

Power MAP 3940: 3745 Scheduled Power ON Problems

Symptom Explanation	Conditions That Could Cause This Symptom
The machine will not power ON as scheduled.	• Wrong setting of scheduled time. • Battery. • PLC card.

Attention

Power may be present when nothing is displayed on the control panel.

Note: Before starting maintenance, check the control panel to ensure the **Power Control** display is set to **3** (local).

If it is, proceed with step 1.

If it is not, perform the following:

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.

001

– Press **Power On**.
Is the ac present lamp ON?
Yes **No**

002

– There is a power ON problem. Go to "Power MAP 3900: 3745 Power Control Subsystem Problems" on page 2-21.

003

– Check with the customer, that the data entered matches the actual day and time.
– Select the time services screen and display **Scheduled Power ON** data.
Is the data correct?
Yes **No**

004

Obtain the correct scheduled information and reinitiate the command.

005

– Unplug and check the battery voltage tolerances. Refer to "Battery Exchange Procedure" on page 4-97 for the location and removal.
(Step **005** continues)

005 (continued)
Is the battery OK?
Yes **No**

006

Your battery has expired. Exchange it and record this action. Refer to "Battery Exchange Procedure" on page 4-97.

007

Exchange FRU Group 1117 on page 1-37. Go to "Using the MIP FRU Group Table" on page 1-35.

Power MAP 3950: 3745 Power OFF Not Possible in Host Mode

Symptom Explanation	Conditions That Could Cause This Symptom
Power OFF is not possible in host mode.	• The power control is not in host mode. • 3745/3746-900 host or host cable problem.

Attention

Power may be present when nothing is displayed on the control panel.

001

When the power control is in host mode, a **1** is displayed on the control panel.

Is the power control in host mode?

Yes **No**

002

- Set the power control to host mode.
- Using **Power Control**, scroll until the value is **1**.
- Press **Validate**.
- Power OFF in host mode.

003

Is the machine still ON?

Yes **No**

004

Go to "CE Leaving Procedure" on page 4-180.

005

- Set the power control to local mode.
- Using **Power Control**, scroll until the value is **3**.
- Press **Validate**.
- Power OFF in local mode.

Does the power On Indicator now go OFF?

Yes **No**

006

Go to "Power MAP 3960: 3745 Power OFF Not Possible in Local Mode" on page 2-38.

007

There is a 3745 or 3746-900 host problem or a host cable problem. Contact your support for further investigation.

Power MAP 3960: 3745 Power OFF Not Possible in Local Mode

Symptom Explanation	Conditions That Could Cause This Symptom
Power OFF is not possible in local mode.	• The power control is not in local mode. • Relay K1/K2. • Control Panel. • PLC card.

Attention

Power may be present when nothing is displayed on the control panel.

001

When the power control is in local mode, a **3** is displayed at the control panel.

Is the power control in local mode?

Yes **No**

002

- Set the power control to local mode.
- Using **Power Control**, scroll until the value is **3**.
- Press **Validate**.
- Press **Power OFF**.
- Continue at Step 003.

003

Is the 3745 still powered ON?

Yes **No**

004

Go to "CE Leaving Procedure" on page 4-180.

005

Are the blowers stopped?

Yes **No**

006

Suspect relay K1 or K2 located in the PCC at 01E. Refer to the YZ pages for wiring. Repair and reinitiate the command. If correct, go to "CE Leaving Procedure" on page 4-180.

007

Exchange FRU group 4077 on page 1-38. Go to "Using the MIP FRU Group Table" on page 1-35.

Power MAP 3970: 3745 Power OFF Not Possible in Network Mode

Symptom Explanation	Conditions That Could Cause This Symptom
Power OFF is not possible in network mode.	• The power control is not in network mode. • The 'Power OFF' command is not received from the host. • PLC card, MAC/MAC2 card, TCM or PUC card. • 3745 or 3746-900 host cable problem. • 3745 not able to power OFF in local mode.

Attention

Power may be present when nothing is displayed on the control panel.

001

To enter this MAP: NCP must be running and a network power OFF command must have been issued.
When the power control is in network mode, a **2** is displayed at the control panel.
Is the power control in network mode?
Yes **No**

002

– Set the power control to network mode.

1. Press **Power Control** until **2** is displayed in the power control window.
2. Press **Validate**.

– Reinitiate the power OFF command from the host.
Continue at Step 003

003

Is the power On indicator lit?
Yes **No**

004

– The power OFF command was successful.
Go to "CE Leaving Procedure" on page 4-180.

005

Set the power control to local mode.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **validate**.

Press **Power OFF** key.
(Step **005** continues)

005 (continued)
Does the power On indicator go OFF?
Yes **No**

006

Go to "Power MAP 3960: 3745 Power OFF Not Possible in Local Mode" on page 2-38

007

– Set the power control to network mode.

1. Press **Power Control** until **2** is displayed in the power control window.
2. Press **Validate**.

– Power ON the 3745 by pressing **Power On/Reset**.
– Call the IFTs diagnostics (AT05) for both CCUs.
Is the Power ON indicator still lit?
Yes **No**

008

There is an NCP or network problem. Contact your support structure if additional assistance is required.

009

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Press **Power Off**.
4. Turn the CB1 OFF.
5. Exchange the PLC card located at 01A-X0-A1. Refer to Figure 4-8 on page 4-12 or Figure 4-9 on page 4-13.
6. Turn the CB1 ON.
7. Press **Power On**.
8. Set the power control to network mode.
   a. Press **Power Control** until **2** is displayed in the power control window.
   b. Press **Validate**.
9. Call the IFTs diagnostics and run routine AT05.

(Step **009** continues)

009 (continued)
Is the 3745 still powered ON?
Yes **No**

010
Go to "CE Leaving Procedure" on page 4-180.

011

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Press **Power Off**.
4. Turn the CB1 OFF.
5. Reinstall the PLC card.
6. Exchange the MAC/MAC2 card located at 01A-X0-H1. Refer to Figure 4-8 on page 4-12 or Figure 4-9 on page 4-13.
7. Turn the CB1 ON.
8. Press **Power On**.
9. Set the power control to network mode.
   a. Press **Power Control** until **2** is displayed in the power control window.
   b. Press **Validate**.
10. Call the IFTs diagnostics and run routine AT05.

Is the 3745 still powered ON?
Yes **No**

012
Go to "CE Leaving Procedure" on page 4-180.

013

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Press **Power Off**.
4. Reinstall the MAC/MAC2 card.

For Models 21x or 41x (using the "TCM Exchange Procedure" on page 4-100), exchange the TCM
– or –
For Models 31x or 61x, (using the "Storage and Controls Exchange Procedure" on page 4-88), exchange the PUC card
and **do not go** to the CE Leaving Procedure but return here.

5. Set the power control to network mode.
   a. Press **Power Control** until **2** is displayed in the power control window.

(Step **013** continues)

013 (continued)
   b. Press **Validate**.
6. Call the IFTs diagnostics and run routine AT05.

Is the 3745 still powered ON?
Yes **No**

014
Go to "CE Leaving Procedure" on page 4-180.

015

– Using the "TCM Exchange Procedure" on page 4-100, or the "Storage and Controls Exchange Procedure" on page 4-88, reinstall the TCM or PUC card.

You have exhausted the *Maintenance Information Procedure* portion of the 3745 maintenance package. Contact your support structure for assistance in resolving this problem.

3745 IOC Bus MAP

MAP 4000: IOC Bus MAP

Symptom Explanation	Conditions That Could Cause This Symptom
Tehere are reference codes on multiple adapters or several adapters are missing after MES upgrade.	• ITER, CAL, CSP, TRM card. • IOSW/IOSW2, STER card. • Adapter bus cables. • IOC bus cables. • TCM or PUC card. • Adapter power supply. • Adapter board, address cards or LTC1/LTC2.

This MAP should be used only if the problem can be reproduced.

If you have an intermittent problem, consider that any of the conditions given in the above table can cause the problem.

Note: If you have reached this point after an MES upgrade, you should not have previously run the CDF upgrade .
However, if the CDF file is already destroyed, you can follow this MAP by using the CDF **upgrade** function instead of **verify**. The difference is that you will never get **difference** messages or error information, and after each run of CDF upgrade you will display the CDF file for scanner and channel presence.

The references needed for this MAP are:

- Physical location see chapter 4
- Adapter cables and cards layout see "Board Layout for Models 21X and 41X" on page 2-45, and "Board Layout for Models 31X and 61X" on page 2-46.
- Power supply IDs versus adapter numbers see "3745 Power Supply Cross Reference" on page 4-54.

001

1. Re-create the power configuration.
2. Check the POS for all power supplies present on the machine.
3. Ensure that all the power supplies present are up.
4. Display the CDF file for all adapters (LAs and CAs) and record them
5. Run the CDF **verify**:

– Two different kinds of error messages will appear: **information** error on LA/CA xx,yy, or **difference** message meaning that the CDF file and the machine configuration do not match.
– Answer **2** to the **difference** messages for every adapter fitted in the machine but not in the CDF file (to update the CDF file).
– Answer **1** to the **difference** messages for any other case (to not destroy the CDF file).

Are there any error messages or difference messages on the CA or LA buses?
Yes **No**

002

The CDF **verify** runs correctly.
– The problem is not detected. Check the CDF file and either:

- Use the **S** function (if needed).
- Run diagnostics.
- Use the resistor measurement or **scooping** procedure to isolate the failure. Refer to the MIR.

Note: If a bus with added adapters is open, you will never get any **difference** message for these adapters because they are neither in the CDF file nor are they recognized in the machine.

003

After an MES upgrade, you must get a **difference** message for all the adapters that you added since they are not in the CDF file. They are fitted in the machine.

Do you have any other message than the preceding difference messages?
Yes **No**

004

– The problem is not detected. Check the CDF file and either:

- Use the **S** function (if needed).
- Run diagnostics.
- Use the resistor measurement or **scooping** procedure to isolate the failure. Refer to the MIR.

005

Are there errors (or missing adapters) on more than one bus?

Yes **No**

006

Only one adapter bus is in error.

Are any adapters recognized on this bus?

Yes **No**

007

None of the adapters are recognized.
- Go to Step 026 on page 2-43.

008

At least one adapter is recognized.
Locate the first board were adapters are missing.
The error can be either a bad adapter card, an open cable, or the board itself.

009

Are there errors (or missing adapters) on two buses?

Yes **No**

010

All buses are in error.
- Power OFF all the PSs of buses 1 and 3 by tripping the CBs.
- Re-create the power table using option **C** of the POS function.
- Run the CDF **verify**.

Do you still have errors?

Yes **No**

011

There is probably a bad adapter card on bus 1 or 3.
- Power ON all the PSs of bus 1 (put CBs ON and use the **uxx** function of the POS).
- Re-create the power table using option **C** of the POS function
- Run the CDF **verify**

Do you still have errors?

Yes **No**

012

Bus 3 is in error.
- Go to Step 026 on page 2-43.

013

(Step **013** continues)

013 (continued)

Bus 1 is in error.
- Go to Step 026 on page 2-43.

014

- Power ON all PSs of buses 1 and 3 (put CBs ON and use the **uxx** function of the POS).
- Power OFF all the PSs of buses 2 and 4 by tripping the CBs.
- Re-create the power table using option **C** of the POS function.
- Run the CDF **verify**.

Do you still have errors?

Yes **No**

015

There is probably a bad adapter card on bus 2 or 4.
- Power ON all the PSs of bus 2 (put CBs ON and use the **uxx** function of the POS).
- Re-create the power table using option **C** of the POS function.
- Run the CDF **verify**

Do you still have errors?

Yes **No**

016

Bus 4 is in error.
- Go to Step 026 on page 2-43.

017

Bus 2 is in error.
- Go to Step 026 on page 2-43.

018

The problem is not due to an adapter bus.
- Suspect the IOSW/IOSW2 card first. Swap it with the other card if you have two CCUs.
- You can swap the STER card with the other STER card.
- Run the CCU diagnostics on CCU A.
- Also suspect the IOC bus cables (IOC 1 for adapter buses 1 and 3, or IOC 2 for adapter buses 2 and 4).

019

The adapter buses in error are 1 and 3, or 2 and 4.
- Swap adapter bus cables 1 with 4 at the SACU board (01B-A1) (H0Z4 with N0Z1 and H0Z5 with N0Z2).
- Run the CDF **verify**.

(Step **019** continues)

019 (continued)

Note: If there are one or two TRSSs on the buses, they will not be recognized by the machine after swapping. Take only the TSSs and HPTSSs into account for the analysis of the CDF **verify** results.

Are the errors on the same bus numbers?

Yes **No**

020

The scanner bus of the pair is in error (1 or 4):

– Swap buses 1 and 4.

Are any adapters recognized on the failing bus?

Yes **No**

021

None of the adapters are recognized.

– Go to Step 026.

022

At least one adapter is recognized.

– Locate the first board were adapters are missing.

The error can be either a bad adapter card, an open cable, or the board itself.

023

– Swap the buses 1 and 4.
– Swap the adapter bus cables at the SACU board (01B-A1) 2 with 3 (H0Z1 with N0Z4 and H0Z2 with N0Z5).
– Run the CDF **verify**.

Do the errors shift to the other bus number (2/3)?

Yes **No**

024

The problem is not due to an adapter bus.

– Swap buses 2 and 3.
– First suspect the IOSW/IOSW2 card. Swap it with the other if there are two CCUs.
– Swap the STER card with the other STER card.
– Run the CCU diagnostics on CCU A.
– Also suspect the IOC bus cables (IOC 1 for adapter buses 1 and 3, or IOC 2 for adapter buses 2 and 4).

025

The channel bus of the pair is in error.

– Swap buses 2 and 3.
– Go to Step 026.

026

The failing bus has been located.

– Leave power ON, only on the first power supply of the failing bus, and trip OFF all the other CBs of the bus.
– Re-create the power table using option **C** of the POS function.
– Run the CDF **verify**.

Do you still have errors?

Yes **No**

027

– Power ON the next PS (CB **ON** and POS **uxx**).
– Re-create the power table using option **C** of the POS function.
– Run the CDF **verify**.

Do you still have errors?

Yes **No**

028

– Go to Step 027

029

– Replace the adapter cards supplied by this PS.

030

– Power OFF the first PS (CB **OFF**)
– Power ON the next PS (CB **ON** and POS **Uxx**)

Note: You are allowed to trip OFF only one CB in the middle of the bus.

– Re-create the power table using option **C** of the POS function
– Run the CDF **verify**.

Do you still have errors?

Yes **No**

031

– Replace the adapter cards supplied by the first PS.

032

The problem may be the IOSW/STER/ITER card or a wire problem on the bus or a board.

– Unplug the bus cables into the first board (X position).
– Move the ITER card to the first board (X position).
– Run the CDF **verify**.

Are all adapters in the first board recognized by the CDF verify?

Yes **No**

033

– First suspect the IOSW/IOSW2 card. Swap it with the other if you have two CCUs.

(Step **033** continues)

033 (continued)
- Swap the STER card with the other STER card.
- Replace the ITER card.
- If still in error, the failure is in the first board, or suspect the cables between the SACU board and the first adapter board.

034

The problem may be the IOSW/STER/ITER card or there may be a wire problem on the bus or a board.
- Replug the bus cables into the first board.
- Move the ITER card to the second board.
- Run the CDF **verify**.

Are all adapters recognized by the CDF verify?
Yes **No**

035
- The failure is in the second board, or suspect the cables between the first and the second adapter boards.

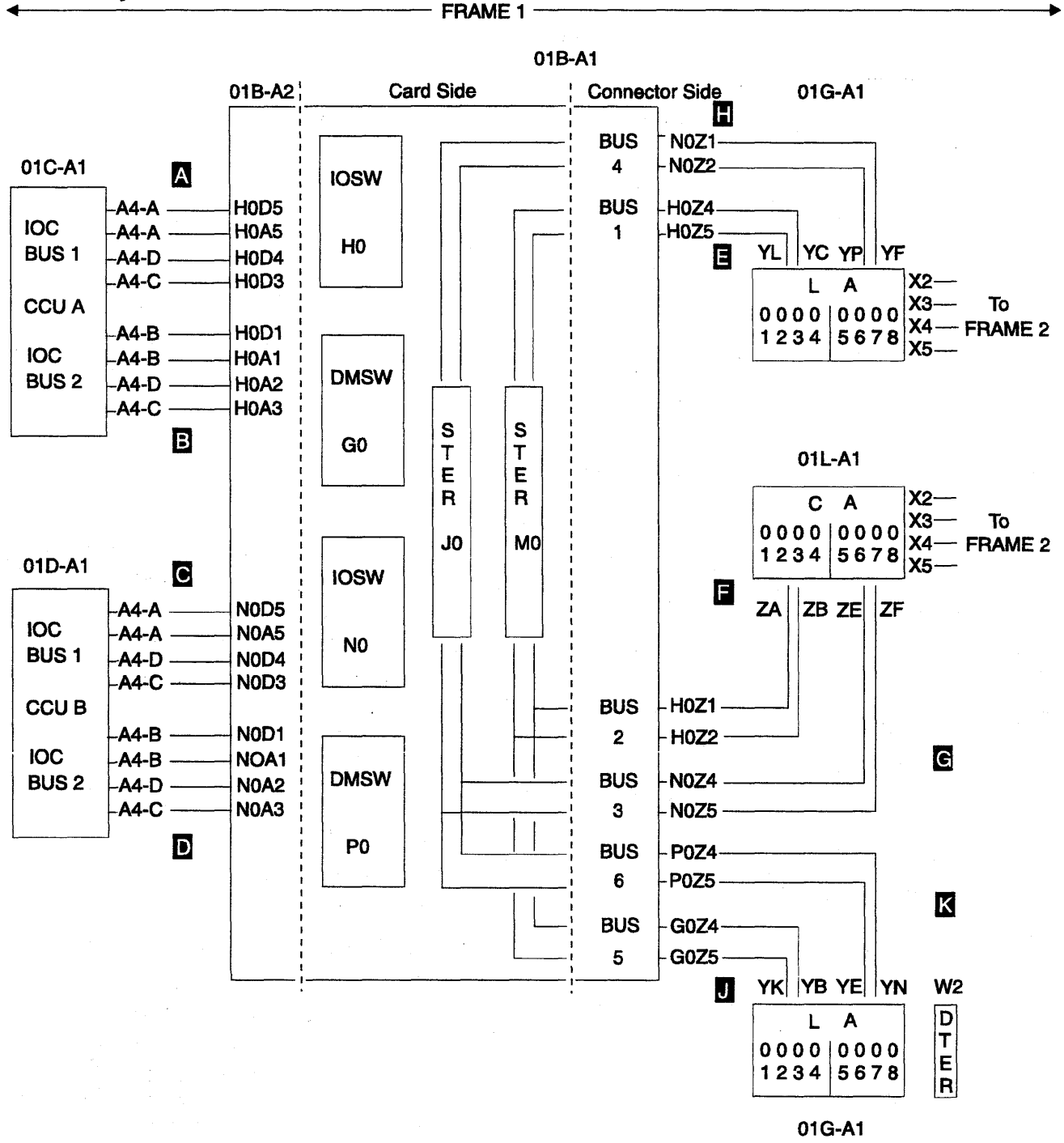
036
- Replug the bus cables in the second board.
- Move the ITER card to the third board.
- Run the CDF **verify**.

Are all adapters recognized by the CDF verify?
Yes **No**

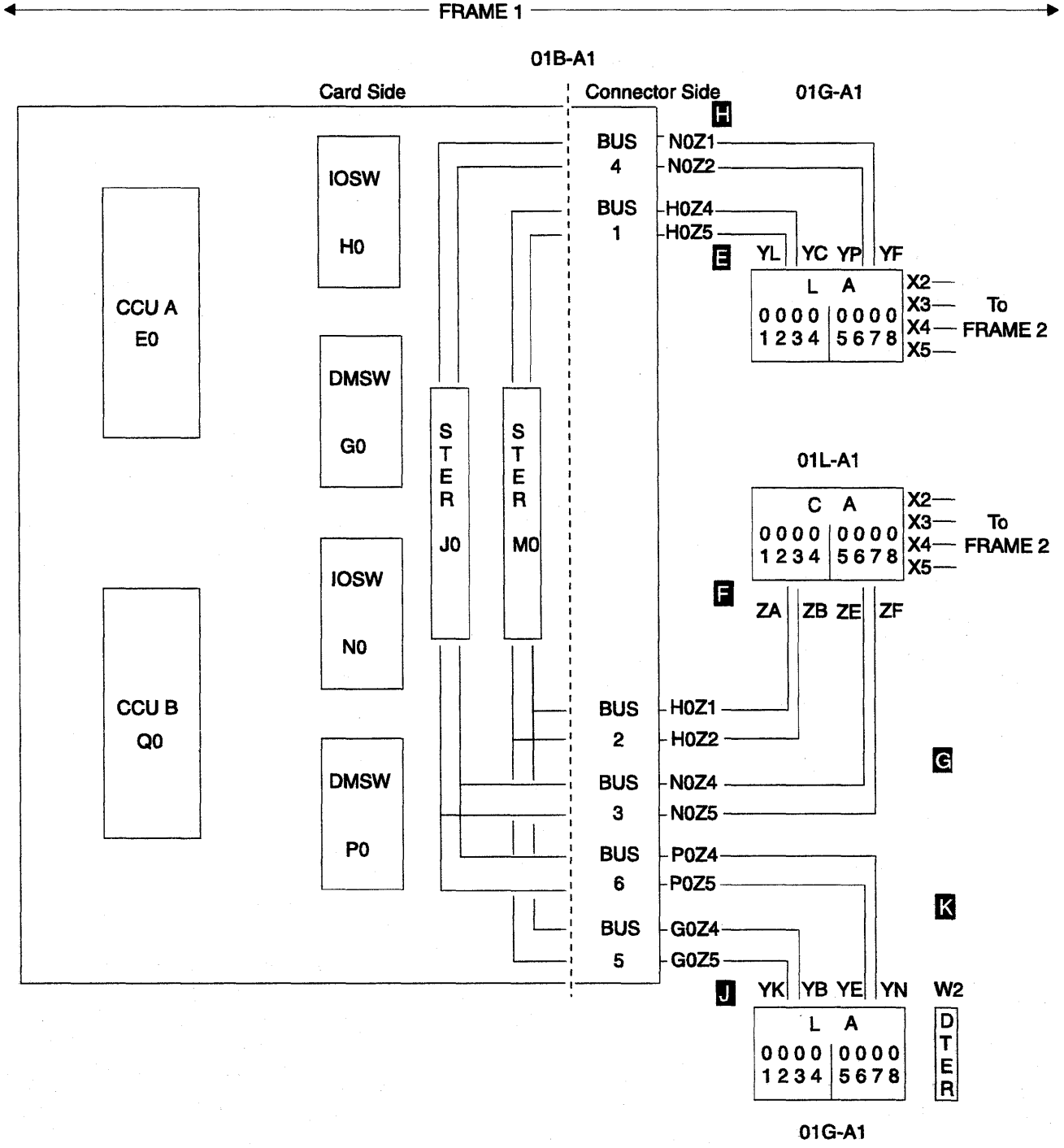
037
- The failure is in the third board, or suspect the cables between the second and the third adapter boards.

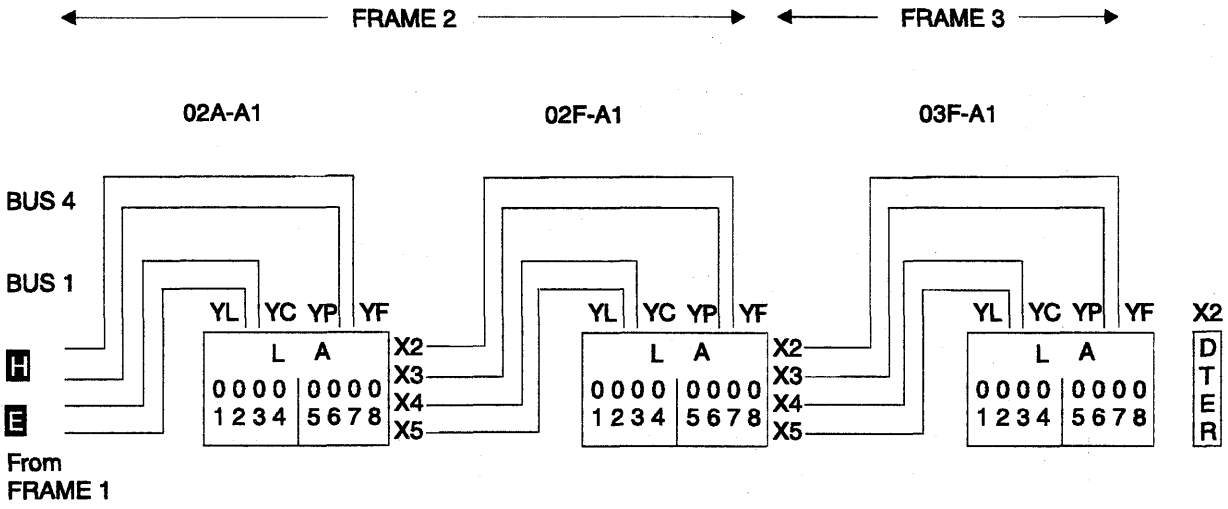
038
- The failure is in the fourth board, or suspect the cables between the second and the third adapter boards.

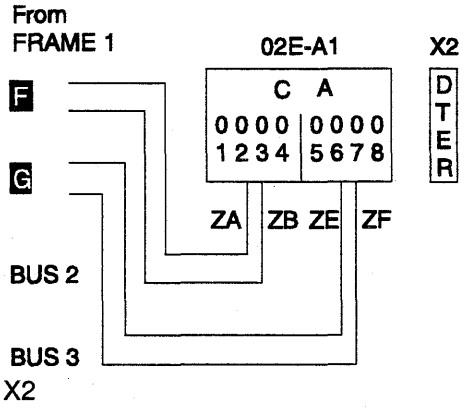
Board Layout for Models 21X and 41X



Board Layout for Models 31X and 61X




FRAME 2
FRAME 3
02A-A1
02F-A1
03F-A1
BUS 4
BUS 1
H
E
From
FRAME 1
YL YC YP YF
L A
0000 0000
1234 5678
X2
X3
X4
X5
X2
DTER


From
FRAME 1
02E-A1
X2
F
G
C A
0000 0000
1234 5678
DTER
ZA ZB ZE ZF
BUS 2
BUS 3
X2

IO Cable Group	Name	From	To
A (Models 210 and 410 only)	IOC 1 Data	01C-A1A4-A	01B-A2H0D5
	IOC 1 Data	01C-A1A4-A	01B-A2H0A5
	IOC 1 Tag In	01C-A1A4-D	01B-A2H0D4
	IOC 1 Tag Out	01C-A1A4-C	01B-A2H0D3
B (Models 210 and 410 only)	IOC 2 Data	01C-A1A4-B	01B-A2H0D1
	IOC 2 Data	01C-A1A4-B	01B-A2H0A1
	IOC 2 Tag In	01C-A1A4-D	01B-A2H0A2
	IOC 2 Tag Out	01C-A1A4-C	01B-A2H0A3
C (Model 410 only)	IOC 1 Data	01D-A1A4-A	01B-A2N0D5
	IOC 1 Data	01D-A1A4-A	01B-A2N0A5
	IOC 1 Tag In	01D-A1A4-D	01B-A2N0D4
	IOC 1 Tag Out	01D-A1A4-C	01B-A2N0D3
D (Model 410 only)	IOC 2 Data	01D-A1A4-B	01B-A2N0D1
	IOC 2 Data	01D-A1A4-B	01B-A2N0A1
	IOC 2 Tag In	01D-A1A4-D	01B-A2N0A2
	IOC 2 Tag Out	01D-A1A4-C	01B-A2N0A3
E	Bus 1 Tag	01B-A1H0Z4	01G-A1YC
	Bus 1 Data	01B-A1H0Z5	01G-A1YL
		If no LA board in frame 2: ITER 01G-A1X2	
		If LA board in frame 2:	
	Bus 1 Tag	01G-A1X4	02A-A1YC
	Bus 1 Data	01G-A1X5	02A-A1YL
		If no second LA board in frame 2: ITER 02A-A1X2	
		If second LA board in frame 2:	
	Bus 1 Tag	02A-A1X4	02F-A1YC
	Bus 1 Data	02A-A1X5	02F-A1YL
		If no frame 3: ITER 02A-A1X2	
		If frame 3:	
	Bus 1 Tag	02F-A1X4	03F-A1YC
	Bus 1 Data	02F-A1X5	03F-A1YL
		ITER 03F-A1X2	
F	Bus 2 Tag	01B-A1H0Z1	01L-A1ZA
	Bus 2 Data	01B-A1H0Z2	01L-A1ZB
		If no CA board in frame 2: ITER 01L-A1X2	
		If CA board in frame 2:	
	Bus 2 Tag	01L-A1X4	02E-A1ZA
	Bus 2 Data	01L-A1X5	02E-A1ZB
		ITER 02E-A1X2	
G	Bus 3 Tag	01B-A1N0Z4	01L-A1ZE
	Bus 3 Data	01B-A1N0Z5	01L-A1ZF
		If no CA board in frame 2: ITER 01L-A1X2	
		If CA board in frame 2:	
	Bus 3 Tag	01L-A1X2	02E-A1ZE
	Bus 3 Data	01L-A1X3	02E-A1ZF
		ITER 02E-A1X2	

IO Cable Group	Name	From To
H	Bus 4 Tag	01B-A1N0Z1 01G-A1YF
	Bus 4 Data	01B-A1N0Z2 01G-A1YP
		If no LA board in frame 2: ITER 01G-A1X2
		If LA board in frame 2:
	Bus 4 Tag	01G-A1X2 02A-A1YF
	Bus 4 Data	01G-A1X3 02A-A1YP
		If no second LA board in frame 2: ITER 02A-A1X2
		If second LA board in frame 2:
	Bus 4 Tag	02A-A1X2 02F-A1YF
	Bus 4 Data	02A-A1X3 02F-A1YP
		If no frame 3: ITER 02A-A1X2
		If frame 3:
	Bus 4 Tag	02F-A1X2 03F-A1YF
	Bus 4 Data	02F-A1X3 03F-A1YP
		ITER 03F-A1X2
J	Bus 5 Tag	01B-A1G0Z4 01G-A1YB
	Bus 5 Data	01B-A1G0Z5 01G-A1YK
		ITER 01G-A1W2
K	Bus 6 Tag	01B-A1P0Z4 01G-A1YN
	Bus 6 Data	01B-A1P0Z5 01G-A1YE
		ITER 01G-A1W2

3745 LAN MAP

MAP 4500: 3745 Models 21A-61A Permanent Console Link Problem

Symptom Explanation	Conditions That Could Cause This Symptom
Console not accessible indicator. Console Message.	• Service processor. • Ring. • Service processor access unit. • MLA card.

001

Is there a panel code displayed on the 3745 control panel?

Yes **No**

002

Go to "3745 Control Panel Symptoms" on page 1-13.

003

Go to "3745 Control Panel Code" on page 2-51 for control panel code interpretation.

3745 Control Panel Code

Table 2-1. 3745 Control Panel Code

3745 Control Panel Code	Description	Action
B8F	LAN adapter check	Exchange the MLA card
B90	Hardware init error	Suspect a hardware problem (see Note 1)
B91	Microcode error	Contact your support structure for assistance
B92	Lobe media test failure	Suspect a hardware problem (see Note 1)
B93	Signal loss while opening	Suspect a ring problem (see Note 1)
B94	Wire fault while opening	Suspect a hardware problem (see Note 1)
B95 B96 B97 B98 B99 B9A B9B B9C B9D	Open frequency error Time out while opening Ring failure while opening Ring beaconing while open Duplicate node address Open request parameters Open remove received Open IMPL force received No monitor for RPL at open	Suspect a ring problem (see Note 1)
B9E	Lobe wire fault at open	Suspect a hardware problem (see Note 1)
B9F BB0 BB1 BB2 BB3 BB4 BB5 BB6	Remote station connected, time out Link lost DM/DISC received /acked FRMR received SABME received Ti Timer expired FMMR sent Unexpected SABME received	Suspect a problem in the service processor or ring problem (see Note 2)
BC0	Permanent ring beaconing	Suspect a ring problem (see Note 1)
BC1 BC2	Lobe wire fault Auto-removal while beaconing	Suspect a hardware problem (see Note 1)
BC3	Remove received	Suspect a ring problem (see Note 1)
BC4	Auto-removal	Suspect a hardware problem (see Note 1)
BD0 BE0	FSM time out Watchdog time out	Suspect problem in the service processor (see Note 2)

Notes:

1. Use the *Token-Ring Network Problem Determination Guide*, SX27-3710.
2. Check the ring and the service processor. Go to the *Service Processor Installation and Maintenance*.

3745 RSF MAP

MAP 4510: 3745 Models 21A-61A Manual Call

You are here because there was a problem in connecting the service processor to RETAIN or because you want to test this facility.

Perform a manual call using the 3745 or the 3746-900 facilities to check this connection.

The service processor console must be logged ON. If it is not, go to "Console Use for Maintenance" on page 1-1 (for logging ON) and return here.

Before starting this MAP, check the **Remote Support facility** options using the following procedure:

- In the **MOSS-E View** window, double-click on the service processor icon.
- The **Service Processor Menu** window is displayed.
- Click on **Configuration Management**.
- Double-click on **Manage Remote Operations**.
- Select the **Remote operations authorization** option in the **Remote Operation Management** window.
- Click on **OK**.
- Ensure that the two following options are selected in the **Remote Support Facility** window.
  - **Enable Remote Support Facility**
  - **Generate Alerts**
- Select them, if not already done, and click on **OK**.
- Click on **Cancel** to return to the **Service Processor Menu**.

001

Is there a 3746-900 attached to your 3745?

Yes **No**

002

Go to Step 006.

003

- Return to the **MOSS-E View** window.
- Double-click on the 3746-900 icon.
- Click on **Problem Management**.
- Double-click on **Report Problem Using Remote Support Facilities**.
- On the **Problem Analysis** window, enter a short description: 'Testing the RSF link'. Then click on **OK**.
- On the **Report Problem Using RSF** window click on **OK**.
- Wait for either the alarm **Call to RETAIN successful** (indicating the normal end of transmission), or the message **Call to RETAIN failed**.
- Write down the alarm number.

Is the alarm Call to RETAIN successful displayed?

Yes **No**

004

Go to Step 009 on page 2-53.

005

Go top Step 008 on page 2-53.

006

(Step **006** continues)

006 (continued)

- Return to the **MOSS-E View** window and double-click on the 3745 icon.
- Click on the **Problem Management** option.
- Double-click on the **Report Problem Using Remote Support Facilities**.
- On the **Problem Analysis** window, enter a short description: 'Testing the RSF link'. Then click on **OK**.
- On the **Report Problem Using RSF** window, click on **OK**.
- Wait for either the alarm **Call to RETAIN successful** indicating the normal end of transmission, or the message **Call to RETAIN failed**.
- Write down the alarm number.

Is the alarm Call to RETAIN successful displayed?

Yes **No**

No → **007**

Go to Step 009.

Yes → **008**

The connection to RETAIN is successful. The following table shown the alarms generated by this connection.

Select the Alarm Number	Meaning
0641	Your microcode is up-to-date, therefore no fix has been downloaded.
0642	A fix has been downloaded automatically. Install the fix.
0649	Call to RETAIN was successful but no download. MCL is too large or there is not enough disk space. Active and accepts all MCLs already received to free space disk and retry the normal call for the new MCLs. If the problem persists call your support. It is a PE problem.

Go to "CE Leaving Procedure" on page 4-180.

009

Locate the alarm number in the following table and perform the action required.

Select the Alarm Number	Action
0643	Go to Step 010 on page 2-54
0644	Call to RETAIN is not authorized. Refer to the *Service Processor Installation and Maintenance* manual, (step concerning recording the customer information").
064C	The call to RETAIN has been performed but RETAIN required a disconnection due to a bad product setup. The following information is missing in the RETAIN customer CCPF file or the system registration file. • Customer number • Machine Model xxA • Branch office number • Area number • Warranty/Status Provide this information to your support before he contacts the RETAIN coordinator for updating.
068C	Suspect a Communication Manager problem. Check the Communication Manager configuration. Refer to the *Service Processor Installation and Maintenance* manual, (step concerning setting up communication parameters to allow remote and NetView operations"). Re-boot the service processor. If the problem persists call your support.
068D	Check the connection between the modem and the line. Check that the telephone number used is correct. Refer to the *Service Processor Installation and Maintenance* manual, (step concerning recording the customer information).

010

- Click on **OK** in the alarm window. A second alarm should be displayed.
- Locate this second alarm number in the following table and perform the required action.

Select the Alarm Number	Action
064A	PE problem. Call your support
064B	PE problem. Call your support
064D	The call to RETAIN has not been performed because: • The associated data have not been tersed or • The associated tersed data have not been written to the service processor disk (the partition was full). To free space on disk perform the following steps. 1. Return to the **MOOS-E View** window. 2. Double-click on the service processor icon. 3. On the **Service Processor Menu** click on the **Operation Management** option. 4. Double-click on **Delete Engineering Data** option. 5. A **Deleting Engineering Data** window is displayed, asking you to confirm your choice. Click on **YES**. 6. Follow the prompts. 7. When this operation is finished retry a call to RETAIN. If the problem persists call your support for assistance.
0681	Suspect a multiprotocol adapter problem. • Run the multiprotocol diagnostic. Refer to the *Service Processor Installation and Maintenance* manual, (chapter concerning how to run the service processor diagnostics). • Check that the communication manager has been correctly initialized. • If everything is correct, suspect a modem problem. Refer to the modem documentation to run diagnostics.
0682	Suspect a communication manager problem. Re-start the communication manager or if this fails re-boot the service processor.

Select the Alarm Number	Action
0685	Machine not registered in RETAIN data base. The following information are missing in RETAIN CCPF. • Machine type • Serial number Provide this information to your support before he contacts the RETAIN coordinator for updating.
0686	Check telephone number and prefix configuration. Refer to the *Service Processor Installation and Maintenance* manual, (step concerning recording the customer information).
0687	Suspect an integrated modem problem. • Run the integrated modem diagnostics using the wrap plug. Refer to the *Service Processor Installation and Maintenance* manual (chapter concerning how to run the service processor diagnostics). • If the modem is error free and if the problem persists call your support.
0688	Suspect an integrated modem problem. • Run the modem diagnostic using the wrap plug. Refer to the *Service Processor Installation and Maintenance* manual, (chapter concerning how to run the service processor diagnostics). • If the modem is error free and if the problem persists call your support.
0689	Local modem is already in use. Check that the remote console is not in use.
068A	Integrated modem is already in use. Check that the remote console is not in use.
068B	Suspect a modem problem. • If you have an integrated modem, run the modem diagnostic using the wrap plug. Refer to the *Service Processor Installation and Maintenance* manual, (chapter concerning how to run the service processor diagnostics). • If you have an external modem, refer to the modem documentation to run diagnostics. • If the modem is error free, suspect a line problem. Call the appropriate service representative.

MAP 5200: 3745/3746-900/Service Processor/Network Node Processor Icon Color Symptoms

Symptom Explanation	Conditions That Could Cause This Symptom
3745, 3746-900, Service Processor, or Network Node Processor (NNP) problem The 3745 icon, the 3746-900 icon, the Service Processor and/or the Network Node Processor icon on the "MOSS-E View" window are not green.	• 3745 scanner and/or a CCU has failed. • 3745 NCP not loaded. • 3746-900, one or more processors, CBC, or ESCC have failed. • No link between 3745 and/or 3746-900 with the service processor. • No link between NNP and the service processor • No link between NNP and the 3746-900 • NNP has failed

001

- The service processor console must be logged ON. If it is not, go to "Console Use for Maintenance" on page 1-1 (for logging ON) and return here.
- The color of the 3745 , 3746-900, NNP, and the service processor icons reflects their status. For example a green icon indicates that the machine is operational. The following table describes the icon color selection. colors.

Table 2-2. Icons Color Selection Table		
Machine	**Icon Color**	**Go to**
Service Processor	White	Step 002 on page 2-57.
3745	White	Step 003 on page 2-57.
	Grey	Step 004 on page 2-58.
	Pink	Step 005 on page 2-58.
3746-900	Yellow	Step 006 on page 2-58.
	White	Step 007 on page 2-58.
	Grey	• The 3746-900 is not connected to the service processor. • Go to "MAP 5600: LAN Problem on the LAN Attached to the Service Processor" on page 2-61.
	Pink	Refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
	Red	Step 008 on page 2-58.
NNP-X	White	The control point is starting and the configuration is activating. This is a normal state, however if this state stay a too long time suspect a problem. Check if you have alarms at the service processor
	Grey	There is: • No connection betweeen the service processor and the network node processor. Or • Link is not ready between the 3746-9xx and the control point of the network node processor. Refer to *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
	Pink	The control point is waiting for operator start, or no NDF (Node Definition File). Refer to *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
	Blue	The connection between the service processor and the network node processor is OK. The network node processor is in standby mode state. The control point must be started. Refer to *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.

002

The service processor icon is white.

- Check if the yellow LED of the service processor (indicating disk access) is active.
- If the yellow LED is sometimes ON and sometimes OFF wait a few more minutes. If the symptom persists, call your support center for assistance.
- If the yellow LED is always OFF, call your support center for assistance.

003

The 3745 icon is white.

- Check the 3745 displayed control panel code or the 3745 status on the service processor:
  - On the **MOSS-E View** window, double-click on the 3745 icon.
  - Click on **Program** (in the action bar).
  - Click on **Status**.
  - The **3745 Controller Status** window indicates the CCU-A (and the CCU-B) status and the associated control code.

(Step **003** continues)

003 (continued)
- Note the control code displayed. Then go to "3745 Control Panel Codes" on page 1-19 and follow the procedure.

004

The 3745 icon is grey.

- The 3745 is not connected to the service processor.
- Go to "MAP 5600: LAN Problem on the LAN Attached to the Service Processor" on page 2-61.

005

The 3745 icon is pink.

- Click on the 3745 pink icon.
- Click on **Program** in the action bar.
- Click on **Status**.
- The **3745 Controller Status** window indicates the CCU-A (and the CCU-B) status and if some adapters are unavailable.
- The normal status of CCU is **loaded**. If a CCU is not in this state check:
  1. If the CCU control program has been loaded.
  2. If the control program has started to load but has not terminated successfully. Go to "General Verbal Symptoms" on page 1-9 and follow the procedure.
- If an adapter address is displayed in the unavailable adapters part of the **3745 Controller Status**, run the diagnostic on the suspected adapter. Go to "3745 Maintenance Actions" on page 1-6 and follow the procedure.

006

The 3746-900 yellow icon is a normal state. Its duration depends on the 3746-900 configuration.

- On the 3746-900 control panel, check if there is a character displayed on the **Service processor not accessible** digit.
- If a character is displayed, go to "MAP 5600: LAN Problem on the LAN Attached to the Service Processor" on page 2-61. Otherwise check if the service processor yellow LED (indicating disk access) is active.
- If the yellow LED is sometimes ON or sometimes OFF, wait a few more minutes. If the symptom persists, call your support for assistance.
- If the yellow LED is always OFF, call your support center for assistance.

007

The 3746-900 white icon is a normal state. Its duration depends on the 3746-900 configuration.

- Check either the 3746-900 control panel code displayed or the 3746-900 status on the service processor:
  - On the **MOSS-E View** window double-click on the 3746-900 icon.
  - Click on **Program** (in the action bar)
  - Click on **Status**.
  - The **3746-900 Status** window indicates the IML steps, the address of any processor, the CBC or unavailable ESCC, and the control panel code.
- Note the control panel code displayed, then refer to the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116 for investigation.

008

The 3746-900 icon is red when it is set in Offline mode.

- To set the 3746-900 in Online mode follow these steps.
  - Double-click on the 3746-900 icon.

(Step **008** continues)

008 (continued)
- On the **3746-9x0 Menu** window, click on the **Problem management** option.
- Click on the **Set 3746-9x0 Online/Offline option**.
- On the **Set 3646-900 Online/Offline** window, click on **Yes**.
- On the next **Set 3746-9x0 Online/Offline** window click on **YES** or **NO** (according to the current setting).
- On the next **Set 3746-9x0 Online/Offline** window, click on **OK**.

- Start a general IML in order to set the 3746-900 in Online mode.
- At IML completion, the 3746-900 icon must be green.
- Return to the **MOSS-E View** window.
- Go to "CE Leaving Procedure" on page 4-180 to return the machine to the customer. If the problem persists contact your support center.

MAP 5205: LAN Checking

You are here because you suspect the LAN cable (WLOB) or the service processor access unit (ACUN) to be faulty.

001

Perform the following steps:

- Check that the service processor LAN cable is correctly connected to the rear of the service processor and in the service processor access unit.
- Check that all the LAN cables are correctly connected to the service processor access unit.

Did you find the problem?

Yes **No**

002

Exchange the suspected FRU.

003

Problem solved go to "CE Leaving Procedure" on page 4-180.

MAP 5600: LAN Problem on the LAN Attached to the Service Processor

Symptom Explanation	Conditions That Could Cause This Symptom
Unable to activate or deactivate a ring. Errors occur while ring is running. No connection with the service processor.	• Service processor or network node processor LAN adapter. • Ring. • Service processor access unit. • 3746-900 TIC3 or CBSP. • 3745 MLA card.

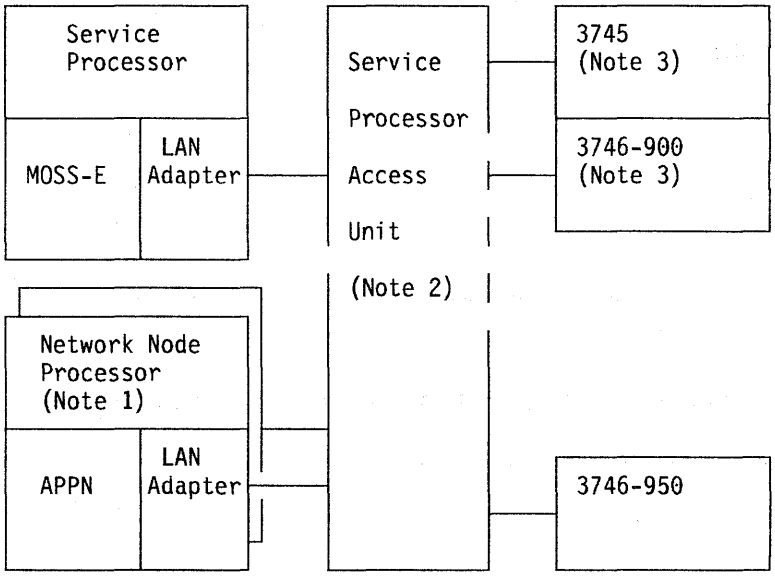


Figure 2-7. LAN Attached to the Service Processor

Notes:

1. The network node processor is an optional feature which is present only when APPN is installed. Up to four network node processor can be installed on the same LAN. A backup network node processor can also be present.
2. The LAN can be made of two service processor access units (8228).
3. Only 37XX units can be connected to the LAN when APPN is installed.

001

You are here because there is a problem on the LAN that is attached to the service processor. The following links can be impacted (one or more):

- 3745 MOSS/MOSS-E link
- 3746-900/MOSS-E link
- 3746-900/APPN link (if present)
- MOSS-E/APPN link (if present)

Is the problem permanent?

Yes **No**

002

Go to Step 016 on page 2-63.

003

(Step **003** continues)

003 (continued)
Does the problem appear on all units connected to the service processor?
Yes **No**

004
Go to Step 011.

005
Is the service processor powered ON?
Yes **No**

006
Power ON the service processor.
Is the service processor powered ON?
Yes **No**

007
Go to Step 010.

008
Problem solved.

009

- Check that the service processor LAN cables are correctly connected at the rear of the service processor.
- Check that the LAN cables are correctly connected to the service processor access unit.
- If everything is correct, continue with Step 010.

010
Go to **Service Processor Problem Determination** in the corresponding *Service Processor Installation and Maintenance* manual.

011
Is the problem only on a 3745?
Yes **No**

012
In the following list, select the unit that has the problem and perform the appropriate action.

Faulty Unit	Action:
3746-900	Restart problem determination using the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
3746-950	Restart problem determination using the *IBM 3746 Nways Multiprotocol Controller Model 950 Service Guide*, SY33-2108.
Network Node Processor	Perform problem determination on the network node processor using the corresponding *Network Node Processor Installation and Maintenance* manual.
Other unit	If you have another unit other than a 3745, 3746-900, or 3746-950 connected to the LAN. Refer to the specific documentation of this unit or do the problem determination on the ring using the *Token-Ring Network, Problem Determination Guide*, SX27-3710.

013

Is there a panel code displayed on the 3745 control panel?
Yes **No**

014

Go to "3745 Control Panel Symptoms" on page 1-13.

015

Go to "3745 Control Panel Code" on page 2-51 for control panel code interpretation.

016

You are here because you have transient errors on the service processor LAN .
Does the problem appear on all units connected to the service processor?
Yes **No**

017

Go to Step 019.

018

- Check that the service processor LAN cable is correctly connected at the rear of the service processor.
- Check that all the LAN cables are correctly connected to the service processor access unit.
- Do the problem determination on the ring using the *Token-Ring Network, Problem Determination Guide*, SX27-3710.
- If you do not identify the problem call your support center.

019

Is the problem only on a 3745?
Yes **No**

020

Faulty Unit	**Action:**
3746-900	Restart the problem determination using the *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.
3746-950	Restart problem determination using the *IBM 3746 Nways Multiprotocol Controller Model 950 Service Guide*, SY33-2108.
Network Node Processor	Perform problem determination on the network node processor using the corresponding *Network Node Processor Installation and Maintenance* manual.
Other Unit	If you have another unit other than a 3745, 3746-900, or 3746-950 connected to the LAN. Refer to the specific documentation of this unit or do the problem determination on the ring using the *Token-Ring Network Problem Determination Guide* SX27-3710.

021

Go to Step 022.

022

- If you are not already logged ON at the service processor console, go to "Console Use for Maintenance" on page 1-1 for logging ON. Then return here.
- On the **MOSS-E View** window, double-click on the desired 3745 icon.

(Step **022** continues)

022 (continued)

- Click on **MOSS**.
- On the MOSS screen, enter **ELD** (Event Log Display). and press **Enter** on the service processor keyboard.
- On the next MOSS screen, enter **7** (alarm) and press **Enter** on the service processor keyboard.
- On the list, check the presence of alarms type 11 (link lost) showing a problem on LAN.

Are there alarm type 11?

Yes **No**

No → **023**

Perform the problem determination on the ring using the *Token-Ring Network Problem Determination Guide*, SX27-3710.

Yes → **024**

- Record the selection number of each alarm 11. Enter this selection number and press **Enter** on the service proces sor keyboard.
- On the next MOSS screen, record the panel code.
- Repeat the two preceding steps for each alarm type 11. Then go to "3745 Control Panel Code" on page 2-51 to interpret the panel codes and continue the procedure.

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3745 Diagnostic Description

3745 Diagnostics

A full and detailed description of diagnostics is given in the *IBM 3745 Communication Controller Service Function*, SY33-2055 manual.

Two groups of diagnostics run on the 3745:

1. Automatic:

   IML/IPL checkout diagnostics including MOSS diagnostics.

2. Controlled:

   a. Power subsystem tests

   b. Functional area diagnostics

      - Internal Function Tests (IFTs)
      - Wrap tests
      - OLTs.

Diagnostics are run during the installation procedure and when a fault is detected to isolate a field-replaceable unit that caused the failure. They are also executed after a repair is performed, to check that the hardware area is working correctly. They must be run before and after an EC or MES has been installed in the area concerned.

Diagnostics may be run in offline mode when the 3745 is fully available or in concurrent mode. In concurrent mode, the diagnostic must be selected in the specific area and will run only in configured units. These units must be available at that time. Concurrent mode can not be run during a dump transfer on the other CCU.

Errors During Diagnostics

When the MOSS diagnostic program detects a failure, a three-digit code is displayed on the control panel.

When the internal function tests detect an error, a reference code is posted on the 3745 console.

Diagnostic Monitoring

The functional diagnostics are monitored by the diagnostic control monitor (DCM) and the command processor (CP).

The diagnostic control monitor is loaded when the diagnostic utility program is selected from the 3745 function menu.

It automatically restricts diagnostic testing to the elements that are defined in the configuration data file (CDF), powered ON, and disconnected from the NCP.

Checkout Diagnostics

The checkout diagnostics are designed to test the hardware of the CCU, switch, IOC, channel adapter, CSP part of the line adapter, TIC, and the PLC card.

For the CA, LA, and TRA, diagnostics are part of the microcode and are located in the ROS of the adapter itself. They run automatically every time the power is applied to the respective adapter. That is, at power ON time before IML, or when respective power is started (power ON reset line).

The PLC checkouts only run when power is applied to the power subsystem and are successful when the power control and service mode indicators are displayed.

For the CCU, switch, and IOC, the diagnostics are located on the disk and run during IPL.

For the CA, TSS, and HPTSS, they are also automatically run when the internal function tests are started.

For the TIC, the token-ring wrap test is automatically run at each TIC Open command from the NCP. This TIC Internal Lobe Media tests the ring up to the local wiring concentrator (IBM 8228), or up to the point where it is unplugged before the 8228.

If an error is detected, the MOSS analyzes the problem and presents a control panel code or a reference code.

MOSS Diagnostics

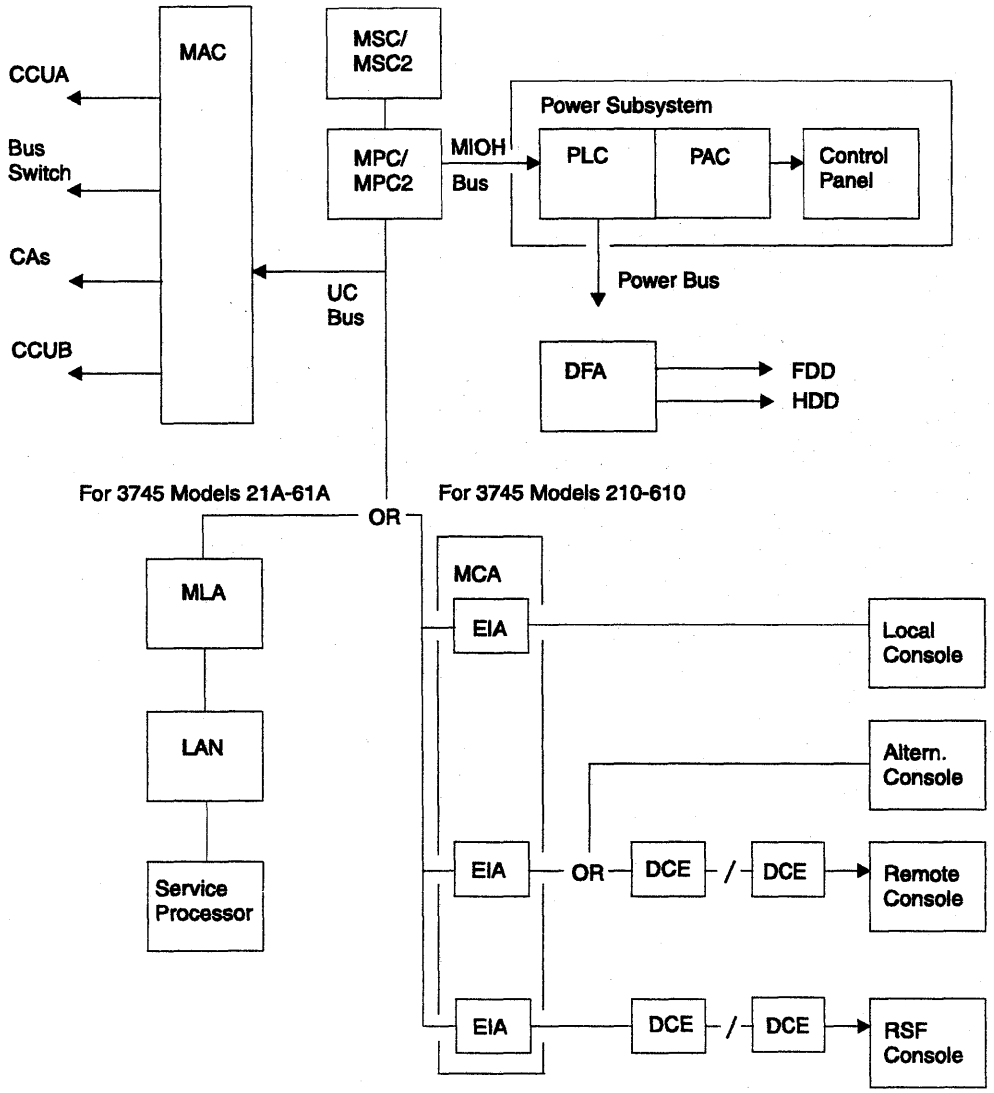


Figure 3-1. MOSS Overview

The MOSS diagnostics can be run in concurrent mode.

1. **Basic MOSS tests**

   They are designed to test the following units:

   - MPC (MOSS processor card) MPC2 for 3745 Models 21A and 61A
   - MSC (MOSS storage card) MSC2 for 3745 Models 21A and 61A
   - MAC/MAC2 (MOSS adapter card)
   - MCA (MOSS console adapter card) for 3745 Models 210-610
   - MLA (MOSS LAN adapter card) for 3745 Models 21A-61A
   - DFA (Disk file adapter card)
   - HDD (Hard disk drive)
   - FDD (Flexible Disk Drive).

   The basic MOSS tests are run whenever the following functions occur:

   - Power ON reset

- MOSS IML
- General IPL.

-IML MOSS functions. For example: MOSS dump.

IF A CRITICAL FAILURE IS DETECTED DURING ANY OF THE MOSS DIAGNOSTICS, A CODE WILL BE DISPLAYED ON THE CONTROL PANEL.

Refer to "How to Run MOSS Diagnostics" on page 3-20.

2. **Loop MOSS diagnostics**

   Refer to "How to Loop MOSS Diagnostics" on page 3-21.

   Basic tests will loop until an error is detected or an exit from this option is performed.

3. **Local/Remote/RSF console link tests**

   Refer to "How to Run the Console Link Test on 3745 Models 210-610" on page 3-23.

   They are individually selected tests which will test the hardware connecting the respective consoles.

Power Subsystem Tests

1. **Control panel test**

   This test is designed to ensure that all the keys and displays are working correctly. The control panel bus and the PLC (power logic card) are also partially tested.

   This diagnostic can be run in concurrent mode. Refer to "How to Run the 3745 Panel Test" on page 3-22.

2. **Power control bus test**

   The power control bus test allows the CE to check the interface between the PLC card and the different power supplies of the 3745.

   This function is dedicated to CE use only.

   When the power control subsystem loses the control of a power supply due to an interface problem, a BER is logged by the MOSS. Based on this information, the CE may have to check the power control bus.

This diagnostic can be run in concurrent mode. Refer to "How to Run the Power Control Bus Test" on page 3-25.

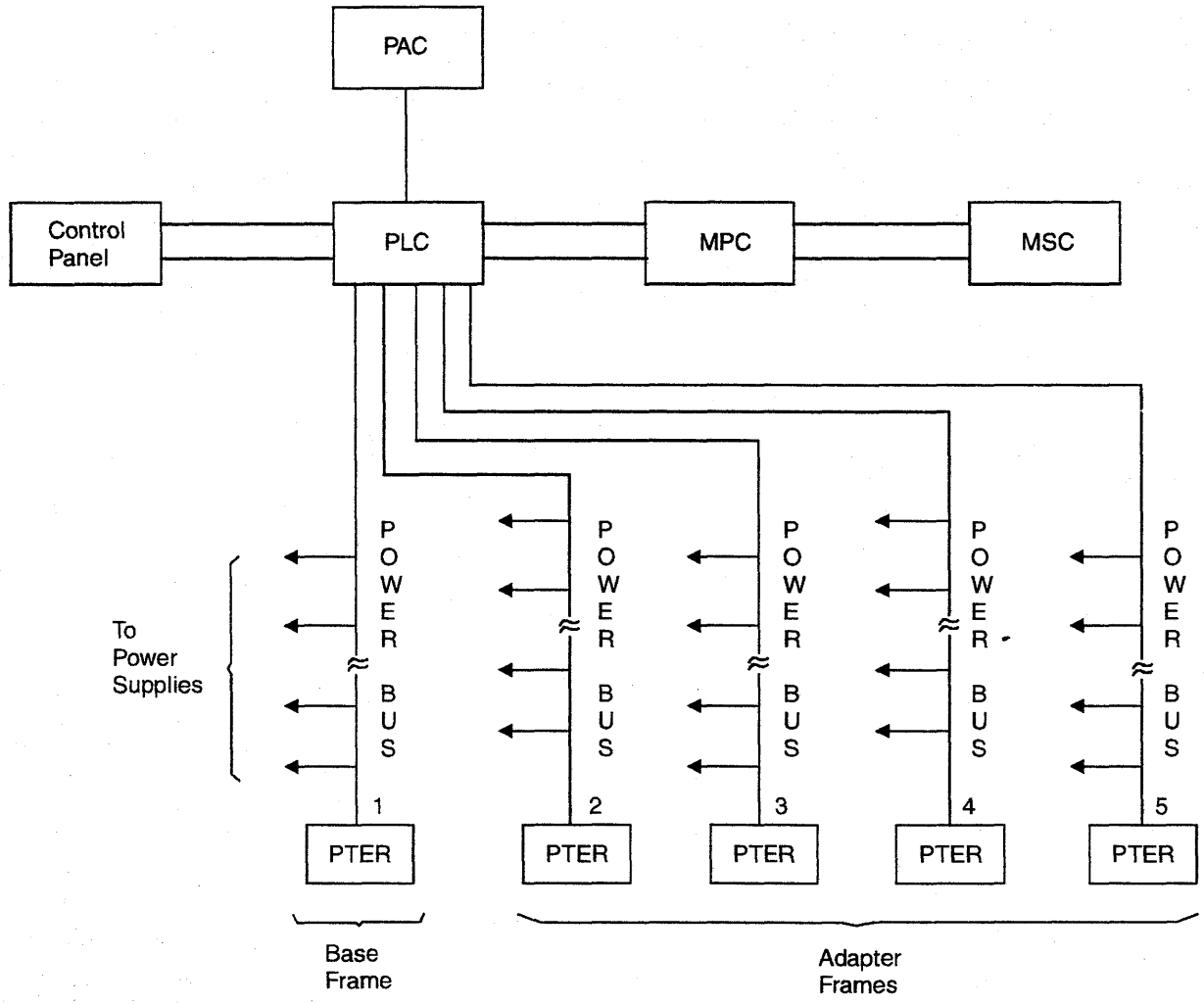


Figure 3-2. Power Control Bus Layout

Functional Area Diagnostics

1. CCU (central control unit)
2. IOC BUS (input/output control)
3. CA (channel adapter)
4. TSS (transmission subsystem)
5. TRSS (token-ring subsystem)
6. HPTSS (high-performance transmission subsystem).

These tests are stored on the hard disk and are run to detect failures caused by the hardware in the 3745, and to isolate the FRU that caused the failure. They are also used to verify that the machine is working correctly after a repair has been made.

The diagnostics are arranged in groups, internal function tests (IFTs), sections, and routines.

Group: Set of IFTs that test a 3745 subsystem (the CA group for example).

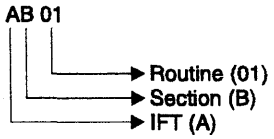
IFT: Internal function test often divided into **Sections** that can be loaded and executed one at a time.

Section: Set of routines that test a particular adapter, or a component of a subsystem.

Routine: The shortest executable test.

Diagnostic Identification

The identification contains the IFT number, the section number, and the routine number as follows:



Selecting these diagnostics is accomplished by using the 3745 console.

If a failure is detected by the diagnostics, a reference code is posted at the 3745 console, and the corresponding FRUs can be displayed by the reference code interpretation function. See "Using Reference Codes" on page 1-17.

Refer to "How to Run Internal Function Tests" on page 3-30.

CCU Diagnostics

The CCU and the switch hardware are tested by automatic checkout during IPL. The IFTs for the CCU and switch mainly check if the different internal functions are working properly.

For the components tested, see Figure 3-3.

CCU diagnostics include the following IFTs:

IFT A CCU operations.

IFT B CACHE.

IFT D SCTL/CCU link.

IFT E SCTL/STORAGE/CACHE link.

IFT F SCTL/DMA link.

IFT G SWITCH diagnostics (IOC driver/receiver are not tested by that diagnostic but by the IOC diagnostics).

IFT H Functional processor diagnostic.

These diagnostics can be run in concurrent mode on one CCU for a Model 41x or 61x, except during a dump transfer or when a multiple load module (MLM) is running on the other CCU.

AT05 is a manual intervention routine and can not be run in concurrent mode.

Running time for the whole group is a minimum of 40 minutes per CCU.

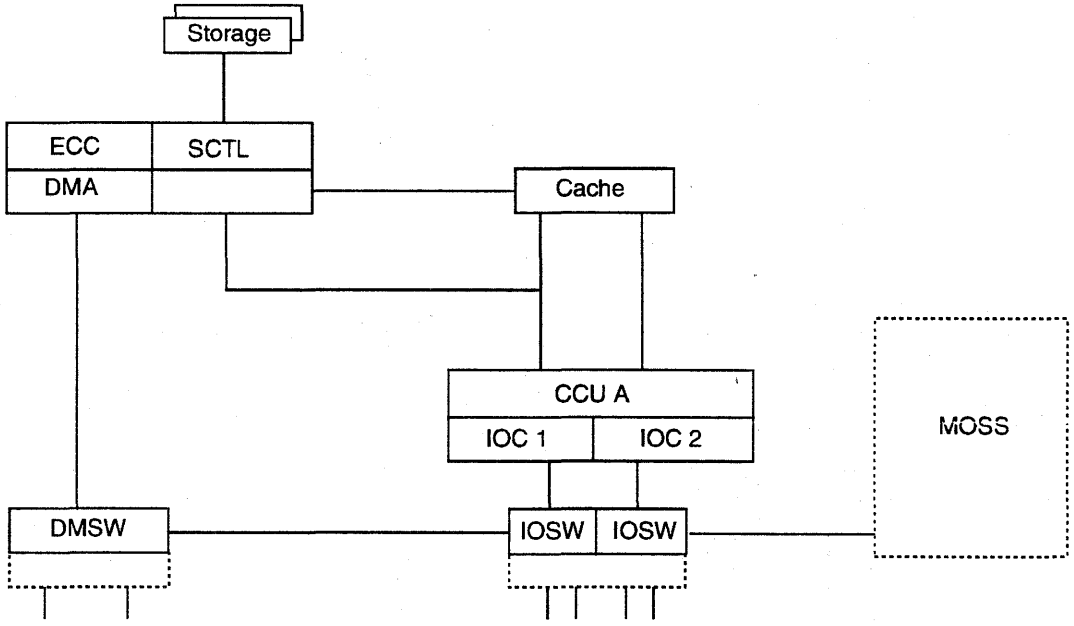


Figure 3-3. CCU Diagnostic Coverage

IOC Diagnostics

The IOC hardware is tested by automatic checkout during IPL. The IFTs for IOC mainly check if the different internal functions are working properly.

Only the adapter Bus drivers or Bus receivers are tested in the IOSW/IOSW2 card.

For components tested, see Figure 3-4.

IOC diagnostics include the following IFTs:

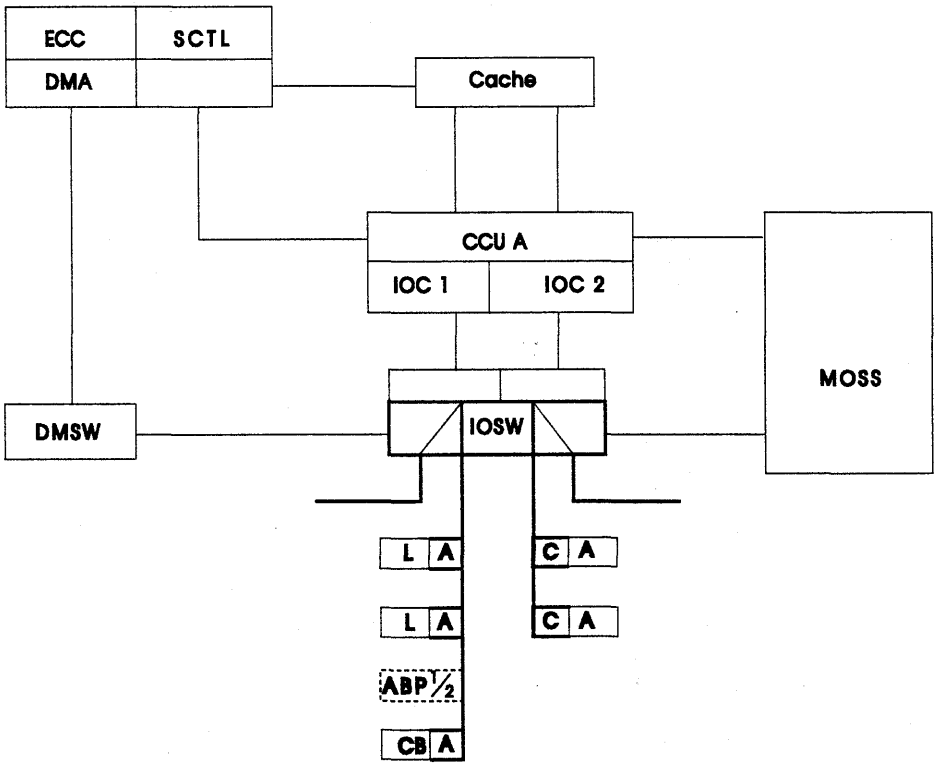
IFT I Primary pass for transmission and channel adapters.

IFT J Secondary pass for transmission and channel adapters.

IFT K Transmission adapter attachment to adapter buses.

These diagnostics can be run in concurrent mode on one CCU for a model 41x or 61x.

Running time for the whole group depends on the configuration.



Parts tested
Parts tested by other diagnostics
Parts not tested

Figure 3-4. IOC Diagnostic Coverage

CBA Diagnostics

The link between the 3745 and the 3746-900 is checked via CBA routines invoked from the 3745 MOSS console.

CBA Diagnostics from the 3745 MOSS Console:

New diagnostic sections are provided to test the 3745 and 3746-900 interface. These sections must be run **manually and Offline**.

- IOC interface is tested by two new sections:
  - IDxx section tests the path between the:
    - CCUA and IOC Bus 1
    - CCUB and IOC Bus 4.
    - ID01: Use of IOC test register.
    - ID02: Test of bad parity
    - ID03: Interrupt test.
  - JDxx section tests the path between the:
    - CCUA and IOC Bus 4
    - CCUB and IOC Bus 1.
    - JD01: Use of IOC test register.
    - JD02: Test of bad parity
    - JD03: Interrupt test.

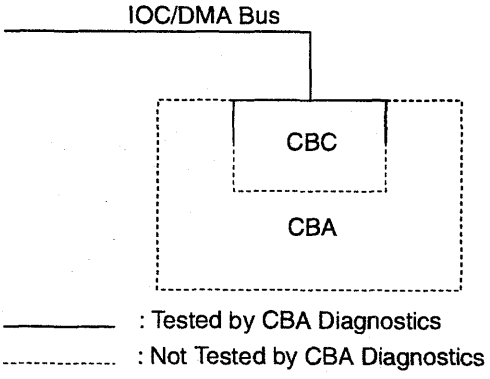


Figure 3-5. CBA Diagnostic Coverage

The run time is about 1 minute and 30 seconds.

- DMA interface is tested by a new section XAxx.
  - XA01: DMA test.
  - XA02: Extended DMA test.

  The run time is about 6 minutes per coupler.

Prerequisites to Run the CBA Test from the 3745 MOSS

- The 3745 must be powered ON and in offline mode.
- The 3746-900 must be powered ON and in online mode.
- The CBCs and their respective CBSP and/or TRP must **not** be in concurrent mode.
- The CBCs and their respective CBSP and/or TRP must be available in the CDF-E.
- The 3746-900 must be error free.

Refer to Figure 3-5 for the coverage of CBA diagnostics.

CA Diagnostics

The channel adapter hardware is tested during IML checkout by the diagnostics contained in the CA ROS itself. CA diagnostics are mainly designed to check if the different functions with MOSS, CCU, memory, and host sequences are working properly.

The Autoselect, cycle steal chains, internal wrap, and external wrap are also tested.

The channel adapter diagnostics are all included in IFT L.

The following routines are not linked and need a manual intervention:

- LG02, LI03, LI04, LJ03, LK02 (channel cables must be removed and terminators installed in the **OUT** connectors).
- LO01 (wrap plugs and terminators installed).

Note: Routine LA must be run before the manual routines are started.

Due to possible interferences with other 3745 components, some routines are not run in concurrent mode but automatically selected and run in offline mode.

Running time for the whole group is about 1 minute per CA.

CA Wrap Test

This test is part of the CA diagnostics. It is a specific manual intervention routine (LO01) which is run on the CA from the 3745 console. Two wrap plugs installed at the tailgate to check if input or output lines of the CA are working properly.

For the running procedure, refer to "How to Run the Channel Wrap Test" on page 3-47.

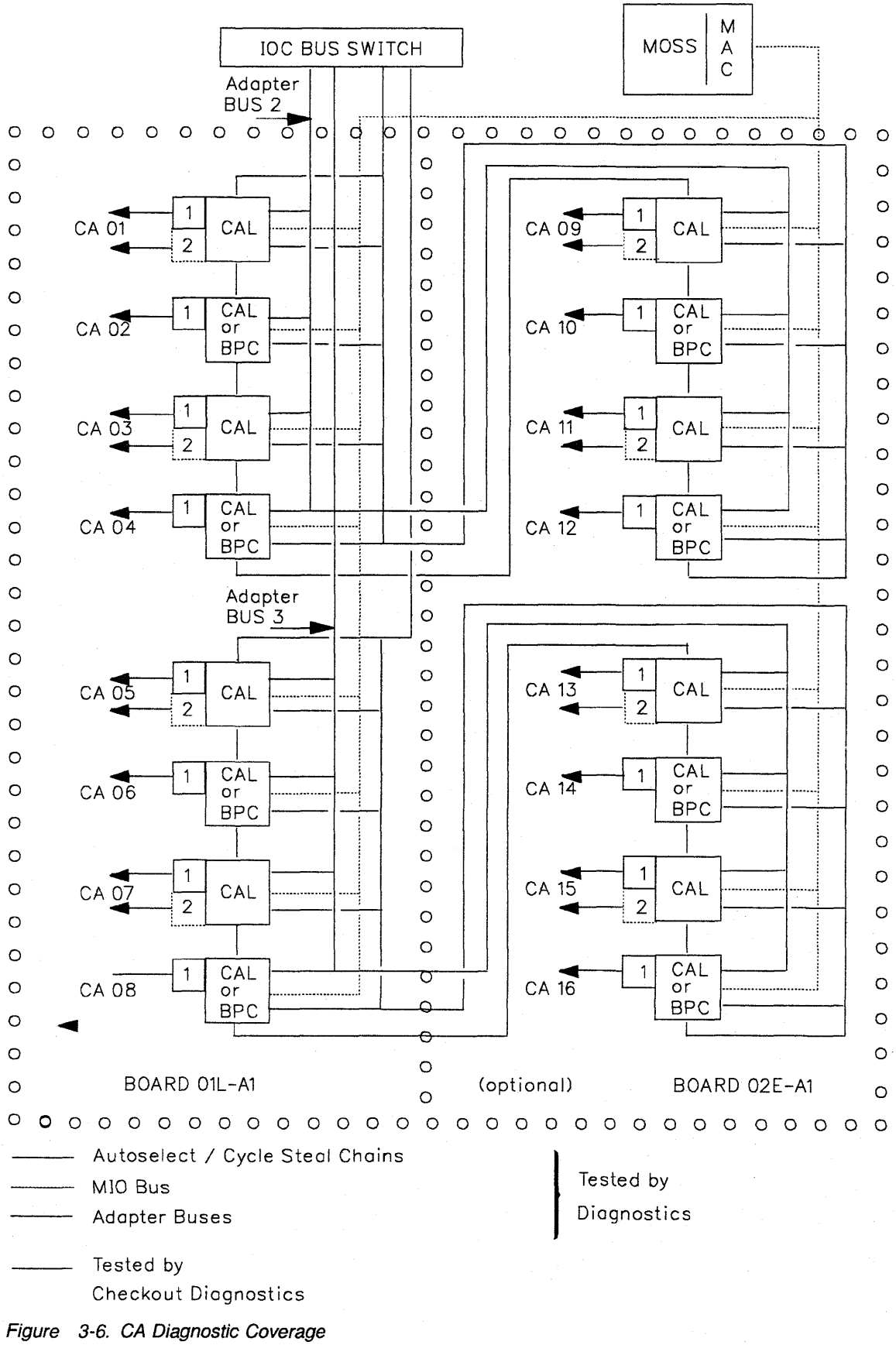


Figure 3-6. CA Diagnostic Coverage

TSS Diagnostics

Two sets of diagnostics are used to test the TSS in the 3745:

- Tests residing in the ROS of the CSP card
- IFTs residing on the disk and run from the MOSS console.

Refer to Figure 3-7 on page 3-13 for the coverage of TSS diagnostics.

CSP ROS diagnostics are run every time the scanner is IMLed. They test the CSP hardware. If an error is detected, a RAC code is sent to MOSS which will build the appropriate reference code. After a successful run, an OK is posted to MOSS.

IFTs are run from the 3745 console. They are used to test the remaining part of the TSS after ROS diagnostics are run.

In concurrent mode, CSP checkout is included in TSS diagnostics.

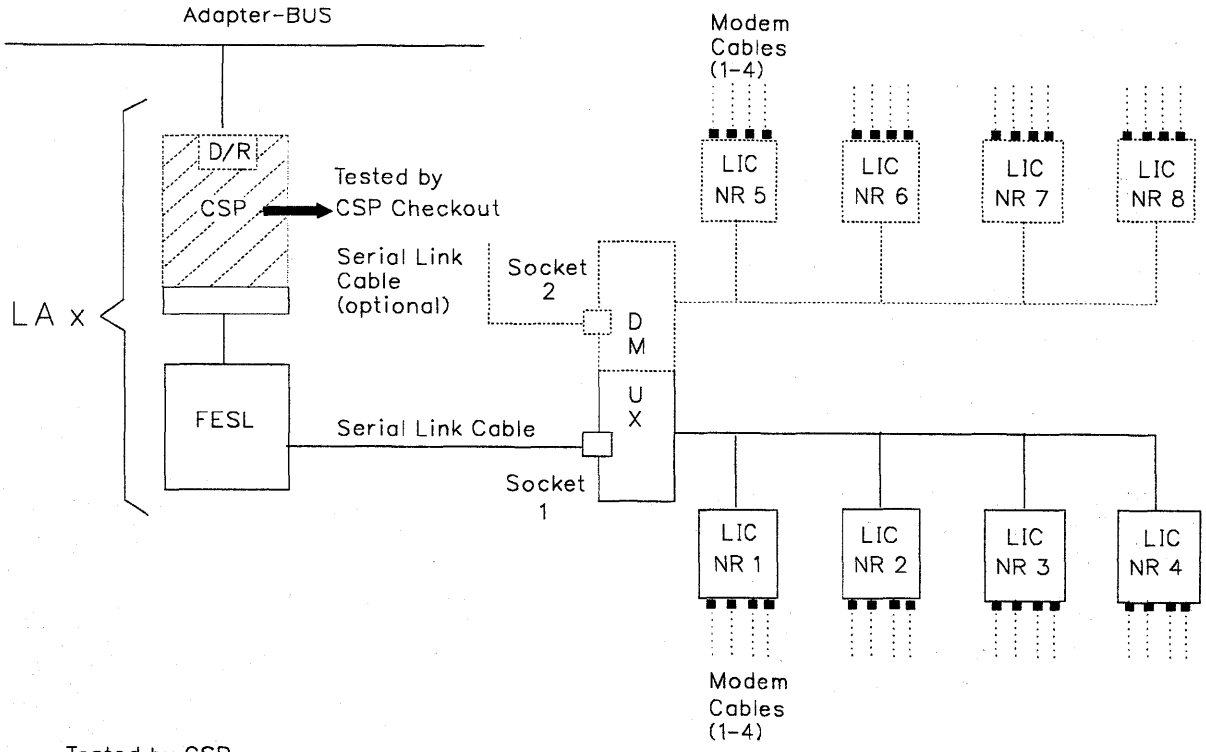
The following table shows the relation between IFTs and the areas tested.

IFT/RTN	Area Tested
PA to PE	FESL/CSP card level FESL interconnections
QA	DMUX card level
RA	LIC1-4/ICF card level
RB to RC	LIC1-4/ICF line level
RD	LIC1-4/ICF Japan NTT
RG	LIC5-6 card level
RH	LIC5-6 line level

RC01, RD01 to RD03, and RH59 are manual intervention routines.

IFTs can be run concurrently with the customers operations. Only one scanner needs to be disabled from NCP/VTAM.

Running time can be up to 15 minutes per adapter, depending on the number of lines connected to that adapter.



Tested by CSP Checkout Diagnostics

Tested by TSS Diagnostics via LA x

Tested by TSS Diagnostics via LA x, If cable is not present in socket 2

Figure 3-7. TSS Diagnostic Coverage

TRSS Diagnostics

IFTs are used to test the TRSS. They are loaded and run using the 3745 console only.

Refer to Figure 3-8 for the coverage of TRSS diagnostics.

The following table shows the relation between IFTs and the areas tested.

IFT/RTN	Area Tested
TA to TE	TRM card level
TF to TI	TIC card level

IFTs can be run concurrently with the customer's operations. Only one TRA needs to be disabled from NCP/VTAM.

Running time can be up to 5 minutes per adapter.

Note: The TRA must be disconnected prior to running the diagnostics each time the power supply is turned ON.

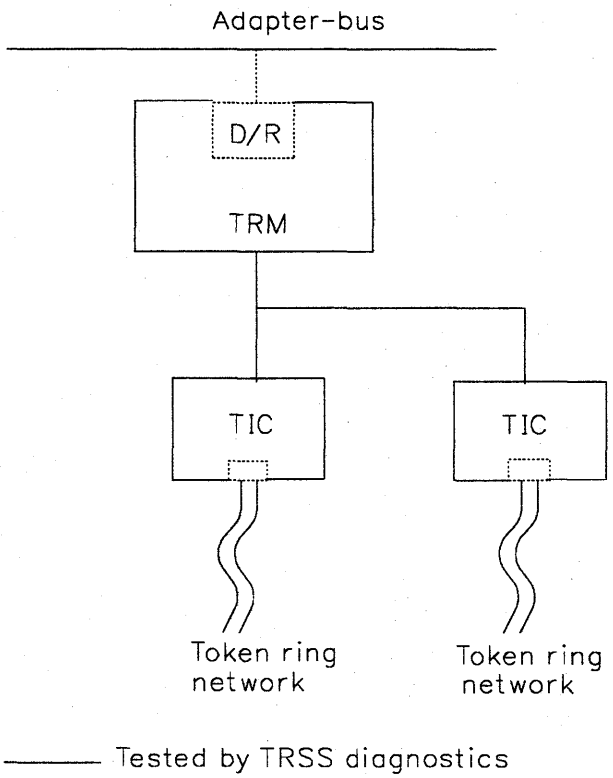


Figure 3-8. TRSS Diagnostic Coverage

HPTSS Diagnostics

Two sets of diagnostics are used to test the HPTSS in the 3745:

- Tests residing in the ROS of the CSP card
- IFTs residing on the disk and run from the 3745 console.

The CSP ROS diagnostics are run every time a scanner is IMLed. They test the CSP hardware. If an error is detected, a RAC code is sent to the MOSS which will build the appropriate reference code. After a successful run, an OK is posted to the MOSS.

IFTs are run from the 3745 console. They are used to test the FESH card, DMA bus connection from switch to HPTSS, and the line interface from the FESH card up to the tailgate. However, in concurrent mode, the DMA bus is not tested until specifically selected. This is to avoid overloading other adapters residing on the same DMA bus.

Refer to Figure 3-9 for the coverage of HPTSS diagnostics.

The following table shows the relation between the IFTs and the areas tested.

IFT/RTN	Area Tested
VA	FESH card level and FESH to CSP interconnection. row.
VB to VD	FESH card state machines. row.
VE	FESH to CSP cycle steal function. row.
VF	FESH card SDLC functions. row.
VG to VH	Complete DMA operation on FESH, DMSW, and SCTL/SCTL2 cards. row.
VI to VK	FESH to TP lines interface. Wrap Plug needed.

In concurrent mode, routines VG and VH are run only if explicitly selected.

IFTs can be run concurrently with the customers operations. Only one scanner needs to be disabled from NCP/VTAM.

Running time can be up to 10 minutes per scanner.

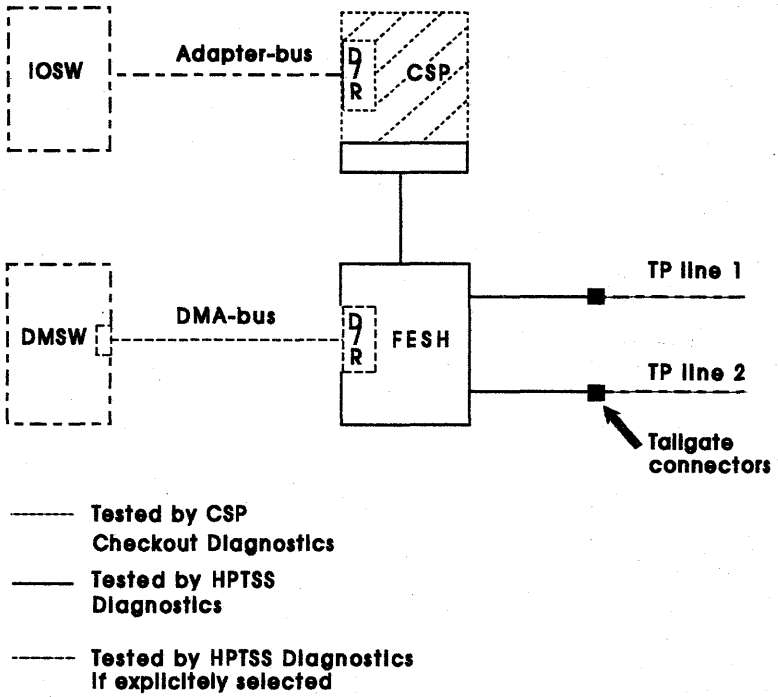


Figure 3-9. HPTSS Diagnostic Coverage

ESS Diagnostics

Two sets of diagnostics are used to test the ESS in the 3745:

- Tests residing in the ROS of the CSP card
- IFTs residing on the disk and run from the 3745 console.

The CSP ROS diagnostics are run every time a scanner is IMLed. They test the CSP hardware. If an error is detected, a RAC code is sent to MOSS which will build the appropriate reference code. After a successful run, an OK is posted to MOSS.

IFTs are run from the 3745 console. They are used to test the EAC card, DMA bus connection from switch to ESS, and the line interface from the EAC card up to the tailgate. However, in concurrent mode, the DMA bus is not tested until specifically selected. This is to avoid overloading other adapters residing on the same DMA bus.

Refer to Figure 3-10 for the coverage of ESS diagnostics.

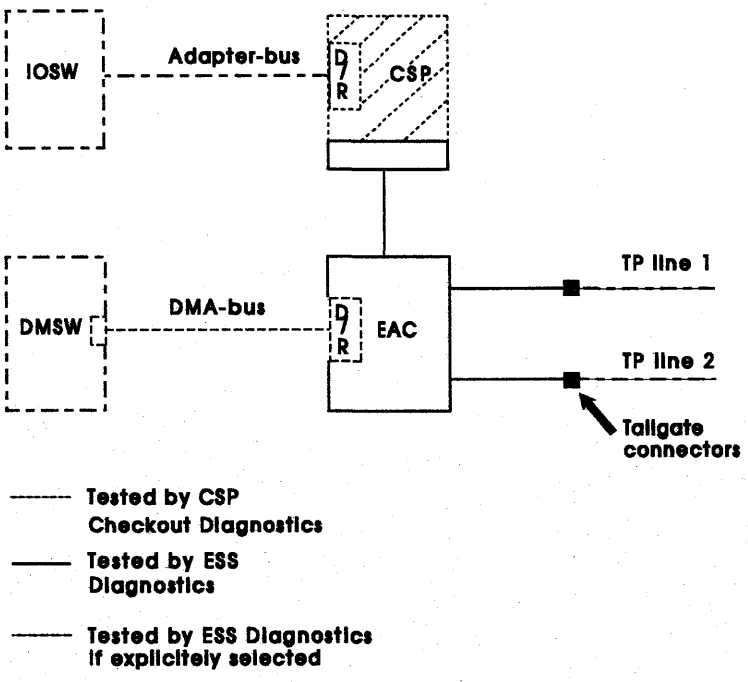


Figure 3-10. ESS Diagnostic Coverage

The following table shows the relation between IFTs and the areas tested.

IFT/RTN	Area Tested
UA01 to UA09	EAC card level and EAC to CSP interconnection.
UB01	EAC card state machines.
UC01 to UC02	EAC to CSP cycle steal function.
UD01 to UE03	Complete DMA operation on EAC, DMSW, and SCTL/SCTL2 cards.
UF02 to UF03	EAC to TP lines interface.

IFTs can be run concurrently with the customers operations. Only one scanner needs to be disabled from NCP/VTAM.

Running time can be up to 10 minutes per scanner.

CA Online Test (OLT)

This test causes the OLT responder (stored on the disk), to be loaded into the 3745.

It requires that the OLTs be loaded at the host. It is used to respond to requests from the host via the channel interface.

If a failure is detected while running the OLTs, a system message is displayed at the system operators display.

This test is run only in offline mode.

Information for running the OLTs is covered by the *3745 Channel Adapter Online Tests*, D99-3745A manual.

Note: OLTs are not invoked by any of the MIPs procedures.

Network Power OFF Test

The CCU IFT routine AT05 is a manual routine which tests the correct execution of the network power OFF command.

If the 3745 has only one CCU, running the AT05 routine on this CCU will power OFF the 3745. If the machine has two CCUs, the AT05 routine must be run on both CCUs to cause the power OFF condition.

The 3745 must be fully available before running this routine.

LIC Wrap Test

Two different wrap tests are available for the customer and the CE.

1. The wrap test function (WTT) is a problem determination aid available for the customer. It needs the control program (NCP) running and ports on a LIC being 'Sysgenned'. It also needs LIC lines that are deactivated by the network operator.

   a. The automatic wrap test (option 1) runs at LIC level only and does not need a wrap plug.

      This wrap test, without any manual intervention on the machine confirms if the tested LIC is failing, or checks if the newly installed LIC is OK.

      The only input is the number of a line on the LIC.

      The result of the GO or NOGO test have three possibilities:

      - Wrap test completed: Link is OK.
      - Wrap test completed: Link is failing.
      - Unable to perform wrap test on this LIC for .... Please retry (the reason is given).

      Run time is approximately 30 seconds.

   b. The Wrap Test At Any Level (option 2) is to be used by the customer. For more explanations, refer to the *IBM 3745 Communication Controller All Models Advanced Operations Guide*, SA33-2097 manual.

   Information on running the wrap test is given in "How to Run the Wrap Test (WTT) for TSS, HPTSS, or 3746-900" on page 3-34.

2. The IFT wrap test is run when:

   The RC section (or all TSS or HPTSS IFTs) is called on the selected LA and line when there is a wrap plug or wrap cable installed on the HPTSS port or LIC 1, 3, or 4.

   The RH59 routine (or all TSS IFTs) is called on the selected LA and line with a wrap plug installed on LIC 5, or 6.

   The RD01 through RD03 routines are reserved for the Nippon Telegraph Telephone (NTT) administration. They check the data wrap. They also check the modem control leads depending on the LIC type (modem-in-wrap).

   Reference for running is given in "How to Run the Wrap Test with IFTs for TSS, HPTSS, or ESS Port" on page 3-42.

How to Run MOSS Diagnostics

These tests can be run without stopping the customers application.

- Error conditions will result in a control panel code being displayed. Actions for these codes are defined in "3745 Control Panel Codes" on page 1-19.
- Some errors will result in a reference code at IML completion. These types can also be recognized by the panel code displaying **'F0D'**. Refer to "Using Reference Codes" on page 1-17 for action.

Ensure that the MOSS is offline or alone.

From the 3745 Console

1. Perform a MOSS IML action from the console by entering **IML** in menu 1.
2. After approximately two minutes, the console will be re-initialized with the **Channel Enable/Disable** screen which indicates that a successful run of MOSS diagnostics and the MOSS IML have been completed.
3. If the console has not been re-initialized, an error was detected.

From the Control Panel

1. Set the function to MOSS IML:
   a. Press **Service** until **0** or **1** is displayed in the service window (no bypass of MOSS diagnostics).
   b. Press **Validate**.
   c. Press **Function** until **1** is displayed in the function window.
   d. Press **Validate**.
2. If after approximately two minutes the control panel displays code **F0F**, the MOSS diagnostics and a MOSS IML have been successfully completed. The code **F0E** can be displayed if the MOSS was previously **alone**, (that is, not in **offline mode**).
3. If any other code is displayed, an error was detected.

How to Loop MOSS Diagnostics

If an intermittent MOSS problem is suspected, the **loop MOSS diagnostics** facility can be used as follows:

Ensure that the MOSS is offline or alone.

1. Set service mode to Maintenance 1:
   a. Press **Service mode** until **1** is displayed in the service window.
   b. Press **Validate**.
2. Set the function to loop on MOSS diagnostics:
   a. Press **Function** until **A** is displayed in the function window.
   b. Press **Validate**.
3. The MOSS diagnostics will run continuously unless an error is detected. Usually 5 to 10 minutes of error free operation are sufficient to determine whether the MOSS is working satisfactorily. If an error is detected, a panel code will be permanently displayed. Go to "3745 Control Panel Codes" on page 1-19. Gentle vibration of the MOSS cables and cards (while the test is running), will locate most loose connection problems.

   If no error is detected:
4. Set service mode to NORMAL:
   a. Press **Service** until **0** is displayed in the function window.
   b. Press **Validate**.
5. Set function to MOSS IML:
   a. Press **Function** until **1** is displayed in the function window.
   b. Press **Validate**.
6. When the control panel displays **F0F** (or **F0E** if the MOSS was previously **alone**), perform a MOSS online. Refer to "How to Put the MOSS Online" on page 4-183

How to Run the 3745 Panel Test

This test can be run without stopping the customers application.

It is not a sequential test and can be cancelled at any time by pressing **Exit**.

Notes:

1. Any inactivity (during the panel test) of approximately 60 seconds will result in the test being automatically cancelled and the panel will return to operational mode.
2. During this test, the control panel audible alarm will sound for each action.

The **special character:** can be described as every possible segment of the window being lit:

1. Set the power to local:
   a. Press **Power Control** until **3** is displayed in the power control window.
   b. Press **Validate**.

      If the preceding action can not be performed, go to Step 11.
2. Set Service Mode to Maintenance 1:
   a. Press **Service Mode** until the number **1** is displayed in the service window.
   b. Press **Validate**.

      If the preceding action can not be performed, go to Step 11.
3. Set **Function** to panel test:
   a. Press **Function** until **5** is displayed in the function window.
   b. Press **Validate**.

      If the preceding action cannot be performed, go to Step 11.

   Observe the display: All 10 **special characters** will be displayed.

   If the pattern is not identical for each of the 10 special characters, go to Step 11.

   Note: If during the following steps the function window displays **5**, the control panel has detected its own failure. Go to Step 11.
4. Press **Function**.

   Observe the display: The **Function** window **special character** will be displayed. Repetitive action will scroll through the **Code** window sequentially, and wrap around.

   If this does not occur, go to Step 12.
5. Press **Service Mode**.

   Observe the display: The **Service** window **special character** will be displayed. Repetitive action will scroll through the **Power Control** window, and wrap around.

   If this does not occur, go to Step 12.
6. Press **Power Control**.

   Observe the display: The **Console in Use** window **special character** will be displayed. Repetitive action will scroll through the **All CA Disabled MOSS Inop** and the **MOSS Msg** windows sequentially, and wrap around.

   If this does not occur, go to Step 12.
7. Press **Power ON Reset**.

   Observe the display: **8** will be displayed in the **Function** window.

   If this does not occur, go to Step 12.
8. Press **Power Off**.

   Observe the display: The display will be completely blank.

   If this does not occur, go to Step 12.
9. Press **Exit**.

   Observe the display: The display will present the **Power Control** and **Service Mode** indicating that the test is complete, and the panel has returned to operational mode.

   If this does not occur, go to Step 12.
10. **The control panel test has completed with no error detected. Disregard Steps 11 and 12 .**
11. Record that FRU group 4077 on page 1-38 is involved.
12. Record that FRU group 1116 on page 1-37 is involved.

How to Run the Console Link Test on 3745 Models 210-610

This function is available for the 3745 Models 210-610 only.

This function tests the customers console ports with wrap plugs which may be installed at the end of the cable. They are attached to either the local console, the remote console modem, or the RSF link modem. The wrap plugs can also be installed at the connectors for these cables in the 3745 (not possible with the 3727 console cable).

This test can be run without stopping the customers application.

Local/Remote or Alternate/RSF Link Tests

1. Ensure that the customer is not using any of the 3745 consoles and also confirm the availability of MOSS.
2. Set the power control to local:
   a. Press **Power Control** until **3** is displayed in the power control window.
   b. Press **Validate**.
3. Set the Service Mode to Maintenance 1:
   a. Press **Service** until the number **1** is displayed in the service window.
   b. Press **Validate**.

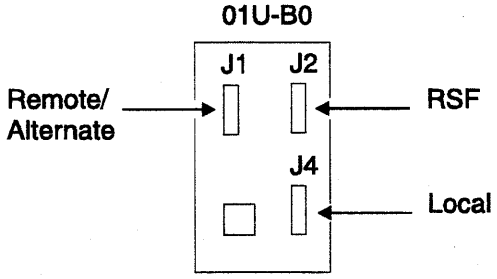


Figure 3-11. Console Output

4. We advise you to start the **wrap plugging** from the far end of the DCE interface cable. Refer to Figure 3-12 on page 3-24 for the different cable configurations.
5.
   - Remove the DCE interface cable from the console, modem, or console switch (the DCE interface cable may be connected directly to the DCE, or to an intermediate **adapter**). **In the second case, remove the the DCE interface cable from the adapter**).
   - Connect the appropriate wrap plug at the end of the cable.

   Wrap plug to be used according to the DCE interface cable and to the console:
   a. DCE interface cable between the 3745 and the console/modem **without** an intermediate **adapter** (**A** in Figure 3-12).

      Use wrap plug PN 6398697.
   b. DCE interface cable between the 3745 and the console/modem **with** an intermediate **adapter** (**B** in Figure 3-12).

      Use the wrap plug PN 2667737.
   c. DCE interface cable between the 3745 and the console switch (7427) (**C** in Figure 3-12).

      Use the wrap plug PN 2667737.
   d. DCE interface cable between the console switch (7427) and the console/modem (**D** in Figure 3-12).

      Use the wrap plug PN 6398697 for a console 31XX or the wrap plug PN 2667737 for a console 3727.

   Important:

   The cable connecting to the alternate console must be tested on the **Local** output with the test option **8**.

   OR

   Open the rear cover of the 3745 base frame. Remove the appropriate cable (if installed) from the output and connect the wrap plug PN 6398697. See Figure 3-11.
6. Set the function to the link test required: either remote/alternate, RSF, or local:
   a. Press **Function** until **6**, **7**, or **8** is displayed in the function window.
      - 6 (remote/alternate)
      - 7 (RSF)
      - 8 (Local).
   b. Press **Validate**.
7. After a partial MOSS IML, the following panel codes will be displayed:
   a. LOCAL
      1B1: Start of test
      1B2: Successful completion of test.
   b. REMOTE/ALTERNATE
      1B3: Start of test
      1B4: Successful completion of test.
   c. RSF

1B5: Start of test
1B6: Successful completion of test.

If any other panel code is displayed, disconnect the wrap plug. Go to "3745 Control Panel Codes" on page 1-19 and follow the instructions.

8. Disconnect the wrap plug and reconnect the cable.
9. Set the service mode to NORMAL:
   a. Press **Service** until **0** is displayed in the function window.
   b. Press **Validate**.
10. Set the function to MOSS IML:
    a. Press **Function** until **1** is displayed in the function window.
    b. Press **Validate**.
11. When the control panel displays **F0F** or **F0E** (if the MOSS was previously **alone**), perform a MOSS online. Refer to "How to Put the MOSS Online" on page 4-183.
12. The console link test has completed with no error detected.

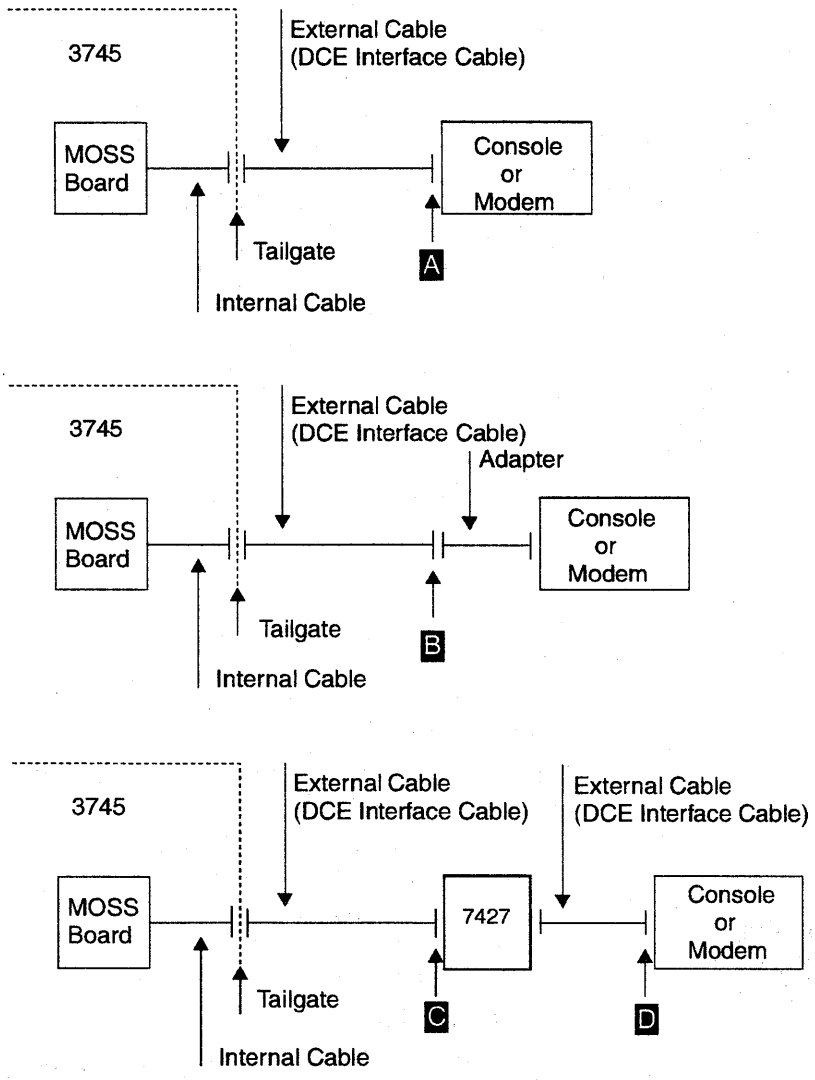


Figure 3-12. Cable Configurations

How to Run the Power Control Bus Test

The Power Control Bus (PCB) test can be run with the machine being either powered OFF or ON and online.

- Power supply statuses will not be impacted.
- Power supplies are not polled during the test.
- No cooling detection available.
- Scooping is possible on the wrap card.
- Test result has a code displayed on the control panel.
- Step-by-step action will allow the CE to isolate the faulty FRU.

Power Control Bus Test Procedures

Use the Power Control Wrap Card (PN 65X9848) to run this test.

The power bus test function is available from the control panel.

Start:

1. Set the power control to local.
   a. Press **Power Control** until **3** is displayed in the power control window.
   b. Press **Validate**.
2. Set service mode to **Maintenance 1**.
   a. Select service **1**.
   b. Press **Validate**.
3. Select the power bus test.
   a. Press **Function** until **C** is displayed in the function window.
   b. Press **Validate**.
4. For the power terminator (PTER) location, see Figure 4-2 on page 4-5 to Figure 4-7 on page 4-11.
5. Disconnect the power bus cable from the terminator on the bus to be tested. See Figure 3-13.

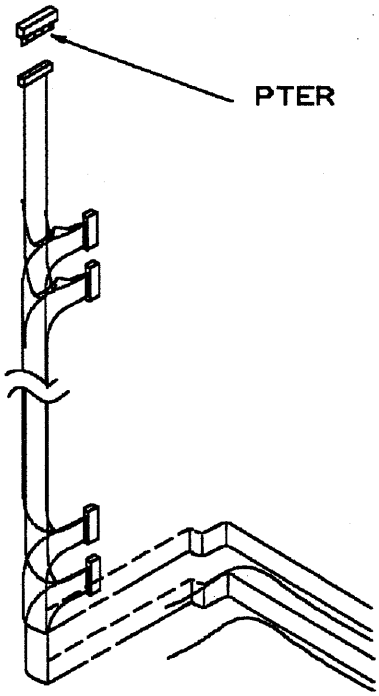


Figure 3-13. Power Terminator (Frame 01 Represented)

6. Fit the wrap card side A to this bus. See Figure 3-14 on page 3-27.
7. Press **Function** until the required character **D** through **H** (according to the following table) is displayed in the **Function** window.

Function	Bus Number	
D	Bus 1	Frame 01
E	Bus 2	Frame 02
F	Bus 3	Frame 03
G	Bus 4	Frame 04/05/06 Front
H	Bus 5	Frame 04/05/06 Rear

8. Press **Validate**.
9. Select service **A** on the control panel.
10. Press **Validate**.

    The predetermined patterns are now sent to the power control bus.

    The test will loop on these patterns as long as the function or service keys are not pressed, or an error detected.
11. IF code **005** is displayed on the control panel, go to "Power MAP 3920: 3745 Power Bus Test Failure" on page 2-32.
12. Code 004 displayed on the control panel indicates a successful cycling of the test.

13. Select service **1**.
14. Press **Validate**.
15. Reverse the wrap card to side B.
16. Select service **B**.
17. Press **Validate**.
18. Code 004 displayed on the control panel indicates a successful cycling of the test.
19. If any other code is displayed on the control panel, go to "Power MAP 3920: 3745 Power Bus Test Failure" on page 2-32.
20. Remove the power control wrap card and reinstall the removed cable on the terminator.

    Note: Code **005** displayed at this time is a normal consequence of the test without a wrap card installed.
21. Press **Exit** to finish the test.

PCB Wrap Card Description

The wrap card consists of two independent wrap circuits (A or B) on the same tool, each circuit having its own connector.

There are eight output wires for only five input wires. The test will be performed in two runs.

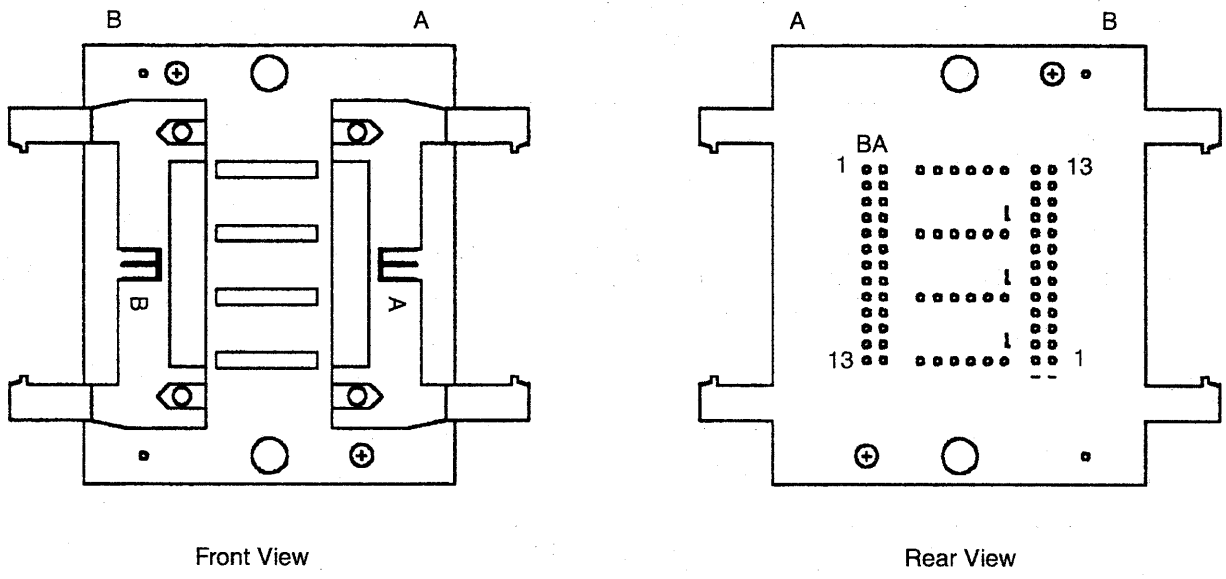


Figure 3-14. Power Control Bus Wrap Card

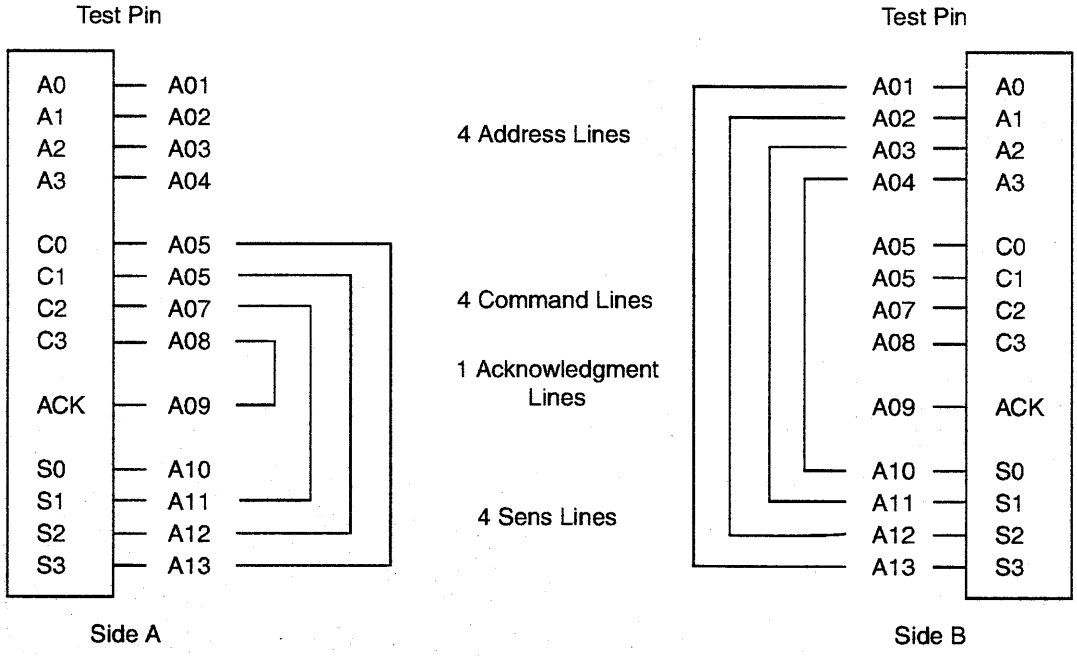


Figure 3-15. Wrap Circuit of the Wrap Card

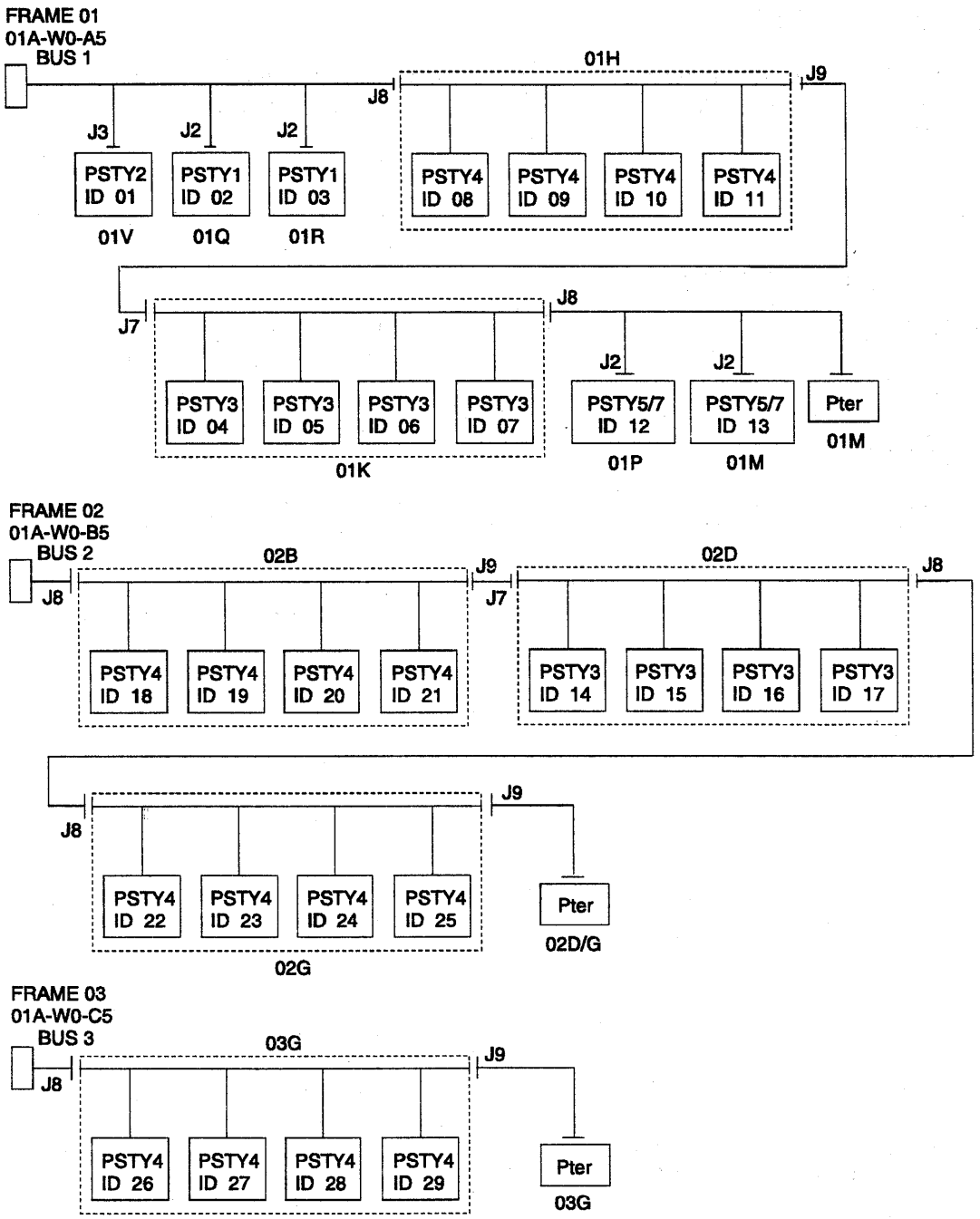


Figure 3-16. Power Control Bus Layout (Part 1 of 2)

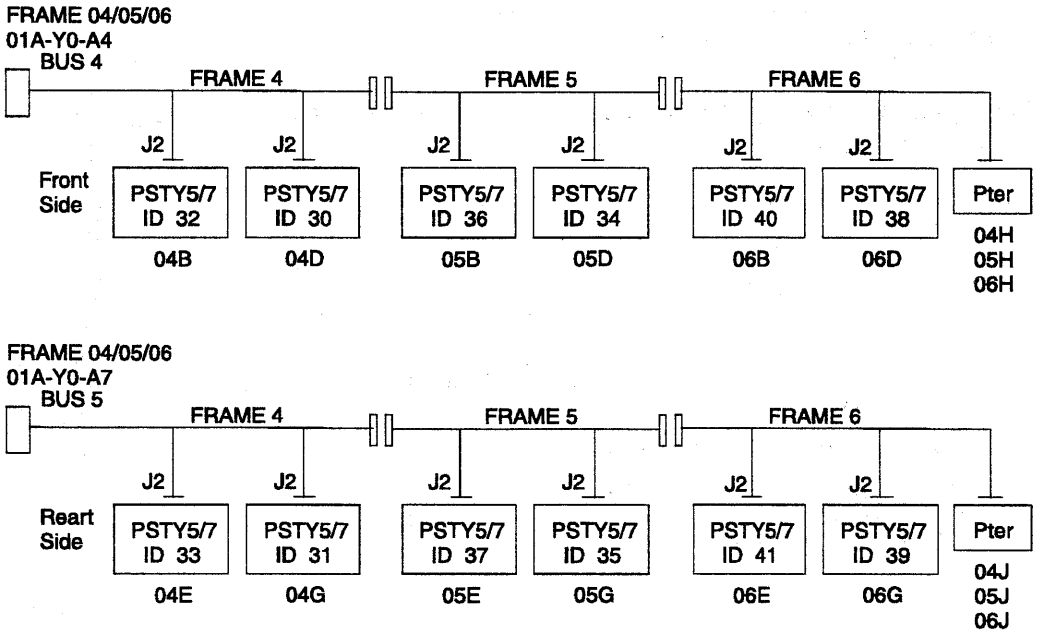


Figure 3-17. Power Control Bus Layout (Part 2 of 2)

Types of Failure Detected

The power bus is made of 13 signal wires, each separated from the other by a ground wire.

The following types of failures are detected:

- Short circuit on a signal wire.
- Open circuit on a signal wire.
- Driver or receiver forcing a low or high level.
- Board (CA, scanner, MOSS) problems.
- Power supply problems.
- PLC card problems.

The test sends alternating patterns to the Bus and verifies if these s alternating patterns.

How to Run Internal Function Tests

How to Invoke Diagnostics: On the 3745 console, press F5 in Menu 1 to display the maintenance function menu (Menu 3). See Figure 3-18.

```
CUSTOMER ID:                          3745-xxx        SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE     X71:020415
                                        X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------ 01/12/87 04:29
                                MENU 3

      MISUSE OF MAINTENANCE FUNCTIONS MAY LEAD TO UNPREDICTABLE RESULTS

BER CORRELATION..: BRC      MODULE DISPLAY...: MDD     TSS SERVICES.....: TSS
CADS SERVICES....: CAS      MOSS STORE DSPLY.: MSD
CONCURRENT DIAGS.: CDG      OFFLINE DIAGS....: ODG
DUMP DISPLAY/DEL.: DDD      TRSS SERVICES....: TRS




                           ENTER OFF TO LOG OFF
===>

F1:END  F2:MENU2   F3:ALARM       F4:MENU1                    F6:RULES
```

Figure 3-18. Maintenance Functions Menu

- In this menu, two options are available to run diagnostics:

  1. **CDG** to run diagnostics in **concurrent maintenance mode.**
     Selected diagnostics will run if the adapter is disconnected from the NCP, and only the sections or routines allowed to run in concurrent mode will be called without interfering with the operation of the 3745.

     CDG must be used if at least one CCU + NCP are running.

     Note: If you are in **TWIN-DUAL** mode with one CCU running and the other CCU just powered ON (not IPLed), you can not run the diagnostics on any adapter or IOC connected to the idle CCU.
     In this case, you must IPL this CCU to the end of phase 1 (step-by-step IPL will allow a ready stop at the end of phase 1) then start the concurrent diagnostics.

  2. **ODG** to run diagnostics in **offline mode** when the 3745 is fully available for maintenance.

     Selected diagnostics will run whatever the status of the adapter.

     All channel interfaces must be disabled.

     ODG must be used if conditions for concurrent maintenance mode are not met (no NCP or CCU running).

- **Type ODG or CDG after ===> and press SEND/ENTER.**
- Continue with "How to Select Diagnostics" on page 3-31.

How to Select Diagnostics

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------------ 03/07/87 00:21
FUNCTION ON SCREEN: CONCURRENT DIAGS
GROUP :ADP# :LINE :
 1 ALL             :
 2 CCU : A- B:     :
 3 IOCB: 1- 4:     :
 4 CA  : 1-16:     :
 5 TSS : 1-32: 0-31:
 6 TRSS: 1- 6: 1- 2:
 7 HTSS: 1- 8:     :
 8 OLT : 1-16:     :                              DIAGNOSTICS INITIALIZATION
 9 ESS : 1- 8:     :
X0 CBA : 1- 2:     :
 OPT=  Y IF MODIFY :

OPTION REQUIRED    :
                   : ENTER REQUEST ACCORDING TO THE DIAG MENU
                   : DIAG==>       ADP#==>     LINE==>     OPT==>
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 3-19. How to Select Diagnostics

After entering ODG or CDG in menu 3, the diagnostic menu is displayed. See Figure 3-19.

Four input fields are available in this menu:

- **DIAG==>** Diagnostic group (1-10), IFT, section, or the routine to be run.

  Example:

  - 2 (full set of CCU IFTs.)
  - K (section K of IOC diagnostics)
  - AC01 (specific routine of CCU diagnostics).

- **ADP#==>** Adapter number.
- **LINE==>** Line number for TSS, HPTSS, ESS, or TRSS (00-31).

  The line number is obtained from the **LID** function entering the line address.

- **OPT==>** Y to display the option menu.

Diagnostics will be run on the selected adapter if its power is ON.

In concurrent mode, if the **ALL** option is entered, diagnostics will be run on all adapters, IOC buses and CCUs in the CDF which are disconnected from the NCP.

Type your request in the input fields and press SEND/ENTER.

If OPT===>Y is entered, the option menu is displayed. See Figure 3-20 on page 3-32. If not, the diagnostic is started and the diagnostic result is displayed on this frame.

If an error is detected, an error message is displayed. See Figure 3-21 on page 3-33.

Options Menu

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------- 03/06/87 00:15
FUNCTION ON SCREEN: CONCURRENT DIAGS
                  :
                  :
                  :
C CANCEL REQUEST  :
G GO              :
M MODIFY OPTIONS: :
 S/LS/AL/ALS/B/DM :
 NW/W             : START 09:58:15
 C1/CNNN/C        : REQUEST: CCU  A              DIAGNOSTICS INITIALIZATION
 R1/RNNN          : OPTIONS: S   NW C1   R1    BR
 BR/NBR           :
                  : ENTER REQUEST ACCORDING TO THE DIAG MENU
                  : ==>M R2
===>

F1:END  F2:MENU2  F3:ALARM
```

Figure 3-20. How to Enter an Option

When the OPT field is set to **Y** in the diagnostic menu, the options menu is displayed. See Figure 3-20.

The default options are automatically displayed.

Options:	**Meaning**
S	Stop on first error.
LS	Loop on first error with stop.
AL	Automatic loop on error.
ALS	Automatic loop on error with new error stop.
B	Bypass error stop.
DM	Display multiple errors.
NW	No wait before execution of each routine.
W	Wait before execution of each routine.
C1/CNNN/C	Cycle request option.
R1/RNNN	Repeat routine option.
BR/NBR	BER recording option.

1. Enter or modify the option using the **M** function followed by the option or options needed.

   Only one option per line of the menu can be selected. If more than one option is entered, only the last one is accepted.

2. Press **SEND/ENTER**.

   Restart the same procedure to enter the other options if needed.

3. Enter **G**.

4. Press **SEND/ENTER**.

   The diagnostic is started and the diagnostic result is displayed on this frame.

   If an error is detected, an error message is displayed. See Figure 3-21 on page 3-33.

Error Menu

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCU-A SELECTED PROCESS MOSS-OFFLINE         X71:020415
                                            X72:000085

CCU-B
RUN-REQ
------------------------------------------------------------------ 03/01/87 10:17
FUNCTION ON SCREEN: CONCURRENT DIAGS
                  : ****************                  FRU REMOVAL ==> POWER OFF
R RERUN REQUEST   : *RH R3036694   *
A ABORT ROUTINE   : *RAC 906030001 * ERR BIT  C108
C CANCEL REQUEST  : * ERC RB23E01C *                        ERROR COUNT 00001
GO                : ****************
M MODIFY OPTIONS: :
 S/LS/AL/ALS/B/DM :
 NW/W             : START 10:13:46  STOP 10:18:02
 C1/CNNN/C        : REQUEST: TSS  3  0            TSS  DIAG - RUNNING
 R1/RNNN          : OPTIONS: S   NW C1   R1    BR      ROUTINE RB23 TSS 03 L 00
 BR/NBR           :
                  : ENTER REQUEST ACCORDING TO THE DIAG MENU
                  : ==>
===>              ***ERROR FOUND***

F1:END  F2:MENU2  F3:ALARM
```

Figure 3-21. Error Menu

The reference code is in the 8-digit field following **RH**.

This menu is used by "Diagnostic Result Analysis" on page 3-48, and "Using Reference Codes" on page 1-17 to determine which FRU is involved with the error.

Note: An **unexpected Error** must be considered as a normal error and the reference code is the usable information.

How to Run the Wrap Test (WTT) for TSS, HPTSS, or 3746-900

Attention: The MOSS must be online to start this procedure.

1. Select Menu 1
2. Type **WTT**
3. Press **SEND/ENTER**.

The Wrap Test Initial Selection screen is displayed:

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCA-A           PROCESS MOSS-ALONE
RESET      BYP-IOC-CHK STOP-CCU-CHK

CCU-B           PROCESS MOSS-ALONE          X71:0A0800
RUN        BYP-IOC-CHK STOP-CCU-CHK         X72:0BC800
------------------------------------------------------------ mm/dd/yy hh:mm
FUNCTION ON SCREEN: WRAP TEST
               WRAP TEST INITIAL SELECTION

- SELECT THE COMMUNICATION SUBSYSTEM (1, 2, 3) ==>

    1 = TSS

    2 = HPTSS

    3 = 3746-900



THEN PRESS ENTR
===>

F1:END  F2:MENU2
```

If you select:

- **1** = TSS: Go to "Wrap Test Initial Selection for TSS" on page 3-35.
- **2** = HPTSS: Go to "Wrap Test Initial Selection for HPTSS" on page 3-37.
- **3** = 3746-900: Go to "Wrap Test Initial Selection for 3746-900" on page 3-38.

Wrap Test Initial Selection for TSS

Follow the instructions in the following screen.

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCA-A           PROCESS MOSS-ALONE
RESET      BYP-IOC-CHK STOP-CCU-CHK

CCU-B           PROCESS MOSS-ALONE          X71:0A0800
RUN        BYP-IOC-CHK STOP-CCU-CHK         X72:0BC800
------------------------------------------------------------- mm/dd/yy hh:mm
FUNCTION ON SCREEN: WRAP TEST
              WRAP TEST INITIAL SELECTION FOR TSS

- SELECT ONE OPTION (1,2)  ==> (A)

    1 = AUTOMATIC WRAP TEST ON LIC UNIT

    2 = WRAP TEST AT ANY LEVEL


  THEN PRESS SEND
===>

F1:END  F2:MENU2  F3:ALARM
```

(A) Enter 1 or 2 to select the wrap test option.

Option 1: Follow the instructions in the following screen.

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCA-A           PROCESS MOSS-ALONE
RESET      BYP-IOC-CHK STOP-CCU-CHK

CCU-B           PROCESS MOSS-ALONE          X71:0A0800
RUN        BYP-IOC-CHK STOP-CCU-CHK         X72:0BC800
------------------------------------------------------------- mm/dd/yy hh:mm
FUNCTION ON SCREEN: WRAP TEST
              AUTOMATIC WRAP TEST ON LIC UNIT

- ENTER A LINE ADDRESS OF THE LIC (0000-0895) ==> (B)


 WARNING: ALL LINES OF THE LIC MUST BE DISABLED/DEACTIVATED



===>

F1:END  F2:MENU2  F3:ALARM      F4:WRAP TEST INITIAL SELECTION
```

(B) Enter the line address.

Option 2: Follow the instructions in the following screen and select the wrap level **4** (tailgate).

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCA-A           PROCESS MOSS-ALONE
RESET      BYP-IOC-CHK STOP-CCU-CHK

CCU-B           PROCESS MOSS-ALONE          X71:0A0800
RUN        BYP-IOC-CHK STOP-CCU-CHK         X72:0BC800
------------------------------------------------------------------ mm/dd/yy hh:mm
FUNCTION ON SCREEN: WRAP TEST
              WRAP TEST INITIAL SELECTION FOR TSS

- ENTER LINE ADDRESS (0000-0895) ==> (B)

- ENTER WRAP TYPE (1 to 2)  ==>
    1 = DATA
    2 = CONTROL LEADS

- ENTER WRAP LEVEL (1 to 4) ==> (C)
    1 = LOCAL MODEM                  4 = TAILGATE
    2 = NTT CABLE (TSS ONLY)
    3 = LIC (DATA WRAP ONLY)

       LINE(S) TO BE TESTED MUST BE DISABLED/DEACTIVATED
===>

F1:END  F2:MENU2  F3:ALARM    F4:INITIAL SELECTION
```

(B) Enter the line address.

(C) Enter **4** to select the tailgate level.

- **For LIC Types 1 and 4**

  Install the wrap plug PN 65X8927 on the LIC connector. See Figure 3-23 on page 3-45 and Figure 3-26 on page 3-46.

- **For LIC Type 3**

  Install the wrap cable PN 65X8928 between the two sockets. See Figure 3-24 on page 3-45 and Figure 3-26 on page 3-46.

  Notes:

  1. The test must be run a second time with the wrap cable reversed end to end.
  2. If you are working on a line adapter with one line at 256 kbps connected to at least one other line, and if these lines are initialized at the NCP activation, you are not allowed to run the WTT on these lines.

- **For LICs Types 5 and 6**

  1. Unplug the line cable at the customer wall frame.
  2. Install the appropriate wrap plug (see the following table) at the end of the cable or unplug the line cable from both ends.
  3. Install the wrap plug PN 11F4815 at the LIC connector (the line cable must be unplugged from the wall frame when necessary for telephone line loading reason.) See Figure 3-25 on page 3-45 and Figure 3-27 on page 3-46.

Country	Part Number
Austria	6162946
Belgium	6162950
France	6162955
Germany	6162950
Hong Kong	65X8070
Israel	66X1954
Italy	6162957
Japan	6124644
Luxemburg	6162950
Netherlands	6162948
Switzerland	66X0748
U.K.	65X8069
U.S.A./ Canada	66X0807

Wrap Test Initial Selection for HPTSS

Follow the instructions in the following screen.

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCA-A           PROCESS MOSS-ALONE
RESET      BYP-IOC-CHK STOP-CCU-CHK

CCU-B           PROCESS MOSS-ALONE          X71:0A0800
RUN        BYP-IOC-CHK STOP-CCU-CHK         X72:0BC800
------------------------------------------------------------------ mm/dd/yy hh:mm
FUNCTION ON SCREEN: WRAP TEST
              WRAP TEST INITIAL SELECTION FOR HPTSS

- ENTER LINE ADDRESS (1024-1039) ==> (B)

- ENTER WRAP TYPE (1 to 2)  ==>
    1 = DATA
    2 = CONTROL LEADS

- ENTER WRAP LEVEL (1 to 4) ==> (C)
    1 = LOCAL MODEM (DATA WRAP ONLY)  4 = TAILGATE
    2 = REMOTE MODEM (DATA WRAP ONLY)
    3 = INTERNAL

       LINE(S) TO BE TESTED MUST BE DISABLED/DEACTIVATED
===>

F1:END  F2:MENU2                  F4:INITIAL SELECTION
```

(B) Enter the line address.

(C) Enter **4** to select the tailgate level.

- **For HPTSS**

  Install the wrap plug (N 58X9349 for V.35 or PN 58X9354 for X.21) on the tailgate connector.

Wrap Test Initial Selection for 3746-900

Follow the instructions in the following screen.

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCA-A          PROCESS MOSS-ALONE
RESET      BYP-IOC-CHK STOP-CCU-CHK

CCU-B          PROCESS MOSS-ALONE          X71:0A0800
RUN        BYP-IOC-CHK STOP-CCU-CHK        X72:0BC800
------------------------------------------------------------------ mm/dd/yy hh:mm
FUNCTION ON SCREEN: WRAP TEST
              WRAP TEST INITIAL SELECTION FOR 3746-900

- ENTER LINE ADDRESS (2112-3135) ==> (A)      CCU (A, B) ==>

- ENTER WRAP TYPE (1 to 2)  ==> (B)
    1 = DATA
    2 = CONTROL LEADS

- ENTER WRAP LEVEL (1 to 5) ==> (C)
    1 = LOCAL MODEM                      4 = NTT CABLE
    2 = REMOTE MODEM (DATA WRAP ONLY)    5 = WRAP PLUG
    3 = INTERNAL

       LINE(S) TO BE TESTED MUST BE DISABLED/DEACTIVATED
===>

F1:END  F2:MENU2                   F4:INITIAL SELECTION
```

(A) Enter the line address.

(B) Select the required option.

Notes:

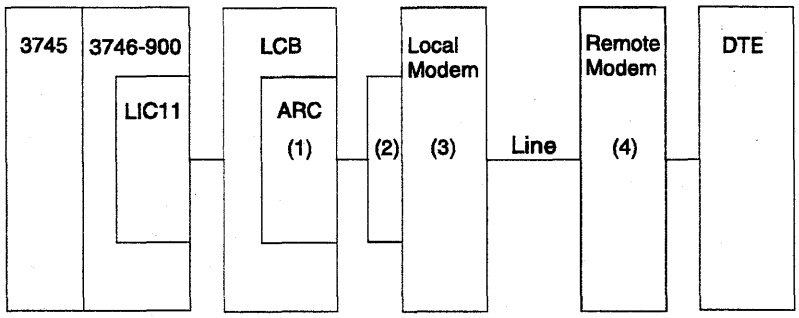
1. The control leads option is not valid when requesting the local and remote modem wrap level on LIC12.
2. On LIC16, the control leads option is not available.

(C) Enter the desired wrap option
(see "Available Wrap Options" on page 3-39).

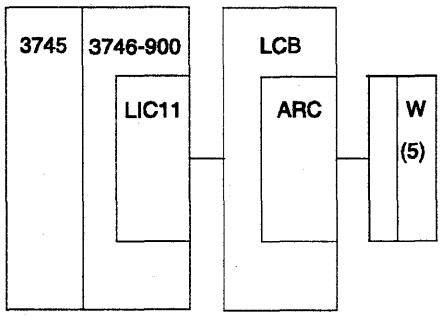
- The following screens prompt you:
  - To enter the numbers of wraps.
  - To install (if necessary) the wrap plug according to the entity tested (see "Available Wrap Plugs" on page 3-41).

Available Wrap Options

Wrap Option Available on LIC11



(1) Internal level wrap
(2) NTT cable wrap
(3) Local modem level wrap
(4) Remote modem level wrap.



(5) ARC wrap plug for testing the ARC and its cable. Select the appropriate ARC wrap plug according to the type of ARC (see Table 3-1 on page 3-41).

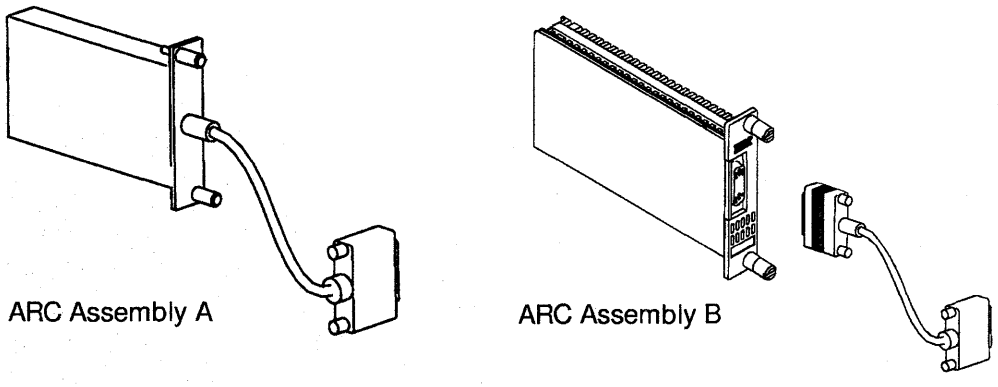
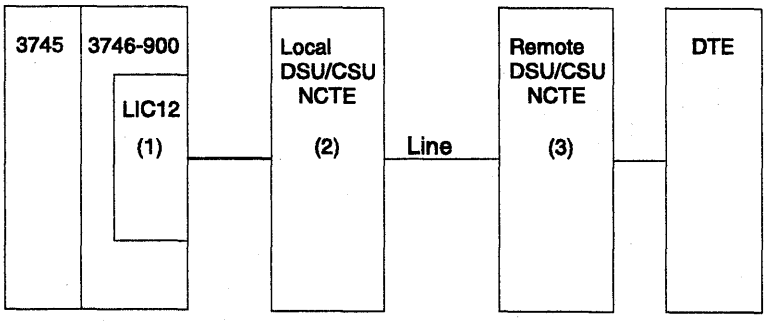


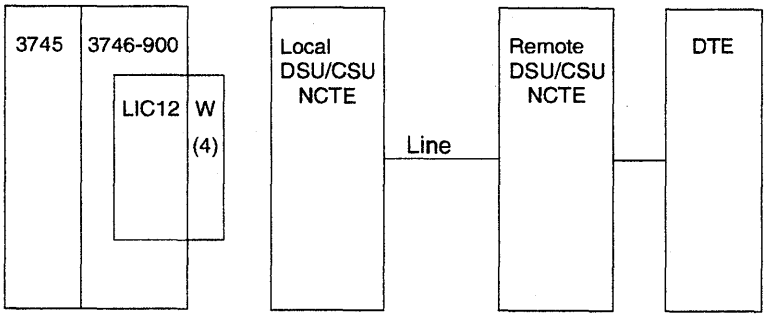
Figure 3-22. ARC Assembly Identification

Note: With ARC assembly B (with a detachable cable), an additional wrap plug allows testing of the ARC only (see Table 3-3 on page 3-41).

Wrap Option Available on LIC12

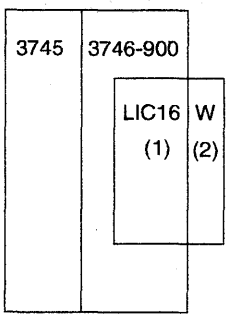


(1) Internal level wrap
(2) Local DSU/CSU or NCTE wrap
(3) Remote DSU/CSU or NCTE wrap



(4) LIC12 wrap plug

Wrap Option Available on LIC16



(1) Internal level wrap
(2) LIC16 wrap plug

Available Wrap Plugs

Table 3-1. Wrap Plugs for Testing the ARC Assembly A and ARC Assembly B (with Cable)

ARC Type	Wrap Plug PN
ARC V.24 DTE	61F4523
ARC V.24 DCE	61F4522
ARC V.35 DTE	61F4527
ARC V.35 DCE	61F4526
ARC/3745 V.24 DTE	61F4525
ARC/3745 V.24 DCE	61F4525
ARC/3745 V.35 DTE	61F4578
ARC/3745 V.35 DCE	61F4528

Table 3-2. Wrap Plugs for LIC Testing

LIC Type	Wrap Plug PN
LIC11	58G9425
LIC12 for X.21	58X9354
LIC12 for V.35	58X9349
LIC16	57G8097

Table 3-3. Wrap Plugs for Testing the ARC Assembly B (without Cable)

ARC	Wrap Plug PN
ARC V.24	58G5660
ARC V.35 non 3745	58G5661
ARC V.35 3745	58G5659
ARC X.21	58G5662

How to Run the Wrap Test with IFTs for TSS, HPTSS, or ESS Port

1. Install the wrap plug as follows:
   - **For HPTSS**

     Install the wrap plug PN 58X9349 for V.35 or PN 58X9354 for X.21 on the tailgate connector.
   - **For ESS**

     The wrap test can work either with the wrap plug installed (configuration RF1), or with the transceiver (configuration RF2).

     Both options test different lines.

     You are advised to execute first a wrap test with the transceiver, then a wrap test with the wrap plug.

     If you want to test with the wrap plug, install it (PN 70X8670) on the tailgate.
   - **For LICs Types 1 and 4**

     Install the wrap plug PN 65X8927 on the LIC connector. See Figure 3-23 on page 3-45.
   - **For LIC Type 3**

     Install the wrap cable PN 65X8928 between the two sockets. See Figure 3-24 on page 3-45 and Figure 3-26 on page 3-46.
   - **For LICs Type 5 and 6**

     Unplug the line cable at the customer wall frame. Install the appropriate wrap plug (see the following table) at the end of the cable or unplug the line cable from both ends. Install the wrap plug PN 11F4815 at the tailgate connector (the line cable must be unplugged from the wall frame for telephone line loading reasons). See Figure 3-25 on page 3-45 and Figure 3-27 on page 3-46.

Country	Part Number
Austria	6162946
Belgium	6162950
France	6162955
Germany	6162950
Hong Kong	65X8070
Israel	66X1954
Italy	6162957
Japan	6124644
Luxemburg	6162950
Netherlands	6162948
Switzerland	66X0748
U.K.	65X8069
U.S.A./ Canada	66X0807

2. Start the diagnostic as follows:
   - **For HPTSS**

     Update the CDF to show that the lines to be tested have wrap plugs installed. Refer to *IBM 3745 Communication Controller Service Function*, SY33-2055.

     Using "How to Run Internal Function Tests" on page 3-30 invoke the IFTs and enter the routine number **VI** and **VK** (for V.35) or **VJ** and **VK** (for X.21) in the DIAG==> area, the adapter number in the ADP#==> area.

     Press **SEND/ENTER**.
   - **For ESS**

     Using "How to Run Internal Function Tests" on page 3-30 invoke the IFTs and enter the routine number **UF03** (for port J1) or **UF02** (for port J2) in the DIAG==> area, the adapter number in the ADP#==> area.

     Press **SEND/ENTER**.
   - **For LICs Type 1, 3, and 4**

     Using "How to Run Internal Function Tests" on page 3-30 invoke the IFTs and enter the routine number **RC01** in the DIAG==> area, the adapter number in the ADP#==> area and the line number in the LINE==> area.
     (To obtain the LA number and the line number from the **LID** function, enter the line address. Refer to the *IBM 3745 Communication Controller All Models Advanced Operations Guide*, SA33-2097). See Note (at the end of this procedure).

Press **SEND/ENTER**.

For LIC type 3 reverse the wrap cable end to end and rerun the test.

- **For LICs Type 5, and 6**

  Ensure that no PKD action is in progress. This would lead to an unexpected diagnostic error.

  Using "How to Run Internal Function Tests" on page 3-30 invoke all the IFTs and enter routine number **RH59** in the DIAG==> area, the adapter number in the ADP#==> area and the line number in the LINE==> area.
  (To obtain the LA number and the line number from the **LID** function, enter the line address. Refer to *IBM 3745 Communication Controller All Models Advanced Operations Guide*, SA33-2097). See Note (at the end of this procedure).

  Press **SEND/ENTER**.

Note: The MOSS can be alone, online, or offline but the scanners must be IMLed and the CCU must be running.
In the case of MOSS being alone, IPL until phase 4. Then cancel the IPL to permit the LID function to work as required.

Routines RD01 through RD03 for Japan Only (LIC 1, 3, and 4 only)

RD01: NTT ON/OFF Driver

This routine permanently sets ON or OFF all the active line drivers of a LIC card to allow measurements by the NTT service personnel.

When the message **LINE DRIVER STATE: ON=F1, OFF=F2, EXIT=F9** is displayed, enter:

- RF1 to set drivers to high voltage level
- RF2 to set drivers to low voltage level
- RF9 to exit from the routine

When you enter RF1 or RF2, the following message is displayed:

```
MODEM INCL X21
MODEM EXC X21      CHECK DRIVERS ARE   ON     PRESS SEND/ENTER TO CONTINUE
X21                                    OFF
AUTOCALL
```

At this step, the NTT personnel may check the driver voltage.
To change the option, press **SEND/ENTER**.

RD02: NTT Data Wrap Test

This routine checks the data wrap path (transmit to receive).

The Test/Operate switch on the cable connector or on the DCE must be set as follows:

- LIC type 1: Set the connector TEST/OPERATE switch to **TEST**
- LIC type 3: Set the DCE Test/Operate switch to **T1**
- LIC type 4: Set the DCE Test/Operate switch to **T1**.

RD03: Modem-In Wrap Test

This routine checks the modem control leads according to the LIC type.

Use the TEST/OPERATE switch or the wrap block as follows:

- LIC type 1 (V.24): Set the connector TEST/OPERATE switch to TEST
- LIC type 1 (V.25): Plug the wrap block at the cable end
- LIC type 3: Set the DCE Test/Operate switch to T1
- LIC type 4: Set the DCE Test/Operate switch to T1

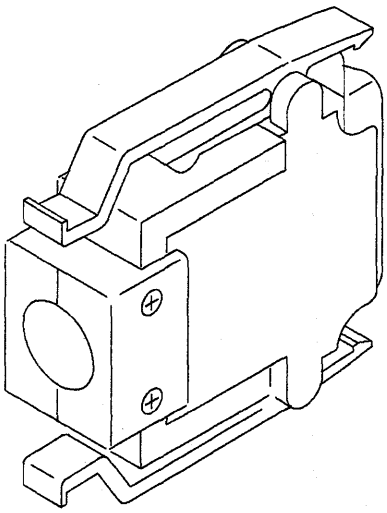


Figure 3-23. LIC Types 1 and 4 Wrap Plug (PN 65X8927)

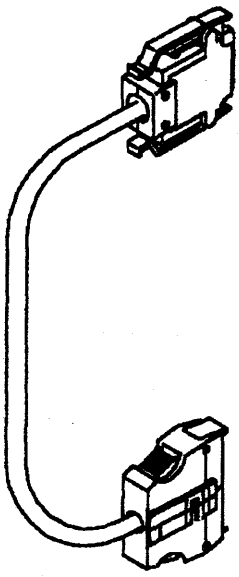


Figure 3-24. LIC Type 3 Wrap Cable (PN 65X8928)

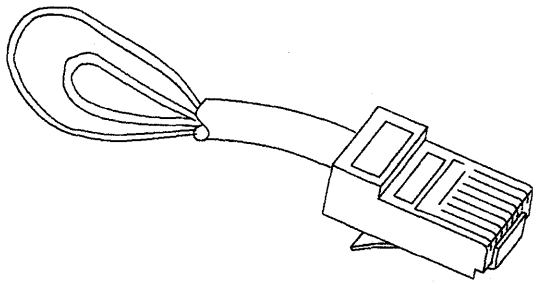
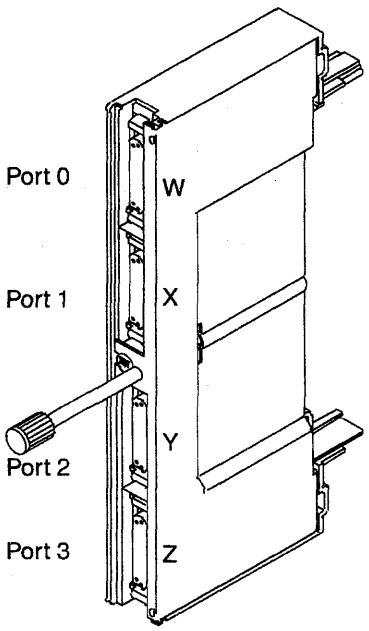
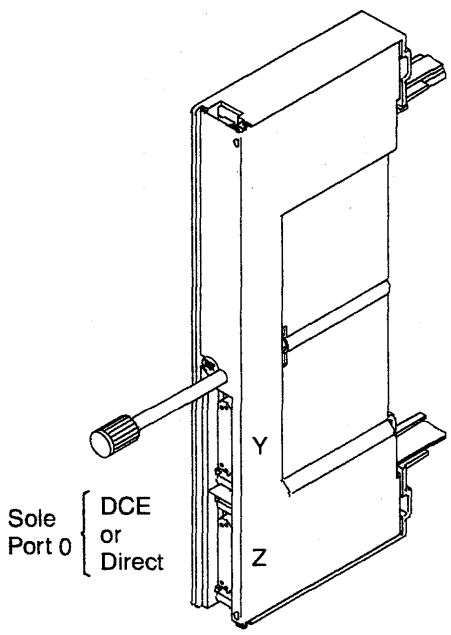


Figure 3-25. LIC Types 5 and 6 Wrap Plug (PN 11F4815)

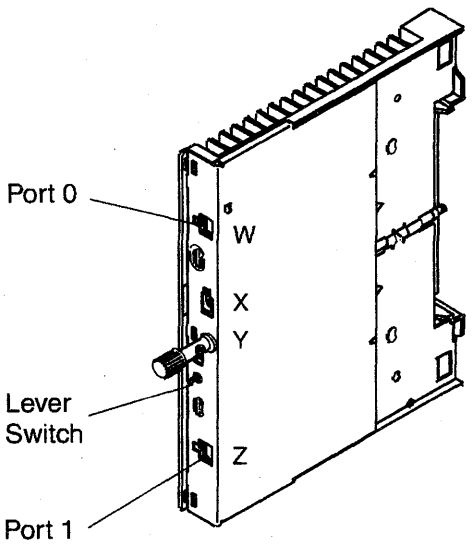


TYPE	Knob Color
LIC1	Brown
LIC4A	Green
LIC4B	Green

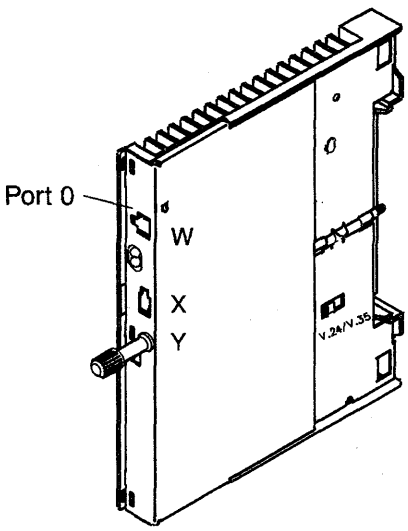


TYPE	Knob Color
LIC3	Blue

Figure 3-26. LIC Types 1, 3, and 4



TYPE	Knob Color
LIC5	Black



TYPE	Knob Color
LIC6	Black

Figure 3-27. LIC Types 5 and 6

How to Run the Channel Wrap Test

Note: Do not start the IFT L001 with the wrap plug already installed. Install or remove the wrap plug when directed by the MOSS console.

1. Ensure that the **Select Out Bypass** switch is in the **NORMAL** position.
2. Select the option **ODG** or **CDG** from the maintenance function menu.
3. Enter the following:
   - **LO01** in the DIAG==> area
   - Channel number in the ADP#==> area.
4. Press **SEND/ENTER**.
5. When requested by the diagnostic, remove the interface cables. Then install the wrap plugs and terminators. Refer to Figure 4-30 on page 4-48
   In order to allow the customer to use the channel during test time, you must connect the cables together or to the terminators.
6. You will be asked for the wrap tools PN that you are using.

   Two models of wrap plugs can be used for this test:
   - Bus PN 03F4301 and Tag PN 03F4300

   or
   - Bus PN 26F1755 and Tag PN 26F1754
7. Messages on the screen will prompt you for the required actions.

   According to the wrap plugs you are using, follow one of the two actions:
   - If using the channel wrap plugs:

     PN 03F4300 (for Tag)
     and PN 03F4301 (for Bus)

     Install them for interface A in the IN ROW (dark grey) and the CA terminators:

     PN 2282676 (for Tag)
     and PN 2282675 (for Bus)

     In the OUT ROW (light grey).
   - If using the channel wrap plugs :

     PN 26F1754 (for Tag)
     and PN 26F1755 (for Bus)

     Two installations must be done, one after the other (when requested by messages on the screen):

     Step 1 - Install the wrap plugs for interface A in the IN ROW (dark grey), and the CA terminators:

     PN 2282676 (for Tag)
     and PN 2282675 (for Bus)

     in the OUT ROW (light grey).

     Step 2 - Install the wrap plugs in the OUT ROW (light grey) and leave the IN ROW (dark grey) free. (CA terminators are not used).
8. You will be asked to install the wrap plugs on the interface connectors B if the TPS feature is installed on this channel. In this case, repeat the action as for interface A.

Action to Take After a Diagnostic Run

Diagnostic Result Analysis

001

This procedure analyzes the results of the diagnostics before exchanging FRU and it explains what is to be done.

When MOSS diagnostics detect an error, a hexadecimal code is set on the control panel. The code can be decoded by using the "3745 Control Panel Codes" on page 1-19.

When ODG/CDG diagnostics detect an error, a reference code is given on the diagnostic screen, (see Figure 3-21 on page 3-33).

This reference code can be decoded to find the action to take using the BRC function in Menu 3. If required, see "Using Reference Codes" on page 1-17

Did diagnostics run without a message for manual intervention?
Yes **No**

002

Follow the instructions given by the diagnostics. Then, go back to this procedure according to the result.

003

Did the diagnostics detect a failure?
Yes **No**

004

– Go to Step 014.

005

Was the failure other than 'unexpected error'?
Yes **No**

006

Was a reference code generated by the diagnostics?
Yes **No**

007

– Run the previous diagnostic for the upper level in the run all diagnostics.
For example, TRSS > IOC Bus > CCU.
Go to "3745 FRU List" on page 1-39.

008

Analyze the reference code. Refer to "Using Reference Codes" on page 1-17

009

You may have started this service call to exchange FRUs called by a reference code or panel code.

Is the first FRU indicated by the diagnostics different from the FRU you were going to exchange?
Yes **No**

010

Perform a FRU exchange using Chapter 4, "FRU Exchange" on page 4-1.

011

Is there a FRU given by both lists?
Yes **No**

012

– If you do not have the first FRU called by the diagnostics, obtain it.

If you have the FRU or when you obtain the FRU, go to "3745 FRU List" on page 1-39.

013

Consider it is the first FRU of the list and exchange it.

014

Were HPTSS diagnostics being run for a suspected FESH card?
Yes **No**

015

Go to Step 018 on page 3-49.

016

– In the 3745 frame 01 (at tailgate location 01U), remove cables from the HPTSS lines to be tested. Refer to Figure 4-2 on page 4-5.

– Install the wrap plugs in the sockets of 01U for the lines to be tested.
– Update the CDF to indicate that the lines to be tested have wrap plugs installed. Refer to *IBM 3745 Communication Controller Service Function*, SY33-2055.
– Run one of the following HPTSS diagnostic routines:
  - VI and VK if V.35 wrap plug is installed
  - VJ and VK if X.21 wrap plug is installed
  - VI, VJ, and VK if both types of wrap plugs are installed.

Refer to "How to Run Internal Function Tests" on page 3-30.

Did the diagnostic run free of error?

Yes

018

No

017

Go to Step 009 on page 3-48.

Is the FRU you were processing the last FRU requested for the error?

Yes

020

No

019

You have an intermittent error or an error not detected by this diagnostic.

Continue using this manual for the next FRU called. Go to "3745 FRU List" on page 1-39.

Go to "CE Leaving Procedure" on page 4-180.

Chapter 4. FRU Exchange

This chapter is to be used to exchange a defined FRU. Use all sections (from the begining to the end), to determine:

1. Where the FRU is physically located
2. How to properly exchange FRUs
3. How to test the machine
4. What else must be done before returning the machine to the customer.

Exchange Precautions

1. Most of the 3745 FRUs can be exchanged in concurrent maintenance. Thus, it is **very important** that these procedures be followed when replacing any FRU in the machine.
2. The control panel has voltage present even with the machine Powered OFF.
3. Ensure that the 3745 is powered OFF before replacing any FRUs, when requested by the procedure, before replacing any FRUs. .
4. **Before starting the FRU exchange, ensure that the involved area has been disabled by the customer.**
5. The 3745 communication controller contains cards that are sensitive to electrostatic discharge (ESD). Store all cards in their protective packaging when you are not actually exchanging them.
6. Procedures for exchanging FRUs are listed on the next pages. Use the list in alphabetical order.

Attention

Do not disassemble or attempt to remove FRUs from the 3745 until you have read the *Safety Information* manual, GA33-0400.

Very important

Ensure that the required area has been disabled

before any FRU exchange.

If not done, go to the start page and follow the appropriate procedure.

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List of 3745 FRUs

ABP1/2	Use the "ABP1 and ABP2 Exchange Procedure" on page 4-84.
CA Tailgate	Use the "Channel Tailgate and Internal Cable Exchange Procedure" on page 4-126.
CA Board	Use the "Channel Board Exchange Procedure" on page 4-130.
LA Board	Use the "Line Adapter Board Exchange Procedure" on page 4-138.
LIC Board Type 1	Use the "LIC Board Type 1 Exchange Procedure" on page 4-148.
LIC Board Type 2	Use the "LIC Board Type 2 Exchange Procedure" on page 4-152.
MOSS Board	Use the "MOSS Board Exchange Procedure" on page 4-157.
SAC Gate	Use the "SAC Gate Assembly Exchange Procedure for Models 21x and 41x" on page 4-162.
SAC2 Gate	Use the "SAC2 Gate Assembly Exchange Procedure for Models 31x and 61x" on page 4-168.
TCM Board	Use the "TCM Board Exchange Procedure" on page 4-175.
Air Filters	Use the "Air Filters Exchange Procedure" on page 4-89.
AMD	Use the "Air Moving Device Exchange Procedure for Models 21x and 41x" on page 4-93.
AMD2	Use the "Air Moving Device Exchange Procedure for Models 31x and 61x" on page 4-95.
Battery	Use the "Battery Exchange Procedure" on page 4-97.
CADR	Use the "CADR and CAL Exchange Procedure" on page 4-55.
CAL	Use the "CADR and CAL Exchange Procedure" on page 4-55.
Control Panel	Use the "Control Panel Exchange Procedure" on page 4-56.
CSP	Use the "CSP Exchange Procedure" on page 4-72.
DFA	Use the "DFA Exchange Procedure" on page 4-58.
DICO	Use the "DICO Exchange Procedure" on page 4-85.
DMSW	Use the "Storage and Controls Exchange Procedure" on page 4-88.
DMUX	Use the "DMUX Exchange Procedure" on page 4-76.
DTER	Use the "DTER, ITER, LTC1, and LTC2 Exchange Procedure" on page 4-84.
EAC	Use the "EAC Exchange Procedure" on page 4-75.
ETG	Use the "ETG (ESS Tailgate) Exchange Procedure" on page 4-127.
FDD	Use the "FDD Exchange Procedure" on page 4-59.
FESH	Use the "FESH Exchange Procedure" on page 4-74.
FESL	Use the "FESL Exchange Procedure" on page 4-73.
HDD	Use the "HDD Exchange Procedure" on page 4-61.
IOSW/IOSW2	Use the "Storage and Controls Exchange Procedure" on page 4-88.
ITER	Use the "DTER, ITER, LTC1, and LTC2 Exchange Procedure" on page 4-84.
LIC FAN	Use the "LIC Fan Exchange Procedure" on page 4-81.

LIC Types 1-4	Use the "LIC Types 1-4 Exchange Procedure" on page 4-79.
LIC Types 5 and 6	Use the "LIC Types 5 and 6 Exchange Procedure" on page 4-80.
LTC1 or LTC2	Use the "DTER, ITER, LTC1, and LTC2 Exchange Procedure" on page 4-84.
MAC or MAC2	Use the "MAC and MAC2 Exchange Procedure" on page 4-65.
MCA	Use the "MCA, MSC, and MSC2 Exchange Procedure" on page 4-67.
MLA	Use the "MLA Exchange Procedure" on page 4-68.
MOSS Blower	Use the "MOSS Blower Exchange Procedure" on page 4-99.
MPC or MPC2	Use the "MPC and MPC2 Exchange Procedure" on page 4-66.
MSC or MSC2	Use the "MCA, MSC, and MSC2 Exchange Procedure" on page 4-67.
PAC	Use the "PAC Exchange Procedure" on page 4-69.
PLC	Use the "PLC Exchange Procedure" on page 4-70.
PROM	Use the "PROM Exchange Procedure" on page 4-71.
PS Fan	Use the "PS Fan Exchange Procedure" on page 4-125.
PSTY1	Use the "PS Type 1 Exchange Procedure for Models 21x and 41x" on page 4-111.
PSTY1B	Use the "PS Type 1B Exchange Procedure for Models 310 and 610" on page 4-112.
PSTY2	Use the "PS Type 2 Exchange Procedure" on page 4-114.
PSTY3	Use the "PS Type 3 Exchange Procedure" on page 4-115.
PSTY4	Use the "PS Type 4 Exchange Procedure" on page 4-116.
PSTY5	Use the "PS Type 5 Exchange Procedure" on page 4-118.
PSTY6	Use the "PS Type 6 Exchange Procedure" on page 4-120.
PSTY7	Use the "PS Type 7 Exchange Procedure" on page 4-121.
PSTY8	Use the "PS Type 8 Exchange Procedure" on page 4-123.
PTER	Use the "PTER Exchange Procedure" on page 4-86.
PUC or PUC1	Use the "Storage and Controls Exchange Procedure" on page 4-88.
SCTL/SCTL2/3	Use the "Storage and Controls Exchange Procedure" on page 4-88.
SMUXA/B	Use the "SMUX A and SMUX B Exchange Procedure" on page 4-77.
STER	Use the "STER Exchange Procedure" on page 4-87.
STO	Use the "Storage and Controls Exchange Procedure" on page 4-88.
TCM	Use the "TCM Exchange Procedure" on page 4-100.
TIC	Use the "TRM and TIC Exchange Procedure" on page 4-82.
TRM	Use the "TRM and TIC Exchange Procedure" on page 4-82.

3745 FRU Exchange

FRU Physical Locations

3745 Frames

3746-L15	3746-L14	3746-L13	3745- or 210/310 21A/31A	3745-410/610 41A/61A	3746-A11	3746-A12	3746-900[3]
Expansion Unit Frame 06 Four LIC Unit Lines 640-895	Expansion Unit Frame 05 Four LIC Unit Lines 384-639	Expansion Unit Frame 04 Four LIC Unit Lines 128-383	Base Frame . . . Frame 01 . MOSS CCU(s) . LA[1] 1-8 . CA 1-8 . LIC Unit . Lines . 000-127 .		Expansion Unit Frame 02 LA[2] 9-24 CA 9-16	Expansion Unit Frame 03 LA[2] 25-32 Board	Expansion Unit 3746-900 Frame 07 10 ESCON 21 TRA 20 CLA

[1] = LSS, HSS, ELA, or TRA
[2] = LSS only
[3] = 3746-900 frame can also be installed instead of 3746-A11 or 3746-A12 but must be the last frame.

Figure 4-1. 3745 Full Machine Configuration

Frame 01 (Base Frame)

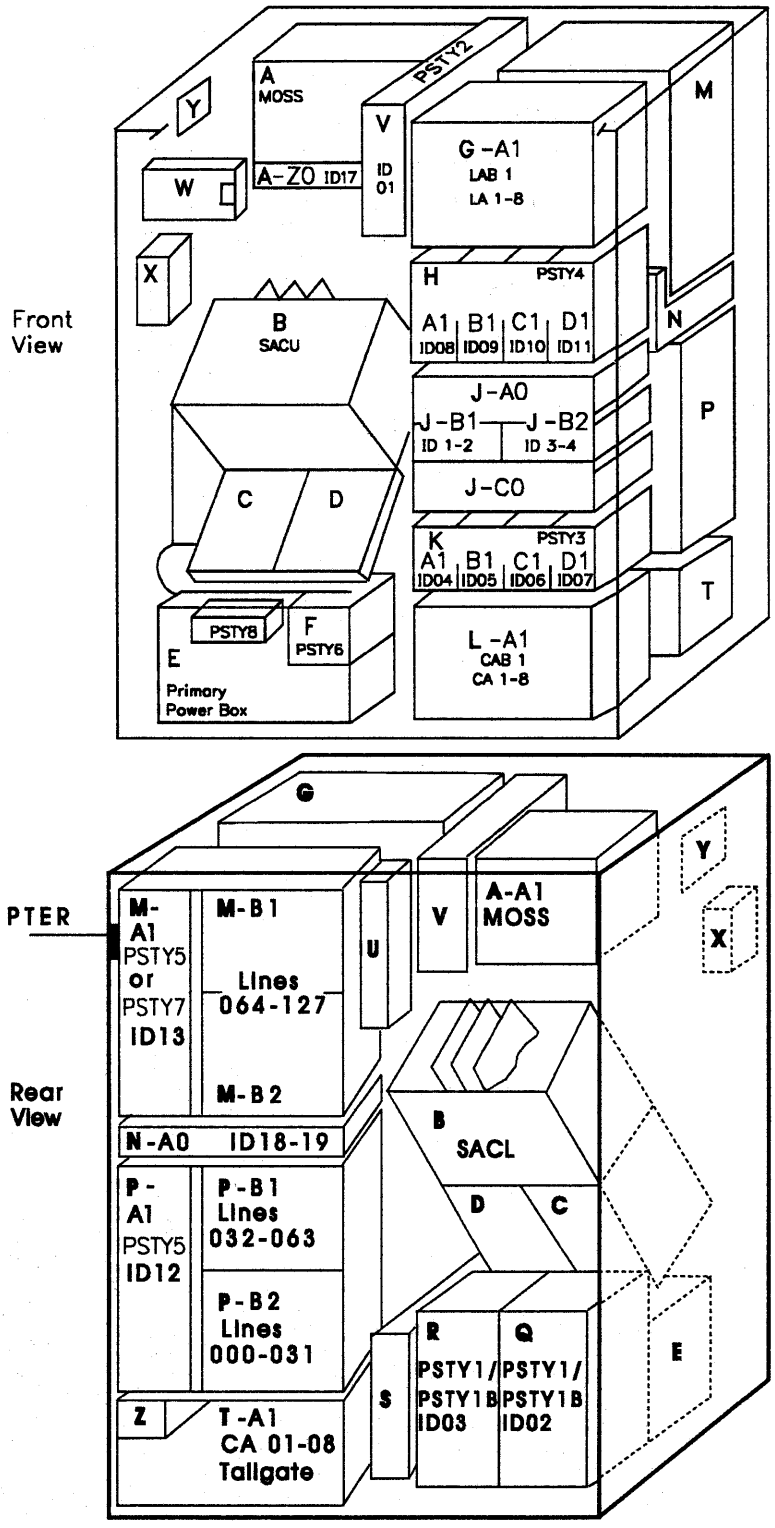
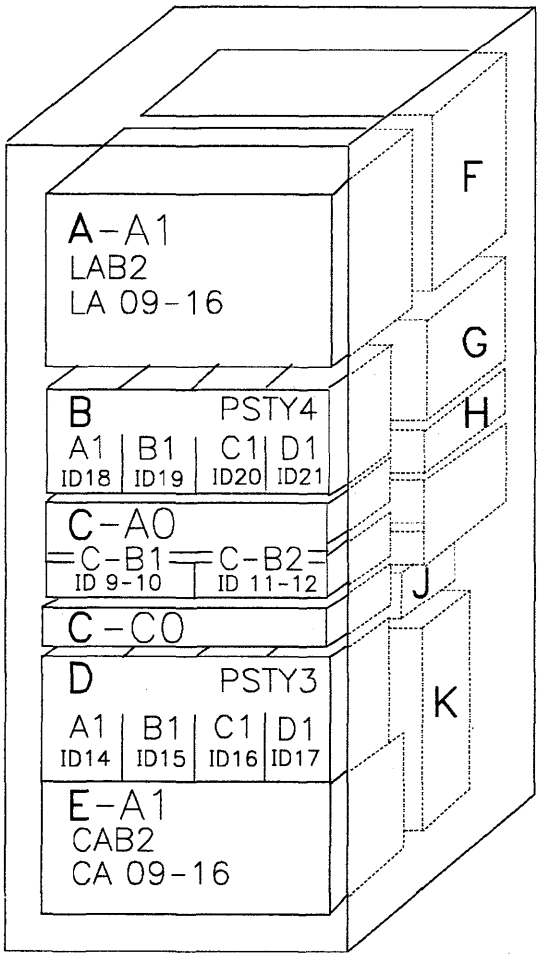


Figure 4-2. 3745 Base Frame

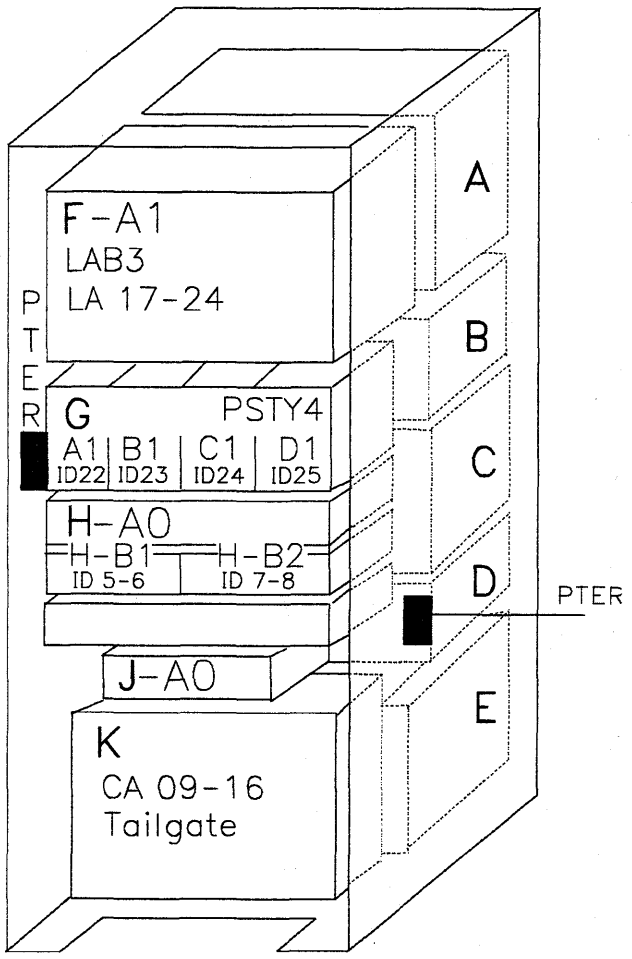
A MOSS
B SAC gate
C AMD/AMD2 for CCU A
D AMD/AMD2 for CCU B
E Primary power box
F Power supply control (type 6)
G Line adapters from 01 to 08
H PS type 4 for line adapters 01 to 08
J Fan, ac, and dc distribution
K PS type 3 for channel adapters 01 to 08
L Channel adapters from 01 to 08
M LIC unit (lines from 64 to 127)
N Fan for LICs
P LIC unit (lines from 00 to 63)
Q PS type 1/1B for CCU A
R PS type 1/1B for CCU B
S EPO tailgate
T Channels adapters 01 to 08 tailgate
U TRSS, HPTSS, or ESS tailgate:
TRSS (lines from 1088 to 1095)
HPTSS (lines from 1024 to 1039)
ESS (lines from 1058 to 1071)
V PS type 2 for MOSS
W Control panel and FDD
X HDD
Y Remote control
Z Auxiliary power box

Frame 02 (Expansion Unit A11)



Front View

Figure 4-3 (Part 1 of 2). 3746-011



Rear View

Figure 4-3 (Part 2 of 2). 3746-011

A Line adapters (from 09 to 16)
B PS type 4 for line adapters 09 to 16
C Fan, ac, and dc distribution
D PS type 3 for channel adapters 09 to 16
E Channel adapter (from 09 to 16)

F Line adapters (from 17 to 24)
G PS type 4 for line adapters 17 to 24
H Fan, ac and dc distribution
J Auxiliary power box
K Channels adapters 09 to 16 tailgate

Frame 03 (Expansion Unit A12)

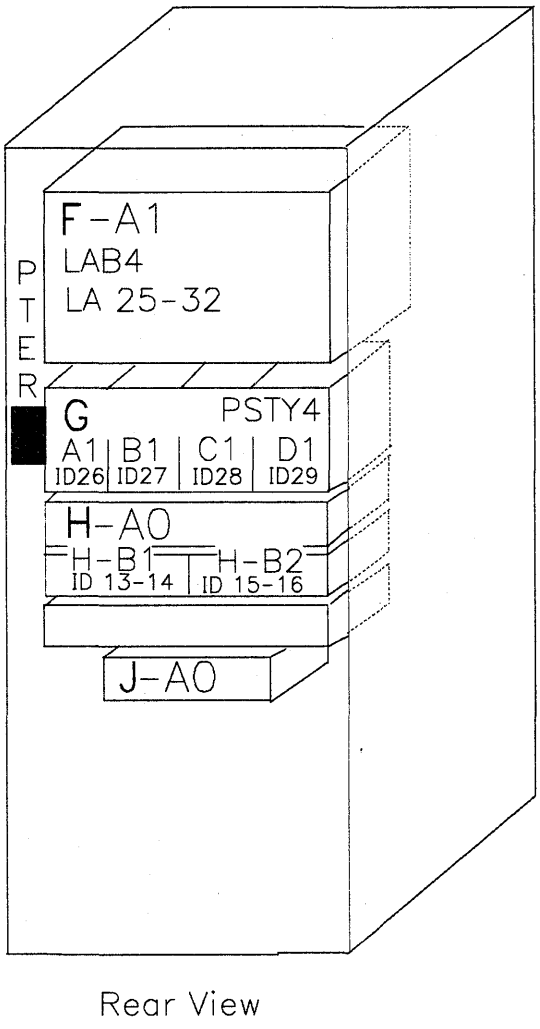


Figure 4-4. 3746-012

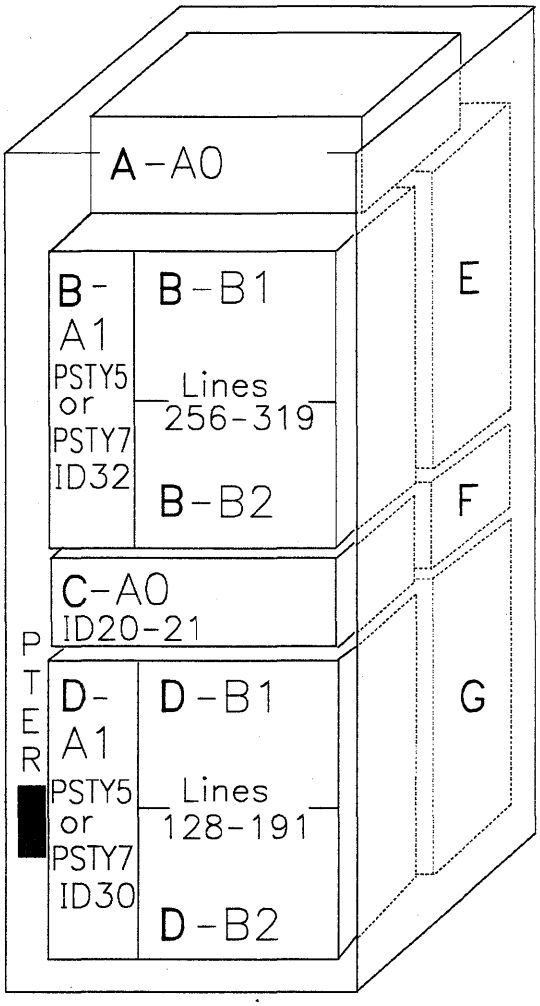
F Line adapters (from 25 to 32)

G PS type 4 for line adapters 25 to 32

H Fan, ac, and dc distribution

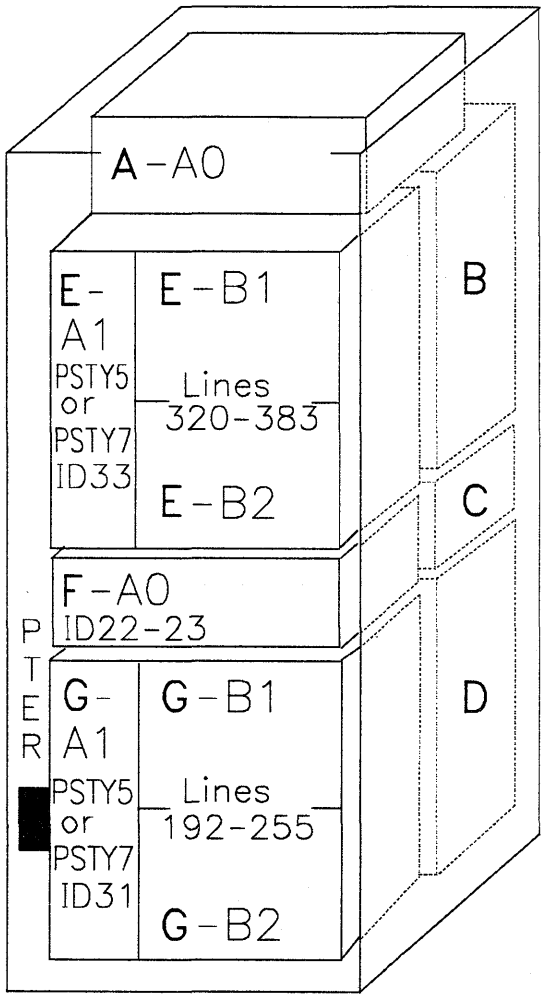
J Auxiliary power box

Frame 04 (Expansion Unit L13)



Front View

Figure 4-5 (Part 1 of 2). 3746-013

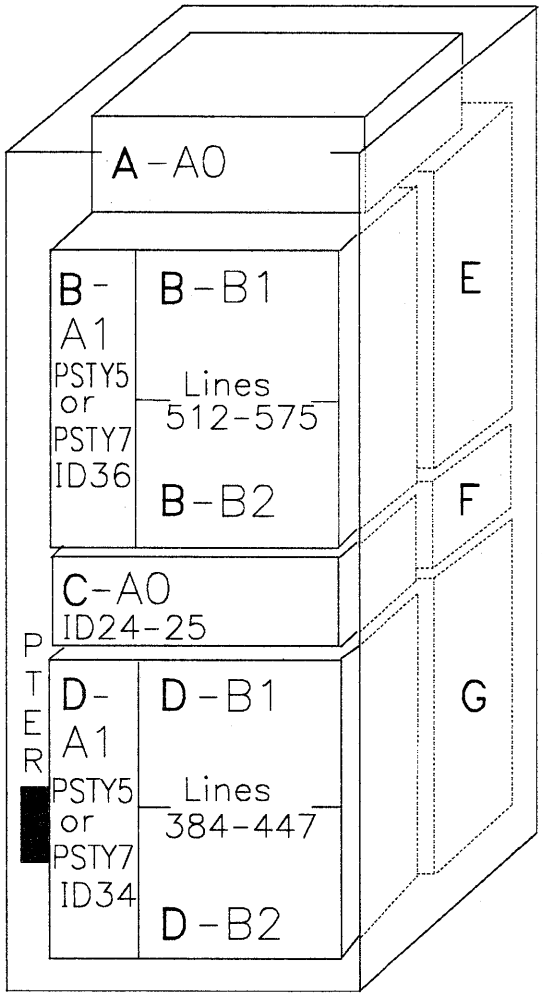


Rear View

Figure 4-5 (Part 2 of 2). 3746-013

A ac distribution
B LIC unit (from 256 to 319 lines)
C Fan for LICs
D LIC unit (from 128 to 191 lines)
E LIC unit (from 320 to 383 lines)
F Fan for LICs
G LIC unit (from 192 to 255 lines)

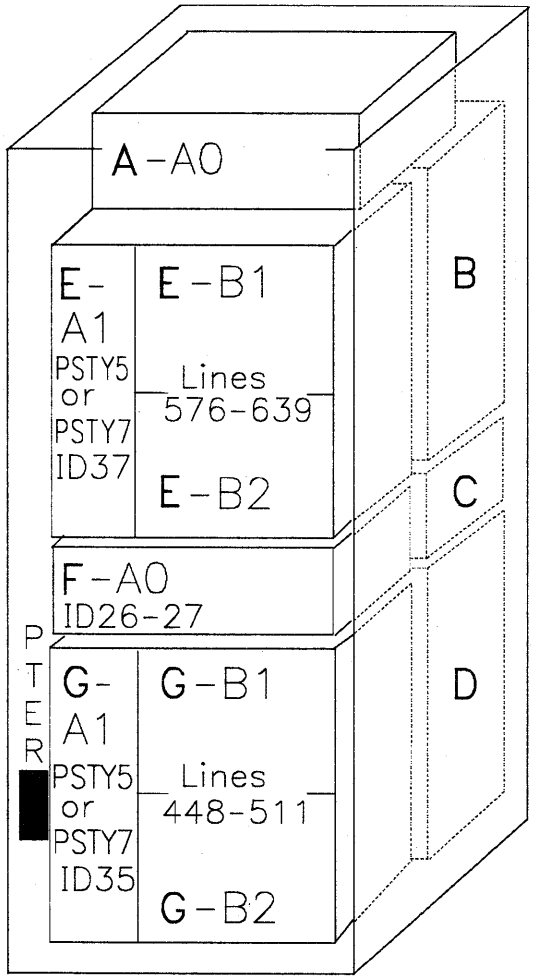
Frame 05 (Expansion Unit L14)



Front View

Figure 4-6 (Part 1 of 2). 3746-014

A AC distribution
B LIC unit (from 512 to 575 lines)
C Fan for LICs
D LIC unit (from 384 to 447 lines)

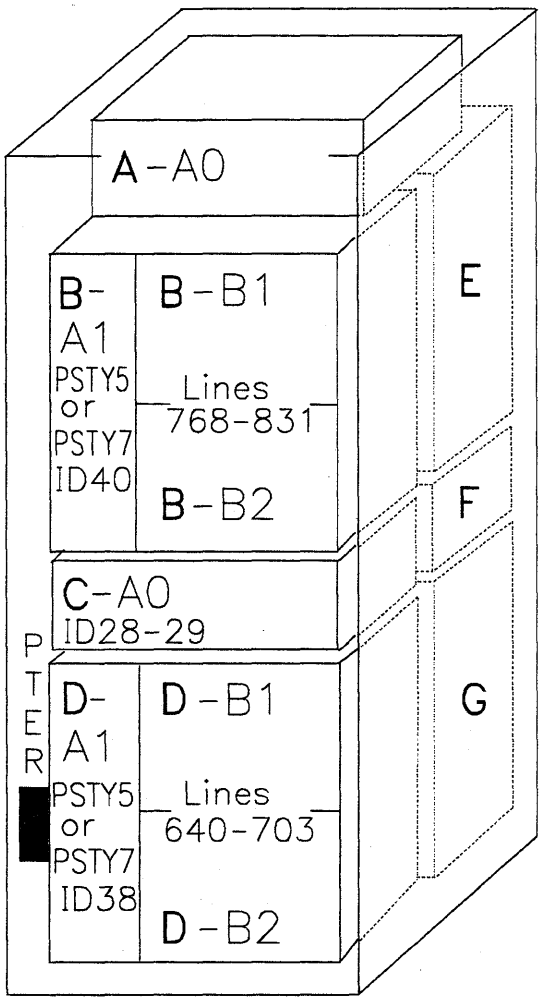


Rear View

Figure 4-6 (Part 2 of 2). 3746-014

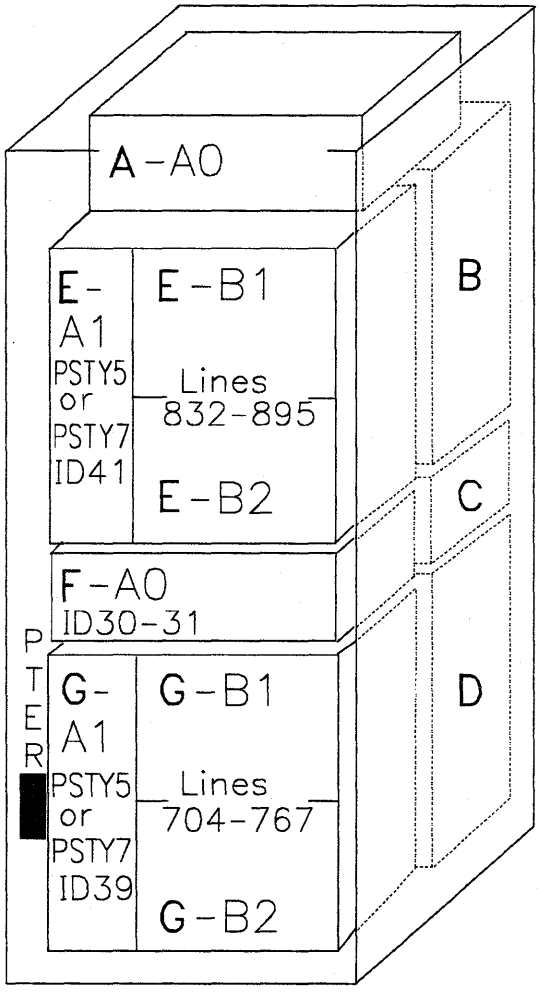
E LIC unit (from 576 to 639 lines)
F Fan for LICs
G LIC unit (from 448 to 511 lines)

Frame 06 (Expansion Unit L15)



Front View

Figure 4-7 (Part 1 of 2). 3746-015



Rear View

Figure 4-7 (Part 2 of 2). 3746-015

A ac distribution
B LIC unit (from 768 to 831 lines)
C Fan for LICs
D LIC unit (from 640 to 703 lines)

E LIC unit (from 832 to 895 lines)
F Fan for LICs
G LIC unit (from 704 to 767 lines)

MOSS Board, Cards, and Connectors for Models 210-610

LOCATION: 01A-

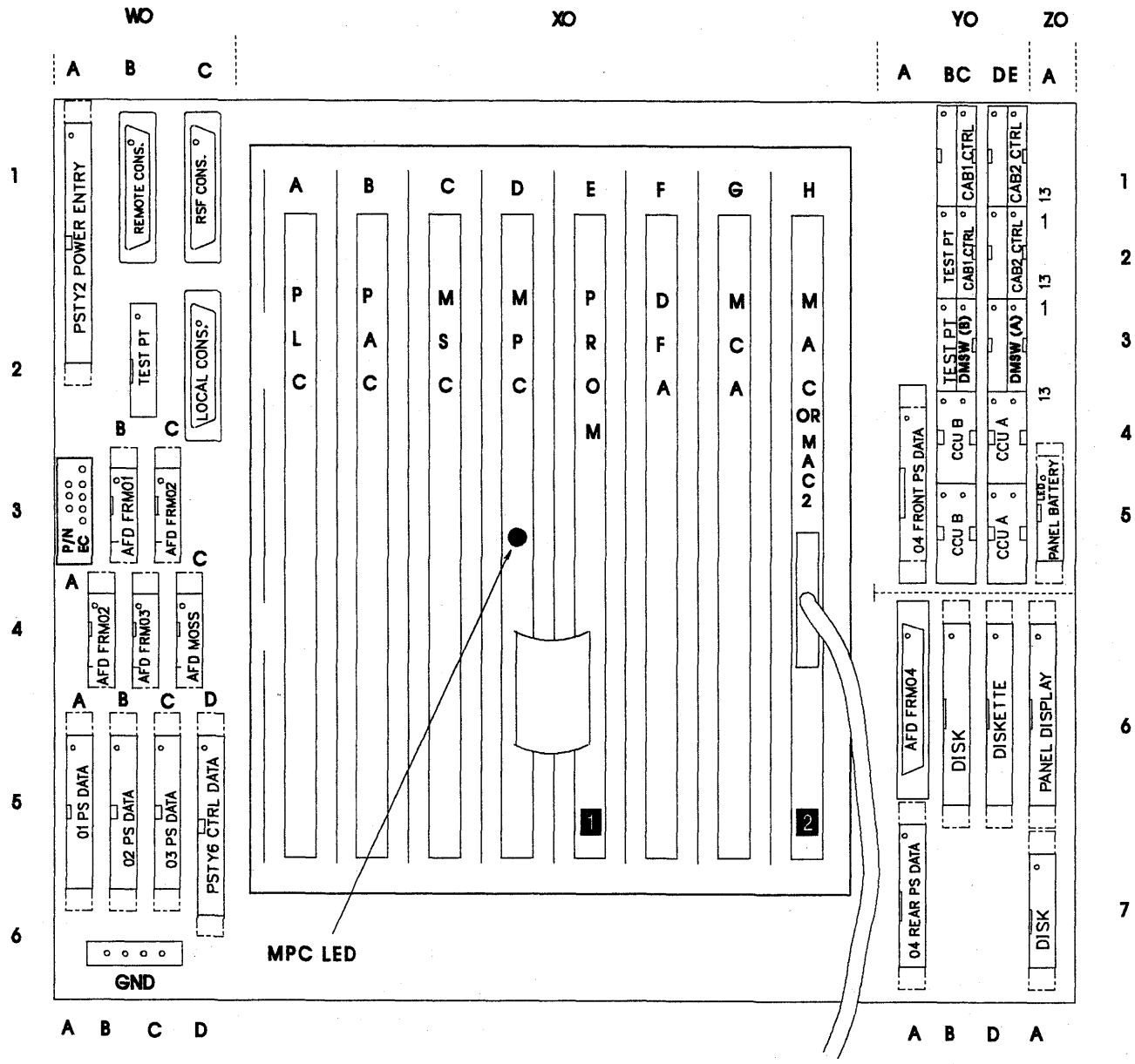


Figure 4-8. 3745 Models 210-610 MOSS Board, Cards, and Connectors

1 The **PROM** card may not be present on the machine. In this case, the interconnecting cable is not present too.

2 MAC card for Models 210 and 410 or MAC2 card (without cable) for Models 310 and 610.

MOSS Board, Cards, and Connectors for Models 21A-61A

LOCATION: 01A-

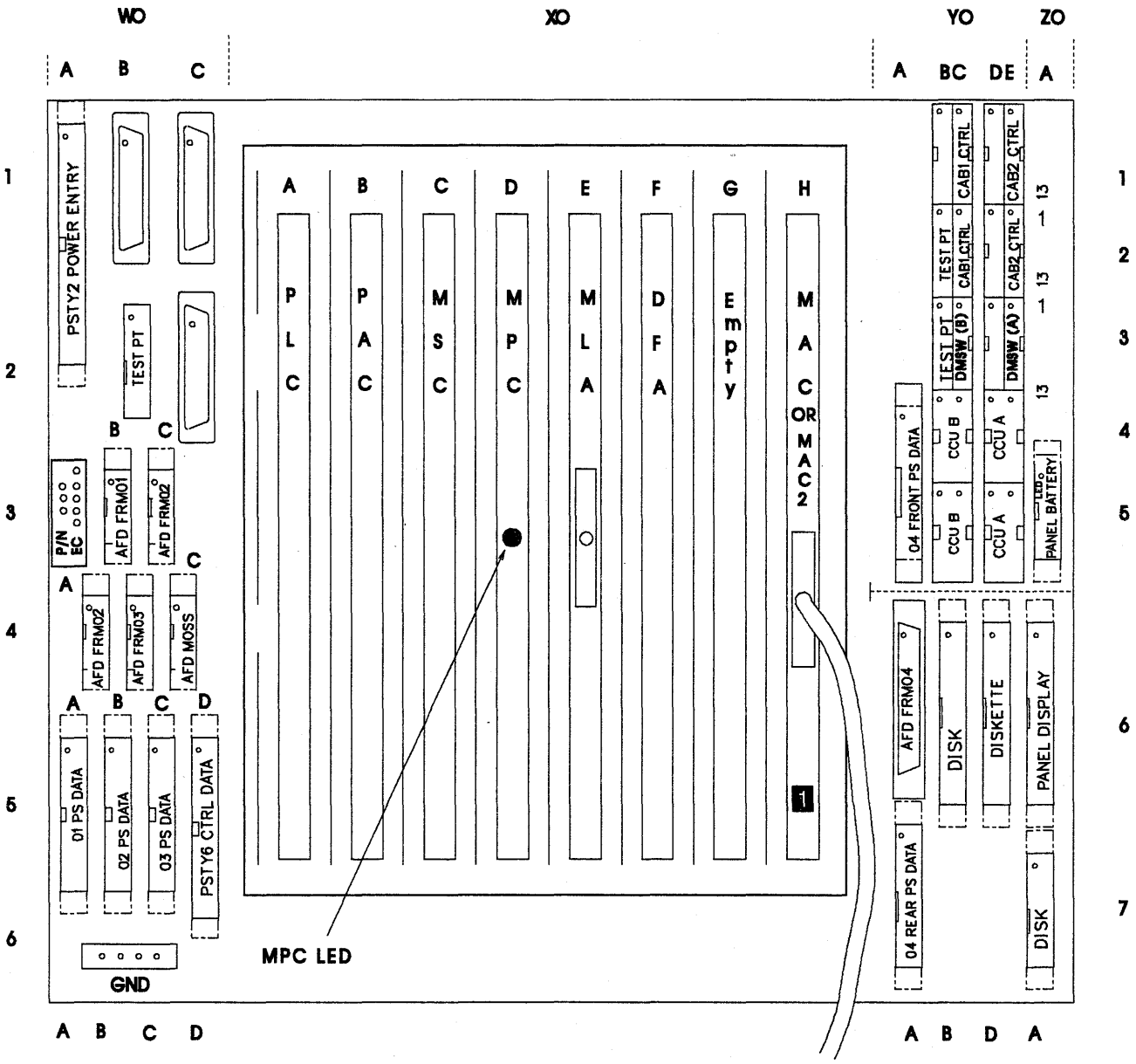
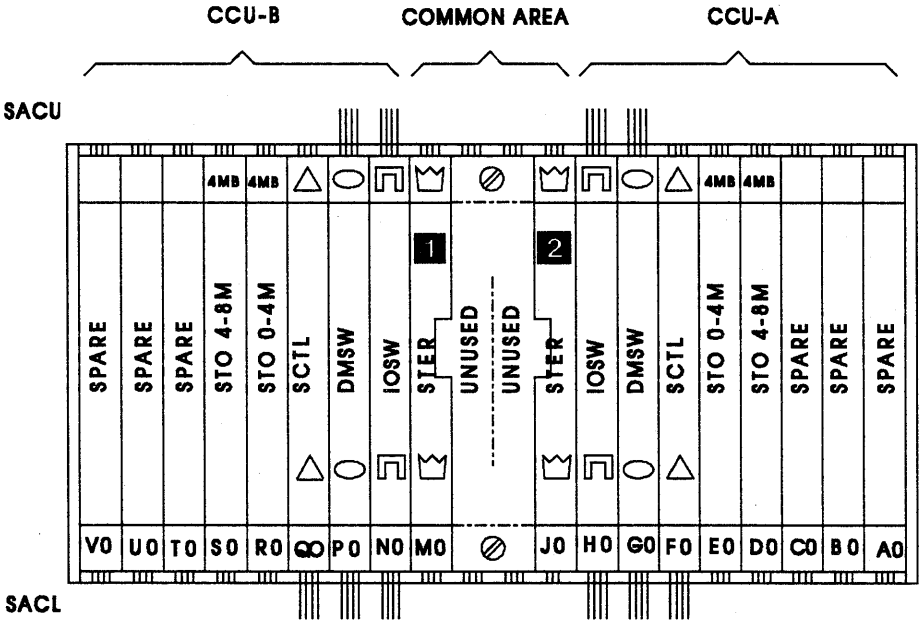


Figure 4-9. 3745 Models 21A-61A MOSS Board, Cards, and Connectors

1 MAC card for Models 21A and 41A or MAC2 card (without cable) for Models 31A and 61A.

Storage, Control Boards, and Cards for Models 210 and 410

LOCATION: 01B



CARD LOCATIONS	
ROW	CARD NAME
A0	
B0	
C0	
D0	STO 4-8M
E0	STO 0-4M
F0	SCTL
G0	DMSW
H0	IOSW
J0	STER
K0	
L0	
M0	STER
N0	IOSW
P0	DMSW
Q0	SCTL
R0	STO 0-4M
S0	STO 4-8M
T0	
U0	
V0	

1 STER in MO is for buses 1.2 and 5

2 STER in JO is for buses 3.4 and 6

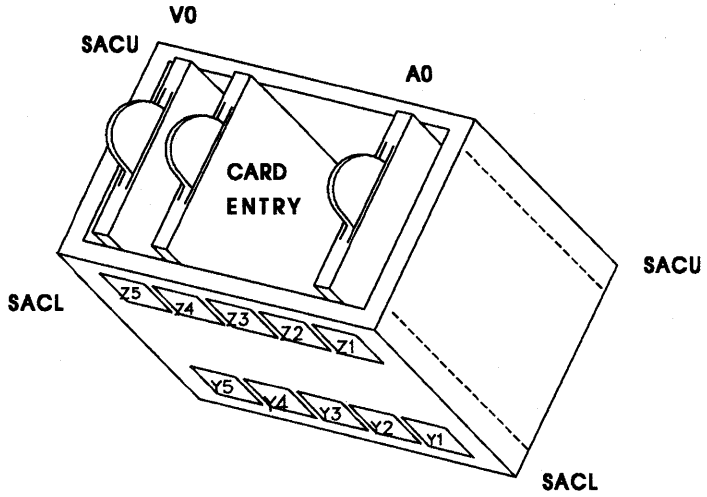
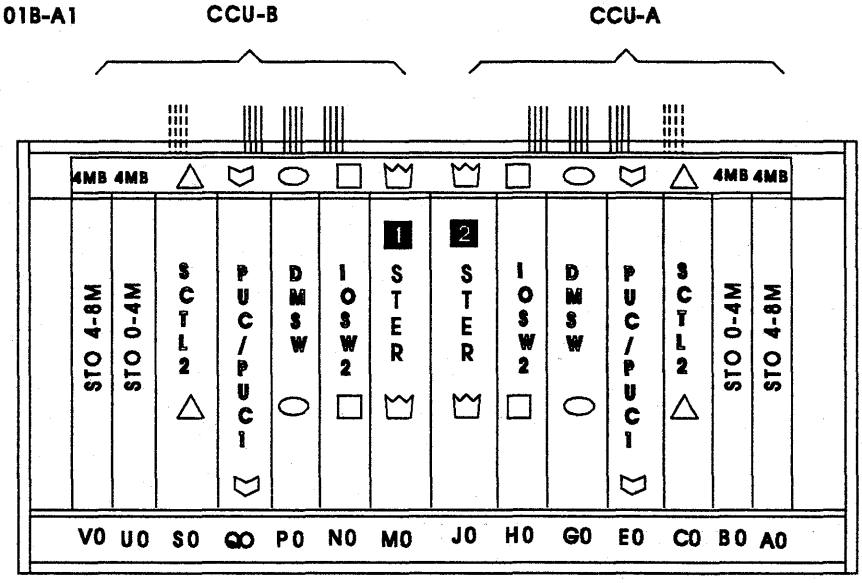


Figure 4-10. 3745 Storage, Control Boards, and Cards for Models 210 and 410

Storage, Control Boards, and Cards for Models 21A, 31x, 41A and 61x

Without the 16 MB storage feature installed on Models 31A and 61A.

LOCATION: 01B



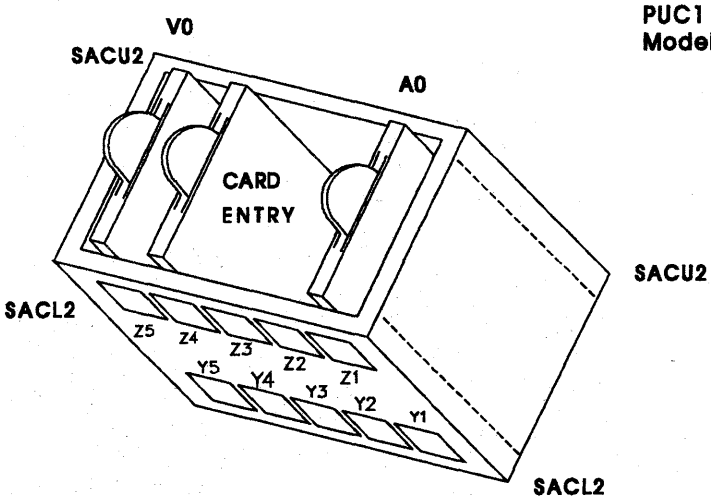
CARD LOCATIONS	
FRONT ROW	CARD NAME
A0	STO 4-8M
B0	STO 0-4M
C0	SCTL2
E0	PUC/PUC1
G0	DMSW
H0	IOSW2
J0	STER
M0	STER
N0	IOSW2
P0	DMSW
Q0	PUC/PUC1
S0	SCTL2
U0	STO 0-4M
V0	STO 4-8M

SACL2 01B-A2

1 STER in MO is for buses 1.2 and 5

2 STER in JO is for buses 3.4 and 6

Note:
PUC are used on 3745 Models 31X and 61X
PUC1 are used on 3745 Models 21A and 41A.



41A and 61x

Figure 4-11. 3745 Storage, Control Boards, and Cards for Models 21A and 31x

Storage, Control Boards and Cards for Models 31A and 61A

With the 16 MB storage feature installed on Models 31A and 61A.

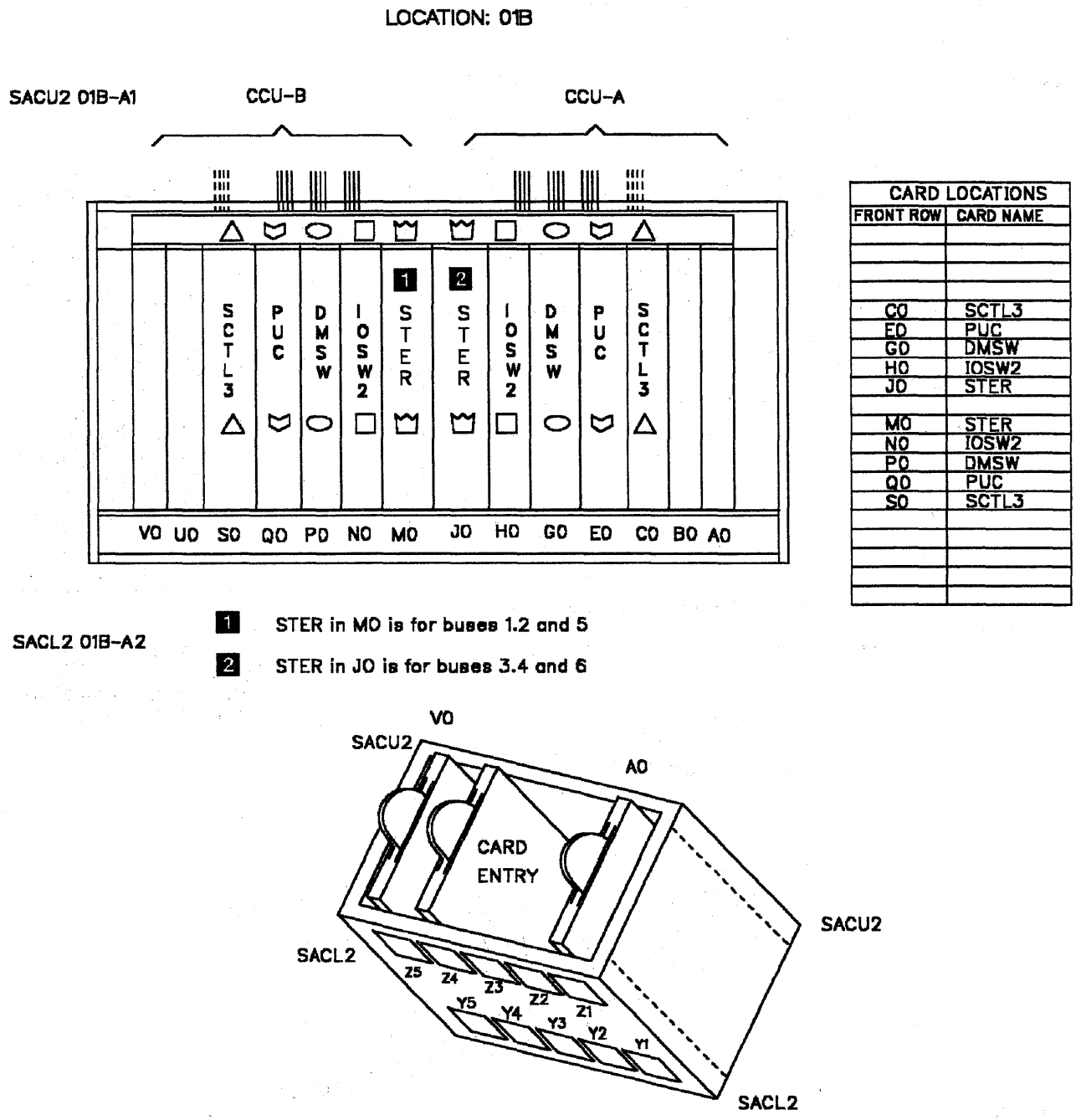


Figure 4-12. 3745 Storage, Control Boards, and Cards for Models 31A and 61A. (with the 16 MB storage feature installed)

SACU Board and Connectors for Models 21x and 41x

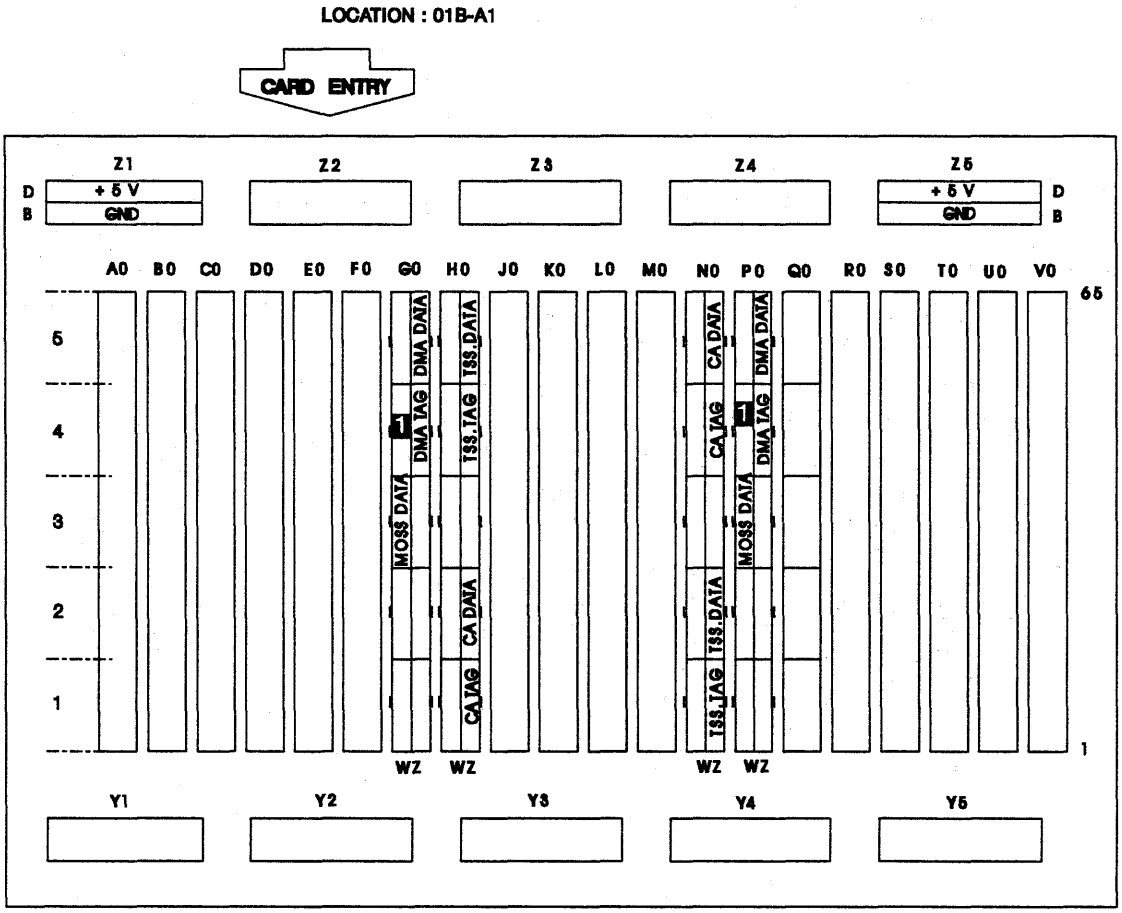


Figure 4-13. 3745 SACU Board and Connectors for Models 21x and 41x. (1 Cable from the DICO card when a TSST board is installed on the 3745 Models 21A and 41A)

SACU2 Board and Connectors for Models 31x and 61x

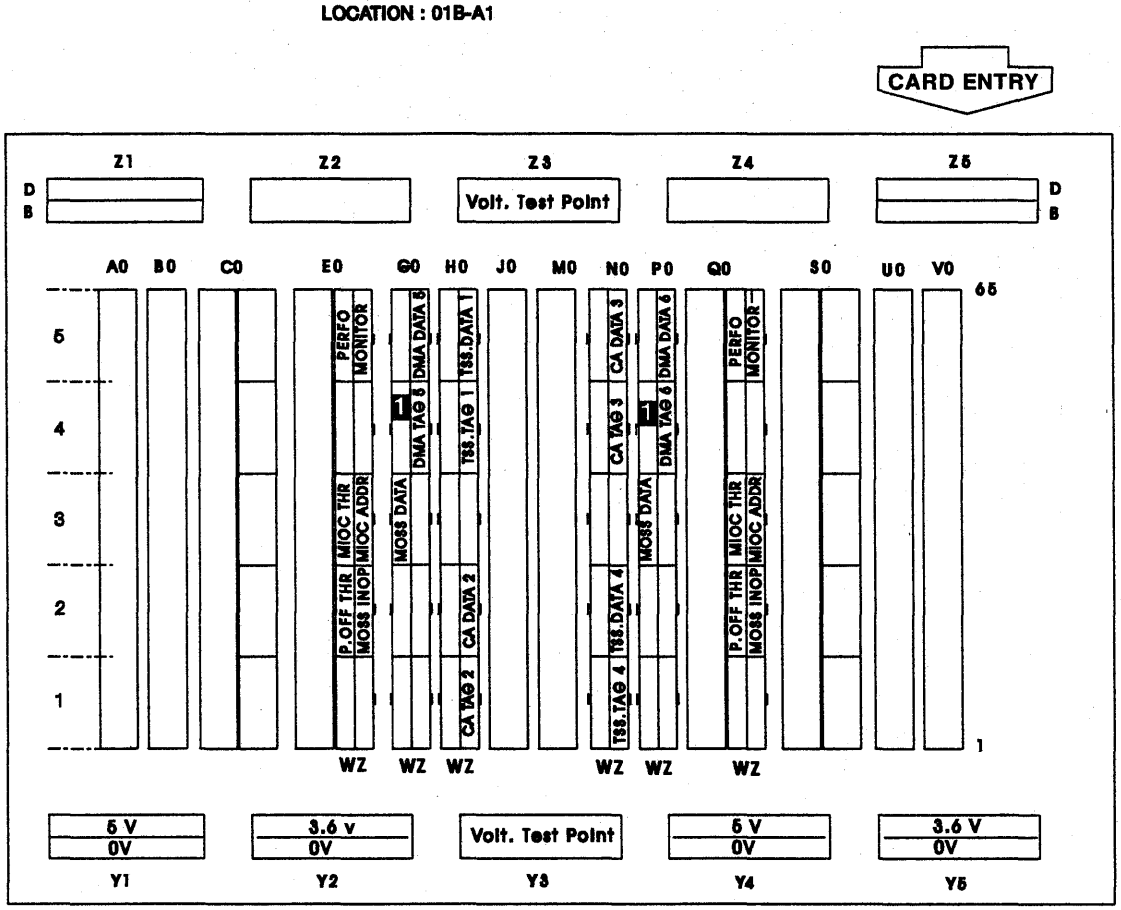
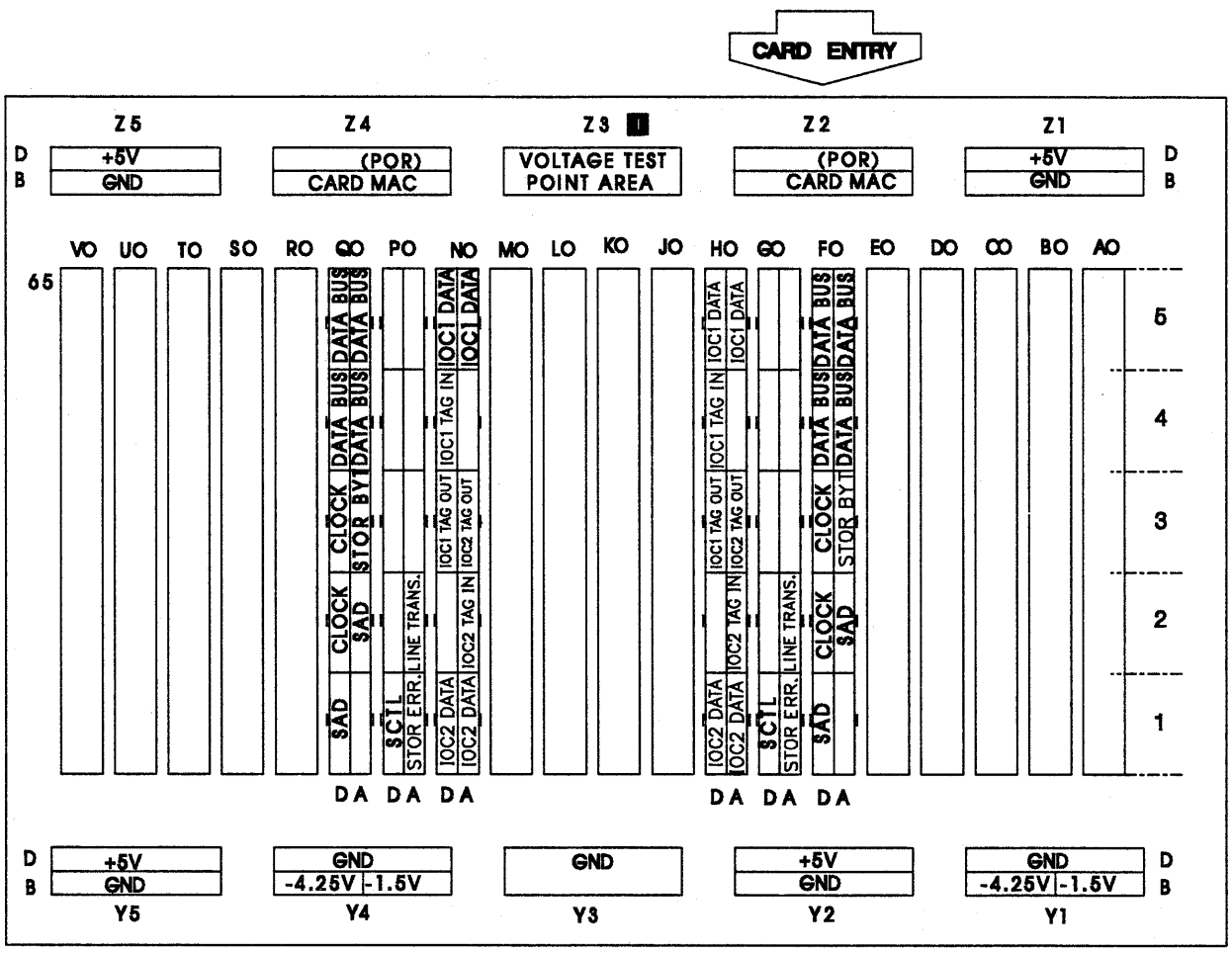


Figure 4-14. 3745 SACU2 Board and Connectors for Models 31x and 61x. (1 Cable from the DICO card when a TSST board is installed on the 3745 Models 31A and 61A)

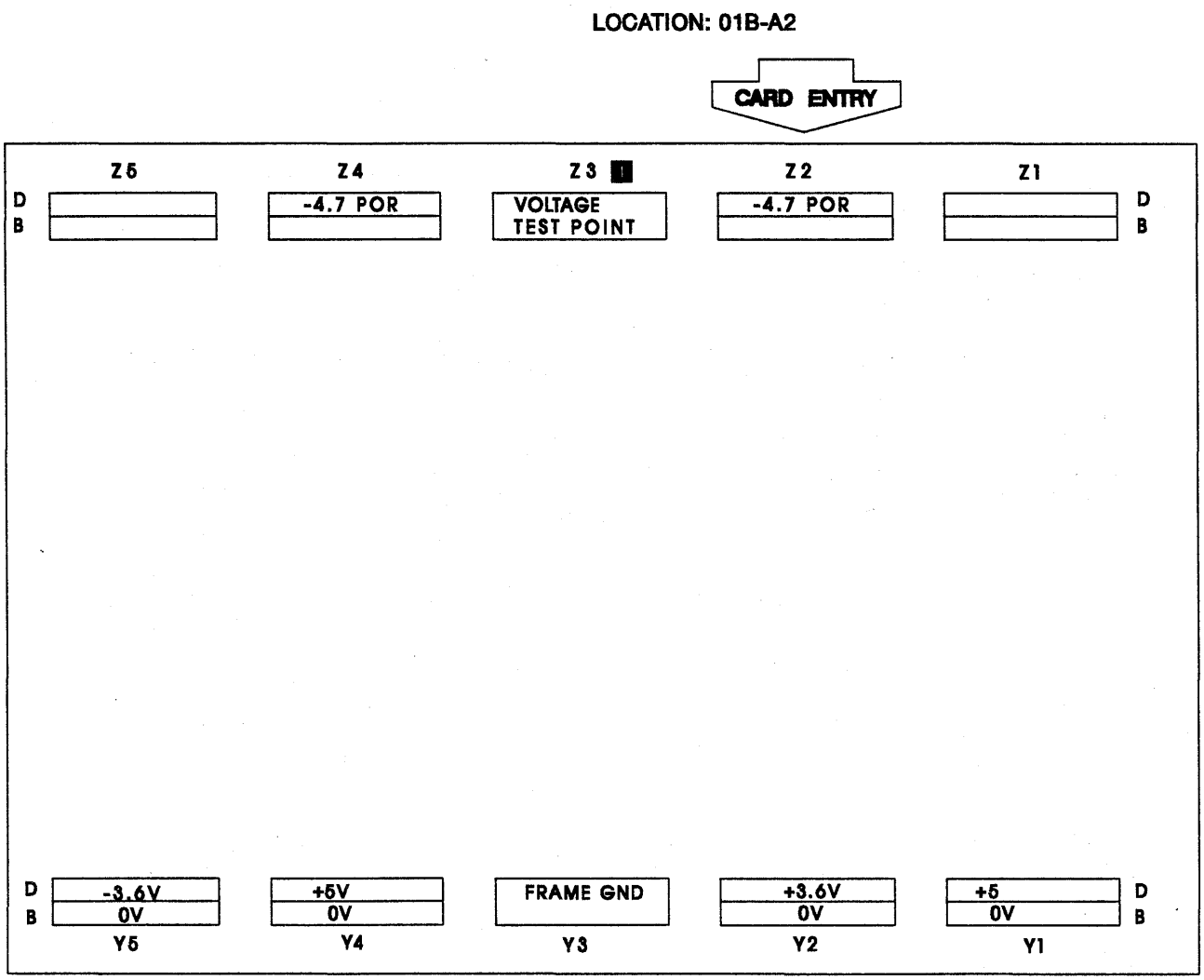
SACL Board and Connectors for Models 21x and 41x



See Power Supply chapter in the MIR for details.

Figure 4-15. 3745 SACL Board and Connectors for Models 21x and 41x

SACL2 Board and Connectors for Models 31x and 61x



1 **See Power Supply chapter in the MIR for details.**

Figure 4-16. 3745 SACL2 Board and Connectors for Models 31x and 61x

TCM Board (Front)

LOCATION: 01C-A1 / 01D-A1
FRONT VIEW

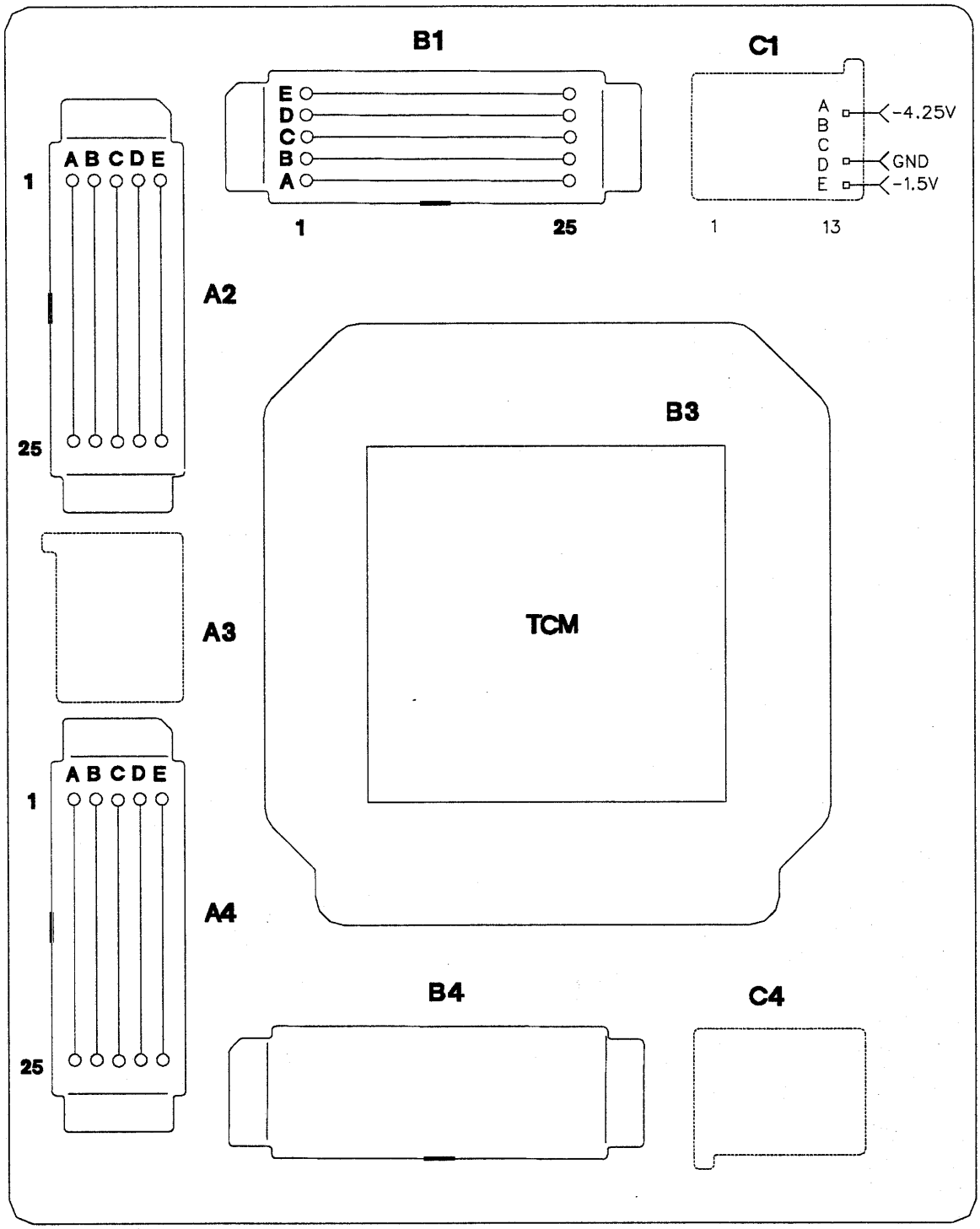


Figure 4-17. 3745 TCM Board and Connectors (Front)

TCM Board (Rear)

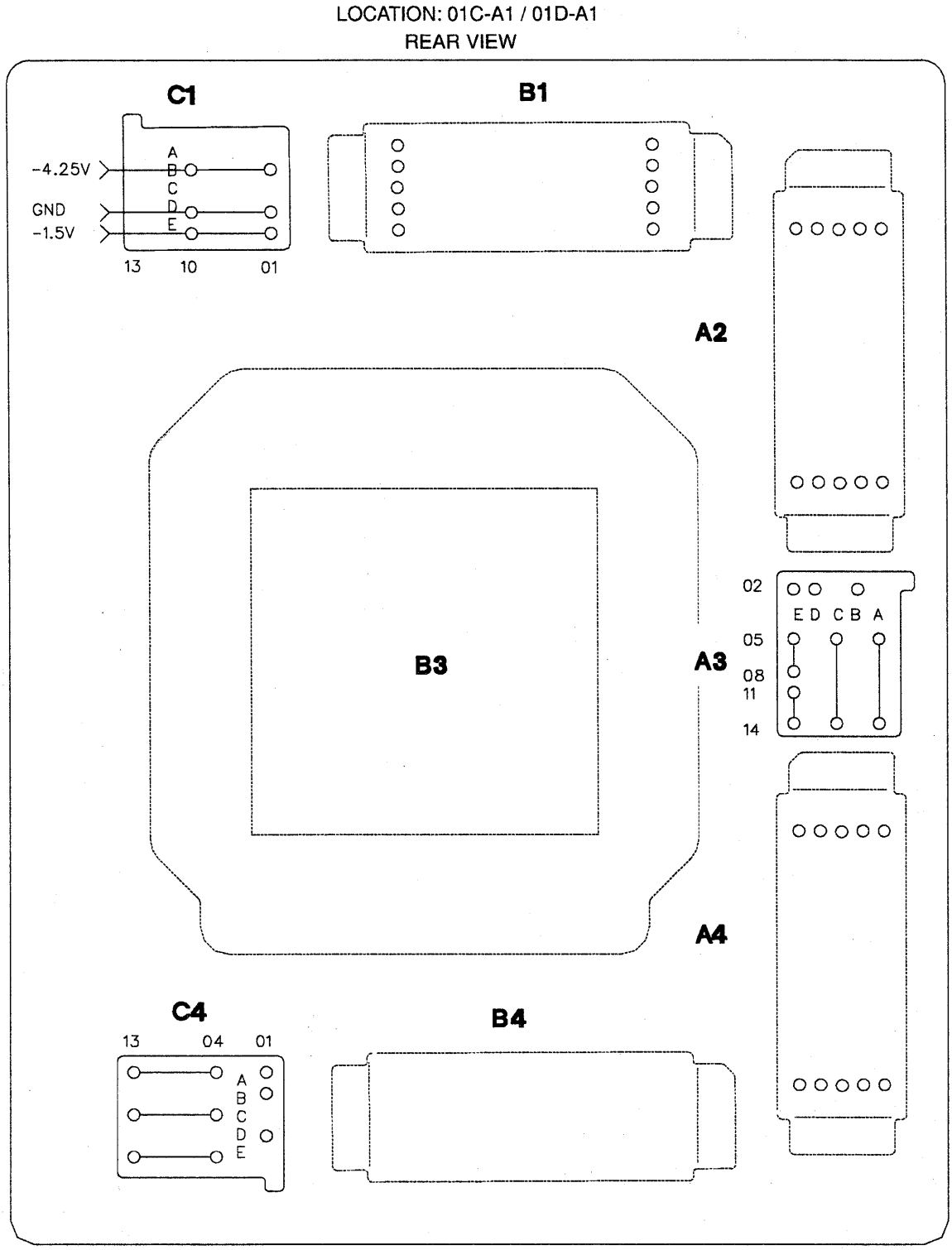
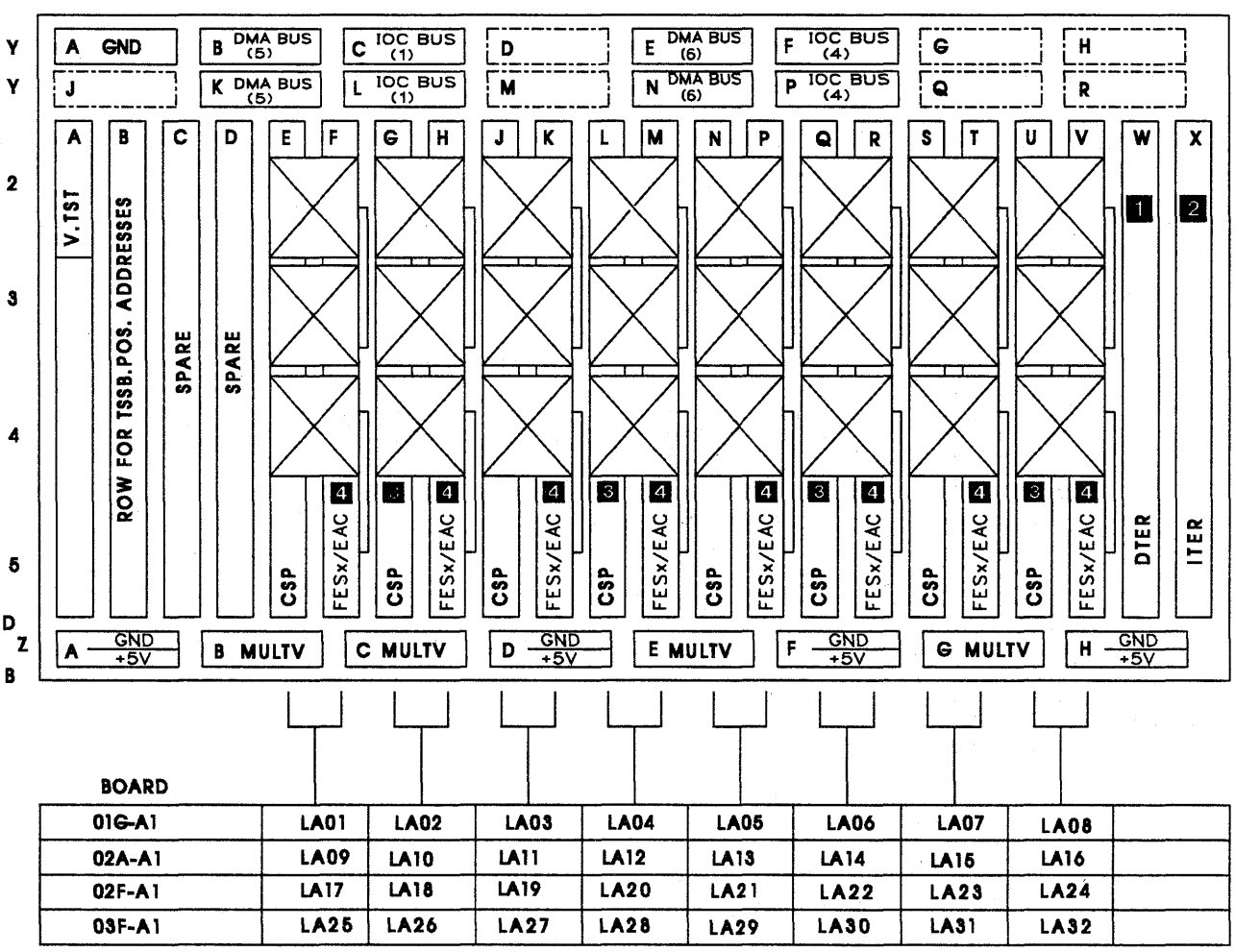


Figure 4-18. 3745 TCM Board and Connectors (Rear)

TSSB Board and Cards



BOARD								
01G-A1	LA01	LA02	LA03	LA04	LA05	LA06	LA07	LA08
02A-A1	LA09	LA10	LA11	LA12	LA13	LA14	LA15	LA16
02F-A1	LA17	LA18	LA19	LA20	LA21	LA22	LA23	LA24
03F-A1	LA25	LA26	LA27	LA28	LA29	LA30	LA31	LA32

Figure 4-19. 3745 TSSB Board and Cards

1 DTER card present when HPTSS or ESS installed for 3745 Models 210-610.
DICO card and flat cables present for 3745 Models 21A-61A.

2 ITER card or flat cables present for 3745 Models 210-610.
DICO card and flat cables present for 3745 Models 21A-61A.

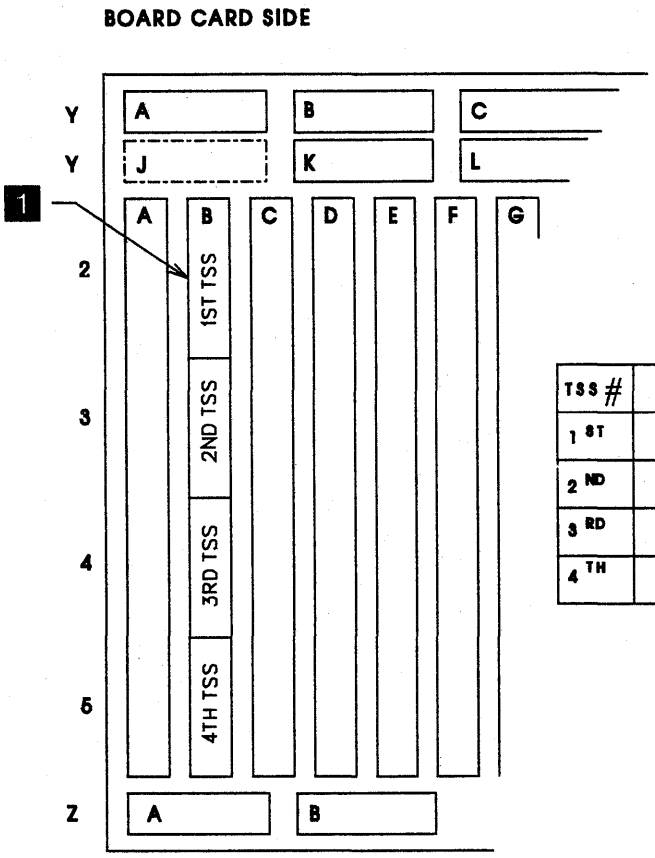
3 Install bypass cards using the bypass card plugging instructions. Refer to "How to Check the Bypass Card Position" on page 4-183.

4 FESx is for FESL or FESH.

Note: FESH and EAC can be installed only on board 01G-A1.

TSSB Board and Connectors

LOCATIONS : 01G-A1, 02A-A1, 02F-A1, 03F-A1



BOARD ADDRESSING 1

TSS #	BOARD LOCATION	PLUG ADDR.CARD ON POSITION	PWR SUPP. PLUG JUMPER
1 ST	01G-A1	B2	NO
2 ND	02A-A1	B3	NO
3 RD	02F-A1	B4	YES
4 TH	03F-A1	B5	NO

Figure 4-20. 3745 TSSB Board and Connectors

TSST Board and Cards

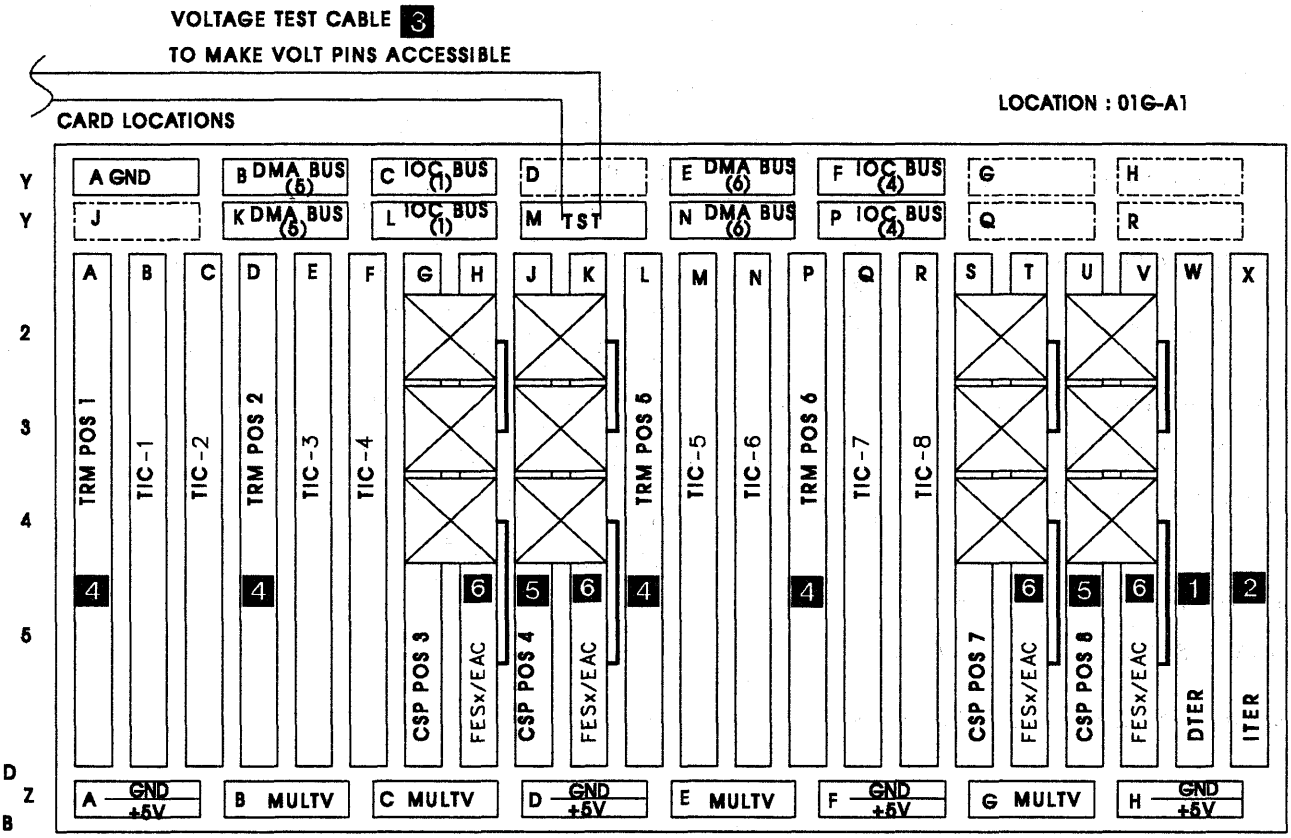


Figure 4-21. 3745 TSST Board Cards and Connectors

1 DTER card present when HPTSS or ESS installed for 3745 Models 210-610.
DICO card and flat cables present for 3745 Models 21A-61A.

2 ITER card or flat cables present for 3745 Models 210-610.
DICO card and flat cables present for 3745 Models 21A-61A.

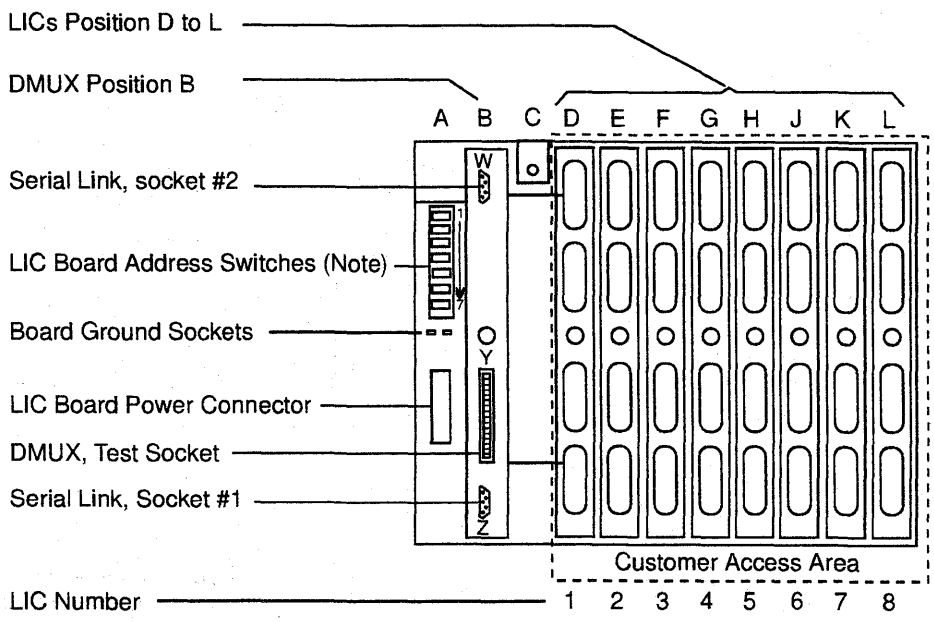
3 Going to voltage test connector located on the left side on board 01G-A1

4 Install bypass cards using the bypass card plugging instructions. Refer to "How to Check the Bypass Card Position" on page 4-183.

5 Install bypass cards using the bypass card plugging instructions. Refer to "How to Check the Bypass Card Position" on page 4-183.

6 FESx is for FESL or FESH.

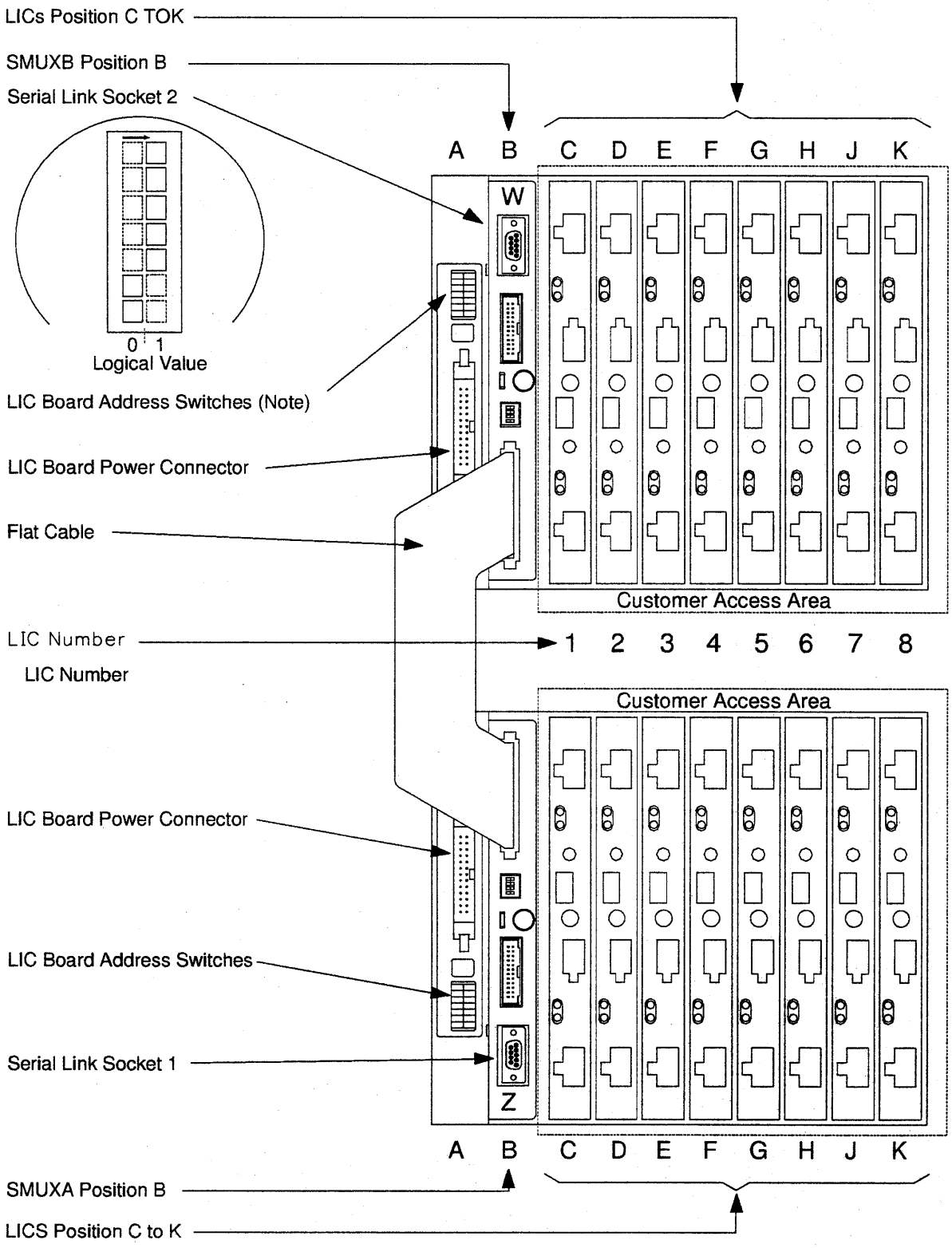
LIC Board Type 1



Note: See details page 4-149.

Figure 4-22. 3745 LIC Unit Type 1 Board and Connectors

LIC Board Type 2



Note: See details page 4-153.

Figure 4-23. 3745 LIC Unit Type 2 Board and Connectors

DMUX Packaging

Table 4-1. 3745 DMUX Packaging

MUX Connector Number		DMUX Location
Z	W	
1	2	01P-B2-B1
3	4	01P-B1-B1
5	6	01M-B2-B1
7	8	01M-B1-B1
9	10	04D-B2-B1
11	12	04D-B1-B1
13	14	04G-B2-B1
15	16	04G-B1-B1
17	18	04B-B2-B1
19	20	04B-B1-B1
21	22	4E-B2-B1
23	24	04E-B1-B1
25	26	05D-B2-B1
27	28	05D-B1-B1

Table 4-2. 3745 DMUX Packaging

MUX Connector Number		DMUX Location
Z	W	
29	30	05G-B2-B1
31	32	05G-B1-B1
33	34	05B-B2-B1
35	36	05B-B1-B1
37	38	05E-B2-B1
39	40	05E-B1-B1
41	42	06D-B2-B1
43	44	06D-B1-B1
45	46	06G-B2-B1
47	48	06G-B1-B1
49	50	06B-B2-B1
51	52	06B-B1-B1
53	54	06E-B2-B1
55	56	06E-B1-B1

SMUXA/B Packaging

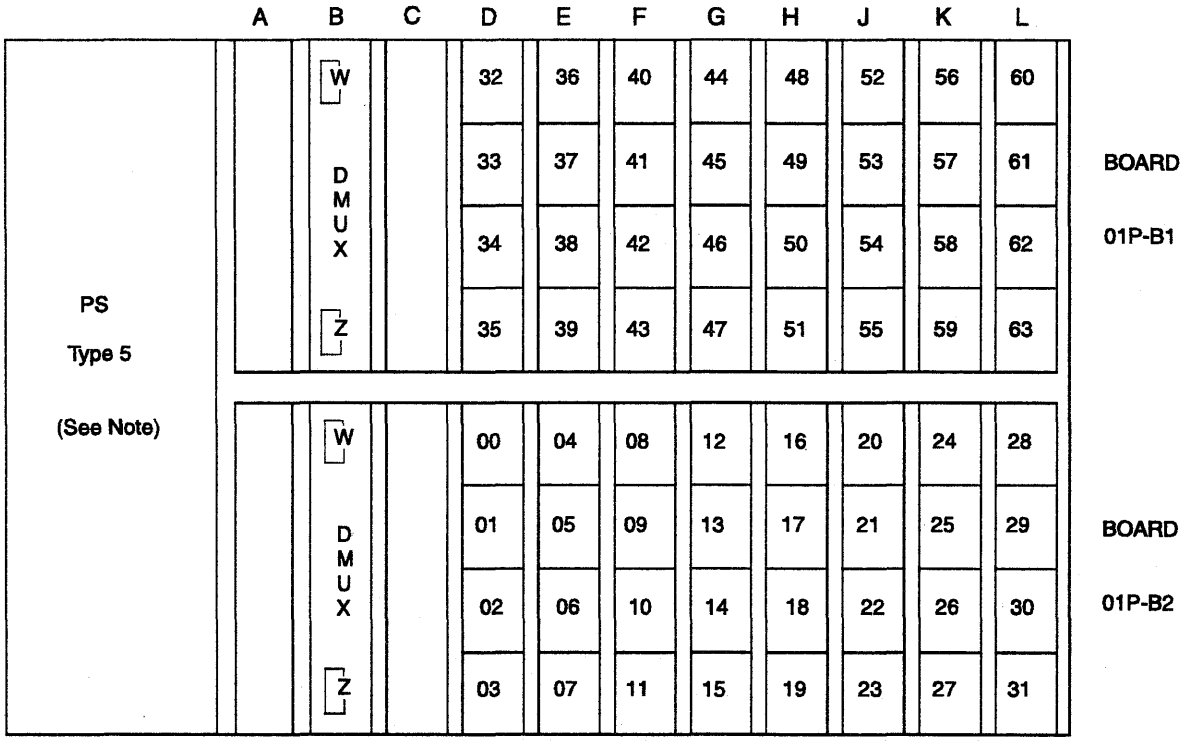
Table 4-3. 3745 SMUXA/B Packaging

MUX Connector Number		DMUX Location
Z	W	
N/A	N/A	01P-B2-B1
N/A	N/A	01P-B1-B1
5	N/A	01M-B2-B1
N/A	7	01M-B1-B1
9	N/A	04D-B2-B1
N/A	11	04D-B1-B1
13	N/A	04G-B2-B1
N/A	15	04G-B1-B1
17	N/A	04B-B2-B1
N/A	19	04B-B1-B1
21	N/A	4E-B2-B1
N/A	23	04E-B1-B1
25	N/A	05D-B2-B1
N/A	27	05D-B1-B1

Table 4-4. 3745 SMUXA/B Packaging

MUX Connector Number		DMUX Location
Z	W	
29	N/A	05G-B2-B1
N/A	31	05G-B1-B1
33	N/A	05B-B2-B1
N/A	35	05B-B1-B1
37	N/A	05E-B2-B1
N/A	39	05E-B1-B1
41	N/A	06D-B2-B1
N/A	43	06D-B1-B1
45	N/A	06G-B2-B1
N/A	47	06G-B1-B1
49	N/A	06B-B2-B1
N/A	51	06B-B1-B1
53	N/A	06E-B2-B1
N/A	55	06E-B1-B1

LIC Unit Type 1 Packaging for LIC Types 1-4



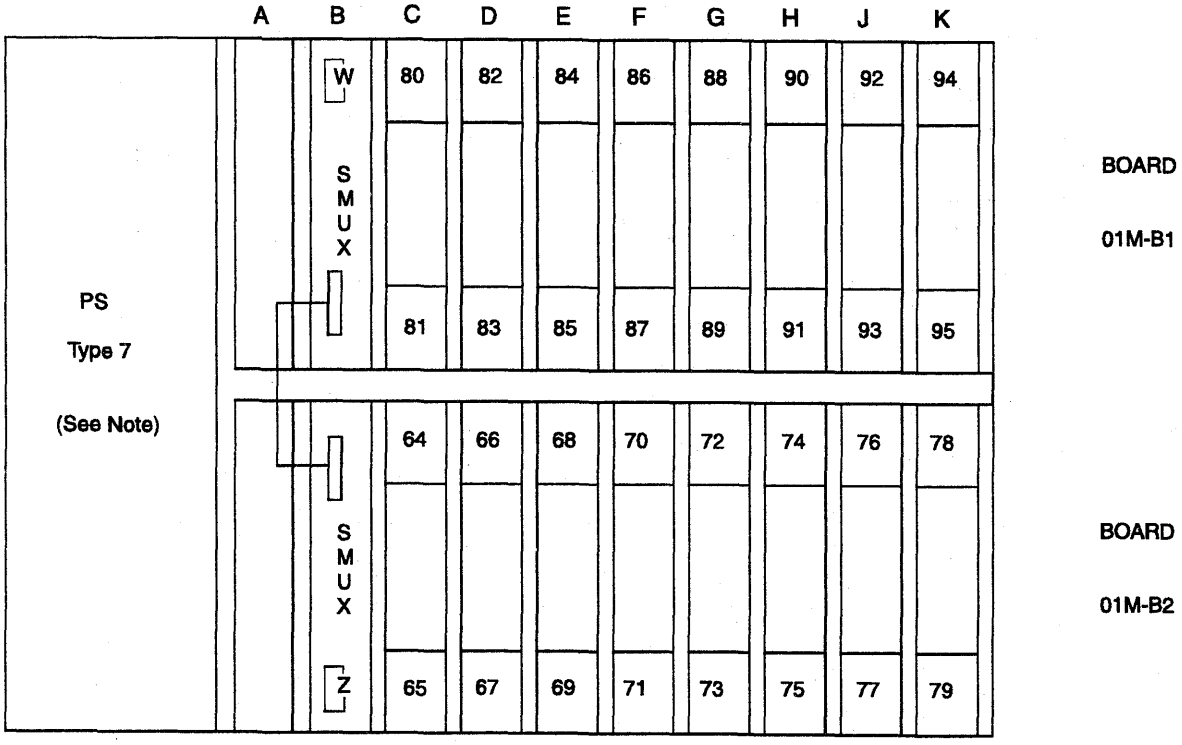
Note: Refer to page YZ075 for PS type 5 addressing switches.

Figure 4-24. LIC Unit Type 1 Packaging (for LIC Types 1-4)

Table 4-5. Line Numbers and Boards (for LIC Types 1-6)

Boards	Lines (LIC 1-4)	Lines (LIC 5-6)
01P-B1/B2	000-063	NA
01M-B1/B2	064-127	064-095
04D-B1/B2	128-191	128-159
04G-B1/B2	192-255	192-223
04B-B1/B2	256-319	256-287
04E-B1/B2	320-383	320-351
05D-B1/B2	384-447	384-415
05G-B1/B2	448-511	448-479
05B-B1/B2	512-575	512-543
05E-B1/B2	576-639	576-607
06D-B1/B2	640-703	640-671
06G-B1/B2	704-767	704-735
06B-B1/B2	768-831	768-799
06E-B1/B2	832-895	832-863

LIC Unit Type 2 Packaging for LIC Type 5

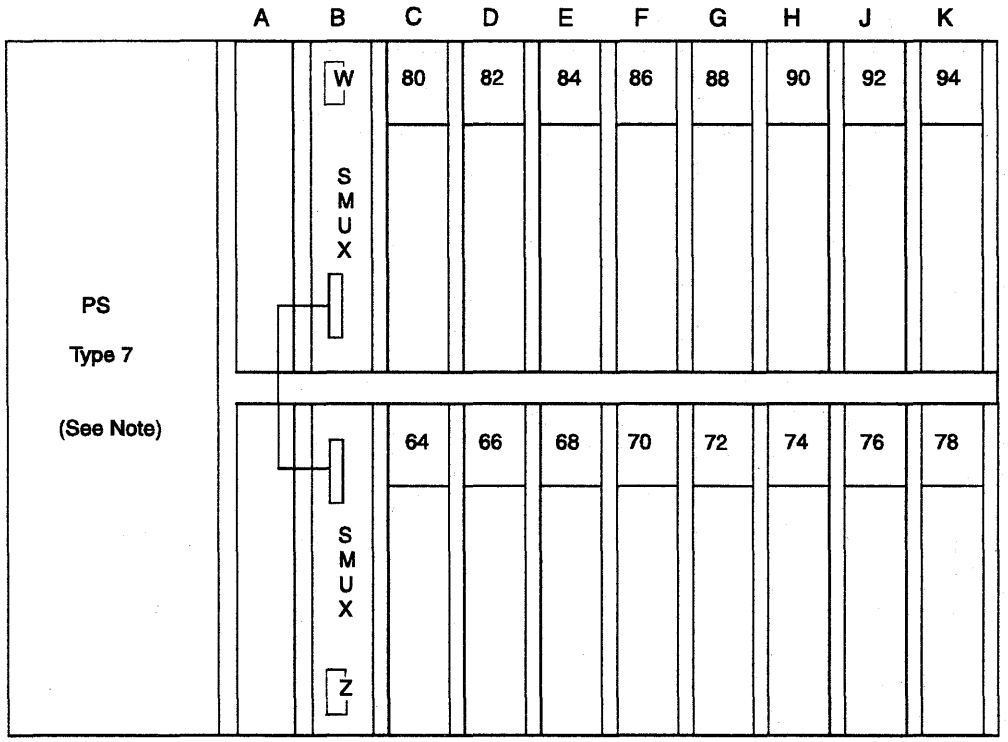


Notes:

1. Refer to page YZ077 for PS type 7 addressing switches.
2. LICs type 5 and 6 can be mixed in this board.

Figure 4-25. LIC Unit Type 2 Packaging (for LIC Type 5)

LIC Unit Type 2 Packaging for LIC Type 6 Low-Speed



Notes:

1. Refer to page YZ077 for PS type 7 addressing switches.
2. LICs type 5 and 6 can be mixed in this board.

Figure 4-26. LIC Unit Type 2 Packaging for LIC Type 6 Low-Speed

LIC Unit Type 2 Packaging for LIC Type 6 High-speed

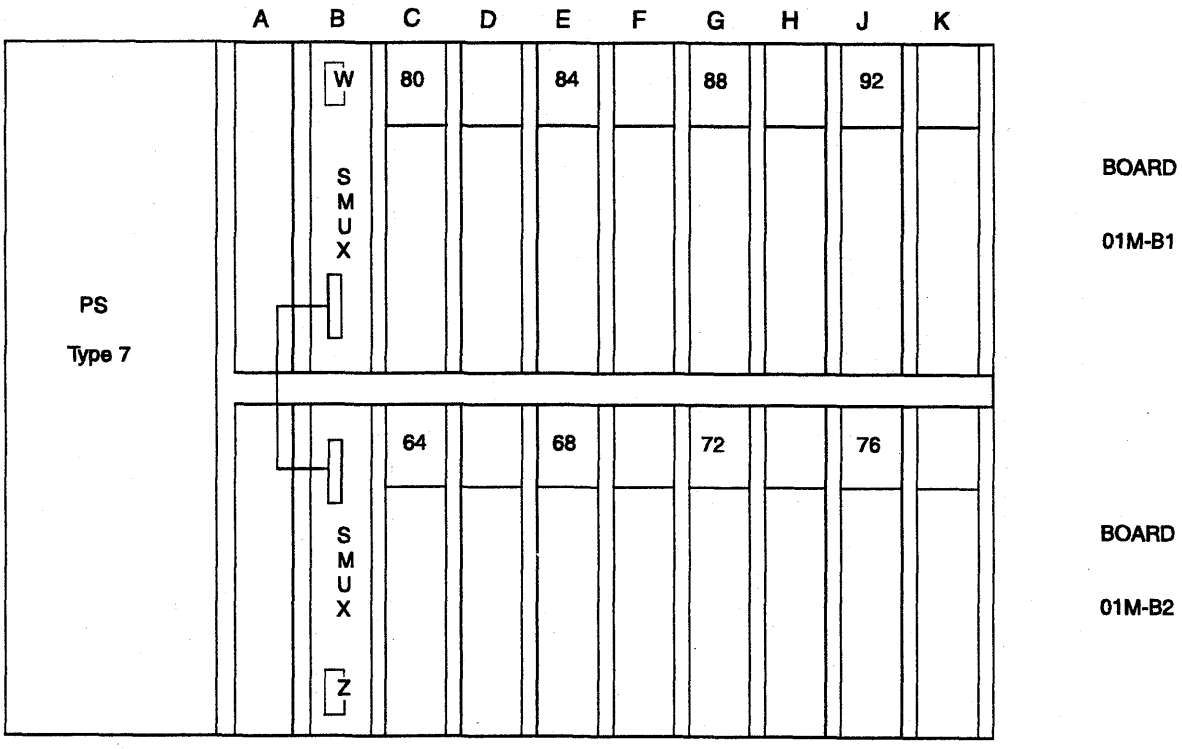


Figure 4-27. LIC Unit Type 2 Packaging for LIC Type 6 High-Speed

LIC Unit Type 1 Layout Board B2 (for LIC Types 1-4)

Table 4-6. LIC Unit Type 1 Layout Board B2 (for LIC Types 1-4)

Board	Card Position								
	DMUX	LIC							
	B	C	D	E	F	G	H	J	K
01P-B2	W=2	000	004	008	012	016	020	024	028
		001	005	009	013	017	021	025	029
	Z=1	002	006	010	014	018	022	026	030
		003	007	011	015	019	023	027	031
01M-B2	W=6	064	068	072	076	080	084	088	092
		065	069	073	077	081	085	089	093
	Z=5	066	070	074	078	082	086	090	094
		067	071	075	079	083	087	091	095
04D-B2	W=10	128	132	136	140	144	148	152	156
		129	133	137	141	145	149	153	157
	Z=9	130	134	138	142	146	150	154	158
		131	135	139	143	147	151	155	159
04G-B2	W=14	192	196	200	204	208	212	216	220
		193	197	201	205	209	213	217	221
	Z=13	194	198	202	206	210	214	218	222
		195	199	203	207	211	215	219	223
04B-B2	W=18	256	260	264	268	272	276	280	284
		257	261	265	269	273	277	281	285
	Z=17	258	262	266	270	274	278	282	286
		259	263	267	271	275	279	283	287
04E-B2	W=22	320	324	328	332	336	340	344	348
		321	325	329	333	337	341	345	349
	Z=21	322	326	330	334	338	342	346	350
		323	327	331	335	339	343	347	351
05D-B2	W=26	384	388	392	396	400	404	408	412
		385	389	393	397	401	405	409	413
	Z=25	386	390	394	398	402	406	410	414
		387	391	395	399	403	407	411	415
05G-B2	W=30	448	452	456	460	464	468	472	476
		449	453	457	461	465	469	473	477
	Z=29	450	454	458	462	466	470	474	478
		451	455	459	463	467	471	475	479
05B-B2	W=34	512	516	520	524	528	532	536	540
		513	517	521	525	529	533	537	541
	Z=33	514	518	522	526	530	534	538	542
		515	519	523	527	531	535	539	543
05E-B2	W=38	576	580	584	588	592	596	600	604
		577	581	585	589	593	597	601	605
	Z=37	578	582	586	590	594	598	602	606
		579	583	587	591	595	599	603	607
06D-B2	W=42	640	644	648	652	656	660	664	668
		641	645	649	653	657	661	665	669
	Z=41	642	646	650	654	658	662	666	670
		643	647	651	655	659	663	667	671
06G-B2	W=46	704	708	712	716	720	724	728	732
		705	709	713	717	721	725	729	733
	Z=45	706	710	714	718	722	726	730	734
		707	711	715	719	723	727	731	735
06B-B2	W=50	768	772	776	780	784	788	792	796
		769	773	777	781	785	789	793	797
	Z=49	770	774	778	782	786	790	794	798
		771	775	779	783	787	791	795	799
06E-B2	W=54	832	836	840	844	848	852	856	860
		833	837	841	845	849	853	857	861
	Z=53	834	838	842	846	850	854	858	862
		835	839	843	847	851	855	859	863

LIC Unit Type 1 Layout Board B1 (for LIC Types 1-4)

Table 4-7. LIC Unit Type 1 Layout Board B1 (for LIC Types 1-4)

Board	Card Position								
	DMUX	LIC							
	B	C	D	E	F	G	H	J	K
01P-B1	W=4	032	036	040	044	048	052	056	060
		033	037	041	045	049	053	057	061
	Z=3	034	038	042	046	050	054	058	062
		035	039	043	047	051	055	059	063
01M-B1	W=8	096	100	104	108	112	116	120	124
		097	101	105	109	113	117	121	125
	Z=7	098	102	106	110	114	118	122	126
		099	103	107	111	115	119	123	127
04D-B1	W=12	160	164	168	172	176	180	184	188
		161	165	169	173	177	181	185	189
	Z=11	162	166	170	174	178	182	186	190
		163	167	171	175	179	183	187	191
04G-B1	W=16	224	228	232	236	240	244	248	252
		225	229	233	237	241	245	249	253
	Z=15	226	230	234	238	242	246	250	254
		227	231	235	239	243	247	251	255
04B-B1	W=20	288	292	296	300	304	308	312	316
		289	293	297	301	305	309	313	317
	Z=19	290	294	298	302	306	310	314	318
		291	295	299	303	307	311	315	319
04E-B1	W=24	352	356	360	364	368	372	376	380
		353	357	361	365	369	373	377	381
	Z=23	354	358	362	366	370	374	378	382
		355	359	363	367	371	375	379	383
05D-B1	W=28	416	420	424	428	432	436	440	444
		417	421	425	429	433	437	441	445
	Z=27	418	422	426	430	434	438	442	446
		419	423	427	431	435	439	443	447
05G-B1	W=32	480	484	488	492	496	500	504	508
		481	485	489	493	497	501	505	509
	Z=31	482	486	490	494	498	502	506	510
		483	487	491	495	499	503	507	511
05B-B1	W=36	544	548	552	556	560	564	568	572
		545	549	553	557	561	565	569	573
	Z=35	546	550	554	558	562	566	570	574
		547	551	555	559	563	567	571	575
05E-B1	W=40	608	612	616	620	624	628	632	636
		609	613	617	621	625	629	633	637
	Z=39	610	614	618	622	626	630	634	638
		611	615	619	623	627	631	635	639
06D-B1	W=44	672	676	680	684	688	692	696	700
		673	677	681	685	689	693	697	701
	Z=43	674	678	682	686	690	694	698	702
		675	679	683	687	691	695	699	703
06G-B1	W=48	736	740	744	748	752	756	760	764
		737	741	745	749	753	757	761	765
	Z=47	738	742	746	750	754	758	762	766
		739	743	747	751	755	759	763	767
06B-B1	W=52	800	804	808	812	816	820	824	828
		801	805	809	813	817	821	825	829
	Z=51	802	806	810	814	818	822	826	830
		803	807	811	815	819	823	827	831
06E-B1	W=56	864	868	872	876	880	884	888	892
		865	869	873	877	881	885	889	893
	Z=55	866	870	874	878	882	886	890	894
		867	871	875	879	883	887	891	895

LIC Unit Type 2 Layout Board B2 (for LIC Type 5)

Note:

- LICs 5 and LICs 6(low-speed and high-speed) may be intermixed on a given board.
- A pair of LICs may be made up of a LIC 5 and a LIC 6 (low-speed).

Table 4-8. LIC Unit Type 2 Layout Board B2 (for LIC Type 5)

Board	Card Position								
	SMUX	LIC							
	B	C	D	E	F	G	H	J	K
01M-B2	W=N/A Z=5	064 065	066 067	068 069	070 071	072 073	074 075	076 077	078 079
04D-B2	W=N/A Z=9	128 129	130 131	132 133	134 135	136 137	138 139	140 141	142 143
04G-B2	W=N/A Z=13	192 193	194 195	196 197	198 199	200 201	202 203	204 205	206 207
04B-B2	W=N/A Z=17	256 257	258 259	260 261	262 263	264 265	266 267	268 269	270 271
04E-B2	W=N/A Z=21	320 321	322 323	324 325	326 327	328 329	330 331	332 333	334 335
05D-B2	W=N/A Z=25	384 385	386 387	388 389	390 391	392 393	394 395	396 397	398 399
05G-B2	W=N/A Z=29	448 449	450 451	452 453	454 455	456 457	458 459	460 461	462 463
05B-B2	W=N/A Z=33	512 513	514 515	516 517	518 519	520 521	522 523	524 525	526 527
05E-B2	W=N/A Z=37	576 577	578 579	580 581	582 583	584 585	586 587	588 589	590 591
06D-B2	W=N/A Z=41	340 641	642 643	644 645	646 647	648 649	650 651	652 653	654 655
06G-B2	W=N/A Z=45	704 705	706 707	708 709	710 711	712 713	714 715	716 717	718 719
06B-B2	W=N/A Z=49	768 769	770 771	772 773	774 775	776 777	778 779	780 781	782 783
06E-B2	W=N/A Z=53	832 833	834 835	836 837	838 839	840 841	842 843	844 845	846 847

LIC Unit Type 2 Layout Board B1 (for LIC Type 5)

Note:

- LICs 5 and LICs 6(low-speed and high-speed) may be intermixed on a given board.
- A pair of LICs may be made up of a LIC 5 and a LIC 6 (low-speed).

Table 4-9. LIC Unit Type 2 Layout Board B1 (for LIC Type 5)

Board	Card Position								
	SMUX	LIC							
	B	C	D	E	F	G	H	J	K
01M-B1	W=7 Z=N/A	080 081	082 083	084 085	086 087	088 089	090 091	092 093	094 095
04D-B1	W=11 Z=N/A	144 145	146 147	148 149	150 151	152 153	154 155	156 157	158 159
04G-B1	W=15 Z=N/A	208 209	210 211	212 213	214 215	216 217	218 219	220 221	222 223
04B-B1	W=19 Z=N/A	272 273	274 275	276 277	278 279	280 281	282 283	284 285	286 287
04E-B1	W=23 Z=N/A	336 337	338 339	340 341	342 343	344 345	346 347	348 349	350 351
05D-B1	W=27 Z=N/A	400 401	402 403	404 405	406 407	408 409	410 411	412 413	414 415
05G-B1	W=31 Z=N/A	464 465	466 467	468 469	470 471	472 473	474 475	476 477	478 479
05B-B1	W=35 Z=N/A	528 529	530 531	532 533	534 535	536 537	538 539	540 541	542 543
05E-B1	W=39 Z=N/A	592 593	594 595	596 597	598 599	600 601	602 603	604 605	606 607
06D-B1	W=43 Z=N/A	656 657	658 659	660 661	662 663	664 665	666 667	668 669	670 671
06G-B1	W=47 Z=N/A	720 721	722 723	724 725	726 727	728 729	730 731	732 733	734 735
06B-B1	W=51 Z=N/A	784 785	786 787	788 789	790 791	792 793	794 795	796 797	798 799
06E-B1	W=55 Z=N/A	848 849	850 851	852 853	854 855	856 857	858 859	860 861	862 863

LIC Unit Type 2 Layout Board B2 (for LIC Type 6 Low-Speed)

Note:

- LICs 5 and LICs 6 (low-speed and high-speed) may be intermixed on a given board.
- A pair of LICs may be made up of a LIC 5 and a LIC 6 (low-speed).

Table 4-10. LIC Unit Type 2 Layout Board B2 (for LIC Type 6 Low-Speed)

Board	Card Position								
	SMUX	LIC							
	B	C	D	E	F	G	H	J	K
01M-B2	Z=5	064	066	068	070	072	074	076	078
04D-B2	Z=9	128	130	132	134	136	138	140	142
04G-B2	Z=13	192	194	196	198	200	202	204	206
04B-B2	Z=17	256	258	260	262	264	266	268	270
04E-B2	Z=21	320	322	324	326	328	330	332	334
05D-B2	Z=25	384	386	388	390	392	394	396	398
05G-B2	Z=29	448	450	452	454	456	458	460	462
05B-B2	Z=33	512	514	516	518	520	522	524	526
05E-B2	Z=37	576	578	580	582	684	686	688	690
06D-B2	Z=41	640	642	644	646	648	650	652	654
06G-B2	Z=45	704	706	708	710	712	714	716	718
06B-B2	Z=49	768	770	772	774	776	778	780	782
06E-B2	Z=53	832	834	836	838	840	842	844	846

LIC Unit Type 2 Layout Board B1 (for LIC Type 6 Low-Speed)

Table 4-11. LIC Unit Type 2 Layout Board B1 (for LIC Type 6 Low-Speed)

Board	Card Position								
	SMUX	LIC							
	B	C	D	E	F	G	H	J	K
01M-B1	W=7	080	082	084	086	088	090	092	094
04D-B1	W=11	144	146	148	150	152	154	156	158
04G-B1	W=15	208	210	212	214	616	218	220	222
04B-B1	W=19	272	274	276	278	280	282	284	286
04E-B1	W=23	336	338	340	342	344	346	348	350
05D-B1	W=27	400	402	404	406	408	410	412	414
05G-B1	W=31	464	466	468	470	472	474	476	478
05B-B1	W=35	528	530	532	534	536	538	540	542
05E-B1	W=39	592	594	596	598	600	602	604	608
06D-B1	W=43	656	658	660	662	664	666	668	670
06G-B1	W=47	720	722	724	726	728	730	732	734
06B-B1	W=51	784	786	788	790	792	794	796	798
06E-B1	W=55	848	850	852	854	856	858	860	862

LIC Unit Type 2 Layout Board B2 (for LIC Type 6 High-Speed)

Note:

- Any card plugged in positions C, E, G, J may also be fitted in positions D, F, H, K.
- If there is a LIC 6 (high-speed) in one position of a pair, the other position must be left empty.
- LICs 5 and LICs 6 (low-speed and high-speed) may be intermixed on a given board.

Table 4-12. LIC Unit Type 2 Layout Board B2 (for LIC Type 6 High-Speed)

Board	Card Position								
	SMUX	LIC							
	B	C	D	E	F	G	H	J	K
01M-B2	Z=5	064		068		072		076	
04D-B2	Z=9	128		132		136		140	
04G-B2	Z=13	192		196		200		204	
04B-B2	Z=17	256		260		264		268	
04E-B2	Z=21	320		324		328		332	
05D-B2	Z=25	384		388		392		396	
05G-B2	Z=29	448		452		456		460	
05B-B2	Z=33	512		516		520		524	
05E-B2	Z=37	576		580		684		688	
06D-B2	Z=41	640		644		648		652	
06G-B2	Z=45	704		708		712		716	
06B-B2	Z=49	768		772		776		780	
06E-B2	Z=53	832		836		840		844	

LIC Unit Type 2 Layout Board B1 (for LIC Type 6 High-Speed)

Table 4-13. LIC Unit Type 2 Layout Board B1 (for LIC Type 6 High-Speed)

Board	Card Position								
	SMUX	LIC							
	B	C	D	E	F	G	H	J	K
01M-B1	W=7	080		084		088		092	
04D-B1	W=11	144		148		152		156	
04G-B1	W=15	208		212		616		220	
04B-B1	W=19	272		276		280		284	
04E-B1	W=23	336		340		344		348	
05D-B1	W=27	400		404		408		412	
05G-B1	W=31	464		468		472		476	
05B-B1	W=35	528		532		536		540	
05E-B1	W=39	592		596		600		604	
06D-B1	W=43	656		660		664		668	
06G-B1	W=47	720		724		728		732	
06B-B1	W=51	784		788		792		796	
06E-B1	W=55	848		852		856		860	

MUX Number, LIC Number, and Line Address Tables

Frame 01

Table 4-14. Lic Number, Line Address Tables for Frame 01

Location	MUX Number	LIC Number by LIC Type			Line Address by LIC type			
		1-4	5 or 6 LS	6 H	1-4	5	6 LS	6 HS
01M-B1-B1								
01M-B1-C1		N/A	041	041	N/A	080-081	080	080
01M-B1-D1	For LIC 1-4	025	042	041	096-099	082-083	082	080
01M-B1-E1	Z = 7	026	043	043	100-103	084-085	084	084
01M-B1-F1	W = 8	027	044	043	104-107	086-087	086	084
01M-B1-G1	For LIC 5-6	028	045	045	108-111	088-089	088	088
01M-B1-H1	Z = N/A	029	046	045	112-115	090-091	090	088
01M-B1-J1	W = 7	030	047	047	116-119	092-093	092	092
01M-B1-K1		031	048	047	120-123	094-095	094	092
01M-B1-L1		032	N/A	N/A	124-127	N/A	N/A	N/A
01M-B2-B1								
01M-B2-C1		N/A	033	033	N/A	064-065	064	064
01M-B2-D1	For LIC 1-4	017	034	033	064-067	066-067	066	064
01M-B2-E1	Z = 5	018	035	035	068-071	068-069	068	068
01M-B2-F1	W = 6	019	036	035	072-075	070-071	070	068
01M-B2-G1	For LIC 5-6	020	037	037	076-079	072-073	072	072
01M-B2-H1	Z = 5	021	038	037	080-083	074-075	074	072
01M-B2-J1	W = N/A	022	039	039	084-087	076-077	076	076
01M-B2-K1		023	040	039	088-091	078-079	078	076
01M-B2-L1		024	N/A	N/A	092-095	N/A	N/A	N/A
01P-B1-B1								
01P-B1-C1		N/A	N/A	N/A	N/A	N/A	N/A	N/A
01P-B1-D1	For LIC 1-4	009	N/A	N/A	032-035	N/A	N/A	N/A
01P-B1-E1	Z = 3	010	N/A	N/A	036-039	N/A	N/A	N/A
01P-B1-F1	W = 4	011	N/A	N/A	040-043	N/A	N/A	N/A
01P-B1-G1	For LIC 5-6	012	N/A	N/A	044-047	N/A	N/A	N/A
01P-B1-H1	Z = N/A	013	N/A	N/A	048-051	N/A	N/A	N/A
01P-B1-J1	W = N/A	014	N/A	N/A	052-055	N/A	N/A	N/A
01P-B1-K1		015	N/A	N/A	056-059	N/A	N/A	N/A
01P-B1-L1		016	N/A	N/A	060-063	N/A	N/A	N/A
01P-B2-B1								
01P-B2-C1		N/A	N/A	N/A	N/A	N/A	N/A	N/A
01P-B2-D1	For LIC 1-4	001	N/A	N/A	000-003	N/A	N/A	N/A
01P-B2-E1	Z = 1	002	N/A	N/A	004-007	N/A	N/A	N/A
01P-B2-F1	W = 2	003	N/A	N/A	008-011	N/A	N/A	N/A
01P-B2-G1	For LIC 5-6	004	N/A	N/A	012-015	N/A	N/A	N/A
01P-B2-H1	Z = N/A	005	N/A	N/A	016-019	N/A	N/A	N/A
01P-B2-J1	W = N/A	006	N/A	N/A	020-023	N/A	N/A	N/A
01P-B2-K1		007	N/A	N/A	024-027	N/A	N/A	N/A
01P-B2-L1		008	N/A	N/A	028-031	N/A	N/A	N/A

Frame 04B and 04D

Table 4-15. Lic Number, Line Address Tables for Frame 04B and 04D

Location	MUX Number	LIC Number by LIC Type			Line Address by LIC Type			
		1-4	5 or 6 LS	6 H	1-4	5	6 LS	6 HS
04B-B1-B1								
04B-B1-C1		N/A	137	137	N/A	272-273	272	272
04B-B1-D1	For LIC 1-4	073	138	137	288-291	274-275	274	272
04B-B1-E1	Z = 19	074	139	139	292-295	276-277	276	276
04B-B1-F1	W = 20	075	140	139	296-299	278-279	278	276
04B-B1-G1	For LIC 5-6	076	141	141	300-303	280-281	280	280
04B-B1-H1	Z = N/A	077	142	141	304-307	282-283	282	280
04B-B1-J1	W = 19	078	143	143	308-311	284-285	284	284
04B-B1-K1		079	144	143	312-315	286-287	286	284
04B-B1-L1		080	N/A	N/A	316-319	N/A	N/A	N/A
04B-B2-B1								
04B-B2-C1		N/A	129	129	N/A	256-257	256	256
04B-B2-D1	For LIC 1-4	065	130	129	256-259	258-259	258	256
04B-B2-E1	Z = 17	066	131	131	260-263	260-261	260	260
04B-B2-F1	W = 18	067	132	131	264-267	262-263	262	260
04B-B2-G1	For LIC 5-6	068	133	133	268-271	264-265	264	264
04B-B2-H1	Z = 17	069	134	133	272-275	266-267	266	264
04B-B2-J1	W = N/A	070	135	135	276-279	268-269	268	268
04B-B2-K1		071	136	135	280-283	270-271	270	268
04B-B2-L1		072	N/A	N/A	284-287	N/A	N/A	N/A
04D-B1-B1								
04D-B1-C1		N/A	073	073	N/A	144-145	144	144
04D-B1-D1	For LIC 1-4	041	074	073	160-163	146-147	146	144
04D-B1-E1	Z = 11	042	075	075	164-167	148-149	148	148
04D-B1-F1	W = 12	043	076	075	168-171	150-151	150	148
04D-B1-G1	For LIC 5-6	044	077	077	172-175	152-153	152	152
04D-B1-H1	Z = N/A	045	078	077	176-179	154-155	154	152
04D-B1-J1	W = 11	046	079	079	180-183	156-157	156	156
04D-B1-K1		047	080	079	184-187	158-159	158	156
04D-B1-L1		048	N/A	N/A	188-191	N/A	N/A	N/A
04D-B2-B1								
04D-B2-C1		N/A	065	065	N/A	128-129	128	128
04D-B2-D1	For LIC 1-4	033	066	065	128-131	130-131	130	128
04D-B2-E1	Z = 9	034	067	067	132-135	132-133	132	132
04D-B2-F1	W = 10	035	068	067	136-139	134-135	134	132
04D-B2-G1	For LIC 5-6	036	069	069	140-143	136-137	136	136
04D-B2-H1	Z = 9	037	070	069	144-147	138-139	138	136
04D-B2-J1	W = N/A	038	071	071	148-151	140-141	140	140
04D-B2-K1		039	072	071	152-155	142-143	142	140
04D-B2-L1		040	N/A	N/A	156-159	N/A	N/A	N/A

Frame 04E and 04G

Table 4-16. Lic Number, Line Address Tables for Frame 04E and 04G

Location	MUX Number	LIC Number by LIC Type			Line Address by LIC type			
		1-4	5 or 6 LS	6 H	1-4	5	6 LS	6 HS
04E-B1-B1								
04E-B1-C1		N/A	169	169	N/A	336-337	336	336
04E-B1-D1	For LIC 1-4	089	170	169	352-355	338-339	338	336
04E-B1-E1	Z = 23	090	171	171	356-359	340-341	340	340
04E-B1-F1	W = 24	091	172	171	360-363	342-343	342	340
04E-B1-G1	For LIC 5-6	092	173	173	364-367	344-345	344	344
04E-B1-H1	Z = N/A	093	174	173	368-371	346-347	346	344
04E-B1-J1	W = 23	094	175	175	372-375	348-349	348	348
04E-B1-K1		095	176	175	376-379	350-351	350	348
04E-B1-L1		096	N/A	N/A	380-383	N/A	N/A	N/A
04E-B2-B1								
04E-B2-C1		N/A	161	161	N/A	320-321	320	320
04E-B2-D1	For LIC 1-4	081	162	161	320-323	322-323	322	320
04E-B2-E1	Z = 21	082	163	163	324-327	324-325	324	324
04E-B2-F1	W = 22	083	164	163	328-331	326-327	326	324
04E-B2-G1	For LIC 5-6	084	165	165	332-335	328-329	328	328
04E-B2-H1	Z = 21	085	166	165	336-339	330-331	340	328
04E-B2-J1	W = N/A	086	167	167	340-343	332-333	342	332
04E-B2-K1		087	168	167	344-347	334-335	344	332
04E-B2-L1		088	N/A	N/A	348-351	N/A	N/A	N/A
04G-B1-B1								
04G-B1-C1		N/A	105	105	N/A	208-209	208	208
04G-B1-D1	For LIC 1-4	057	106	105	224-227	210-211	210	208
04G-B1-E1	Z = 15	058	107	107	228-231	212-213	212	212
04G-B1-F1	W = 16	059	108	107	232-235	214-215	214	212
04G-B1-G1	For LIC 5-6	060	109	109	236-239	216-217	216	216
04G-B1-H1	Z = N/A	061	110	109	240-243	218-219	218	216
04G-B1-J1	W = 15	062	111	111	244-247	220-221	220	220
04G-B1-K1		063	112	111	248-251	222-223	222	220
04G-B1-L1		064	N/A	N/A	252-255	N/A	N/A	N/A
04G-B2-B1								
04G-B2-C1		N/A	097	097	N/A	192-193	192	192
04G-B2-D1	For LIC 1-4	049	098	097	192-195	194-195	194	192
04G-B2-E1	Z = 13	050	099	099	196-199	196-197	196	196
04G-B2-F1	W = 14	051	100	099	200-203	198-199	198	196
04G-B2-G1	For LIC 5-6	052	101	101	204-207	200-201	200	200
04G-B2-H1	Z = 13	053	102	101	208-211	202-203	202	200
04G-B2-J1	W = N/A	054	103	103	212-215	204-205	204	204
04G-B2-K1		055	104	103	216-219	206-207	206	204
04G-B2-L1		056	N/A	N/A	220-223	N/A	N/A	N/A

Frame 05B and 05D

Table 4-17. Lic Number, Line Address Tables for Frame 05B and 05D

Location	MUX Number	LIC Number by LIC Type			Line Address by LIC Type			
		1-4	5 or 6 LS	6 H	1-4	5	6 LS	6 HS
05B-B1-B1								
05B-B1-C1		N/A	265	265	N/A	528-529	528	528
05B-B1-D1	For LIC 1-4	137	266	265	544-547	530-531	530	528
05B-B1-E1	Z = 35	138	267	267	548-551	532-533	532	532
05B-B1-F1	W = 36	139	268	267	552-555	534-535	534	532
05B-B1-G1	For LIC 5-6	140	269	269	556-559	536-537	536	536
05B-B1-H1	Z = N/A	141	270	269	560-563	538-539	538	536
05B-B1-J1	W = 35	142	271	271	564-567	540-541	540	540
05B-B1-K1		143	272	271	568-571	542-543	542	540
05B-B1-L1		144	N/A	N/A	572-575	N/A	N/A	N/A
05B-B2-B1								
05B-B2-C1		N/A	257	257	N/A	512-513	512	512
05B-B2-D1	For LIC 1-4	129	258	257	512-515	514-515	514	512
05B-B2-E1	Z = 33	130	259	259	516-519	516-517	516	516
05B-B2-F1	W = 34	131	260	259	520-523	518-519	518	516
05B-B2-G1	For LIC 5-6	132	261	261	524-527	520-521	520	520
05B-B2-H1	Z = 33	133	262	261	528-531	522-523	522	520
05B-B2-J1	W = N/A	134	263	263	532-535	524-525	524	524
05B-B2-K1		135	264	263	536-539	526-527	526	524
05B-B2-L1		136	N/A	N/A	540-543	N/A	N/A	N/A
05D-B1-B1								
05D-B1-C1		N/A	201	201	N/A	400-401	400	400
05D-B1-D1	For LIC 1-4	105	202	201	416-419	402-403	402	400
05D-B1-E1	Z = 27	106	203	203	420-423	404-405	404	404
05D-B1-F1	W = 28	107	204	203	424-427	406-407	406	404
05D-B1-G1	For LIC 5-6	108	205	205	428-431	408-409	408	408
05D-B1-H1	Z = N/A	109	206	205	432-435	410-411	410	408
05D-B1-J1	W = 27	110	207	207	436-439	412-413	412	412
05D-B1-K1		111	208	207	440-443	414-415	414	412
05D-B1-L1		112	N/A	N/A	444-447	N/A	N/A	N/A
05D-B2-B1								
05D-B2-C1		N/A	193	193	N/A	384-385	384	384
05D-B2-D1	For LIC 1-4	097	194	193	384-387	386-387	386	384
05D-B2-E1	Z = 25	098	195	195	388-391	388-389	388	388
05D-B2-F1	W = 26	099	196	195	392-395	390-391	390	388
05D-B2-G1	For LIC 5-6	100	197	197	396-399	392-393	392	392
05D-B2-H1	Z = 25	101	198	197	400-403	394-395	394	392
05D-B2-J1	W = N/A	102	199	199	404-407	396-397	396	396
05D-B2-K1		103	200	199	408-411	398-399	398	396
05D-B2-L1		104	N/A	N/A	412-415	N/A	N/A	N/A

Frame 05E and 05G

Table 4-18. Lic Number, Line Address Tables for Frame 05E and 05G

Location	MUX Number	LIC Number by LIC Type			Line Address by LIC Type			
		1-4	5 or 6 LS	6 H	1-4	5	6 LS	6 HS
05E-B1-B1								
05E-B1-C1		N/A	297	297	N/A	592-593	592	592
05E-B1-D1	For LIC 1-4	153	298	297	608-611	594-595	594	592
05E-B1-E1	Z = 39	154	299	299	612-615	596-597	596	596
05E-B1-F1	W = 40	155	300	299	616-619	598-599	598	596
05E-B1-G1	For LIC 5-6	156	301	301	620-623	600-601	600	600
05E-B1-H1	Z = N/A	157	302	301	624-627	602-603	602	600
05E-B1-J1	W = 39	158	303	303	628-631	604-605	604	604
05E-B1-K1		159	304	303	632-635	606-607	608	604
05E-B1-L1		160	N/A	N/A	636-639	N/A	N/A	N/A
05E-B2-B1								
05E-B2-C1		N/A	289	289	N/A	576-577	576	576
05E-B2-D1	For LIC 1-4	145	290	289	576-579	578-579	578	576
05E-B2-E1	Z = 37	146	291	291	580-583	580-581	580	580
05E-B2-F1	W = 38	147	292	291	584-587	582-583	582	580
05E-B2-G1	For LIC 5-6	148	293	293	588-591	584-585	584	584
05E-B2-H1	Z = 37	149	294	293	592-595	586-587	586	584
05E-B2-J1	W = N/A	150	295	295	596-599	588-589	588	588
05E-B2-K1		151	296	295	600-603	590-591	590	588
05E-B2-L1		152	N/A	N/A	604-607	N/A	N/A	N/A
05G-B1-B1								
05G-B1-C1		N/A	233	233	N/A	464-465	464	464
05G-B1-D1	For LIC 1-4	121	234	233	480-483	466-467	466	464
05G-B1-E1	Z = 31	122	235	235	484-487	468-469	468	468
05G-B1-F1	W = 32	123	236	235	488-491	470-471	470	468
05G-B1-G1	For LIC 5-6	124	237	237	492-495	472-473	472	472
05G-B1-H1	Z = N/A	125	238	237	496-499	474-475	474	472
05G-B1-J1	W = 31	126	239	239	500-503	476-477	476	476
05G-B1-K1		127	240	239	504-507	478-479	478	476
05G-B1-L1		128	N/A	N/A	508-511	N/A	N/A	N/A
05G-B2-B1								
05G-B2-C1		N/A	225	225	N/A	448-449	448	448
05G-B2-D1	For LIC 1-4	113	226	225	448-451	450-451	450	448
05G-B2-E1	Z = 29	114	227	227	452-455	452-453	452	452
05G-B2-F1	W = 38	115	228	227	456-459	454-455	454	452
05G-B2-G1	For LIC 5-6	116	229	229	460-463	456-457	456	456
05G-B2-H1	Z = 29	117	230	229	464-467	458-459	458	456
05G-B2-J1	W = N/A	118	231	231	468-471	460-461	460	460
05G-B2-K1		119	232	231	472-475	462-463	462	460
05G-B2-L1		120	N/A	N/A	476-479	N/A	N/A	N/A

Frame 06B and 06D

Table 4-19. Lic Number, Line Address Tables for Frame 05B and 05D

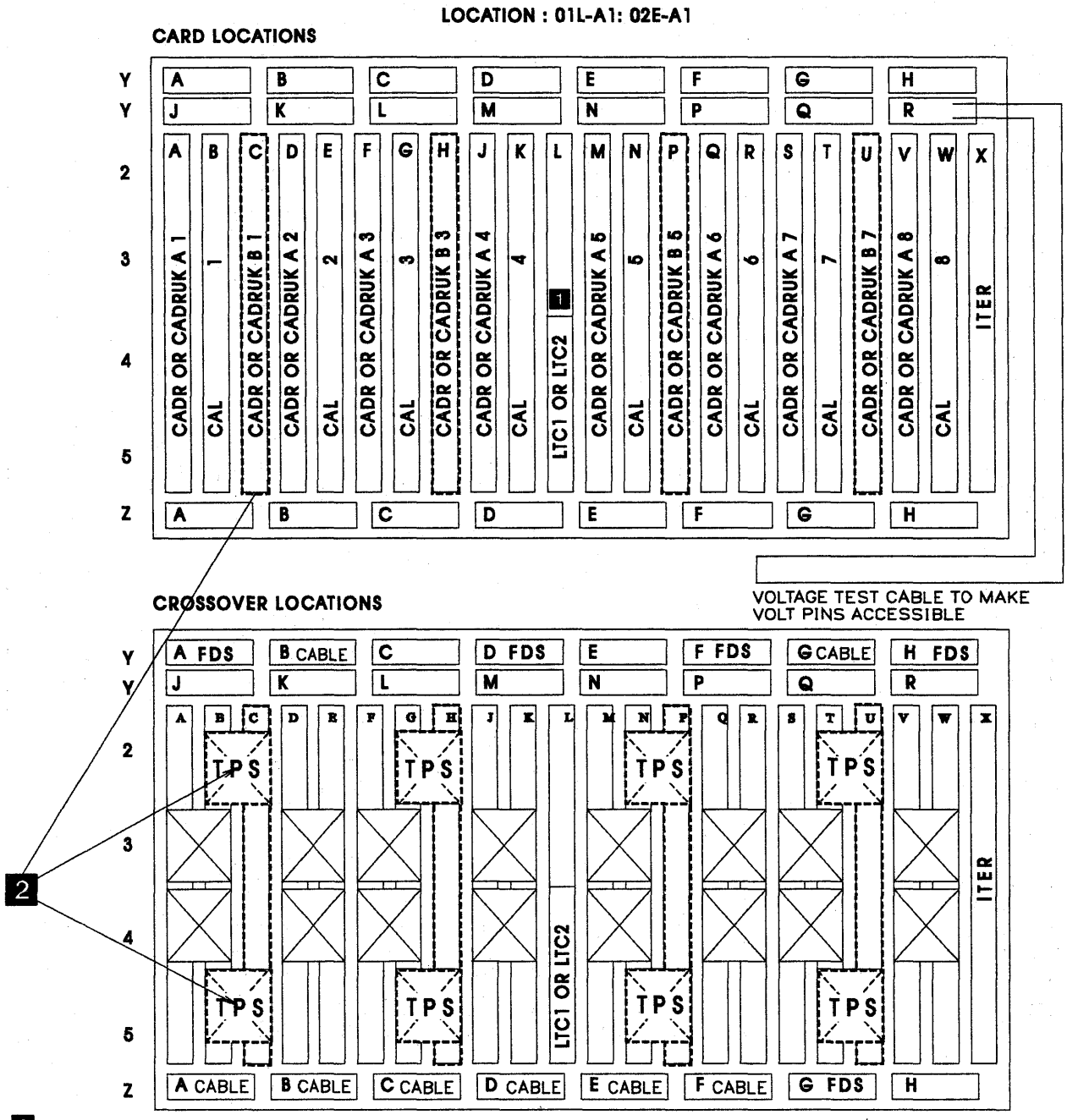
Location	MUX Number	LIC Number by LIC Type			Line Address by LIC Type			
		1-4	5 or 6 LS	6 H	1-4	5	6 LS	6 HS
06B-B1-B1								
06B-B1-C1		N/A	393	393	N/A	784-785	784	784
06B-B1-D1	For LIC 1-4	201	394	393	800-803	786-787	786	784
06B-B1-E1	Z = 51	202	395	395	804-807	788-789	788	788
06B-B1-F1	W = 52	203	396	395	808-811	790-791	790	788
06B-B1-G1	For LIC 5-6	204	397	397	812-815	792-793	792	792
06B-B1-H1	Z = N/A	205	398	397	816-819	794-795	794	792
06B-B1-J1	W = 51	206	399	399	820-823	796-797	796	796
06B-B1-K1		207	400	399	824-827	798-799	798	796
06B-B1-L1		208	N/A	N/A	828-831	N/A	N/A	N/A
06B-B2-B1								
06B-B2-C1		N/A	385	385	N/A	768-769	768	768
06B-B2-D1	For LIC 1-4	193	386	385	768-771	770-771	770	768
06B-B2-E1	Z = 49	194	387	387	772-775	772-773	772	772
06B-B2-F1	W = 50	195	388	387	776-779	774-775	774	772
06B-B2-G1	For LIC 5-6	196	389	389	780-783	776-777	776	776
06B-B2-H1	Z = 49	197	390	389	784-787	778-779	778	776
06B-B2-J1	W = N/A	198	391	391	788-791	780-781	780	780
06B-B2-K1		199	392	391	792-795	782-783	782	780
06B-B2-L1		200	N/A	N/A	796-799	N/A	N/A	N/A
06D-B1-B1								
06D-B1-C1		N/A	329	329	N/A	656-657	656	656
06D-B1-D1	For LIC 1-4	169	330	329	672-675	658-659	658	656
06D-B1-E1	Z = 43	170	331	331	676-679	660-661	660	660
06D-B1-F1	W = 44	171	332	331	680-683	662-663	662	660
06D-B1-G1	For LIC 5-6	172	333	333	684-687	664-665	664	664
06D-B1-H1	Z = N/A	173	334	333	688-691	666-667	666	664
06D-B1-J1	W = 43	174	335	335	692-695	668-669	668	668
06D-B1-K1		175	336	335	696-699	670-671	670	668
06D-B1-L1		176	N/A	N/A	700-703	N/A	N/A	N/A
06D-B2-B1								
06D-B2-C1		N/A	321	321	N/A	640-641	640	640
06D-B2-D1	For LIC 1-4	161	322	321	640-643	642-643	642	640
06D-B2-E1	Z = 41	162	323	323	644-647	644-645	644	644
06D-B2-F1	W = 42	163	324	323	648-651	646-647	646	644
06D-B2-G1	For LIC 5-6	164	325	325	652-655	648-649	648	648
06D-B2-H1	Z = 41	165	326	325	656-659	650-651	650	648
06D-B2-J1	W = N/A	166	327	327	660-663	652-653	652	652
06D-B2-K1		167	328	327	664-667	654-655	654	652
06D-B2-L1		168	N/A	N/A	668-671	N/A	N/A	N/A

Frame 06E and 06G

Table 4-20. Lic Number Line Address Tables for Frame 06E and 06G

Location	MUX Number	LIC Number by LIC Type			Line Address by LIC Type			
		1-4	5 or 6 LS	6 H	1-4	5	6 LS	6 HS
06E-B1-B1								
06E-B1-C1		N/A	425	425	N/A	848-849	848	848
06E-B1-D1	For LIC 1-4	217	426	425	864-867	850-851	850	848
06E-B1-E1	Z = 55	218	427	427	868-871	852-853	852	852
06E-B1-F1	W = 56	219	428	427	872-875	854-855	854	852
06E-B1-G1	For LIC 5-6	220	429	429	876-879	856-857	856	856
06E-B1-H1	Z = N/A	221	430	429	880-883	858-859	858	856
06E-B1-J1	W = 55	222	431	431	884-887	860-861	860	860
06E-B1-K1		223	432	431	888-891	862-863	862	860
06E-B1-L1		224	N/A	N/A	892-895	N/A	N/A	N/A
06E-B2-B1								
06E-B2-C1		N/A	417	417	N/A	832-833	832	832
06E-B2-D1	For LIC 1-4	209	418	417	832-835	834-835	834	832
06E-B2-E1	Z = 53	210	419	419	836-839	836-837	836	836
06E-B2-F1	W = 54	211	420	419	840-843	838-839	838	836
06E-B2-G1	For LIC 5-6	212	421	421	844-847	840-841	840	840
06E-B2-H1	Z = 53	213	422	421	848-851	842-843	842	840
06E-B2-J1	W = N/A	214	423	423	852-855	844-845	844	844
06E-B2-K1		215	424	423	856-859	846-847	846	844
06E-B2-L1		216	N/A	N/A	860-863	N/A	N/A	N/A
06G-B1-B1								
06G-B1-C1		N/A	361	361	N/A	720-721	720	720
06G-B1-D1	For LIC 1-4	185	362	361	736-739	722-723	722	720
06G-B1-E1	Z = 47	186	363	363	740-743	724-725	724	724
06G-B1-F1	W = 48	187	364	363	744-747	726-727	726	724
06G-B1-G1	For LIC 5-6	188	365	365	748-751	728-729	728	728
06G-B1-H1	Z = N/A	189	366	365	752-755	730-731	730	728
06G-B1-J1	W = 47	190	367	367	756-759	732-733	732	732
06G-B1-K1		191	368	367	760-763	734-735	734	732
06G-B1-L1		192	N/A	N/A	764-767	N/A	N/A	N/A
06G-B2-B1								
06G-B2-C1		N/A	353	353	N/A	704-705	704	704
06G-B2-D1	For LIC 1-4	177	354	353	704-707	706-707	706	704
06G-B2-E1	Z = 45	178	355	355	708-711	708-709	708	708
06G-B2-F1	W = 46	179	356	355	712-715	710-711	710	708
06G-B2-G1	For LIC 5-6	180	357	357	716-719	712-713	712	712
06G-B2-H1	Z = 45	181	358	357	720-723	714-715	714	712
06G-B2-J1	W = N/A	182	359	359	724-727	716-717	716	716
06G-B2-K1		183	360	359	728-731	718-719	718	716
06G-B2-L1		184	N/A	N/A	732-735	N/A	N/A	N/A

Channel Board, Cards and Connectors



1

- LTC1 is terminator and gives address for CAB1
- LTC2 is terminator and gives address for CAB2

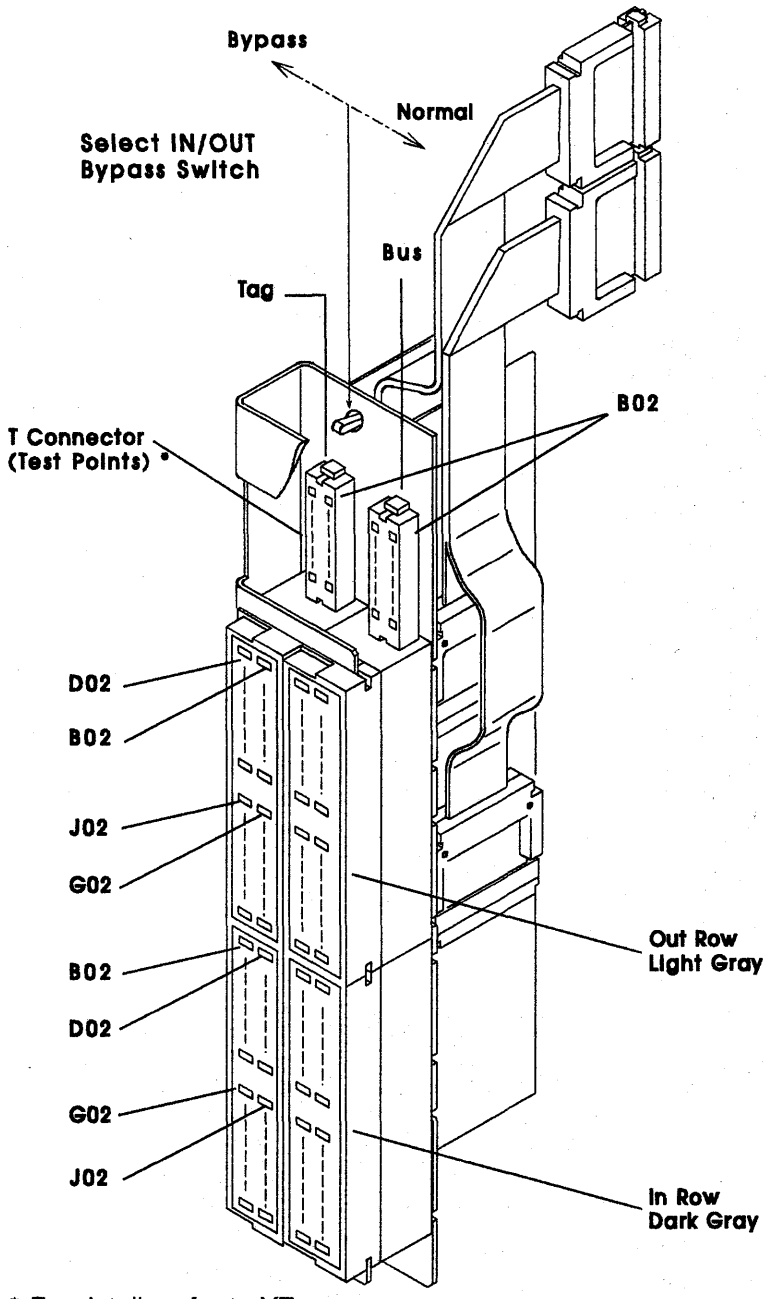
2

- Cards C, H, P, U and connectors **TPS** are only present with TPS feature.
- When a CA with a TPS feature is installed, there is no channel in the associated even position.

Figure 4-28. 3745 Channel Board, Cards, and Connectors

Channel Tailgate and Internal Cables

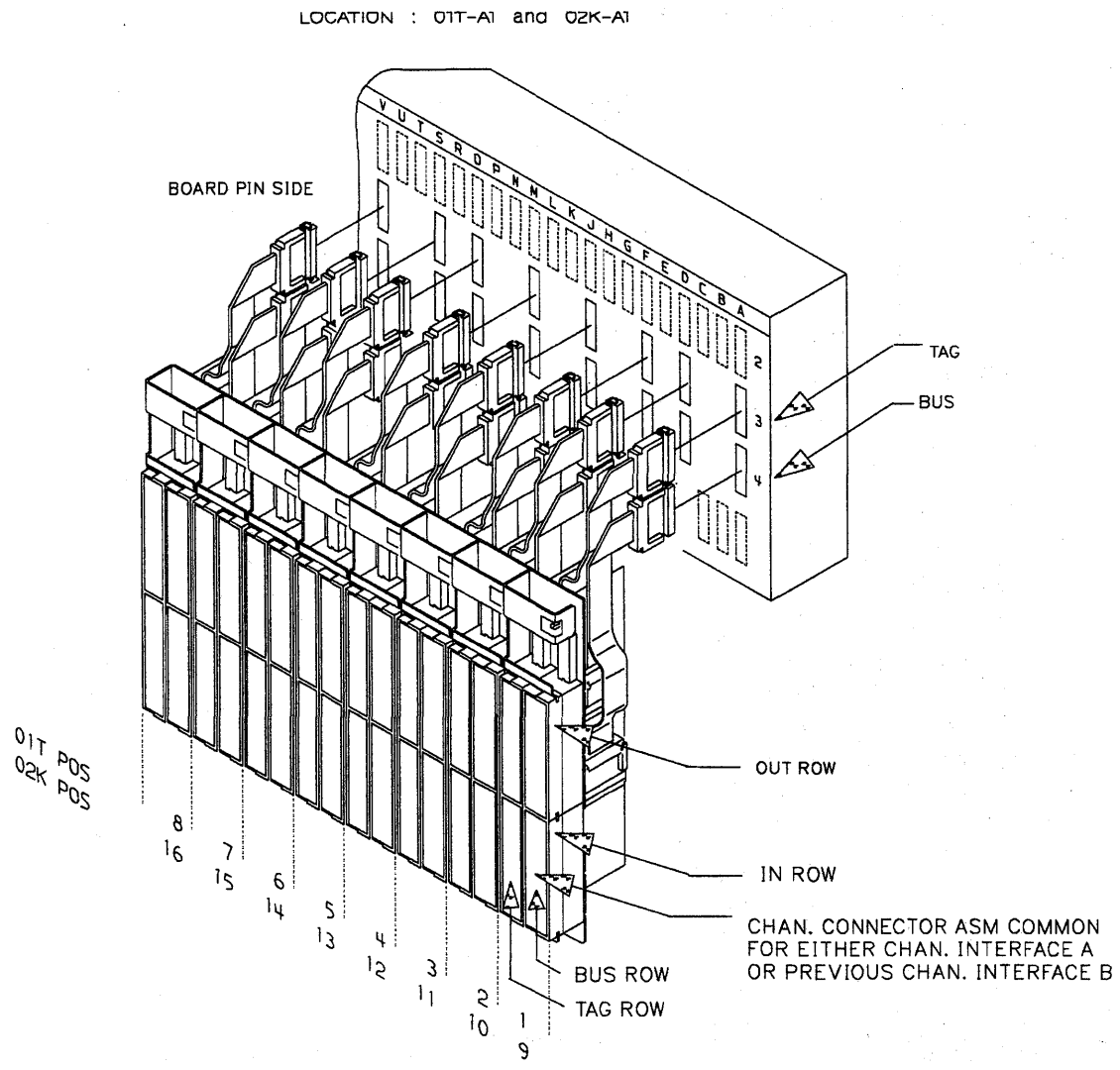
Location: 01T-A1: 02K-A1



* For details refer to YZ pages.

Figure 4-29. 3745 Channel Tailgate with Internal Cables and Standard Interface Test Points

Channel Tailgate



CHANNEL INTERFACE A & INTERFACE B (TPS) DISTRIBUTION CHART.		
CA BOARD REAR POS.	TAIL GATE	CA# INTERFACE A INTERFACE B
A3 A4	1	CA1-A
D3 D4	2	CA2-A OR CA1-B
F3 F4	3	CA3-A
J3 J4	4	CA4-A OR CA3-B
M3 M4	5	CA5-A
Q3 Q4	6	CA6-A OR CA5-B
S3 S4	7	CA7-A
V3 V4	8	CA8-A OR CA7-B

CHANNEL INTERFACE A & INTERFACE B (TPS) DISTRIBUTION CHART.		
CA BOARD REAR POS.	TAIL GATE	CA# INTERFACE A INTERFACE B
A3 A4	9	CA9-A
D3 D4	10	CA10-A OR CA9-B
F3 F4	11	CA11-A
J3 J4	12	CA12-A OR CA11-B
M3 M4	13	CA13-A
Q3 Q4	14	CA14-A OR CA13-B
S3 S4	15	CA15-A
V3 V4	16	CA16-A OR CA15-B

Figure 4-30. 3745 Channel Tailgate

HPTSS, ESS, and TRSS Tailgate

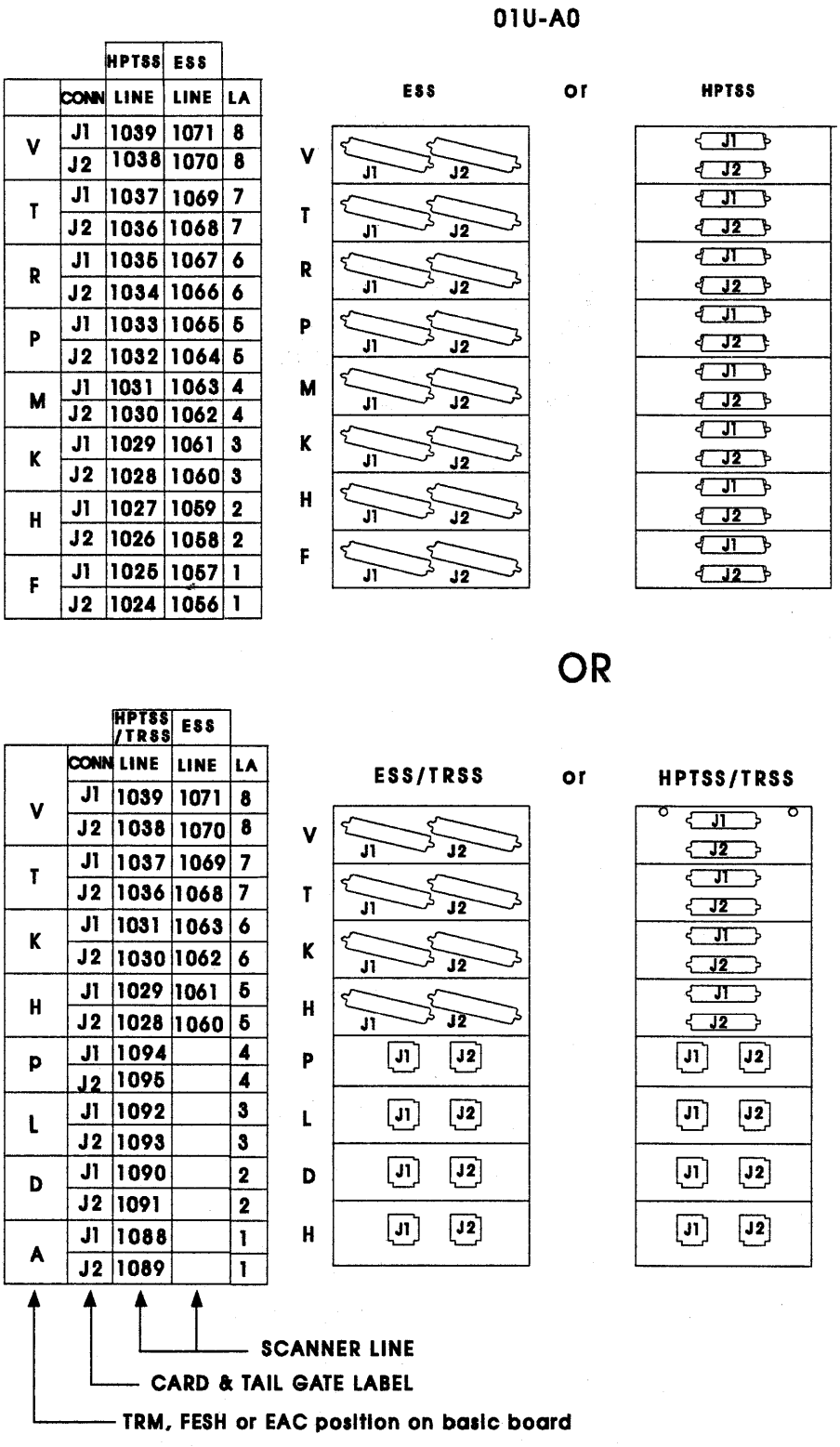


Figure 4-31. 3745 HPTSS, ESS, and TRSS Tailgate (External Side)

ESS Tailgate

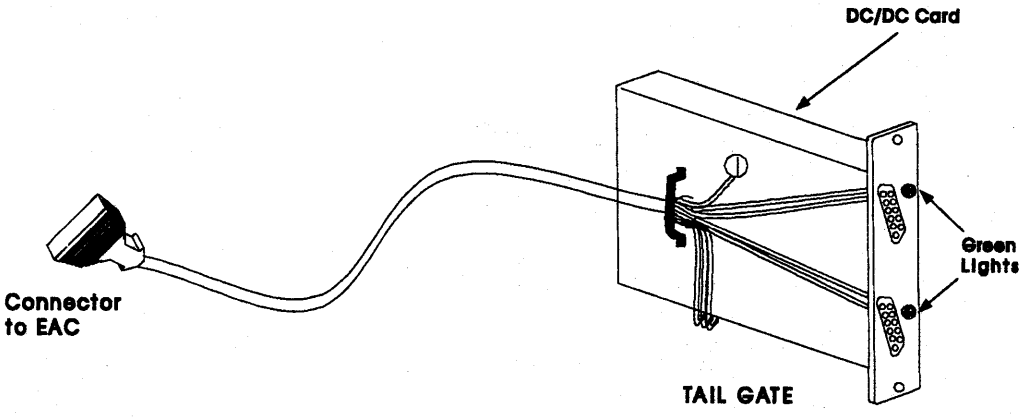


Figure 4-32. 3745 ESS Tailgate.

ESS Tailgate and EAC

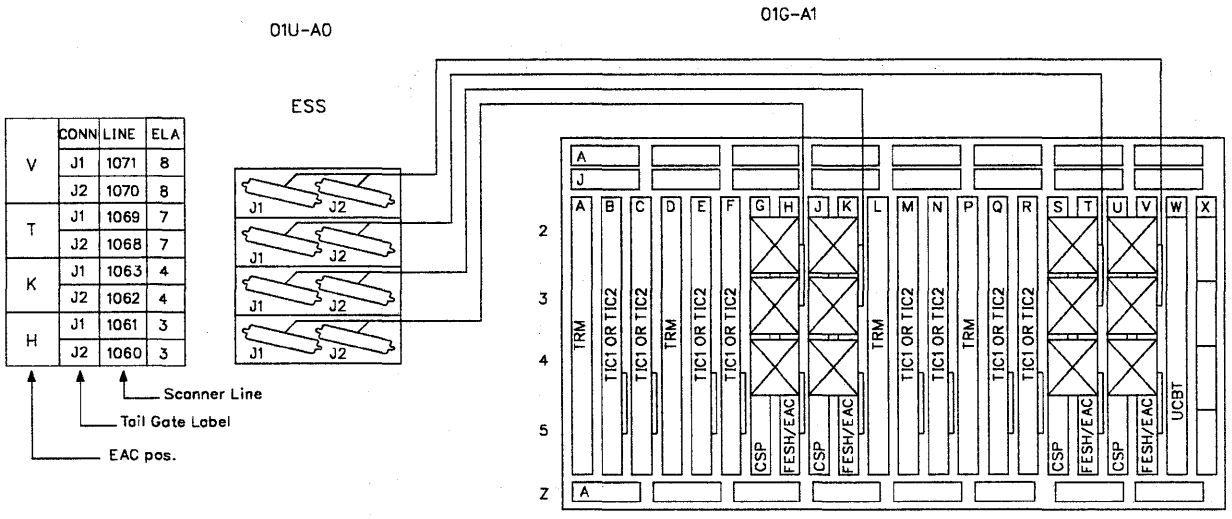


Figure 4-33. EAC and ESS Tailgate (External Side) for TSST Basic Board

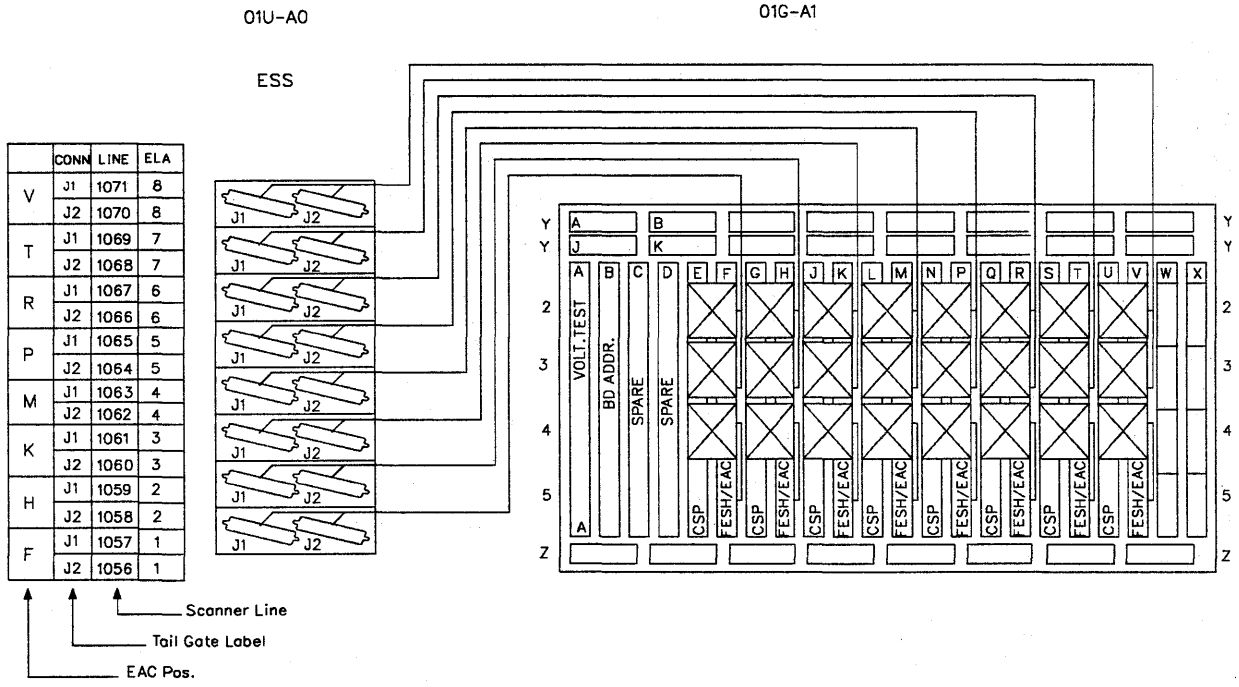


Figure 4-34. EAC and ESS Tailgate (External Side) for TSSB Basic Board

Control Panel

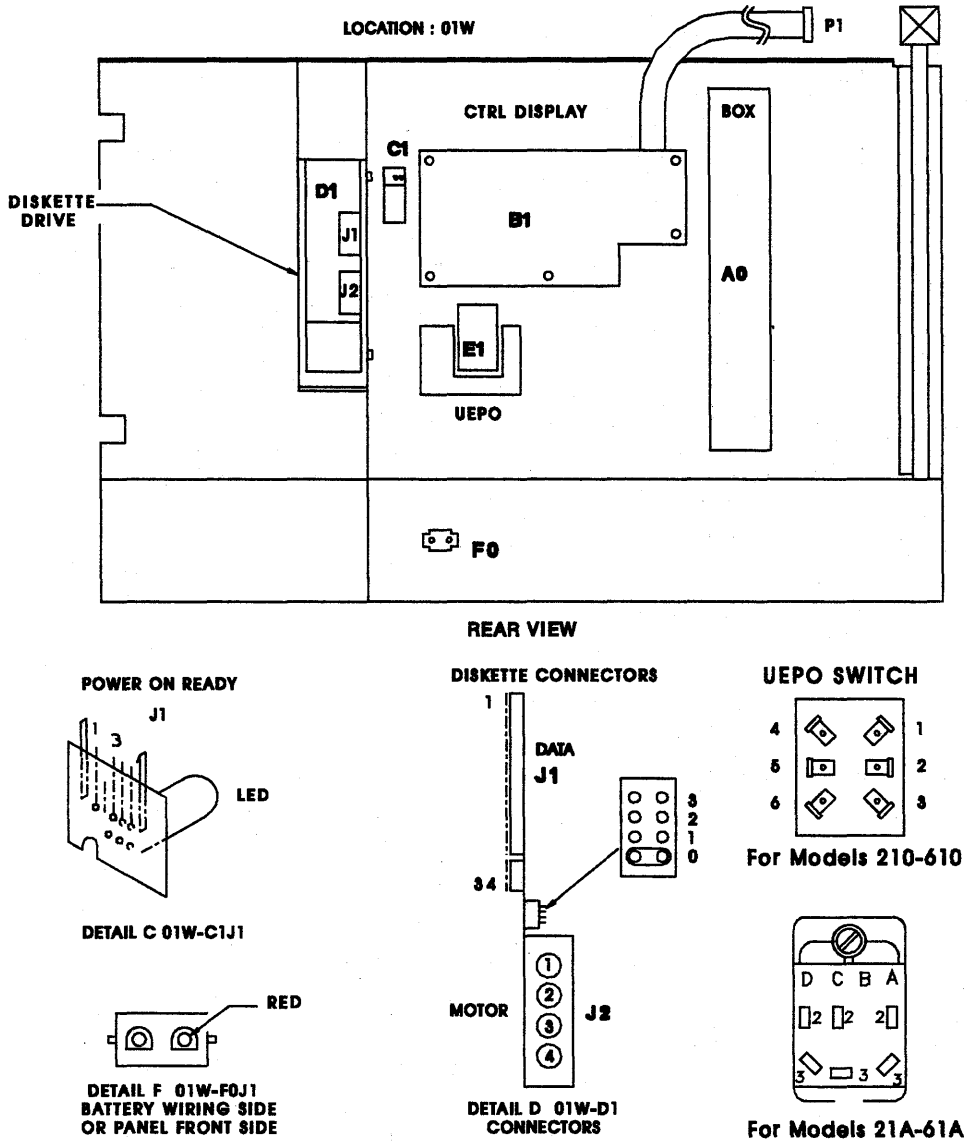


Figure 4-35. 3745 Control Panel

Primary Power Box

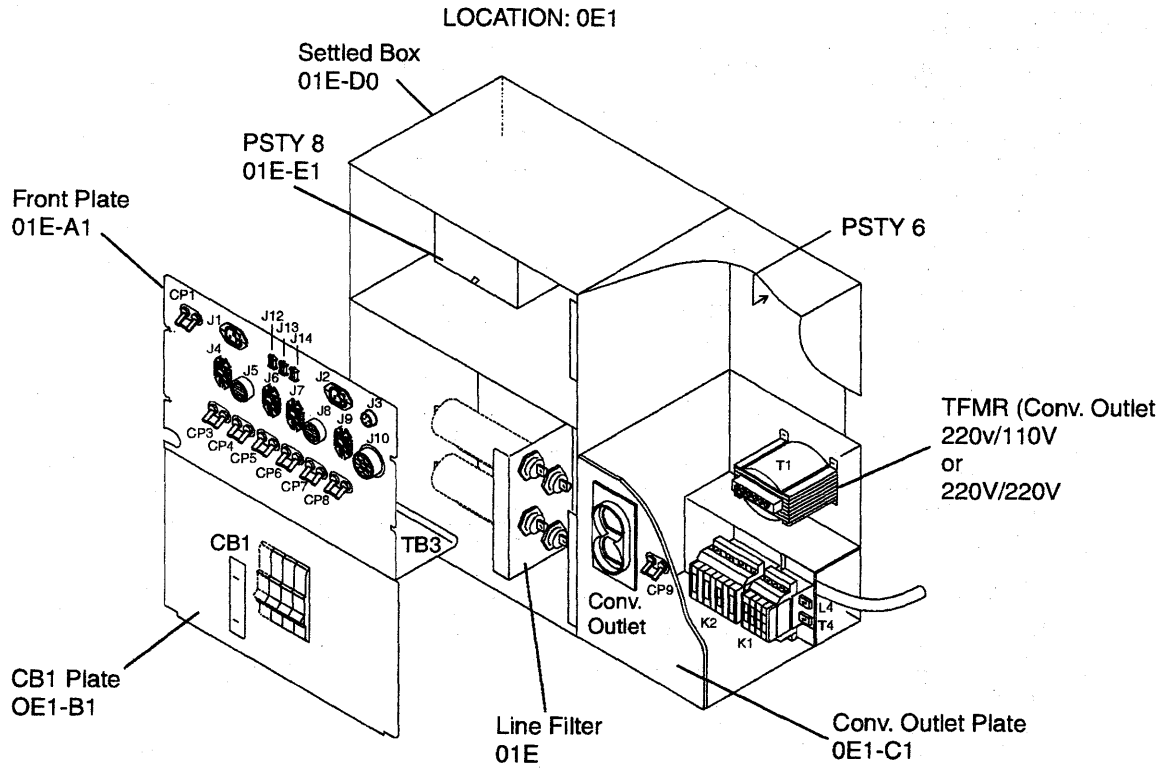


Figure 4-36. 3745 Primary Power Box Components

3745 Power Supply Cross Reference

Table 4-21. 3745 Power Supply Cross Reference

Frame	Power Supply	Location	Area Supplied
Frame 1	Type 2 ID=01	01V	MOSS
	Type 1/1B ID=02	01Q	CCU A
	Type 1/1B ID=03	01R	CCU B
	Type 3 ID=04	01K-A1	CA 01-02
	Type 3 ID=05	01K-B1	CA 03-04
	Type 3 ID=06	01K-C1	CA 05-06
	Type 3 ID=07	01K-D1	CA 07-08
	Type 4 ID=08	01H-A1	LA 01-02
	Type 4 ID=09	01H-B1	LA 03-04
	Type 4 ID=10	01H-C1	LA 05-06
	Type 4 ID=11	01H-D1	LA 07-08
	Type 5 ID=12	01P-A1	Lines 000-063
	Type 5 or 7 ID=13	01M-A1	Lines 064-127
	Type 6	01F	PS control
	Type 8	01E	Fan control
Frame 2	Type 3 ID=14	02D-A1	CA 09-10
	Type 3 ID=15	02D-B1	CA 11-12
	Type 3 ID=16	02D-C1	CA 13-14
	Type 3 ID=17	02D-D1	CA 15-16
	Type 4 ID=18	02B-A1	LA 09-10
	Type 4 ID=19	02B-B1	LA 11-12
	Type 4 ID=20	02B-C1	LA 13-14
	Type 4 ID=21	02B-D1	LA 15-16
	Type 4 ID=22	02G-A1	LA 17-18
	Type 4 ID=23	02G-B1	LA 19-20
	Type 4 ID=24	02G-C1	LA 21-22
	Type 4 ID=25	02G-D1	LA 23-24
Frame 3	Type 4 ID=26	03G-A1	LA 25-26
	Type 4 ID=27	03G-B1	LA 27-28
	Type 4 ID=28	03G-C1	LA 29-30
	Type 4 ID=29	03G-D1	LA 31-32
Frame 4	Type 5 or 7 ID=30	04D-A1	Lines 128-191
	Type 5 or 7 ID=31	04G-A1	Lines 192-255
	Type 5 or 7 ID=32	04B-A1	Lines 256-319
	Type 5 or 7 ID=33	04E-A1	Lines 320-383
Frame 5	Type 5 or 7 ID=34	05D-A1	Lines 384-447
	Type 5 or 7 ID=35	05G-A1	Lines 448-511
	Type 5 or 7 ID=36	05B-A1	Lines 512-575
	Type 5 or 7 ID=37	05E-A1	Lines 576-639
Frame 6	Type 5 or 7 ID=38	06D-A1	Lines 640-703
	Type 5 or 7 ID=39	06G-A1	Lines 704-767
	Type 5 or 7 ID=40	06B-A1	Lines 768-831
	Type 5 or 7 ID=41	06E-A1	Lines 832-895

CADR and CAL Exchange Procedure

Note: There is a special CADR card for the UK.

For physical FRU locations in Frame 01, refer to Figure 4-2 on page 4-5 and Figure 4-28 on page 4-46.

For physical FRU locations in Frame 02, refer to Figure 4-3 on page 4-7 and Figure 4-28 on page 4-46.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3. If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. **As described in the "Disabling Procedure 0030: Preparing a CA for Maintenance" on page 1-100, the associated channel adapter must be in disconnect status before powering OFF the PS..**
   Ensure the **two** associated channel adapters are disabled.
   a. Ask the customer to stop activity on the associated channel adapter.
   b. On the 3745 console, call the **CID** function.
   c. Enter **D** in the CHANGE E/D REQ field for the interface A (and B if TPS is installed) for the associated channel adapter you are working on.
   d. Press **SEND/ENTER** and wait until the **status** is changed to **DISABLED**.
   e. Call menu 3 and enter **CAS** (for channel adapter services).
   f. Press **SEND/ENTER**.
   g. Type **4** for concurrent maintenance commands.
   h. Press **SEND/ENTER** and type the channel adapter number in the CA number ===> field.
   i. Press **SEND/ENTER**.
   j. Type **SHT** in the command ===> field.
   k. Press **SEND/ENTER**.
   l. Re-initialize the same procedure as from Step 3h for the associated CA, if any.
4. Remove the power as follows:
   a. Type **POS** on any displayed screen selection area and press **SEND/ENTER**.
      The power services menu is displayed.
   b. Select the appropriate power services frame and press **SEND/ENTER**.
   c. Check the status of the affected power supply, on the displayed information screen.
      If it is up, type **dxx** where xx= affected power supply id.
   d. For CADR only, (referring to Figure 4-29 on page 4-47 and Figure 4-30 on page 4-48), put the **Select Out Bypass** switch to the **BYPASS** position for the channel interface you are working on, and the attached channel interface (if the TPS feature is installed for this channel).
5. **Attention: Use the ESD kit and procedures.**
6. Keeping the correct order, remove the top connectors from the card you have to exchange.
7. Exchange the card and re-install the top connectors.
8. For CADR only, put the **Select Out Bypass** switch (or switches) back to the **NORMAL** position.
9. In the 3745 console power services frame, key in **uxx** where xx is the PS id. This will turn the PS ON.
10. Referring to "How to Run Internal Function Tests" on page 3-30, run the same diagnostics you ran before you exchanged the FRU. Go to "Repair Verification Procedure" on page 4-178.

Control Panel Exchange Procedure

For physical locations, refer to Figure 4-2 on page 4-5.

Note: If the nature of the fault does not allow control panel actions, go to Step 3f.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the Power Control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Press **Service** on the control panel until **1**. is displayed in the service window.
   b. Press **Validate**.
   c. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
   d. Press **Validate**.
   e. Observe the MOSS inoperative display on the control panel. At completion of power OFF, it will display the character **B**
   f. Locate the **Maintenance SW1** on PS type 6. See Figure 4-38 on page 4-57. Lift the lever up and pull it outwards to the **Test** position. Check that the LED is ON.
   g. Locate the **Maintenance SW2** on the PS type 6.
   h. Switch it to the **T1** position.
4. **Attention: Use the ESD kit and procedures**.
5. Open the front cover and the control panel door.
6. Exchange the FRU as follows:
   a. Remove the cable at position 01A-Z0-A6 (control panel FRU comes complete with interconnecting cable). See Figure 4-8 on page 4-12 for the cable location.
   b. Unlatch and swing the control panel gate open.
   c. Release the cable from its securing points.
   d. Remove the five screws securing the panel and withdraw the panel complete with cable. 1

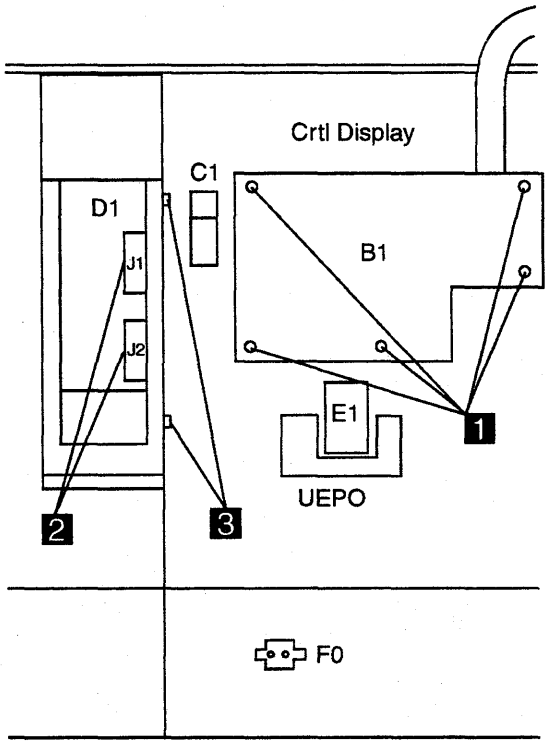


Figure 4-37. Control Panel Removal

   e. To install the control panel, perform this procedure in the reverse order.
7. Re-apply the power as follows:
   a. Return the **Maintenance SW2** to the **T2** position.
   b. Is the control panel displaying **Power Control** and **Service Mode** information? If it is, continue with Step 8. If it is not, the initial checkouts have failed.
   c. Switch it to the **T1** position.
   d. Reseat the PLC card or try another PLC card and return to Step 7a.
8. Refer to "How to Run the 3745 Panel Test" on page 3-22 and run the diagnostic.
   If the diagnostic runs error free, continue with the next Step.
9. Push **Maintenance SW1** back to the **NORMAL** position.
10. Press **Function** on the control panel until **1** is displayed in the function window.
11. Press **Validate**.

    Note: This action will power the MOSS ON, run the MOSS diagnostics, and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F** or **000**. If any other

code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.

12. Set the time-of-day clock and recreate the power configuration table. Refer to the *IBM 3745 Communication Controller Service Function*, SY33-2055.
13. Tell the customer that the **scheduled power ON** services will have to be recreated.
14. Go to "CE Leaving Procedure" on page 4-180.

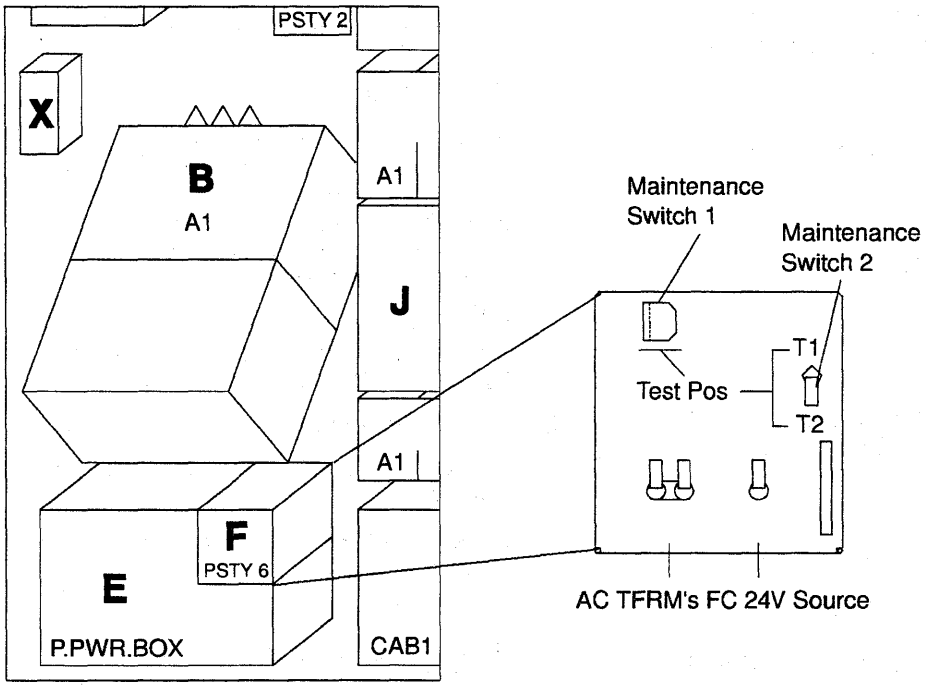


Figure 4-38. PS Type 6 SW1 Actuator

DFA Exchange Procedure

For physical locations, refer to Figure 4-2 on page 4-5 and Figure 4-8 on page 4-12.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Press **Service** until **1** is displayed in the service window.
4. Press **Validate**.
5. Remove the power as follows:
   a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
   b. Press **Validate**.
   c. Observe the MOSS Inoperative display on the control panel. At completion of power OFF, it will display the character **B**.).
6. **Attention: Use the ESD kit and procedures**.
7. Locate the card by referring to Figure 4-8 on page 4-12.
8. If present, remove the **shipping springs** that secure the extractor levers by squeezing them together. Refer to Figure 4-47 on page 4-67.
9. Remove the card.
10. Install the new card.
11. Re-install the **shipping springs** (if present).

    Note: In the remaining Steps, it is assumed that the microcode is at the same level on both the diskette and the hard disk drive.

12. Re-apply the power as follows:
    a. Install the primary backup diskette in the FDD.
    b. Press **Function** on the control panel until the **Load from Diskette** function 9 is displayed.
    c. Press **Validate**.

       Note: This action will also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.
    d. If any error is detected, go to "Repair Verification Procedure" on page 4-178.
13. If no error is detected :
    a. Remove the primary backup diskette from the FDD.
    b. Press **Service** until **0** is displayed in the service window.
    c. Press **Validate**.
    d. Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
    e. Press **Validate**.

       Note: This action will also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.
    f. Go to "Repair Verification Procedure" on page 4-178.

FDD Exchange Procedure

For physical locations, refer to Figure 4-2 on page 4-5.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the Power Control window.
2. Press **Validate**.
3. Press **Service** until **1** is displayed in the service window.
4. Press **Validate**.
5. Before exchanging the FDD, check the voltages as follows:

   Note: The voltages are not permanently applied to the FDD. A MOSS IML is required to have them available for measurement for approximately 15 minutes.

   a. Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.

   b. Press **Validate**.

   c. Using Table 4-22 on page 4-60, measure the voltages on the FDD connector (J2). If the voltages are not within tolerance or are missing, check the voltage test points of the PS type 2. Refer to Figure 4-41 on page 4-60. If that is incorrect, exchange the PS type 2.

   Note: If problems are experienced in measuring voltages with the connectors that are plugged in, power the MOSS OFF (function **B**). Remove connector J2 from the FDD and power the MOSS ON (function 1).

6. Remove the power as follows:

   a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.

   b. Press **Validate**.

   c. Observe the MOSS inoperative display on the control panel. At completion of power OFF, the character **B** is displayed.

7. **Attention: Use the ESD kit and procedures.**
8. Open the front cover and the control panel door.
9. Replace the FRU as follows:

   a. Unlatch and swing the control panel gate open.

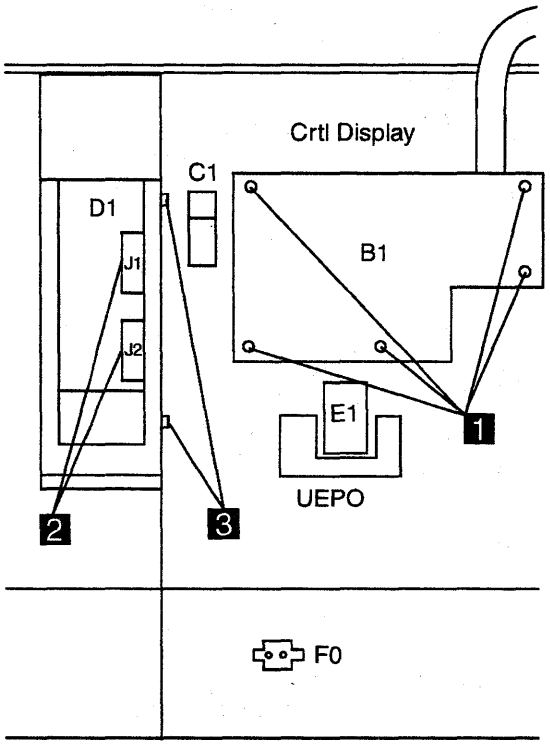


Figure 4-39. FDD Removal

   b. Remove the two cables from the drive **2**.

   c. Remove the four securing screws from the assembly **3**.

   d. Slide out the FDD assembly.

   e. Check if the new FDD has a jumper. See Figure 4-40 for **4**. If this is available, ensure that there is a jumper only at position 0.

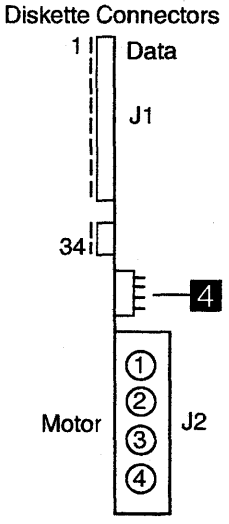


Figure 4-40. FDD Jumpering

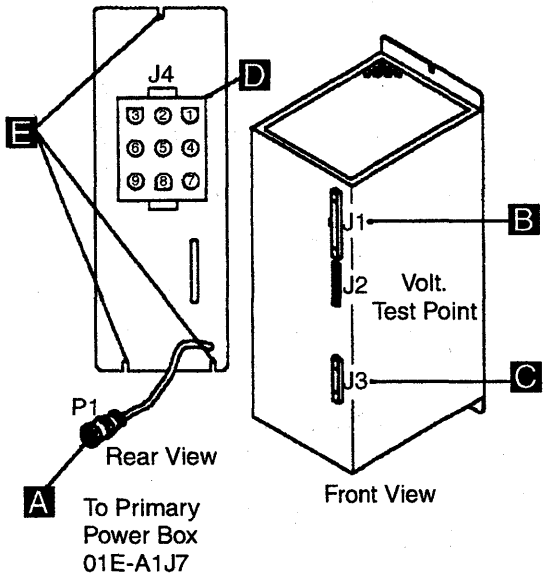


Figure 4-41. PS Type 2

f. To install the new FDD, perform this procedure in the reverse order.

Note: In the remaining Steps, it is assumed that the microcode is at the same level on both the diskette and the hard disk drive.

10. Re-apply the power as follows:
    a. Install the primary backup diskette in the FDD.
    b. Press **Function** on the control panel until the **Load from Diskette** function 9 is displayed.
    c. Press **Validate**.

       Note: This action will also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.
    d. Remove the primary backup diskette from the FDD and go to "Repair Verification Procedure" on page 4-178.

Table 4-22. Voltage Test Points

Connector	Pin	Voltage	Maximum	Minimum	Ripple
01W-D1-J2 (FDD)	1	+12 V	+12.60 V	+11.60 V	.12 V peak-to-peak
	2	GND			
	3	GND			
	4	+ 5 V	+ 5.25 V	+ 4.85 V	.10 V peak-to-peak
PS Type 2-J2 Voltage Test Points	2	+12 V	+12.60 V	+11.60 V	.12 V peak-to-peak
	5	+ 5 V	+ 5.25 V	+ 4.85 V	.10 V peak-to-peak
	10	GND			

HDD Exchange Procedure

Removal Procedure

For physical locations, refer to Figure 4-2 on page 4-5.

1. For the 3745 Model 21A to 61A, proceed with Step 2. For the 3745 Model 210 to 610 go to Step 16.
2. Ask the customer for the service processor maintenance password (to logon at the service processor console). If the logon is already done go to Step 4. If it is not, proceed with Step 3.
3. To logon:
   a. In the **MOSS-E View** window, click on **Program** (in the action bar).
   b. Click on **Log on MOSS-E**.
   c. Enter the password.
4. In the **MOSS-E View** window, click on the controller icon to record the serial number of the machine where the FRU is located. The serial number is displayed on the bottom line of the **MOSS-E View** window.
5. In the **MOSS-E View** window, double-click on service processor icon.
6. In the **Service Processor Menu** window, click on the **Configuration Management** option.
7. Double-click on the **Manage 3745/3746-900 Installation/Removal** option.
8. In the **Controller Installation** window, click on the serial number of the 3745 to be selected.
9. Click on **Repair**.
10. In the **Repairs Action for 3745** window, select the **Change 3745 Hard Disk** option and click on **OK**.
11. A **Controller Repair Message** is displayed. Before clicking on **OK**, return to the **MOSS-E View** window, using the Alt/Esc keys.
12. In the **MOSS-E View** window, double-click on the 3745 icon on which you exchange the HDD.
13. In the **3745 Menu** window, click on the **Operation Management** option.
14. Double-click on the **Set 3745/MOSS-E Connection Mode** option (to set the diskette mode to ON).
15. In the **3745/MOSS-E Connection** window click on **OK**.
16. **Important**

    Check that the **Power Control** display is set to **3** (local) on the 3745 control panel. If it is, go to Step 19.

    If it is not, proceed with Step 17.
17. Press **Power Control** until **3** is displayed in the power control window.
18. Press **Validate**.
19. Press **Service** until **1** is displayed in the service window.
20. Press **Validate**.
21. Before exchanging the HDD, check the voltages as follows:

    Note: The voltages are not permanently applied to the HDD. A MOSS IML is required to have them available for measurement for approximately 15 minutes.
    a. Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
    b. Press **Validate**.
    Wait until the control panel displays a hexadecimal code greater than 0A0. It takes approximately one minute.
    c. Using Table 4-23 on page 4-64, measure the voltages on the HDD connector (J3). If the voltages are not within tolerance or are missing, check the voltage test points of the PS type 2. Refer to Figure 4-41 on page 4-60. If they are incorrect, exchange the PS type 2.

    Note: If problems are experienced in measuring voltages with the connectors that are plugged in, power the MOSS OFF (function **B**). Remove connector P3 from the HDD and power the MOSS ON (function 1).
22. Remove the power as follows:
    a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
    b. Press **Validate**.
    c. Observe the MOSS inoperative display on the control panel. At completion of power OFF, the character **B** is displayed.
23. **Attention: Use the ESD kit and procedures.**
24. Open the front cover and the control panel door.
25. Referring to Figure 4-42 on page 4-62, remove the HDD as follows:

a. Remove the four securing screws 2 from the assembly.
b. Slide out the HDD.
c. Remove the three cables 1 and the ground wire (if any) from the drive.

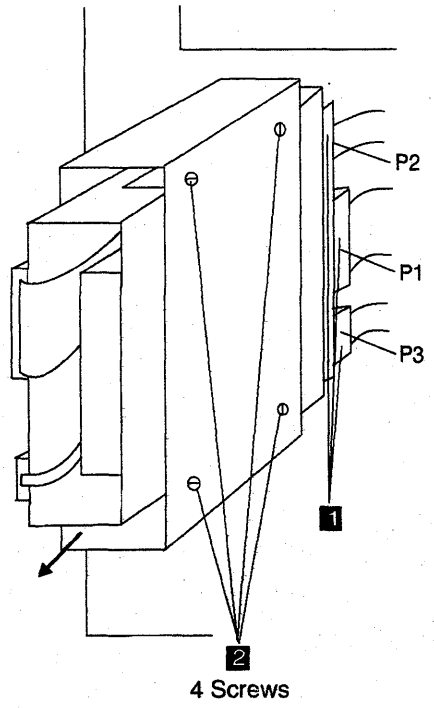


Figure 4-42. HDD Removal

Installation Procedure

1. Identify the HDD that you received using Figure 4-43 (several types of HDD are available).
2. If you receive, a new HDD assembly (similar to the HDD Figure 4-43), continue with Step 3. Otherwise go to Step 6.

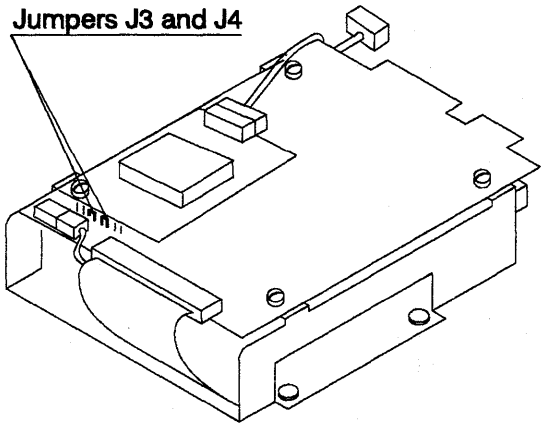


Figure 4-43. New Type of HDD

3. Ensure that the jumpers are present in positions J3 and J4. See Figure 4-43.
4. Install the new HDD as follows:

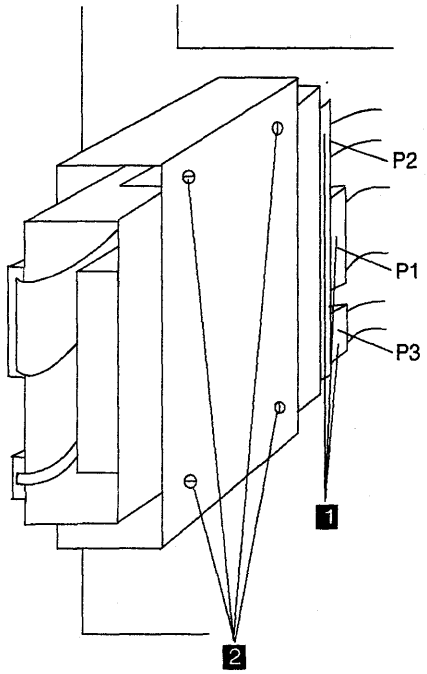


Figure 4-44. HDD Installation

   a. Install the three cables **1**.
   b. Slide in the HDD.
   c. Secure the HDD using the four screws **2**.
5. Continue with Step 9.
6. On the new HDD, remove the rails which are not used in the 3745.
7. Ensure that there is a jumper in position 1 (according to the disk model). See Figure 4-45.
8. Install the new HDD as follows:
   a. Install the three cables **1** and the ground wire (if any).
   b. Slide in the HDD.
   c. Secure the HDD using the four screws **2**.
9. **Re-apply the power as follows:**
   a. Install the primary backup diskette in the FDD.
   b. Press **Function** on the control panel until function **9** (**Load from Diskette**) is displayed.
   c. Press **Validate**.

   Note: This action will also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.
10. Refer to *IBM 3745 Communication Controller Service Function*, SY33-2055 to:
    - Initialize the disk.
    - Restore the disk from diskettes (follow the prompt screens until **Disk correctly restored** is displayed).
11. When these actions are completed, a MOSS IML from the HDD will have been executed.

    Note: This action will also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19
12. In the **3745 Menu** window, click on the **Operation Management** option.
13. Double-click on **Set 3745/MOSS-E Connection Mode** option (to set the diskette mode OFF).
14. For 3745 Model 21A to 61A, proceed with Step 15. For 3745 Model 210 to 610 go to Step 18 on page 4-64.
15. In the **3745/MOSS-E Connection** window click on **OK**.
16. Come back on the **Controller Repair Message** window and click on **OK**.
17. Leave the **Controller Installation** window by clicking on **Cancel**.

18. Remove the diskette.
19. Refer to the Maintenance Information Procedures (MIP) manual and exchange all the filters.

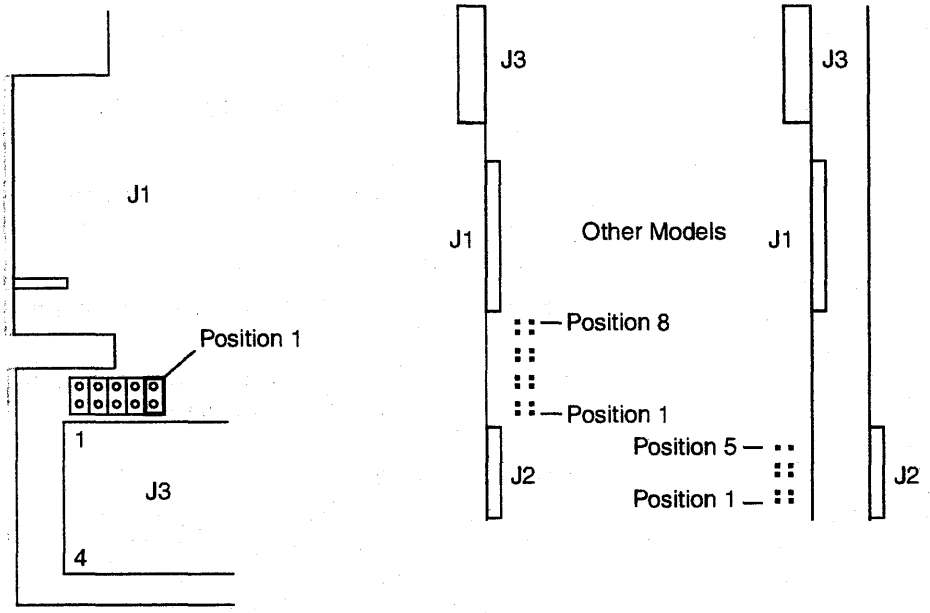


Figure 4-45. HDD Jumpering

Table 4-23. Voltage Test Points

Connector	Pin	Voltage	Maximum	Minimum	Ripple
01X-A1-P3 (HDD)	1	+12 V	+13.00 V	+11.00 V	.12 V peak-to-peak
	2	GND			
	3	GND			
	4	+ 5 V	+ 5.25 V	+ 4.85 V	.10 V peak-to-peak
PS type 2-J2 Voltage Test Points	1	+12 V	+13.00 V	+11.00 V	.12 V peak-to-peak
	5	+ 5 V	+ 5.25 V	+ 4.85 V	.10 V peak-to-peak
	10	GND			

MAC and MAC2 Exchange Procedure

For physical locations, refer to Figure 4-2 on page 4-5 and Figure 4-8 on page 4-12.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Press **Service** until **1** is displayed in the service window.
4. Press **Validate**.
5. Remove the power as follows:
   a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
   b. Press **Validate**.
   c. Observe the MOSS inoperative display on the control panel. At completion of power OFF, it will display the character **B**.
6. **Attention: Use the ESD kit and procedures..**
7. **The following sequence should always be observed.**
   a. Locate the card by referring to Figure 4-8 on page 4-12. Remove the cable attached to the card if present (MAC card only).
   b. If present, remove the **shipping springs** that secure the extractor levers by squeezing them together. Refer to Figure 4-46.
   c. Remove the card.
   d. Install the new card.
   e. Re-install the **shipping springs** (if present).
   f. Install the cable on the card.
8. Re-apply the power as follows:
   a. Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
   b. Press **Validate**.

      Note: This action will also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.
   c. If the MOSS diagnostic was not the one that directed you to this FRU, and referring to Chapter 3, "How to Run the Diagnostics" on page 3-1, run the same diagnostics you ran before you exchanged the FRU. Go to "Repair Verification Procedure" on page 4-178.

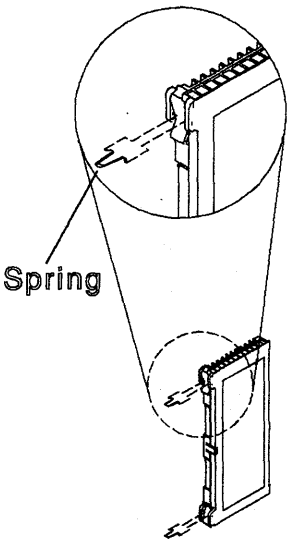


Figure 4-46. Shipping Springs

MPC and MPC2 Exchange Procedure

For physical locations, refer to Figure 4-2 on page 4-5 and Figure 4-8 on page 4-12.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Press **Service** until **1** is displayed in the service window.
4. Press **Validate**.
5. Remove the power as follows:
   a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
   b. Press **Validate**.
   c. Observe the MOSS Inoperative display on the control panel. At completion of power OFF, the character **B** is displayed.
6. **Attention: Use the ESD kit and procedures**.
7. Locate the card by referring to Figure 4-8 on page 4-12.
   a. If present, remove the interconnecting cable from the **PROM** card at position 01A-X0-E4-Z.

      Note: The PROM card may not be present on the machine.
   b. Remove the **shipping springs** (if present) that secure the extractor levers by squeezing them together. Refer to Figure 4-46 on page 4-65.
   c. Remove the MPC card complete with cable (if present).
   d. Install the new card.
   e. Re-install the **shipping springs**
   f. Re-plug the interconnecting cable to the **PROM** card at position 01A-X0-E4-Z (if present).
8. Re-apply the power as follows:
   a. Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
   b. Press **Validate**.

      Note: This action will also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.
9. Go to "Repair Verification Procedure" on page 4-178.

MCA, MSC, and MSC2 Exchange Procedure

For physical locations, refer to Figure 4-2 on page 4-5 and Figure 4-8 on page 4-12.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If yes, go to Step 3.

If not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Press **Service** until **1** is displayed in the service window.
4. Press **Validate**.
5. Remove the power as follows:
   a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
   b. Press **Validate**.
   c. Observe the MOSS inoperative display on the control panel. At completion of power OFF, the character **B** is displayed.
6. **Attention: Use the ESD kit and procedures.**
7. Locate the card by referring to Figure 4-8 on page 4-12.
8. If present, remove the **shipping springs** that secure the extractor levers by squeezing them together. Refer to Figure 4-47.
9. Remove the card.
10. Install the new card.
11. Re-install the **shipping springs** (if present).
12. Re-apply the power as follows:
    a. Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
    b. Press **Validate**.

    Note: This action will also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.
13. If the MCA has been exchanged, refer to "How to Run the Console Link Test on 3745 Models 210-610" on page 3-23 to run this diagnostic. Go to "Repair Verification Procedure" on page 4-178.

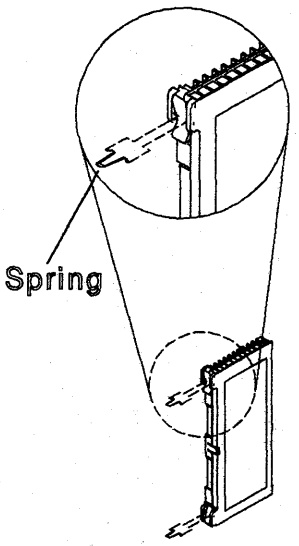


Figure 4-47. Shipping Springs

MLA Exchange Procedure

For physical locations, refer to Figure 4-2 on page 4-5 and Figure 4-9 on page 4-13.

Important

Check that the **Power Control** display is set to **3** (local) on the 3745 control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Press **Service Mode** until **1** is displayed in the service window.
4. Press **Validate**.
5. Remove the power as follows:
   a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
   b. Press **Validate**.
   c. Observe the MOSS Inoperative display on the control panel. At completion of power OFF, it will display the character **B**.
6. Ask the customer for the service processor maintenance password to logon at the service processor console. If the logon is already done go to Step 8. If it is not, proceed with Step 7.
7. To logon:
   a. In the **MOSS-E View** window, click on **Program** (in the action bar).
   b. Click on **Log on MOSS-E**
   c. Enter the password.
8. In the **MOSS-E View** window, click on the controller icon to record the serial number of the machine where the FRU is located. The serial number is displayed on the bottom line of the **MOSS-E View** window.
9. In the **MOSS-E View** window double-click on the service processor icon.
10. In the **Service Processor Menu** window, click on the **Configuration Management** option. Double-click on the **Manage 3745/3746-9x0 Installation** option.
11. In the **Controller Installation** window, click on the serial number of the 3745 to be selected. Click on **Repair**
12. In the **Repairs Action for 3745** window, select the **Change 3745 MOSS LAN Adapter** option and click on **OK**
13. The **Controller Repair Message** window is displayed. Perform the following Steps before clicking on **OK**.
    a. Locate the card by referring to Figure 4-9 on page 4-13 and disconnect the cable attached to the card.
    b. **Attention: Use the ESD kit and procedures**.
    c. Loosen the two thumbscrews and remove the card.
    d. Install the new card and tighten the two thumbscrews.
    e. Reconnect the cable to the card.
    f. Re-apply the power as follows:
       1) Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
       2) Press **Validate**.

       Note: This action will also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.
14. In the **Controller Repair Message** window of the MOSS-E, click on **OK**
15. In the **Controller Installation** window, click on **Save**
16. A new window prompts you to install the installation diskette in the service processor. When it is done click on **OK**
17. A **Controller Saving Message** is displayed. Remove the diskette and click on **OK**
18. The **Controller Installation** window is displayed again. Click on **Cancel**
19. Go to "Repair Verification Procedure" on page 4-178.

PAC Exchange Procedure

For physical locations, refer to Figure 4-2 on page 4-5 and Figure 4-8 on page 4-12.

Note: If the nature of the fault does not allow control panel actions, go to Step 3f.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If if it not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Press **Service** on the control panel until **1** is displayed in the service window.
   b. Press **Validate**.
   c. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
   d. Press **Validate**.
   e. Observe the MOSS inoperative display on the control panel. At completion of power OFF, the character **B** is displayed.
   f. Locate the **Maintenance SW1** on PS type 6 (see Figure 4-38 on page 4-57). Lift the lever up and pull it outwards to the **Test** position. Check that the **LED** is **ON**
   g. Locate the **Maintenance SW2** on PS type 6.
   h. Switch it to the **T1** position.
4. **Attention: Use the ESD kit and procedures.**
5. **Attention: Card damage will result if any other card except the PAC is plugged in this position.**
6. Locate the card by referring to Figure 4-8 on page 4-12.
   a. If present, remove the **shipping springs** that secure the extractor levers by squeezing them together. Refer to Figure 4-47 on page 4-67.
   b. Remove the card.
   c. Install the new card.
   d. Re-install the **shipping springs** (if present).
7. Re-apply the power as follows:
   a. Return the **Maintenance SW2** to the **T2** position.
   b. Is the control panel displaying **Power Control** and **Service Mode** information? If yes, continue with Step 8. If not, the initial checkouts have failed.
   c. Locate the **Maintenance SW2** on PS type 6.
   d. Switch it to the **T1** position
   e. Reseat the PLC card or try another PLC card and return to Step 7a.
8. Refer to "How to Run the 3745 Panel Test" on page 3-22 and run the diagnostic.
9. Push the **Maintenance SW1** back to its normal position.
10. Press **Function** on the control panel until **1** is displayed in the function window.
11. Press **Validate**.

    Note: This action will power the MOSS ON, run MOSS diagnostics, and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19. In the CE leaving procedure you will be instructed to recreate the power configuration, set the time of day clock, and any required scheduled power ON time.
12. Go to "Repair Verification Procedure" on page 4-178.

PLC Exchange Procedure

For physical locations, refer to Figure 4-2 on page 4-5 and Figure 4-8 on page 4-12.

Note: If nature of fault does not allow control panel actions, then go to Step 3f

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Press **Service** on the control panel until **1** is displayed in the service window.
   b. Press **Validate**.
   c. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
   d. Press **Validate**.
   e. Observe the MOSS Inoperative display on the control panel. At completion of power OFF, the character **B** is displayed.
   f. Locate the **Maintenance SW1** on PS type 6 (see Figure 4-38 on page 4-57). Lift the lever up and pull it outwards to the **Test** position. Check that the **LED** is **ON**
   g. Locate the **Maintenance SW2** on the PS type 6.
   h. Switch it to the **T1** position.
4. **Attention: Use the ESD kit and procedures.**
5. Locate the card by referring to Figure 4-8 on page 4-12
   a. If present, remove the **shipping springs** that secure the extractor levers by squeezing them together. Refer to Figure 4-47 on page 4-67.
   b. Remove the card.
   c. Install the new card.
   d. Re-install the **shipping springs** (if present).
6. Re-apply the power as follows:
   - Return the **Maintenance SW2** to the **T2** position.
7. Is the control panel displaying **Power Control** and **Service Mode** information?
   If yes, continue with Step 11.
   If not, the initial checkouts have failed. Continue with Step 8.
8. Locate the **Maintenance SW2** on PS type 6.
9. Switch it to the **T1** position.
10. Reseat the PLC card or try another PLC card and return to Step 6.
11. Panel code **008** may appear (depending on the FRU level). Do not care.
    Refer to "How to Run the 3745 Panel Test" on page 3-22 and run the diagnostics.
12. Push the **Maintenance SW1** back to the normal position.
13. Press **Function** on the control panel until **1** is displayed in the function window.
14. Press **Validate**.

    Note: This action will power the MOSS ON, run MOSS diagnostics, and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.

    Attention: The power configuration table must be recreated. Refer to "CE Leaving Procedure" on page 4-180. Set the time of day clock and the power ON time may also need to be reset.
15. Go to "Repair Verification Procedure" on page 4-178.

PROM Exchange Procedure

For physical locations, refer to Figure 4-2 on page 4-5 and Figure 4-8 on page 4-12.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If yes, go to Step 3.

If not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Press **Service** on the control panel until **1** is displayed in the service window.
4. Press **Validate**.
5. Remove the power as follows:
   a. Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
   b. Press **Validate**.
   c. Observe the MOSS inoperative display on the control panel. At completion of power OFF, the character **B** is displayed.
6. **Attention: Use the ESD kit and procedures.**
7. Refer to Figure 4-8 on page 4-12.
8. Remove the interconnecting cable from the **PROM** card at position 01A-X0-E4-Z.
9. Exchange the card.
10. Re-plug the interconnecting cable to the **PROM** card at position 01A-X0-E4-Z.
11. Re-apply the power as follows:
    a. Press **Function** on the control panel until the **MOSS IML** function **1** is displayed.
    b. Press **Validate**.

    Note: This action will also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.
12. Go to "Repair Verification Procedure" on page 4-178.

CSP Exchange Procedure

For physical FRU locations in Frame 01, refer to Figure 4-2 on page 4-5 and Figure 4-19 on page 4-23, or Figure 4-21 on page 4-25.

For physical FRU locations in Frame 02, refer to Figure 4-3 on page 4-7 and Figure 4-19 on page 4-23.

For physical FRU locations in Frame 03, refer to Figure 4-4 on page 4-8 and Figure 4-19 on page 4-23.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.

Table 4-24. Relation Between the CSP Card Location and the Power Services Screen	
CSP or FESL Location	**Power Services Screen and ID**
01G-A1-YY	Base Frame ID=**1**
02A-A1-YY 02F-A1-YY	Expansion Unit A11 ID=**2**
03F-A1-YY	Expansion Unit A12 ID=**3**

   b. Refer to Table 4-24 ('x'= Power Services Screen ID) and type **x** to select the appropriate power services frame.
   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, type **dxx** (where xx= affected power supply id).
4. **Attention: Use the ESD kit and procedures.**
5. Referring to Figure 4-48 on page 4-73, exchange the CSP card as follows:
   a. Remove the three non-polarized top card connectors from positions W, X, and Y.
   b. Exchange the CSP card.
   c. Replace the three top card connectors.
6. Using the MOSS console, turn the affected power supply ON as follows:

   On the displayed power information screen, type **u** followed by the number of the affected power supply, to turn it ON.
7. Run the same diagnostics you ran before you exchanged the FRU. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

FESL Exchange Procedure

For physical FRU locations in Frame 01, refer to Figure 4-2 on page 4-5, Figure 4-19 on page 4-23, or Figure 4-21 on page 4-25.

For physical FRU locations in Frame 02, refer to Figure 4-3 on page 4-7 and Figure 4-19 on page 4-23.

For physical FRU locations in Frame 03, refer to Figure 4-4 on page 4-8 and Figure 4-19 on page 4-23.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.
   b. Refer to Table 4-24 on page 4-72 (**x**= Power Services Screen ID). Type **x** to select the appropriate power services frame.
   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, type **dxx** (where xx= affected power supply id).
4. **Attention: Use the ESD kit and procedures.**
5. Referring to Figure 4-48, exchange the FESL card as follows:
   a. Remove the three non-polarized top card connectors from positions W, X, and Y.
   b. Withdraw the FESL card until the serial link cable (J1) on the component side is accessible. Disconnect the cable and fully remove the card.

      Note: Never remove the other end of the SL cable (DMUX or SMUX side) during this maintenance procedure. DMUX or SMUX can be driven by another line adapter and this would lead to the corresponding lines going down.
   c. Exchange the FESL card.
   d. Replace the serial link cable and replug the FESL card.
   e. Replace the three top card connectors.
6. Using the 3745 console, turn the affected power supply ON as follows:

   On the displayed power information screen, type **u** followed by the ID of the affected power supply to turn it ON.
7. Run the same diagnostics you ran before you exchanged the FRU. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

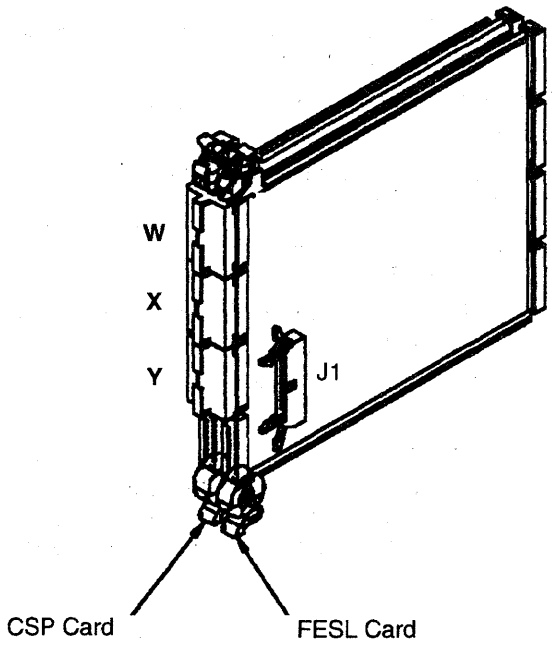


Figure 4-48. CSP and FESL Cards

FESH Exchange Procedure

For physical FRU locations, refer to Figure 4-2 on page 4-5, Figure 4-19 on page 4-23, or Figure 4-21 on page 4-25.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.
   b. Type **1** to select the base frame power services.
   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, type **dxx** (where xx= affected power supply id).
4. **Attention: Use the ESD kit and procedures.**.
5. Referring to Figure 4-49, exchange the FESH card as follows:
   a. Unscrew the plate on the left side of the board and push it up.
   b. Remove the three non-polarized top card connectors from positions W, X, and Y.
   c. Disconnect the two cable ground wires from the board.
   d. Withdraw the FESH card until the two line cables (J1 and J2) on the component side are accessible. Disconnect the cables (note their position) and remove the card.
   e. Exchange the FESH card (check that the jumper is installed on the new card).
   f. Replace the two line cables and replug the FESH card.
   g. Replace the three top card connectors.
   h. Reconnect the two cable ground wires.
   i. Push the plate on the left side down.

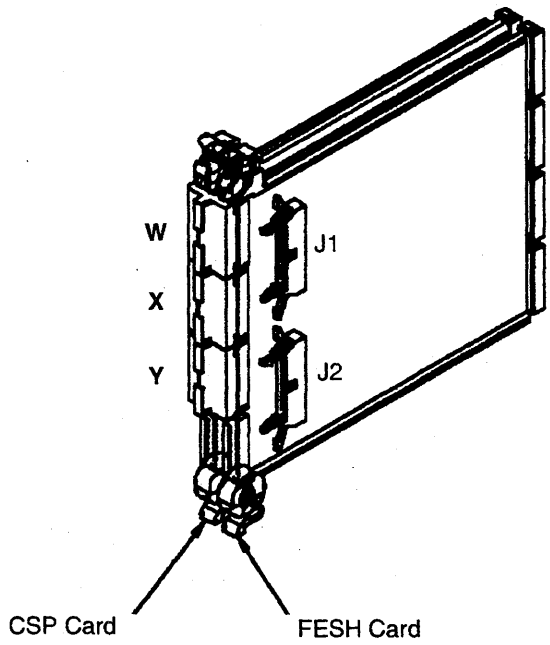


Figure 4-49. FESH Card

6. Using the 3745 console, turn the affected power supply ON as follows:

   On the displayed base frame power information screen, type **u** followed by the id of the affected power supply to turn it ON.
7. Run the same diagnostics you ran before you exchanged the FRU. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

EAC Exchange Procedure

For physical FRU locations, refer to Figure 4-2 on page 4-5, Figure 4-19 on page 4-23, or Figure 4-21 on page 4-25.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove power as follows:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.
   b. Type **1** to select the base frame power services.
   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, type **dxx** (where xx= affected power supply id).
4. **Attention: Use the ESD kit and procedures.**.
5. Referring to Figure 4-50, exchange the EAC card as follows:
   a. Unscrew the plate on the left side of the board and push it up.
   b. Remove the three non-polarized top card connectors from positions W, X, and Y.
   c. Disconnect the two cable ground wires from the board.
   d. Withdraw the EAC card until the line cable (J1) on the component side is accessible. Disconnect the cable and remove the card.
   e. Exchange the EAC card.
   f. Replace the line cable and replug the EAC card.
   g. Replace the three top card connectors.
   h. Reconnect the two cable ground wires.
   i. Push the plate on the left side down.

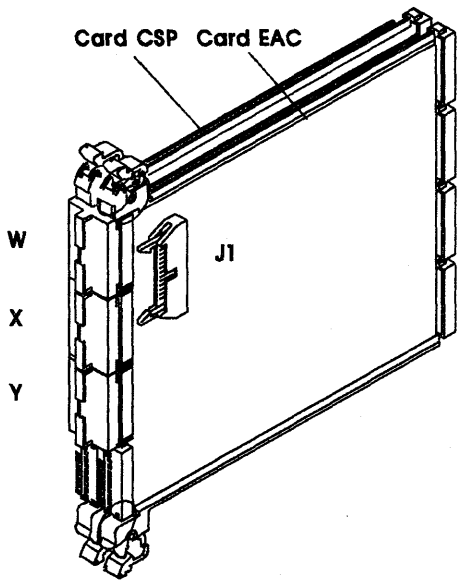


Figure 4-50. EAC Card

6. Using the 3745 console, turn the affected power supply ON as follows:

   On the displayed base frame power information screen, type **u** followed by the id of the affected power supply to turn it ON.
7. Run the same diagnostics you ran before you exchanged the FRU. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

DMUX Exchange Procedure

For physical FRU locations, refer to Figure 4-1 on page 4-4 through Figure 4-7 on page 4-11, and "DMUX Packaging" on page 4-28.

Important

If no matrix switch is connected to the attached LICs, the DMUX is **hot-pluggable** and there is no need to power OFF. Otherwise, call your support for RETAIN TDR H004382.

Refer to Figure 4-51 and Figure 4-22 on page 4-26.

1. Remove the partial board cover for access to the DMUX.
2. Remove the serial link cables located on top of the DMUX. Note the positions.
3. Unfasten the thumb screw holding the DMUX cassette on the board.
4. Exchange the DMUX.
5. Fasten the thumb screw holding the DMUX cassette on the board.
6. Replace the removed serial link cables.
7. Replace the partial board cover.
8. Run the same diagnostics you ran before you exchanged the DMUX. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

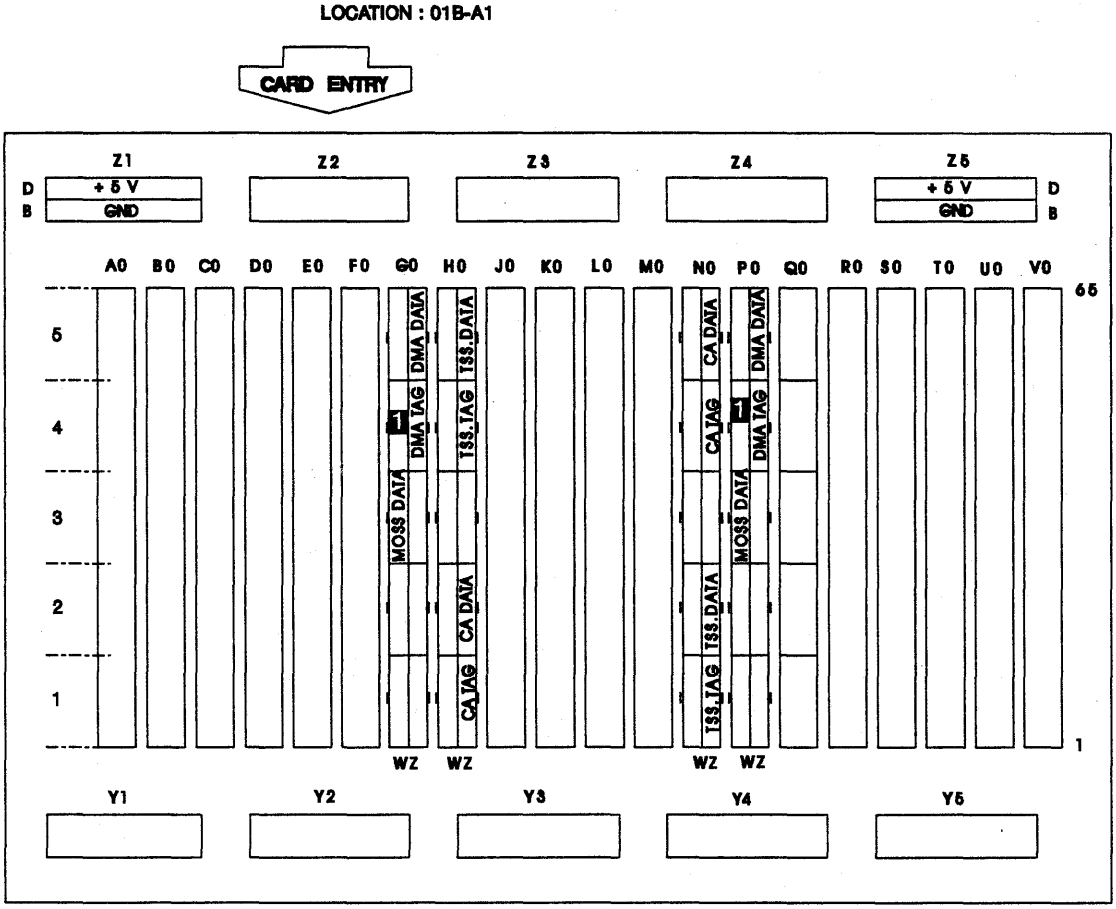


Figure 4-51. DMUX Card

SMUX A and SMUX B Exchange Procedure

For physical FRU locations, refer to Figure 4-1 on page 4-4 through Figure 4-7 on page 4-11, and "SMUXA/B Packaging" on page 4-28.

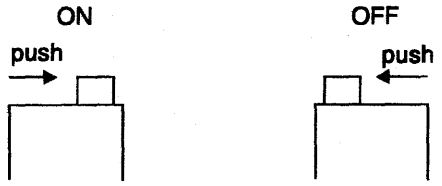
Since the SMUX is **hot-pluggable**, there is no need to power OFF.

Refer to Figure 4-52 on page 4-78 and Figure 4-22 on page 4-26.

1. Remove the partial board cover to gain access to the SMUX card.
2. Remove the serial link cables located on the top or bottom of the SMUX. Note the positions.
3. Disconnect the flat cable between SMUX A and B.
4. Unfasten the thumb screw holding the SMUX cassette on the board.
5. Exchange the SMUX.
6. Fasten the thumb screw holding the SMUX cassette on the board.
7. Replace the removed serial link cables.
8. Reconnect the flat cable between SMUX A and B.
9. Set the xmit level switches according to the table below.
10. Replace the partial board cover.
11. Run the same diagnostics you ran before you exchanged the SMUX. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

Table 4-25. SMUX A and SMUX B Switches

Country (Leased Lines)	**Xmit Level (in DBm)**	**Sliding Switches**			
Canada, Greece, U.S.A. Ireland, other AP/APG countries	0	1	2	3	4
	- 1	ON			
	- 2		ON		
	- 3	ON	ON		
	- 4			ON	
	- 5	ON		ON	
Chile, other EMEA countries	- 6		ON	ON	
	- 7	ON	ON	ON	
	- 8				ON
Hong Kong	- 9	ON			ON
Denmark, Finland Iceland, Italy, Sweden	- 10		ON		ON
	- 11	ON	ON		ON
	- 12			ON	ON
Australia, U.K.	- 13	ON		ON	ON
	- 14		ON	ON	ON
France, Japan	- 15	ON	ON	ON	ON



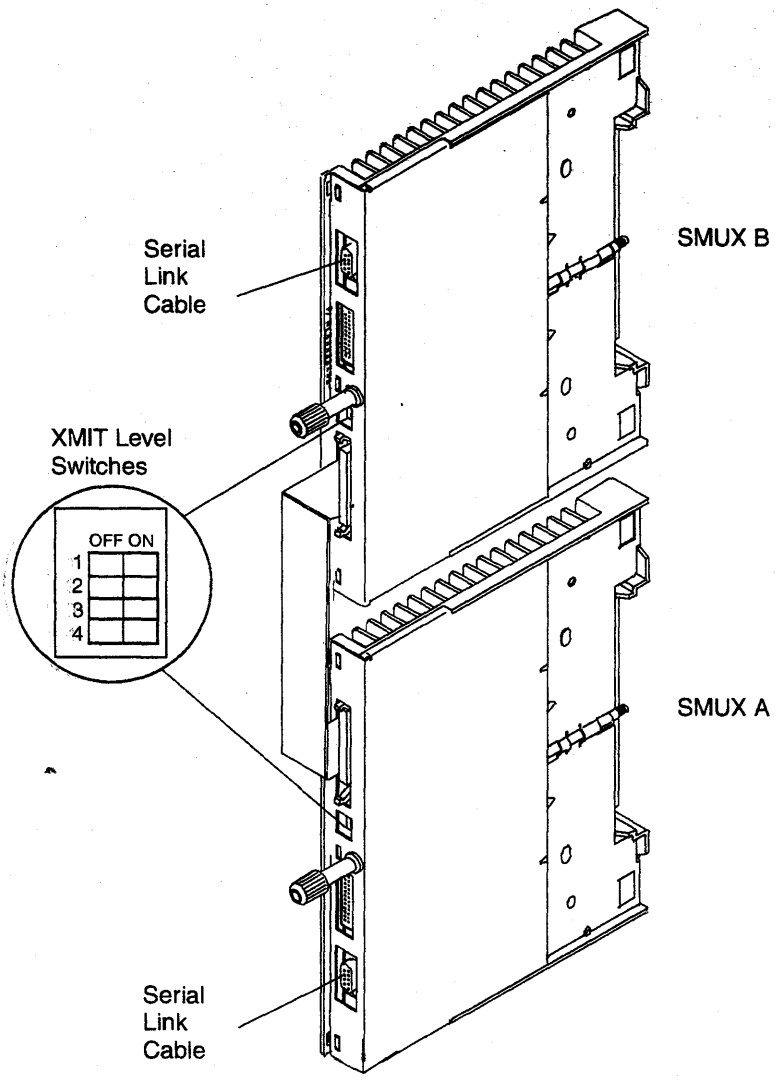


Figure 4-52. SMUX A and SMUX B Cards

LIC Types 1-4 Exchange Procedure

For physical FRU locations, refer to Figure 4-1 on page 4-4 up to Figure 4-7 on page 4-11 ,and Figure 4-22 on page 4-26 to 5-29.

Important

If no matrix switch is connected to the LIC, the LIC is **hot-pluggable** and there is no need to power OFF. Otherwise, call your support for RETAIN TDR H004382.

Refer to Figure 4-53 and Figure 4-22 on page 4-26.

1. Remove the line cables from the LIC. Note their positions.
2. Unfasten the thumb screw holding the LIC cassette on the board.
3. Exchange the LIC.
4. Fasten the thumb screw holding the LIC cassette on the board. Finger strength is enough. Do not use pliers.
5. Replace the line cables removed in Step 1.
6. Run the same diagnostics you ran before you exchanged the FRU. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

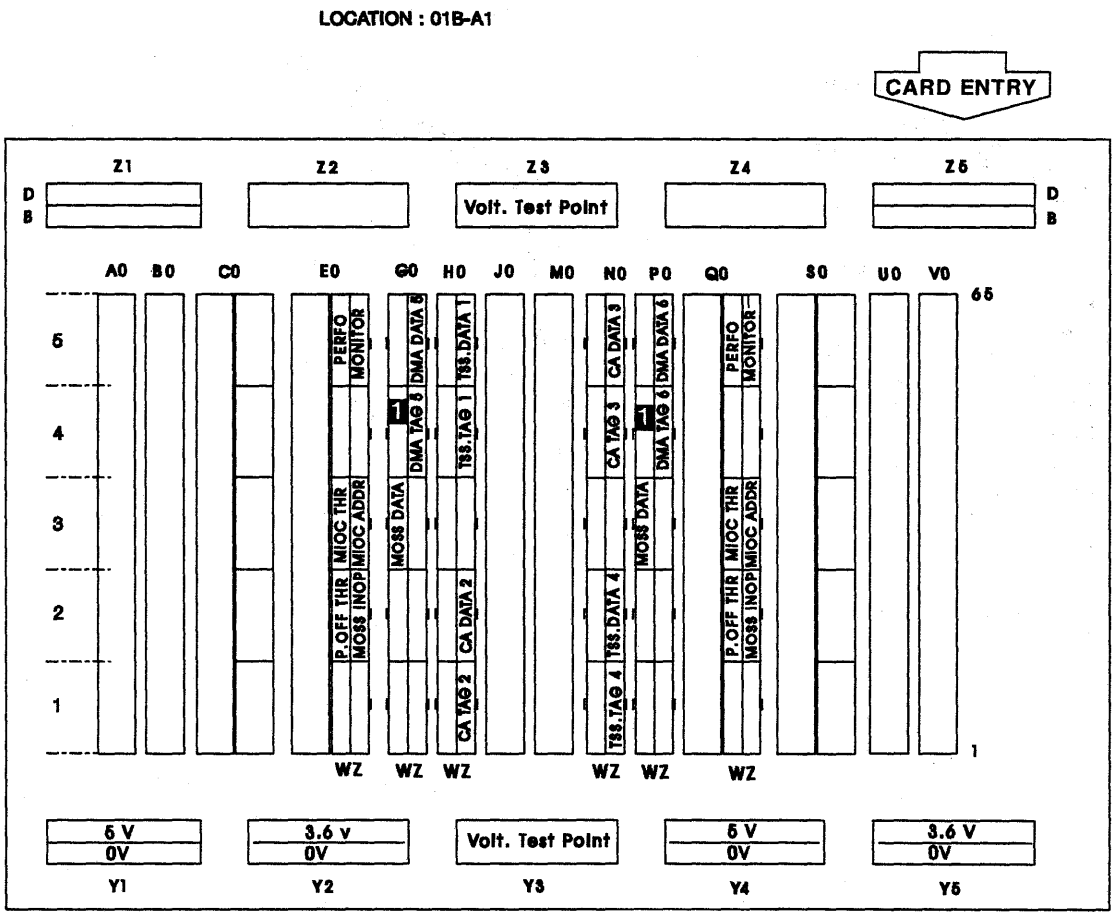


Figure 4-53. LIC Cassette Types 1-4

LIC Types 5 and 6 Exchange Procedure

For physical FRU locations, refer to Figure 4-1 on page 4-4 through to Figure 4-7 on page 4-11, and Figure 4-23 on page 4-27 to 5-33.

The LIC is hot-pluggable. There is no need to power OFF.

Refer to Figure 4-54 and Figure 4-23 on page 4-27.

1. Unplug the line cables at the customer wall frame (to keep the PTT lines loaded).
2. Remove the line cables from the LIC. Note their positions.
3. Unfasten the thumb screw holding the LIC cassette on the board.
4. Exchange the LIC.
5. Fasten the thumb screw holding the LIC cassette on the board. Finger strength is enough. Do not use pliers.
6. If you are exchanging a LIC type 6, locate the speed switch on the right side of the LIC cassette (see Figure 4-54) and set it as it was on the replaced card.
7. Ask the customer to select the correct configuration parameters by using the PKD.
8. Replace the line cables removed in Step 1.
9. Run the same diagnostics you ran before you exchanged the FRU. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

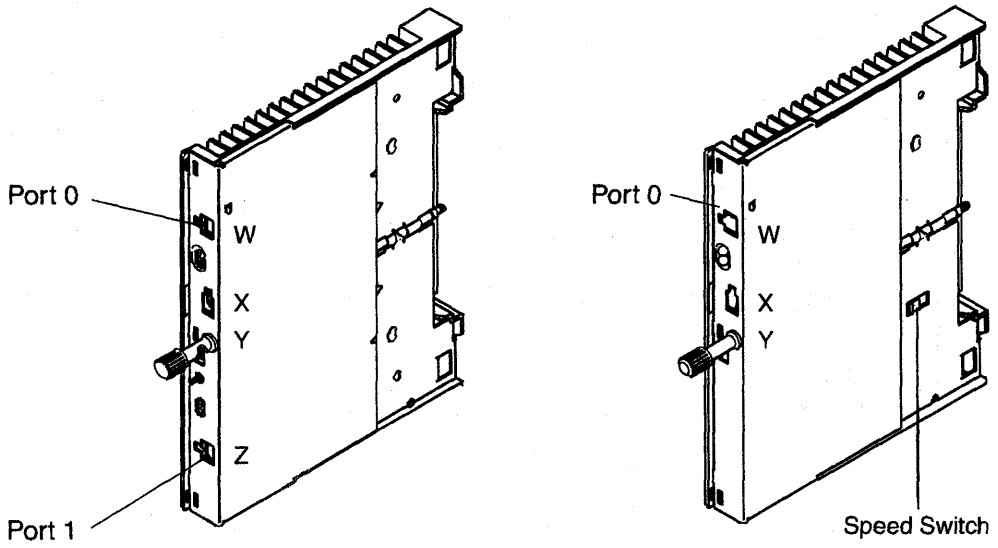


Figure 4-54. LIC Cassette Types 5 and 6

LIC Fan Exchange Procedure

Prior to starting the exchange, read the *Safety Information* manual, GA33-0400.

Attention: Power may be present when nothing is displayed on the control panel.

Locations: For LIC fan location 01N: refer to Figure 4-2 on page 4-5.

For LIC fan locations 04C and 04F: refer to Figure 4-5 on page 4-9.

For LIC fan locations 05C and 05F: refer to Figure 4-6 on page 4-10.

For LIC fan locations 06C and 06F: refer to Figure 4-7 on page 4-11.

If the LICs cooled by the LIC fan assembly are types 1, 3, or 4 only (powered by PS type 5), go to Step 2.

If there are LIC types 5 or 6 (powered by PS type 7), continue with the next Step.

1. **Attention: Do not forget that the assembly contains two fans. You have two minutes to replace the assembly. If you exceed two minutes, the associated power supplies type 7 will automatically be powered OFF.**

   For this reason:

   - Read the following procedure before starting to exchange the assembly.
   - The assembly to be installed must be unpacked and close to the location of the failing unit.

2. Ensure that the fan blades are running free. Do this by pushing the blades with a thin screwdriver or similar tool.
3. Referring to Figure 4-55:
   a. Unscrew the two screws **C**.
   b. Disconnect the power plug **A**.
   c. Disconnect the AFD plug **B**.
   d. Slide the assembly out of the machine..
   e. Fit the new assembly into the machine..
   f. Reconnect the AFD plug **B**.
   g. Reconnect the power plug **A**.
   h. Secure the two screws **C**.
   i. Go to "CE Leaving Procedure" on page 4-180.

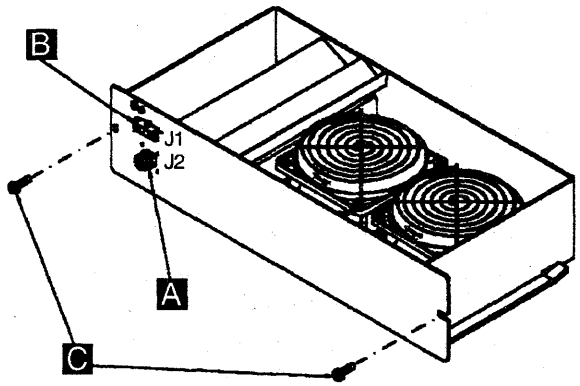


Figure 4-55. Fan Assembly

TRM and TIC Exchange Procedure

For physical FRU locations, refer to Figure 4-2 on page 4-5 and Figure 4-21 on page 4-25.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove power as follows:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.
   b. Type **1** to select the base frame power services.
   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, type **dxx** (where xx= affected power supply id).
4. **Attention: Use the ESD kit and procedures.**.
5. If the card you are exchanging is the TIC, do the following. Otherwise go to Step 6.

   Refer to Figure 4-56 on page 4-83 and Figure 4-57 on page 4-83.
   a. Unplug the TIC card and withdraw it until the token-ring cable on the component side is accessible.
   b. Disconnect the token-ring cable.
   c. Fully remove the TIC card.
   d. If the card is a TIC type 1, ensure that jumper A is present and all switches in switch block B are set to ON.
   e. Replug the TIC card in reverse order.
6. If you were sent to exchange the TRM, exchange it now. Refer to Figure 4-56 on page 4-83.
7. Using the 3745 console, power the affected power supply ON as follows:

   On the displayed base frame power services screen type **u** followed by the ID of the affected power supply, to power it ON.
8. Although the TRA has been disconnected before exchanging the FRU, you must disconnect this adapter again after power ON and prior to running the diagnostics. Proceed as follows:
   a. From menu 3, select **TRSS Services** by entering **TRS** into the selection area.
   b. From the **TRSS Services** screen, choose **select** by entering **1** in the selection area.
   c. In the input area, enter the number of the suspected adapter.
   d. Enter **2** in the selection area to choose **Connect/Disc**
   e. On the **Connect/Disc** screen, enter **DS** to disconnect the TRA.
9. Run the same diagnostics you ran before you exchanged the FRU. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

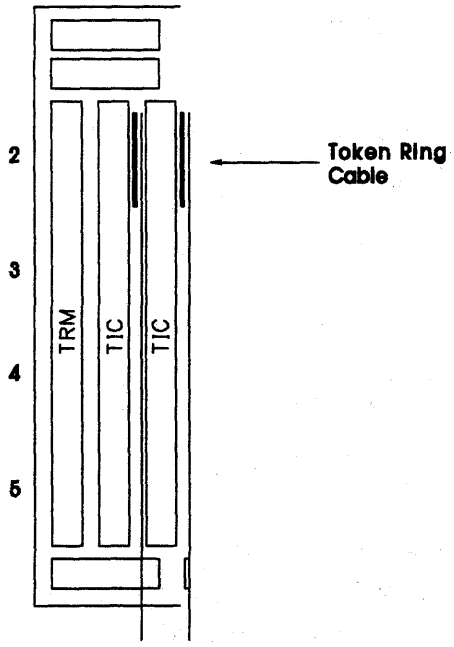


Figure 4-56. TIC and TRM

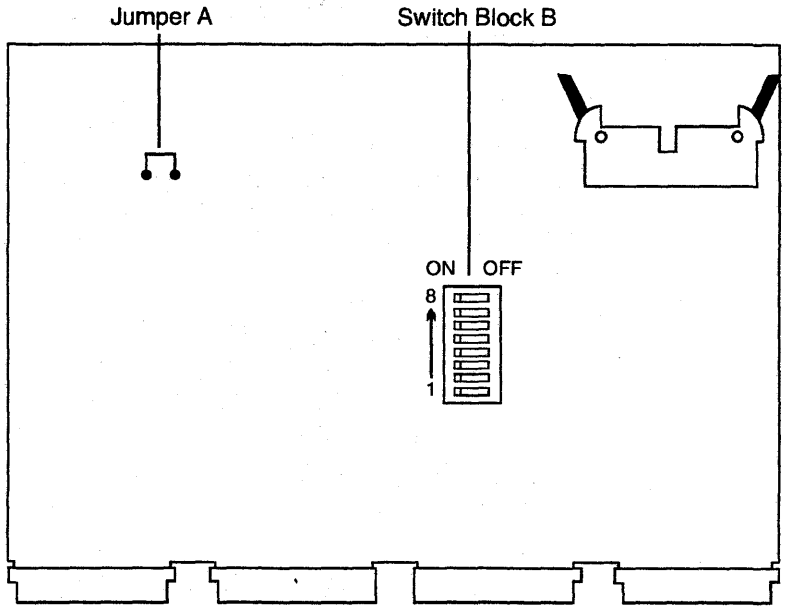


Figure 4-57. Location of Jumper A and Switch Block B on the TIC Card

DTER, ITER, LTC1, and LTC2 Exchange Procedure

For physical FRU locations in frame 01, refer to Figure 4-2 on page 4-5.

For physical FRU locations in frame 02, refer to Figure 4-3 on page 4-7.

For physical FRU locations in frame 03, refer to Figure 4-4 on page 4-8.

Attention: As each of those cards is common to both CCUs, the whole machine must be available to exchange one of them.

The DTER, ITER, LTC1, LTC2 are hot-pluggable. There is no need to turn the power OFF.

1. Remove the board cover.
2. Exchange the card.
3. Replace the board cover.
4. Run the same diagnostics you ran before exchanging the FRU. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

ABP1 and ABP2 Exchange Procedure

Attention: As each of these cards is common to both CCUs, the whole 3746-900 must be available to exchange one of them.

Using the offline function on the MOSS-E put the 3746-900 offline:

1. Ask the customer for the administrator maintenance password to logon at the service processor console. This password gives access to the **MOSS-E View** window.
2. In this window, double-click on the 3746-900 icon attached to the 3745 for which you are called.
3. The **3746-9x0 Menu** window is displayed.
4. Click on the **Problem Management** option.
5. Double-click on the **Set 3746-9x0 Online/Offline option**
6. In the **Set 3746-9x0 Online/Offline** window, click on **YES** or **NO** according to the current setting.
7. In the next **Set 3746-9x0 Online/Offline** window, click on **OK**

On the 3745:

To check the ABP1 and ABP2 position, use the bypass card plugging instructions. Refer to "How to Check the Bypass Card Position" on page 4-183.

For physical FRU locations:

- In frame 01, refer to Figure 4-2 on page 4-5
- In frame 02, refer to Figure 4-3 on page 4-7
- In frame 03, refer to Figure 4-4 on page 4-8.

1. Remove the board cover.
2. Disconnect the power cable and flat cables from the ABP1 or ABP2 card.
3. Exchange the card.
4. Connect the flat cables and power cable to the ABP1 or ABP2 card.
5. Replace the board cover.
6. Run the same diagnostics you ran before exchanging the FRU. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1
7. Turn back the 3746-900 Online using the Set 3746-9x0 Online/Offline from the Network function on the MOSS-E.
8. Go to "Repair Verification Procedure" on page 4-178.

DICO Exchange Procedure

For physical FRU locations, refer to Figure 4-2 on page 4-5, Figure 4-19 on page 4-23, or Figure 4-21 on page 4-25.

Attention: As each of these cards is common to both CCUs, the whole machine must be available to exchange one of them.

The DICO is hot-pluggable. There is no need to turn the power OFF.

1. Remove the board cover.
2. Disconnect the cables from the DICO card
3. Exchange the card.
   Use the dummy card (PN 2733278) to secure the DICO card in place. Refer to Figure 4-58.
4. Connect the cables to the DICO card.

   Important

   If you have some difficulties to plug the cables on top of the DICO card, do the following:

   1. Unplug the DICO card from the board.
   2. Plug the cables on the DICO card.
   3. Plug the DICO card again into the board.
5. Replace the board cover.
6. Run the same diagnostics you ran before exchanging the FRU. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

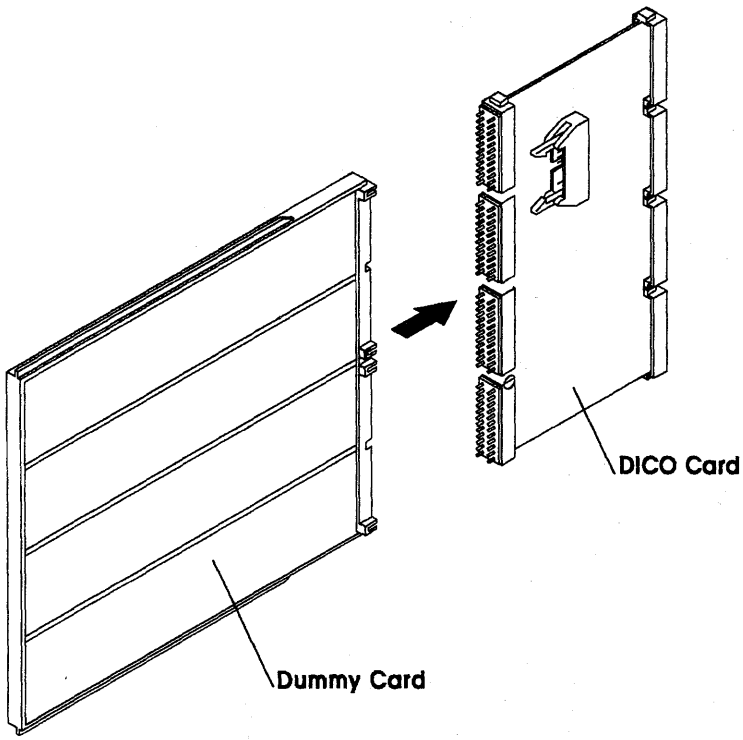


Figure 4-58. Installing DICO Card Using a Dummy Card. Ensure that the dummy card pushes on the middle of the row of pins.

PTER Exchange Procedure

For PTER location refer to Table 4-26.

Table 4-26. PTER Location in Frame	
Frame Number	**Location**
01	01M
02	02D 02G
03	03G
04	04J 04H
05	05J 05H
06	06J 06H

The six power buses on which the power terminators are mounted are located at each frame on the raceway. Refer to Figure 4-2 on page 4-5, Figure 4-3 on page 4-7, Figure 4-4 on page 4-8, Figure 4-5 on page 4-9, Figure 4-6 on page 4-10, and Figure 4-7 on page 4-11.

Figure 4-59 shows the PTER for frame 01.

PTERs are always fitted at the uppermost part of the bus.

The power terminators are hot-pluggable. There is no need to power OFF.

1. Locate the terminator you wish to exchange (see Table 4-26).

   Prior to exchanging the power terminator card, perform the following action:

2. Set the power control to **local** as follows:
   - Press **Power Control** until **3** is displayed in the power control window.
   - Press **Validate**.

   The procedure is the same as that of the power bus test.

3. Set the service mode to **Maintenance 1** as follows:
4. Press **Service Mode** on the control panel until **1** is displayed in the service window..
5. Press **Validate**.
6. Press **Function** on the control panel until **C** is displayed in the service window..
7. Press **Validate**.
8. Select the bus on which the failing PTER is fitted (D to H), from theb power bus test.
9. Press **Validate**.
10. Locate and remove the power bus terminator card.
11. Fit the new power bus terminator card.
12. Press **Exit**.
13. Press **Validate**.
14. Check that the new terminator card is good. Go to "How to Run the Power Control Bus Test" on page 3-25.

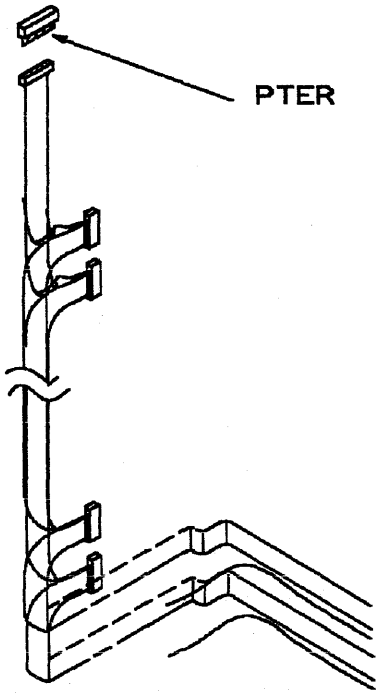


Figure 4-59. Power Terminator (Frame 01 Represented)

STER Exchange Procedure

For physical FRU locations, refer to Figure 4-2 on page 4-5 and Figure 4-10 on page 4-14 for Models 21x or 41x, or Figure 4-11 on page 4-15 for Models 31x or 61x.

Attention: Do not remove more than one card at a time. The air flow would not be powerful enough to cool the other cards properly.

The STER is hot pluggable. There is no need to turn the power OFF.

1. Remove the board cover by loosening the screws.
2. Remove the cover above the common area (if any) by loosening the two screws.
3. Remove the card as follows:
   a. Using both hands, release levers A and B simultaneously by moving them upwards and outwards to their fullest extent. Refer to Figure 4-60.
   b. Gently press in catches C and D. Draw the card assembly out of the board (catches can be released after initial withdrawal).
4. Replace the card as follows:
   a. **Open the card handle by gently pressing in catches C and D and pulling the handle.**
   b. Ensure that the levers A and B are still open to their fullest extent.
   c. **Insert the card into the slot and allow it to seat under its own weight ensuring that it has reached the end of the slot.**

      Ensure that the card is placed so that the card label is towards the corresponding board label.
   d. Press in catches C and D and push the handle until it locks in the closed position (catches can be released after initial motion).
   e. Using both hands, release levers A and B simultaneously by moving them downwards and inwards.

   Note: In order to improve contact, maneuver the card seating levers three times.
5. Replace the cover above the common area.
6. Replace the board cover.
7. Run the same diagnostics you ran before exchanging the FRU. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

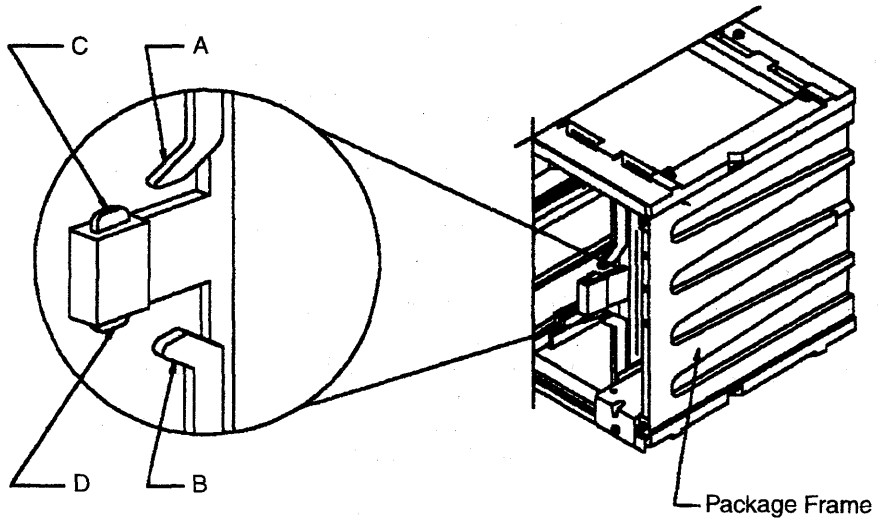


Figure 4-60. Card Clamp Mechanism

Storage and Controls Exchange Procedure

For physical FRU locations, refer to Figure 4-2 on page 4-5 and Figure 4-10 on page 4-14 for Models 21x or 41x, or Figure 4-11 on page 4-15 for Models 31x or 61x.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.

   b. Type **1** to select the base frame power services.

   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, type **dxx** (where xx= affected power supply id).

   Attention: Do not remove more than one card at a time. The air flow would not be powerful enough to cool the other cards properly.
4. **Attention: Use the ESD kit and procedures.**.
5. Remove the board cover by loosening the screws.
6. Remove the card as follows:
   a. Using both hands, release levers A and B simultaneously by moving them upwards and outwards to their fullest extent. Refer to Figure 4-60 on page 4-87.

   b. Gently press in catches C and D. Draw the card assembly out of the board (catches can be released after initial withdrawal).
7. Replace the card as follows:
   a. **Open the card handle by gently pressing in catches C and D and pulling the handle.**

   b. Ensure that the levers A and B are still open to their fullest extent.

   c. **Insert the card into the slot and allow it to seat under its own weight, ensuring that it has reached the end of the slot.**

      Ensure that the card is placed so that the card label is towards the corresponding board label.

   d. Press in catches C and D and push the handle until it locks in the closed position (catches can be released after initial motion).

   e. Using both hands, release levers A and B simultaneously by moving them downwards and inwards.

   Note: In order to improve contact, maneuver the card seating levers three times.
8. Replace the board cover.
9. Turn the power supply ON by using the power menus as follows:
   a. Type **POS** on any displayed screen selection area. The power services menu is displayed.

   b. Type **1** to call the base frame power services.

   c. Type **u02** or **u03** depending on the power id to be turned ON.
10. Run the CCU diagnostics for any of the replaced cards.
11. Run IOC diagnostics for IOSW card or HPTSS diagnostics for DMSW card. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1), and follow 'How to Run Internal Function Tests'. Go to "Repair Verification Procedure" on page 4-178.

Air Filters Exchange Procedure

Notes:

1. When the CE is called to exchange a filter he must exchange all the filters on the 3745 and the 3746-900.
2. The CE must take advantage of this intervention to check the battery voltage and to exchange it if necessary (minimum 2.75 V).

Gate Filters for All Models: No special procedure is needed to exchange the filters located at the bottom of the following gates:

- Frame 01
- Frame 02
- Frame 03

1. Open the front cover of the frames 1-3 and rear cover of the frames 2 and 3.
2. Open the internal black cover if any.
3. Exchange the filter. Follow the arrow direction.
4. Close the covers.

For 3746-900 Frame:

Refer to *IBM 3746 Nways Multiprotocol Controller Model 900 Service Guide*, SY33-2116.

Air Moving Device Filters for Models 21x and 41x: The 3745 will automatically send an alert to the operator console when the filters must be changed.

Perform the following Steps to remove the air filter unit:

1. Referring to Figure 4-61:
   - Open the left front cover of frame 01.
   - Remove the internal black cover by unscrewing the four screws.
2. Referring to Figure 4-62:
   - Locate the air filters for CCU A and CCU B **A** .
3. Referring to Figure 4-63 on page 4-90:
   - Unlock the air filter retaining screw **A** .
   - Remove the air filter **B** .
   - Put the new air filter in and tighten the screw.
4. Close the covers.

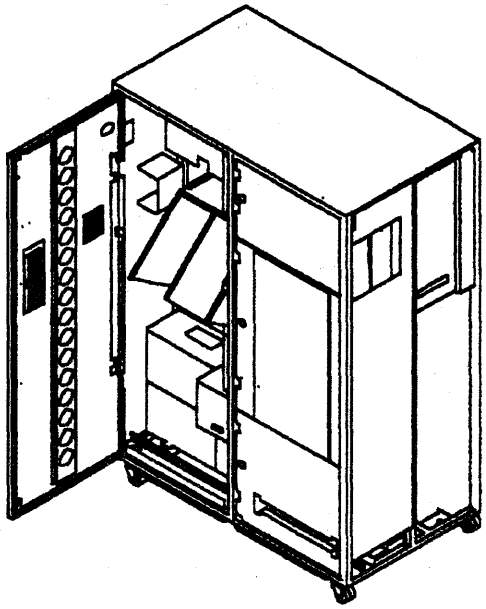


Figure 4-61. Frame 01 Internal Access

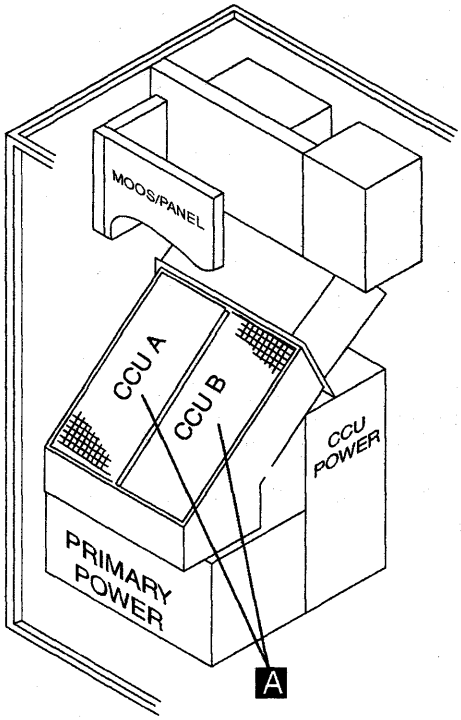


Figure 4-62. AMD Filter Location

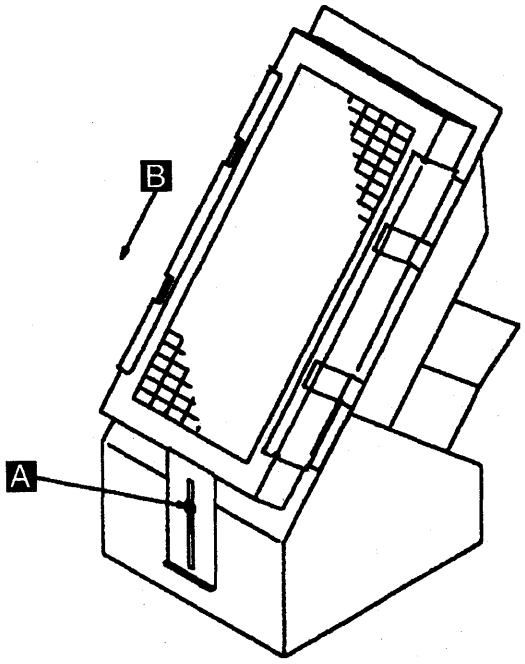


Figure 4-63. Filter Removal

Reporting: To update the air filters exchange record as follows:

- Using the 3745 console type **POS** on any displayed screen selection area.
- The power services menu is displayed.

  If a MOSS console function is in process, press **F1** to terminate it.

Referring to Figure 4-66 on page 4-92 and Figure 4-67 on page 4-92:

- Select option **A**
- Select option **F** to acknowledge the change.
- Confirm the change (**Y/N**).

  A successful command message appears.

  If you have exchanged the air filters after a HDD replacement, go to "Repair Verification Procedure" on page 4-178.

  If not: Go to "CE Leaving Procedure" on page 4-180.

Air Moving Device Filter for Models 31x and 61x

Note: We advise you to take advantage of this intervention to check the battery voltage and to exchange it if necessary.

The 3745 will automatically send an alert to the operator console when the filter must be changed.

1. Open the left front door of frame 01 (base frame).
2. Locate the front air moving device filter. Refer to Figure 4-64.
3. Loosen the screw which maintains the bracket 1. Push the bracket down. You can now remove the air filter by sliding it down.
4. Insert the new air filter. Ensure that the arrow on the side of the filter is positionned **downward**.
5. Slide the bracket up then tighten the screw.
6. Close the front door.

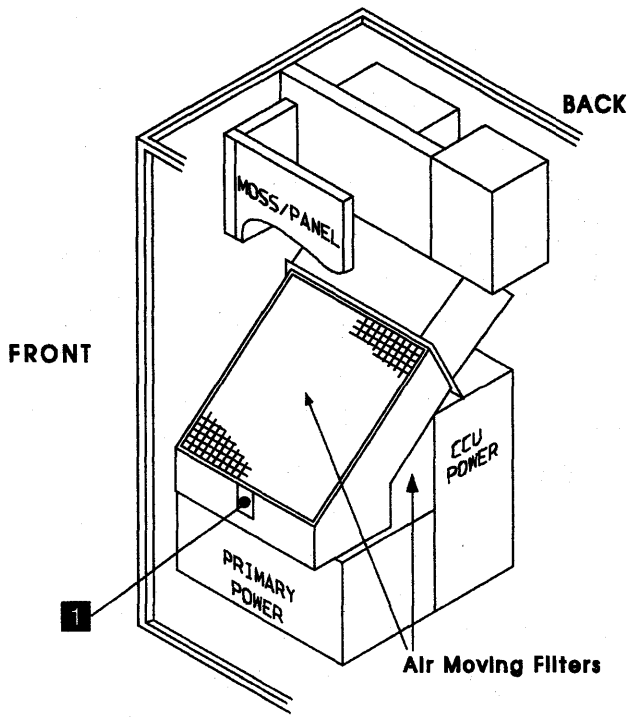


Figure 4-64. Air Filter locations

7. Open the back doors of frame 01 (base frame).
8. Locate the back air moving device filter **2**. Refer to Figure 4-64 on page 4-90 and Figure 4-65.
9. Loosen the screw which maintains the bracket **3**, then remove it.
10. Extract the air filter through the cables pushing the righthand cable **4** towards the frame and pulling the lefthand cable **4** towards yourself.
11. Insert the new air filter. Ensure that the arrow on the side of the filter is positioned **upward**.
12. Reinstall the bracket, then tighten the screw.
13. Close the back doors.

Reporting: Now you have to Update the air filter exchange record as follows:

- Using the 3745 console, type **POS** on any displayed screen selection area.

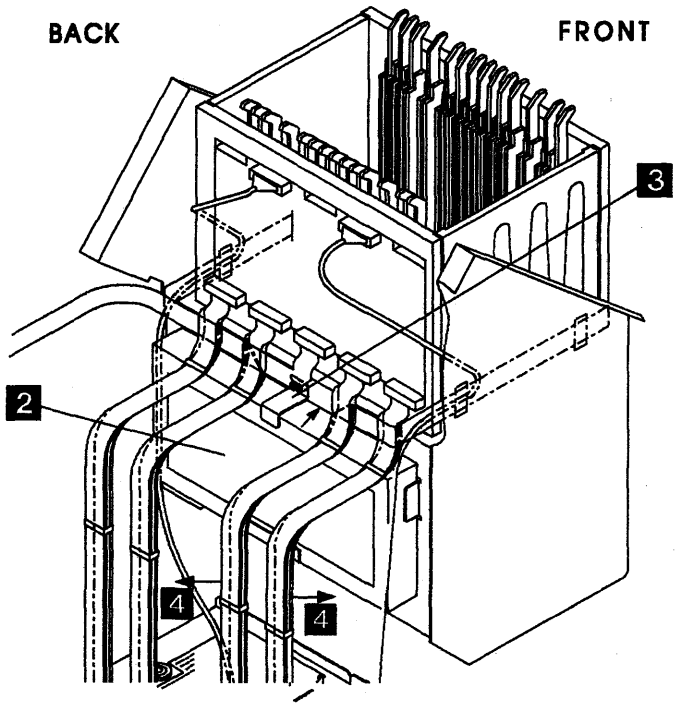


Figure 4-65. Back Air Filter Location

- The power services menu is displayed.

  If a MOSS console function is in process, press **F1** to terminate.

Referring to Figure 4-66 on page 4-92 and Figure 4-67 on page 4-92:

- Select option **A**
- Select option **F** to acknowledge the change.
- Confirm the change (**Y/N**).

  A successful command message will appear.

  If the air filters were exchanged after an HDD replacement, go to "Repair Verification Procedure" on page 4-178.

  If not: go to "CE Leaving Procedure" on page 4-180.

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCA-A           PROCESS MOSS-ALONE
RESET      BYP-IOC-CHK STOP-CCU-CHK

CCU-B           PROCESS MOSS-ALONE          X71:0A0800
RUN        BYP-IOC-CHK STOP-CCU-CHK         X72:0BC800
------------------------------------------------------------- 03/01/87 01:2
FUNCTION ON SCREEN: POWER SERVICES

- SELECT ONE OPTION (1 TO 6,C,A OR D), THEN PRESS ENTER  ==>

   1 = DISPLAY 3745                          4 = DISPLAY 3746 L13
   2 = DISPLAY 3746 A11                      5 = DISPLAY 3746 L14
   3 = DISPLAY 3746 A12                      6 = DISPLAY 3746 L15

          C = RE-CREATE POWER CONFIGURATION TABLE
          A = AIR FILTERS/BATTERY CHANGE ACKNOWLEDGE
          D = DISPLAY AIR FLOW DETECTORS STATUSES


===>

F1:END  F2:MENU2  F3:ALARM                F6:QUIT
```

Figure 4-66. Power Services Screen

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCA-A           PROCESS MOSS-ALONE
RESET      BYP-IOC-CHK STOP-CCU-CHK

CCU-B           PROCESS MOSS-ALONE          X71:0A0800
RUN        BYP-IOC-CHK STOP-CCU-CHK         X72:0BC800
------------------------------------------------------------- 03/01/87 01:2
FUNCTION ON SCREEN: POWER SERVICES

                 AIR FILTERS/BATTERY CHANGE ACKNOWLEDGE

- SELECT ONE OPTION (F,B), THEN PRESS ENTER  ==>

F = ACKNOWLEDGE AIR FILTERS CHANGE

B = ACKNOWLEDGE BATTERY CHANGE

CONFIRM BATTERY CHANGE (Y/N) ==>


===>

F1:END  F2:MENU2  F3:ALARM                F6:QUIT
```

Figure 4-67. Acknowledge Screen

Air Moving Device Exchange Procedure for Models 21x and 41x

The following procedures concern the removal and installation of the air moving device (AMD).

This procedure is valid for both CCUs.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Type **'POS'** on any displayed screen selection area.

      The power services menu is displayed.

   b. Type **1** to select the base frame power services.

   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, type **dxx**

      CCU A xx=02
      CCU B xx=03.

Air Moving Device Removal

1. Referring to Figure 4-68:
   - Open the left front cover of frame 01.
   - Remove the upper internal black covers by unscrewing the four screws.
2. Referring to Figure 4-69:
   - Locate the failing AMD given by either the reference code or the FRU list **A**
   - Unplug the power cord **B** of the CCU air moving device.

     Attention: Do not switch the nearby CPs OFF.

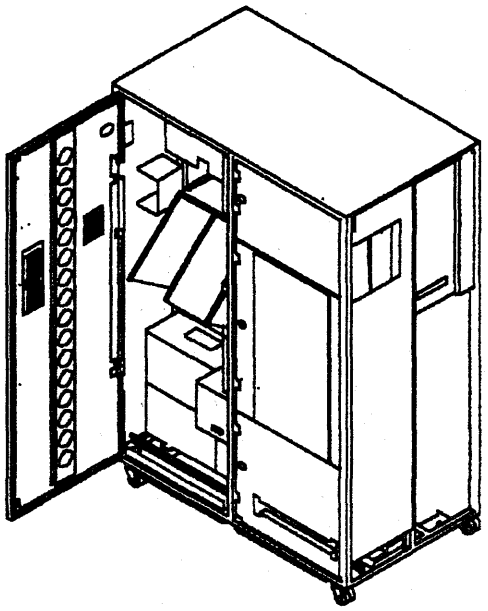


Figure 4-68. Frame 01 Internal Access

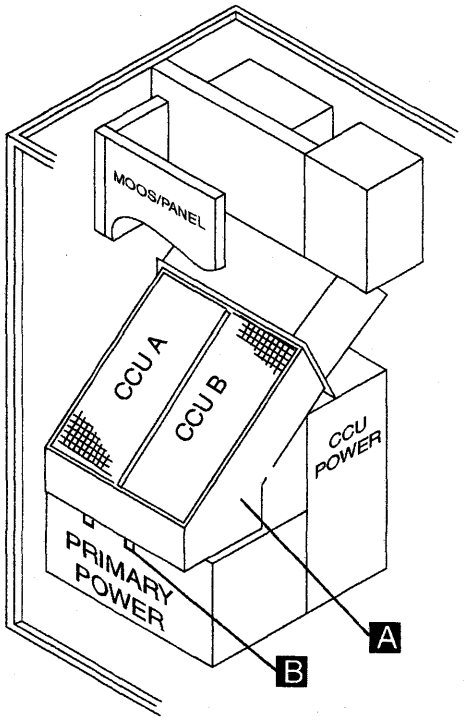


Figure 4-69. Air Moving Device Location

3. Referring to Figure 4-70:
   - Remove the four mounting screws **A** of the air moving device unit.
   - To remove the air moving device, swing out the bottom of the unit and lift out **B**.

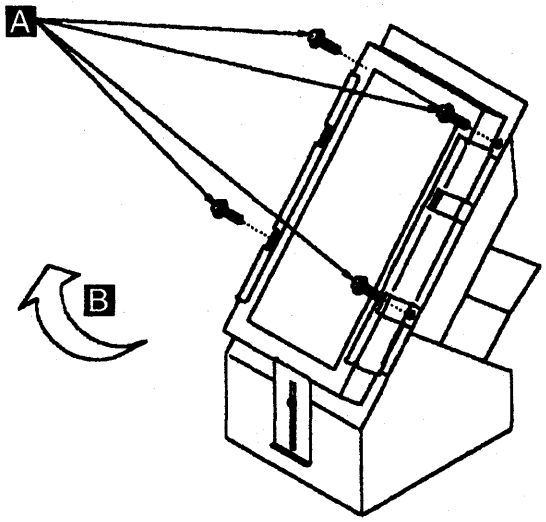


Figure 4-70. Air Moving Device Removal

Air Moving Device Installation:

Note: Inspect the air filter. Do not hesitate to exchange it if dirty. Also, update the exchange record. Refer to "Air Filters Exchange Procedure" on page 4-89.

To replace the air moving device assembly, perform the removal procedure in the reverse order.

Then:

1. Using the 3745 console, turn the affected power supply ON as follows:
   - Type **POS** on any displayed screen selection area.

     The power services menu is displayed.

   - Select option **1**
   - Type **uxx** to turn the power supply ON.
     CCU A xx=02
     CCU B xx=03.
2. Go to "Repair Verification Procedure" on page 4-178.

Air Moving Device Exchange Procedure for Models 31x and 61x

The following procedure concerns the removal and the installation of the air moving device (AMD).

This procedure is valid for both CCUs.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until (**3**) is displayed in the power control window.
2. Press **Validate**.
3. Remove the power as follow:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.

   b. Type **1** to select the base frame power services.

   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, type **dxx**
      CCU A xx=02
      CCU B xx=03.

Air Moving Device Removal

1. Open the left front door of frame 01 (base frame).
2. Locate the air moving devices. Refer to Figure 4-71.

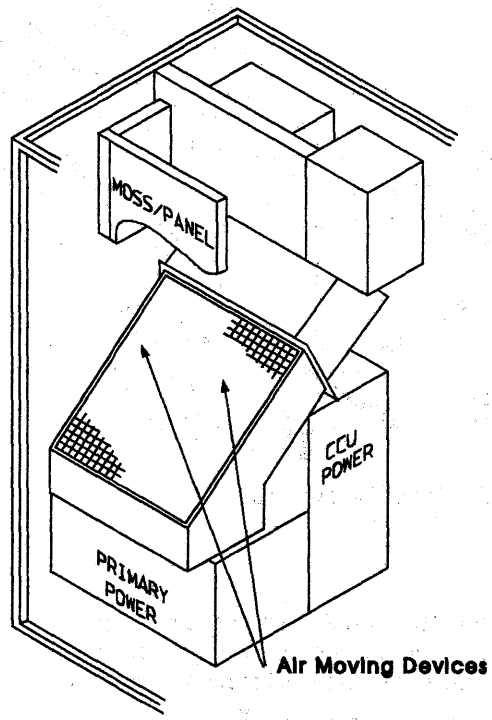


Figure 4-71. Air Moving Devices Location

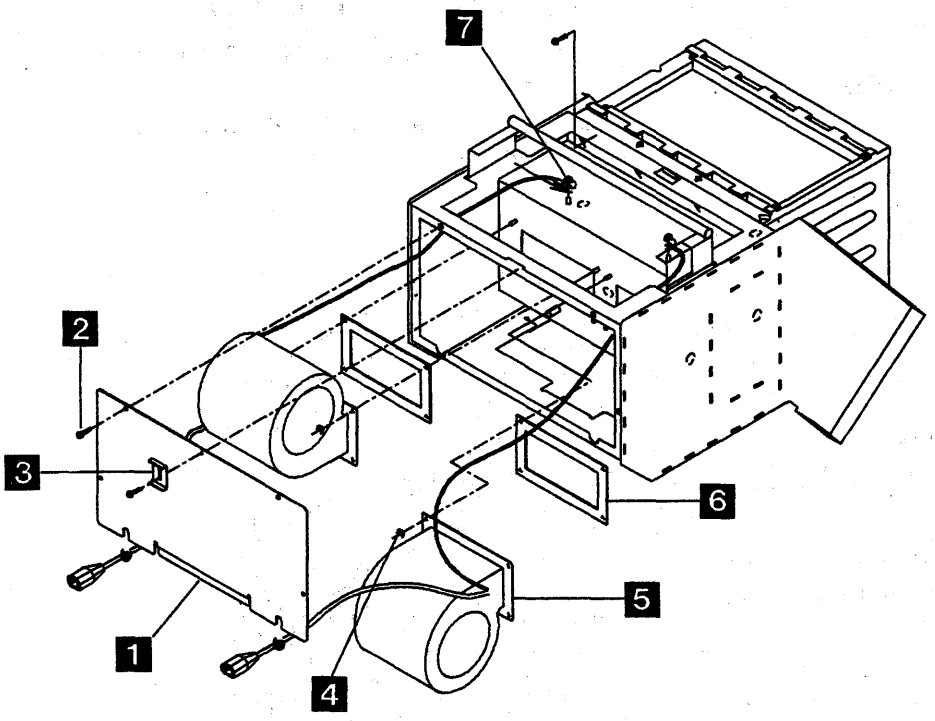


Figure 4-72. Air Moving Devices Removal

3. Refer to Figure 4-72. Remove the screw which maintains the bracket 3. You can now remove the upper filter by sliding it down.
4. Remove the four screws 2 which maintain the plate 1. Remove the plate.
5. Locate the failing air moving device given by either the reference code or the FRU list. The air moving device for CCU A is on the left.
6. Disconnect the power plug related to the failing air moving device.
7. Disconnect the ground wire related to the failing air moving device 7.
8. Remove the four nuts 4 which maintain the failing air moving device unit. Remove this unit.
9. Remove the related pad 6.

Air Moving Device Installation: **Note:** Inspect the air filter. Do not hesitate to exchange it if dirty. Also update the exchange record. Refer to "Air Moving Device Filter for Models 31x and 61x" on page 4-90.

To replace the air moving device unit, perform the removal procedure in the reverse order. (If you can not achieve to reinstall the four nuts which maintain the air moving device, note that three nuts may be considered sufficient).

1. Using the 3745 console, turn the affected power supply ON as follows:
   a. Type **POS** on any displayed screen selection area.

      The services menu is displayed.

   b. Select option **1**
   c. Type **uxx** to turn the power supply ON.
      CCU A xx=02
      CCU B xx=03.
2. Go to "Repair Verification Procedure" on page 4-178.

Battery Exchange Procedure

It is the CEs responsibility to exchange the battery.

The 3745 will automatically send an alert to the operator console when there is a need to exchange the battery.

Perform the following Steps to remove the battery:

1. Referring to Figure 4-73:
   - Open the left front cover of frame 01.
   - Locate the battery at the bottom of the control panel **A**

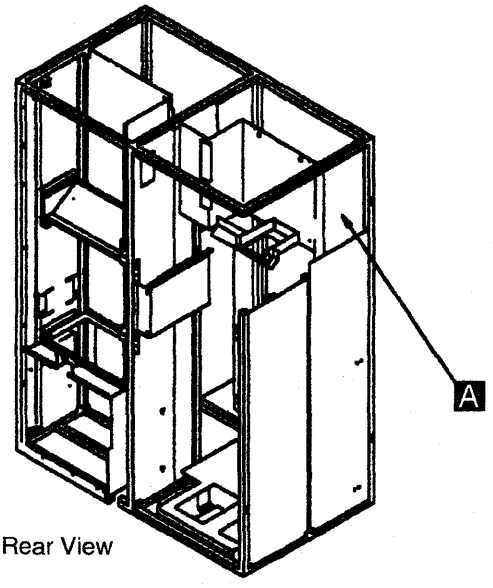


Figure 4-73. Battery Location

2. Referring to Figure 4-74:
   - Unclip the battery **A**
   - Unplug the battery plug **B**
   - Replace the new battery and reconnect the plug.

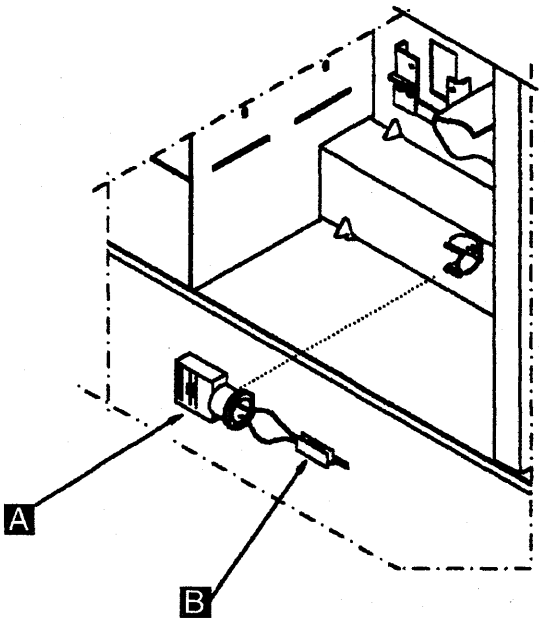


Figure 4-74. Battery Removal

3. Close the covers.
4. Battery disposal must be performed according to the instructions on the battery case.

Reporting: Update the battery exchange record as follows:

- Using the 3745 console, type **POS** on any displayed screen selection area.
- The power services menu is displayed. If a MOSS console function in process, press **F1** to terminate.

Referring to Figure 4-75 on page 4-98 and Figure 4-76 on page 4-98:

- Select option **C** = re-create power configuration table.
- Select option **A** = air filter/battery.
- Select option **B** = acknowledge battery.
- Confirm the exchange (**Y/N**).

A successful command message appears.

Check the time and date. If not correct use the **TIM** function to change it.

Go to "CE Leaving Procedure" on page 4-180.

Note: To reset the code 007 displayed on the 3745 control panel, a MOSS IML (function 1) should be performed.

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCA-A           PROCESS MOSS-ALONE
RESET      BYP-IOC-CHK STOP-CCU-CHK

CCU-B           PROCESS MOSS-ALONE          X71:0A0800
RUN        BYP-IOC-CHK STOP-CCU-CHK         X72:0BC800
------------------------------------------------------------- 03/01/87 01:2
FUNCTION ON SCREEN: POWER SERVICES

- SELECT ONE OPTION (1 TO 6,C,A OR D), THEN PRESS ENTER  ==>

   1 = DISPLAY 3745                            4 = DISPLAY 3746 L13
   2 = DISPLAY 3746 A11                        5 = DISPLAY 3746 L14
   3 = DISPLAY 3746 A12                        6 = DISPLAY 3746 L15

          C = RE-CREATE POWER CONFIGURATION TABLE
          A = AIR FILTERS/BATTERY CHANGE ACKNOWLEDGE
          D = DISPLAY AIR FLOW DETECTORS STATUSES


===>

F1:END  F2:MENU2  F3:ALARM                F6:QUIT
```

Figure 4-75. Power Services Screen

```
CUSTOMER ID:                              3745-xxx          SERIAL NUMBER:
CCA-A           PROCESS MOSS-ALONE
RESET      BYP-IOC-CHK STOP-CCU-CHK

CCU-B           PROCESS MOSS-ALONE          X71:0A0800
RUN        BYP-IOC-CHK STOP-CCU-CHK         X72:0BC800
------------------------------------------------------------- 03/01/87 01:2
FUNCTION ON SCREEN: POWER SERVICES

                  AIR FILTERS/BATTERY CHANGE ACKNOWLEDGE

- SELECT ONE OPTION (F,B), THEN PRESS ENTER  ==>

F = ACKNOWLEDGE AIR FILTERS CHANGE

B = ACKNOWLEDGE BATTERY CHANGE

CONFIRM BATTERY CHANGE (Y/N) ==>


===>

F1:END  F2:MENU2  F3:ALARM                F6:QUIT
```

Figure 4-76. Acknowledge Screen

MOSS Blower Exchange Procedure

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Press **Service** until **1** is displayed.
4. Press **Validate**.
5. Remove the power as follows:
   - Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
   - Press **Validate**.
   - Observe the MOSS inoperative display on the control panel. At completion of power OFF, it will display the character **B**.

MOSS Blower Assembly Removal

1. Referring to Figure 4-77:
   - Open the left front cover of frame 01.
   - Remove the upper internal black covers by unscrewing the four screws.
   - Locate the blower below the MOSS board at 01A-Z0.

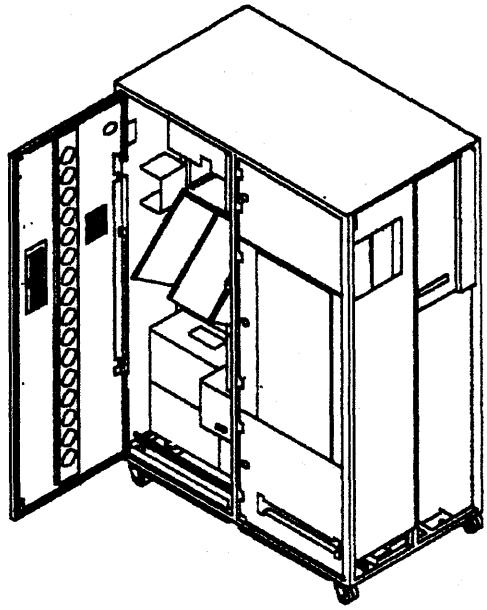


Figure 4-77. Frame 01 Internal Access

2. Referring to Figure 4-78:
   - Unplug the connector **A** from the front.
   - At the rear side of the 3745, open the right cover of frame 01.
   - Unplug the connector **B** 01A-W0C4.
   - Unlock the two retaining screws **C**.
   - Slide the assembly out of the machine **D**.

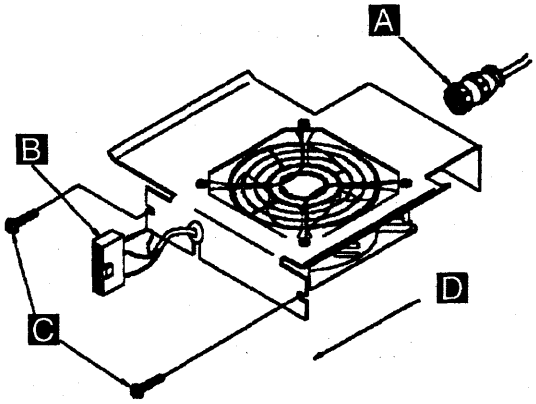


Figure 4-78. Blower Assembly Removal

MOSS Blower Assembly Installation:

To replace the MOSS blower assembly, perform the preceding procedure in reverse order. Then:

1. Turn the MOSS ON. Proceed as follows:
   - Using the **Function** key, scroll till the value is **1** (MOSS IML).
   - Press **Validate**.

     Note: This action will also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.
2. Go to "Repair Verification Procedure" on page 4-178.

TCM Exchange Procedure

The following procedures concern the removal and installation of FRUs that pertain to the Thermal Conduction Modules (TCM) and TCM cables.

This procedure is valid for both CCUs.

Attention: The TCM is susceptible to mechanical shock damage. Carefully observe handling instructions and keep the TCM in its shipping container whenever it is not in the machine.

Required Tools and Preliminary Procedures

Required Tools

The following tools are required to service the TCM area of the CCU.

- TCM tool kit PN 69x7667

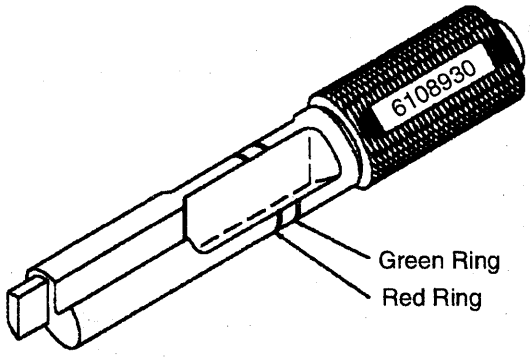
This tool kit contains the following tools:

- TCM Tool case PN 69x7668
- TCM Label kit, (inside the case) PN 69x7669
- Clip-on TCM cover (COTC) PN 7331541[1]
- TCM handle PN 7331537[1]
- TCM actuation tool PN 5665908
- TCM cam gauge PN 6108930
- Module pin aligner (2) PN 2360424
- Module Pin Template PN 4447370
- Hex drive torque tool (red) PN 2360092
- Hex drive torque tool (blue) PN 4134750
- 1/4 ratchet PN 1808111

- ESD kit PN 6428316
- Signal cable unlatch tool PN 2360349

An [1]indicates that this tools is also shipped in container with each new TCM.

TCM Cam Gauge (PN 6108930): The TCM cam gauge checks that the TCM is cammed into position correctly after the TCM is installed (using the TCM actuating tool).



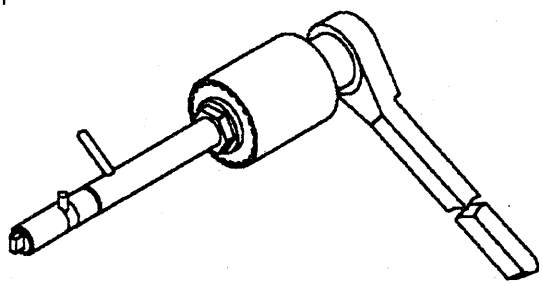
TCM Actuation Tool (PN 5665909): This tool is used to put the TCM in a cammed position (installation) or in an uncammed position (removal).

The depth indicator ring indicates if the tool is properly inserted.

If the tool is fully inserted; the ring is no longer visible.

The detent pin must be set to the **R** position for removal and to the **I** position to install the TCM.

The indicator pin, points to the **3 o'clock** position if the TCM is in the cammed position and to the **7 o'clock** position if the TCM is in the uncammed position.



Module Pin Aligner (PN 2360424): Pins may bent on a module so that it cannot be installed properly without causing severe damage to the system.

To ensure against this potential damage, the pin alignment of a module must be checked before installation.

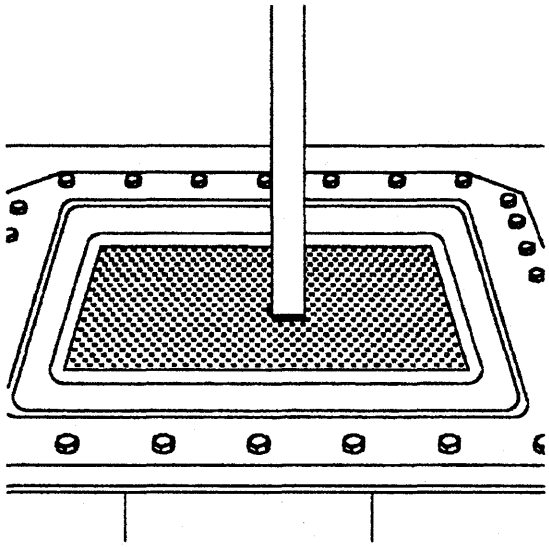
A visual inspection must be made by sighting down the row of pins.

Any pins out of alignment should be checked using the multiple end of the tool to ensure alignment.

The module pin aligner tool should be used only if PINS ARE BENT.

One end of the tool is for straightening a single pin, while the other end is used to verify that a bent pin is straightened correctly, in relation to the surrounding pins.

After bent pins have been straightened, use the module pin template to verify the alignment of all of the module pins.



Module Pin Template (PN 4447370):

This tool is provided to check the alignment of the TCM connector pins.

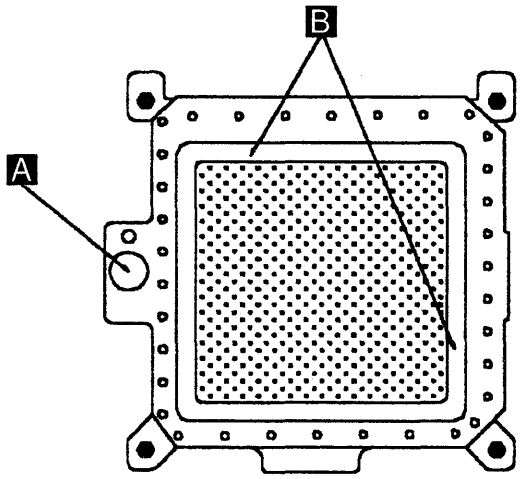
Use the template with in both hands with the part number visible.

Align the template so that the large hole in the template coincides with the cam hole in the TCM **A**.

Carefully align the gauge with the guide pins on the TCM base plate.

A slight downward pressure on each end of the pin gauge **B** should cause the template to fit easily.

If it does not fit properly, use the module pin aligner to straighten the bent pins.

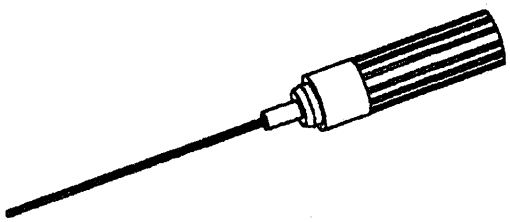


Torque Tool (PN 2360092): This tool is used to operate the screws that hold the TCM module, heat-sink, and module guide.

It is a hand-operated tool with a preset torque setting when turned in a clockwise direction.

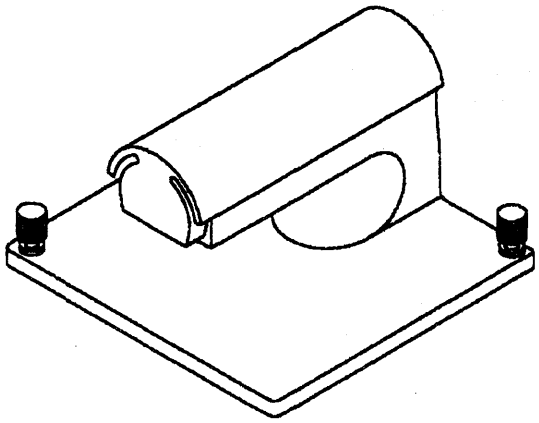
Torque control is needed to prevent damage to the screw threads and inserts. When removing screws always ensure that the tip is fully seated in the socket head screw.

The tool has a positive drive in the counterclockwise direction.



TCM Handle (PN 7331537): This handle is part of the shipping container.

When removing a TCM module, this handle must be mounted right after the heat-sink is removed.



Clip-On TCM (COTC) Cover (PN 7331541): This cover is normally used when the module is returned to the manufacturing plant.

It should also be used if the module is removed for any other reason, to protect the pins from being bent.

Handling ESD-Sensitive TCM FRUs

The 3745 CCUs use parts that are known to be sensitive to electrostatic discharge (ESD).

To prevent damage to ESD-sensitive parts, observe the following procedures.

Perform these procedures in addition to all the usual precautions, such as powering OFF the unit before removing TCMs.

- Keep the ESD-sensitive part in its original shipping container until the part is ready to be installed in the machine.
- Make as few body movements as possible to prevent an increase of static electricity in clothing, carpet, and furniture fabric.
- Before touching the ESD-sensitive part, connect the ESD kit (PN 6428316) as follows:

  Place the wristband around your wrist and attach the wristband to the snap-on clip at the end of the ESD cable.

  Attach the alligator clip on the other end of the ESD cable to a ground strap on the machine frame.
- Hold the ESD-sensitive part by the edge or the connector shroud (cover); **Do not touch the pins** If a pluggable module is being removed, use the correct module.
- Do not place the ESD-sensitive part on the machine cover or on a metal table. If the ESD-sensitive part must be put down for any reason, first place it in its special protective container.

  Machine covers and metal tables are electrical grounds.

  They increase the risk of damage because they provide a discharge path from the human body through the ESD-sensitive part.

  Large metal objects can provide discharge paths without being grounded.
- Prevent ESD-sensitive parts from being accidentally touched by other customer engineers (CEs) or customers.

  Re-install the cover on the machine while the machine is not being serviced, and do not place unprotected ESD-sensitive parts on a table.
- If possible, keep all ESD-sensitive parts in a grounded metal cabinet or case.
- Be especially careful in working with ESD-sensitives parts when cold weather heating is used; low humidity increases static electricity.

TCM Removal and Replacement Procedure

Connect the ESD kit:

- Place the wristband around your wrist and attach the wristband to the snap-on clip at the end of the ESD cable.
- Attach the alligator clip on the other end of the ESD cable to a ground strap on the machine frame, for example grounding strap close to the frame lock.
- Attach the center connector of the ESD cable to the conductive mat.

TCM Removal: Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove power as follows:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.

   b. Type **1** to select the base frame power services.

   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, type **dxx**

      CCU A xx=02

      CCU B xx=03.
4. Referring to Figure 4-79:
   - Open the left front cover of frame 01.
   - Remove the internal black cover by unscrewing the 4 screws.

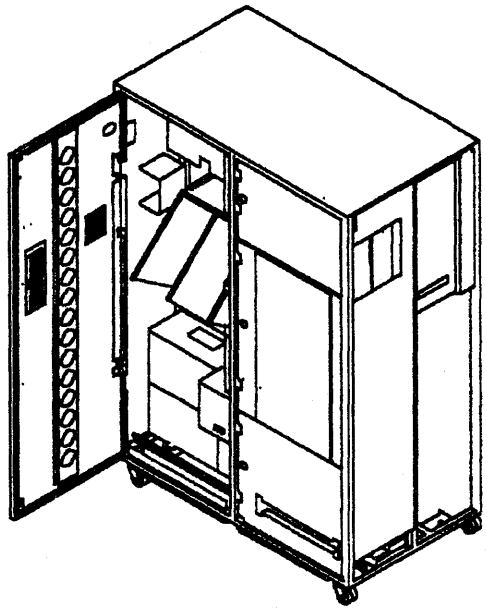


Figure 4-79. Frame 01 Internal Access

5. Referring to Figure 4-80:
   - Locate the failing CCU unit given by either the reference code or the FRU list **A**.
   - Unplug the power cord of the CCU air moving device **B**.

     J1 for CCU A
     J2 for CCU B.

     Attention: Do not switch the nearby CPs OFF.

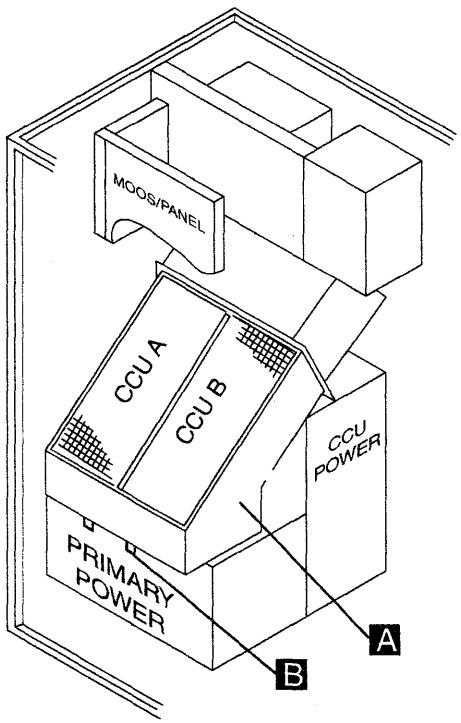


Figure 4-80. AMD Location

6. Referring to Figure 4-81:
   - Remove the four mounting screws A
   - To remove the air moving device, swing up the bottom of the unit and lift out B.

     Move the AMD to a safe place for a later reuse.

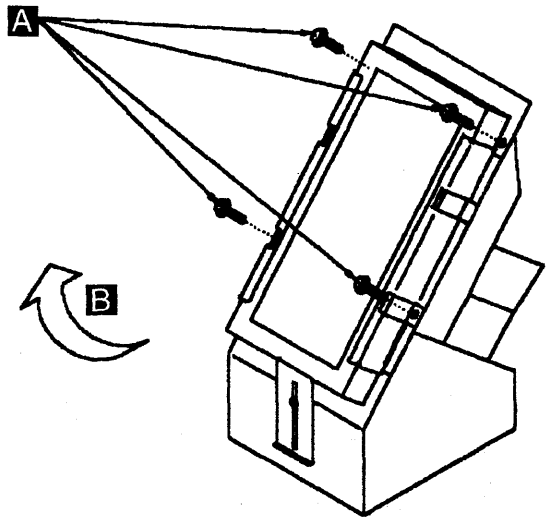


Figure 4-81. Air Moving Device Removal

7. Referring to Figure 4-82:
   - Use the torque tool (PN 2360092) to loosen the nine screws which hold the TCM heat sink A
   - **Carefully remove the heat sink** B

     Carefully put it in a safe area, placing the TCM face up (for a later reuse).

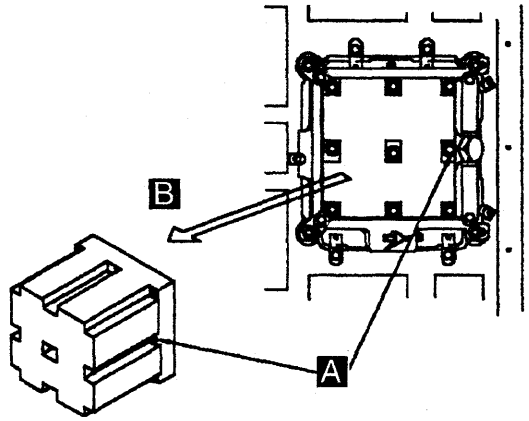


Figure 4-82. Heat Sink Removal

8. Referring to Figure 4-83:
   - Attach the TCM handle to the surface of the TCM A.
   - Tighten the two thumbscrews securely B.

     Note: The handle is part of the TCM shipping container. You may have to remove the handle from the new TCM.

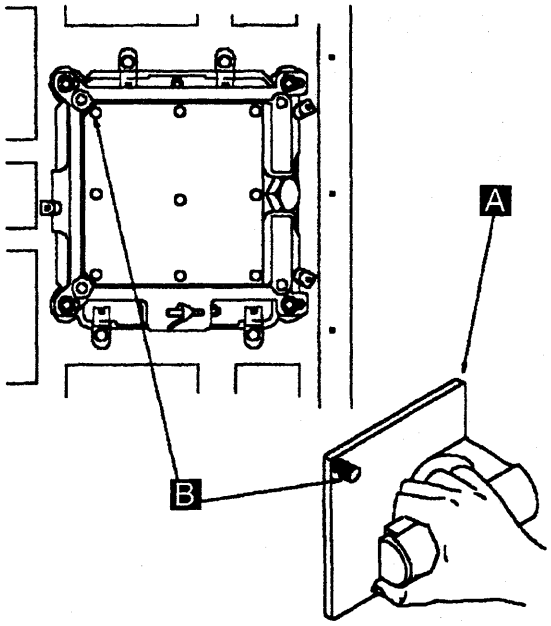


Figure 4-83. TCM Handle Attachment

9. Referring to Figure 4-84 on page 4-106:
   - Use the torque tool (PN 2360092) to loosen the four TCM retaining screws completely A.

     Note: The TCM retaining screws are captive screws. Ensure that they are unscrewed completely and are free of the tapped holes in the board stiffener.

     These screws must be loosened completely to allow the cam guard to slide to the left side.

     This permits the TCM actuation tool to be inserted to release the TCM.

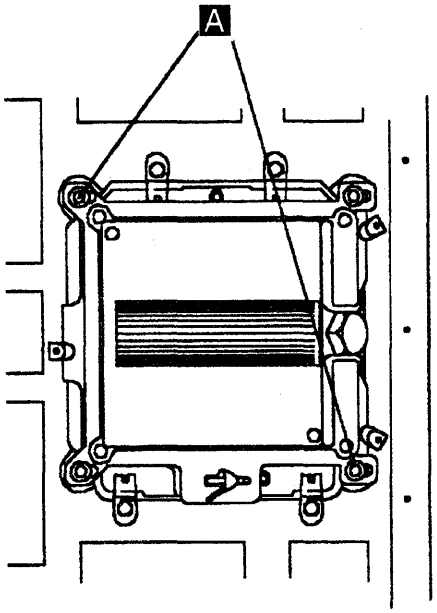


Figure 4-84. TCM Retaining Screws

10. Use the TCM actuation tool (PN 5665909) to remove the TCM.

    Perform the following Steps:

    - Before using the TCM actuation tool, ensure that the detent pin in the tool is in the **Removal position** R (as shown Figure 4-85).

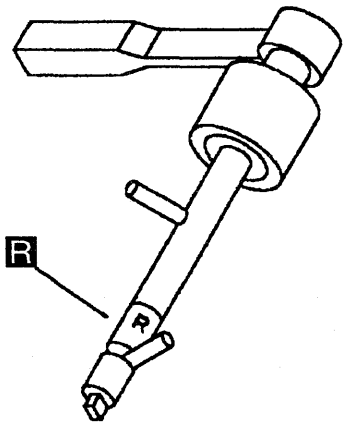


Figure 4-85. Actuation Tool (TCM Removal)

    - Set the lever on the ratchet handle to drive in a counterclockwise direction.
    - On the TCM, slide the cam guard to its left side limit.

      Insert the tip of the TCM actuation tool into the module with its indicator pin pointing to the cammed (9 o'clock) position as shown in Figure 4-86.

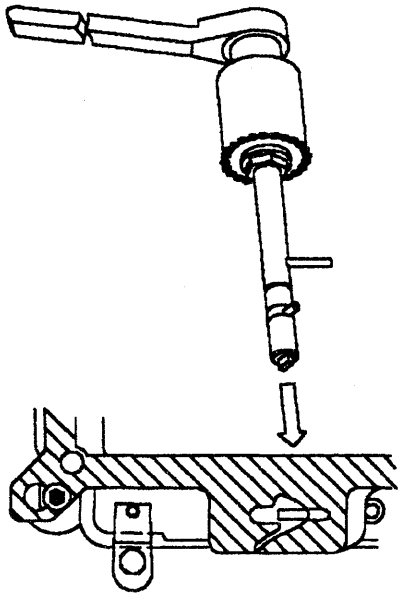


Figure 4-86. Actuation Tool Usage

    - Ensure that the TCM actuation tool is fully inserted until the red ring is no longer visible.

      Attention: When turning the TCM actuation tool, avoid exerting any side force on the tool.

      If the TCM actuation tool is not fully inserted, turning the actuation tool may damage the cam guard.
    - Place both hands on the actuation tool and turn the actuation tool slowly counterclockwise from the cammed position to the uncammed position.

      Continue to turn the actuation tool counterclockwise until the slip clutch is activated. This assures that the TCM is uncammed completely as shown in Figure 4-87 on page 4-107.

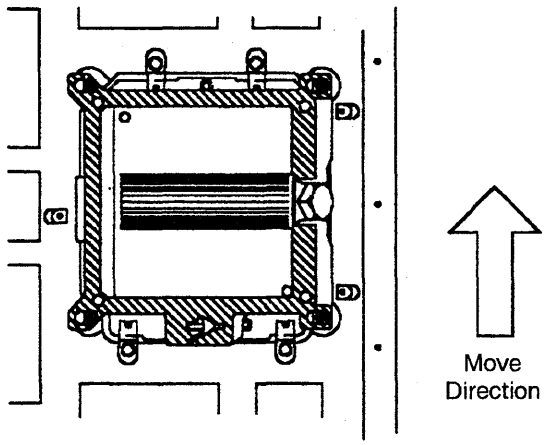


Figure 4-87. TCM Uncammed Position

Remove the TCM actuation tool.

Attention: Keep one hand firmly on the TCM handle to hold it in position until after the next operation is completed.

11. Referring to Figure 4-88:
    - Grasp and unlatch the three spring clip retainers **A** starting with the one on the left, then the two on the right.

      Unlatch them by grasping each clip. Lift and rotate the clip approximately 180 degrees (see detail **A**).
    - Hold the TCM handle firmly and carefully remove the TCM from the machine **B**.

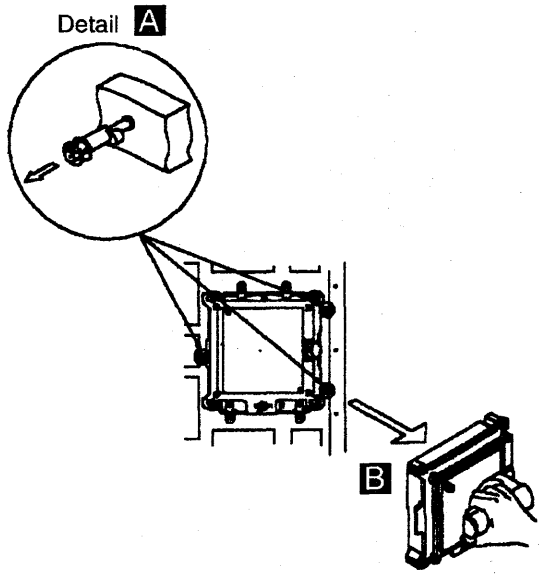


Figure 4-88. TCM Removal

12. Install the clip-on TCM cover (COTC) on the pin side of the TCM, (as shown Figure 4-89).

    Ensure that the P/N labels are visible through the holes.
13. Using the ESD mat, place the TCM in a safe place until you can put it in the shipping container (as shown Figure 4-90).

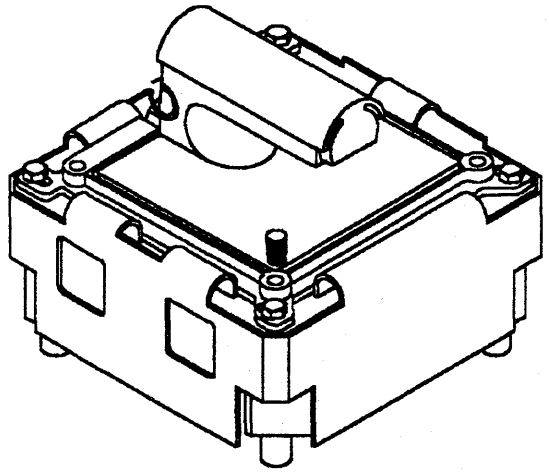


Figure 4-89. TCM Protection

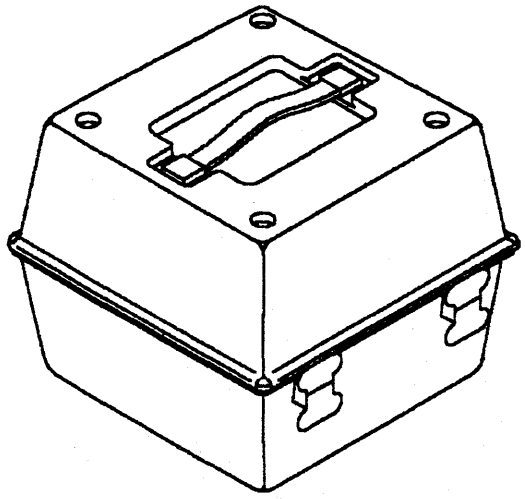


Figure 4-90. TCM Container

TCM Installation: Attention: When handling a TCM, be extremely careful not to drop, bump, or jar the assembly.

1. Inspect the TCM board connectors for dirt, dust, or lint as shown in Figure 4-91.

   Use extreme care, if you have to remove foreign debris so that the connectors are not bent.
   If any deformed or damaged connectors are detected, **DO NOT INSTALL THE TCM** and call your next level of support.

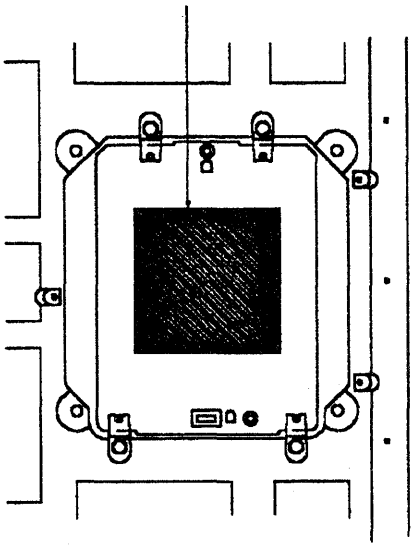


Figure 4-91. TCM Board

2. Grasp the TCM handle and take out the TCM from the shipping container.

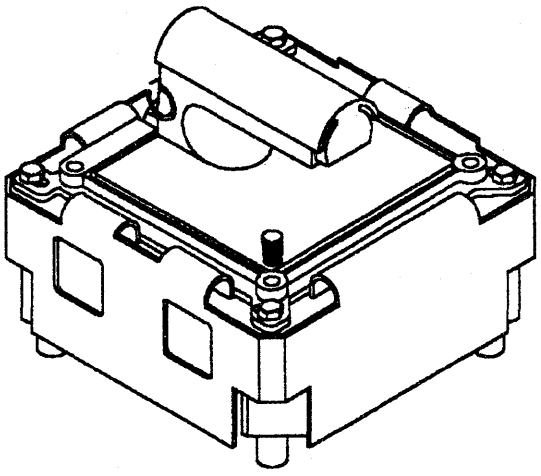


Figure 4-92. TCM Assembly

3. Referring to Figure 4-93:
   - Remove the clip-on cover from the TCM. Squeeze at arrows to remove the clip-on cover **A**.
   - Inspect the TCM for dirt, debris and bent pins **B**.
   - Use the module pin template to ensure alignment. Refer to "Module Pin Template (PN 4447370)" on page 4-101.

     If any pin is damaged, **DO NOT INSTALL THE TCM**.

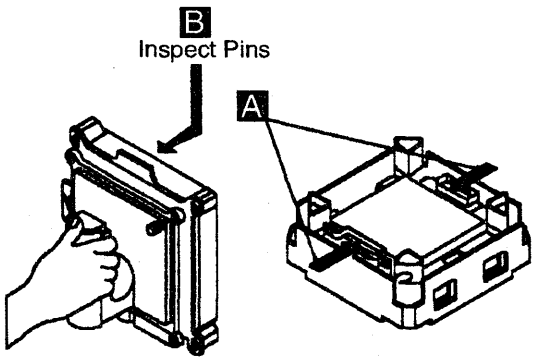


Figure 4-93. TCM Inspection

4. Hold the TCM by the handle. Position the cam at the bottom, and carefully insert it into the board as shown in Figure 4-94.

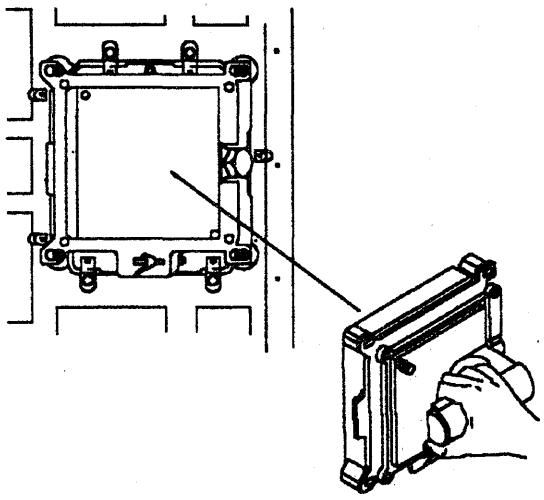


Figure 4-94. TCM Installation

Attention: Keep one hand firmly on the module to hold it in position until the next operation is completed.

5. Grasp and latch each of the three spring clip retainers by lifting and rotating the clip approximately 180 degrees.

6. Perform the following Steps:
   - Before using the TCM actuation tool, ensure that the detent pin is in the **Installation position** I (as shown in Figure 4-95).

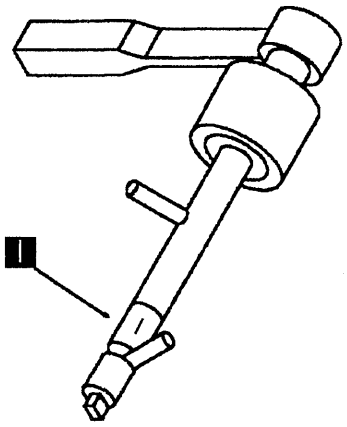


Figure 4-95. Actuation Tool Installation

   - Set the lever on the ratchet handle to drive the tool in a clockwise direction.
   - Move the cam guard to its left side to insert the TCM actuation tool (see Figure 4-96).

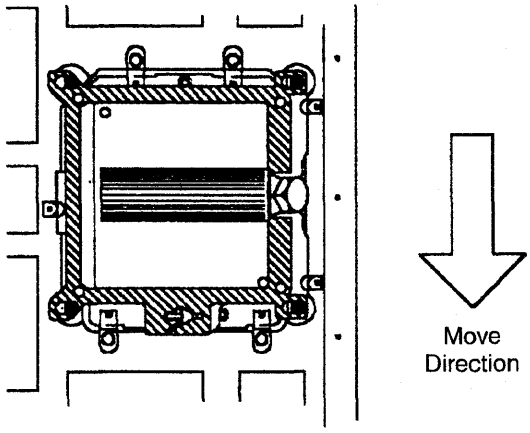


Figure 4-96. TCM Cammed Position

   - Insert the tip of the TCM actuation tool into the module with the indicator pin pointing to the uncammed (9 o'clock) position.

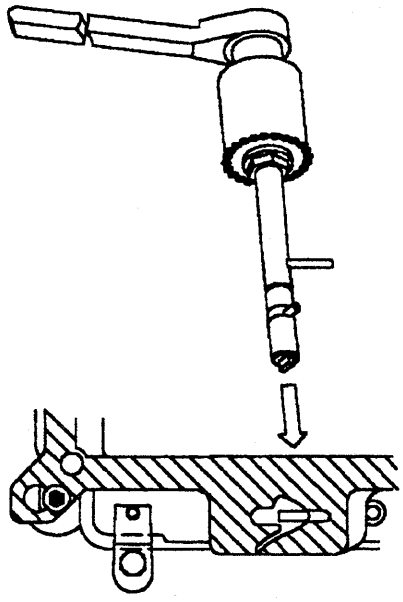


Figure 4-97. Actuation Tool Usage

   - Turn the actuation tool clockwise until the slip clutch is activated.
   - Remove the TCM actuation tool.
   - Use the TCM cam gauge (PN 6108930) to check that the TCM is cammed into position correctly.

     Insert and turn the gauge. The red ring should disappear. Only the green ring should remain.
   - Referring to Figure 4-98 on page 4-110:
     - Move the cam guard to its rightmost limit and use the torque tool to tighten the four four TCM retaining screws completely A.
     - Remove the TCM handle by loosening the two thumbscrews B.

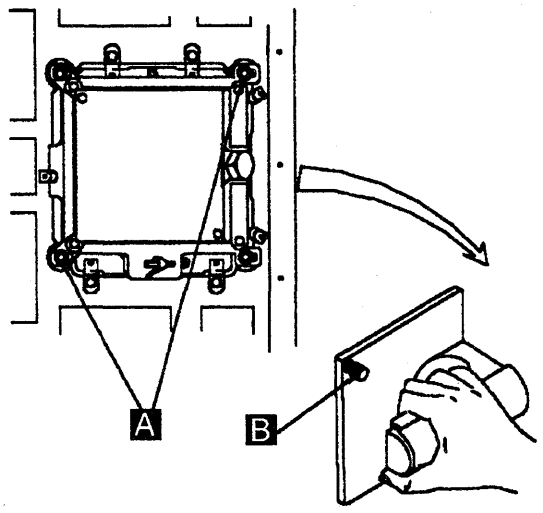


Figure 4-98. TCM Handle Removal

7. Referring to Figure 4-99:
   - **Carefully** install the heat sink **A** previously removed with the two beveled corners **B** to the left.
   - Use the torque tool to tighten the nine screws **C** which hold the heat sink.
8. Disconnect the ESD kit.

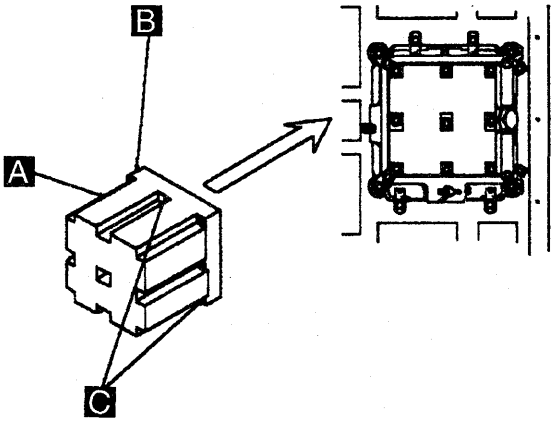


Figure 4-99. Heat Sink Installation

9. Referring to Figure 4-100:
   - Install the air moving device unit and tighten the four mounting screws **A**.
   - Inspect the filter **B**. Do not hesitate to exchange it if dirty (refer to "Air Filters Exchange Procedure" on page 4-89, if you have exchanged it).

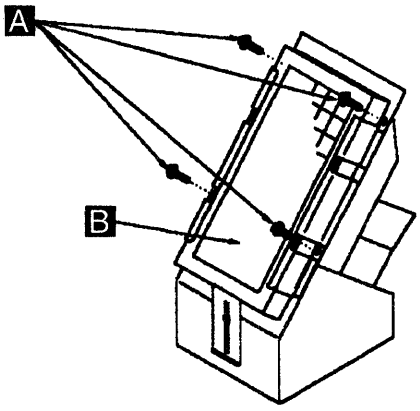


Figure 4-100. AMD Installation

   - Plug the power cord of the air moving device.
10. If previously removed, replace the internal black cover and reconnect the ground strap.
11. Close the internal black cover.
12. Close the front left cover of frame 01.
13. Using the 3745 console, power ON the affected power supply as follows:
    - Type **POS** on any displayed screen selection area.

      The power services menu is displayed.
    - Select option **1**
    - Type **uxx** to turn the power supply ON.

      CCU A xx=02

      CCU B xx=03.
14. Compare the part numbers of the TCM you have installed with the one you have removed.
    - If they are identical, continue with the next Step.
    - If they are different, check the level of the MLT.
    - If the MLT level is equal or higher than C37962, continue with the next Step. Otherwise, do a CDF verify before continuing with the next Step.
15. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1, and run diagnostics for the associated area. Go to "Repair Verification Procedure" on page 4-178.

PS Type 1 Exchange Procedure for Models 21x and 41x

For physical FRU locations, refer to Figure 4-2 on page 4-5.

This type of power supply is located at 01Q or 01R.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.
   b. Type **1** to select the base frame power services.
   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, type **dxx**

      CCU A xx=02

      CCU B xx=03.

Prior to starting the exchange, read the *Safety Information* manual, GA33-0400

Before exchanging the PS Type 1, visually check that there are no opened wires at connector J1

Power Supply Assembly Removal Procedure

1. Switch OFF the corresponding CP in the primary box:

   CCU A PS type 1 id=02 CP3

   CCU B PS type 1 id=03 CP8.

Refer to Figure 4-101:

2. Disconnect the connector from P1 **B**

   J4 for CCU A
   J9 for CCU B
3. Note the position of SW1 **A**:
4. Disconnect the connector from J1 **C**.
5. Disconnect the connector from J2 **D**.
6. Disconnect the laminar buses from TB-1 to TB-9 **E** (mark each laminar for easier replacement).

   Important: This power supply weighs 19 kilos.
7. Remove the three mounting screws **F** and slide the power supply assembly out of the machine using the handle **G**

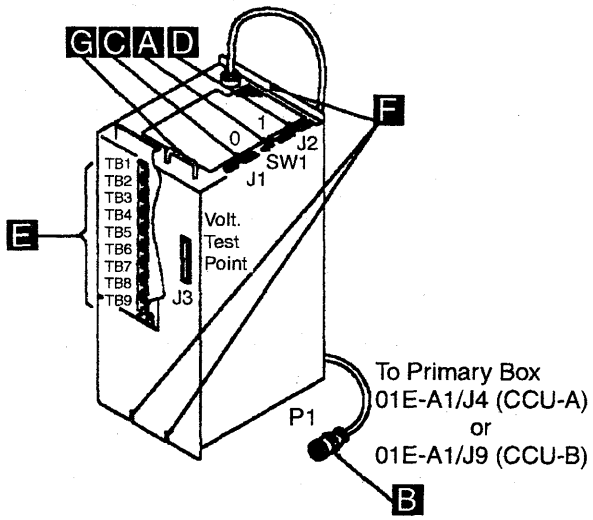


Figure 4-101. PS Type 1

Power Supply Assembly Installation:

1. To replace the power supply assembly, perform the removal procedure in the reverse order.

   Note: Ensure that SW1 is in the same position as noted in Step 2 of the power supply removal.
   If it is not, refer to "Volume 4, page YZ071" for the proper setting.
2. Using the 3745 console, turn the affected power supply ON as follows:
   - Type **POS** on any displayed screen selection area.

     The power services menu is displayed.
   - Select frame 01.
   - Type **uxx** to turn the power supply ON:

     CCU A xx=02

     CCU B xx=03.
3. Run the CCU diagnostics. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1, and follow **How to Run Internal Function Tests**. Go to "Repair Verification Procedure" on page 4-178.

PS Type 1B Exchange Procedure for Models 310 and 610

For physical FRU locations, refer to Figure 4-2 on page 4-5.

This type of power supply is located at 01Q or 01R.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.

   b. Type **1** to select the base frame power services.

   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, **type dxx**

      CCU A xx=02

      CCU B xx=03.

Prior to starting the exchange, read the *Safety Information* **manual, GA33-0400**

Before exchanging the PS Type 1B, visually check that there are no opened wires at connector J1

Power Supply Assembly Removal Procedure

1. Switch OFF the corresponding CP in the primary box:

   CCU A PS type 1B id=02 CP3

   CCU B PS type 1B id=03 CP8.

Refer to Figure 4-102:

2. Disconnect the P1 connector in the primary power box.

   01E-A1J4 for CCU A
   01E-A1J9 for CCU B

3. Note the position od SW1.
4. Disconnect the connector from J1.
5. Disconnect the connector from J2.
6. Disconnect the laminar buses from TB-1 to TB-4 (mark each laminar for easier replacement).
7. Remove the three mounting screws **1** and slide the power supply assembly out of the machine.

PSTY1B	P.P.B
01Q	01E-A1/J4
01R	01E-A1/J9

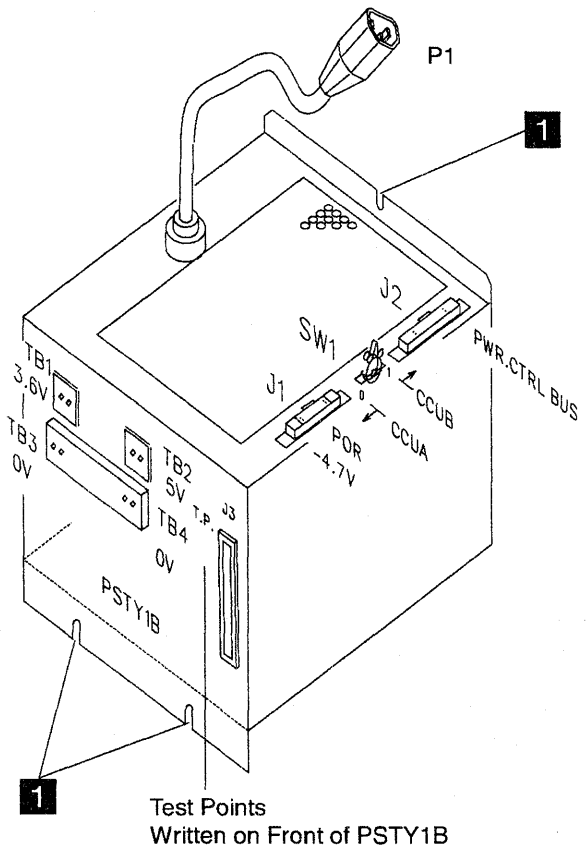


Figure 4-102. PS Type 1B

Power Supply Assembly Installation:

1. To replace the power supply assembly, perform the removal procedure in the reverse order.

   Note: Ensure that SW1 is in the same position as noted in Step 2 of the power supply removal.
   If it is not, refer to "Volume 4, page YZ071" for the proper setting.

2. Using the 3745 console, turn the affected power supply ON as follows:

   - Type **POS** on any displayed screen selection area.

The power services menu is displayed.

- Select frame 01.
- Type **uxx** to turn the power supply ON:

  CCU A xx=02

  CCU B xx=03.

3. Run the CCU diagnostics. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1, and follow **How to Run Internal Function Tests**. Go to "Repair Verification Procedure" on page 4-178.

PS Type 2 Exchange Procedure

For physical FRU locations, refer to Figure 4-2 on page 4-5.

This type of power supply is located at 01V.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.

   Note: Normally, a failure on the MOSS power supply (PS type 2) will automatically turn the power supply OFF. If the MOSS is still available, continue the procedure in sequence. If not, check, at the voltage test point (J2) on the power supply, that no voltage is distributed. See YZ370 for voltage pin assignment. Continue with paragraph 'Power Supply Assembly Removal Procedure' for that power supply.
3. Remove power as follows:
   - Press **Service** on the control panel until **1** is displayed on the service window.
   - Press **Validate**.
   - Press **Function** on the control panel until the **MOSS Power OFF** function **B** is displayed.
   - Press **Validate**.
   - Observe the MOSS inoperative display on the control panel. At completion of power OFF, this will display the character **B**.

Prior to starting the exchange, read the *Safety Information* manual, GA33-0400.

Power Supply Assembly Removal Procedure

1. Switch CP6 OFF in the primary box.

Referring to Figure 4-103:

2. Disconnect the P1 connector in the primary power box (01E-A1J7) A
3. Free the ac cable from the primary to the power supply, from the raceways.
4. Disconnect the connector from J1 B
5. Disconnect the connector from J3 C
6. Disconnect the connector from J4 D
7. Remove the three mounting screws and slide the power supply assembly out of the machine E

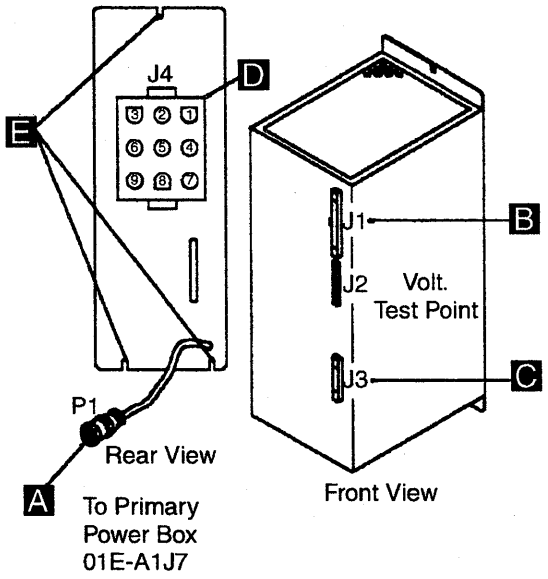


Figure 4-103. PS Type 2

Power Supply Assembly Installation

1. To replace the power supply assembly perform the removal procedure in the reverse order.

   When only the MOSS is powered OFF proceed as follows:
   - Press **Function** till the value is **1**, (MOSS IML).
   - Press **Validate**.
   - A MOSS power ON is initiated.

   Note: This action will also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.
2. Go to "Repair Verification Procedure" on page 4-178.

PS Type 3 Exchange Procedure

For PS type 3 locations in frame 01, refer to Figure 4-2 on page 4-5.

This type of power supply is located at 01K.

For PS type 3 locations in frame 02, refer to Figure 4-3 on page 4-7.

This type of power supply is located at 02D.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.

   b. Type **x** to select the appropriate service frame.

   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, type **dxx** where xx=affected power supply id.

Prior to starting the exchange, read the *Safety Information* **manual, GA33-0400.**

Power Supply Assembly Removal Procedure

Referring to Figure 4-104:

1. Switch the CP OFF on the power supply **A**.
2. Disconnect the ac power plug P1 **B**.
3. Unscrew the two tab screws until they are free **C**.
4. Unlock the retaining screw **D**.
5. Slide the power supply assembly out of the machine, using the handle **E**.

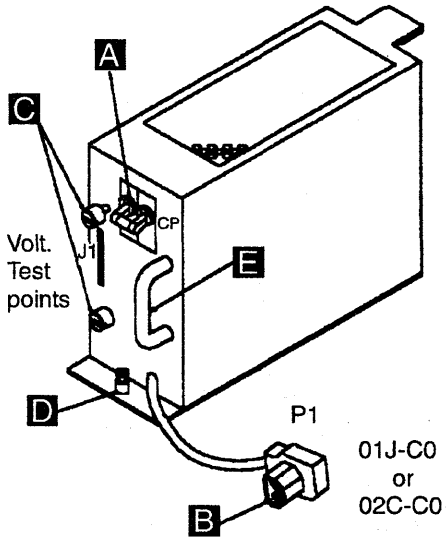


Figure 4-104. PS Type 3

Power Supply Assembly Installation

1. To replace the power supply assembly, perform the removal procedure in the reverse order.
2. Using the 3745 console, turn the affected power supply ON as follows:
   - Type **POS** on any displayed screen selection area.

     The power services menu is displayed.

   - Type **uxx** to turn the power supply ON.
3. Run diagnostics for the associated area. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1 Go to "Repair Verification Procedure" on page 4-178.

PS Type 4 Exchange Procedure

For PS type 4 locations in frame 01, refer to Figure 4-2 on page 4-5.

This type of power supply is located at 01H.

For PS type 4 locations in frame 02, refer to Figure 4-3 on page 4-7.

This type of power supply is located at 02B and 02G.

For PS type 4 locations in frame 03, refer to Figure 4-4 on page 4-8.

This type of power supply is located at 03G.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.
   b. Type **x** to select the appropriate service frame.
   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, type **dxx** where xx=affected power supply id.

Prior to starting the exchange, read the *Safety Information* **manual, GA33-0400.**

Power Supply Assembly Removal Procedure

Referring to Figure 4-105:

1. Switch the CP OFF on the power supply **A**

Important

Do not switch OFF more than one CP of PS types 4 in the same power supply board (01H, 02B, 02G, or 03G) at the same time. If you switch OFF two or more CPs at the same time, the remaining supply in that board may go to **NOREPLY** status.

2. Disconnect the ac power plug P1 **B**.
3. Unscrew the two tab screws until they are free **C**.
4. Unlock the retaining screw **D** and slide the power supply assembly out of the machine, using the handle **E**.

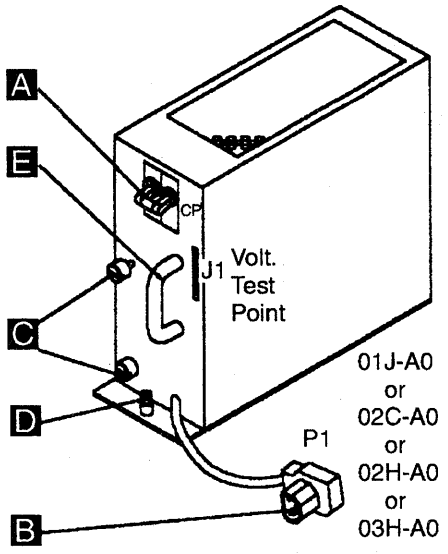


Figure 4-105. PS Type 4

Power Supply Assembly Installation

1. To replace the power supply assembly, perform the removal procedure in the reverse order.
2. Using the 3745 console, turn the affected power supply ON as follows:
   - Type **POS** on any displayed screen selection area.

     The power services menu is displayed.
   - Type **uxx** to turn the power supply ON.
   - If it is successful, continue with Step 3.
   - If any other status, go to Step 4.
3. Using the 3745 console, proceed as follows:

a. If the power is supplying TSSs or HPTSSs, IML the two line adapters as follows:
   - From menu 3, select TSS services by entering **TSS** into the selection area.
   - From the TSS services screen, choose **Select/Release** by entering **1** into the selection area.
   - In the input area, enter an **S** followed by the suspected adapter number.
   - Enter **2** in the selection area to choose Dump/IML.
   - On the Dump/IML screen, enter **I** to IML the line adapter.
   - Enter **1** in the selection area to choose **Select/Release**
   - Enter **REL** in the input area to release the disabled line adapter.
   - Repeat the preceding Steps for the associated adapter.

b. If this power is supplying TRSSs, you must disconnect the adapters again after power ON and prior to running the diagnostics. Proceed as follows:
   - From menu 3, select **TRSS Services** by entering **TRS** into the selection area.
   - From the **TRSS Services** screen, choose **select** by entering **1** in the selection area.
   - In the input area, enter the number of the suspected adapter.
   - Enter **2** in the selection area to choose **Connect/Disc**
   - On the **Connect/Disc** screen, enter **DS** to disconnect the TRA.
   - Repeat the preceding Steps for the associated adapter.

4. Run the diagnostics for the associated area. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

PS Type 5 Exchange Procedure

For PS type 5 locations 01M-A1 and 01P-A1: refer to Figure 4-2 on page 4-5.

For PS type 5 locations 04B-A1, 04D-A1, 04E-A1, and 04G-A1: refer to Figure 4-5 on page 4-9.

For PS type 5 locations 05B-A1, 05D-A1, 05G-A1, and 05E-A1: refer to Figure 4-6 on page 4-10.

For PS type 5 locations 06B-A1, 06D-A1, 06G-A1, and 06E-A1: refer to Figure 4-7 on page 4-11.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.
   b. Select the appropriate service frame.
   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, type **dxx** where xx=affected power supply id.

Prior to starting the exchange, read the *Safety Information* manual, GA33-0400.

Power Supply Assembly Removal Procedure:

In order to access the power supply, remove the partial board cover.

Referring to Figure 4-106:

1. Switch the CP OFF on the power supply **A**.
2. Trace the ac power cord **B** of the PS type 5 back to the ac distribution (01Z or 04A or 05A) and unplug the P1 connector (see following table).
3. Disconnect the J3 connector **C**.
4. Disconnect the J2 connector **D**.
5. Disconnect the J4 connector **E**.
6. Note the addressing switch positions **F**.
7. Unscrew the two mounting screws **G** and slide the power supply assembly out of the machine, using the handle **H**.

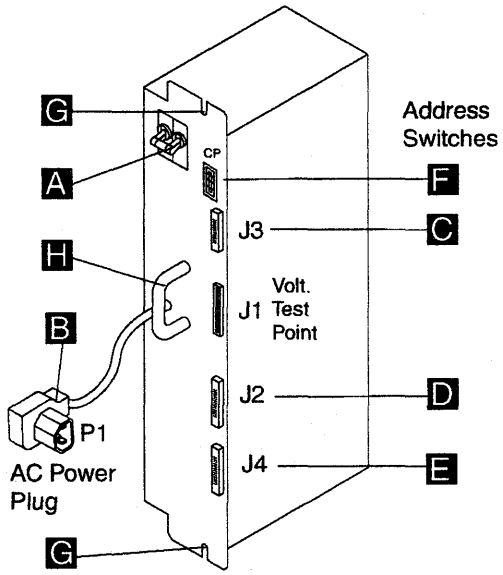


Figure 4-106. PS Type 5

	Frame 04				Frame 05				Frame 06			
PS ID	30	31	32	33	34	35	36	37	38	39	40	41
Power Plug	J5	J9	J6	J10	J5	J9	J6	J10	J5	J9	J6	J10

Power Supply Assembly Installation:

To replace the power supply assembly, perform the removal procedure in the reverse order.

Note: Ensure that the addressing switches are in the same positions as noted in Step 6 of the power supply removal.

If it is not, refer to "Volume 4, page YZ075, Addressing" for the proper setting.

1. Using the 3745 console, turn the affected power supply ON as follows:
   - Type **POS** on any displayed screen selection area.

     The power services menu is displayed.

   - Type **uxx** to turn the power supply ON.
   - If it is successful, continue with Step 2.
   - If any other status, go to "Repair Verification Procedure" on page 4-178.
2. Run diagnostics for the associated area (refer to Chapter 3, "How to Run the Diagnostics" on page 3-1). Go to "Repair Verification Procedure" on page 4-178.

PS Type 6 Exchange Procedure

For physical FRU locations, refer to Figure 4-2 on page 4-5.

This type of power supply is located at 01F.

Prior to starting the exchange, read the *Safety Information* manual, GA33-0400

Power Supply Assembly Removal Procedure

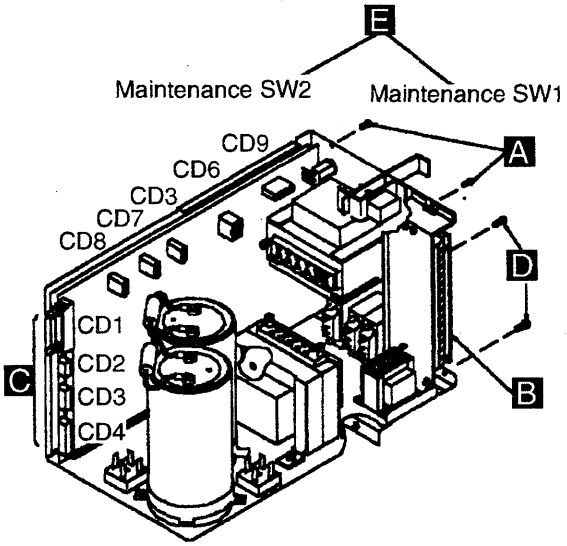


Figure 4-107. PS Type 6

1. Switch **CB1** OFF. (located at frame 01, 01E-B1).

Referring to Figure 4-107:

Remove the cover by unscrewing the two screws **A** to access and perform the following Steps:

2. Disconnect the TB1 wires **B** (positions 1, 6, 10, and 14). Refer to YZ576.
3. Go to the rear and disconnect the CD1, CD2, CD4, CD5 connectors **C**.
4. Unscrew the two mounting screws **D**.
5. Disconnect the ground strap.
6. Remove the power supply assembly out of the machine.

Note: Switches 1 and 2 **E**:

Maintenance SW1 is normally OFF when the machine is operating. Closing the external cover actuates maintenance SW1 to the normal position. Maintenance SW2 is used for card unplugging.

Power Supply Assembly Installation:

1. To replace the power supply assembly, perform the removal procedure in the reverse order.

   Note: Check with YZ576 for the voltage input.

2. Switch the **CB1** ON (located at frame 01, 01E-B1).
3. Re-apply the power as follows by means of the control panel:
   a. Press the power control key until **3** appears in the power control window (Power Control in local).
   b. Press **Validate**.
   c. Press **Function** until **1** appears in the function window (function in MOSS IML).
   d. Press **Validate**.
   e. Press **Service** until **1** appears in the service window (service in MAINT.1).
   f. Press **Validate**.
   g. Press **Power ON Reset**.

   Note: The former actions will power the machine ON and also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19
4. Go to "Repair Verification Procedure" on page 4-178.

PS Type 7 Exchange Procedure

For PS Type 7 locations 01M-A1: refer to Figure 4-2 on page 4-5.

For PS Type 7 locations 04B-A1, 04D-A1, 04E-A1, and 04G-A1: refer to Figure 4-5 on page 4-9.

For PS Type 7 locations 05B-A1, 05D-A1, 05E-A1, and 05G-A1: refer to Figure 4-6 on page 4-10.

For PS Type 7 locations 06B-A1, 06D-A1, 06E-A1, and 06G-A1: refer to Figure 4-7 on page 4-11.

Important

Check that the **Power Control** display is set to **3** (local) on the control panel.
If it is, go to Step 3.
If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the power control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.
   b. Select the appropriate service frame.
   c. On the displayed information screen, check the status of the affected power supply.

      If it is up, type **dxx** where xx=affected power supply id.

Prior to starting the exchange, read the *Safety Information* **manual, GA33-0400**

Power Supply Assembly Removal Procedure: In order to access the power supply, remove the partial board cover.

Referring to Figure 4-108:

1. Switch the CP OFF on the power supply **A**.
2. Trace the ac power cord **B** of the PS type 7 back to the ac distribution (01Z, 04A, 05A, or 06A) and unplug the P1 connector (see following table).
3. For easier access to the power connectors, remove both SMUXs as follows:
   a. Remove the cables located on the top of the SMUXs.
   b. Unfasten the thumb screw holding the SMUX cassettes.
   c. Remove the SMUXs.
4. Disconnect the P2 connector **D**.
5. Disconnect the J3 connector **C**.
6. Disconnect the J4 connector **E**.
7. Note the addressing switch positions **F**.
8. Unscrew the four mounting screws **G** and slide the power supply assembly out of the machine, using the handle **H**.

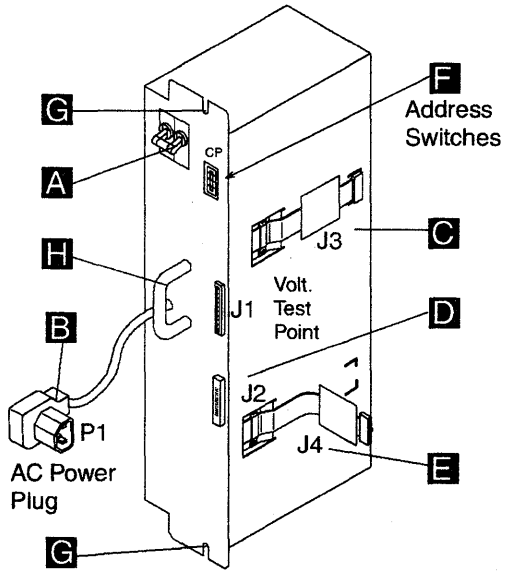


Figure 4-108. PS Type 7

	Frame 04				Frame 05				Frame 06			
PS ID	30	31	32	33	34	35	36	37	38	39	40	41
Power Plug	J5	J9	J6	J10	J5	J9	J6	J10	J5	J9	J6	J10

Power Supply Assembly Installation:

To replace the power supply assembly, perform the removal procedure in the reverse order.

Note: Ensure that the addressing switches are in the same position as noted in Step 7 of the power supply removal.

If it is not, refer to the "Volume 4, page YZ077" for the proper setting.

1. Using the 3745 console, turn the affected power supply ON as follows:
   - Type **POS** on any displayed screen selection area.

     The power services menu is displayed.

   - Type **uxx** to turn the power supply ON.
   - If it is successful, continue with Step 2.
   - If any other status, go to "Repair Verification Procedure" on page 4-178.
2. Run diagnostics for the associated area. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

PS Type 8 Exchange Procedure

For physical FRU locations, refer to Figure 4-2 on page 4-5.

This type of power supply is located at 01E.

Very Important

Before starting maintenance:

1. **Imperatively ask** the customer to remove the ac power from the 3745.
2. **Confirm** that ac power is no longer present.
3. Find the TB1 in PS type 6, located at 01F.
4. **Check** for power not present at PS type 6 TB1-6, 10, and 14, A with a CE meter, using the ground as reference, see Figure 4-109.

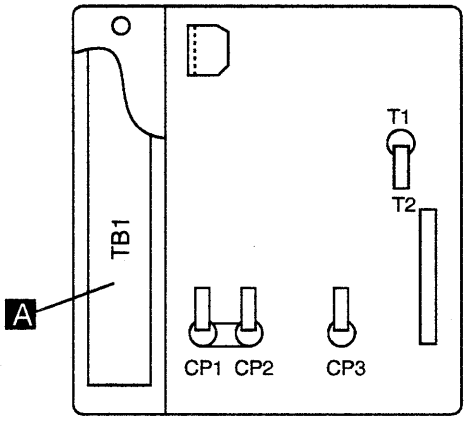


Figure 4-109. Phases

Prior to starting the exchange, read the *Safety Information* **manual, GA33-0400**

Power Supply Assembly Removal Procedure

1. Referring to Figure 4-110:
   - Open the left front cover of frame 01.
   - Open the lower and upper internal black covers.
   - Remove the front plate 01E-A1 to access the PS type 8. Refer to Figure 4-36 on page 4-53.
   - Disconnect connectors J1 to J10 and remove the cover.

Note: Do not damage the AMD cables when removing the cover.

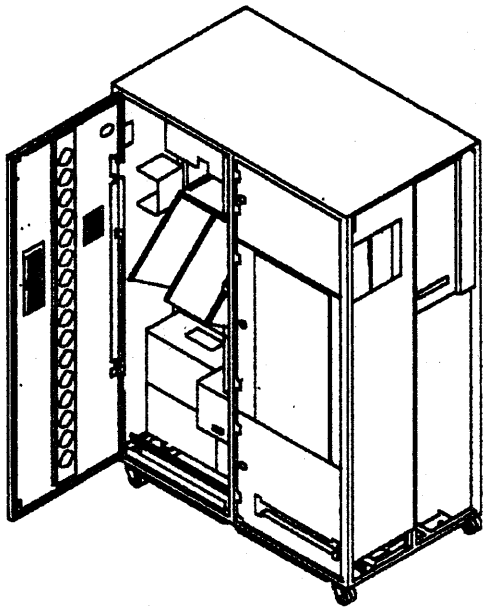


Figure 4-110. Frame 01 Internal Access

2. Switch the **CB1** OFF (location 01E-B1).
3. Referring to Figure 4-111:
   - Disconnect the P11 connector A.
   - Unscrew the two mounting screws B.
   - Remove the power supply assembly from the machine.

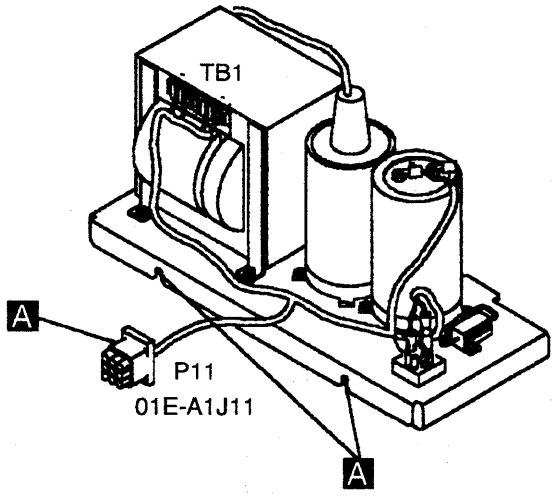


Figure 4-111. PS Type 8

Power Supply Assembly Installation:

To replace the power supply assembly, perform the removal procedure in the reverse order.

1. Ask the customer to enable the ac power to the 3745.
2. Switch the **CB1** ON (located at frame 01, 01E-B1).
3. Re-apply the power as follows by means of the control panel:
   - Press **Power Control** until **3** appears in the power control window (power control in local).
   - Press **Validate**.
   - Press **Function** until **1** appears in the function window (function in MOSS IML).
   - Press **Validate**.
   - Press **Service** until **1** appears in the service window (service in MAINT.1).
   - Press **Validate**.
   - Press **Power ON Reset**.

   Note: The former actions will turn the machine ON and also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0**F, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.
4. Go to "Repair Verification Procedure" on page 4-178.

PS Fan Exchange Procedure

Prior to starting the exchange, read the *Safety Information* manual, GA33-0400

Attention: Power may be present when nothing is displayed on the control panel.

Locations

For PS fan locations 01J-B1 and 01J-B2: refer to Figure 4-2 on page 4-5.

For PS fan locations 02C-B1, 02C-B2, 02H-B1, and 02H-B2: refer to Figure 4-3 on page 4-7.

For PS fan locations 03H-B1 and 03H-B2: refer to Figure 4-4 on page 4-8.

Attention: Do not forget that the assembly contains two fans. You have two minutes to replace the assembly. If you exceed two minutes the associated power supplies will automatically be powered OFF.

For this reason:

- Read the following procedure before starting to exchange the assembly.
- Have the assembly to be installed unpacked and close to the location of the failing unit.
- Be sure that the fan blades are running free. Do this by pushing the blades with a thin screwdriver or similar tool.

Referring to Figure 4-112:

1. Unlock the T-knobs **A**.
2. Disconnect the power plug **B**.
3. Disconnect the AFD plug **C**.
4. Slide the assembly out of the machine.
5. Fit the new assembly into the machine.
6. Reconnect the AFD plug **C**.
7. Reconnect the power plug **B**.
8. Lock the T-knobs **A**.
9. Using the 3745 console POS function, verify that all power supplies are in the **UP** status. Refer to "3745 Service Functions".
10. Go to "CE Leaving Procedure" on page 4-180.

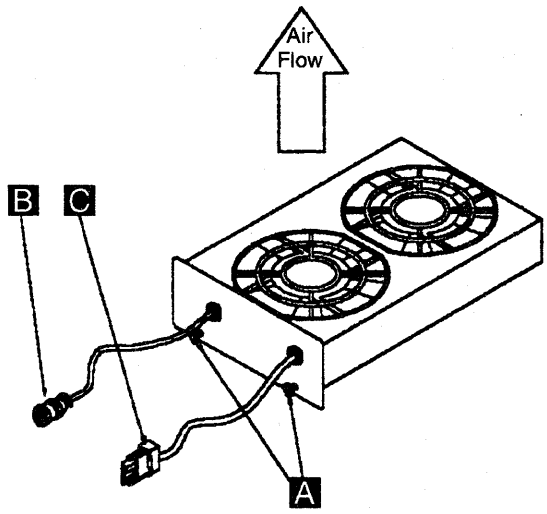


Figure 4-112. Fan Assembly

Channel Tailgate and Internal Cable Exchange Procedure

1. **Advise the customer that the 3745 is to be turned OFF and the channel removed from the host configuration (hannel will be opened).**
2. Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 5. If it is not, proceed with Step 3.
3. Press **Power Control** until **3** is displayed in the power control window.
4. Press **Validate**.
5. Remove power as follows:
6. Press **Power OFF** on the control panel.
7. Switch the **CB1** OFF. Refer to Figure 4-119 on page 4-130 for the location of CB1.
8. Using Figure 4-120 on page 4-131 or Figure 4-121 on page 4-131, locate tailgate 01T-A1 containing the channels 1 to 8, or tailgate 02K-A1 containing the channels 9 to 16.

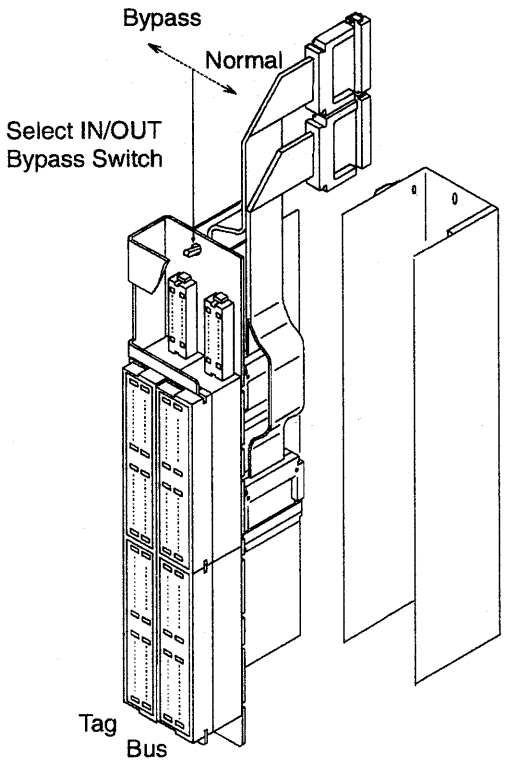


Figure 4-113. Tailgate Connector

9. Remove the tailgate front cover.
10. Disconnect the interface cables or terminators from the tailgate for the involved channel interface.
11. Remove the cover above the tailgate connectors (six screws).
12. Remove the two screws retaining the tailgate connector and the screw holding the flat cable retainer on the board.
13. Remove the retainer and unplug the flat cable connectors.
14. Remove the rubber gasket attached to the tailgate assembly located to the right of the one you are installing. This gasket goes between the CA tailgate connector assemblies and is installed on the left side of the assembly only.
15. Remove the assembly.
16. For re-installation proceed in reverse order.

    Important: Take care of the springs located at the left side of the assembly.
17. Power the 3745 ON and referring to "How to Run the Channel Wrap Test" on page 3-47, run the diagnostics on the involved channel interface. Go to "Repair Verification Procedure" on page 4-178.

ETG (ESS Tailgate) Exchange Procedure

Removal Procedure

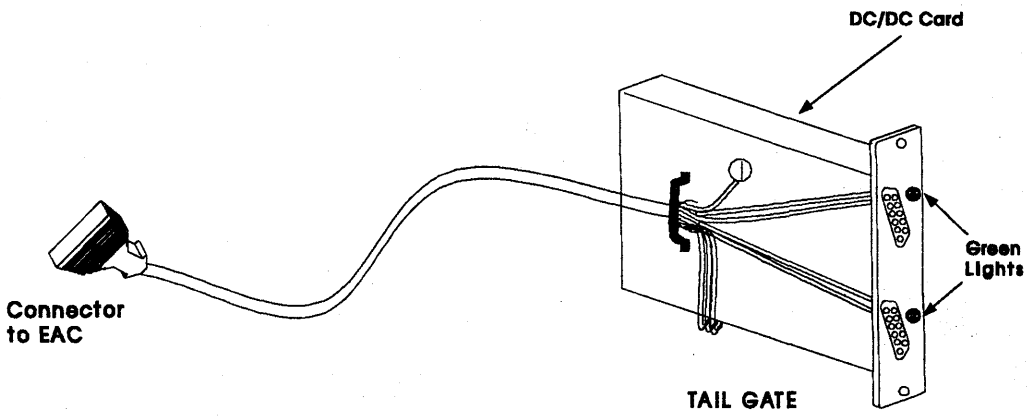


Figure 4-114. 3745 ESS Tailgate

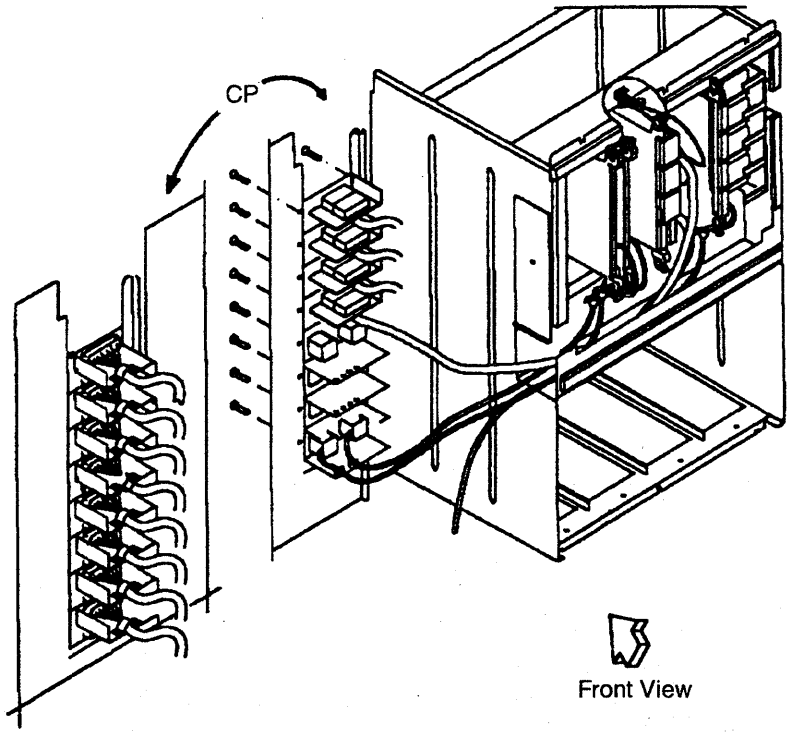


Figure 4-115. ESS Tailgate and LA Basic Board (01G-A1)

For physical locations, refer to Figure 4-2 on page 4-5 (for ESS tailgate), Figure 4-117 and Figure 4-118 on page 4-129 (for connectors, EAC and links between them).

Important

Check that the **Power Control** display is set to **3** (local) on the control panel. If it is, go to Step 3.

If it is not, proceed with Step 1.

1. Press **Power Control** until **3** is displayed in the Power Control window.
2. Press **Validate**.
3. Remove the power as follows:
   a. Type **POS** on any displayed screen selection area.

      The power services menu is displayed.

   b. Type **1** to select the base frame power services.

c. On the displayed information screen, check the status of the affected power supply.

   If it is up, type **dxx** (where xx= affected power supply id).

4. **Attention: Use the ESD kit and procedures.**.
5. Referring to Figure 4-115 on page 4-127 and Figure 4-116, remove the cable from EAC to the tailgate as follows:

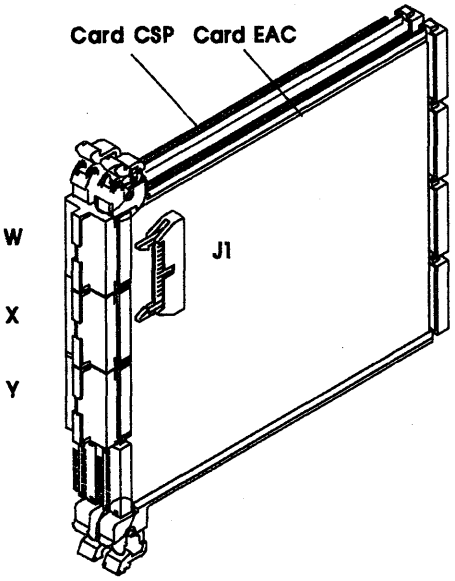


Figure 4-116. EAC Card.

a. Unscrew the plate on the left side of the board and push it up.
b. Remove the three non-polarized top card connectors from positions W, X, and Y.
c. Disconnect the two cable ground wires from the board.
d. Withdraw the EAC card until the line cable (J1) on the component side is accessible. Disconnect the cable.
e. Unclamp the cable up to the tailgate connector.
f. Remove the external cable on the related connector.
g. Unscrew the connector two screws and remove it with its internal cable.

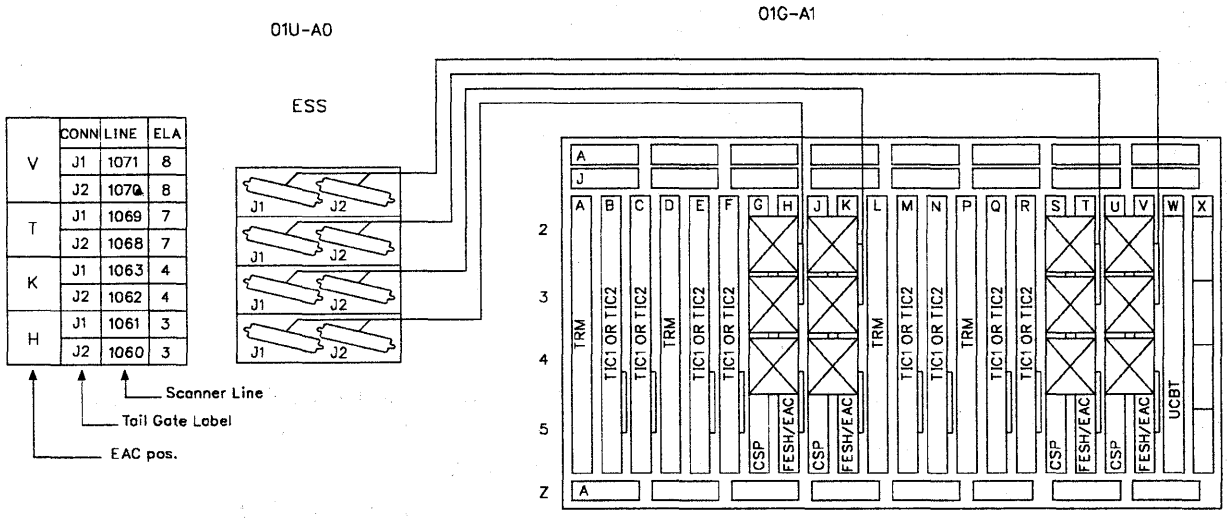


Figure 4-117. EAC and Tailgate (for TSST Basic Board)

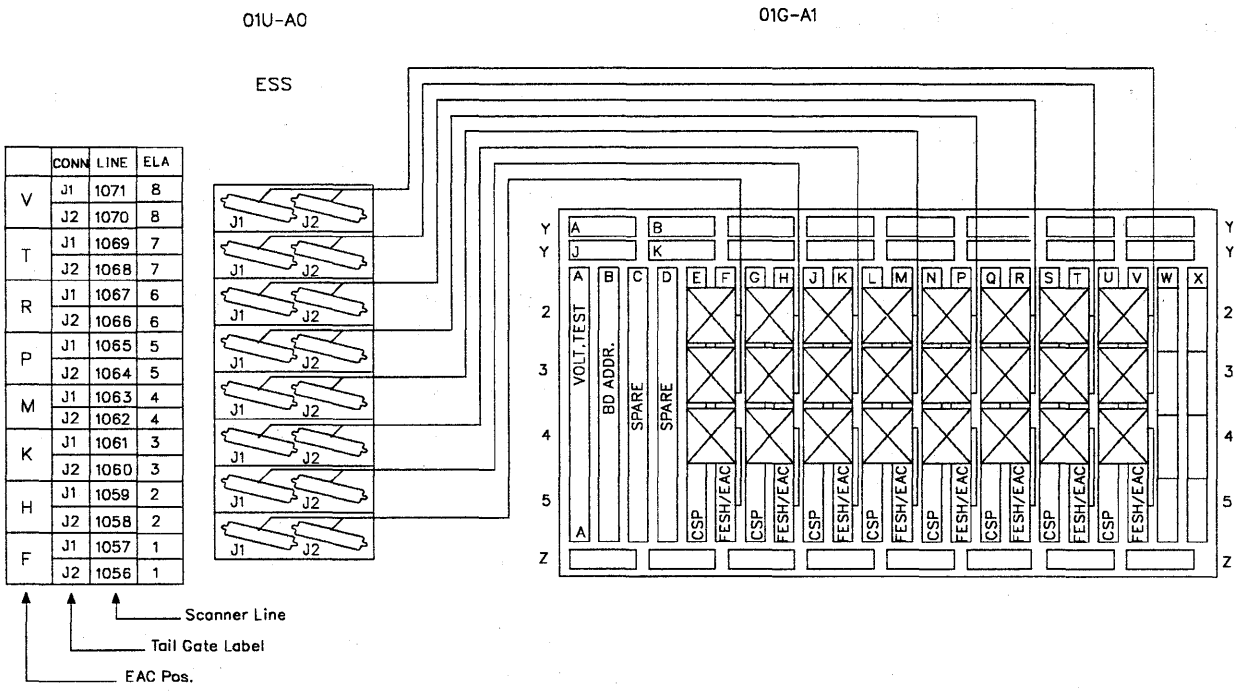


Figure 4-118. EAC and Tailgate (for TSSB Basic Board)

Installation Procedure

1. Install the new connector and its internal cable in its position in the tailgate. Two screws have to be used.
2. Clamp the internal cable up to the EAC card.
3. Replug the cable to the EAC card connector (J1).
4. Replug the two cable ground wires to the board.
5. Replug the EAC card.
6. Replace the three top card connectors.
7. Push the plate on the left side down.
8. Reconnect the external cable on the tailgate connector.
9. Using the 3745 console, turn the affected power supply ON as follows:

   On the displayed base frame power information screen, type **u** followed by the id of the affected power supply to turn it ON.
10. Run the same diagnostics you ran before you exchanged the FRU. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1. Go to "Repair Verification Procedure" on page 4-178.

Channel Board Exchange Procedure

Removal Procedure

1. **Advise the customer that the 3745 is to be turned OFF.**
2. Press **Power OFF** on the control panel.
3. Switch the **CB1** OFF. Refer to Figure 4-119 for the location of CB1.
4. Locate (using Figure 4-120 on page 4-131) channel board 01L-A1 containing channels 1 to 8, or (using Figure 4-121 on page 4-131) channel board 02E-A1 containing channels 9 to 16.
5. For the channel board you are working on, locate the related tailgate using Figure 4-120 on page 4-131 or Figure 4-121 on page 4-131.
6. At the tailgate, switch all the channel select in/out bypass switches to the **BYPASS** position. Refer to Figure 4-122 on page 4-132.
7. From the rear of the channel adapter board, note the locations and remove the flat cables coming from the tailgate (two per channel).
8. Open the channel adapter board cover and remove it by lifting it upwards.

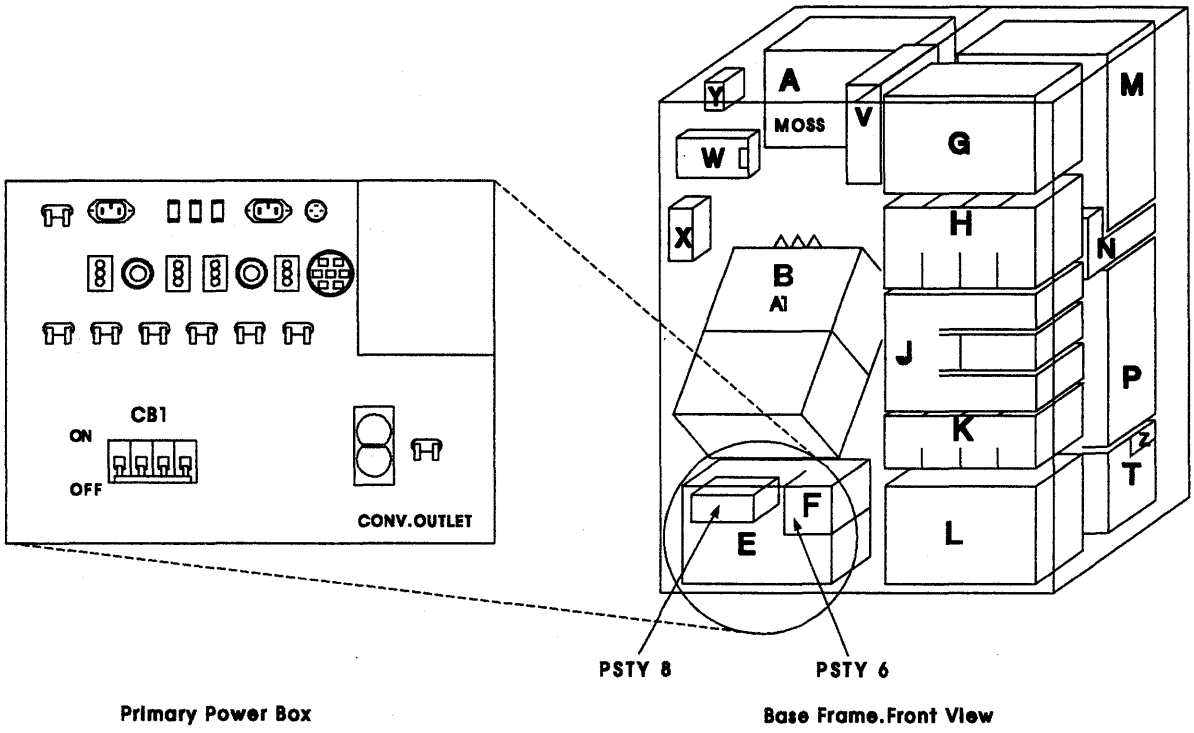


Figure 4-119. Primary Power Box in Frame 01

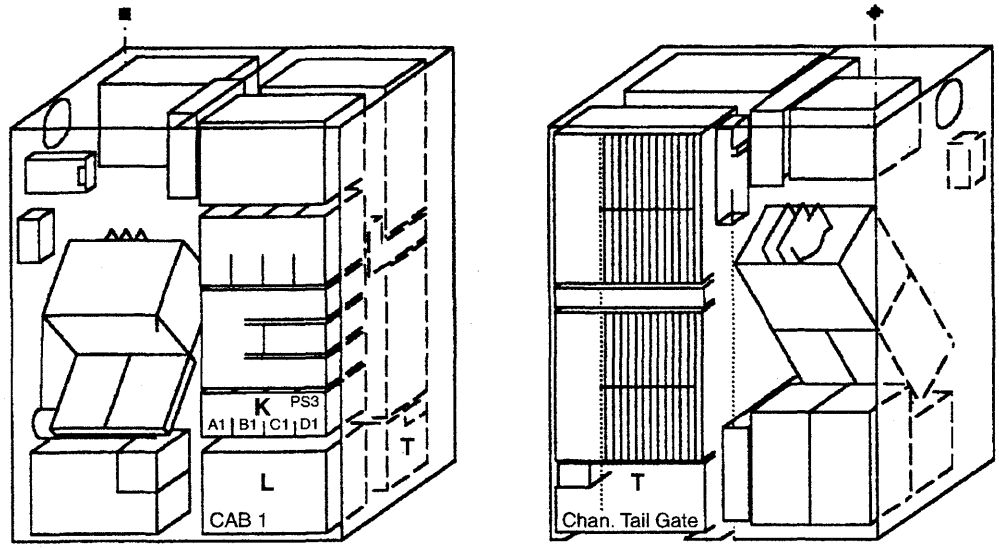


Figure 4-120. Channel Board, Tailgate, and Channel Power in Basic Frame 01

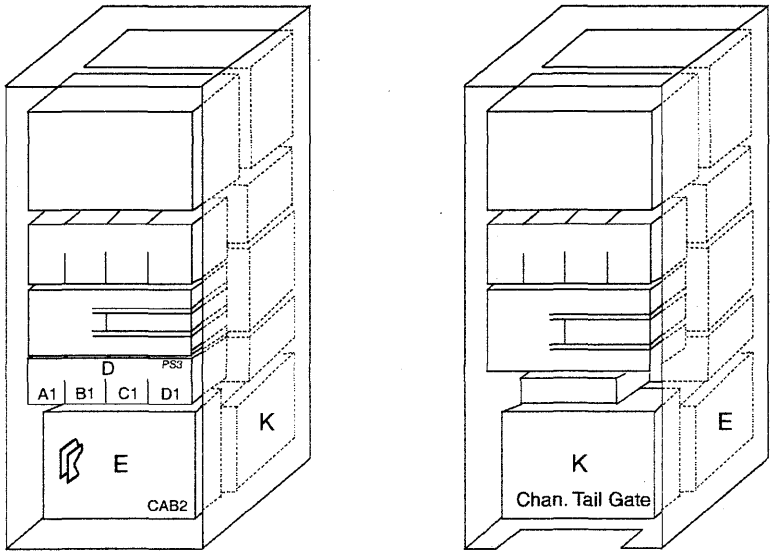


Figure 4-121. Channel Board, Tailgate, and Channel Power in Frame 02

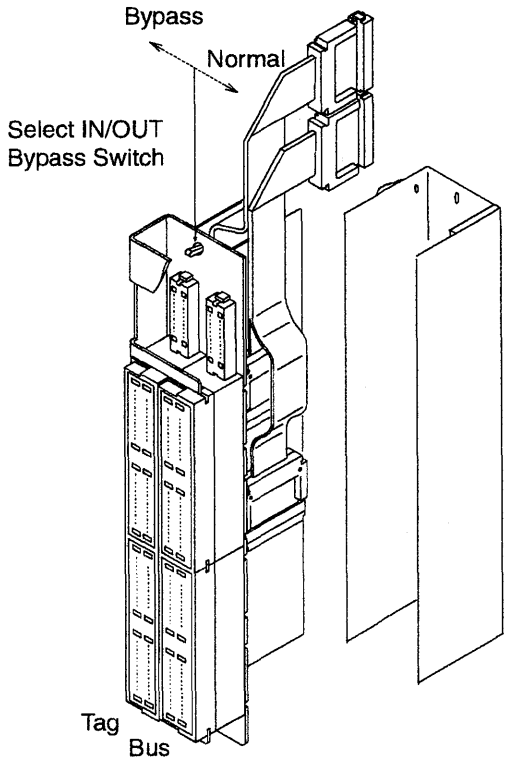


Figure 4-122. Tailgate

9. The power supplies for channel board 01L-A1 are located at 01K. Refer to Figure 4-120 on page 4-131.
   The power supplies for channel board 02E-A1 are located at 02D. Refer to Figure 4-121 on page 4-131.
   Using Figure 4-123, remove the power supplies as follows:
   a. On each power supply, unscrew the two tab screws **1** until they are free and the green band is visible.

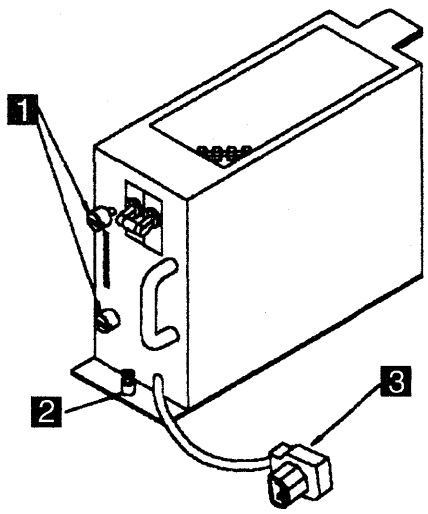


Figure 4-123. Channel Board Power Supply

   b. Unlock the retaining screw **2**.
   c. Disconnect connector **3** and slide the assembly out of the machine.
10. Note the locations and remove the top card connectors.
11. **Attention: Use the ESD kit and procedures.**.
    Check if all the cards are labelled according to their positions. If it is not, label them.
    Remove the cards and store them in a safe place.
12. When exchanging channel board 01L-A1, proceed as directed in Step 13. When exchanging channel board 02E-A1, proceed as directed in Step 14.
13. For board 01L-A1:
    a. In the following positions you may find flat cables instead of a terminator card. If so disconnect these cables and remove them from the raceway in the channel board enclosure:

       01L-A1X2
       01L-A1X3
       01L-A1X4
       01L-A1X5,

    b. Locate cables at:

       01A-Y0C1
       01A-Y0C2

       01B-A1HZ1
       01B-A1HZ2
       01B-A1NZ4
       01B-A1NZ5.

       Check that the cables are labeled according to their positions. If they are not, label them.
       Disconnect the cables.
    c. Feed the cables through the frame back to the 01L-A1 board enclosure.
    d. Remove power connectors 01K-J7 and 01K-J8. Refer to Figure 4-124 on page 4-134.
    e. At the machine frame 01 ground bus remove the FDS ground cable coming from the channel board assembly.
    f. Continue with Step 16 on page 4-134.
14. For board 02E-A1:
    a. Locate cables at:

       01A-Y0E1
       01A-Y0E2

       01L-A1X2
       01L-A1X3

01L-A1X4
01L-A1X5.

Check that the cables are labeled according to their positions. If they are not, label them.
Disconnect the cables.

b. Remove the cables from the raceway and feed the cables through the frame back to the 02E-A1 board enclosure.

c. Remove power connectors 02D-J7 and 02D-J8. refer to Figure 4-124 on page 4-134.

d. At the machine frame ground area (to the right of the 01L-A1 board), remove the FDS ground cable coming from the channel board assembly.

15. Continue with Step 16 on page 4-134.

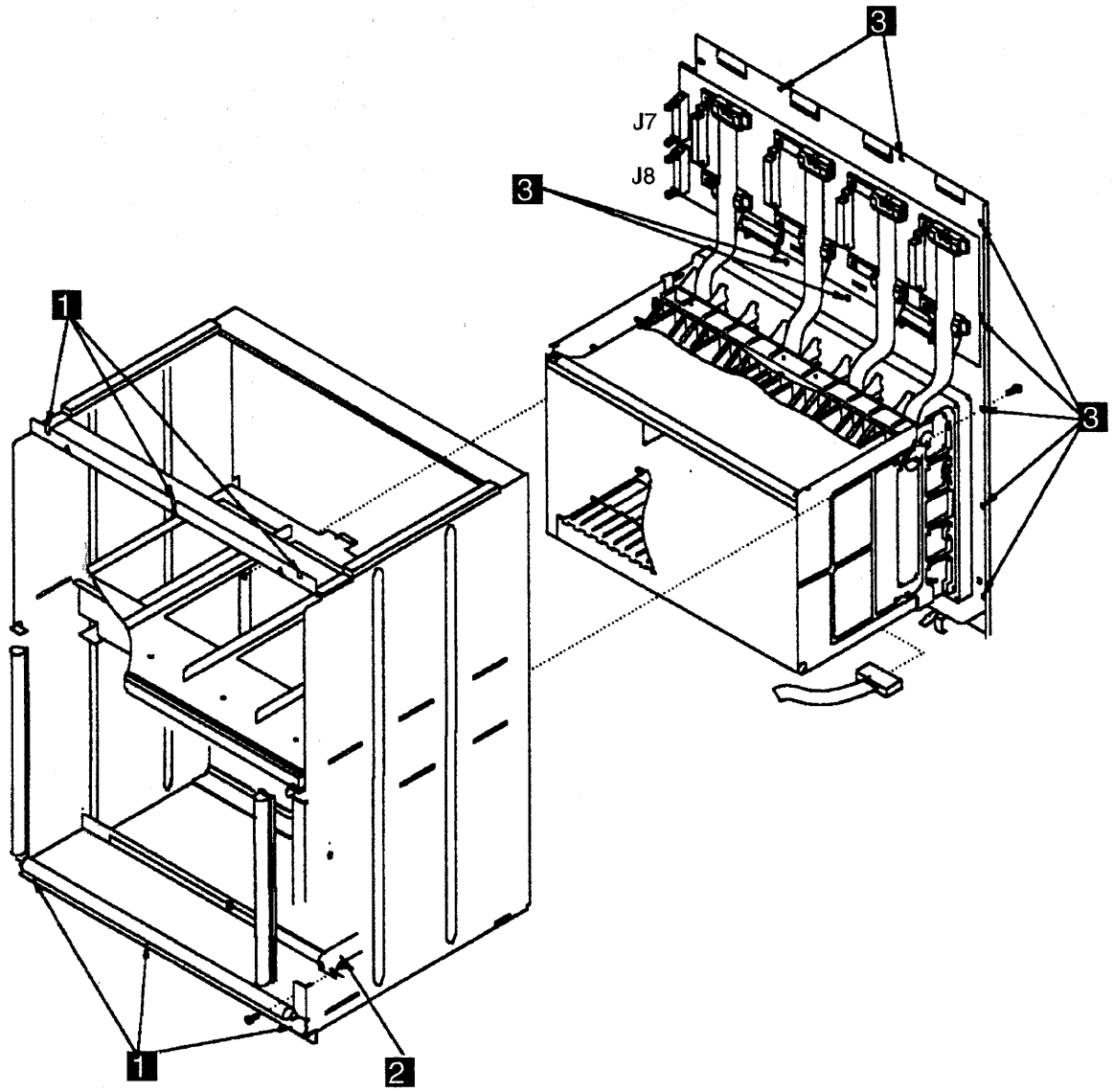


Figure 4-124. Channel Board and Power Enclosure

16. Refer to Figure 4-124.
    Remove the six screws **1** which maintain the enclosure on the frame. Slide the enclosure out of the machine taking care not to damage the power board and connectors on the left side.
17. Remove the two screws **3** securing the FDS cable.
18. Refer to Figure 4-124. Remove the 11 screws **3** holding the enclosure back plate assembly. Remove the back plate assembly and place it in an area for further work.

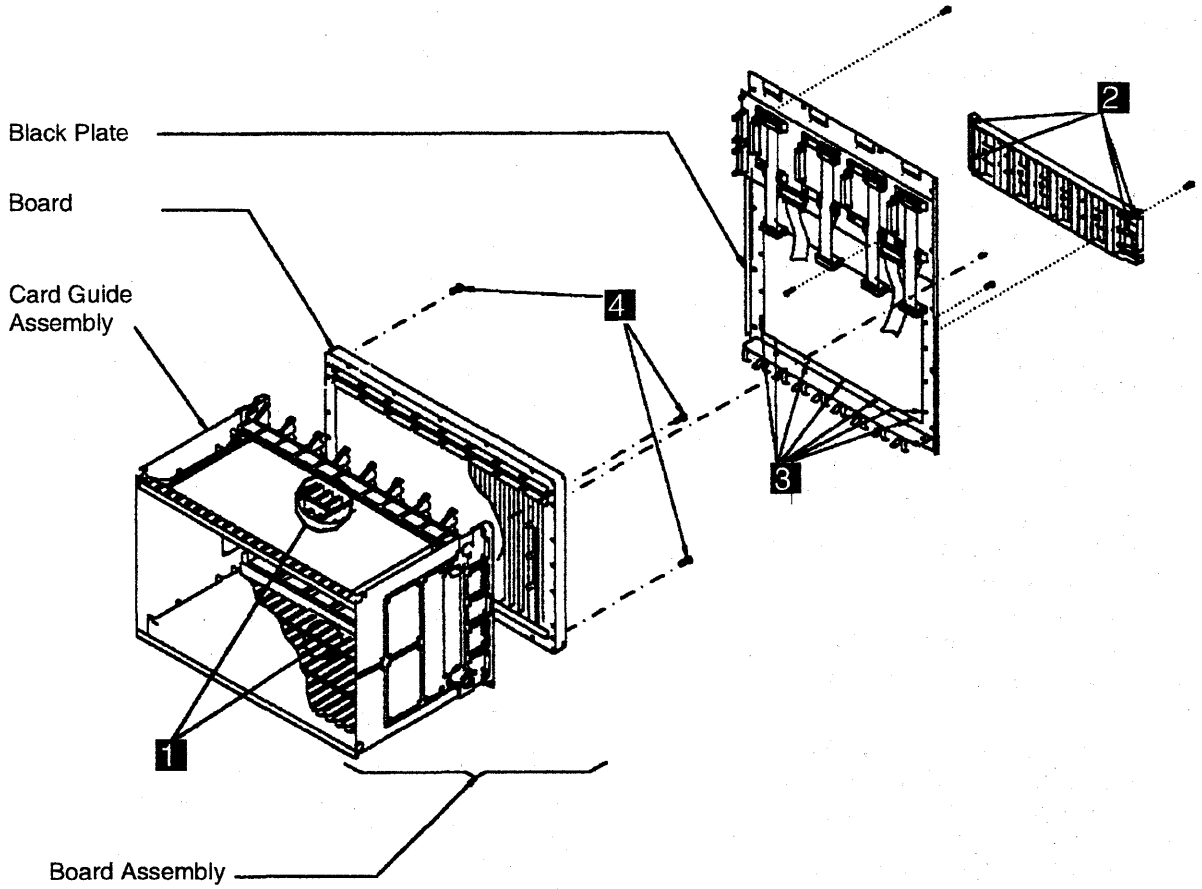


Figure 4-125. Board Assembly

19. Refer to Figure 4-125. At the front of the board, loosen the brackets 1 which maintain the flat cables at the top and bottom of the board (rows **Y** and **Z**). Remove those cables from the board.
    a. Refer to Figure 4-125.
    b. At the back of the channel board, remove the four screws 2 which hold the cable retainer to the board assembly.
    c. Remove the 10 screws 3 which maintain the board assembly on the frame. You can now remove the board assembly.
    d. Remove the four screws 4 which hold the board to the card guide assembly and remove the board.

Installation Procedure

1. Attach the card guide assembly to the new board using the four screws 4.
   Refer to Figure 4-125 on page 4-135.
2. Install the 10 screws 3 which hold the board assembly to the back panel.
3. Refer to Figure 4-125 on page 4-135.
   Ensure that there are no bent pins on the board.
   At the back of the channel board, re-install the four screws 2 which hold the cable retainer to the board assembly taking care that the retainer is located correctly.
4. At the front of the board, re-install the cables at the top and bottom of the board (rows **Y** and **Z**). Re-install and tighten the cable retainers 1 for these cables and re-install the cables in the raceway.
5. Refer to Figure 4-124 on page 4-134.
   Re-install the 11 screws 2 holding the enclosure back plate assembly to the enclosure.
6. Refer to Figure 4-124 on page 4-134.
   Slide the enclosure into the machine taking care not to damage the power board and connectors on the left side. Re-install the six screws 1 which maintain the enclosure to the frame.
7. When exchanging channel board 01L-A1, proceed as directed in Step 9. When exchanging channel board 02E-A1, proceed as directed in Step 8.
8. For board 02E-A1:
   a. Feed the cables through the frame back to their correct locations.

      01A-Y0E1
      01A-Y0E2

      01L-A1X2
      01L-A1X3
      01L-A1X4
      01L-A1X5

      Replug the cables.

   b. Replug power connectors 02D-J7 and 02D-J8.
   c. At the machine frame ground area (to the right of 01L-A1 board), connect the ground FDS cable coming from the 02E-A1 board assembly.
   d. Continue with Step 10.
9. For board 01L-A1:
   a. Feed the cables through the frame back to their correct locations:

      01A-Y0C1
      01A-Y0C2

      01B-A1HZ1
      01B-A1HZ2
      01B-A1NZ4
      01B-A1NZ5

      Connect the cables.

   b. Re-install power connectors 01K-J7 and 01K-J8.
   c. At the machine frame 01 ground bus, re-install the ground FDS cable coming from the channel board assembly.
   d. In the following positions, if you removed flat cables, re-install those cables:

      01L-A1X2
      01L-A1X3
      01L-A1X4
      01L-A1X5

10. **Attention: Use the ESD kit and procedures.**.
    Re-install the cards.
11. Re-install the top card connectors.
12. The power supplies for channel board 01L-A1 are located at 01K.
    The power supplies for channel board 02E-A1 are located at 02D.
    Using the Figure 4-123 on page 4-132, re-install the power supplies as follows:
    a. On each power supply, slide the assembly into the machine.
    b. Tighten the two tab screws 1.
    c. Lock the retaining screw 2.
    d. Re-install the connector 3.
13. At the rear of the channel adapter board, re-install the flat cables coming from the tailgate (2 per channel).
14. Re-install the channel adapter board cover.
15. Close the internal covers.
16. Switch the **CB1** ON.
17. Close the frame doors.
18. Power the machine ON using the control panel as follows:
    a. Press the Power Control key until **3** appears in the power control window (power control in local).
    b. Press **Validate**.
    c. Press **Function** until **1** appears in the function window (function in MOSS IML).
    d. Press **Validate**.

e. Press **Service** until **1** appears in the service window (service in Maintenance 1).

f. Press **Validate**.

g. Press **Power On Reset**.

Note: The former actions will turn the machine ON and also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19

19. Run the diagnostics related to the channel boards you changed.
20. At the tailgate, switch all the channel select in/out bypass switches to the **NORMAL** position. Refer to Figure 4-122 on page 4-132.
    Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1.
21. Go to "Repair Verification Procedure" on page 4-178.

Line Adapter Board Exchange Procedure

Removal Procedure

1. **Advise the customer that the 3745 is to be turned OFF.**
2. Press **Power OFF** on the control panel.
3. Switch **CB1** OFF. Refer to Figure 4-126 for the location of the CB1.
4. Locate the line adapter boards at:

   01G-A1 = LAB1 (TSSB or TSST)
   02A-A1 = LAB2 (TSSB)
   02F-A1 = LAB3 (TSSB)
   03F-A1 = LAB4 (TSSB)

For the location of the boards and associated power supplies refer to:

- Figure 4-127 on page 4-139 for line adapters 01 to 08 (LAB1)
- Figure 4-128 on page 4-139. for line adapters 09 to 15 (LAB2) and line adapters 15 to 24 (LAB3)
- Figure 4-129 on page 4-140 for line adapters 25 to 32 (LAB4).

The LAB type TSSB can be identified by the presence of a board address card in 01G-A1-B2. This is a small single-position wide card. If a four-wide card or no card is present, the board is a TSST type board.

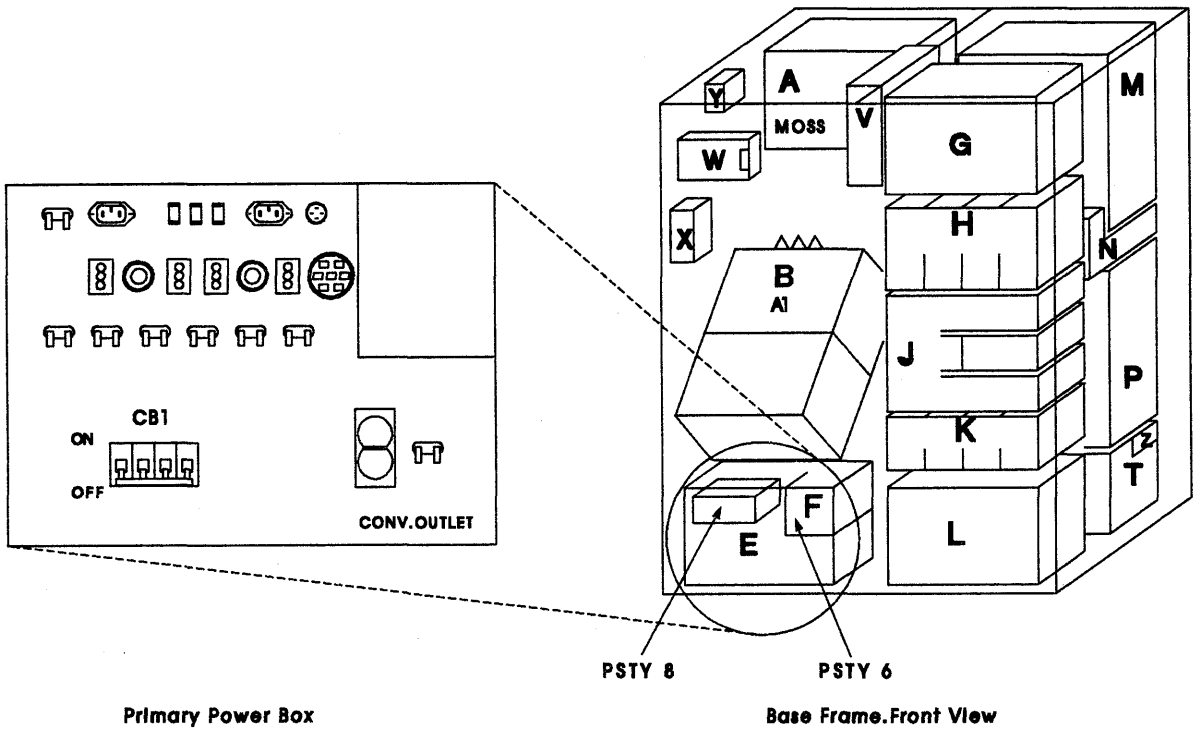
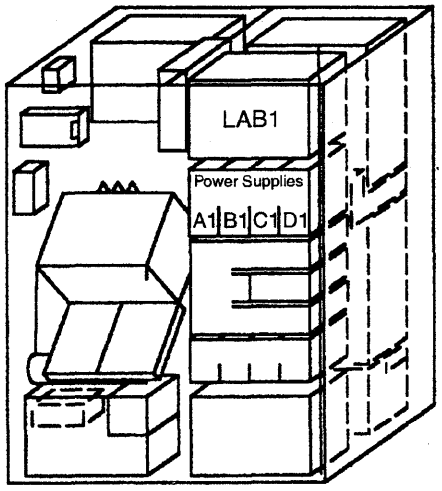
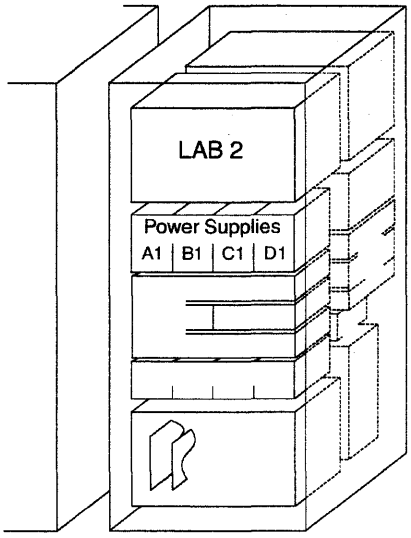


Figure 4-126. Primary Power Box in Frame 01



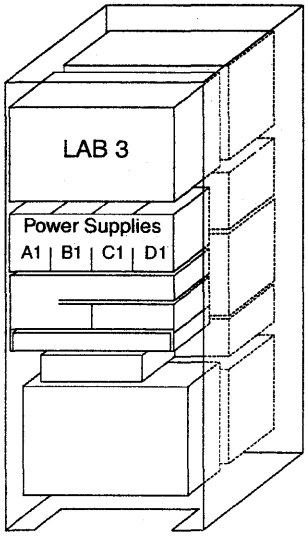
Frame 01
Front View

Figure 4-127. LAB1 and the Associated Power Supplies



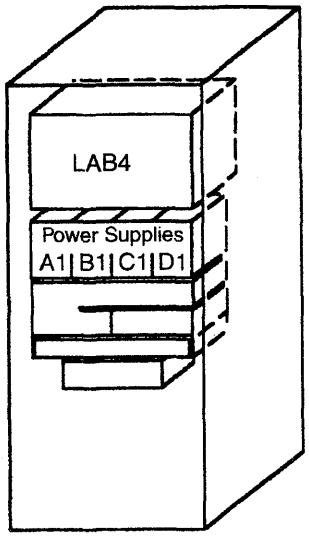
Front View

Frame 02



Rear View

Figure 4-128. LAB2, LAB3, and the Associated Power Supplies



Frame 03
Rear View

Figure 4-129. LAB4 and Associated Power Supplies

5. Using Figure 4-130, remove the power supplies (up to four power supplies can be installed) as follows:
   a. Unscrew the two tab screws 1 until they are free and the green band is visible.
   b. Unlock the retaining screw 2.
   c. Disconnect the connector 3 and slide the power supply assembly out of the machine.
   d. Repeat the previous Steps for each of the power supplies in the rack.

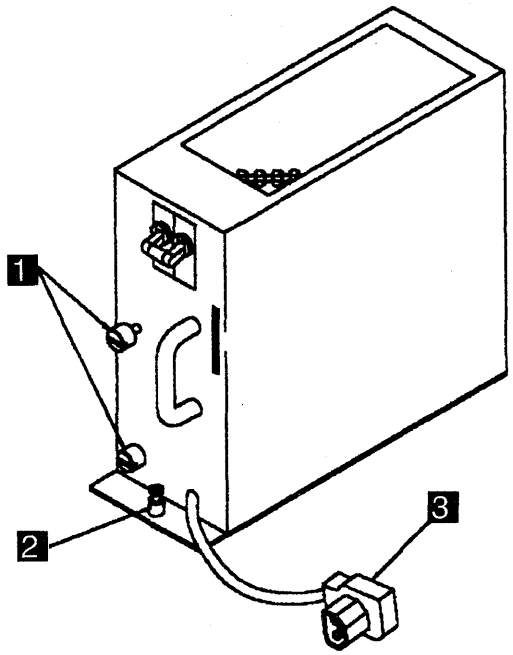


Figure 4-130. Line Adapter Power Supply

6. **Attention: Use the ESD kit and procedures..**

   Refer to Figure 4-131 if dealing with a TSSB Board. Refer to Figure 4-132 on page 4-142 if dealing with a TSST Board.

   a. Note the locations and remove the top card connectors.

   b. Note the locations and remove the serial link cables from the FESL cards if any.

   c. Note the locations and remove the token-ring cables from the TRM cards if any.

   d. Note the locations and remove the line cables from the FESH cards if any.

   e. Check if the cards are labelled according to their positions. If they are not, label them. Remove the cards and store them in a safe place.

   f. If flat cables are present in positions X2, X3, X4, and X5, disconnect and remove them from the raceway in the line adapter board enclosure.

   g. Remove the grounding screws of the serial link, token-ring, and line cables. Feed these cables out of the enclosure.

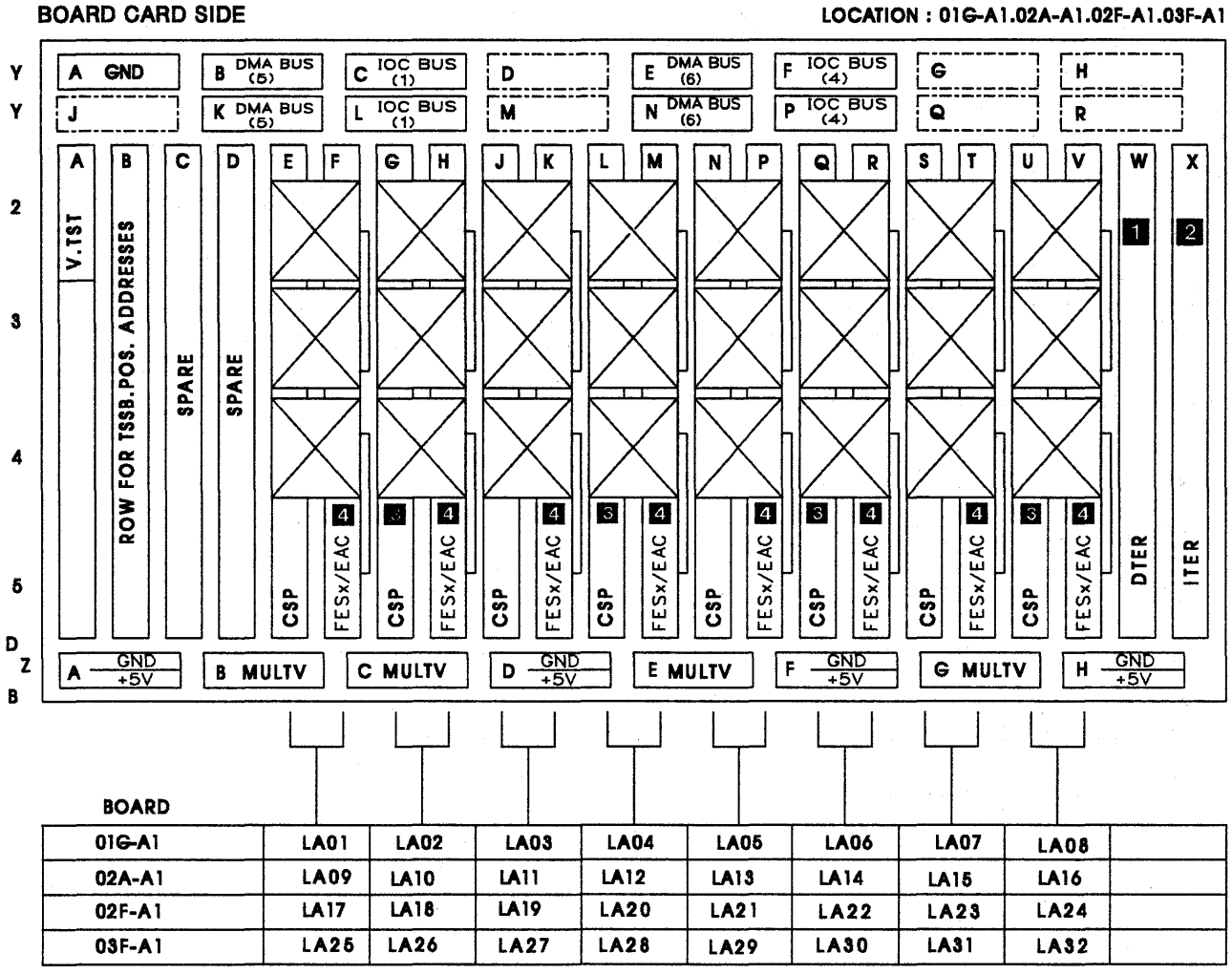


Figure 4-131. Line Adapter Board, Cards, and Crossovers (TSSB)

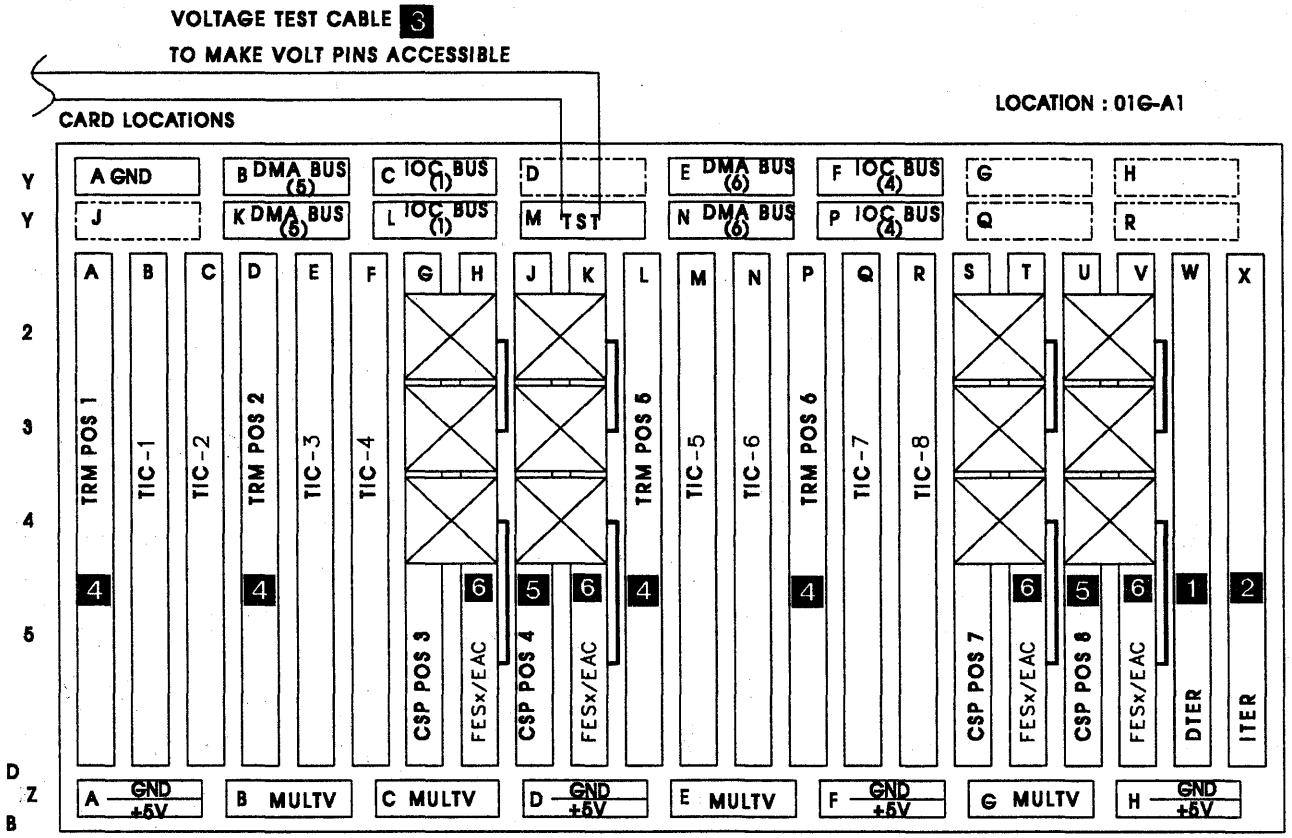


Figure 4-132. Line Adapter Board, Cards and Crossovers (TSST)

1 Card present when HPTSS installed

2 Either a card or flat cable

3 Going to voltage test connector located on the left side on board 01G-A1

4 Install bypass card BPC2 in missing TRM positions to ensure the bus continuity between scanners

5 Install bypass card BPC1 in missing CSP positions to ensure the bus continuity between scanners, except when the first adapter of the group is the last adapter of the bus.

6 FESx is for FESL or FESH.

7. If you are exchanging a LAB1 board, go to Step 8.

   If you are exchanging a LAB2 board, go to Step 9 on page 4-143.

   If you are exchanging a LAB3 board, go to Step 10 on page 4-143.

   If you are exchanging a LAB4 board, go to Step 11 on page 4-143.

8. For a LAB1 board:

   a. Refer to Figure 4-13 on page 4-17 and locate cables at:

      01B-A1-GZ4
      01B-A1-GZ5
      01B-A1-HZ4
      01B-A1-HZ5
      01B-A1-NZ1
      01B-A1-NZ2
      01B-A1-PZ4
      01B-A1-PZ5

   b. Check that the cables are labeled according to their positions. If they are not, label them. Disconnect the cables from the SACU board.

   c. Free these cables from the raceway and feed them through the frame back to LAB1 board enclosure.

d. Refer to Figure 4-134 on page 4-145 and remove the power connectors 01H-J8 and 01H-J9.

e. Disconnect the FDS ground cable from the LAB1 board.

f. Continue with Step 12.

9. For a LAB2 board:

a. Refer to Figure 4-131 on page 4-141 and locate cables at:

01G-A1-X2
01G-A1-X3
01G-A1-X4
01G-A1-X5

b. Check that the cables are labelled according to their positions. If they are not, label them. Disconnect the cables.

c. Free these cables from the raceway and feed them through the frame back to the LAB2 board enclosure.

d. Refer to Figure 4-134 on page 4-145 and remove the power connectors 02B-J8 and 02B-J9.

e. Disconnect the FDS ground cable from the LAB2 board.

f. Continue with Step 12.

10. For a LAB3 board:

a. Refer to Figure 4-131 on page 4-141 and locate cables at:

02A-A1-X2
02A-A1-X3
02A-A1-X4
02A-A1-X5.

b. Check that the cables are labelled according to their positions. If they are not, label them. Disconnect the cables.

c. Free these cables from the raceway and feed them through the frame back to the LAB3 board enclosure.

d. Refer to Figure 4-134 on page 4-145. Remove the power connectors 02G-J8 and 02G-J9.

e. Disconnect the FDS ground cable from the LAB3 board.

f. Continue with Step 12.

11. For a LAB4 board:

a. Refer to Figure 4-131 on page 4-141 and locate cables at:

02F-A1-X2
02F-A1-X3
02F-A1-X4
02F-A1-X5.

b. Check that the cables are labelled according to their positions. If they are not, label them. Disconnect the cables.

c. Free these cables from the raceway and feed them through the frame back to LAB4 board enclosure.

d. Refer to Figure 4-134 on page 4-145. Remove the power connectors 03G-J8 and 03G-J9.

e. Disconnect the FDS ground cable from the LAB4 board.

12. Refer to Figure 4-133 on page 4-144 and Figure 4-134 on page 4-145, and do the following:

a. Remove the six screws **1** which maintain the enclosure on the frame. Slide the enclosure out of the machine taking care not to damage the power board and connectors on the left side. Place the enclosure in safe working area, front side up.

b. Unscrew the two screws **2** securing the FDS cable.

c. Loosen the spring-loaded cable retainers which hold the cables on rows Y and Z by completely loosening the two screws **6**. Remove these cables.

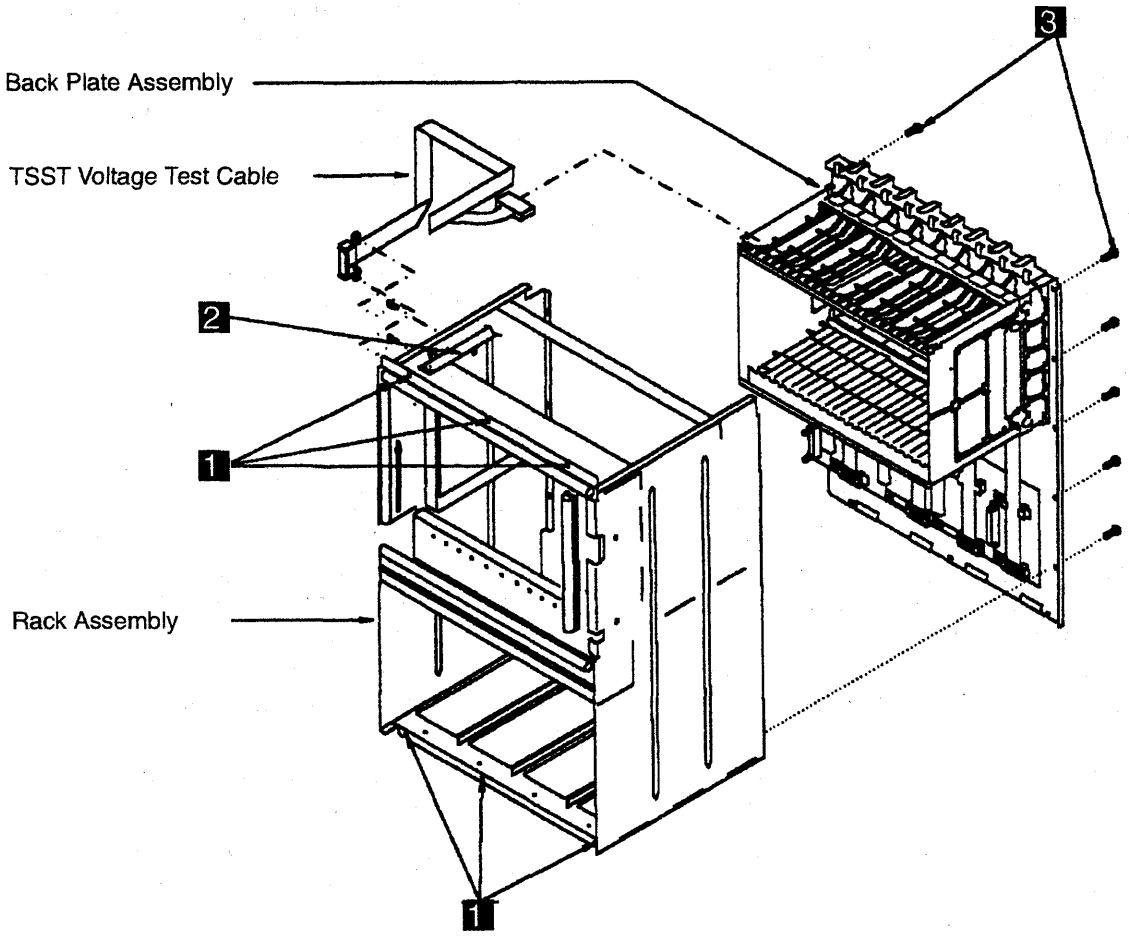


Figure 4-133. Enclosure for the Line Adapter Board

d. If you are exchanging a TSST board, remove the two screws holding the TSST voltage test cable on the left side of the rack assembly.

e. Working from the rear side of the enclosure, remove the 11 screws 3 holding the back plate assembly and rack assembly together. Remove the back the plate assembly and place it in an area for later use.

f. Remove the 10 screws 4, which maintain the board assembly on the back plate. Remove the board assembly.

g. Remove the four screws 5 which hold the board to the card guide assembly. You can now remove the line adapter board.

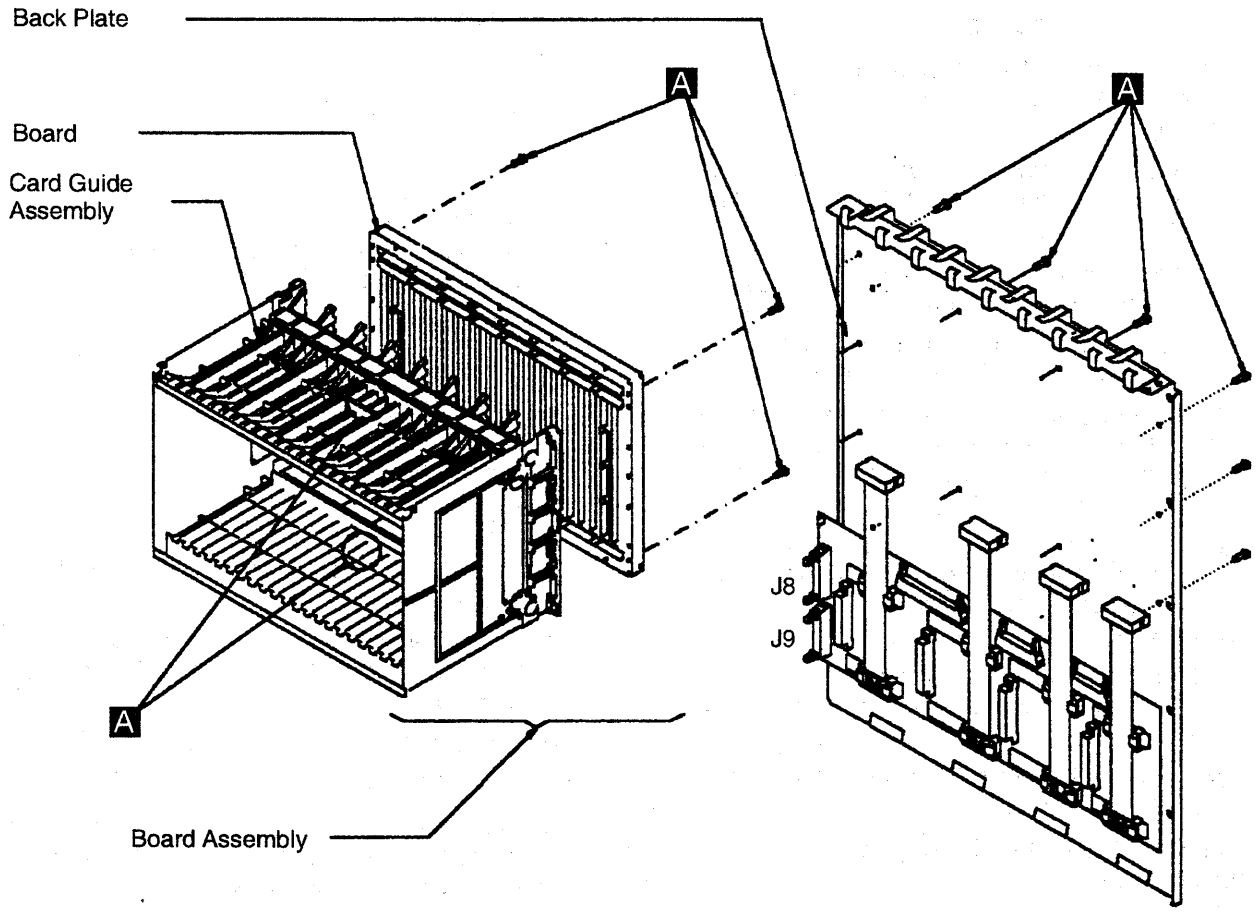


Figure 4-134. Back Plate Assembly

Installation Procedure

1. Refer to Figure 4-133 on page 4-144 and Figure 4-134 on page 4-145 and do the following:
   a. Fasten the new line adapter board on the card guide assembly with the four screws 5 .
   b. Fasten the board assembly on the back plate assembly with the 10 screws 4 .
   c. Fasten the back plate assembly on the rack assembly with the 11 screws 3 .
   d. Reconnect the flat cables at the top and at the bottom of the board (row **Y** and **Z**) and tighten the brackets which maintain them with the two screws 6 .
   e. If you have exchanged a TSST board, re-install the two screws holding the TSST voltage test cable on the left side of the rack assembly.
   f. Slide the enclosure into the machine. Fasten it on the frame with the six screws 1
2. Secure the cables with the cable clamps on the enclosure raceway.
3. **Attention: Use the ESD kit and procedures.**.

   Refer to Figure 4-131 on page 4-141 (for a TSSB) or to Figure 4-132 on page 4-142 (for a TSST) and do the following:
   a. Re-install all the cards and the top card connectors.
   b. Route the present serial link, token-ring, and line cables back to the enclosure and fasten their grounding screws. Reconnect them to the FESL, TIC, and FESH cards, according to their labels.
   c. If no card is present on X2, re-install the flat cables on X2, X3, X4, and X5. Secure them on the raceway with cable clamps.
4. Refer to Figure 4-130 on page 4-140. Re-install the removed power supplies as follows:
   a. Slide the PS type 4 assembly into the machine.
   b. Connect the P1 connector 3 .
   c. Lock the retaining screw 2 .
   d. Tighten the 2 tab screws 3 .
5. If you have exchanged a LAB1 board, go to Step 6 .

   If you have exchanged a LAB2 board, go to Step 7.

   If you have exchanged a LAB3 board, go to Step 8.

   If you have exchanged a LAB4 board, go to Step 9.
6. For the LAB1 board:
   a. Feed the cables through the frame back to the SACU board and re-install them in their correct locations:

      01B-A1-GZ4
      01B-A1-GZ5
      01B-A1-HZ4
      01B-A1-HZ5
      01B-A1-NZ1
      01B-A1-NZ2
      01B-A1-PZ4
      01B-A1-PZ5.
   b. Re-install the power connectors 01H-J8 and 01H-J9.
   c. At the machine frame 01 ground bus, reconnect the FDS cable coming from the LAB1 board.
   d. Continue with Step 11 on page 4-147.
7. For the LAB2 board:
   a. Feed the cables through the frames back to the LAB1 board enclosure. Reconnect the cables to their correct locations:

      01G-A1-X2
      01G-A1-X3
      01G-A1-X4
      01G-A1-X5.
   b. Re-install the power connectors 02B-J8 and 02B-J9.
   c. At the machine frame 02 ground bus, re-install the FDS cable coming from the LAB2 board.
   d. Continue with Step 11 on page 4-147.
8. For the LAB3 board:
   a. Feed the cables through the frame back to the LAB2 board enclosure. Reconnect the cables to their correct locations:

      02A-A1-X2
      02A-A1-X3
      02A-A1-X4
      02A-A1-X5.
   b. Reconnect the power connectors 02G-J8 and 02G-J9.
   c. At the machine frame ground bus, reconnect the FDS cable coming from the LAB3 board.
   d. Continue with Step 11 on page 4-147.
9. For the LAB4 board:

a. Feed the cables through the frames back to the LAB3 board enclosure. Reconnect the cables to their correct locations:

   02F-A1-X2
   02F-A1-X3
   02F-A1-X4
   02F-A1-X5.

b. Reconnect power connectors 03G-J8 and 03G-J9.

c. At the machine frame 03 ground bus, reconnect the FDS cable coming from the LAB4 board.

10. Close the internal covers.
11. Switch the **CB1** ON.
12. Close the frame doors.
13. Turn the machine ON using the control panel as follows:
    a. Press **Power Control** until **3** appears in the power control window (power control in local).
    b. Press **Validate**.
    c. Press **Function** until **1** appears in the function window (function in MOSS IML).
    d. Press **Validate**.
    e. Press **Service** until **1** appears in the service window (service in Maintenance 1).
    f. Press **Validate**.
    g. Press **Power On Reset** key.

    Note: The former actions will power the machine ON and also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.
14. Run the TSS diagnostics.
    Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1.
15. Go to "Repair Verification Procedure" on page 4-178.

LIC Board Type 1 Exchange Procedure

Removal Procedure

1. **Advise the customer that the 3745 is to be turned OFF.**
2. Press power OFF on the control panel.
3. Switch the **CB1** OFF. Refer to Figure 4-135.
4. Locate the board to exchange. Refer to Figures 5-1 to 5-6.

Refer to Figure 4-136 on page 4-149 and do the following:

5. Verify that the LIC cables are labelled according to their positions. If they are not, label them. Remove the LIC cables from the LICs.
6. Remove the cover to allow access to the DMUX.
7. Verify that the serial link cable(s) on the DMUX are labeled according to their positions. If they are not, label them. Remove the serial link cables.
8. Note the types and locations of the LICs. The LIC type is indicated by the color of the thumb screw.

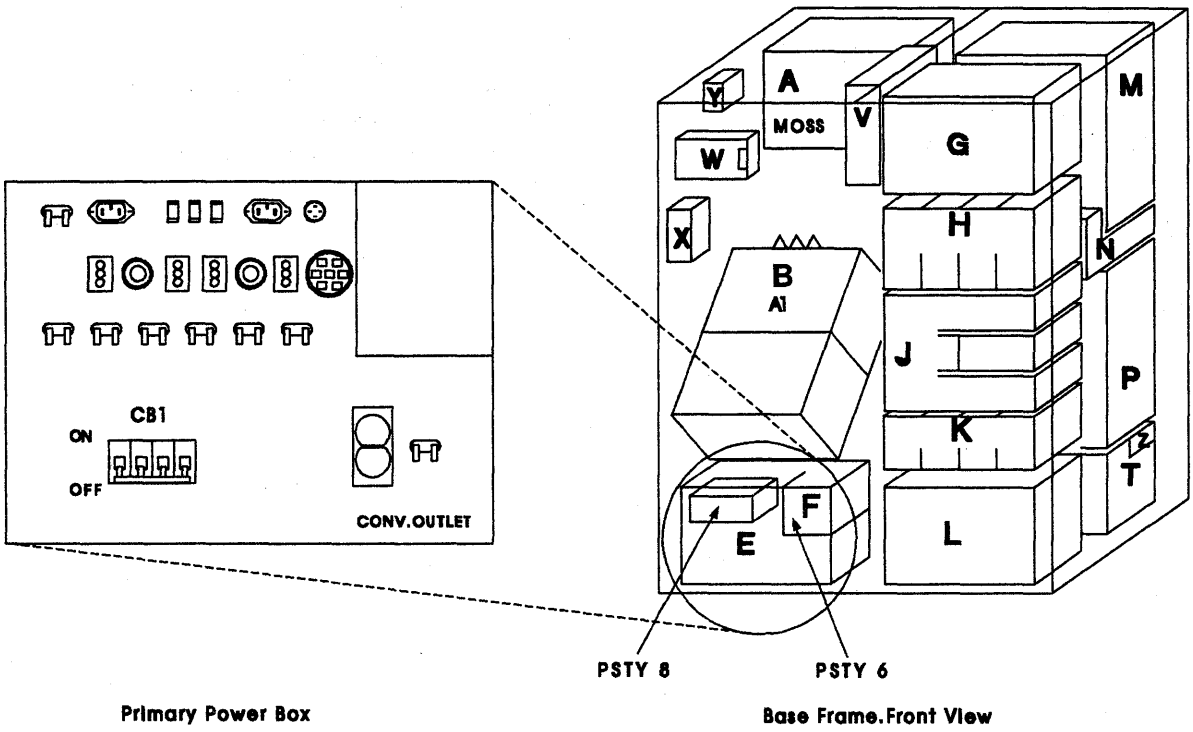


Figure 4-135. Primary Power Box

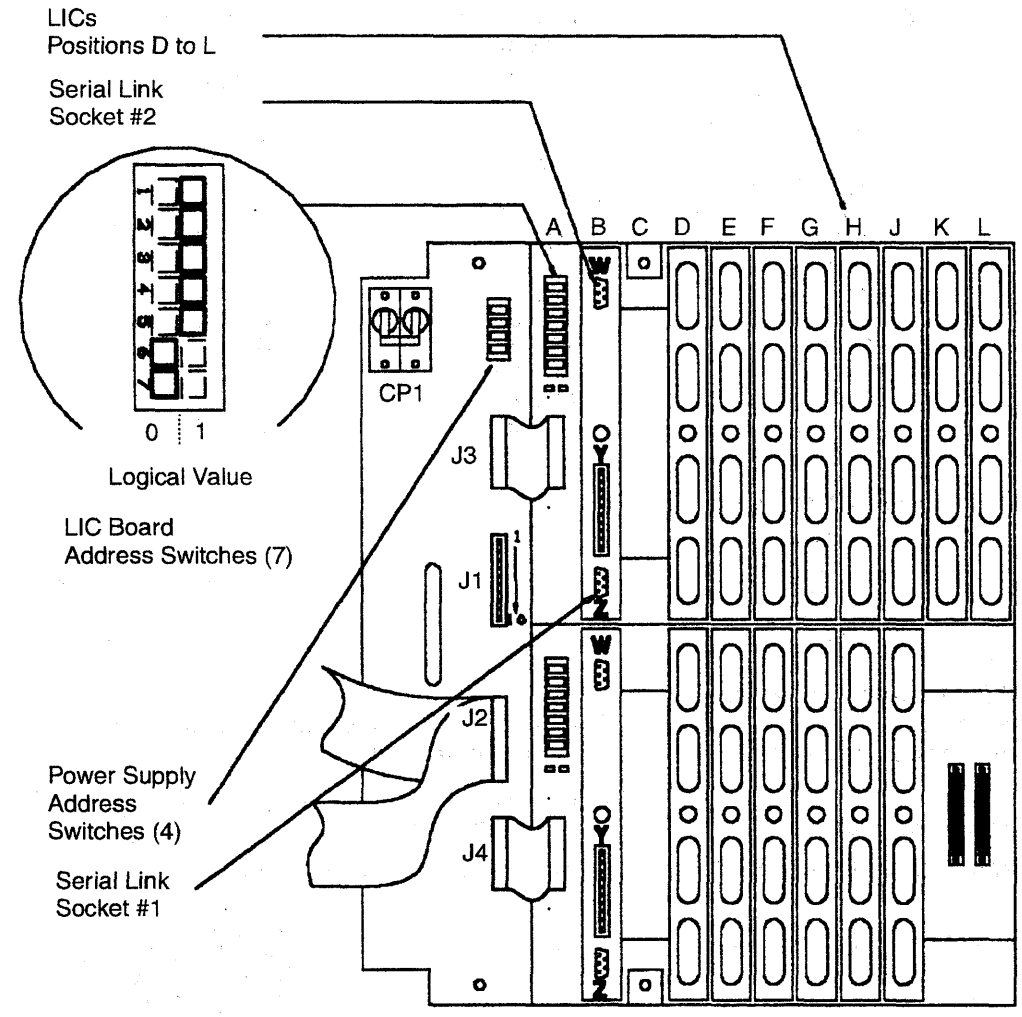


Figure 4-136. LIC Board Type 1 Assembly

LIC Board Type 1 Location	Address Switches 7 to 1	LIC Board Type 1 Location	Address Switches 7 to 1
01M-B1	0000011	05D-B1	0010001
01M-B2	0000010	05D-B2	0010000
01P-B1	0000001	05E-B1	0010111
01P-B2	0000000	05E-B2	0010110
04B-B1	0001101	05G-B1	0010011
04B-B2	0001100	05G-B2	0010010
04D-B1	0001001	06B-B1	0011101
04D-B2	0001000	06B-B2	0011100
04E-B1	0001111	06D-B1	0011001
04E-B2	0001110	06D-B2	0011000
04G-B1	0001011	06E-B1	0011111
04G-B2	0001010	06E-B2	0011110
05B-B1	0010101	06G-B1	0011011
05B-B2	0010100	06G-B2	0011010

FRU Type	Thumb Screw Colors
LIC Type 1	Brown
LIC Type 3	Blue
LIC Type 4A	Green
LIC Type 4B	Green
DMUX	White

9. **Attention: Use the ESD kit and procedures.** Remove the LICs and the DMUX by unfastening the thumb screws holding them to the board.
10. Note the board address for later use.

Refer to Figure 4-137 and Figure 4-138 and do the following:

11. Disconnect the flat power cable 1 from the LIC Board.

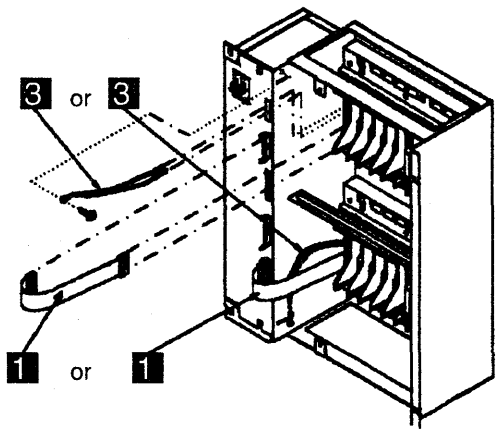


Figure 4-137. LIC Board Type 1 Enclosure Assembly

12. If present, disconnect the ground strap from the LIC board 3.
13. Remove the four screws 2 holding the board assembly to the frame.
14. Remove the LIC Board assembly.

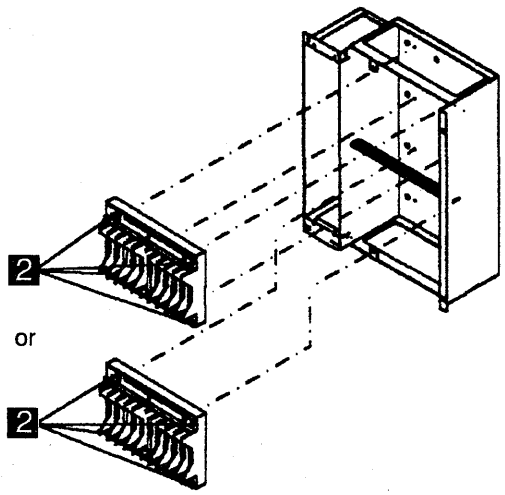


Figure 4-138. LIC Board Type 1 Assemblies

Installation Procedure

1. Refer to Figure 4-136 on page 4-149 and set the board address the same way you noted it during board removal.
2. Refer to Figure 4-138 on page 4-150.
   If present, check if there is a place on the new board to install the ground strap and reconnect it.
   If there is not, remove the ground strap from the frame.
   Mount the new board in place and secure it with the four screws 2
3. Refer to Figure 4-137 on page 4-150.
   Reconnect the flat power cable 1
4. **Attention: Use the ESD kit and procedures.**.

   Install the LICs and the DMUX in their proper positions and fasten the thumb screws holding them on the board. Finger strength is enough. Do not use tools.
5. Install the LIC cables on the LICs.
6. Note from the serial link cable labels the connection information (which line adapter they were connected to). Record this information for later use.
7. Install the serial link cables on the DMUX.
8. Re-install the DMUX cover.
9. Record the prt nmber of the new board on the label stuck above the LIC enclosure.
10. Switch the **CB1** ON. Refer to Figure 4-135 on page 4-148.
11. Turn the machine ON using the control panel as follows:
    a. Press **Power Control** until **3** appears in the power control mode window (power control in local).
    b. Press **Validate**.
    c. Press **Function** until **1** appears in the function window (function MOSS IML).
    d. Press **Validate**.
    e. Press **Service** until **1** appears in the service window (service in Maintenance 1).
    f. Press **Validate**.
    g. Press **Power On Reset**.

    Note: The former actions will power the machine ON and also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19
12. Run the TSS diagnostics for the line adapters you recorded in Step 6 in this procedure. Refer to "How to Run Internal Function Tests" on page 3-30.
13. Go to "Repair Verification Procedure" on page 4-178.

LIC Board Type 2 Exchange Procedure

Removal Procedure

1. **Advise the customer that the 3745 is to be turned OFF.**
2. Press **Power Off** on the control panel.
3. Switch the **CB1** OFF. Refer to Figure 4-139
4. Locate the board to exchange. Refer to Figures 5-1 to 5-6.

Refer to Figure 4-140 on page 4-153 and do the following:

5. Verify that the LIC cables are labeled according to their positions. If they are not, label them. Remove the LIC cables from the LICs.
6. Remove the cover to allow access to the SMUX.
7. Verify that the serial link cable on the SMUXA or SMUXB is labeled according to its position. If they are not, label them. Remove the serial link cable.
8. Remove the flat cable between SMUXA and SMUXB.
9. Note the types and locations of the LICs.

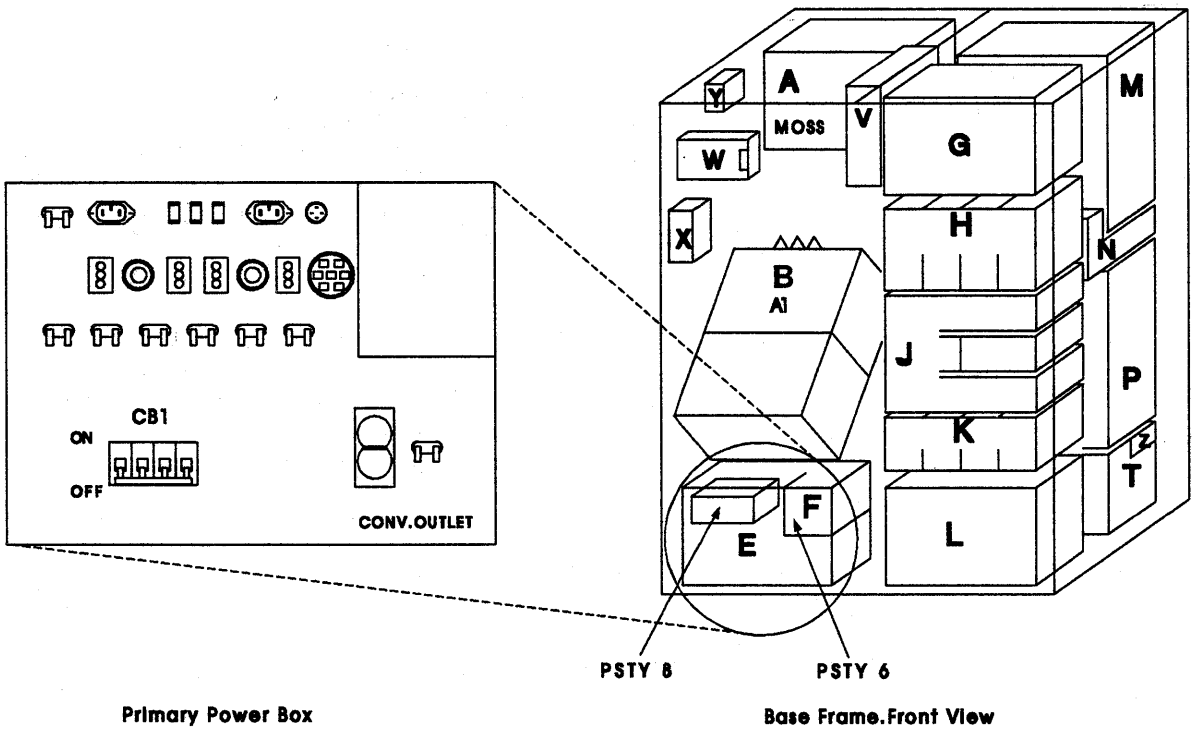


Figure 4-139. Primary Power Box

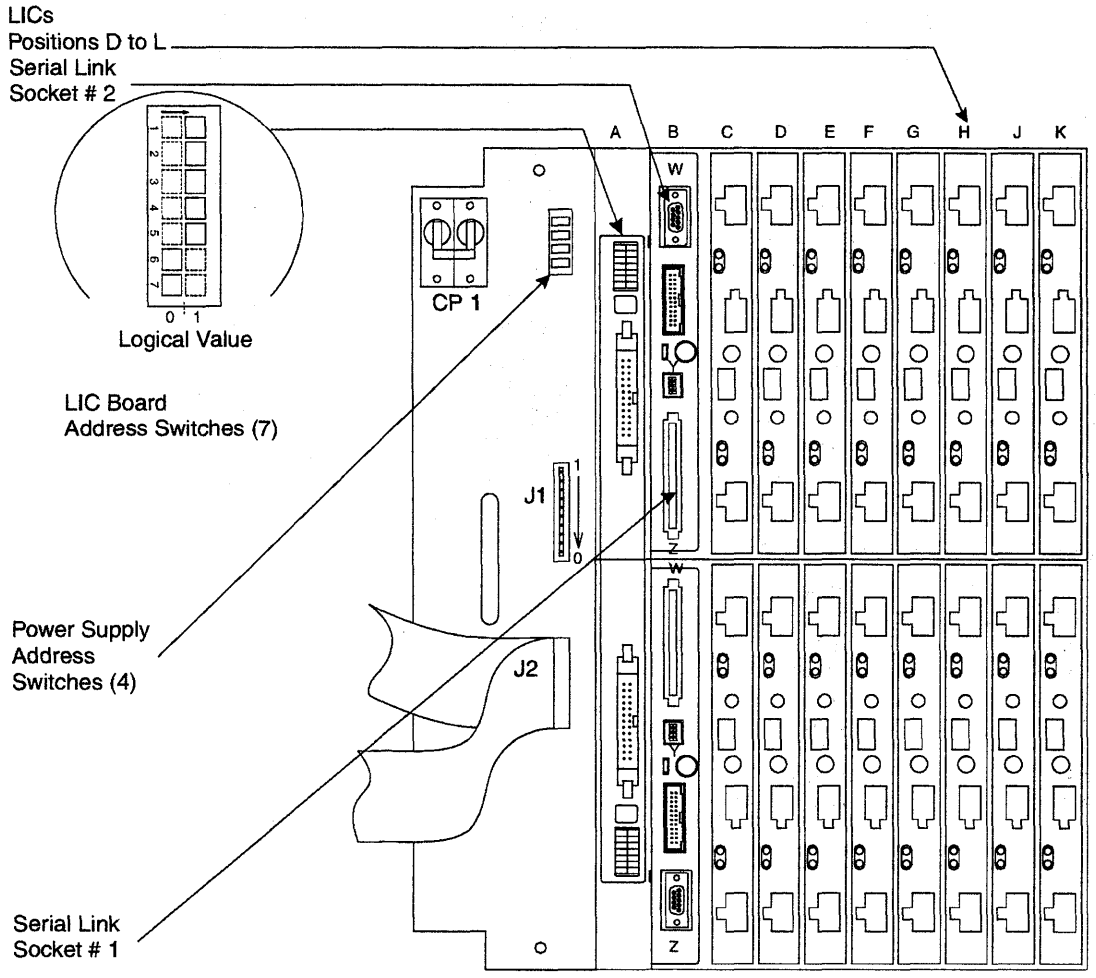


Figure 4-140. LIC Board Type 2 Assembly

LIC Board Type 2 Location	Address Switches 7 to 1	LIC Board Type 2 Location	Address Switches 7 to 1
01M-B1	0000011	05D-B1	0010001
01M-B2	0000010	05D-B2	0010000
01P-B1	N/A	05E-B1	0010111
01P-B2	N/A	05E-B2	0010110
04B-B1	0001101	05G-B1	0010011
04B-B2	0001100	05G-B2	0010010
04D-B1	0001001	06B-B1	0011101
04D-B2	0001000	06B-B2	0011100
04E-B1	0001111	06D-B1	0011001
04E-B2	0001110	06D-B2	0011000
04G-B1	0001011	06E-B1	0011111
04G-B2	0001010	06E-B2	0011110
05B-B1	0010101	06G-B1	0011011
05B-B2	0010100	06G-B2	0011010

FRU Type	Thumb Screw Colors
LIC Type 1	Brown
LIC Type 3	Blue
LIC Type 4A	Green
LIC Type 4B	Green
LIC Type 5	Black
LIC Type 6	Black
DMUX	White
SDMUXA	Black
SDMUXB	Black

10. **Attention: Use the ESD kit and procedures.**.

    Remove the LICs and the SMUXA or SMUXB by unfastening the thumb screws holding them on the board.

11. Note the board address for later use.

Refer to Figure 4-141 and Figure 4-142 and do the following:

12. Disconnect the flat power cable 1 from the LIC board.
13. Remove the four screws 2 holding the board assembly on the frame.
14. Remove the LIC board assembly.

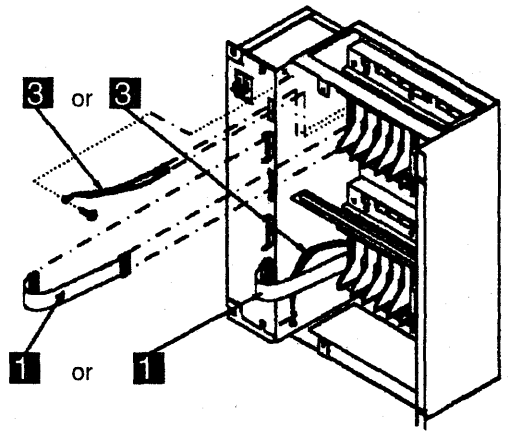


Figure 4-141. LIC Board Type 2 Enclosure Assembly

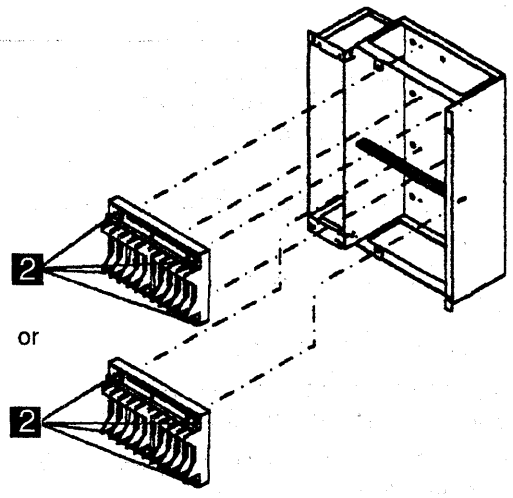


Figure 4-142. LIC Board Type 2 Assemblies

Installation Procedure

1. Refer to Figure 4-140 on page 4-153 and set the board address to the same one you noted during board removal.
2. Refer to Figure 4-142 on page 4-155. Mount the new board in place and secure it with the four screws **2**
3. Refer to Figure 4-141 on page 4-155. Reconnect the flat power cable **1**
4. **Attention: Use the ESD kit and procedures.**.

   Install the LICs and the SMUXA or SMUXB in their proper positions and fasten the thumb screws holding them on the board. Finger strength is enough. Do not use tools.
5. Install the LIC cables on the LICs.
6. Note the connection information from the serial link cable label (which line adapter they are connected to). Record this information for later use.
7. Install the serial link cable on the SMUXA or SMUXB.
8. Install the flat cable between SMUXA and SMUXB.
9. Re-install the SMUX cover.
10. Record the part number of the new board on the label stuck above the LIC enclosure.
11. Switch the **CB1** ON. Refer to Figure 4-139 on page 4-152
12. Power the machine ON using the control panel as follows:
    a. Press **Power control** until **3** appears in the power control mode window (power control in local).
    b. Press **Validate**.
    c. Press **Function** until **1** appears in the function window (function MOSS IML).
    d. Press **Validate**.
    e. Press **Service** until **1** appears in the service window (service in Maintenance 1).
    f. Press **Validate**.
    g. Press **Power On Reset**.

    Note: The former actions will power the machine ON and also run MOSS diagnostics and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19
13. Run the TSS diagnostics for the line adapters you recorded on Step 6 in this procedure. Refer to "How to Run Internal Function Tests" on page 3-30.
14. Go to "Repair Verification Procedure" on page 4-178.

MOSS Board Exchange Procedure

Removal Procedure

1. **Advise the customer that the 3745 is to be turned OFF.**
2. Press **Power OFF** on the control panel.
3. Switch **CB1** OFF. Refer to Figure 4-144.
4. Refer to Figure 4-143 to locate the MOSS board.
5. Refer to Figure 4-145 on page 4-158.
   a. Disconnect the flat cable **2** from PROM card 01A-X0E1 (if any). **The disconnection can be done only from the PROM card.**
   b. Disconnect the cable **1** from MAC card 01A-X0H1 (if any).

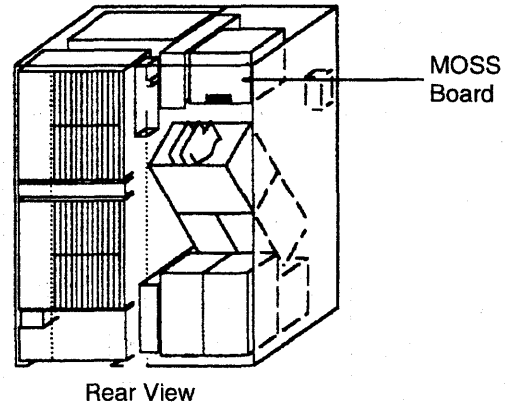


Figure 4-143. Base Frame - Rear View

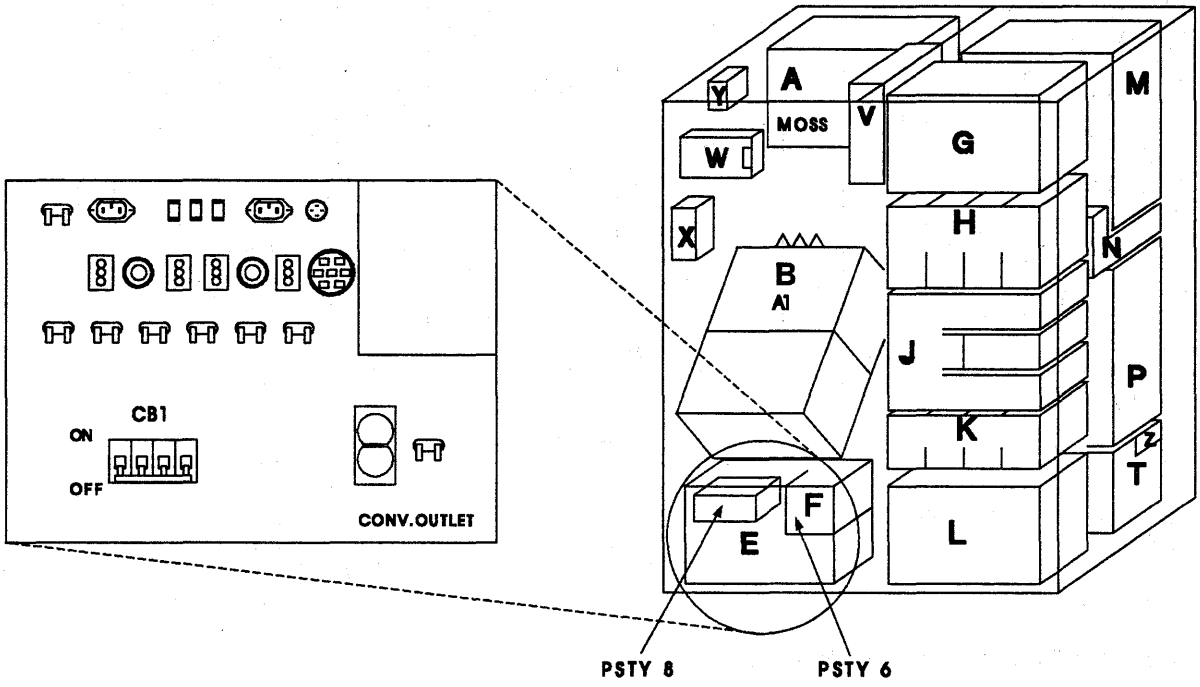


Figure 4-144. Primary Power Box in Frame 01

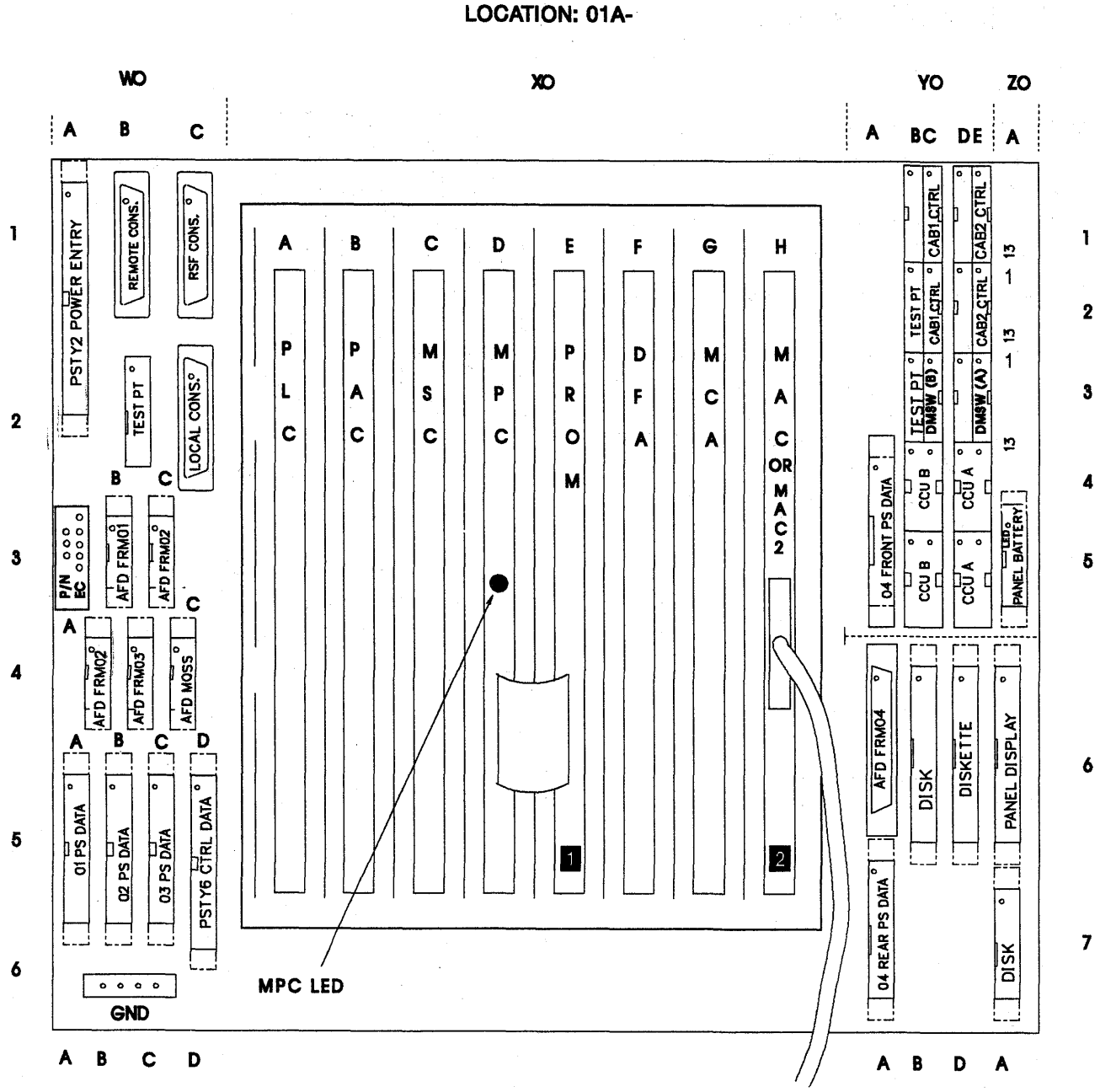


Figure 4-145. MOSS Cables and Cards for Models 210-610

1 The **PROM** card may not be present on the machine. In this case the interconnecting cable is not present too.

2 MAC card for Models 210 and 410 or MAC2 card (without cable) for Models 310 and 610.

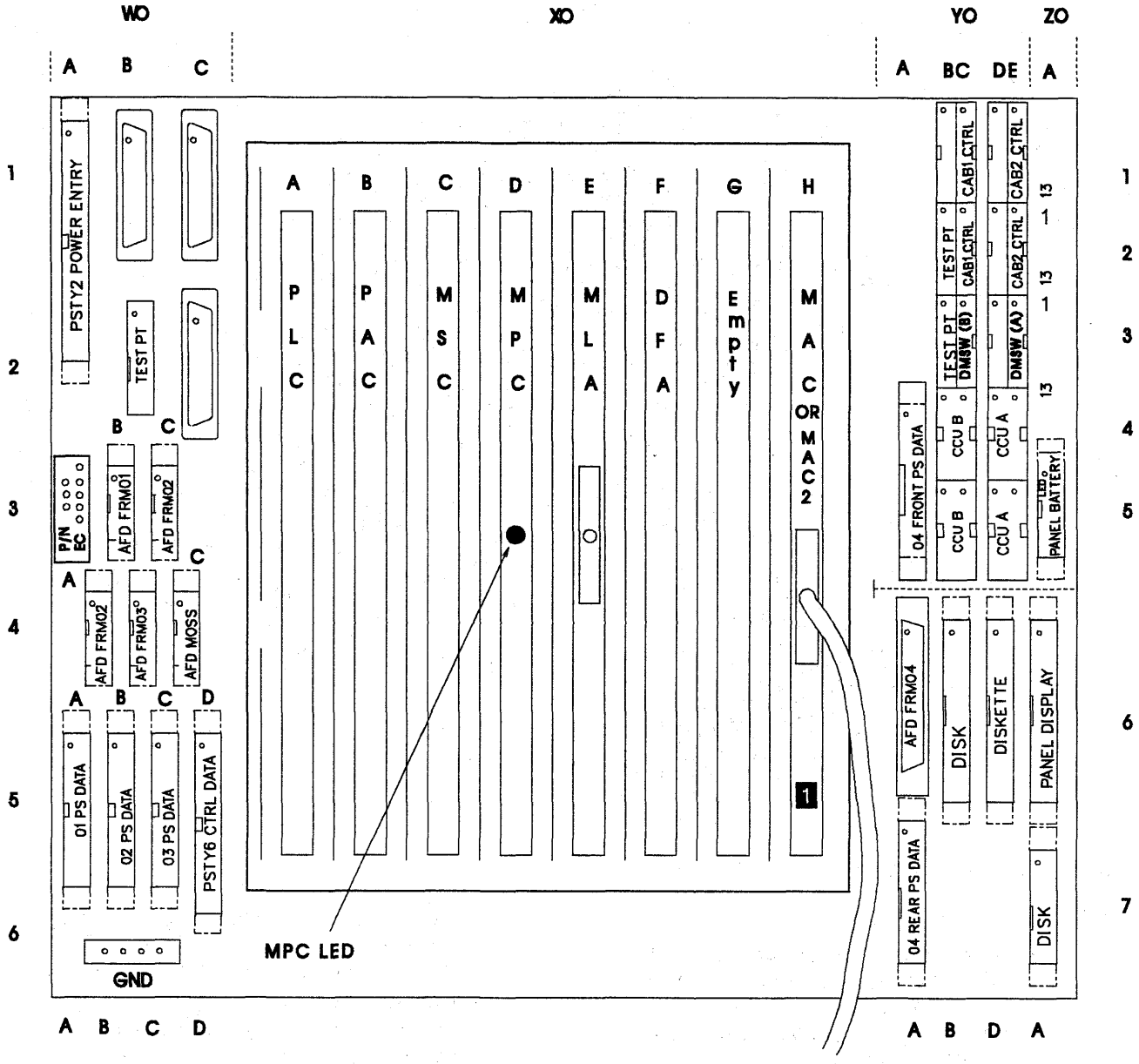


Figure 4-146. 3745 MOSS Board, Cards, and Connectors for Models 21A-61A

1 MAC card for models 21A and 41A or MAC2 card (without cable) for Models 31A and 61A.

6. Refer to Figure 4-145 on page 4-158 for Models 210-610

   Verify if the cards are labelled according their locations. If they are not, label them.

   Attention: Use the ESD kit and procedures..

   Remove the cards and put them in a safe place.

7. Refer to Figure 4-145 on page 4-158 for Models 210-610 or Figure 4-146 for Models 21A-61A.

   Verify that all the cables are labelled according their locations. If they are not, label them.

   Disconnect the cables from the 01A-W0, 01A-Y0, and 01A-Z0 areas.

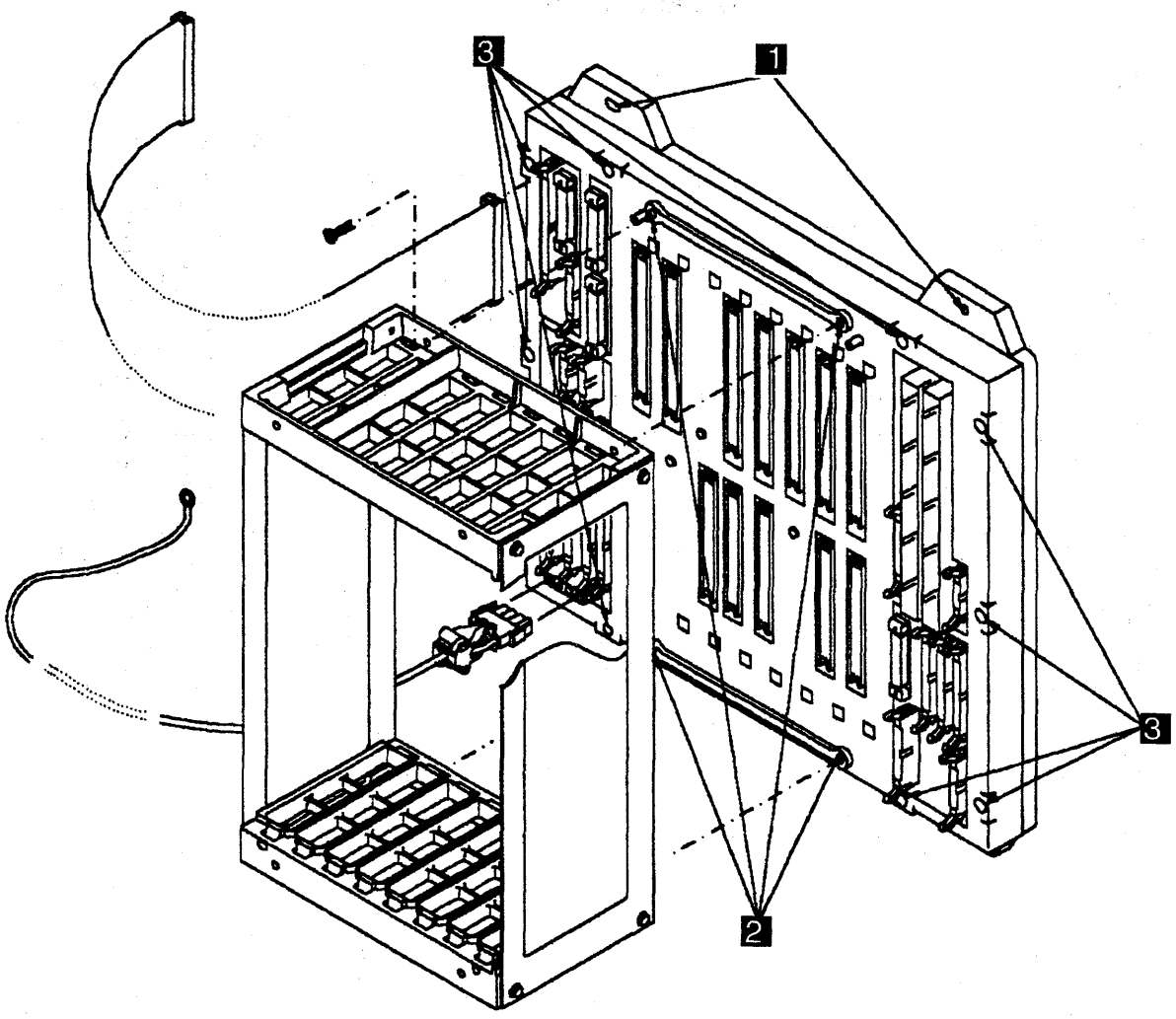


Figure 4-147. MOSS Board and Card Rail Assemblies

8. Refer to Figure 4-147.
   a. Remove the four screws 1 holding the MOSS board assembly to the machine frame. Remove the MOSS board assembly. Place the board assembly in a work area for later use.
   b. Remove the four screws 2 holding the rail assembly on the FRU board. Remove the rail assembly and store it for later use.
   c. Remove the 10 screws 3 holding the top stiffener of the MOSS board. Carefully remove the top stiffener. Lift the MOSS board out of the bottom stiffener.

Installation Procedure

1. Place the new MOSS board in the bottom stiffener.
2. Refer to Figure 4-147 on page 4-160.
   a. Replace the top stiffener and attach it with the 10 screws 3
   b. Attach the rail assembly to the top stiffener with the four screws 2 ,
   c. Attach the MOSS board and rail assembly to the base frame with the four screws 1 ,
3. Refer to Figure 4-145 on page 4-158.

   Install the cables at 01A-W0, 01A-Y0, and 01A-Z0 in their correct locations, according to their labels.
4. **Attention: Use the ESD kit and procedures.**.

   Install the cards in their correct locations according to their labels. Refer to Figure 4-145 on page 4-158.
5. Refer to Figure 4-145 on page 4-158.

   Reconnect the flat cable 2 (coming from the MPC card 01A-X0D1), to the PROM card 01A-X0E1 (if any).

   Reconnect the cable 1 to the MAC card 01A-X0H1 (if any).
6. Close the internal covers.
7. Switch **CB1** ON.
8. Close the doors of the base frame.
9. Turn the machine ON using the control panel as follows:
   a. Press **Power Control** until **3** appears in the power control window (power control in local).
   b. Press **Validate**.
   c. Press **Function** until **1** appears in the function window (function in MOSS IML).
   d. Press **Validate**.
   e. Press **Service** until **1** appears in the service window (service in Maintenance 1).
   f. Press **Validate**.
   g. Press **Power On Reset**.

   Note: The former actions will turn the machine ON, run MOSS diagnostics, and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19
10. Go to "Repair Verification Procedure" on page 4-178.

SAC Gate Assembly Exchange Procedure for Models 21x and 41x

Removal Procedure

1. **Advise the customer that the 3745 is to be turned OFF.**
2. Press **Power OFF** on the control panel.
3. Switch **CB1** OFF. Refer to Figure 4-148 for the location of the CB1.
4. Refer to Figure 4-149 on page 4-163 to locate the SAC boards (SACU and SACL).
5. Refer to Figure 4-150 on page 4-164. Working from the rear of frame 01, do the following:
   a. Loosen the four screws which maintain the internal cover and remove the cover.
   b. Remove the blanking plate assembly by removing the four screws 1
   c. **Attention: Use the ESD kit and procedures.**

      Check that the cards are labeled according to their positions. If they are not, label them. Refer to Figure 4-152 on page 4-165 and remove the cards as follows:
      1) Using both hands, release levers A and B simultaneously by moving them upwards and outwards.
      2) Gently Press in catches C and D and pull the card assembly out of the SAC gate assembly.
   d. Note the locations and remove the cables from the Z row of the SACL board.
   e. Remove the cable cover 2 by removing the two screws 3 .
   f. Note the locations and remove the trilead packs from the SACL board.
   g. Note the locations and remove the cables from the Y row of the SACL board.
   h. Ensure that all the removed cables are clear of the board assembly.

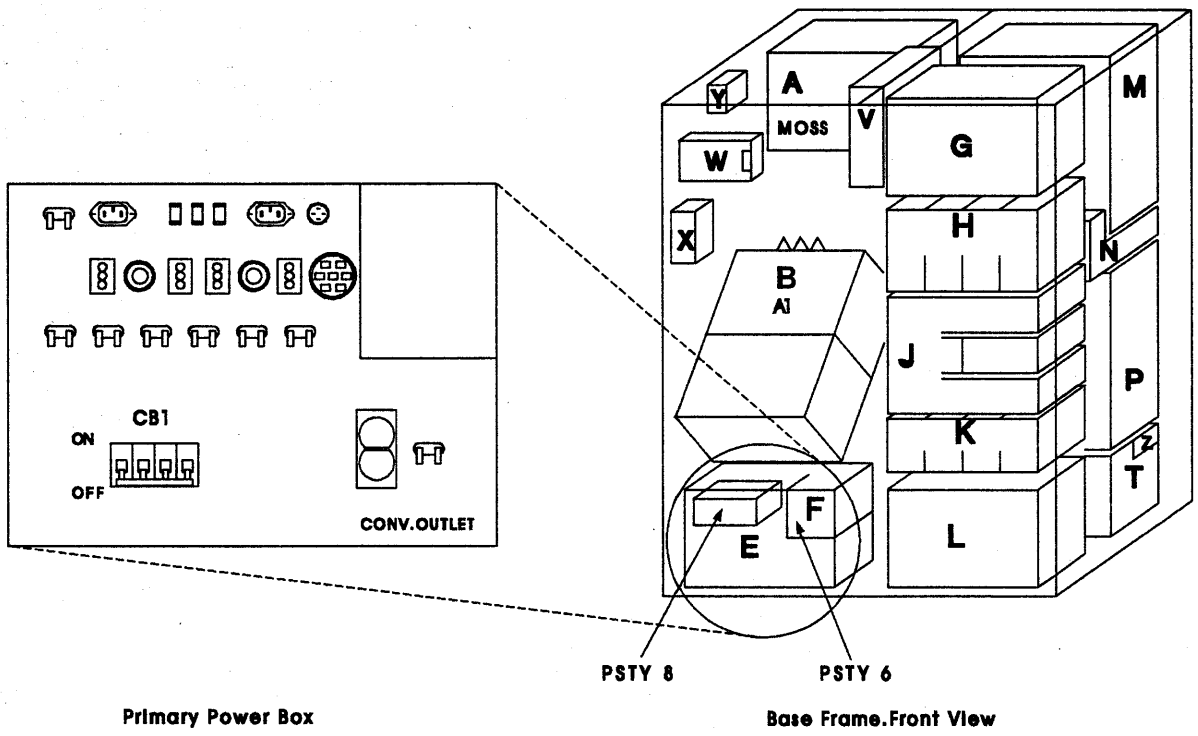


Figure 4-148. Primary Power Box in Frame 01

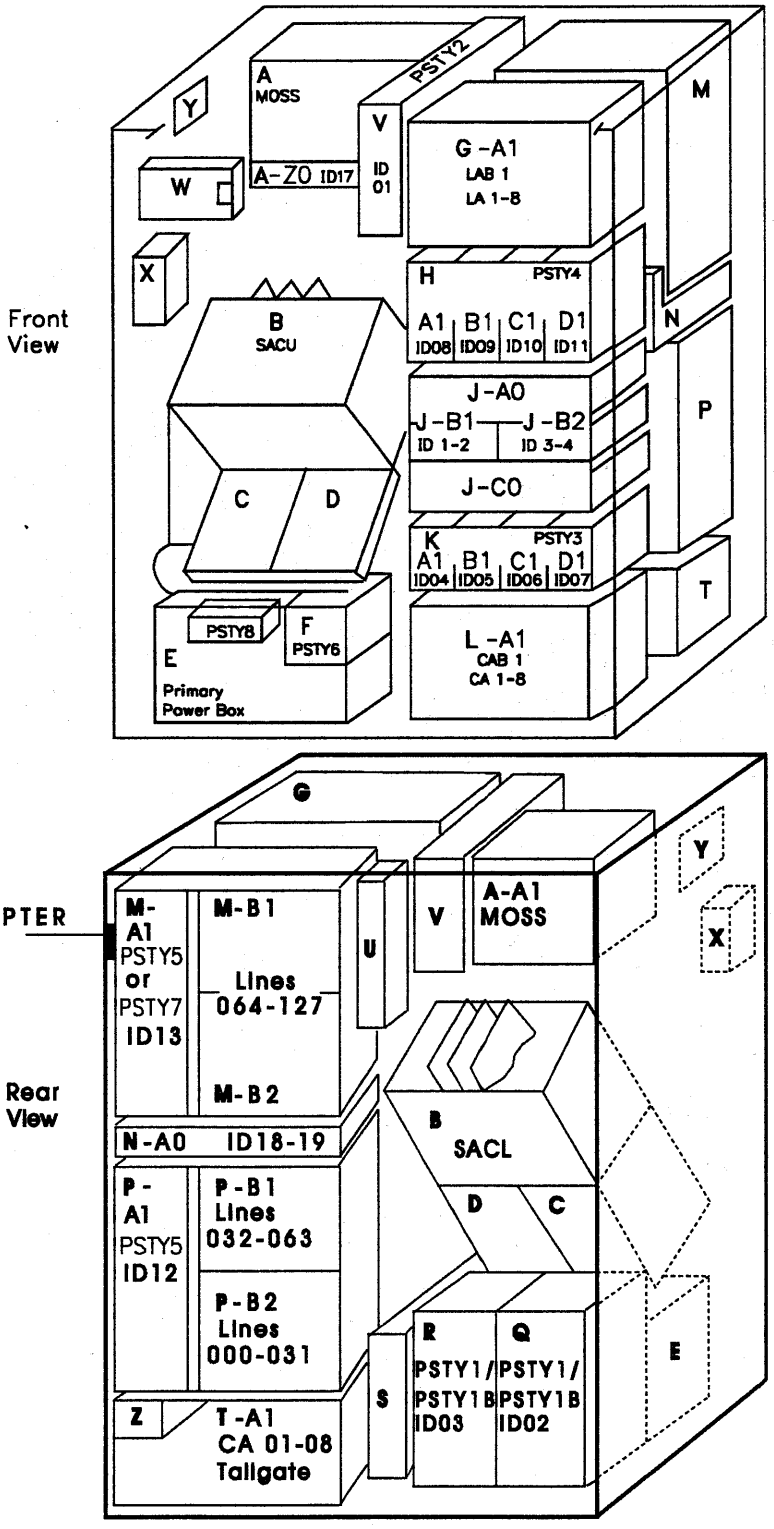


Figure 4-149. Frame 01 Front and Rear View

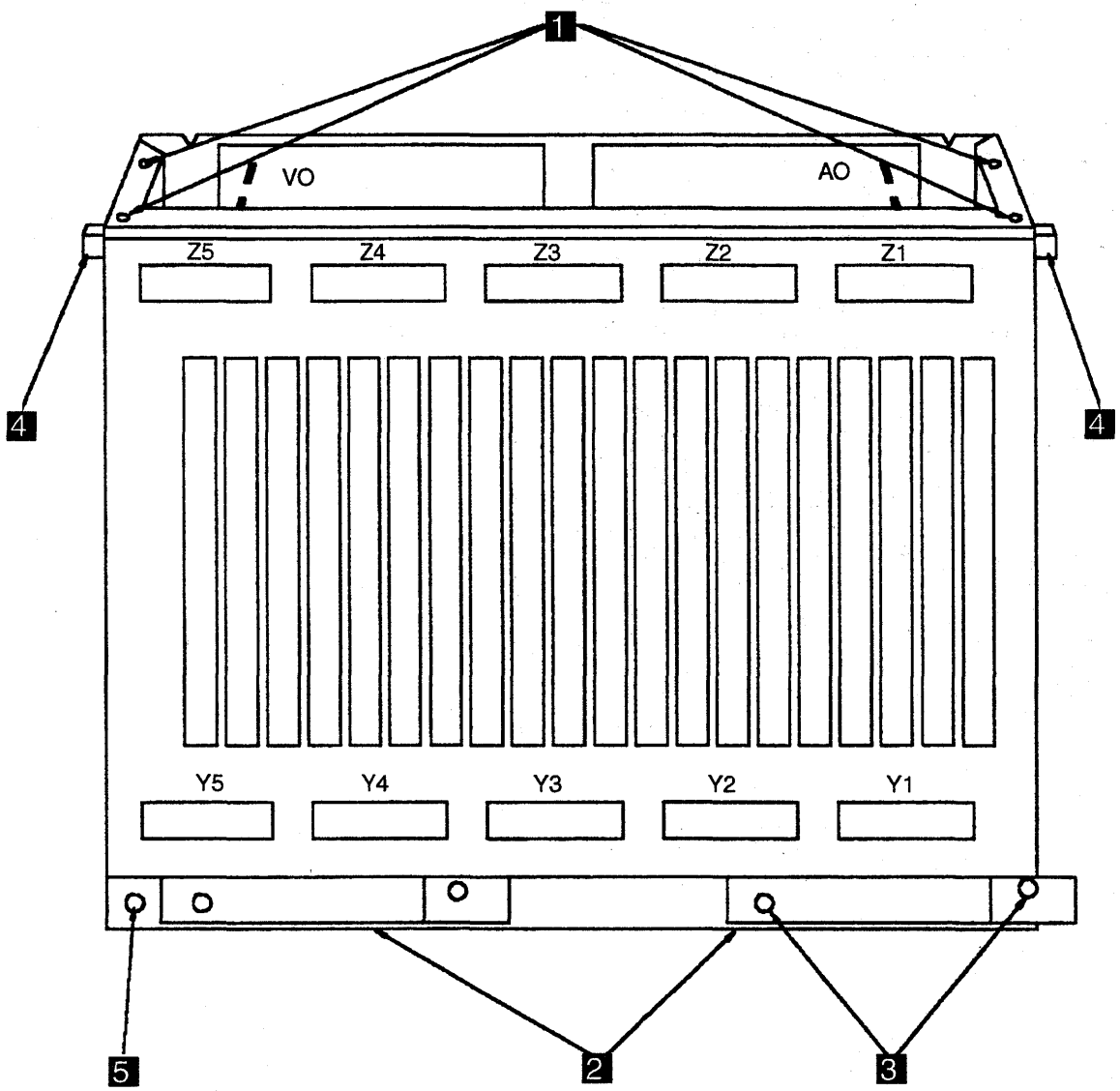


Figure 4-150. Rear View of the SAC Gate Assembly

6. Refer to Figure 4-151 on page 4-165. Working from the front of frame 01, do the following:
   a. Open the internal door.
   b. Open the control panel door.
   c. Note the locations and remove the cables from the Z row of the SACU board.
   d. Note the locations and remove the ribbon cables from the SACU board.
   e. Note the locations and remove the cables from the Y row of the SACU board.
   f. Ensure that all the removed cables are clear of the SAC gate assembly.

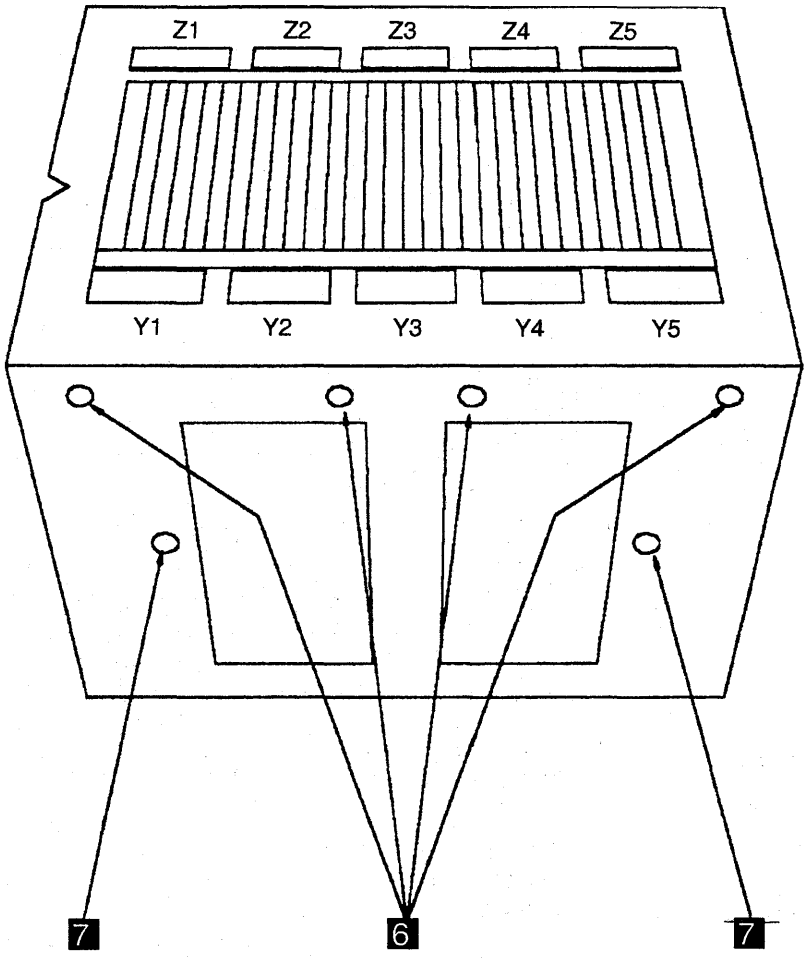


Figure 4-151. Front View of the SAC Gate Assembly

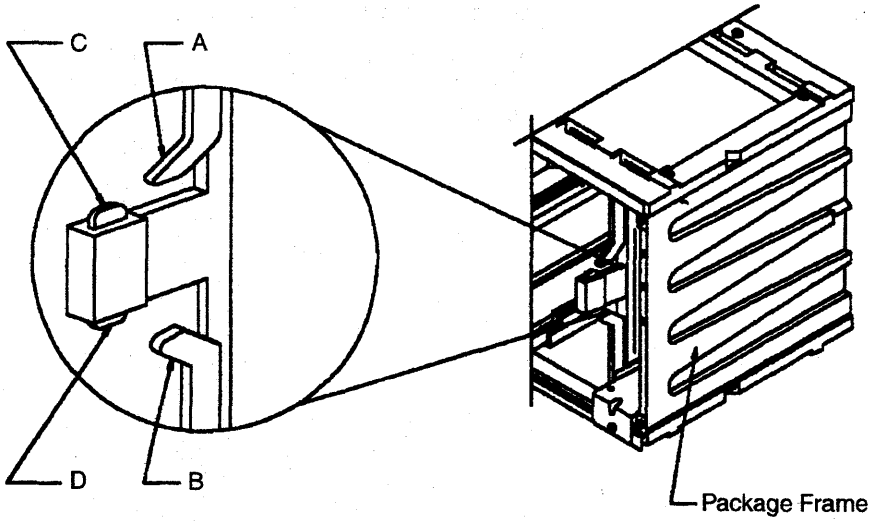


Figure 4-152. Card Clamp Mechanism

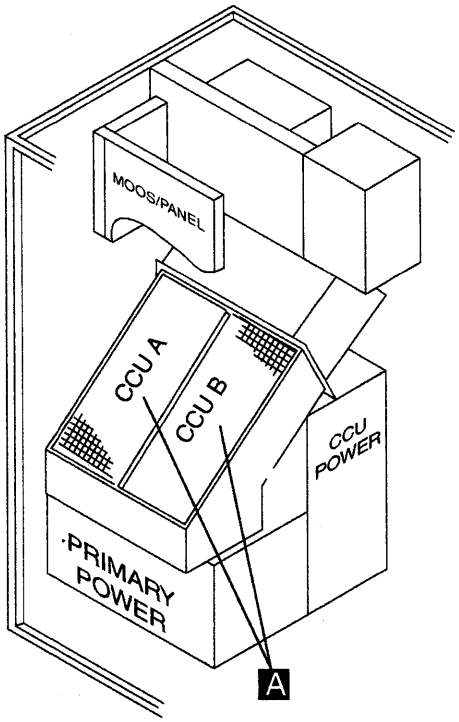


Figure 4-153. SAC air moving device Unit Location

7. Refer to Figure 4-153 and to Figure 4-154 and remove the air moving devices as follows:
   a. Unplug the air moving device power cord.
   b. Remove the four mounting screws from the air moving device unit.
   c. To remove the air moving device, swing the bottom of the unit out and lift the air moving device out.
   d. Repeat the procedure for the second air moving device if present, otherwise remove the blanking cover by removing the four mounting screws.

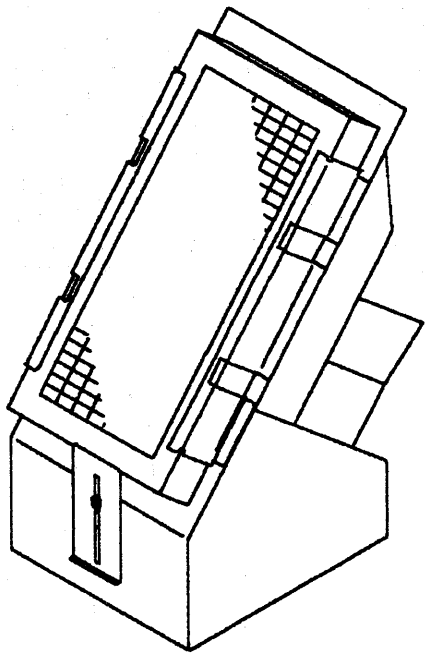


Figure 4-154. SAC Air Moving Device

8. Refer to Figure 4-151 on page 4-165. Remove the four screws 6 holding the SAC gate assembly.
9. Refer to Figure 4-150 on page 4-164. Working from the rear of frame 01, do the following:
   a. Open the cable clips 4 and remove the FDS cables.
   b. Remove the two screws 5 holding the gate assembly to the frame.
   c. Referring to Figure 4-151 on page 4-165 and working through the gate assembly, remove the last two screws 7 still holding the gate assembly to the frame.
   d. **Attention: The SAC gate assembly weighs approximately 10 kg.**
   e. Very carefully remove the SAC gate assembly by lifting it upwards with both hands.

Installation Procedure

1. Install the labels shipped with the new SAC gate assembly using the enclosed instructions.

Refer to Figure 4-150 on page 4-164 and Figure 4-151 on page 4-165.

2. Working from the rear, do the following:
   a. Put the new SAC gate assembly in place.
   b. Fasten the SAC gate assembly to the frame with the two center screws 7 and two bottom screws 5. Do not tighten the screws.
3. Working from the front, do the following:
   a. Install the four top screws 6. Do not tighten the screws.
   b. Align the SAC gate assembly with the bottom and sides of the opening and tighten all eight screws.
   c. Reconnect the ribbon cables to the SACU board.
   d. Reconnect the cables to Z and Y rows of the SACU board. Refer to Figure 4-13 on page 4-17.
   e. Re-install the air moving device(s).
4. Working from the rear, do the following:
   a. Feed the FDS cables going to the SACU board from the rear, through the cable clips 4. Close the clips.
   b. Reconnect the cables to the Y row of the SACL board. Refer to Figure 4-15 on page 4-19.
   c. Reconnect all the trilead packs on the SACL board.
   d. Reconnect the cables to the Z row of the SACL board.
   e. Re-install the cable cover 2 by installing the two screws 3 ensuring that no trileads are trapped.
   f. **Attention: Use the ESD kit and procedures.**
   g. Re-install the cards.

      Note: In order to improve contact, maneuver card seating levers three times for every card.
   h. Re-install the blanking plate assembly by installing the four screws 1.
   i. Re-install the SAC gate assembly internal cover.
5. Close the front internal door and the control panel door.
6. Switch the **CB1** ON.
7. Close the frame doors.
8. Turn the machine ON using the control panel as follows:
   a. Press **Power Control** until **3** appears in the power control window (power control in Local).
   b. Press **Validate**.
   c. Press **Function** until **1** appears in the function window (function in MOSS IML).
   d. Press **Validate**.
   e. Press **Service** until **1** appears in the service window (service in Maintenance 1).
   f. Press **Validate**.
   g. Press **Power On Reset**.

   Note: The former actions will turn the machine ON, run MOSS diagnostics, and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19
9. Run the CCU and the IOC bus diagnostics. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1.
10. Go to "Repair Verification Procedure" on page 4-178.

SAC2 Gate Assembly Exchange Procedure for Models 31x and 61x

Removal Procedure

1. **Advise the customer that the 3745 is to be turned OFF.**
2. Press **Power OFF** on the control panel.
3. Open the doors of frame 01 (base frame).
4. Switch **CB1** OFF. Refer to Figure 4-155 for the location of CB1.

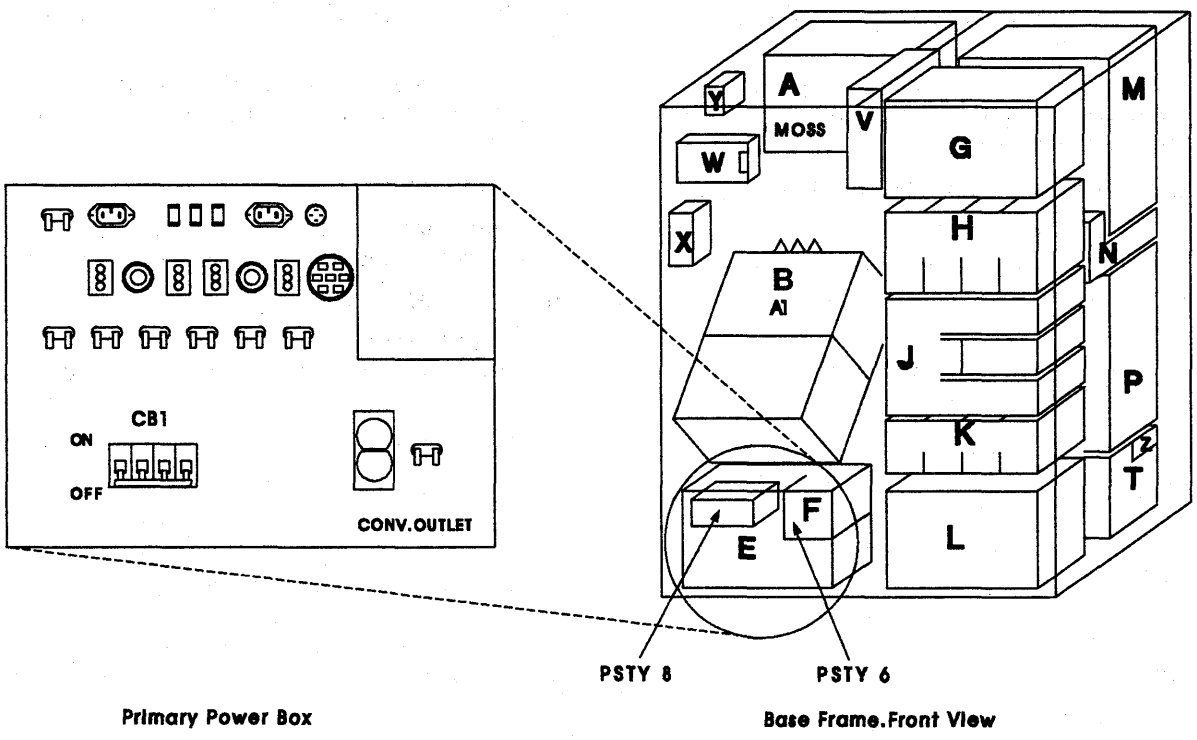


Figure 4-155. Primary Power BOX in Frame 01

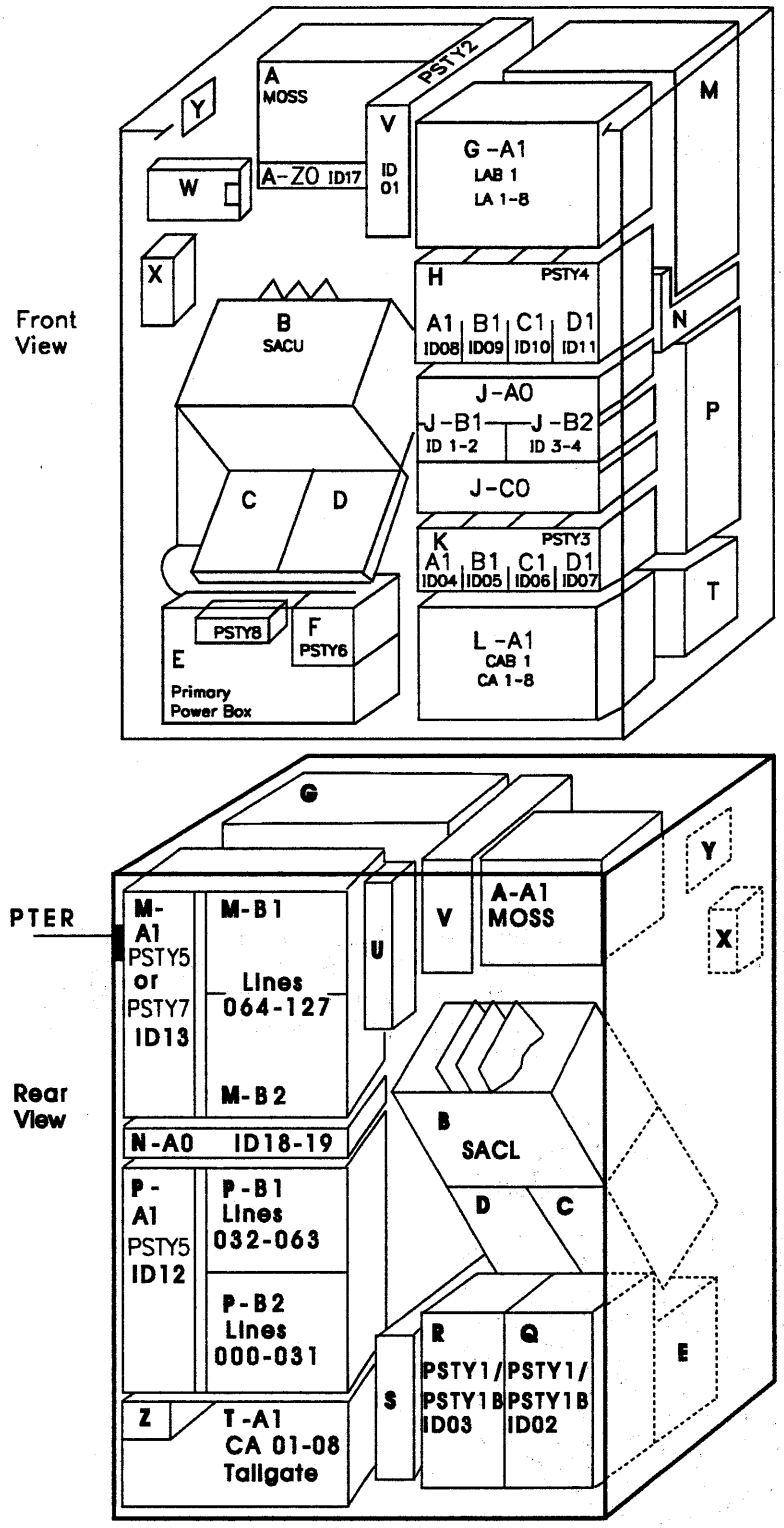


Figure 4-156. Frame 01 Front and Rear View

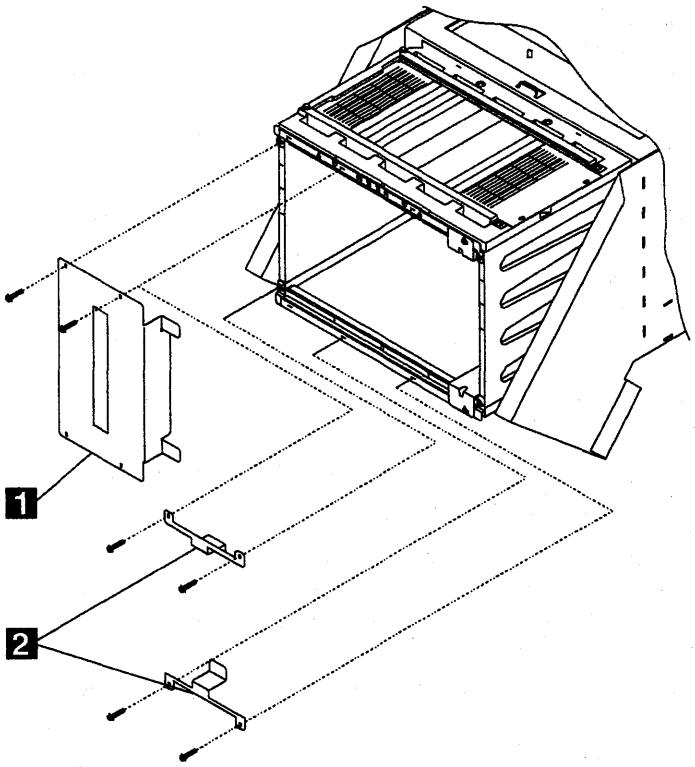


Figure 4-157. SAC Gate Assembly - Brackets

5. Refer to Figure 4-156 on page 4-169 to locate the SAC boards (SACU and SACL).
6. Refer to Figure 4-157. Working from the rear of frame 01, do the following:
   a. Remove the brackets which maintain the central cards. One bracket 1 for the 3745 simplex model, two brackets 2 for the 3745 duplex model. Four screws must be removed.

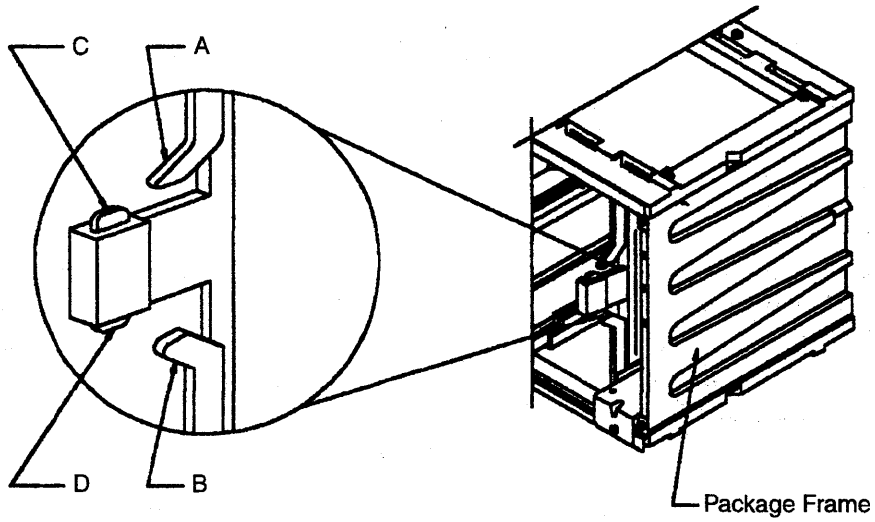


Figure 4-158. Card Clamp Mechanism

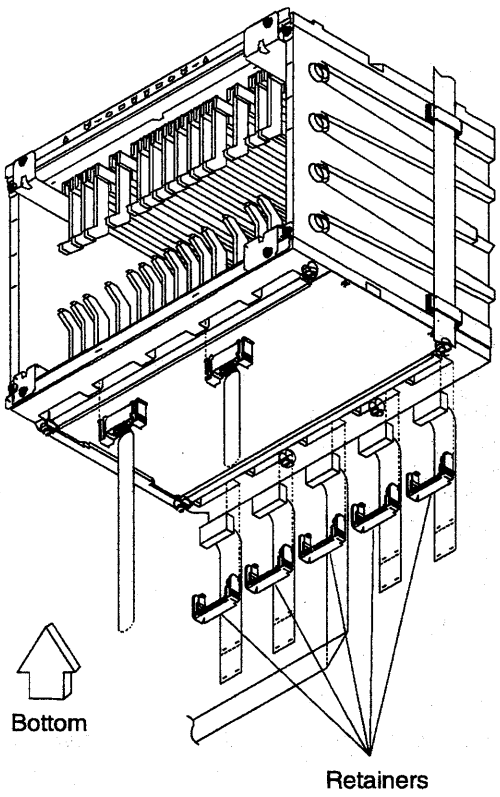


Figure 4-159. Lower View of the SAC Gate Assembly

b. **Attention: Use the ESD kit and procedures.**.

c. Check that the cards are labelled according to their positions. If they are not, label them. Refer to Figure 4-158 on page 4-170 and remove the cards as follows:

   1) Using both hands, release levers A and B simultaneously by moving them upwards and outwards.

   2) Gently press in catches C and D and pull the card assembly out of the SAC gate assembly.

d. Refer to Figure 4-159. Check if the cables are labelled according to their positions. If they are not, label them. Remove the retainers and the cables from the Y and Z rows.

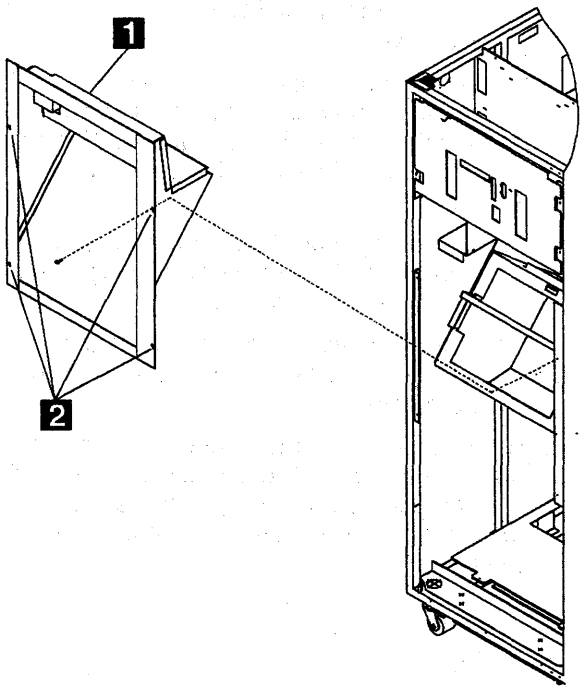


Figure 4-160. Air Duct

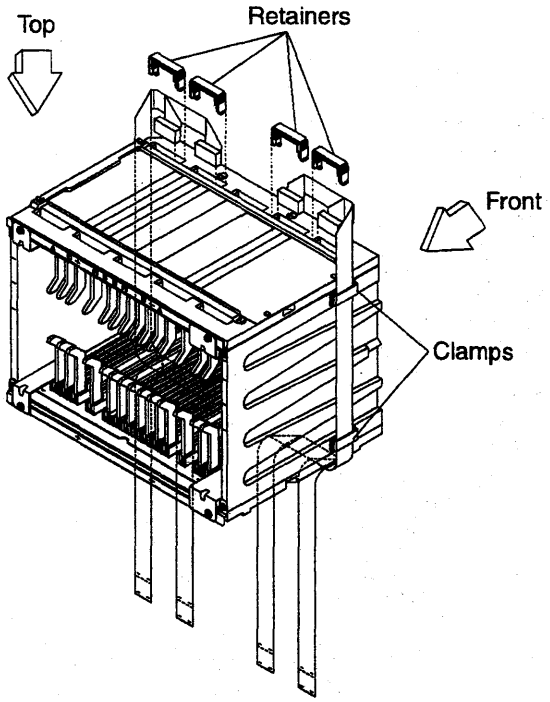


Figure 4-161. Upper View of the SAC Gate Assembly

7. Refer to Figure 4-160. Working from the front side, do the following:
   a. Loosen the four screws 2 which maintain the air duct 1 on the frame.
   b. Lift the air duct up and remove it.
8. Refer to Figure 4-161. Working from the front of frame 01, do the following:
   a. Check that the cables are labeled according to their positions. If they are not, label them.
   b. Remove the ribbon cables from the central area of the SACU board.
   c. Open the clamps. Remove the retainers and the cables from row Y of the SACU board.
   d. Ensure all the removed cables are well clear of the SAC gate assembly.

9. Refer to Figure 4-162 and to Figure 4-163 and remove the air moving devices as follows:

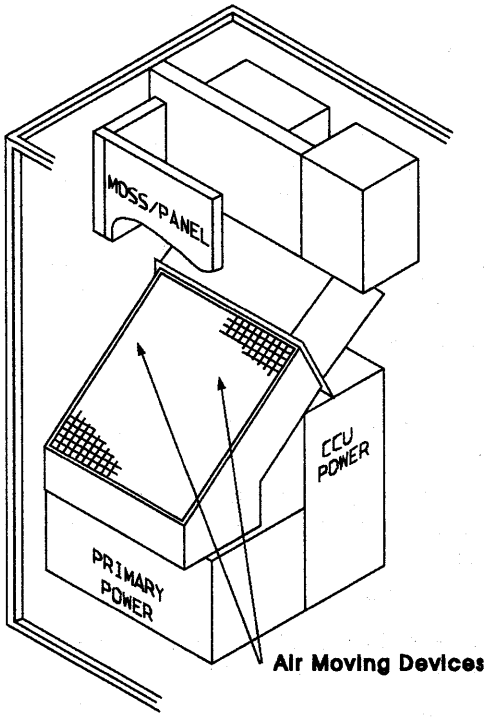


Figure 4-162. SAC air moving devices Unit Location

a. Unplug the air moving device power cords.

b. Remove the plate 1 and the bracket 3 by removing the five screws 2 .

c. Remove the the upper filter.

d. Disconnect the ground wires 7 .

e. Remove the two air moving device units 5 (or the left air moving device and the right plate if you are working on a 3745 simplex model). To do that, eight nuts 4 have to be removed.

f. Remove the two pads 6 .

g. You can now access the eight screws 8 wich maintain the SAC gate assembly 9 .

h. **Attention: The SAC gate assembly weighs approximately 10 kg.**

i. A second person must support (at the rear side) the SAC gate assembly while removing the eight screws.

j. Working from the rear side, very carefully remove the SAC gate assembly by lifting it upwards with both hands.

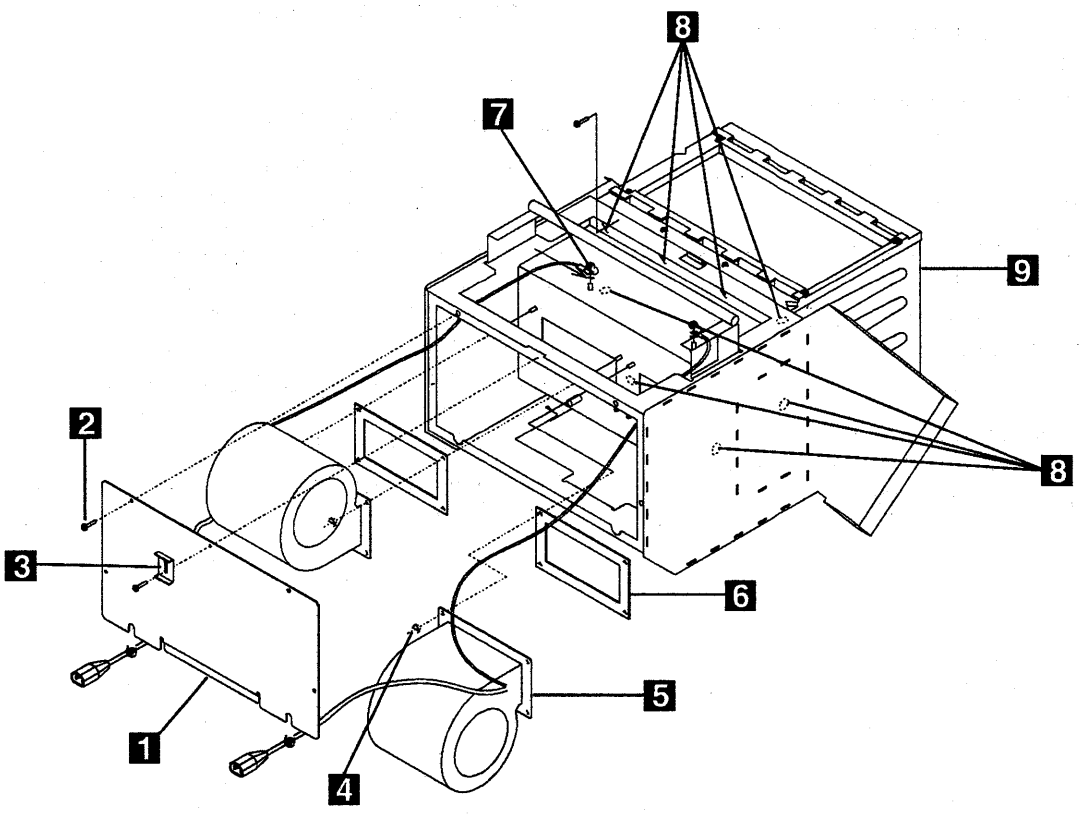


Figure 4-163. Air Moving Device Unit Removal

Installation Procedure

1. Install the labels shipped with the new SAC gate assembly using the enclosed instructions.
2. Refer to Figure 4-163 on page 4-173. Do the following :
   a. From the rear side, put the new SAC gate assembly **9** in place.
   b. While you support the SAC gate assembly, a second person must install the eight screws **8** at the front side.
   c. At the front side, install the two pads **6**.
   d. Re-install the two air moving device units (or the left air moving device unit and the right plate if you are working on a 3745 simplex model). Tighten the eigth nuts **4** which maintain the air moving device units.
   e. Reconnect the ground wires **7**.
   f. Re-install the upper filter.
   g. Re-install the plate **1** and the bracket **3** using the five screws **2**.
   h. Replug the air moving device power cords.
3. Refer to Figure 4-161 on page 4-172. At the front side, do the following:
   a. Reconnect the cables to the Y row of the SACU board.
   b. Re-install the retainers and close the clamps.
   c. Reconnect the ribbon cables to the central area of the SACU board.
4. Refer to Figure 4-159 on page 4-171. At the rear side, do the following:
   a. Reconnect the cables to the Y and Z row of the SACL board.
   b. Re-install the retainers.
5. Refer to Figure 4-160 on page 4-172. At the front side, re-install the air duct as follow:
   a. Slide down the air duct **1**.
   b. Tighten the four srews **2**.
6. Refer to Figure 4-157 on page 4-170. From the rear side, do the following :
   a. **Attention: Use the ESD kit and procedures..**
   b. Re-install the cards.
      Note: In order to improve contact, maneuver the card seating levers three times for every card.
   c. Re-install the brackets **1** or **2** which maintains the central cards using the four screws.
7. Switch **CB1** ON.
8. Close the frame doors.
9. Turn the machine ON using the control panel as follows:
   a. Press **Power Control** until **3** appears in the power control window (power control in Local).
   b. Press **Validate**.
   c. Press **Function** until **1** appears in the function window (function in MOSS IML).
   d. Press **Validate**.
   e. Press **Service** until **1** appears in the service window (service in Maintenance 1).
   f. Press **Validate**.
   g. Press **Power On Reset**.

   Note: The former actions will turn the machine ON, run MOSS diagnostics, and complete a MOSS IML. A successful completion will result in a code **F0E**, **F0F**, or **000**. If any other code is displayed, an error was detected. See "3745 Control Panel Codes" on page 1-19.
10. Run the CCU and the IOC bus diagnostics. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1.
11. Go to "Repair Verification Procedure" on page 4-178.

TCM Board Exchange Procedure

The following procedures concern the removal and installation of the thermal conduction modules (TCM) board.

This procedure is valid for both CCUs.

Attention: The TCM is susceptible to mechanical shock damage. Carefully observe handling instructions and keep the TCM in its shipping container whenever it is not in the machine.

Removal and Replacement Procedure:

Attention: Advise the customer that the 3745 is to be turned OFF.

In order to access the TCM board it is necessary to remove the TCM.

Attention: Always remove the TCM before exchanging a TCM board. If not, the TCM may be damaged.

Refer to "TCM Removal" on page 4-104.

TCM Board Removal:

1. Referring to Figure 4-164 on page 4-176:
   - Using the torque tool, disconnect the three supergroupers **A** positions B1, A2, and A4 located on the TCM board (TCM side).
   - At the rear of the machine, open the cover.
   - Unscrew the FDS retaining screws.
   - Remove the FDS bracket.
   - Disconnect the FDS **B** positions C1, A3, and C4.
   - Disconnect the sense cable **C**.
2. Remove the PS type 1 (except TB-1 disconnect). Refer to "PS Type 1 Exchange Procedure for Models 21x and 41x" on page 4-111.
3. Referring to Figure 4-165 on page 4-177, use the torque tool and remove the 10 mounting screws.

   Note: To access the two lower screws, slide the SAC cage assembly about 15 centimeters. Some, but not all, the cables must be disconnected to allow the SAC cage to slide back.
4. Carefully remove the TCM board from the machine.
5. Remove the metallic RFI cover and save it for later use.

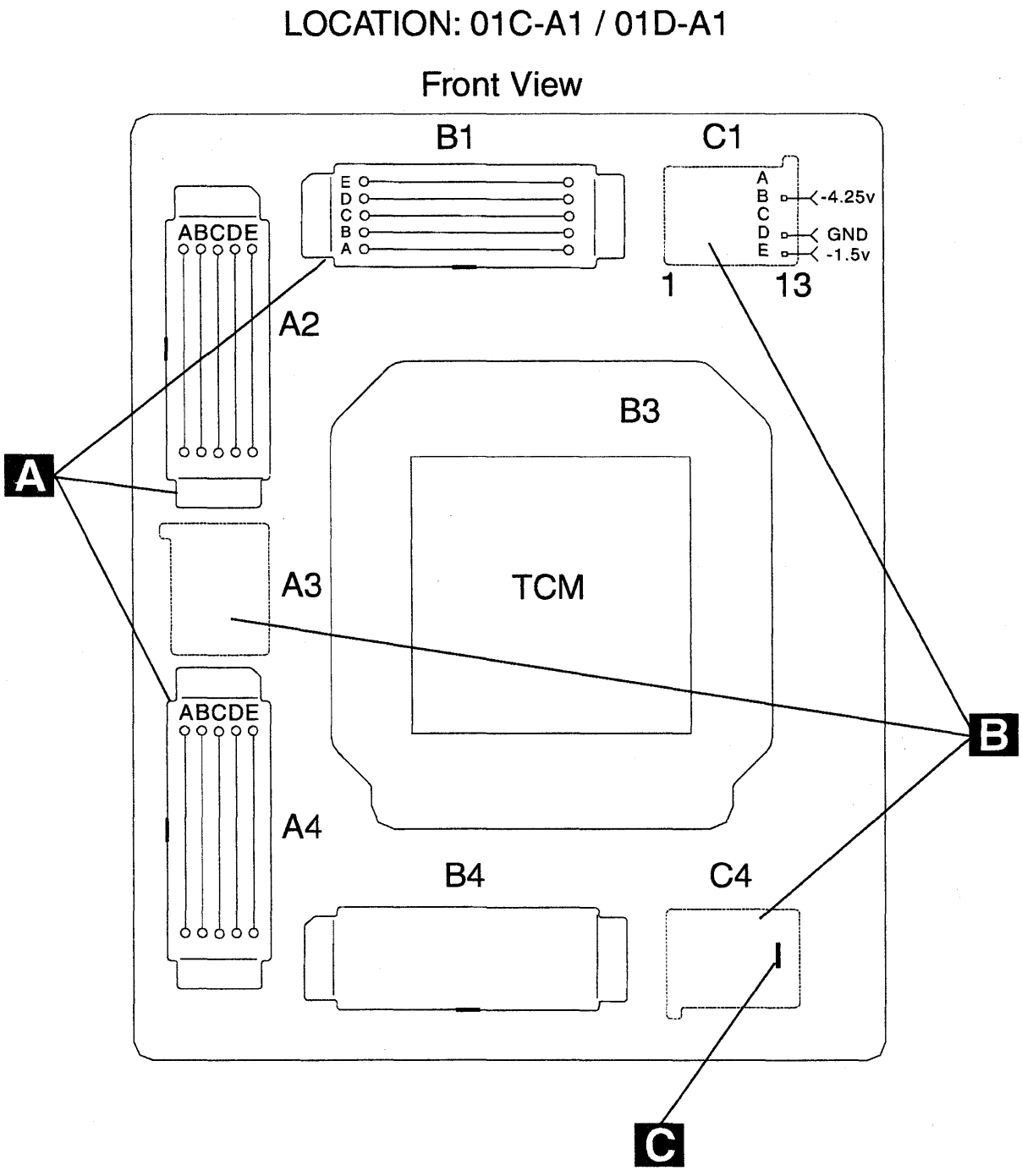


Figure 4-164. TCM Board

TCM Board Installation: Attention: Before installing the TCM board, inspect it for dirt or damage. DO NOT INSTALL the TCM board if damaged, or in doubtful shape.

Proceed as follows:

1. Before installing the new board, install the RFI metallic cover over the plastic cover, using the plastic cover screws.
2. Carefully install the TCM board into the machine.
3. Using the torque tool, fasten the 10 mounting screws.
4. Re-install the PS type 1. Refer to "PS Type 1 Exchange Procedure for Models 21x and 41x" on page 4-111.
5. Re-install the TCM using "TCM Installation" on page 4-108.
6. Refer to Chapter 3, "How to Run the Diagnostics" on page 3-1, and run the CCU diagnostics.
7. Go to "Repair Verification Procedure" on page 4-178.

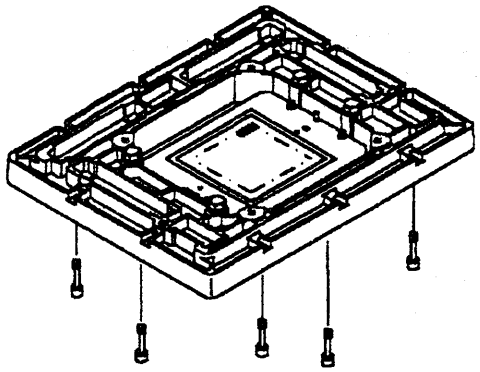


Figure 4-165. Board Screws

Repair Verification Procedure

Verification Procedure 0001

001

Have you been told to exchange all FRUs for an intermittent problem? (From Step 17. "Action to Take After a Diagnostic Run" on page 3-48).
Yes No

No: 002

Go to Step 008.

Yes: 003

Did the diagnostics run error free or power successfully on?
Yes No

No: 004

There is a problem with the new FRU. Try another FRU or put the original back in. Go to Chapter 4, "FRU Exchange" on page 4-1.

005

Have all the FRUs called been exchanged?
Yes No

No: 006

Go to Chapter 4, "FRU Exchange" on page 4-1 for next FRU called.

Yes: 007

Go to "CE Leaving Procedure" on page 4-180.

008

Was the FRU other than a power supply?
Yes No

No: 009

Has the power supply successfully powered up?
Yes No

No: 010

Go to Step 021 on page 4-179.

Yes: 011

(Step **011** continues)

011 (continued)

Go to "CE Leaving Procedure" on page 4-180.

012

Did the last run of diagnostics or IML detect an error?
Yes No

No: 013

Go to "CE Leaving Procedure" on page 4-180.

Yes: 014

Is the error the same as before?
Yes No

No: 015

Go to Step 019.

Yes: 016

– The problem is not solved by changing this FRU. Put the original FRU back in.

Have all the FRUs called been changed?
Yes No

No: 017

Go to "3745 FRU List" on page 1-39 for next FRU called.

Yes: 018

Go to Step 021 on page 4-179.

019

– Check that you have done is correct:

- Cards seating
- Cables seating
- Crossovers, location, and orientation
- Switches in correct position.

– Run the diagnostics again, IML, or any other action you were asked after FRU exchange.
(Step **019** continues)

019 (continued)

Was a failure detected?

Yes **No**

020

Go to "CE Leaving Procedure" on page 4-180.

021

During your path through the MIP, have you recorded another Action or MAP to use?

Yes **No**

022

You may have a defective new FRU, or multiple problems. Determine if restarting the full procedure, or if another symptom may help you.
Also suspect cables, boards, and voltages. It may also be necessary to run diagnostics with the **ALL** option in offline mode. In any case, contact your support structure for further assistance.

023

Go there now.

CE Leaving Procedure

The maintenance package has determined that the 3745 is ready to be returned to normal operation.

001

Did you work on a 3745 Model 21A, 31A, 41A, or 61A, or on a 3746-900?
Yes No

002

Go to Step 004.

003

- In the **MOSS-E View** window, double click on the service processor icon.
- The **Service Processor Menu** window is displayed.
- Click on the **Configuration Management** option.
- Double-click on the **Manage Remote Operations** option.
- In the **Remote Operation Management** window, select the **Remote operations authorization** option and click on **OK**
- In the **Remote Support Facility** window, select the two following options:
  - **Enable Remote Support Facility**
  - **Generate alerts**.
- Click on **OK**
- Click on **Cancel** to return to **Service Processor Menu**.
- Click on **Function** and **Exit** to return to the **MOSS-E View** window.
- In the **MOSS-E View** window, click on **Program** in the action bar.
- Click on **Log off MOSS-E**
- Continue with Step 004.

004

Use the following list to ensure that the machine is in suitable condition for customer operation and that call information is recorded.

1. Replace any cables removed.
2. Do all actions that apply in the following list:

If You Have	What You Should Do
Exchanged all the FRUs called for an intermittent problem or a problem not detected by the diagnostics (tentative repair which may be unsuccessful).	Use the manual BER correlation to point out some additional potentially failing FRUs. Proceed as follows: 1. In the Error Log Display, find the alarm with the reference code used to exchange the FRUs. 2. Select the BER range which occurs in the same time frame as the alarm. 3. In menu **3**, type **BRC** 4. Enter the most recent and the oldest BER in the range selected, then press **SEND/ENTER** 5. Note the extra FRUs, if any, provided by the BER correlation and advise the HSC/HCS or update the PMH in case of problem reoccurrence.
Used the MIP for an installation	Go back to the installation procedure in the installation manual.
Exchanged the PLC card	1. Set the time-of-day clock and recreate the power configuration table. Refer to the *IBM 3745 Communication Controller Service Function*, SY33-2055. 2. Tell the customer that the **scheduled power ON** services will have to be recreated.

Exchanged the 3745 HDD	Tell the customer that he must: 1. Refresh the NCP on this disk if he uses HDD to load the control program. 2. Update the passwords.
Exchanged a PUC	Return the old PUC IMMEDIATELY to your Branch Office Stores (shipment can then occur to the designated plant to permit failure analysis)
Run the wrap diagnostic on the CA or power bus	Ensure that the wrap plug is removed and replaced by the normal cable.
Run the offline diagnostics	Ensure that you have terminated diagnostics by pressing **F1**. Otherwise, the MOSS will remain in **service** mode.
Been working on a Model 410 or 610 (2 CCUs)	Ensure that no CCU is in the **down** state. If one is in the down state, use the **REP** facility in menu **2** to change the failing CCU from the **down** to the **ready** state.
Been working on the channels area in concurrent maintenance mode with ACF/NCP Version 5 Release 2 or higher	Restore the adapters back to NCP, using the channel service screen. Refer to "CA Restore Procedure" on page 4-183.
Been working on the TSS or HPTSS adapter area in concurrent maintenance mode	• Remove all wrap plugs installed during this service call. • Replace all modem and line cables removed during this service call. • If the CDFs were altered during this service call, check the CDFs and update, if necessary. Refer to the "3745 Service Functions". • IML the scanners that are disconnected from the NCP during this call. This can be done, by selecting **IMS** from the menu **1** When IML is complete, the adapters will automatically be connected to the NCP. • Ask the customer to reactivate the lines that were stopped during maintenance.
Been working with TRSS in concurrent maintenance mode	• Connect the TRAs that were disconnected during this service call back to the NCP. Refer to "TRA Reconnect Procedure" on page 4-183. • Ask the customer to reactivate the rings stopped during the maintenance.

3. IML the MOSS as follows:
   - Set service to **0** (normal mode).
   - Press **Validate**.
   - Set function to **1** (MOSS IML).
   - Press **Validate**.
4. Set the console in use according to customer requirements.
5. Restore the power mode as it was before your intervention.
6. Do all actions that apply in the following list:

If You Have	What You Should Do
Had the MOSS offline	Put the MOSS online. For details, refer to page 4-183.

Disabled a complete CSS	Ask the customer to IPL that CSS and load the NCP. Verify that the IPL completes without errors. If the system is not available to load the NCP into the box, return the console to maintenance mode and IPL, Step-by-Step. At the beginning of phase 4, verify that you do not have the message **SCANNER(s) not IMLED xxxx** displayed. Continue to end of phase 4.
Had the whole configuration	Ask the customer to IPL and load the NCP into both CCUs. Verify that both IPLs complete without errors. If the system is not available to load the NCP into both CCUs, return the console to maintenance mode and IPL each CCU (which does not have NCP loaded) Step-by-Step. At the beginning of phase 4, verify that you do not have the message **SCANNER(s) not IMLED xxxx** displayed. Continue to end of phase 4.
Repaired a CCU unused by the customer (stand-by mode)	Inform the customer that this CCU is ready for IPL.
If you are in fallback mode	Ask the customer to **switch back** the complete system, and to reactivate the resources.
Disabled some channels	Ask the customer: • To re-enable them using the CID screen. • To put them online from the host.
Put the 3746-900 offline	Put the 3746-900 in online mode.
Been working on the 3746-900 in concurrent maintenance mode on processors or couplers	Use the CDF-E display function to check that the replaced/tested FRUs are available or active.

7. Ensure that all latches holding the internal covers are in the vertical position. This is to prevent the ESD door rubbers from being damaged, and to ensure a proper contact with the machine frame.
8. Replace all covers.
9. Leave the machine in a **safe** condition.
10. Record the actions taken and the FRUs replaced during the call. If the origin of the intervention was an alarm A5 or AA, report as preventive maintenance (Service Code 08).
11. Update the PMH record for this call.
12. Return parts to the stock room.

CA Restore Procedure

1. On the 3745 console, display menu 3 and type **CAS** in the selection area for channel adapter services.
2. Press **SEND/ENTER**.
3. Type **4** for concurrent maintenance commands.
4. Press **SEND/ENTER**.
5. Type the channel adapter number corresponding to this FRU in the CA number ===>field.
6. Press **SEND/ENTER**.
7. Type **RES** in the command ===>field.
8. Press **SEND/ENTER**.
9. Re-initiate the same procedure from Step 5 for the associated CA, if any.

TRA Reconnect Procedure: For this procedure you may wish to refer to Figure 1-22 on page 1-106, Figure 1-24 on page 1-107, and Figure 1-23 on page 1-106.

1. Display menu 3 and enter **TRS** for TRSS services.
2. Press **SEND/ENTER**.
3. Type **1** in the selection area to choose Select.
4. Press **SEND/ENTER**.
5. In the input area, enter the TRA number.
6. Press **SEND/ENTER**.
7. In the selection area, enter **2** for connect/disconnect.
8. Press **SEND/ENTER**.
9. In the input area, enter **CT** to connect the selected adapter to the NCP.
10. Press **SEND/ENTER**.

How to Put the MOSS Online

Note: The MOSS can be put online only if the NCP is running.

1. Using the console, display menu 2.
2. If you are working on a 3745-21x or 31x, type **MON** in the selection area.
3. Press **SEND/ENTER**.
4. **MOSS ONLINE** will be displayed on the screen.
5. If you are working on a 3745-41x or 61x, from menu 2, select CCU SEL/RELEASE by entering **CSR**
6. Press **SEND/ENTER**.
7. On the CCU selection screen, enter **1** to select CCU A.
8. Press **SEND/ENTER**.
9. Type **MON** in the selection area.
10. Press **SEND/ENTER**.
11. **MOSS ONLINE** will be displayed on the screen.
12. On the CCU selection screen, enter **2** to select CCU B.
13. Press **SEND/ENTER**.
14. Type **MON** in the selection area.
15. Press **SEND/ENTER**.
16. **MOSS ONLINE** will be displayed on the screen.

How to Check the Bypass Card Position

1. In the **MOSS E View** window, double-click on the **3745 Controller** icon.
2. In the **3745 Menu** click on **Operation Management**
3. Click on **Locate Bypass Card Position**.
4. Follows the prompts on the following windows.

Appendix A. Control Panel Code Definitions

3745 MOSS Control Panel Codes

Table A-1 (Page 1 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
000	IPL has completed; The MOSS IML was performed from the disk; The control program is loaded and MOSS is ONLINE.
001	MOSS ROS code unable to get control or unable to execute scheduled processing.
002	Problem detected with the MMIO interface.
003	MOSS Re-IML has been initiated.
004	Power bus test successfully completed.
005	Problem detected during the power bus test.
006	AC Input Fault detected
007	MOSS battery down
008	Power control not initialised
009	MOSS power supply ID 1 error detected - "NO REPLY"
00A	MOSS power supply ID 1 error detected - "PROBLEM WITH INTERFACE"
00B	MOSS power supply ID 1 error detected - "OVERCURRENT FAULT"
00C	MOSS power supply ID 1 error detected - "POWER SUPPLY FAULT" (overvoltage or undervoltage).
00D	NOT USED
00E	Problem detected on power supply ID 2
00F	Problem detected on power supply ID 3
010	Problem detected on power supply ID 4
011	Problem detected on power supply ID 5
012	Problem detected on power supply ID 6
013	Problem detected on power supply ID 7
014	Problem detected on power supply ID 8
015	Problem detected on power supply ID 9
016	Problem detected on power supply ID 10
017	Problem detected on power supply ID 11
018	Problem detected on power supply ID 12
019	Problem detected on power supply ID 13
01A	Problem detected on power supply ID 14
01B	Problem detected on power supply ID 15
01C	Problem detected on power supply ID 16
01D	Problem detected on power supply ID 17
01E	Problem detected on power supply ID 18
01F	Problem detected on power supply ID 19
020	Problem detected on power supply ID 20
021	Problem detected on power supply ID 21
022	Problem detected on power supply ID 22
023	Problem detected on power supply ID 23
024	Problem detected on power supply ID 24
025	Problem detected on power supply ID 25
026	Problem detected on power supply ID 26
027	Problem detected on power supply ID 27
028	Problem detected on power supply ID 28
029	Problem detected on power supply ID 29
02A	Problem detected on power supply ID 30
02B	Problem detected on power supply ID 31
02C	Problem detected on power supply ID 32
02D	Problem detected on power supply ID 33
02E	Problem detected on power supply ID 34
02F	Problem detected on power supply ID 35
030	Problem detected with MOSS blower
031	Problem detected with base frame blower

An [1] following a panel code denotes that the code should 'Blink'.

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Table A-1 (Page 2 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
032	Problem detected with Expansion Unit A11 blowers - front side
033	Problem detected with Expansion Unit A11 blowers - rear side
034	Problem detected with Expansion Unit A12 blowers
035	Cooling problem for the LICs in the Base Frame
036	Cooling problem for the LICs in the Expansion Unit L13 Front side
037	Cooling problem for the LICs in the Expansion Unit L13 Rear side
038	Cooling problem for the LICs in the Expansion Unit L14 Front side
039	Cooling problem for the LICs in the Expansion Unit L14 Rear side
03A	Cooling problem for the LICs in the Expansion Unit L15 Front side
03B	Cooling problem for the LICs in the Expansion Unit L15 Rear side
03C to 044	NOT USED
045	CCU A power OFF due to overheating.
046	CCU B power OFF due to overheating.
047 to 04F	NOT USED
050	Initial MOSS processor reset state is incorrect.
051	NOT USED
052	Initial MOSS processor state OK - diagnostics progression code
053	Unexpected level 0 interrupt present in IOIRV
054	Unexpected level 1 interrupt present in IOIRV
055	Unexpected level 2 interrupt present in IOIRV
056	Unexpected level 3 interrupt present in IOIRV
057	Unexpected level 4 interrupt present in IOIRV
058	Unexpected level 5 interrupt present in IOIRV
059	Unexpected level 6 or 7 interrupt present in IOIRV
05A	MOSS processor condition codes is incorrect
05B	NOT USED
05C	MOSS processor cache is incorrect
05D	MOSS processor instruction failure during 1st part of test
05E	NOT USED
05F	MOSS ROS check sum is incorrect
060	MOSS ROS bad parity location not detected
061	NOT USED
062	MOSS EIRV did not report the forced errors
063 to 065	NOT USED
066	PIO bus test did not run completely
067	PIO bus test; some error(s) occurred - first IO problem found is read TOD BSTAT not as expected
068	PIO bus test; some error(s) occurred - first IO problem found is set TOD BSTAT bits 5/6
069	PIO bus test; some error(s) occurred - first IO problem found is reset TOD BSTAT bits 5/6
06A	PIO bus test; some error(s) occurred - first IO problem found is set TOD BSTAT bit 6
06B	PIO bus test; some error(s) occurred - first IO problem found is read DFA BSTAT not as expected
06C	PIO bus test; some error(s) occurred - first IO problem found is set DFA BSTAT bits 5/6/7
06D	PIO bus test; some error(s) occurred - first IO problem found is reset DFA BSTAT bits 5/6/7

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 3 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
06E	PIO bus test; some error(s) occurred - first IO problem found is read MCCU A STAT0 not as expected
06F	PIO bus test; some error(s) occurred - first IO problem found is set MCCU A STAT0 bits 5/6
070	PIO bus test; some error(s) occurred - first IO problem found is reset MCCU A STAT0 bits 5/6
071	PIO bus test; some error(s) occurred - first IO problem found is read MCCU B STAT0 not as expected
072	PIO bus test; some error(s) occurred - first IO problem found is set MCCU B STAT0 bits 5/6
073	PIO bus test; some error(s) occurred - first IO problem found is reset MCCU A STAT0 bits 5/6
074	PIO bus test; some error(s) occurred - first IO problem found is read MCAD INTP1 not as expected
075	PIO bus test; some error(s) occurred - first IO problem found is set MCAD INTP1 bits 5/6
076	PIO bus test; some error(s) occurred - first IO problem found is reset MCAD INTP1 bits 5/6
077	PIO bus test; some error(s) occurred - first IO problem found is read SWAD BSTAT not as expected
078	PIO bus test; some error(s) occurred - first IO problem found is set SWAD BSTAT bits 5/6
079	PIO bus test; some error(s) occurred - first IO problem found is reset SWAD BSTAT bits 5/6
07A	PIO bus test; some error(s) occurred - first IO problem found is command read PCA (local port) BSTAT not as expected
07B	PIO bus test; some error(s) occurred - first IO problem found is command set PCA (local port) BSTAT bit 6
07C	PIO bus test; some error(s) occurred - first IO problem found is command reset PCA (local port) BSTAT bit 6
07D	PIO bus test; some error(s) occurred - first IO problem found is command read PCA (remote port) BSTAT not as expected
07E	PIO bus test; some error(s) occurred - first IO problem found is command set PCA (remote port) BSTAT bit 6
07F	PIO bus test; some error(s) occurred - first IO problem found is command reset PCA (remote port) BSTAT bit 6
080	PIO bus test; some error(s) occurred - first IO problem found is command read PCA (RSF port) BSTAT not as expected
081	PIO bus test; some error(s) occurred - first IO problem found is command set PCA (RSF port) BSTAT bit 6
082	PIO bus test; some error(s) occurred - first IO problem found is command reset PCA (RSF port) BSTAT bit 6
083 to 089	NOT USED
08A	Progression code for PIO tests Part 1 successful without severe errors or problems in PIO test part 2
08B	All PIO bus tests failed
08C	Only IOs to TOD adaptor were successful during PIO tests
08D	All IOs to the DFA failed during PIO tests
08E	All IOs to the MAC failed during PIO tests
08F	All IOs to the MCCU-A of the MAC failed during PIO tests
090	All IOs to the MCCU-B of the MAC failed during PIO tests
091	All IOs to the MCAD of the MAC failed during PIO tests
092	All IOs to the SWAD of the MAC failed during PIO tests
093	All IOs to the MCA failed during PIO tests
094	All IOs to the local PCA of the MCA failed during PIO tests
095	All IOs to the remote PCA of the MCA failed during PIO tests
096	All IOs to the RSF PCA of the MCA failed during PIO tests
097	NOT USED
098[1]	Unexpected data during specific pattern test on PIO bus
099	Progression code for successful completion of PIO pattern test

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 4 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
09A to 09C	NOT USED
09D	Unexpected error from PLC when request definition was originated
09E	NOT USED
09F	Control lost in mainline controller after checking the request
0A0	MOSS storage tests in progress
0A1[1]	Unexpected error in MOSS EIRV register
0A2[1]	Unexpected error in MOSS EIRV register during memory access
0A3[1]	Control panel 'valid' option cannot be disabled
0A4[1]	Reconfigure bit 5 in TOD mode register is permanently ON
0A5[1]	No address increment during write/read storage operation
0A6[1]	Data mismatch during write/read storage operation
0A7[1]	No expected check in EIRV bit 3 during ROS invalid address check
0A8[1]	No expected check in EIRV bit 3 after maximum storage exceeded
0A9[1]	All memory locations contained errors
0AA[1]	Error interrupt in EIRV during memory access to all locations
0AB to 0AC	NOT USED
0AD[1]	Appropriate single bit errors were never corrected during ECC
0AE[1]	Single bit errors were badly corrected during ECC
0AF	NOT USED
0B0[1]	ECC mechanism failed during double bit error correction
0B1[1]	Different loaded and stored contents of a memory location
0B2[1]	Reconfigure bit 5 in TOD mode register cannot be set
0B3	NOT USED
0B4[1]	Different loaded and stored contents of a memory location
0B5[1]	Double uncorrectable error during spare bit swapping
0B6[1]	Control panel 'valid' option cannot be enabled
0B7[1]	Unexpected error in EIRV at completion of memory tests
0B8 to 0BE	NOT USED
0BF	MOSS memory tests complete - progress to next test
0C0	Problem found during initialization of ROS mainline controller
0C1	Control lost after initialization of ROS mainline controller
0C2	Control lost during PSV swap test
0C3[1]	Storage check occurred when accessing register space
0C4[1]	Scheduled progression not performed during PSV test
0C5[1]	Cache in/cache out operation was not successful
0C6	NOT USED
0C7	PSV swap tests complete - progress to next test
0C8 to 0CF	NOT USED
0D0[1]	DFA; test entry and progression
0D1[1]	DFA; Unexpected error interrupt in EIRV during reset
0D2[1]	DFA; Unexpected interrupt in IOIRV during reset
0D3[1]	DFA; BSTAT bits 0,1 or 6 not in busy or in enable after reset
0D4	NOT USED
0D5[1]	DFA; BSTAT bits 0,1 not in idle state after reset
0D6[1]	DFA; Different loaded and stored contents during PIO commands
0D7[1]	DFA; Register not in reset state after reset command
0D8[1]	DFA; Invalid command not recognised
0D9[1]	DFA; Unexpected error interrupt in EIRV during PIO command test
0DA[1]	DFA; Unexpected interrupt in IOIRV during PIO command test
0DB[1]	DFA; BSTAT bits 0,1 are not in idle state during initialization
0DC[1]	DFA; Unexpected error interrupt in EIRV during initialization
0DD[1]	DFA; Unexpected interrupt in IOIRV during initialization
0DE[1]	DFA; Unexpected error interrupt in EIRV during transfer initialisation
0DF[1]	DFA; No interrupt request in IOIRV during transfer initialization

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 5 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
0E0[1]	DFA; Error occurred during CHIO transfer
0E1[1]	DFA; BSTAT bits 0,1 and 6 not in idle or enable during diagnostic command test
0E2[1]	DFA; Data transmission error - HSTAT and BSTAT bits are incorrect during diagnostic command test
0E3[1]	DFA; Different content between 1st and 2nd part of sector buffer during diagnostic command test
0E4[1]	DFA; Error found in drive status of SSB byte 0 during diagnostic command test
0E5[1]	DFA; Error found in adaptor status of SSB byte 1 and 2 during diagnostic command test
0E6[1]	DFA;HDD; BSTAT bits 0,1 or 6 not in idle or enable during drive initialization
0E7[1]	DFA;HDD; No interrupt request in IOIRV during drive initialization
0E8[1]	DFA;HDD; Unexpected error interrupt in EIRV during drive initialization
0E9[1]	DFA;HDD; Data transmission error - HSTAT bits are incorrect during drive initialization
0EA[1]	DFA;HDD; BSTAT bits 0,1 or 6 not in idle or enable during seek command before recalibrate test
0EB[1]	DFA;HDD; No interrupt request in IOIRV during seek command before recalibrate test
0EC	NOT USED
0ED[1]	DFA;HDD; BSTAT bits 0,1 or 6 not in idle or enable before recalibrate command
0EE[1]	DFA;HDD; No interrupt received in IOIRV during recalibrate command
0EF[1]	DFA;HDD; Unexpected error interrupt in EIRV during recalibrate command
0F0	NOT USED
0F1[1]	DFA;HDD; Data transmission error - HSTAT and BSTAT bits incorrect during recalibrate command
0F2[1]	DFA;HDD; No cylinder zero in SSB byte 0, bit 7 during recalibrate command
0F3[1]	DFA;HDD; Drive status error in SSB byte 0 during recalibrate command
0F4[1]	DFA;HDD; Adaptor status error in SSB byte 1 or 2 during recalibrate command
0F5[1]	DFA;HDD; BSTAT bits 0,1 or 6 not in idle or enable during read ID command
0F6[1]	DFA;HDD; No interrupt request in IOIRV during read ID command
0F7[1]	DFA;HDD; Unexpected error interrupt in EIRV during read ID command
0F8[1]	DFA;HDD; Data transmission error - HSTAT and BSTAT bits incorrect during read ID command
0F9[1]	DFA;HDD; Error on head addressing mechanism during read ID command
0FA[1]	DFA;HDD; Drive status error in SSB byte 0 during read ID command
0FB[1]	DFA;HDD; Adaptor status error in SSB byte 1 or 2 during read ID command
0FC[1]	DFA;HDD; BSTAT bits 0,1 or 6 not in idle or enable during recalibrate before seek command
0FD[1]	DFA;HDD; No interrupt request in IOIRV during recalibrate before seek command
0FE	NOT USED
0FF[1]	DFA;HDD; BSTAT bits 0,1 or 6 not in idle or enable during seek command
100	NOT USED
101	Hard disk initial state not ready. Recovery in process.
102	Hard disk not ready after recovery.
103 to 110	NOT USED
111[1]	DFA;HDD; No interrupt request in IOIRV during seek command
112[1]	DFA;HDD; Unexpected error interrupt in EIRV during seek command
113[1]	DFA;HDD; Data transmission error - HSTAT and BSTAT bits incorrect during seek command
114[1]	DFA;HDD; Different head numbers during seek command
115[1]	DFA;HDD; Drive status error in SSB byte 0 during seek command
116[1]	DFA;HDD; Adaptor status error in SSB byte 1 or 2 during seek command
117[1]	DFA;HDD; BSTAT bits 0,1 or 6 not in idle or enable during read/write a sector command
118[1]	DFA;HDD; No interrupt request in IOIRV during read/write a sector command
119[1]	DFA;HDD; Unexpected error interrupt in EIRV during read/write a sector command
11A[1]	DFA;HDD; Data transmission error - HSTAT and BSTAT bits incorrect during read / write a sector command
11B[1]	DFA;HDD; Different written and read sectors after read/write a sector command
11C[1]	DFA;HDD; Drive status error in SSB byte 0 after read/write a sector command
11D[1]	DFA;HDD; Adaptor status error in SSB byte 1 or 2 after read/ write a sector command
11E[1]	DFA;HDD; BSTAT bits 0,1 or 6 not in idle or enable during read /write a full track command
11F[1]	DFA;HDD; No interrupt request in IOIRV during read/write a full track command
120[1]	DFA;HDD; Unexpected error interrupt in EIRV during read/write a full track command
121[1]	DFA;HDD; Data transmission error - HSTAT and BSTAT bits incorrect during read/write a full track command
122[1]	DFA;HDD; Different written and read tracks after read/write a full track command

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 6 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
123[1]	DFA;HDD; Drive status error in SSB byte 0 after read/write a full track command
124[1]	DFA;HDD; Adaptor status error in SSB byte 1 or 2 after read/ write a full track command
125[1]	DFA;HDD; BSTAT bits 0,1 or 6 not in idle or enable during read/ write no data command
126[1]	DFA;HDD; No interrupt request in IOIRV during read/write no data command
127[1]	DFA;HDD; Unexpected error interrupt in EIRV during read/write no data command
128[1]	DFA;HDD; Data transmission error - HSTAT and BSTAT bits incorrect during read/write no data command
129[1]	DFA;HDD; Different written and read sectors after read/write no data command
12A[1]	DFA;HDD; Drive status error in SSB byte 0 after read/write no data command
12B[1]	DFA;HDD; Adaptor status error in SSB byte 1 or 2 after read/ write no data command
12C[1]	DFA;HDD; BSTAT bits 0,1 or 6 not in idle or enable during read check/write verify command
12D[1]	DFA;HDD; No interrupt request in IOIRV during read check/write verify command
12E[1]	DFA;HDD; Unexpected error interrupt in EIRV during read check/ write verify command
12F[1]	DFA;HDD; Data transmission error - HSTAT and BSTAT bits incorrect during read check/write verify command
130[1]	DFA;HDD; Drive status error in SSB byte 0 after read check/ write verify command
131[1]	DFA;HDD; Adaptor status error in SSB byte 1 or 2 after read check /write verify command
132[1]	DFA;HDD; Different written and read sectors after read check/ write verify command
133[1]	DFA;HDD; BSTAT bits 0,1 or 6 not in idle or enable during ECC correction test
134[1]	DFA;HDD; No interrupt request in IOIRV during ECC correction test
135[1]	DFA;HDD; Unexpected error interrupt in EIRV during ECC correction test
136[1]	DFA;HDD; Data transmission error - HSTAT and BSTAT bits incorrect during ECC correction test
137[1]	DFA;HDD; Error on a selected sector during ECC correction test
138[1]	DFA;HDD; Expected error in SSB byte 1, bit 1 did not occur during burst length 16 ECC correction test
139[1]	DFA;HDD; Expected correction did not occur during ECC correction test
13A[1]	DFA;HDD; Expected error in SSB byte 1, bit 1 did not occur during burst length 17 ECC correction test
13B[1]	DFA;HDD; Unexpected correction occurred during ECC correction test
13C[1]	DFA;HDD; Drive status error in SSB byte 0 after ECC correction test
13D[1]	DFA;HDD; Adaptor status error in SSB byte 1 or 2 after ECC correction test
13E[1]	DFA;HDD; Different written and read sector contents during ECC correction test
13F[1]	DFA;FDD; Diskette change information is not present in SSB byte 0, bit 4
140[1]	DFA;FDD; BSTAT bits 0,1 or 6 not in idle or enable during drive initialization
141[1]	DFA;FDD; No interrupt request in IOIRV during drive initialization
142[1]	DFA;FDD; Unexpected error interrupt in EIRV during drive initialization
143[1]	DFA;FDD; Data transmission error - HSTAT bits are incorrect during drive initialization
144[1]	DFA;FDD; BSTAT bits 0,1 or 6 not in idle or enable during seek command before recalibrate test
145[1]	DFA;FDD; No interrupt request in IOIRV during seek command before recalibrate test
146	NOT USED
147[1]	DFA;FDD; BSTAT bits 0,1 or 6 not in idle or enable before recalibrate command
148[1]	DFA;FDD; No interrupt received in IOIRV during recalibrate command
149[1]	DFA;FDD; Unexpected error interrupt in EIRV during recalibrate command
14A[1]	DFA;FDD; Data transmission error - HSTAT and BSTAT bits incorrect during recalibrate command
14B[1]	DFA;FDD; No cylinder zero in SSB byte 0, bit 7 during recalibrate command
14C[1]	DFA;FDD; Drive status error in SSB byte 0 during recalibrate command
14D[1]	DFA;FDD; Adaptor status error in SSB byte 1 or 2 during recalibrate command
14E[1]	DFA;FDD; BSTAT bits 0,1 or 6 not in idle or enable during read ID command
14F[1]	DFA;FDD; No interrupt request in IOIRV during read ID command
150[1]	DFA;FDD; Unexpected error interrupt in EIRV during read ID command
151[1]	DFA;FDD; Data transmission error - HSTAT and BSTAT bits incorrect during read ID command
152[1]	DFA;FDD; Error on head addressing mechanism during read ID command
153[1]	DFA;FDD; Drive status error in SSB byte 0 during read ID command
154[1]	DFA;FDD; Adaptor status error in SSB byte 1 or 2 during read ID command
155[1]	DFA;FDD; BSTAT bits 0,1 or 6 not in idle or enable during recalibrate before seek command
156[1]	DFA;FDD; No interrupt request in IOIRV during recalibrate before seek command
157	NOT USED
158[1]	DFA;FDD; BSTAT bits 0,1 or 6 not in idle or enable during seek command
159[1]	DFA;FDD; No interrupt request in IOIRV during seek command

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 7 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
15A[1]	DFA;FDD; Unexpected error interrupt in EIRV during seek command
15B[1]	DFA;FDD; Data transmission error - HSTAT and BSTAT bits incorrect during seek command
15C[1]	DFA;FDD; Different head numbers during seek command
15D[1]	DFA;FDD; Drive status error in SSB byte 0 during seek command
15E[1]	DFA;FDD; Adaptor status error in SSB byte 1 or 2 during seek command
15F	Completion of DFA diagnostics
160 to 16F	NOT USED
170	Ros code had control for a Re-IML but the Re-IML reset sequence was not performed
171	Re-IML sequence was performed but an error occurred in the MOSS reset test
172 to 177	NOT USED
178	Control was lost during the processing of the 'MOSS diags by-pass option' request (origin default parms set)
179 to 17A	NOT USED
17B	Control was lost during the processing of the 'MOSS diags by-pass option' request
17C	NOT USED
17D	Storage access problem - dump request cannot be processed
17E	NOT USED
17F	Completion of ROS part of MOSS Diagnostics
180	Entry into RAM part of MOSS Diagnostics
181[1]	Level 6 program level interrupt not as expected
182	Progression code indicating RAM Diagnostic has full control
183 to 187	NOT USED
188	Control lost during MOSS instruction test Part 2
189[1]	Error occurred during 2nd part of MOSS instruction execution
18A	Successful completion of MOSS instruction test Part 2
18B	NOT USED
18C	Control lost during TOD tests
18D	TOD tests complete - progress to next test
18E to 18F	NOT USED
190	Start of MCA tests
191[1]	PCA1; Hardwired conditions do not allow access to PCA1
192[1]	PCA1; Error during PCA1 asynchronous test
193[1]	PCA1; Unexpected level 0 interrupt during PCA1 test
194[1]	PCA1; Error during PCA1 internal wrap asynchronous test
195[1]	PCA1; Unexpected level 0 interrupt during PCA1 wrap test
196[1]	PCA2; Hardwired conditions do not allow access to PCA2
197[1]	PCA2; Error during PCA2 asynchronous test
198[1]	PCA2; Unexpected level 0 interrupt during PCA2 test
199[1]	PCA2; Error during PCA2 internal wrap asynchronous test
19A[1]	PCA2; Unexpected level 0 interrupt during PCA2 wrap test
19B[1]	PCA3; Hardwired conditions do not allow access to PCA3
19C[1]	PCA3; Error during PCA3 asynchronous test
19D[1]	PCA3; Unexpected level 0 interrupt during PCA3 test
19E[1]	PCA3; Error during PCA3 internal wrap asynchronous test
19F[1]	PCA3; Unexpected level 0 interrupt during PCA3 wrap test
1A0	Local link test; wrap block does not appear to be installed on local console cable/connector
1A1	Local link test; Local console cable is at fault
1A2	Local link test; Local console PCA1 is at fault
1A3	Remote/Alternate link test; wrap block does not appear to be installed on remote/alternate console cable/connector
1A4	Remote/Alternate link test; Remote/Alternate console cable is at fault
1A5	Remote/Alternate link test; Remote/Alternate console PCA2 is at fault

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 8 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
1A6	RSF link test; wrap block does not appear to be installed on RSF console cable/connector
1A7	RSF link test; RSF console cable is at fault
1A8	RSF link test; RSF console PCA3 is at fault
1A9 to 1AF	NOT USED
1B0	Completion of MCA tests
1B1	Start of Local Console link test
1B2	Completion of Local Console link test
1B3	Start of Remote / Alternate Console link test
1B4	Completion of Remote / Alternate Console link test
1B5	Start of RSF Console link test
1B6	Completion of RSF Console link test
1B7 to 1CF	NOT USED
1D0	MAC; Start of MAC tests
1D1	NOT USED
1D2[1]	MAC; Solid error detected in one of the MCAD registers (2nd pass)
1D3[1]	MAC; 100 milli second timer in MCAD is not operational
1D4[1]	MAC; Permanent interrupt request level 1 in IOIRV during MCCU tests
1D5[1]	MAC; Permanent interrupt request level 4 in IOIRV during MCAD tests
1D6[1]	MAC; Interrupt request level 1 of MCAD was not reported to Solo
1D7[1]	MAC; MCCU A reset line did not activate 'MOSS inop bit'
1D8[1]	MAC; MCCU B reset line did not activate 'MOSS inop bit'
1D9[1]	MAC; Permanent interrupt request level 0 in IOIRV during MCCU tests
1DA[1]	MAC; Solid error detected in one of the MCCU A registers (1st pass)
1DB[1]	MAC; Solid error detected in one of the MCCU A registers (2nd pass)
1DC[1]	MAC; Solid error detected in one of the MCCU B registers (1st pass)
1DD[1]	MAC; Solid error detected in one of the MCCU B registers (2nd pass)
1DE[1]	MAC; Permanent interrupt request level 0 in IOIRV during SWAD tests
1DF[1]	MAC; 'Switch MOSS Inop'- bit 0 in SWAD disconnect register was not reset during test.
1E0[1]	MAC; Internal clock check occurred - bit 4 in SWAD disconnect register
1E1[1]	MAC; Solid error detected in one of the SWAD registers (1st pass)
1E2[1]	MAC; Solid error detected in one of the SWAD registers (2nd pass)
1E3[1]	MAC; Unable to set MOSS Inop bit in MCCU A
1E4[1]	MAC; Unable to set MOSS Inop bit in MCCU B
1E5[1]	MAC; TCM A power off information is not available in MCCU A
1E6[1]	MAC; TCM B power off information is not available in MCCU B
1E7[1]	MAC; No interrupt reporting possible in MCCU A
1E8[1]	MAC; No interrupt reporting possible in MCCU B
1E9 to 1EE	NOT USED
1EF	MAC; Completion of MAC tests
1F0 to 1FD	NOT USED
1FE[1]	Control lost during return to RAM IML processor
1FF	Completion of RAM MOSS diagnostics
200 to 9FF	NOT USED
A00[1]	MOSS level 0 error detection; MCCU A or MCCU B or SWAD Adaptor is 'down'; Excess spurious errors
A01[1]	MOSS level 0 error detection; PCA1; Adaptor is 'down'
A02[1]	MOSS level 0 error detection; PCA1; PIO Bus Check; Inbound parity
A03[1]	MOSS level 0 error detection; PCA1; PIO Bus Check; Adaptor not detected
A04[1]	MOSS level 0 error detection; PCA1; PIO Timeout; Outbound; Address parity check
A05[1]	MOSS level 0 error detection; PCA1; PIO Timeout; Outbound; Command/data parity check
A06[1]	MOSS level 0 error detection; PCA2; Adaptor is 'down'
A07[1]	MOSS level 0 error detection; PCA2; PIO Bus Check; Inbound parity

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 9 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
A08[1]	MOSS level 0 error detection; PCA2; PIO Bus Check; Adaptor not detected
A09[1]	MOSS level 0 error detection; PCA2; PIO Timeout; Outbound; Address parity check
A0A[1]	MOSS level 0 error detection; PCA2; PIO Timeout; Outbound; Command/data parity check
A0B[1]	MOSS level 0 error detection; PCA3; Adaptor is 'down'
A0C[1]	MOSS level 0 error detection; PCA3; PIO Bus Check; Inbound parity
A0D[1]	MOSS level 0 error detection; PCA3; PIO Bus Check; Adaptor not detected
A0E[1]	MOSS level 0 error detection; PCA3; PIO Timeout; Outbound; Address parity check
A0F[1]	MOSS level 0 error detection; PCA3; PIO Timeout; Outbound; Command/data parity check
A10[1]	MOSS level 0 error detection; MCCU A; Adaptor is 'down'
A11[1]	MOSS level 0 error detection; MCCU A; Adaptor is 'down'; Excess spurious errors
A12[1]	MOSS level 0 error detection; MCCU A; Adaptor check; 1 usec counter parity
A13[1]	MOSS level 0 error detection; MCCU A; Adaptor check; MIOC/CCU timeout parity
A14[1]	MOSS level 0 error detection; MCCU A; CHIO Bus check
A15[1]	MOSS level 0 error detection; MCCU A; CHIO Timeout
A16[1]	MOSS level 0 error detection; MCCU A; CHIO; Storage ECC error; Register space parity during main store.
A17[1]	MOSS level 0 error detection; MCCU A; CHIO; Storage ECC error; Multiple bits in DIV Register
A18[1]	MOSS level 0 error detection; MCCU A; CHIO; Storage ECC error; No bits active in DIV Register
A19[1]	MOSS level 0 error detection; MCCU A; CHIO; Exception; Address exception on main store data access
A1A[1]	MOSS level 0 error detection; MCCU A; CHIO; Exception; Operation exception; CHCV Reg invalid
A1B[1]	MOSS level 0 error detection; MCCU A; CHIO; Exception; Register precision; CHP Reg bits 0-7 are not zero
A1C[1]	MOSS level 0 error detection; MCCU A; CHIO; Exception; Specification exception with invalid address on main store data access
A1D[1]	MOSS level 0 error detection; MCCU A; CHIO; Exception; Multiple bits in DIV Register
A1E[1]	MOSS level 0 error detection; MCCU A; CHIO; Exception; No bits active in DIV Register
A1F[1]	MOSS level 0 error detection; MCCU A; CHIO; Internal check; Cache parity check
A20[1]	MOSS level 0 error detection; MCCU A; CHIO; Internal check; Invalid address on CHP Reg access
A21[1]	MOSS level 0 error detection; MCCU A; CHIO; Internal check; Multiple bits in DIV Register
A22[1]	MOSS level 0 error detection; MCCU A; CHIO; Adaptor check; Step counter parity
A23[1]	MOSS level 0 error detection; MCCU A; CHIO; Adaptor check; Half word/burst counter parity
A24[1]	MOSS level 0 error detection; MCCU A; CHIO; Adaptor check; CCU busy; Timeout
A25[1]	MOSS level 0 error detection; MCCU A; CHIO; Adaptor check; MIOC timeout
A26[1]	MOSS level 0 error detection; MCCU A; CHIO; Adaptor check; MIOC parity check - in
A27[1]	MOSS level 0 error detection; MCCU A; CHIO; Adaptor check; MIOC parity check - out
A28[1]	MOSS level 0 error detection; MCCU A; CHIO; Adaptor check; Adaptor failure
A29[1]	MOSS level 0 error detection; MCCU A; CHIO; Adaptor check; Multiple bits detected in Stat reg
A2A[1]	MOSS level 0 error detection; MCCU A; CHIO; Adaptor check; No CHIO in progress in Adaptor Control Block
A2B[1]	MOSS level 0 error detection; MCCU A; CHIO; Multiple bits detected in EIRV reg
A2C[1]	MOSS level 0 error detection; MCCU A; CHIO; No CHIO in progress in Adaptor Control Block
A2D[1]	MOSS level 0 error detection; MCCU A; Device; Adaptor check; Step counter parity
A2E[1]	MOSS level 0 error detection; MCCU A; Device; Adaptor check; MIOC timeout
A2F[1]	MOSS level 0 error detection; MCCU A; Device; Adaptor check; MIOC parity check - in
A30[1]	MOSS level 0 error detection; MCCU A; Device; Adaptor check; MIOC parity check - out
A31[1]	MOSS level 0 error detection; MCCU A; Device; Adaptor check; Adaptor failure
A32[1]	MOSS level 0 error detection; MCCU A; Device; Adaptor check; Multiple bits detected in Stat reg
A33[1]	MOSS level 0 error detection; MCCU A; Device; Adaptor check; No Common Adaptor Code running
A34[1]	MOSS level 0 error detection; MCCU A; PIO; Bus check; Inbound parity
A35[1]	MOSS level 0 error detection; MCCU A; PIO; Bus check; Adaptor failure
A36[1]	MOSS level 0 error detection; MCCU A; PIO; Bus check; Adaptor not detected
A37[1]	MOSS level 0 error detection; MCCU A; PIO; Timeout; Invalid command
A38[1]	MOSS level 0 error detection; MCCU A; PIO; Timeout; Outbound address parity check
A39[1]	MOSS level 0 error detection; MCCU A; PIO; Timeout; Adaptor not detected
A3A[1]	MOSS level 0 error detection; MCCU A; PIO; Timeout; Adaptor failure
A3B[1]	MOSS level 0 error detection; MCCU A; PIO; Timeout; Multiple bits detected in Stat reg
A3C[1]	MOSS level 0 error detection; MCCU B; Adaptor is 'down'
A3D[1]	MOSS level 0 error detection; MCCU B; Adaptor is 'down'; Excess spurious errors

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 10 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
A3E[1]	MOSS level 0 error detection; MCCU B; Adaptor check; 1 usec counter parity
A3F[1]	MOSS level 0 error detection; MCCU B; Adaptor check; MIOC/CCU timeout parity
A40[1]	MOSS level 0 error detection; MCCU B; CHIO Bus check
A41[1]	MOSS level 0 error detection; MCCU B; CHIO Timeout
A42[1]	MOSS level 0 error detection; MCCU B; CHIO; Storage ECC error; Register space parity during main store.
A43[1]	MOSS level 0 error detection; MCCU B; CHIO; Storage ECC error; Multiple bits in DIV Register
A44[1]	MOSS level 0 error detection; MCCU B; CHIO; Storage ECC error; No bits active in DIV Register
A45[1]	MOSS level 0 error detection; MCCU B; CHIO; Exception; Address exception on main store data access
A46[1]	MOSS level 0 error detection; MCCU B; CHIO; Exception; Operation exception; CHCV Reg invalid
A47[1]	MOSS level 0 error detection; MCCU B; CHIO; Exception; Register precision; CHP Reg bits 0-7 are not zero
A48[1]	MOSS level 0 error detection; MCCU B; CHIO; Exception; Specification exception with invalid address on main store data access
A49[1]	MOSS level 0 error detection; MCCU B; CHIO; Exception; Multiple bits in DIV Register
A4A[1]	MOSS level 0 error detection; MCCU B; CHIO; Exception; No bits active in DIV Register
A4B[1]	MOSS level 0 error detection; MCCU B; CHIO; Internal check; Cache parity check
A4C[1]	MOSS level 0 error detection; MCCU B; CHIO; Internal check; Invalid address on CHP Reg access
A4D[1]	MOSS level 0 error detection; MCCU B; CHIO; Internal check; Multiple bits in DIV Register
A4E[1]	MOSS level 0 error detection; MCCU B; CHIO; Adaptor check; Step counter parity
A4F[1]	MOSS level 0 error detection; MCCU B; CHIO; Adaptor check; Half word/burst counter parity
A50[1]	MOSS level 0 error detection; MCCU B; CHIO; Adaptor check; CCU busy; Timeout
A51[1]	MOSS level 0 error detection; MCCU B; CHIO; Adaptor check; MIOC timeout
A52[1]	MOSS level 0 error detection; MCCU B; CHIO; Adaptor check; MIOC parity check - in
A53[1]	MOSS level 0 error detection; MCCU B; CHIO; Adaptor check; MIOC parity check - out
A54[1]	MOSS level 0 error detection; MCCU B; CHIO; Adaptor check; Adaptor failure
A55[1]	MOSS level 0 error detection; MCCU B; CHIO; Adaptor check; Multiple bits detected in Stat reg
A56[1]	MOSS level 0 error detection; MCCU B; CHIO; Adaptor check; No CHIO in progress in Adaptor Control Block
A57[1]	MOSS level 0 error detection; MCCU B; CHIO; Multiple bits detected in EIRV reg
A58[1]	MOSS level 0 error detection; MCCU B; CHIO; No CHIO in progress in Adaptor Control Block
A59[1]	MOSS level 0 error detection; MCCU B; Device; Adaptor check; Step counter parity
A5A[1]	MOSS level 0 error detection; MCCU B; Device; Adaptor check; MIOC timeout
A5B[1]	MOSS level 0 error detection; MCCU B; Device; Adaptor check; MIOC parity check - in
A5C[1]	MOSS level 0 error detection; MCCU B; Device; Adaptor check; MIOC parity check - out
A5D[1]	MOSS level 0 error detection; MCCU B; Device; Adaptor check; Adaptor failure
A5E[1]	MOSS level 0 error detection; MCCU B; Device; Adaptor check; Multiple bits detected in Stat reg
A5F[1]	MOSS level 0 error detection; MCCU B; Device; Adaptor check; No Common Adaptor Code running
A60[1]	MOSS level 0 error detection; MCCU B; PIO; Bus check; Inbound parity
A61[1]	MOSS level 0 error detection; MCCU B; PIO; Bus check; Adaptor failure
A62[1]	MOSS level 0 error detection; MCCU B; PIO; Bus check; Adaptor not detected
A63[1]	MOSS level 0 error detection; MCCU B; PIO; Timeout; Invalid command
A64[1]	MOSS level 0 error detection; MCCU B; PIO; Timeout; Outbound address parity check
A65[1]	MOSS level 0 error detection; MCCU B; PIO; Timeout; Adaptor not detected
A66[1]	MOSS level 0 error detection; MCCU B; PIO; Timeout; Adaptor failure
A67[1]	MOSS level 0 error detection; MCCU B; PIO; Timeout; Multiple bits detected in Stat reg
A68[1]	MOSS level 0 error detection; SWAD; Adaptor is 'down'
A69[1]	MOSS level 0 error detection; SWAD; Adaptor is 'down'; Excess spurious errors
A6A[1]	MOSS level 0 error detection; SWAD; Adaptor check; Internal clock check 1
A6B[1]	MOSS level 0 error detection; SWAD; Adaptor check; Internal clock check 2
A6C[1]	MOSS level 0 error detection; SWAD; Adaptor check; Multiple bits detected in Disconnect reg
A6D[1]	MOSS level 0 error detection; SWAD; Device; Adaptor check; State counter parity
A6E[1]	MOSS level 0 error detection; SWAD; Device; Adaptor check; Shift pulse counter parity
A6F[1]	MOSS level 0 error detection; SWAD; Device; Adaptor check; Ground fault detected on a driver line
A70[1]	MOSS level 0 error detection; SWAD; Device; Adaptor check; Interface check
A71[1]	MOSS level 0 error detection; SWAD; Device; Adaptor check; Interface timeout
A72[1]	MOSS level 0 error detection; SWAD; Device; Adaptor check; Interface parity check
A73[1]	MOSS level 0 error detection; SWAD; Device; Adaptor check; Multiple bits detected in EB Stat reg
A74[1]	MOSS level 0 error detection; SWAD; Device; Adaptor check; Switch interface error
A75[1]	MOSS level 0 error detection; SWAD; Device; Adaptor check; Switch driver fault

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 11 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
A76[1]	MOSS level 0 error detection; SWAD; Device; Adaptor check; Switch serial link parity
A77[1]	MOSS level 0 error detection; SWAD; Device; Adaptor check; Switch invalid command
A78[1]	MOSS level 0 error detection; SWAD; Device; Adaptor check; Multiple bits detected in Device stat reg
A79[1]	MOSS level 0 error detection; SWAD; Device; Adaptor check; Adaptor failure
A7A[1]	MOSS level 0 error detection; SWAD; Device; Adaptor check; No Common Adaptor Code running
A7B[1]	MOSS level 0 error detection; SWAD; PIO; Bus check; Inbound parity
A7C[1]	MOSS level 0 error detection; SWAD; PIO; Bus check; Adaptor failure
A7D[1]	MOSS level 0 error detection; SWAD; PIO; Bus check; Adaptor not detected
A7E[1]	MOSS level 0 error detection; SWAD; PIO; Timeout; Invalid command
A7F[1]	MOSS level 0 error detection; SWAD; PIO; Timeout; Outbound address parity check
A80[1]	MOSS level 0 error detection; SWAD; PIO; Timeout; Overrun
A81[1]	MOSS level 0 error detection; SWAD; PIO; Timeout; Adaptor not detected
A82[1]	MOSS level 0 error detection; SWAD; PIO; Timeout; Adaptor failure
A83[1]	MOSS level 0 error detection; SWAD; PIO; Timeout; Multiple bits detected in Stat reg
A84[1]	MOSS level 0 error detection; MCAD; Adaptor is 'down'
A85[1]	MOSS level 0 error detection; MCAD; PIO; Bus check; Inbound parity
A86[1]	MOSS level 0 error detection; MCAD; PIO; Bus check; Adaptor failure
A87[1]	MOSS level 0 error detection; MCAD; PIO; Bus check; Adaptor not detected
A88[1]	MOSS level 0 error detection; MCAD; PIO; Timeout; Invalid command
A89[1]	MOSS level 0 error detection; MCAD; PIO; Timeout; Outbound parity check
A8A[1]	MOSS level 0 error detection; MCAD; PIO; Timeout; Adaptor not detected
A8B[1]	MOSS level 0 error detection; MCAD; PIO; Timeout; Adaptor failure
A8C[1]	MOSS level 0 error detection; MCAD; PIO; Timeout; Multiple bits detected in Stat reg
A8D[1]	MOSS level 0 error detection; DFA; Adaptor is 'down'
A8E[1]	MOSS level 0 error detection; DFA; CHIO Bus check
A8F[1]	MOSS level 0 error detection; DFA; CHIO Timeout
A90[1]	MOSS level 0 error detection; DFA; CHIO; Storage ECC error; Register space parity during main store.
A91[1]	MOSS level 0 error detection; DFA; CHIO; Storage ECC error; Multiple bits in DIV Register
A92[1]	MOSS level 0 error detection; DFA; CHIO; Storage ECC error; No bits active in DIV Register
A93[1]	MOSS level 0 error detection; DFA; CHIO; Exception; Operation exception; CHCV Reg invalid
A94[1]	MOSS level 0 error detection; DFA; CHIO; Exception; Register precision; CHP Reg bits 0-7 are not zero
A95[1]	MOSS level 0 error detection; DFA; CHIO; Exception; Specification exception with invalid address on main store data access
A96[1]	MOSS level 0 error detection; DFA; CHIO; Exception; Address exception on main store data access
A97[1]	MOSS level 0 error detection; DFA; CHIO; Exception; Multiple bits in DIV Register
A98[1]	MOSS level 0 error detection; DFA; CHIO; Exception; No bits active in DIV Register
A99[1]	MOSS level 0 error detection; DFA; CHIO; Internal check; Cache parity check
A9A[1]	MOSS level 0 error detection; DFA; CHIO; Internal check; Invalid address on CHP Reg access
A9B[1]	MOSS level 0 error detection; DFA; CHIO; Internal check; Multiple bits in DIV Register
A9C[1]	MOSS level 0 error detection; DFA; CHIO; Multiple bits detected in EIRV reg
A9D[1]	MOSS level 0 error detection; DFA; CHIO; No CHIO in progress in Adaptor Control Block
A9E[1]	MOSS level 0 error detection; DFA; PIO; Bus check; Inbound parity
A9F[1]	MOSS level 0 error detection; DFA; PIO; Bus check; Adaptor failure
AA0[1]	MOSS level 0 error detection; DFA; PIO; Bus check; Adaptor not detected
AA1[1]	MOSS level 0 error detection; DFA; PIO; Timeout; Invalid command
AA2[1]	MOSS level 0 error detection; DFA; PIO; Timeout; Outbound address parity check
AA3[1]	MOSS level 0 error detection; DFA; PIO; Timeout; Outbound command/data parity check
AA4[1]	MOSS level 0 error detection; DFA; PIO; Timeout; Adaptor failure
AA5[1]	MOSS level 0 error detection; DFA; PIO; Timeout; Multiple bits detected in Stat reg
AA6[1]	MOSS level 0 error detection; TOD; Adaptor is 'down'
AA7[1]	MOSS level 0 error detection; TOD; PIO; Bus check; Inbound parity
AA8[1]	MOSS level 0 error detection; TOD; PIO; Bus check; Adaptor not detected
AA9[1]	MOSS level 0 error detection; TOD; PIO; Timeout; Outbound address parity check
AAA[1]	MOSS level 0 error detection; TOD; PIO; Timeout; Outbound command/data parity check
AAB[1]	MOSS level 0 error detection; PLC; Adaptor is 'down'
AAC to AAD	NOT USED

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 12 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
AAE[1]	MOSS level 0 error detection; PLC; MMIO Interface error OR Invalid address during main store data access (ON level 2)
AAF[1]	MOSS level 0 error detection; PLC; MMIO Parity error OR Memory storage; Storage ECC; Data parity (ON level 2)
AB0	NOT USED
AB1[1]	MOSS level 0 error detection; UC Bus; Bus is 'down'
AB2[1]	MOSS level 0 error detection; Register Storage; PIO Storage ECC; Data parity whilst accessing MPC
AB3[1]	MOSS level 0 error detection; Register Storage; PIO Storage ECC; Data parity whilst accessing MSC
AB4[1]	MOSS level 0 error detection; Register Storage; PIO Storage ECC; Unresolved problem
AB5[1]	MOSS level 0 error detection; Register Storage; Storage ECC; Check during PSV swap
AB6[1]	MOSS level 0 error detection; Memory Storage; CHIO Storage ECC; Data parity
AB7[1]	MOSS level 0 error detection; Memory Storage; Storage ECC; Data parity (NOT ON level 2)
AB8[1]	MOSS level 0 error detection; Memory Storage; Storage ECC; Instruction fetch parity
AB9[1]	MOSS level 0 error detection; Loop; Excessive MOSS IML loop is detected via a TOD interrupt
ABA[1]	MOSS level 0 error detection; Erroneous MOSS code; Program error; IO address is not authorized
ABB[1]	MOSS level 0 error detection; Diag code; Program error; Power on reset / start; Unresolved
ABC[1]	MOSS level 0 error detection; Level 0 code; Program error; Invalid BER set during Checkpoint Retry Recovery
ABD[1]	MOSS level 0 error detection; Level 0 code; Program error; Invalid BER set during Postponed Retry Recovery
ABE[1]	MOSS level 0 error detection; Level 0 code; Program error; Invalid BER set during Transparent Retry Recovery
ABF[1]	MOSS level 0 error detection; Level 0 code; Program error; Program request dispatcher - module CHGH0PGM - is in an unexpected state
AC0[1]	MOSS level 0 error detection; Level 0 code; Program error; Invalid adaptor ID present in module CHGH0BUS
AC1[1]	MOSS level 0 error detection; Level 0 code; Program error; Ram processor is in an unexpected state
AC2[1]	MOSS level 0 error detection; Level 0 code; Program error; Ros processor is in an unexpected state
AC3[1]	MOSS level 0 error detection; Level 0 code; Program error; Call address stack table is full
AC4[1]	MOSS level 0 error detection; Level 0 code; Program error; Return address stack table is empty
AC5[1]	MOSS level 0 error detection; Level 0 code; Program error; The type of BER created does not exist in the BER table
AC6[1]	MOSS level 0 error detection; Level 0 code; Program error; MOSS already IML'd routine before the IML routine
AC7[1]	MOSS level 0 error detection; Unexpected spurious interrupt; CHIO error detected
AC8[1]	MOSS level 0 error detection; Unexpected spurious interrupt; Level 0 interrupt detected
AC9[1]	MOSS level 0 error detection; Unexpected spurious interrupt; Level 0 interrupt in IOIRV detected
ACA[1]	MOSS level 0 error detection; Unexpected spurious interrupt; PIO Bus check; No adaptor found with Last Priority Level
ACB[1]	MOSS level 0 error detection; Unexpected spurious interrupt; PIO Bus check; Instruction was not an IO type
ACC[1]	MOSS level 0 error detection; Unexpected spurious interrupt; PIO Bus check; Detected on level 2
ACD[1]	MOSS level 0 error detection; Unexpected spurious interrupt; PIO Bus check; Detected on level 6
ACE[1]	MOSS level 0 error detection; Unexpected spurious interrupt; PIO Timeout; No adaptor found with Last Priority Level
ACF[1]	MOSS level 0 error detection; Unexpected spurious interrupt; PIO Timeout; Instruction was not an IO type
AD0[1]	MOSS level 0 error detection; Unexpected spurious interrupt; PIO Timeout; Detected on level 2
AD1[1]	MOSS level 0 error detection; Unexpected spurious interrupt; PIO Timeout; Detected on level 6
AD2[1]	MOSS level 0 error detection; Unexpected spurious interrupt; Program request detected in PIRV
AD3[1]	MOSS level 0 error detection; Unresolved Exception error; Addressing exception during Instruction fetch
AD4[1]	MOSS level 0 error detection; Unresolved Exception error; Addressing exception during Main store data access
AD5[1]	MOSS level 0 error detection; Unresolved Exception error; Fixed point overflow exception
AD6[1]	MOSS level 0 error detection; Unresolved Exception error; Invalid address exception during non main store access
AD7[1]	MOSS level 0 error detection; Unresolved Exception error; Multiple bits detected in DIV

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 13 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
AD8[1]	MOSS level 0 error detection; Unresolved Exception error; Multiple bits detected in EIRV
AD9[1]	MOSS level 0 error detection; Unresolved Exception error; Operation exception; Invalid opcode detected
ADA[1]	MOSS level 0 error detection; Unresolved Exception error; Register precision exception
ADB[1]	MOSS level 0 error detection; Unresolved Exception error; Specification exception; Invalid address during Instruction fetch
ADC[1]	MOSS level 0 error detection; Unresolved Exception error; Specification exception; Invalid address during Main store data access (NOT ON level 2)
ADD[1]	MOSS level 0 error detection; Unresolved Exception error; Specification exception; Invalid address during non GPR access
ADE[1]	MOSS level 0 error detection; Unresolved Exception error; Specification exception; Invalid execution of KI instruction
ADF[1]	MOSS level 0 error detection; Unresolved Exception error; Specification exception; PSV bits (40-44-47) are not zero
AE0[1]	MOSS level 0 error detection; Unresolved Internal Check; Cache register parity check
AE1[1]	MOSS level 0 error detection; Unresolved Internal Check; Invalid address during GPR access
AE2[1]	MOSS level 0 error detection; Unresolved Internal Check; Invalid address during PSV swap
AE3[1]	MOSS level 0 error detection; Unresolved Internal Check; Multiple bits detected in DIV
AE4[1]	MOSS level 0 error detection; Unresolved Internal Check; Multiple bits detected in EIRV
AE5[1]	MOSS level 0 error detection; Unresolved Storage/ECC Check; Multiple bits detected in DIV
AE6[1]	MOSS level 0 error detection; Unresolved Storage/ECC Check; Multiple bits detected in EIRV
AE7[1]	MOSS level 0 error detection; Unresolved Storage/ECC Check; No bits detected in DIV
AE8	MOSS LAN adapter (MLA) hardware error
AE9 to B00	NOT USED
B01	MLA internal diagnostic error
B02	Error during MPC-MLA interface test
B03	MOSS Lan adapter (MLA) hardware initialization error
B8D	Hardwre MMIO solid error
B8E	Hardwre MMIO error
B8F	Hardwre adapter check
B90	MOSS LAN adapter (MLA) hardware initialization error
B91	MOSS microcode error
B92	Ring lobe media test failure
B93	Ring signal lost while opening
B94	Ring wire fault while opening
B95	Ring open frequency error
B96	Ring time out while opening
B97	Ring failure while opening
B98	Ring beaconing while opening
B99	Ring duplicate node address
B9A	Ring open request parameters
B9B	Ring open remove received
B9C	Ring open IMPL force received
B9D	Ring no monitor for RPL at open
B9E	Ring lobe wire fault at open
B9F	Remote station connection time out
BA0	Successful LAN disable
BB0	Ring link lost
BB1	Ring DM/DISC received/acked
BB2	Ring FRMR received
BB3	Ring SABME received
BB4	Ring Ti timer expired
BB5	Ring FRMR sent
BB6	Ring unexpected SABME received
BC0	Permanent ring beaconing
BC1	Ring lobe wire fault
BC2	Auto removal while beaconing
BC3	Ring remove received

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 14 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
BC4	Ring auto removal
BD0	FSM time out
BE0	Watchdog time out
BFF[1]	MOSS level 0 Incoherence; Problem within the level 0 code
C00 to C03	NOT USED
C04[1]	MOSS level 0 error detection; MOSS ABEND; Supervisor; Invalid SVTTRC
C05[1]	MOSS level 0 error detection; MOSS ABEND; Supervisor; More than one request
C06[1]	MOSS level 0 error detection; MOSS ABEND; Supervisor; Invalid SVTDRC
C07[1]	MOSS level 0 error detection; MOSS ABEND; Supervisor; Invalid TCB ID
C08[1]	MOSS level 0 error detection; MOSS ABEND; Supervisor; Invalid Adaptor ID
C09[1]	MOSS level 0 error detection; MOSS ABEND; Supervisor; Invalid Timer request
C0A[1]	MOSS level 0 error detection; MOSS ABEND; Supervisor; Overflow of lost BER counter.
C0B[1]	MOSS level 0 error detection; MOSS ABEND; Supervisor; BER length null
C0C[1]	MOSS level 0 error detection; MOSS ABEND; Supervisor; Invalid macro ID in CHGSUBEM
C0D[1]	MOSS level 0 error detection; MOSS ABEND; Supervisor; Invalid adaptor ID in CHGSUBEA
C0E[1]	MOSS level 0 error detection; MOSS ABEND; Keyboard/Display Support; Invalid function request
C0F[1]	MOSS level 0 error detection; MOSS ABEND; Keyboard/Display Support; End I/O without FRB
C10[1]	MOSS level 0 error detection; MOSS ABEND; Keyboard/Display Support; Program interrupt without FRB
C11[1]	MOSS level 0 error detection; MOSS ABEND; Keyboard/Display Support; Invalid interrupt
C12[1]	MOSS level 0 error detection; MOSS ABEND; Disk/Diskette Support; Invalid function request
C13	NOT USED
C14[1]	MOSS level 0 error detection; MOSS ABEND; Disk/Diskette Support; Invalid header label
C15 to C16	NOT USED
C17[1]	MOSS level 0 error detection; MOSS ABEND; Disk/Diskette Support; Invalid LM elements
C18	NOT USED
C19[1]	MOSS level 0 error detection; MOSS ABEND; Disk/Diskette Support; Invalid completion status with preemptive request
C1A	NOT USED
C1B[1]	MOSS level 0 error detection; MOSS ABEND; Disk/Diskette Support; Control record found
C1C[1]	MOSS level 0 error detection; MOSS ABEND; Disk/Diskette Support; Invalid completion status with exception detected
C1D[1]	MOSS level 0 error detection; MOSS ABEND; Disk/Diskette Support; Program problem detected by CAC
C1E[1]	MOSS level 0 error detection; MOSS ABEND; Disk/Diskette Support; Invalid completion status with error detected
C1F[1]	MOSS level 0 error detection; MOSS ABEND; Disk/Diskette Support; Invalid completion status with complete but with neither exception nor error detected
C20[1]	MOSS level 0 error detection; MOSS ABEND; Disk/Diskette Support; Unexpected completion status or interrupt
C21[1]	MOSS level 0 error detection; MOSS ABEND; Disk/Diskette Support; Bad disk IOCS initialize
C22[1]	MOSS level 0 error detection; MOSS ABEND; Disk/Diskette Support; Threshold exceeded on unexpected interrupt
C23[1]	MOSS level 0 error detection; MOSS ABEND; CCU Support; No action for Scanner AC hit
C24	NOT USED
C25[1]	MOSS level 0 error detection; MOSS ABEND; CCU Support; Undefined interrupt
C26[1]	MOSS level 0 error detection; MOSS ABEND; CCU Support; Unexpected Mailbox IN rejected
C27[1]	MOSS level 0 error detection; MOSS ABEND; CCU Support; Invalid ID from scanner selected
C28[1]	MOSS level 0 error detection; MOSS ABEND; CCU Support; Invalid adaptor address
C29[1]	MOSS level 0 error detection; MOSS ABEND; CCU Support; Undefined CHIO request
C2A[1]	MOSS level 0 error detection; MOSS ABEND; CCU Support; Switch adaptor CAC requests an ABEND
C2B to C2D	NOT USED
C2E[1]	MOSS level 0 error detection; MOSS ABEND; CCU Support; Invalid PCW command
C2F to	NOT USED

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 15 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
C30	
C31[1]	MOSS level 0 error detection; MOSS ABEND; Operator Control; Load module not found
C32[1]	MOSS level 0 error detection; MOSS ABEND; Operator Control; Logical Disk error
C33[1]	MOSS level 0 error detection; MOSS ABEND; Operator Control; Invalid cancel request
C34[1]	MOSS level 0 error detection; MOSS ABEND; Operator Control; MOSS IML request by operator
C35[1]	MOSS level 0 error detection; MOSS ABEND; Operator Control; Data stream out is greater than 1024 bytes
C36[1]	MOSS level 0 error detection; MOSS ABEND; CCU Functions; End of DCF application
C37[1]	MOSS level 0 error detection; MOSS ABEND; CCU Functions; Incorrect load module identified
C38[1]	MOSS level 0 error detection; MOSS ABEND; CCU Functions; Logical disk error
C39[1]	MOSS level 0 error detection; MOSS ABEND; CCU Functions; Unknown operator control return code
C3A[1]	MOSS level 0 error detection; MOSS ABEND; Transient Tasks; Load module not found
C3B[1]	MOSS level 0 error detection; MOSS ABEND; Transient Tasks; Logical disk error
C3C[1]	MOSS level 0 error detection; MOSS ABEND; Transient Tasks; Unknown operator control return code
C3D[1]	MOSS level 0 error detection; MOSS ABEND; Transient Tasks; Conflicting dump file information
C3E[1]	MOSS level 0 error detection; MOSS ABEND; Transient Tasks; Scanner not installed or SCB not flagged "auto dump"
C3F[1]	MOSS level 0 error detection; MOSS ABEND; Transient Tasks; Control program invalid answer
C40[1]	MOSS level 0 error detection; MOSS ABEND; Transient Tasks; Disconnect not allowed
C41[1]	MOSS level 0 error detection; MOSS ABEND; Transient Tasks; Buffer limit reached
C42[1]	MOSS level 0 error detection; MOSS ABEND; Box Error Logging; Invalid BER stack
C43[1]	MOSS level 0 error detection; MOSS ABEND; Mail Box Support; Load module not found
C44[1]	MOSS level 0 error detection; MOSS ABEND; Mail Box Support; Mail box request rejected
C45[1]	MOSS level 0 error detection; MOSS ABEND; Mail Box Support; Unsolicited call
C46[1]	MOSS level 0 error detection; MOSS ABEND; Mail Box Support; Invalid RU
C47[1]	MOSS level 0 error detection; MOSS ABEND; Macro Invocation; Started bit in request
C48[1]	MOSS level 0 error detection; MOSS ABEND; System IPL; Start IPL refused
C49[1]	MOSS level 0 error detection; MOSS ABEND; Disk Functions; Disk unusable
C4A[1]	MOSS level 0 error detection; MOSS ABEND; Disk Functions; Unable to load CHGDFINT
C4B[1]	MOSS level 0 error detection; MOSS ABEND; Power Functions; Incorrect access to PCST
C4C[1]	MOSS level 0 error detection; MOSS ABEND; Power Functions; Invalid data - threshold
C4D[1]	MOSS level 0 error detection; MOSS ABEND; Power Functions; Next request received before RP
C4E[1]	MOSS level 0 error detection; MOSS ABEND; Level 1; Permanent HLIR - kill MOSS
C4F[1]	MOSS level 0 error detection; MOSS ABEND; Level 1; Excess amount of spurious errors
C50[1]	MOSS level 0 error detection; MOSS ABEND; Level 1; Soft checker - snap shot
C51[1]	MOSS level 0 error detection; MOSS ABEND; MSD; Invalid frame number
C52[1]	MOSS level 0 error detection; MOSS ABEND; IMIN2; No timer IMIN2
C53[1]	MOSS level 0 error detection; MOSS ABEND; TRSS; NCP pointer not found
C54[1]	MOSS level 0 error detection; MOSS ABEND; TRSS; Invalid field format received
C55[1]	MOSS level 0 error detection; MOSS ABEND; TRSS; Invalid TIC storage
C56[1]	MOSS level 0 error detection; MOSS ABEND; TRSS; TRA/TIC not installed or ASB not flagged "Auto TIC Dump"
C57 to C61	NOT USED
C62 to C7A	MOSS microcode error
C7B to D00	NOT USED
D01[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Adaptor busy - attn
D02[1]	MOSS level 0 error detection; Disk errors during IML/Dump; FRB busy
D03 to D04	NOT USED
D05[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Adapter busy - CHIO
D06[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Adapter busy - reset

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 16 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
D07	NOT USED
D08[1]	MOSS level 0 error detection; Disk errors during IML/Dump; SCA 1 not open
D09[1]	MOSS level 0 error detection; Disk errors during IML/Dump; SCA 2 not open
D0A[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Adapter not open
D0B[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Pre-emptive request complete
D0C[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Pre-emptive request rejected
D0D[1]	MOSS level 0 error detection; Disk errors during IML/Dump; SCA 1 already open
D0E[1]	MOSS level 0 error detection; Disk errors during IML/Dump; SCA 2 already open
D0F to D10	NOT USED
D11[1]	MOSS level 0 error detection; Disk errors during IML/Dump; FRB Program check
D12[1]	MOSS level 0 error detection; Disk errors during IML/Dump; BCL Program check
D13[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Invalid PIO command (hardware & equipment checks)
D14 to D1F	NOT USED
D20[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Indeterminate equipment check (hardware error in adapt.)
D21	NOT USED
D22[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Device (SCA) ready (hardware error in adaptor)
D23 to D27	NOT USED
D28[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Seek check (DATA transmission problems)
D29 to D2F	NOT USED
D30[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Device (SCA) not ready (no error)
D31[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Control record found (error / not successful class. sequence errors)
D32[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Sector Buffer Parity error
D33[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Termination error with no specific error
D34[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Cylinder overrun
D35[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Write/Protect fault with FDD
D36[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Write fault with HDD
D37[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Halt during a CHIO operation
D38[1]	MOSS level 0 error detection; Disk errors during IML/Dump; I/O bus parity error
D39[1]	MOSS level 0 error detection; Disk errors during IML/Dump; CCB with no active CSB
D3A[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Invalid command in CCB or SSB
D3B[1]	MOSS level 0 error detection; Disk errors during IML/Dump; ERP invoked by DFA
D3C[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Internal parity error
D3D[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Data error (SSB byte 1)
D3E[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Record not found (L/operator intervention required)
D3F	NOT USED
D40[1]	MOSS level 0 error detection; Disk errors during IML/Dump; CRC/ECC error on ID
D41[1]	MOSS level 0 error detection; Disk errors during IML/Dump; CRC/ECC error on data
D42[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Bad track detected
D43[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Format error detected
D44[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Unable to find ID
D45[1]	MOSS level 0 error detection; Diskette errors during IML/Dump; Format error detected
D46 to D4F	NOT USED
D50[1]	MOSS level 0 error detection; Disk errors during IML/Dump; Disk change information

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 17 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
D51 to D75	NOT USED
D76[1]	MOSS level 0 error detection; Disk errors during IML/Dump; PIO MCK (non-recursive)
D77 to DF5	NOT USED
DF6[1]	MOSS level 0 error detection; Disk errors during IML/Dump; PIO MCK (recursive) - (preemptive request class.)
DF7	NOT USED
DF8[1]	MOSS level 0 error detection; Device errors during IML/Dump; Dump directory entry not found
DF9[1]	MOSS level 0 error detection; Device errors during IML/Dump; Hard Disk not initialised
DFA[1]	MOSS level 0 error detection; Device errors during IML/Dump; Hard Disk not formatted
DFB[1]	MOSS level 0 error detection; Device errors during IML/Dump; Invalid IML request
DFC[1]	MOSS level 0 error detection; Device errors during IML/Dump; Volume IML check
DFD[1]	MOSS level 0 error detection; Device errors during IML/Dump; Data compare check
DFE[1]	MOSS level 0 error detection; Device errors during IML/Dump; Disk time out
DFF[1]	MOSS level 0 error detection; Device errors during IML/Dump; Diskette time out
E00 to EFF	NOT USED
F00	Status / Progression step; Start of MOSS Dump
F01	Status / Progression step; MOSS Dump has been completed without error
F02	Status / Progression steps which occur during the IML sequence; IML Initialisation
F03	Status/Progression steps which occur during the IML sequence; Open adaptor
F04	Status/Progression steps which occur during the IML sequence; Open SCA (either disk or diskette)
F05	Status/Progression steps which occur during the IML sequence; Check disk or diskette ID
F06 to F07	NOT USED
F08	Status/Progression steps which occur during the IML sequence; Find directory entry
F09	Status/Progression steps which occur during the IML sequence; IML end - go to MOSS loader
F0A	Status/Progression steps which occur during the IML sequence; Ram entry (Start of MOSS Init step 1)
F0B	Status/Progression steps which occur during the IML sequence; End of MOSS Init step 1
F0C	Status/Progression steps which occur during the IML sequence; Start of MOSS Init step 2 (MOSS level 7)
F0D	Status/Progression steps which occur during the IML sequence; IML complete with errors detected during MOSS Diagnostics.
F0E	Status/Progression steps which occur during the IML sequence; IML complete - MOSS ALONE
F0F	Status/Progression steps which occur during the IML sequence; IML Complete - CCU connected - MOSS OFFLINE or MOSS Offline command successful
F10	Errors detected during the IPL sequence; Solid error during MIOC operation
F11	Errors detected during the IPL sequence; CCU hardcheck during a CCU IPL in progress
F12	Errors detected during the IPL sequence; Host IPL request during CCU IPL in progress
F13	Errors detected during the IPL sequence; Unidentified IPL selection
F14	Errors detected during the IPL sequence; CDS not correctly built by the CDF
F15	NOT USED
F16	Errors detected during the IPL sequence; CCU memory test failed
F17	Errors detected during the IPL sequence; CCU test failed
F18	Errors detected during the IPL sequence; IOC BUS test failed
F19	Errors detected during the IPL sequence; IPL port table has been incorrectly built via the CDF
F1A	Errors detected during the IPL sequence; CLDP not accessible
F1B	Errors detected during the IPL sequence; CLDP/SALT abend. (output 70)
F1C	Errors detected during the IPL sequence; CLDP/MOSS interface error
F1D	Errors detected during the IPL sequence; NCP/EP init abend
F1E	Errors detected during the IPL sequence; CLDP time out on 'IN MAILBOX' acknowledgement
F1F	Errors detected during the IPL sequence; MOSS time out on waiting NCP/EP init MB out
F20	Errors detected during the IPL sequence; MOSS time out on waiting NCP/EP init MB in acknowledgement
F21	Errors detected during the IPL sequence; NCP/EP INIT/MOSS interface error acknowledgement

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 18 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
F22 to F23	NOT USED
F24	Errors detected during the IPL sequence; No scanner IMLed after scanner IML routine (phase 3)
F25	Errors detected during the IPL sequence; No valid scanner in the CDS
F26	Errors detected during the IPL sequence; LSSD residual count > 7
F27	Errors detected during the IPL sequence; LSSD string select error during a read or write LSSD
F28	Errors detected during the IPL sequence; IPL phase 1A load module not accessible
F29	Errors detected during the IPL sequence; IPL phase 1B load module not accessible
F2A	Errors detected during the IPL sequence; IPL phase 2 load module not accessible
F2B	Errors detected during the IPL sequence; IPL phase 3 load module not accessible
F2C	Errors detected during the IPL sequence; IPL phase 4 load module not accessible
F2D	Errors detected during the IPL sequence; Too many CCU RE-IPL (PGM abend or hardcheck)
F2E	Errors detected during the IPL sequence; Wrong CCU LSSD initialization
F2F	Errors detected during the IPL sequence; No IPL port is available (Neither the Link nor Channel) and no load module on the Disk is available
F30	Errors detected during the IPL sequence; CPIT error: • CPIT length different in MOSS and in NCP • Some CPIT fields not initialized
F31	Errors detected during the IPL sequence; IPL phase 1C load module not accessible
F32	Errors detected during the IPL sequence; CCU check occured during Phase 1C
F33	Errors detected during the IPL sequence; SALT not accessible
F34	Errors detected during the IPL sequence; CCU memory failure
F35	Errors detected during the IPL sequence; Discrepancy between CLDP and 3746-900 CDF information
F36 to F47	NOT USED
F48	Errors detected during the IPL sequence; CCU and CACHE checkout failed SCTL checkout failed
F4A	Errors detected during the IPL sequence; SCTL initialization failed
F4B	Errors detected during the IPL sequence; Switch checkout failed
F4C	Errors detected during the IPL sequence; IOC bus problem.
F4D	Errors detected during the Fallback/Switchback sequence; Channel monitoring failure in normal monitor mode during Fallback or Switch back
F4E	Errors detected during the Fallback/Switchback sequence; Reset adaptors can not be performed during Fallback or Switchback
F4F	Errors detected during the Fallback/Switchback sequence; Problem detected by the CDF
F50	Errors detected during the Fallback/Switchback sequence; The control program cannot be set ONLINE by the Fallback or Switchback
F51	Errors detected during the IPL Fallback/Switchback sequence; Switch operation failed
F52	Errors detected during the IPL sequence; Problem detected with the MCAD interface
F53	Errors detected during the Fallback/Switchback sequence; Fall back function not supported
F54	Errors detected during the Fallback/Switchback sequence; No buffer available for NCP during fallback
F55	Errors detected during the Fallback/Switchback sequence; NCP / MOSS fallback interface error
F56	Errors detected during the Fallback/Switchback sequence; Interface problem detected between Fallback / Switchback and Channel Monitoring
F57	Errors detected during the IPL sequence; CCU power has dropped during the IPL
F58	Error detected during Switchback sequence; Error found in Switchback protocol
F59	Error detected during MOSS IML Diagnostics; IPL can not be performed on the selected CCU
F5A	Errors detected during the IPL sequence; CA configuration from CDF does not match the actual configuration
F60	Error detected during MOSS IML Diagnostics; IPL can not be performed on all CCUs
F61	Errors detected during the IPL sequence; Load module not accessible after a 'suspend' procedure
F62	Errors detected during the IPL sequence; IPL cancelled after stop in phase 1 diags.
F63	Errors detected during the IPL sequence; IPL cancelled after stop in phase 1 diags. CCU unknown.
F64	NCP does not support PUC type.
F65	Memory size of stand-by CCU too small for load module.
F66	Memory size is 16 MB and NCP does not support
F67 to	NOT USED

An [1] following a panel code denotes that the code should 'Blink'.

Table A-1 (Page 19 of 19). 3745 MOSS Control Panel Codes

Panel Code	Definition
FCF	
FD0	Status/Progression steps which occur during a configuration sequence; Fall back complete
FD1	Status/Progression steps which occur during a configuration sequence; Fall back complete but with errors
FD2	Status/Progression steps which occur during a configuration sequence; Switch back complete
FD3	Status/Progression steps which occur during a configuration sequence; Switch back complete but with errors
FD4	Status/Progression steps which occur during a configuration sequence; Fall back in progress
FD5	Status/Progression steps which occur during a configuration sequence; Switch back in progress
FD6	Status/Progression steps which occur during the IPL sequence; The control program loading is started from the Disk
FD7	Status/Progression step; Dump Control Program onto MOSS disk in progress
FD8	Status / Progression step; Save Control Program on MOSS disk in progress
FD9	Status / Progression step; Phase 1C test in progress on the standby CCU
FDA	Status / Progression step; Phase 1C test cancelled on the standby CCU
FDB to FE0	NOT USED
FE1	Errors detected during IML sequence; Disk initialisation failure
FE2	Errors detected during IML sequence; Disk load operation failure
FE3	Errors detected during IML sequence; Power error A - Get end of IML data
FE4	Errors detected during IML sequence; Power error B - Get stacked error
FE5	Errors detected during IML sequence; Panel error
FE6	Errors detected during IML sequence; MIOC error with CCU A operation
FE7	Errors detected during IML sequence; MIOC error with CCU B operation
FE8	Errors detected during IML sequence; Disk error when reading CDF
FE9	Errors detected during IML sequence; CDF not created
FEA	Errors detected during IML sequence; CDF access function(s) error
FEB	Errors detected during IML sequence; NCP timeout on mailbox to CCU A
FEC	Errors detected during IML sequence; NCP timeout on mailbox to CCU B
FED	NOT USED
FEE	Errors detected during IML sequence; MOSS data saving error
FEF	Errors detected during IML sequence; Disk error when reading Port Swap file
FF0	Status/Progression steps which occur during the IPL sequence; IPL entered
FF1	Status/Progression steps which occur during the IPL sequence; IPL phase 1 started
FF2	Status/Progression steps which occur during the IPL sequence; IPL phase 2 started
FF3	Status/Progression steps which occur during the IPL sequence; IPL phase 3 entered
FF4	Status/Progression steps which occur during the IPL sequence; IPL phase 4 entered
FF5	Status/Progression steps which occur during the IPL sequence; The control program Load / Dump is started on a channel attached 3745
FF6	Status/Progression steps which occur during the IPL sequence; The control program Load / Dump is started on a Link attached 3745
FF7	Status/Progression steps which occur during the IPL sequence; control program is loaded and initialization has started
FF8	Status/Progression step which occurs during the IPL sequence; control program Load/Dump is started on a ESCA attached 3746-900.
FF9	Status / Progression steps which occur during a configuration sequence; Switchback was cancelled by the 3745 operator.
FFA	Status / Progression steps which occur during the IPL sequence; IPL has completed but has detected a PCA1 adapter error; Local console may not be accessible
FFB	Status / Progression steps which occur during the IPL sequence; IPL was cancelled by the 3745 Console Operator
FFC	Status / Progression steps which occur during a configuration sequence; Fallback was cancelled by the 3745 Console Operator
FFD	Status / Progression steps which occur during the IPL sequence; IPL has completed; The MOSS IML was performed from the diskette; control program is loaded and MOSS is operational
FFE	Status / Progression steps which occur during the IPL sequence; IPL has been completed but has detected some error during the sequence.
FFF	IPL canceled after error detection.

An [1] following a panel code denotes that the code should 'Blink'.

Appendix B. Maintenance Aids

PKD Maintenance Aids

Configuration: On a LIC type 5 or 6, the configuration parameters are set from the PKD. Refer to the *IBM 3745 Communication Controller All Models Connection and Integration Guide*, SA33-0129, for detailed procedures.

On a LIC type 5, the following configuration parameters are for "service representative only": MODE (native or CCITT), CD SENSIT (normal or low) and L XMIT LEVEL.
They must be set by using the **B** command as follows:

1. Enter the **B 300** at the PKD.
2. Press **GO** several times to obtain the desired option message.
3. Press **ERASE** and enter the new value, if applicable.
4. Press **GO** to validate the new value.

B Commands (Only for LIC Type 5): The following other **B** commands can be used by the CE for miscellaneous actions:

- **B 100** Reload default configuration.
- **B 555** Address a remote modem (using the modem serial number) to change some parameters.
- **B 666** Increase the timeout from 30 seconds to 10 minutes.
- **B 703**, **B 704**, **B 705** CO/CS functions, allows remote commands.
- **B 730** Send a 1004 Hz tone on a telephone line.

Manual Tests: The following manual tests can be executed on a LIC type 5:

- Local self-test
- Remote self-test
- Local status report
- Remote status report
- Analog test (line analysis)
- Digital test (transmit/receive test)
- Manual loopback

The following manual tests can be executed on a LIC type 6:

- Local self-test
- Digital test (transmit/receive test)
- Manual loopback

Refer to the *IBM 3745 Communication Controller All Models Connection and Integration Guide*, SA33-0129 for detailed procedures.

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Contacting Support

You may wish to record:

- The support structure telephone number:

  _____

- The RSF telephone number:

  _____

- The customer number:

  _____

- The customer software contact telephone number:

  _____

You may be directed to call support for various reasons. When support is called, you may be asked to perform specific tasks. On the following pages you will find information about why you call support and references to where you will find information about the tasks you may have to perform.

- "Control Program Maintenance Aids" on page B-3.
- "MOSS Microcode Maintenance Aids" on page B-3.
- "Scanner Microcode Maintenance Aids" on page B-4.
- "Channel Microcode Maintenance Aids" on page B-4.

Control Program Maintenance Aids

The following lists some possible causes of control program errors:

- A hardware configuration change has been performed and there is a difference between the hardware configuration and the control program generation.
- The customer has made some software changes.
- A PTF has been incorrectly applied.
- A PTF exists for the problem but has not been applied.

The following table shows where to find useful information in case of a suspected control program error.

Information	Where to Find It
Customer procedures for diagnosis	"ACF/SSP Diagnosis Reference, LY30-3060"
How to perform control program procedures	"Advanced Operation Guide"
How to execute NCP functions	"Advanced Operation Guide"
Line interface display (LID)	"Advanced Operation Guide"
Token-ring interface display (TID)	"Advanced Operation Guide"
Port swap	"Advanced Operation Guide"
LIC swap	"Advanced Operation Guide"
Access method traces	"Maintenance Information Reference Manual, Chapter 13"
Scanner interface trace (SIT)	"Maintenance Information Reference Manual, Chapter 13"
Stand-alone link test (SALT)	"Advanced Operation Guide"
Catalogued procedures (CP1 to CP6)	"Advanced Operation Guide"
LIC internal wrap test	"3745 Problem Determination Guide, Chapter 10"
LIC wrap test with wrap plugs	"Advanced Operation Guide"
NetView* alerts	NetView bibliography

MOSS Microcode Maintenance Aids

The following table shows where to find useful information in case of a suspected microcode error.

Information	Where to Find It
How to apply MCF	*IBM 3745 Communication Controller Service Function*, SY33-2055
How to display, delete a MOSS dump.	*IBM 3745 Communication Controller Service Function*, SY33-2055
Theory of MOSS and MOSS adapters	*IBM 3745 Communication Controller Models 210 to 61A Maintenance Information Reference*, SY33-2056
How to perform traces and dumps	*IBM 3745 Communication Controller Models 210 to 61A Maintenance Information Reference*, SY33-2056
Save, restore, and format the MOSS hard disk drive.	*IBM 3745 Communication Controller Service Function*, SY33-2055
How to dump the MOSS	"3745 Control Panel Use" on page 1-117

Scanner Microcode Maintenance Aids

The following table shows where to find useful information in case of a suspected scanner microcode error.

Information	Where to Find It
MCF	*IBM 3745 Communication Controller Service Function*, SY33-2055
Patches	*IBM 3745 Communication Controller Service Function*, SY33-2055

Channel Microcode Maintenance Aids

The following table shows where to find useful information in case of a suspected channel microcode error.

Information	Where to Fin It
Channel adapter description	*IBM 3745 Communication Controller Models 210 to 61A Maintenance Information Reference*, SY33-2056

Special Tools

Maintaining the 3745 requires using tools in addition to those in the IBM service representative's tool kit. The tools needed include:

General Purpose Tools

Tool	Quantity	Part Number
PT2-220 V	1	1749268
or		
PT2-110 V	1	1749269
TPLM	1	1749290
PT3-220 V	1	53F7252
or		
PT3-110 V	1	53F7251
Display	1	1749270
Digital voltmeter	1	8309874
	or	8496278
EIA breakout Panel	1	453637
Oscilloscope	1	
either		
Tektronix 454**		459559
Tektronix 475**		453215
Tektronix 2235**		6428880
Tektronix 2465 A**		8309847
High voltage probes	2	453698

ESD Kit

Name	Part Number
ESD kit	6428316
This Kit contains:	
ESD mat	6428274
Wristband (small size)	6428167
Wristband (large size)	6428169
ESD ground cord	6428166

TCM Tools

To remove a TCM from the TCM board, certain special tools are necessary. The following is a list of the tools required.

Name	Part Nbr.
TCM tool kit	69X7667
This kit contains:	
Tool case	69X7668
Label TCM kit	69X7669
¤ Clip-on TCM cover	7331541
¤ TCM handle	7331537
Hex drive torque tool (red)	2360092
Hex drive torque tool (blue)	4134750
Module pin aligner	2360424
Module pin template	4447370
TCM actuating tool	5665908
TCM cam gauge	6108930
1/4" ratchet	1808111
Signal cable unlatch tool	2360349

¤ Also shipped in the container with each new TCM.

Shipping Group Tools

3745 Shipping Group Tools: The following tools are shipped with the machine:

Tool	Qty	Part Nbr.
Segment Board	2	5997533
Console Wrap Plug (31XX)	1	6398697
Console Wrap Plug (3727)	1	2667737
Console Wrap Plug (PS/2*)	1	26F0320
LIC 1 and 4 Wrap Plug	1	65X8927
LIC 3 Wrap Cable	1	65X8928
CA Bus Wrap Plug (old)	1	03F4301
or		
CA Bus Wrap Plug (new)	1	26F1755
CA Tag Wrap Plug (old)	1	03F4300
or		
CA Tag Wrap Plug (new)	1	26F1754
CA Bus Terminator	1	2282675
CA Tag Terminator	1	2282676
Power Control Wrap Card	1	65X9848
Power Control Bus Link	1	6495722
EPO Plug	1	8482303
Cover Keys	2	1643894

The following tools are shipped when an HPTSS is installed in the machine:

V.35 Wrap Plug	1	58X9349
X.21 Wrap Plug	1	58X9354
ESS Wrap Plug	1	70X8670

The following tools are shipped when a LIC-5 or LIC-6 is installed in the machine.

PT2 cable	2	11F4816
LIC 5 or LIC 6 Wrap Plug	1	11F4815

LIC 5 or LIC 6 Wrap Plug PN according to the country:

U.S.A. / Canada	1	66X0807
Japan	1	6124644
Austria	1	6162946
France	1	6162955
Germany	1	6162950
Belgium	1	6162950
Luxemburg	1	6162950
Israel	1	66X1954
Hong Kong	1	65X8070
Italy	1	6162957
Switzerland	1	66X0748
U.K.	1	65X8069
Netherlands	1	6162948

3746-900 Shipping Group Tools: The following tools are shipped with a 3746-900:

Tool	Qty	Part Nbr.
ESCON Wrap Plug	1	5605670
TIC3 Wrap Plug	1	6165899
Filler (dummy card)	1	2733278
LIC11 Wrap Plug	1	58G9425
LIC12 Wrap Plug for X.21	1	58X9354
LIC12 Wrap Plug for V.35	1	58X9349
LIC16 Wrap Plug	1	57X8097

Wrap plugs for testing ARCs and cables (these wrap plugs must be installed on ARC cables).

ARC V.35 DTE Wrap Plug	1	61F4527
ARC V.35 DCE Wrap Plug	1	61F4526
ARC V.24 DTE Wrap Plug	1	61F4523
ARC V.24 DCE Wrap Plug	1	61F4522
ARC V.24 DCE/DTE 3745 Wrap Plug	1	61F4525
ARC V.35 DCE 3745 Wrap Plug	1	61F4528
ARC V.35 DTE 3745 Wrap Plug	1	61F4578
ARC X.21 DTE Wrap Plug	1	61F4530
ARC X.21 DCE Wrap Plug	1	61F4529
ARC X.21 DCE/DTE 3745 Wrap Plug	1	65X8927

Wrap plugs for testing ARCs assembly B (these wrap plugs must be installed at the rear of the ARCs).

ARC V.24 Wrap Plug	1	58G5660
ARC V.35 Non 3745 Wrap Plug	1	58G5661
ARC V.35 DTE 3745 Wrap Plug	1	58G5658
ARC V.35 DCE 3745 Wrap Plug	1	58G5659
ARC X.21 Wrap Plug	1	58G5662

Parts for connection to the 3745:

DICO cards	2	17G6080
Active bypass cards ABP1	2	58G2308
Active bypass cards ABP2	2	58G2309
Passive bypass cards BPC1	18	03F4372
Cables	2	76F9338
Cables	2	76F9339
Intermix brackets	18	1953110
Extenders	18	1953093
Dummy cards	4	398482
Holders	4	1953172

Service Processor Group Tools: The following tool is shipped with the service processor which has an integrated modem installed:

Tool	Qty	Part Nbr.
Integrated modem wrap plug	1	74F4508

Appendix C. 3745 Bibliography

Service Personnel Definitions

Definition	Uses
Product trained CE (PT CE): hardware CE also able to fix problems in the microcode. Also called: CE1 1st Level CE CE Phase 1	RETAIN console 3745 control panel 3745 console 3746-900 control panel Service Processor MIP Service Functions Guide Installation Guide Parts Catalog Basic Operations Guide Problem Determination Guide Connection and Integration Guide Advanced Operations Guide Wiring Diagrams (YZ Pages)
Product support trained CE (PST CE): hardware CE also able to determine and fix problems in the microcode. Also called: CE2 2nd Level CE CE Phase 2 Specialist Support	Same as PT CE, plus: MIR Diagnostic Descriptions Principles of Operation
Hardware Central Service (HCS) May include: Dispatchers PT CEs PST CEs	All 3745 tools and books
Program service representative (PSR) Also called: Program support CE Software CE	Operating systems, access methods, and NCP/EP library

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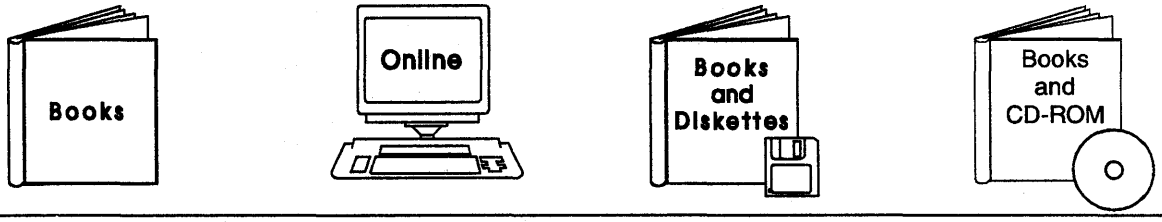
Customer Documentation for the 3745 (Models 210, 21A, 310, 31A, 410, 41A, 610, and 61A) and 3746 (Model 900)

Table C-1 (Page 1 of 4). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

This customer documentation has the following formats:



Finding Information

SA33-0172	***IBM 3745 Communication Controller Models 210 to 61A*** ***IBM 3746 Expansion Unit Model 900*** ***Customer Master Index***[1] Provides references for finding information in the customer documentation library.

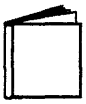
Evaluating and Configuring

GA33-0092	***IBM 3745 Communication Controller Models 210, 310, 410, and 610*** ***Introduction*** Gives an introduction about the IBM Models 210 to 610 capabilities. For Models A refer to the *Overview*, GA33-0180.
GA33-0180	***IBM 3745 Communication Controller Models A***[2] ***IBM 3746 Nways Multiprotocol Controller Models 900 and 950*** ***Overview*** Gives an overview of connectivity capabilities within SNA, APPN, and IP networking.
GA33-0183	***IBM 3745 Communication Controller Models A***[2] ***IBM 3746 Expansion Unit Model 900*** ***Migration and Planning Guide*** Prepares 3745 Models A and 3746 Model 900 planning for: • Field upgrades • Network integration (NCP control) • Physical installation

Preparing Your Site

GC22-7064 GN22-5490	***Input/Output Equipment Installation Manual-Physical Planning*** ***Technical News Letter*** Provides information for physical installation for the 3745 Models 130 to 610. For 3745 Models A and 3746 Model 900, refer to the *Migration and Planning Guide*, GA33-0183.

Table C-1 (Page 2 of 4). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900



GA33-0127

IBM 3745 Communication Controller Models 210, 310, 410, and 610

Preparing for Connection

Helps for preparing the 3745 Models 210 to 610 cable installation. For 3745 Models A refer to the *Connection and Integration Guide*, SA33-0129.

Preparing for Operation

GA33-0400

IBM 3745 Communication Controller All Models[3]
IBM 3746 Nways Multiprotocol Controller Models 900 and 950

Safety Information[1]

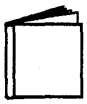
Provides general safety guidelines.

SA33-0129

IBM 3745 Communication Controller All Models[3]
IBM 3746 Nways Multiprotocol Controller Model 900

Connection and Integration Guide[1]

Contains information for connecting hardware and integrating network of the 3745 and 3746-900 after installation.

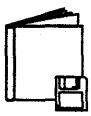


SA33-0416

Line Interface Coupler Type 5 and Type 6
Portable Keypad Display

Migration and Integration Guide

Contains information for moving and testing LIC types 5 and 6.



SA33-0158

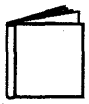
IBM 3745 Communication Controller All Models[3]
IBM 3746 Nways Multiprotocol Model 900

Console Setup Guide[1]

Provides information for:

- Installing local, alternate, or remote consoles for 3745 Models 130 to 610
- Configuring user workstations to remotely control the service processor for 3745 Models A and 3746 Model 900 using:
  - DCAF program
  - Telnet Client program

Customizing Your Control Program



SA33-0178

Guide to Timed IPL and Rename Load Module

Provides VTAM procedures for:

- Scheduling an automatic reload of the 3745
- Getting 3745 load module changes transparent to the operations staff.

Operating and Testing

Table C-1 (Page 3 of 4). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

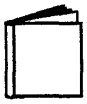
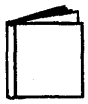
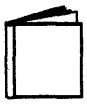
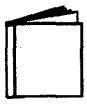
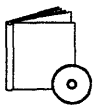
	SA33-0098	***IBM 3745 Communication Controller All Models***[4] ***Basic Operations Guide***[1] Provides instructions for daily routine operations on the 3745 Models 130 to 610.
	SA33-0177	***IBM 3745 Communication Controller Models A***[2] ***IBM 3746 Nways Multiprotocol Controller Model 900*** ***Basic Operations Guide***[1] Provides instructions for daily routine operations on the 3745 Models 17A to 61A, and 3746 Model 900 operating as an SNA node (NCP), APPN/HPR Network Node and IP Router.
	SA33-0097	***IBM 3745 Communication Controller All Models***[3] ***Advanced Operations Guide***[1] Provides instructions for advanced operations and testing, using the 3745 MOSS console.
	On-line Information	***Controller Configuration and Management Application*** Provides a graphical user interface for configuring and managing a 3746 APPN/HPR Network Node and IP Router, and its resources. Is also available as a stand-alone application, using an OS/2 workstation. Defines and explains all the 3746 Network Node and IP Router configuration parameters through its on-line help.
	SH11-3081	***IBM 3746 Nways Multiprotocol Controller Model 950*** ***IBM 3746 Model 900 Network Node*** ***Controller Configuration and Management: User's Guide***[5] Explains how to use CCM and gives examples of the configuration process.
Managing Problems		
	SA33-0096	***IBM 3745 Communication Controller All Models***[3] ***Problem Determination Guide***[1] A guide to perform problem determination on the 3745 Models 130 to 61A.

Table C-1 (Page 4 of 4). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

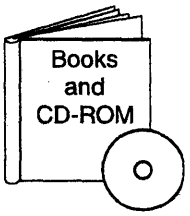
	On-line Information	***Problem Analysis Guide*** An on-line guide to analyze alarms, events, and control panel codes on: • IBM 3745 Communication Controller Models A[2] • IBM 3746 Nways Multiprotocol Controller Models 900 and 950.
	SA33-0175	***IBM 3745 Communication Controller Models A[2]*** ***IBM 3746 Expansion Unit Model 900*** ***IBM 3746 Nways Multiprotocol Controller Model 950*** ***Alert Reference Guide*** Provides information about events or errors reported by alerts for: • IBM 3745 Communication Controller Models A[2] • IBM 3746 Nways Multiprotocol Controller Models 900 and 950.
CD-ROM Bibliography		
	SK2T-6012	***IBM Networking*** ***Softcopy Collection Kit*** Allows customer manuals consulting via CD-ROM viewer.

[1] Documentation shipped with the 3745.
[2] 3745 Models 17A to 61A.
[3] 3745 Models 130 to 61A.
[4] Except 3745 Models A.
[5] Documentation shipped with the 3746-900.

Service Documentation for the IBM 3745 (Models 210, 21A, 310, 31A, 410, 41A, 610, and 61A) and 3746 (Model 900)

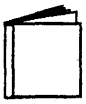
Table C-2 (Page 1 of 3). Service Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

This service documentation has the following formats:



SY33-2080	***IBM 3745 Communication Controller Models 210 to 61A*** ***Service Master Index***[1] Provides references for finding information in the IBM 3745 Models X10 and X1A shipping group documentation.
SY33-2057	***IBM 3745 Communication Controller Models 210 to 61A*** ***Installation Guide***[1] Provides instructions for installing or relocating the IBM 3745 Models X10 and X1A.
SY33-2114	***IBM 3746 Nways Multiprotocol Controller Model 900*** ***Installation Guide***[2] Provides instructions for installing or relocating a 3746-900.
SY33-2116	***IBM 3746 Nways Multiprotocol Controller Model 900*** ***Service Guide***[2] Provides procedures for isolating and fixing the IBM 3746-900 problems.
SY33-2055	***IBM 3745 Communication Controller Models 210, 310, 410, and 610*** ***IBM 3746 Expansion Units Models A11, A12, L13, L14, and L15*** ***Service Functions***[1] Describes MOSS functions using the IBM 3745 Models X10 and X1A consoles.
SY33-2054	***IBM 3745 Communication Controller Models 210 to 61A*** ***Maintenance Information Procedures***[1] Provides procedures for isolating and fixing the IBM 3745 Models X10 and X1A problems.

Table C-2 (Page 2 of 3). Service Documentation for the 3745 Models X10 and X1A, and 3746 Model 900



SY33-2115

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on the 3172, 9585, and 9577)

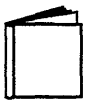
Provides information on installing and maintaining the service processor based on the PS/2 Types 3172, 9585, and 9577.

SY33-2112

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Network Node Processor Installation and Maintenance[4]

Provides information on installing and maintaining the network node processor based on the PS/2 Type 3172.



SY33-2056

IBM 3745 Communication Controller
Models 210 to 61A

Maintenance Information Reference[1]

Provides in-depth hardware reference information on the IBM 3745 Models X10 and X1A.

On-line Information

Hardware Maintenance Reference[5]

Provides in-depth hardware reference information on the 3746 Model 900.

SY33-2075

IBM 3745 Communication Controller
All Models[6]

External Cable References[1]

Provides references to console and line cables used for connecting the IBM 3745 Models 130 to 61A.

SY33-2117

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

External Cable Reference[7]

Provides references to console and line cables used for connecting the IBM 3746 Models 900 and 950.

S135-2015

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Parts Catalog[7]

Provides reference information for ordering parts for the IBM 3746 Models 900 and 950.

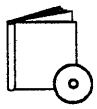
S135-2010

IBM 3745 Communication Controller
Models 210 to 61A

Parts Catalog[1]

Provides reference information for ordering IBM 3745 Models X10 and X1A parts.

Table C-2 (Page 3 of 3). Service Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

	S135-2014	***IBM Controller Expansion*** ***Parts Catalog*** Provides reference information for ordering parts for the controller expansion attached to the IBM 3745 Models A[3], and 3746 Models 900 and 950.
CD-ROM Bibliography		
	ZK2T-8214	***IBM Networking*** ***Softcopy Collection Kit*** Allows service manuals consulting via CD-ROM viewer. EMEA version.
	ZK2T-8187	***IBM Networking*** ***Softcopy Collection Kit*** Allows service manuals consulting via CD-ROM viewer. US version.

[1] Documentation shipped with the 3745.
[2] Documentation shipped with the 3746-900.
[3] 3745 Models 17A to 61A.
[4] Documentation shipped with the processor.
[5] Product integrated information
[6] 3745 Models 130 to 61A.

Related Signal Converter Products Information

The following publications relate to IBM signal converter products and are currently available:

- *7861 Description and Planning Guide*, GA33-0122.
- *7861 Setup, User's Guide, and Problem Analysis*, SA33-0123.
- *7861 Maintenance Information and Parts Catalog*, SY33-2062.
- *7868 Guide to Operation*, GA33-0134.
- *5822-10 Guide to Operation*, GA33-0118.
- *5822-18 Guide to Operation*, GA33-0136.
- *5858 Guide to Operation*, GH11-3027.
- *5858 Maintenance Information and Parts Catalog*, SY12-8246.
- *Link Problem Determination Aid*, SY33-2064.
- *Power Supply and Telecommunication Connections*, GA33-0054.
- *7855 Guide to Operation*, GA33-0160.
- *IBM 7857 Modem, Guide to Operation*, GA13-1839.
- *IBM Asynchronous/SDLC V.32 Modem/A: Installation, Operation, and Problem Determination Guide*, SA27-3955.

Related NCP Service Information

NCP and EP Reference Summary and Data Areas (LY30-3196 for V4R3.1 only)

NCP and EP Reference Summary and Data Areas (LY30-5603 for V5 only)

These manuals are for system programmers and IBM program service representatives. They provide quick access to often-used diagnostic and debugging information about NCP and EP in PEP environment.

NCP, SSP, and EP Diagnosis Guide (LY30-5591)

This manual is designed to help customers and IBM program service representatives isolate and define problem in NCP Version 3, NCP Version 4, NCP V4 Subset, NCP Version 5, and EP in the PEP environment using SSP Version 3. The primary purpose of the manual is to help the user interact with the IBM Support Center to resolve a problem. Procedures in these manuals describe how to:

- Determine whether the problem is in NCP
- Use relevant information to describe the problem
- Gather appropriate documentation about the problem
- Report the problem to the IBM Support Center

In addition, it includes detailed descriptions of how to use the programming tools available with NCP and SSP.

NCP and EP Reference (LY30-5569 for V4R3.1 only)

NCP and EP Reference (LY30-5605 for V5 only)

These manuals contain reference material describing the internal organization and function of the NCP and the EP in PEP environment. These manuals provide information for customization and diagnosis.

World Wide Web

You can access the latest news anf information about IBM network products, customer service and support via the internet, at the Uniform Resource Locator (URL):

http://www.ibm.com

List of Abbreviations

A	ampere
abend	abnormal end of task
ABP	active bypass card
AC	1) alternating current 2) abandon call 3) address compare
ACB	adapter control block
ACF	Advanced Communications Function
ACK	affirmative acknowledgement (BSC)
ACPW	ac power box
ACR	1) add character register (instruction) 2) abandon call request
ACU	automatic calling unit
ACUN	acccess unit (token ring access unit such as the IBM 8228)
AC1	ac power box (ACPW) installed in position 1 of the 3746-900
AC2	ac power box (ACPW) installed in position 2 of the 3746-900
ADB1	adapter bus 1
ADB2	adapter bus 2
ADB3	adapter bus 3
ADB4	adapter bus 4
AE	address exception
AEK	address exception key
AFD	airflow detector
AGC	automatic gain control (signal)
AHR	add halfword register (instruction)
AIO	adapter-initiated operation
AIT	algorithm interface table
ALC	Airlines Line Control
ALU	arithmetic and logic unit
AMD	air moving device
ANSI	American National Standards Institute
AR	add register (instruction)
ARC	active remote connector
ARI	add register immediate (instruction)
AS	autoselection chain
ASCII	American National Standard Code for Information Interchange
AUI	attachment unit interface
AXB	adapter expansion block
B	1) branch (instruction) 2) byte
BAL	branch and link (instruction)
BALR	branch and link register (instruction)
BAT	basic assurance test
BB	branch on bit (instruction)
BCC	block check character (BSC)
BCCA	buffer chaining channel adapter
BCCW	bit clock control word
BCD	binary-coded decimal notation
BCL	branch on C latch (instruction)
BCLE	buffer control list element
BCT	branch on count (instruction)
BER	box event record
B/M	bill of material
BPC1	bus propagation card type 1
BPC2	bus propagation card type 2
bps	bits per second
BR	bus request
BRC	BER reference code
BSC	binary synchronous communication
BT	branch trace
BTAM	Basic Telecommunications Access Method
BTAM-ES	BTAM extended support
BZL	branch on Z latch (instruction)
C	1) Celsius 2) control (X.21 signal)
CA	channel adapter
CAB	channel adapter board

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CAC common adapter code

CACM channel adapter concurrent maintenance

CADR channel adapter driver receiver card

CADRUK channel adapter driver receiver type UK card

CADS channel adapter data streaming

CAL channel adapter logic card

CAL6 CAL type 6 for CADS

CAL7 CAL type 7 for BCCA

CAMPOR CA MOSS power-ON-reset (register)

CARST CA reset (register)

CATPS channel adapter with two-processor switch

CB circuit breaker

CBC controller bus coupler

CBTRA controller bus and token-ring adapter

CBSA controller bus and service adapter (CBSP+CBC+TIC3)

CBSP controller bus and service processor

CCITT Comite Consultatif International Telegraphique et Telephonique. The International Telegraph and Telephone Consultative Committee

CCMD current command (storage)

CCN communications controller node

CCPF common customer profile facility

CCR compare character register (instruction)

CCU central control unit

CCW channel command word

CD 1) carrier detector (signal)
2) connector

CDF configuration data file

CDG concurrent diagnostic

CDS configuration data set (NCP/EP)

CE customer engineer

CEPT Comite Europeen des Postes et Telecommunications

CHCV channel control vector

CHCW channel control word

CHIO channel input/output

CHPID channel path identification

CHR compare halfword register (instruction)

CI calling indicator (signal)

CLDP controller load/dump program

CLP communication line processor

CMOS complementary metal oxide semiconductor

CMSA CCU/MOSS status register A

CMSB CCU/MOSS status register B

CMSC CCU/MOSS status register C

CNM communication network management

CNMI communication network management interface

CNSL console

CO/CS contact operate/contact sense

CONFSW configuration switch

CP 1) communication processor, control program
2) circuit protector

CPIT control program information table

CPM connection point manager

CPN customer problem number

CPR channel pointer register

CPT checkpoint trace

CR 1) compare register (instruction)
2) call request (signal)

CRC cyclic redundancy check character

CRI compare register immediate (instruction)

CRP check record pool

CRQ call request

CRU customer replaceable unit

CS 1) cycle steal
2) communication scanner
3) connectivity switch

CSA common subassembly

CSC connectivity switch cable

CSCE	connectivity switch cable extension
CSCW	cycle steal control word
CSG	cycle steal grant
CSGH	cycle steal grant high
CSGL	cycle steal grant low
CSP	communication scanner processor
CSR	cycle steal request
CSRH	cycle steal request high
CSRL	cycle steal request low
CSS	control subsystem
CSU	1) customer setup 2) customer service unit (DCE-like for high-speed communication lines)
CSW	channel status word
CTS	clear to send (signal)
CW	control word
CZ	carry/zero (latch)
DAF	destination address field (SNA)
DB	data byte
DC	1) direct current 2) data chaining (channel status)
DCAF	Distributed Console Access Facility
DCDP	dc distribution and protection box
DCE	data circuit-terminating equipment
DCF	diagnostic control function
DCM	diagnostic control monitor
DCPW	dc power box
DCRLSD	data channel receive line signal detector (same as CD)
DDS	digital data service
DE	device end (channel status)
DFA	disk file adapter card
DFI	defect-free installation
DI	data in
DICO	DMA IOC connection card
DIFF	differentiator
DIV	diagnostic information vector
DLE	data link escape character
DLO	data line occupied (signal)
DMA	direct memory access
DMSW	direct memory access switch card
DMUX	double multiplex card for board on LIC unit 1
DO	data out
DOI	duration of interrupt
DP	digit present (signal)
DPR	digit present request
DRA	duration of repair action
DRS	data rate select
DRV	driver
DS	data streaming
DSC	distant station connected
DSI	data store interface
DSR	data set ready (signal)
DSRS	data signaling rate selection (signal)
DSU	data service unit (DCE-like for high-speed communication lines)
DTE	data terminal equipment
DTER	DMA bus terminator
DTR	data terminal ready (signal)
DVB	device block
DX	duplex
EAC	Ethernet adapter card
EBCDIC	extended binary-coded decimal interchange code
EC	engineering change
ECB	even control block
ECC	error checking and correction
EDE	elementary data exchange
ED/FI	error detection/fault isolation
EIA	Electronic Industries Association
EIB	error intermediate block
EINTP1	extended interrupt 1 (register)
EIRV	error interrupt request vector
ELA	Ethernet LAN adapter
ELCS	extended line communication status

ENQ enquiry (BSC)

EOT end of transmission (BSC)

EP emulation program

EPO emergency power-OFF

ERC error reference code

EREP environmental recording, editing, and printing (program)

ERP error recovery procedure

ESC emulation subchannel (address)

ESCA ESCON channel adapter. An ESCA consists of an ESCON channel processor (ESCP) and an ESCON channel coupler (ESCC)

ESCH emulation subchannel high (address)

ESCC ESCON channel coupler. A communication controller hardware unit which is the interface between the ESCON channel processor and the ESCON fiber optic cable

ESCC2 ESCON channel coupler type 2

ESCL emulation subchannel low (address)

ESCON channel A channel having an Enterprise System Connection* channel-control-unit interface that uses optical cables as a transmission medium

ESCP ESCON channel adapter. A communication controller hardware unit which provides the channel data link control for the ESCON channel adapter

ESD electrostatic discharge

ESS Ethernet subsystem

ETB end-of-transmission block character (BSC)

ETG Ethernet tail gate

ETX end-of-text character (BSC)

EXP expected

FAC flag address control (SDLC frame)

FALC front end scanner low speed card for Air Line Control (ALC) lines

FCC Federal Communications Commission

FCPS final call progress signals (X.21)

FCS frame check sequence

FDD flexible disk drive

FDS flat distribution system

FDX full-duplex (synonym for duplex)

FE field engineering

FEIS field engineering information system

FERR FESA error register

FES front-end scanner

FESA front-end scanner adapter

FESH front-end scanner (high-speed)

FESL front-end scanner (low-speed)

FID4 format identification 4

FM frequency modulation

FPS FES parameter/status

FRPE frame relay performance enhancement

FRU field-replaceable unit

ft foot

GPR general purpose register

GPT generalized PIU trace

GTF generalized trace facility

HCS Hardware Central Service

HDD hard disk drive

HDR header

HDX half-duplex

hex hexadecimal

hh hexadecimal value hh

HLIR high-level interrupt request

HLU highest logical unit (largest CPU in an establishment)

HPP bus high-performance parallel bus

HPTSS high-performance transmission subsystem

HSB high-speed buffer

HSC high-speed channel

HSS high-speed scanner

HW hardware

Hz	Hertz
I	indication (signal)
IACK	interrupt acknowledgement
IAR	instruction address register
IBE	internal box error
IC	insert character (instruction)
ICA	integrated communication adapter
ICB	interface control block (storage)
ICF	internal clock function
ICT	insert character and count (instruction)
ICW	interface control word
ID	identifier
IEEE	Institute of Electrical and Electronics Engineers
IFT	internal function test
IMB	in mailbox (MOSS)
IML	initial microcode load
in.	inch
IN	input (instruction)
INN	intermediate network node
INOP	inoperative (line, modem, or terminal)
INS	information network system
INTP1	interrupt 1 (register)
INTP4	interrupt 4 (register)
IOC	input/output control
I/O	input/output
IOCB	input/output control bus
IOCS	input/output control system
IOH	input/output halfword (instruction)
IOHI	input/output halfword immediate (instruction)
IOIRR	input/output interrupt request register
IOIRV	input/output interrupt request vector
IOSW	input/output switch (card) for 3745 models 21x and 41x
IOSW2	input/output switch (card) for 3745 models 31x and 61x
IPF	instruction pre-fetch
IPL	initial program load
IPR	isolated pacing response (SNA)
IR	interrupt request
IRR	interrupt request removed
ISDN	integrated service digital network
ISL	inbound serial link
ISO	International Organization for Standardization
ITB	intermediate text block (BSC)
ITER	IOC bus terminator
IVT	isolation verification tests
K	1024 (bytes or words)
KB	kilobyte (1024 bytes)
KBD	keyboard
kbps	kilobits per second
kg	kilogram
kHz	kilohertz
L	load (instruction)
LA	1) load address (instruction) 2) line adapter
LAB	line adapter board
LAN	local area network
LAP	line adapter processor
LAR	lagging address register
LAS	line adapter status
LCB	line control block (storage)
LCBB	line connection box base
LCBE	line connection box expansion
LCD	line control definer (storage)
LCEB	line connection enclosure base
LCEE	line connection enclosure expansion
LCOR	load character with offset register (instruction)
LCPB	line connection power base
LCPE	line connection power expansion
LCR	load character register (instruction)
LCS	line communication status (storage)

LDF line description file

LED light-emitting diode

LERR line error register/driver check

LH load halfword (instruction)

LHOR load halfword with offset register (instruction)

LHR load halfword register (instruction)

LIB 1) line interface buffer
2) LIC board

LIB1 LIC board type 1 for LICs type 1, 3, and 4

LIB2 LIC board type 2 for LICs type 5 and 6

LIC line interface coupler card

LIC1 line interface coupler type 1 (card)

LIC3 line interface coupler type 3 (card)

LIC4 line interface coupler type 4 (card)

LIC5 line interface coupler type 5 (card)

LIC6 line interface coupler type 6 (card)

LID line interface display

LIU line interface coupler unit

LIU1 LIC unit 1 for LICs type 1, 3, and 4

LIU2 LIC unit 2 for LICs type 5, and 6

LLAP LIC line analysis procedure

LLB local loopback

LLIR low-level interrupt request

LL2 link level 2 test

LNVT line vector table

LOR load with offset register (instruction)

LPDA Link Problem Determination Aid

LR load register (instruction)

LRC longitudinal redundancy check

LRI load register immediate (instruction)
local storage

LRU least-recently used

LS local storage

LSAR local storage address register

LSI large scale integration

LSR local storage register (CSP)

LSS low-speed scanner

LSSD level-sensitive scan design

LT local test

LTC1 line terminator card for CAB1 addressing

LTC2 line terminator card for CAB2 addressing

LU logical unit

m meter

mA milliampere

MAC MOSS adapter card for 3745 models 21x and 41x

MAC2 MOSS adapter card for 3745 models 31x and 61x

MAP maintenance analysis-procedure

MAT manual assurance test

MAU media access unit

MB megabyte; 1 048 576 bytes

MCA MOSS console adapter card

MCAD MOSS/CA adapter

MCC MOSS control card

MCCU MOSS/CCU adapter

MCF microcode fix

MCPC machine check/program check

MCT machine configuration table

MDOR MOSS data operand register

MDR miscellaneous data record

MERR MUX error

MES miscellaneous equipment specification

MFM modified frequency modulation

MHz megahertz

MICB MOSS interface control block

MIM Maintenance Information Manual

min minute

MIO MOSS input/output

MIOC MOSS I/O control bus

MIOH	MOSS input/output halfword
MIOHI	MOSS input/output halfword immediate
MIP	Maintenance Information Procedures
MIR	Maintenance Information Reference
MIT	MOSS interface table
MLA	MOSS LAN adapter
MLC	machine level control
MLT	machine load table
mm	millimeter
MMIO	memory mapped input/output
MMOD	MOSS mode
MOD	modifier
MOSS	maintenance and operator subsystem
MOSS-E	MOSS extended
MPC	MOSS processor card for 3745 Models 210 to 610
MPC2	MOSS processor card for 3745 Models 21A to 61A
MPS	multiple port sharing
ms	millisecond
MSA	machine status area
MSAU	multistation access unit
MSC	MOSS storage card for 3745 Models 210 to 610
MSC2	MOSS storage card for 3745 Models 21A to 61A
MSD	machine status display
MUX	multiplex function
mV	millivolt
MVS	Multi Virtual Storage
NA	not applicable
NAK	negative acknowledgment character (BSC)
NCCF	Network Communications Control Facility
NCP	Network Control Program
NCR	AND character register (instruction)
NCTE	network communication terminal equipment
NHR	AND halfword register (instruction)
NLDM	Network Logical Data Manager
NMPF	network management program facilities
NMVT	network management vector transport
NO-OP	no-operation instruction
NOSP	network operation support program (VTAM)
NPDA	Network Problem Determination Application
NPM	NetView performance monitor
NPSI	network packet switching interface
NR	AND register (instruction)
NRI	AND register immediate (instruction)
NRZI	see NRZ-1
NRZ-1	non return-to-zero change on ones recording
NS	new sync (signal)
ns	nanosecond
NSC	native subchannel (address)
NTO	Network Terminal Option
NTT	Nippon Telegraph and Telephone (Japanese PTT)
N/A	Not available or not applicable
oc	overcurrent
OCR	OR character register
ODG	offline diagnostic
OEM	original equipment manufacturer
OEMI	original equipment manufacturer's interface
OHR	OR halfword register
OLT	online test
OLTEP	online test executive program
OLTSEP	online test stand-alone execution (program)
OLTS	online test system
OLTT	online terminal test

OMB	out mailbox
OP	operation decode
OR	OR register (instruction)
ORI	OR register immediate (instruction)
OS	Operating System
OSL	outbound serial link
OUT	output (instruction)
ov	overvoltage
PAC	power analog card
PAP	previous adapter present
PAR	problem analysis and repair
PC	personal computer
PCB	power control bus
PCF	primary control field (storage)
PCI	program-controlled interrupt
PCR	power check reset
PCSS	power control subsystem
PCW	processor control word
PCWC	power control wrap card
PD	problem determination
PDAID	problem determination aids
PDB	power distribution board
PDF	parallel data field (storage)
PE	Product Engineering
PEP	partitioned emulation program
PF	programmable function
PFAR	prefetch address register
PI	power indication (signal)
PIO	program-initiated operation
PIRR	program interrupt request register
PIRV	program interrupt request vector
PIU	pass information unit
PKD	portable keypad display
PLC	power logic card
PN	part number
PND	present next digit (signal)
POPR	prefetch operation register
POR	power-ON reset
POS	power ON services
PRC	processor
PROM	programable read-only memory
PS	power supply
PSA	program status area
PSS	power subsystem
PSTCE	product support trained CE
PSTY	power supply type
PSV	program status vector
PSW	program status word
PSx	power supply type x
PTCE	product-trained CE
PTER	power bus terminator
PTF	program temporary fix
PTT	Post, Telephone and Telegraph (agency)
PTX	phototransistor
PU	physical unit
PUC	processor unit card (mpdels 31x and 61x)
PUC1	processor unit card type 1 (models 21A and 41A starting EC D55657)
PV	parity valid (signal)
QAM	quadrature amplitude modulation
RA	repair action
RAC	repair action code
RAS	reliability, availability, and serviceability
RC	receive clock
RCDB	reference code data base
RCV	receive
RD	receive data (signal)
RDB	reference code data base
RECFMS	record formatted maintenance statistics
RECMS	record maintenance statistics
REQMS	request for maintenance statistics

RETAIN Remote Technical Assistance Information Network

RFS ready for sending (signal) (or clear to send CTS)

RH request/response header

RI 1) register to immediate operand (instruction)
2) ring indicator (same as CI)

RIM request initialization mode (SDLC)

RLSD receive line signal detector

RNIO OS/VS VTAM IO trace

ROK read-only key

ROS read-only storage

ROSAR read-only storage address register

rpm revolutions per minute

RPO 1) remote power-off
2) request power-off

RPQ request for price quotation

RR register-to-register (instruction)

RS register-to-storage (instruction)

RSA register-to-storage with addition (instruction)

RSET receive signal element timing (same as RC)

RSF remote support facility

RTC retry count (X.21)

RTM retry timer (X.21)

RTS request to send (signal)

RU request/response unit (SNA)

RVI reverse interrupt (BSC)

R/W read/write

s second

SAC storage and control board assembly

SACL storage and control lower assembly for 3745 models 21x and 41x

SACU storage and control upper assembly for 3745 models 21x and 41x

SACL2 storage and control lower assembly for 3745 models 31x and 61x

SACU2 storage and control upper assembly for 3745 models 31x and 61x

SALT stand-alone link test

SAR storage address register

SAT specific assurance test

SCB scanner control block (storage)

SCF secondary control field (storage)

SCP signal converter product (or DCE)

SCR 1) subtract character register (instruction)
2) serial clock receive (signal)

SCT serial clock transmit (signal)

SCTL storage control card for 3745 models 21A and 41A

SCTL2 storage control card for 3745 models 31x and 61x

SCTL3 storage control card for 3745 models 31A and 61A

SD send data (signal)

SDF serial data field (storage)

SDLC Synchronous Data Link Control

SE system engineer

SES secondary status (storage)

SET signal element timing (signal)

SHM short hold mode

SHR subtract halfword register (instruction)

SI select in

SIDI serial in data in

SIM set initialization mode (SDLC)

SIO start input/output

SIT scanner interface trace

SKA storage key address

SKDR storage-protect key data register

SL serial link

SMPS switching module power supply

SMUXA single multiplex card for lower board on LIC 2

SMUXB single multiplex card for upper board on LIC 2

SNA Systems Network Architecture

SNRM set normal response mode (SDLC)

SO select out

SODO serial out data out

SOH start of heading (BSC)

SP storage protect

SPAE storage protect/ address exception

SPDn signal and power distribution card

SPK storage protect key

SPS service and power support

SR subtract register (instruction)

SRC system reference code

SRI subtract register immediate (instruction)

SRL shift register latch

SS start-stop

SSA system services architecture

SSB system status block

SSCP system services control point

SSP system support programs

ST store (instruction)

STAT0 status 0 register

STAT1 status 1 register

STAT4 status 4 register

STC store character (instruction)

STCT store character and count (instruction)

STER switch terminator

STH store halfword (instruction)

STG storage

STO storage (card)

STX start of text (BSC)

SVC supervisor call

SW switch

SWAD MOSS/SWL adapter

SWER switch error register

SWL switching logic

SWLA switching logic A

SWLB switching logic B

SYN synchronous idle (BSC)

SYSGEN system generation

T transmit (signal)

TA tag address

TAP trace analysis program

TAR temporary address register

TB terminator block

TC transmit clock

TCAM Telecommunications Access Method

TCB task control block

TCC trace correlation counter (storage)

TCM 1) thermal conduction module
2) treillis coded modulation

TCP test connector pin

TCS two-channel switch

TCTR transient error counter

TD 1) tag data
2) transmitted data (signal)

TERM terminator

TG transmission group

TH transmission header

TI test indicator (signal)

TIC token-ring interface coupler

TIC1 token-ring interface coupler type 1 (card)

TIC2 token-ring interface coupler type 2 (card)

TICB trace interface control block

TIO test I/O

TLNVT trace line vector table

TOD time of day

TPF transaction process facility

TPS two-processor switch

TPSA trace parameter status area

TRA token-ring adapter

TRM	1) token-ring multiplexer card that controls up to two TICs 2) test register under mask (instruction)
TRP	token-ring processor
TRSS	token-ring subsystem
TRU	trace record unit
TSET	transmitter signal element timing (signal, same as TC)
TSS	transmission subsystem
TSSB	FRU name for LA board (basic) with no TRA adapters
TSST	FRU name for LA board (basic) with TRA adapters
TTA	translate table area
TTD	temporary text delay (BSC)
T1	US service for very high speed transmissions at 1.5 million bps
UA	unnumbered acknowledgment (SDLC)
UC	universal controller
UCW	unit control word
UE	unit exception (channel status)
UEPO	unit emergency power-off
UK	United Kingdom
UKA	user key address
UKP	user key program
UKDR	user key data register
UKL	user key level interrupt
URSF	universal remote support facility
USASCII	(see *ASCII*)
µs	microsecond
uv	undervoltage
V	volt
VB	valid byte (signal)
VAC	volts, alternating current
VCNA	VTAM node control application
VDC	volts, direct current
VFO	variable frequency oscillator
VH	valid halfword (signal)
VPD	vital product data
VRC	vertical redundancy check
VS	virtual storage
VSE	Virtual Storage Extended
VTAM	Virtual Telecommunications Access Method
V.24	CCITT V.24 recommendation
V.25	CCITT V.25 recommendation
V.28	CCITT V.28 recommendation
V.35	CCITT V.35 recommendation
W	watt
WACK	wait before transmit positive acknowledgment (BSC)
WB	wrapback (signal)
WLOB	wire lobe (cable connecting token-ring adapters to token-ring access units)
WKR	work register
WSDR	wide storage data register
XI	X.25 SNA interconnection
XID	exchange identification
XCR	exclusive OR character register (instruction)
XHR	exclusive OR halfword register (instruction)
XOR	exclusive OR
XR	exclusive OR register (instruction)
XREG	external registers
XRI	exclusive OR register immediate (instruction)
X.21	CCITT X.21 recommendation
X.25	CCITT X.25 recommendation
YZxxx	wiring diagram
ZI	zero insert
ZREG	Z register

Glossary

This glossary defines all new terms used in this manual. It also includes terms and definitions from the *IBM Dictionary of Computing,* GC20-1699.

adapter-initiated operation (AIO). A transfer of up to 256 bytes between an adapter (CA or LA) and the CCU storage. The transfer is initiated by an IOH/IOHI instruction, and is performed in cycle stealing via the IOC bus.

addressing. A technique where the control station selects, among the DTEs that share a transmission line, the DTE to which it is going to send a message.

alarm. A message sent to the MOSS console. In case of an error a reference code identifies the nature of the error.

alert. A message sent to the host console. In case of an error a reference code identifies the nature of the error.

asynchronous transmission. Transmission in which each character is individually synchronized, usually by the use of start and stop elements. The start-stop link protocol, for example, uses asynchronous transmission. Contrast with *synchronous transmission.*

auto-answer. A machine feature that allows a DCE to respond automatically to a call that it receives over a switched line.

auto-call. A machine feature that allows a DCE to initiate a call automatically over a switched line.

autoBER. A program to automatically analyse a BER file.

automaint. A function that uses autoBER to isolate failing FRUs.

availability. The degree to which a system or resource is ready when needed to process data.

buffer chaining channel adapter (BCCA). A channel adapter that handles buffer chaining in write channel program and both buffer chaining and PIU chaining in read channel program. BCCA works only under NCP.

Bell 212A. Bell recommendations on transmission interface

binary synchronous communication (BSC). A uniform procedure, using standardized set of control characters and character sequences, for synchronous transmission of binary-coded data between stations.

box event record (BER). Information about an event detected by the controller. It is recorded on the disk/diskette and can be displayed on the operator console for event analysis.

block multiplexer channel. A multiplexer channel that interleaves blocks of data. See also *byte multiplexer channel.* Contrast with *selector channel.*

byte multiplexer channel. A multiplexer channel that interleaves bytes of data. See also *block multiplexer channel.* Contrast with *selector channel.*

cache. A high-speed buffer storage that contains frequently accessed instructions and data; it is used to reduce access time.

central control unit (CCU). In the 3745, the controller hardware unit that contains the circuits and data flow paths needed to execute instructions and to control its storage and the attached adapters.

channel. A one-way path between a host and the controller.

channel adapter (CA). A communication controller hardware unit used to attach the controller to a host processor.

channel interface. The interface between the controller and the host processors.

clear channel. Mode of data transmission where the data passes through the DCE and network, and arrives at the receiving communication controller (for example, the IBM 3745) unchanged

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from the data transmitted. The DCE or network can modify the data during transmission because of certain network restrictions, but must ensure the received data stream is the same as the transmitted data stream.

command list. In NetView, a sequential list of commands and control statements that is assigned a name. When the name is invoked (as a command) the commands in the list are executed.

communication common carrier. In the USA and Canada, a public data transmission service that provides the general public with transmission service facilities. For example, a telephone or telegraph company (see also *Post Telephone and Telegraph* for countries outside the USA and Canada).

communication controller. A communication control unit that is controlled by one or more programs stored and executed in the unit. Examples are the IBM 3705, IBM 3725/3726, IBM 3720, and IBM 3745.

communication network management (CNM) application program. An ACF/VTAM application program authorized to issue formatted management services request units containing physical-unit-related requests and to receive formatted management services request units containing information from physical units.

communication scanner. See *scanner.*

communication scanner processor (CSP). The processor of a scanner.

common customer profile facility (CCPF). It is used to create customer profile records for new IBM customers. The records then form the customer profile library, which includes the customer's data processing site, machines and programs used, IBM branch, region, and support center servicing.

communication subsystem. The part of the controller that controls the data transfers over the transmission interface.

configuration data file (CDF). A MOSS file that contains a description of all the hardware features (presence, type, address, and characteristics).

control panel. A panel that contains switches and indicators for the use of the customer's operator and service personnel.

control program. A computer program designed to schedule and to supervise the execution of programs of the controller.

control subsystem (CSS). The part of the controller that stores and executes the control program, and monitors the data transfers over the channel and transmission interfaces.

customer engineer (CE). See *IBM service representative*

cyclic redundancy check. A system of error checking performed at both the sending and receiving station after a block check character has been accumulated.

cyclic redundancy check character (CRC). A character used in a modified cyclic code for error detection and correction.

data circuit-terminating equipment (DCE). The equipment installed at the user's premises that provides all the functions required to establish, maintain, and terminate a connection, and the signal conversion and coding between the data terminal equipment (DTE) and the line. For example, a modem is a DCE (see *modem.*)

Note: The DCE may be separate equipment or an integral part of other equipment.

data communication channel. See *channel.*

data host. A host running application programs only.

data terminal equipment (DTE). That part of a data station that serves as a data source, data sink, or both, and provides for the data communication control function according to protocols.

DIN. Technology of connector contacts.

direct attachment. The attachment of a DTE to another DTE without a DCE.

direct-current interlock (DCI). A mode of data transfer over an I/O interface to enable

communication between data processing systems through a channel.

diskette. A thin, flexible magnetic disk, and its protective jacket, that records diagnostics, microcode, and 3745 files.

diskette drive. A mechanism that reads and writes diskettes.

DOS/VS. Disk Operating System/Virtual Storage.

duplex transmission. Data transmission in both directions at the same time. Contrast with *half-duplex.*

Emulation Program (EP). An IBM licensed program that allows a channel-attached communication controller to emulate the functions of an IBM 2701 Data Adapter Unit, an IBM 2702 Transmission Control, or an IBM 2703 Transmission Control.

error recovery procedure (ERP). A procedure designed to help isolate and, where possible, to recover from errors in equipment. The procedures are often used in conjunction with programs that record the information on machine malfunctions.

Ethernet line adapter (ELA). Ethernet-type LAN line adapter composed of a CSP card and an EAC card.

Ethernet subsystem (ESS). The part of the controller that controls the data transfers over the Ethernet-type LAN.

The ESS consists of up to eight Ethernet line adapters (ELAs).

fallback. In twin-backup mode, a state where the traffic of the failing CCU has been redirected to the second one.

In standby mode, a state where the traffic of the failing CCU has been redirected to the standby CCU after it is IPLed.

front-end scanner (FES). A circuit that scans the transmission lines, serializes and deserializes the transmitted characters, and manages the line services. It is part of the scanner.

half-duplex. Data transmission in either direction, one direction at a time. Contrast with *duplex.*

high-performance transmission subsystem (HPTSS). The part of the controller that controls the data transfers over the high-speed transmission interface (speed up to 2 million bps).

The HPTSS consists of up to eight high-speed scanners (HSSs).

high-speed scanner. Line adapter for lines up to 2 million bps, composed of a communication scanner processor (CSP) and a front-end high-speed scanner (FESH).

high-speed transfer. A mode of high-speed data transmission over an I/O interface to enable communication between data processing systems through a channel.

hit. In cache operation, indicates that the information is in the cache storage.

host processor. 1) A processor that controls all or part of a user application netwo rk. 2) In a network, the processing unit in which the access method for the network resides. (3) In an SNA network, the processing unit that contains a system services control point (SSCP). (4) A processing unit that executes the access method for attached communication controllers. Also called *host.*

IBM service representative. An individual in IBM who performs maintenance services for IBM products or systems.

initial microcode load (IML). The process of loading the microcode into a scanner or into MOSS.

initial program load (IPL). The initialization procedure that causes 3745 control program to commence operation.

input/output control (IOC). The circuit that controls the input/output from/to the channel adapters and scanners via the IOC bus.

internal clock function. A LIC function that provides a transmit clock for sending data, and retrieves a receive clock from received data, when the modem does not provide those timing signals. When the terminal is connected in direct-attach mode (without modem) the ICF also provides the

transmit and receive clocks to the terminal, via the LIC card.

internal function test (IFT). A set of diagnostic programs designed and organized to detect and isolate a malfunction.

LIC module. A group of four adjacent LICs.

LIC unit. A line interface coupler unit (LIU) consisting of:

- One power supply (PS) associated with
- Two LIC boards (LIBs), housing
- Multiplex cards (DMUX, SMUXA, or SMUXB), and
- Line interface coupler cards (LICs)

line. See *transmission line.*

line adapter (LA). The part of the TSS, HPTSS, or TRSS that scans and controls the transmission lines. Also called *scanner.*

For the TSS the line adapters are low-speed scanners (LSSs).

For the HPTSS the line adapters are high-speed scanners (HSSs).

For the TRSS the line adapters are token-ring adapters (TRAs).

line interface coupler (LIC). A circuit that attaches up to four transmission cables to the controller.

Link Problem Determination Aid (LPDA). A set of test facilities resident in the IBM 386X/586X modems and activated from the control program in the controller and from host.

link protocol. The set of rules by which a logical data link is established, maintained, and terminated, and by which data is transferred across the link.

Logrec. Error logging program managed via the operating system.

longitudinal redundancy check (LRC). A system of error checking performed at the receiving station after a block check character has been accumulated.

low-speed scanner. Line adapter for lines up to 256 kbps, composed of a communication scanner processor (CSP) and a front-end low-speed scanner (FESL).

maintenance and operator subsystem (MOSS). The part of the controller that provides operating and servicing facilities to the customer's operator and the IBM service representative.

microcode. A program, that is loaded in a processor (for example, the MOSS processor) to replace a hardware function. The microcode is not accessible to the customer.

miss. In cache operation, indicates that the information is not in the cache storage.

modem (modulator-demodulator). A functional unit that transforms logical signals from a DTE into analog signals suitable for transmission over telephone lines (modulation), and conversely (demodulation). A modem is a DCE. It may be integrated in the DTE.

MOSS input/output control (MIOC). The circuit that controls the input/output from/to the MOSS.

multiplexer channel. A channel designed to operate with a number of I/O devices simultaneously. Several I/O devices can transfer records at the same time by interleaving items of data. See also *byte multiplexer, block multiplexer.*

multiplexing. In data transmission, a function that permits two or more data sources to share a common transmission medium so that each data source has its own channel.

multipoint connection. A connection established for data transmission among more than two data stations. The connection may include switching facilities.

NetView. An IBM licensed program used to monitor a network, manage it, and diagnose its problems.

network. See *user application network.*

Network Control Program (NCP). An IBM licensed program that provides communication controller support for single-domain, multiple-domain, and interconnected network capability.

nonswitched line. A connection between systems or devices that does not have to be made by dialing. The connection can be point-to-point or multipoint. The line can be leased or private. Contrast with *switched line.*

online tests. Testing of a remote data station concurrently with the execution of the user's programs (that is, with only minimal effect on the user's normal operation).

Operating System/Virtual Storage (OS/VS). A family of operating systems that control IBM System/360 and System/370 computing systems. OS/VS includes VS1, VS2, MVS/370, and MVS/XA:

operator console. The IBM Operator Console that is used to operate and service the 3745 through the MOSS. A local console must be located within 7 m of the 3745. Optionally an alternate console may be installed up to 120 m from the 3745, or a remote console may be connected to the 3745 through the switched network.

owning host. A host which can IPL a 3745 and also run application programs.

partitioned emulation programming (PEP) extension. A function of a network control program that enables a communication controller to operate some telecommunication lines in network control mode while simultaneously operating others in emulation mode.

phototransistor. An electronic part used to sense the light of a light-emitting diode.

point-to-point connection. A connection established between two data stations for data transmission. The connection may include switching facilities.

polling. The process whereby remote stations are invited, one at a time, to transmit.

post telephone and telegraph (PTT). A generic term for the government-operated common carriers in countries other than the USA and Canada. Examples of the PTT are British Telecom in the United Kingdom, Deutsche Bundespost in Germany, and Nippon Telephone and Telegraph Public Corporation in Japan.

program-initiated operation (PIO). A transfer of four bytes between a general register in the CCU and an adapter (channel or scanner). The transfer is initiated by IOH/IOHI instruction and is executed via the IOC bus.

reliability. The ability of a functional unit to perform a required function under stated conditions, for a stated period of time.

scanner. A device that scans and controls the transmission lines. Also called *line adapter.*

selector channel. An I/O channel designed to operate with only one I/O device at a time. Once the I/O device is selected, a complete record is transferred one byte at a time. Contrast with *block multiplexer channel, multiplexer channel.*

services. A set of functions designed to facilitate the maintenance of a device or system.

serviceability. The capability to perform effective problem determination, diagnosis, and repair on a data processing system.

single. Configuration with one CCU

start-stop. A data transmission system in which each character is preceded by a start signal and is followed by a stop signal.

switchback. Operation to reset a twin-backup configuration from fallback to initial state.

switched line. A transmission line with which the connections are established by dialing, only when data transmission is needed. The connection is point-to-point and uses a different transmission line each time it is established. Contrast with *nonswitched line.*

Synchronous Data Link Control (SDLC). A discipline conforming to subsets of the Advanced Data Communication Control Procedures (ADCCP) of the American National Standards Institute (ANSI) and High-level Data Link Control of the International Organization for Standardization, for managing synchronous, code-transparent, serial-by-bit information transfer over a link connection. Transmission exchanges may be duplex or half-duplex over switched or nonswitched links. The configuration of the link connection may be point-to-point, multipoint, or loop.

synchronous transmission. Data transmission in which the sending and receiving instruments are operating continuously at substantially the same frequency and are maintained, by means of correction, in a desired phase relationship. Contrast with *asynchronous transmission*.

Systems Network Architecture (SNA). The description of the logical structure, formats, protocols, and operational sequences for transmitting information through a user application network. The structure of SNA allows the users to be independent of specific telecommunication facilities.

time out. The time interval allotted for certain operations to occur.

token-ring subsystem (TRSS). The part of the controller that controls the data transfers over an IBM Token-Ring Network.

The TRSS consists of up to four token-ring adapters (TRAs).

token-ring adapter (TRA). Line adapter for an IBM Token-Ring Network, composed of one token-ring multiplexer card (TRM), and two token-ring interface couplers (TICs).

The TRSS consists of up to four token-ring adapters (TRAs).

transmission interface. The interface between the controller and the user application network.

transmission line. The physical means for connecting two or more DTEs (via DCEs). It can be nonswitched or switched. Also called *line*.

transmission subsystem (TSS). The part of the controller that controls the data transfers over low- and medium-speed, switched and non switched transmission interfaces.

The TSS consists of:

- Up to 32 low-speed scanners (LSSs) associated with
- LIC units (LIUs), through
- Serial links (SLs).

TSST board. line adapter board for token-ring adapters

twin. Configuration with two CCUs.

twin-dual. Mode of operation with two CCUs operating simultaneously in two distinct subareas.

twin-backup. Mode of operation identical to twin-dual with fallback capability.

twin-standby. Mode of operation with one CCU active and the other in standby, ready to take over.

two-processor switch (TPS). A feature of the channel adapter that connects a second channel to the same adapter.

user application network. A configuration of data processing products, such as processors, controllers, and terminals, for the purpose of data processing and information exchange. This configuration may use circuit-switched, packet-switched, and leased-circuit services provided by carriers or the PTT. Also called *user network*.

vertical redundancy check (VRC). An odd parity check performed on each character of a block as the block is received.

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Models 210 to 61A
Maintenance Information Procedures

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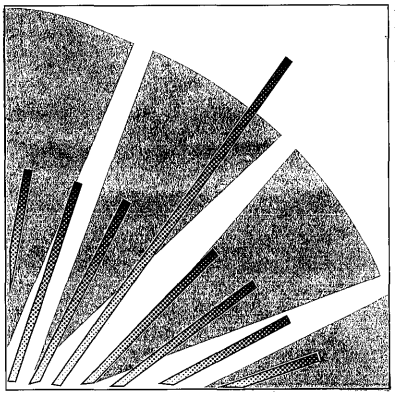

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