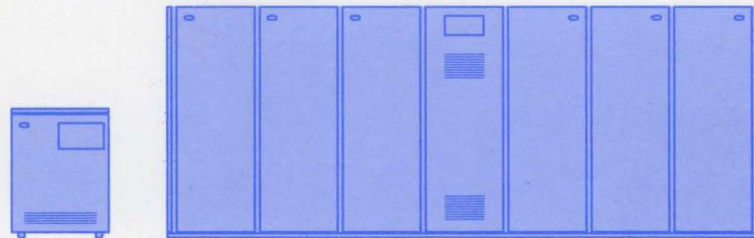


## External Cable References



3745  
3745  
3745  
3745



---

**IBM 3745 Communication Controller**  
Models 130, 150, 170, 210, 310, 410, and 610

SY33-2075-3

**IBM 3746 Expansion Unit**  
Models A11, A12, L13, L14, and L15

**External Cable References**

---

**Note!**

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

**Fourth Edition (August 1991)**

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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## Electronic Emission Notices

### Federal Communications Commission (FCC) Statement

**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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## About this Book

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### Who Should Use This Book

This manual provides references to wrap plugs, console cables, and telecommunication interface cables used to connect any model of IBM 3745 to external consoles and telecommunication lines.

This manual is dedicated to managers and planners who intend to install the IBM 3745 communication controller. This manual is also useful to all those who will prepare the site for the setup of the controller, or during setup.

### How This Book Is Organized

- |                  |  |
|------------------|--|
| <b>Chapter 1</b> | Presents the cables used to connect the 3745 to the consoles (local, alternate, remote) and to the RSF modem.  |
| <b>Chapter 2</b> | Presents the different TSS interfaces and the cables used to connect the LICs to the network. The LIC wrap tools, the PKD and PT2/3 interfaces are also described in that chapter. |
| <b>Chapter 3</b> | Presents the HPTSS interfaces and cables used to connect the high-speed transmission subsystem to the network. HPTSS wrap tools are also described in that chapter.                |
| <b>Chapter 4</b> | Presents the token-ring subsystem interface and cables used to connect the TRSS to the token-ring network.   |

### Where to Find More Information

For a complete list of the 3745 customer and service information manuals, see the bibliography in the *3745 Models 210, 310, 410, and 610 Maintenance Information Procedures (MIP)*, SY33-2054, or the bibliography in the *3745 Models 130, 150, and 170 Maintenance Information Procedures (MIP)*, SY33-2070.

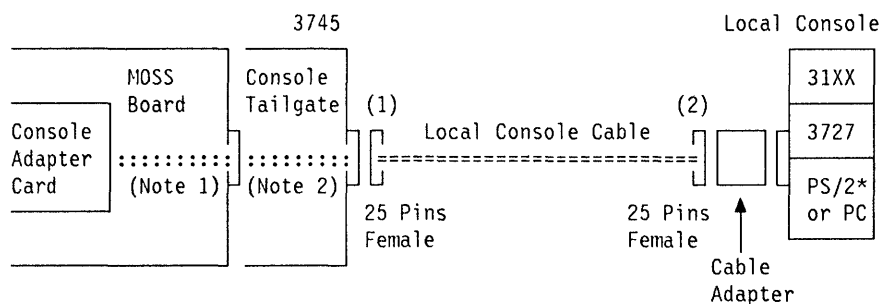
A Service and Customer Bibliographies for the 3745 Models 210, 310, 410, and 610, and for the 3745 Models 130, 150, and 170 are provided at the end of this manual.





## Chapter 1. Console and RSF Interface Cables

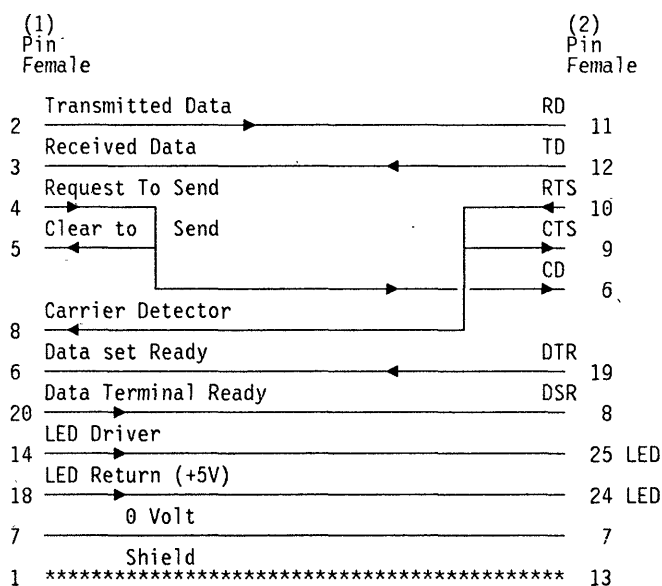
### Cable from the 3745 to a Local Console



**Note 1:** Connection is 01A-Y0C5 in 3745 Models 130, 150 and 170  
Connection is 01A-W0C2 in 3745 Models 210, 310, 410, and 610

**Note 2:** Connection is 01R-A0J3 in 3745 Models 130, 150 and 170  
Connection is 01U-B0J4 in 3745 Models 210, 310, 410, and 610

### Local Console Cable Wiring

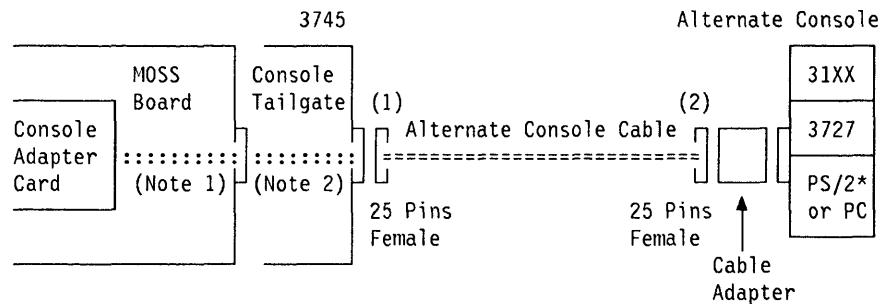


### Local Console Cable Assembly

This assembly consists of a local console cable and adapters for a 31XX, 3727, PS/2\* or PC (see "Cable Adapters for a Local/Alternate Console" on page 1-3).

3745 Model	Cable Type	Length, m (ft)	Cable Group	Assembly PN	Cable PN
130/150/170	Fixed Length	7 m (23)	Shipped	26F1794	03F4948
210/310/410/610	Fixed Length	7 m (23)	Shipped	26F1792	03F4487

## Cable from the 3745 to an Alternate Console



**Note 1:** Connection is 01A-Y0B5 in 3745 Models 130, 150 and 170  
Connection is 01A-W0B1 in 3745 Models 210, 310, 410, and 610

**Note 2:** Connection is 01R-A0J2 in 3745 Models 130, 150 and 170  
Connection is 01U-B0J1 in 3745 Models 210, 310, 410, and 610

### Alternate Console Cable Wiring

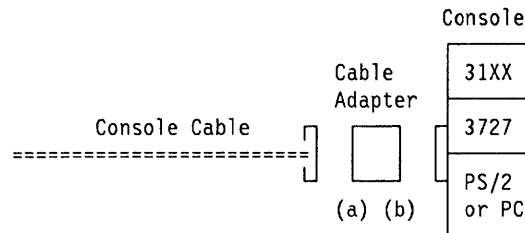
Same as "Local Console Cable Wiring" on page 1-1.

### Alternate Console Cable Assembly

This assembly consists of a cable of variable length and adapters for a 31XX, 3727, PS/2 or PC (see "Cable Adapters for a Local/Alternate Console" on page 1-3).

3745 Model	Cable Type	Length, m (ft)	Cable Group	Assembly PN	Cable PN
130/150/170	Variable Length	Up to 35 m (115) Up to 122 m (400)	6147 NA	26F1799 26F1799	03F5026 03F5026
210/310/410/610	Variable Length	Up to 35 m (115) Up to 122 m (400)	5826 NA	34F1262 34F1262	65X8984 65X8984

## Cable Adapters for a Local/Alternate Console



### Cable Adapter P/N 54F0489 for a 31XX Console

#### Wiring

(a) Pin (Male)		(b) Pin (Male)
Transmitted Data	→	RD 3
Received Data	←	TD 2
Request To Send	→	RTS 4
Clear to Send	→	CTS 5
Carrier Detector	→	CD 8
Data set Ready	→	DTR 20
Data Terminal Ready	→	DSR 6
0 Volt	→	7
Shield		

\*\*\*\*\*

**Warning:** Use care installing the 31XX adapter as it can be reversed and prevent console operation. Observe the label on the adapter and install as indicated.

### Cable Adapter P/N 54F0488 for a 3727 Console

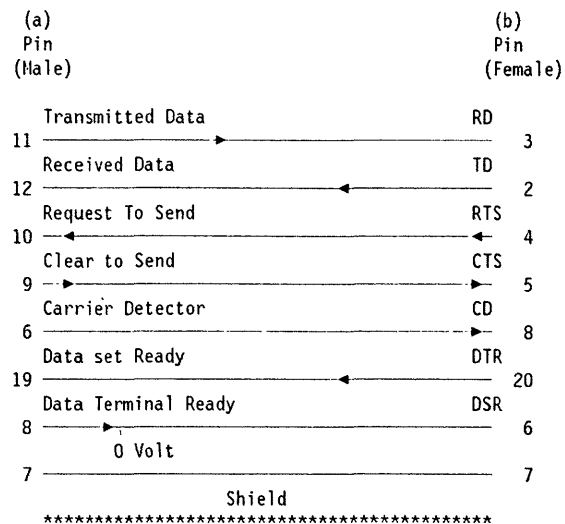
#### Wiring

(a) Pin (Male)		(b) Pin (Female)
Transmitted Data	→	RD 11
Received Data	←	TD 12
Request To Send	→	RTS 10
Clear to Send	→	CTS 9
Carrier Detector	→	CD 6
Data set Ready	→	DTR 19
Data Terminal Ready	→	DSR 8
0 Volt	→	7
Shield		

\*\*\*\*\*

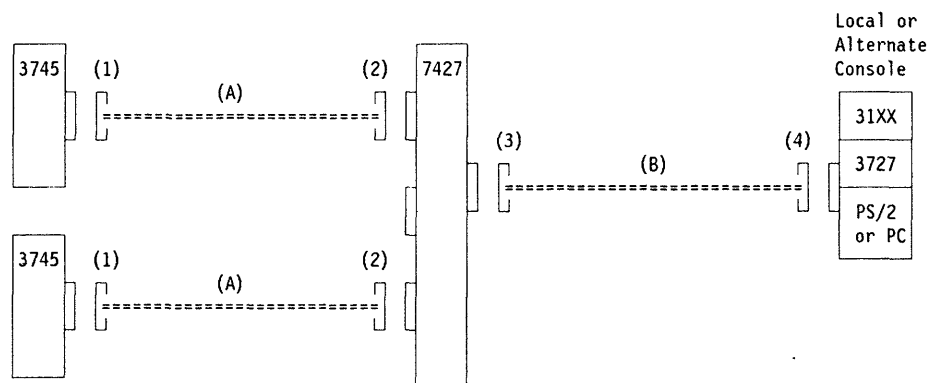
## Cable Adapter P/N 54F0490 for a PS/2 or PC Console

### Wiring



## Console Connection through the IBM 7427 Console Switching Unit

**Principle:** The 7427 is used to switch one console (31XX, 3727, PS/2 or PC) to as many as four 3745s for the local console, or up to six 3745s for the alternate console.



### Cables from the 3745 to the 7427 Switching Unit (A)

(These cables are used **with adapters** as local/alternate console cables.)

### Cable Wiring

Same as "Local Console Cable Wiring" on page 1-1.

### Cable Assembly for Local Console

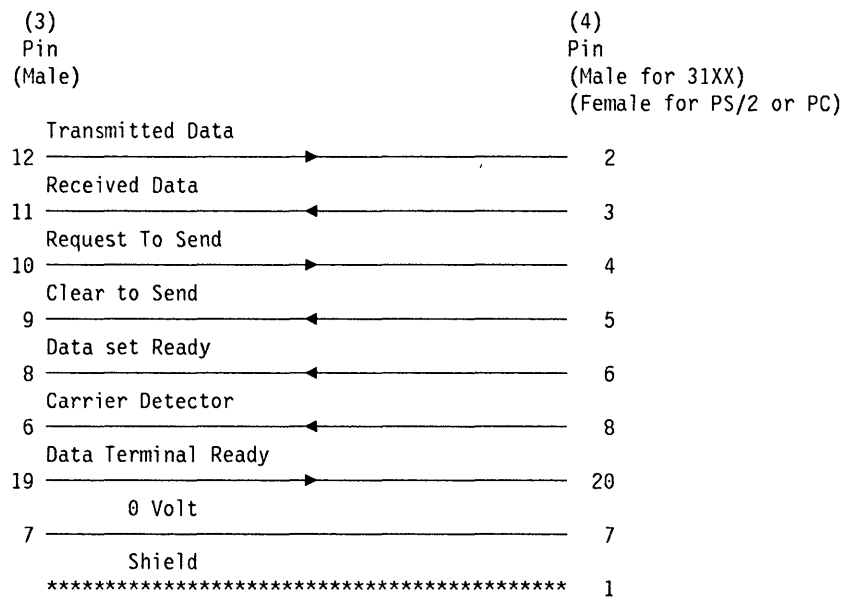
Same as "Local Console Cable Assembly" on page 1-1.  
The cable is connected to the 7427 without an adapter.

### Cable Assembly for Alternate Console

Same as "Alternate Console Cable Assembly" on page 1-2.  
The cable is connected to the 7427 without an adapter.

## Cable from the 7427 to a 31XX or PS/2 or PC Console (B)

### Cable Wiring



### Cable Assembly for a 31XX Console

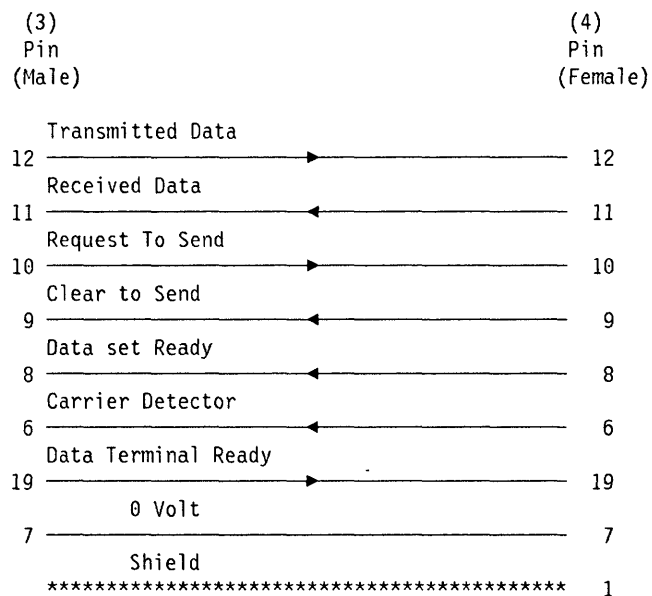
3745 Model	Cable Type	Length, m (ft)	Cable Group	Cable PN
All Models	Fixed Length	1 m (3)	5828	65X8985

### Cable Assembly for a PS/2 or PC Console

3745 Model	Cable Type	Length, m (ft)	Cable Group	Cable PN
All Models	Fixed Length	2 m (6.5)	8148	26F0317

## Cable from the 7427 to a 3727 Console (B)

### Cable Wiring (B)



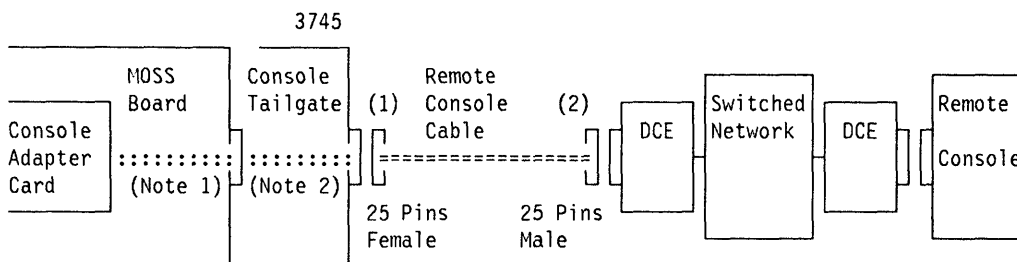
### Cable Assembly

This cable for a 3727 console is delivered with the 7427 switching unit.

3745 Model	Cable Type	Length, m (ft)	Cable Group	Cable PN
All Models	Fixed Length	1 m (3)	NA	6081308



## Remote Console Cable



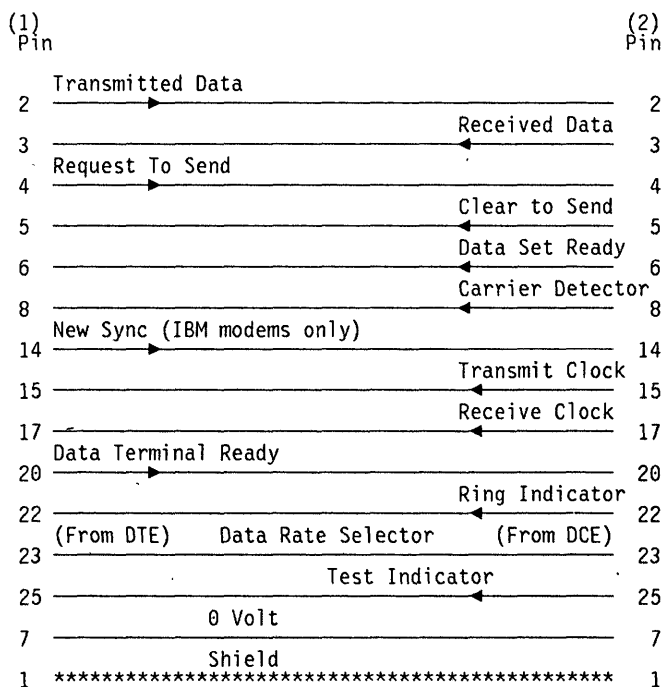
**Note 1:** Connection is 01A-Y0B5 in 3745 Models 130, 150 and 170  
 Connection is 01A-W0B1 in 3745 Models 210, 310, 410, and 610

**Note 2:** Connection is 01R-A0J2 in 3745 Models 130, 150 and 170  
 Connection is 01U-B0J1 in 3745 Models 210, 310, 410, and 610

## Cable to Modem for Remote Console

3745 Model	Cable Type	Length, m (ft)	Cable Group	Cable PN
130/150/170	Variable Length	Up to 13.5 m (45) Up to 122 m (400)	6148 NA	03F5027 03F5028
210/310/410/610	Variable Length	Up to 13.5 m (45) Up to 122 m (400)	6153 NA	03F4404 03F4405

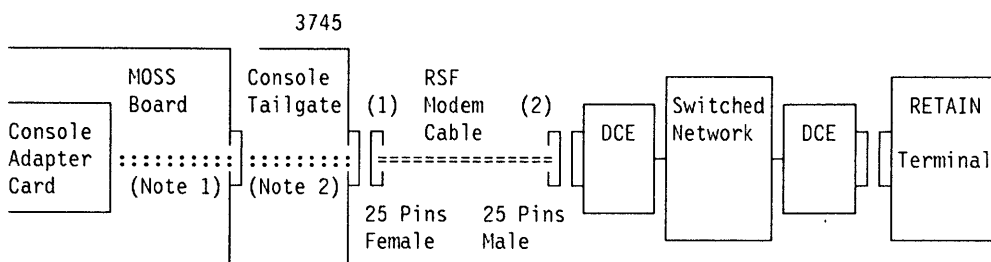
## Cable Wiring



**Note:** The MOSS microcode monitors data set ready (DSR) and ring indicator (RI) to know whether the remote or the alternate console tries to log on.

- If DSR is up without RI, the alternate console is connected.
- If RI goes up first without DSR, the remote console is calling.

## Cable to Modem for RSF



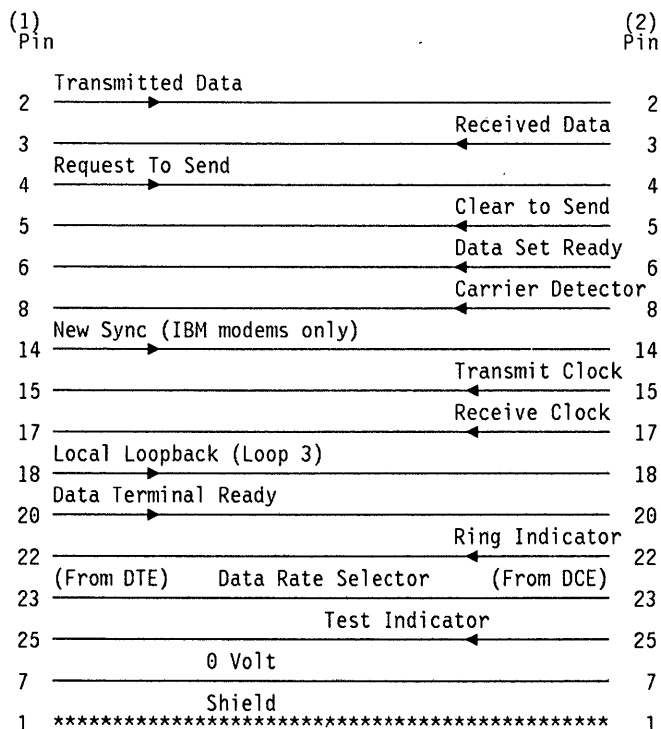
**Note 1:** Connection is 01A-Y0A5 in 3745 Models 130, 150 and 170  
 Connection is 01A-W0C1 in 3745 Models 210, 310, 410, and 610

**Note 2:** Connection is 01R-A0J1 in 3745 Models 130, 150 and 170  
 Connection is 01U-B0J2 in 3745 Models 210, 310, 410, and 610

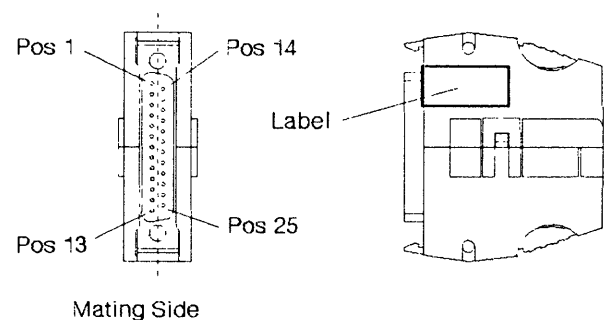
## RSF Modem Cable

3745 Model	Cable Type	Length, m (ft)	Cable Group	Cable PN
130/150/170	Fixed Length	13.5 m (45)	Shipped	03F4945
210/310/410/610	Fixed Length	13.5 m (45)	Shipped	65X8920

## RSF Modem Cable Wiring

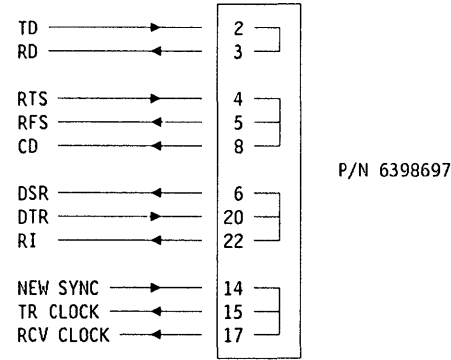


# Console Wrap Tools



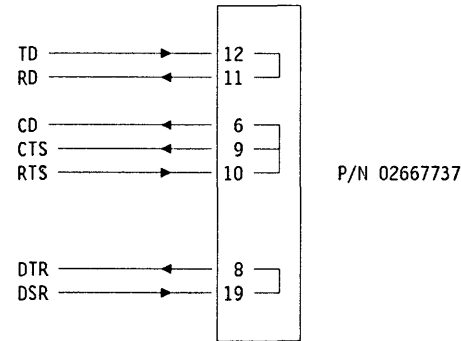
## Wrap Tool (P/N 6398697) for Console Tailgate Connectors:

For a console link test, you can install this 25-position wrap socket (female) on any connector of the 3745 console tailgate (local, remote/alternate, RSF).



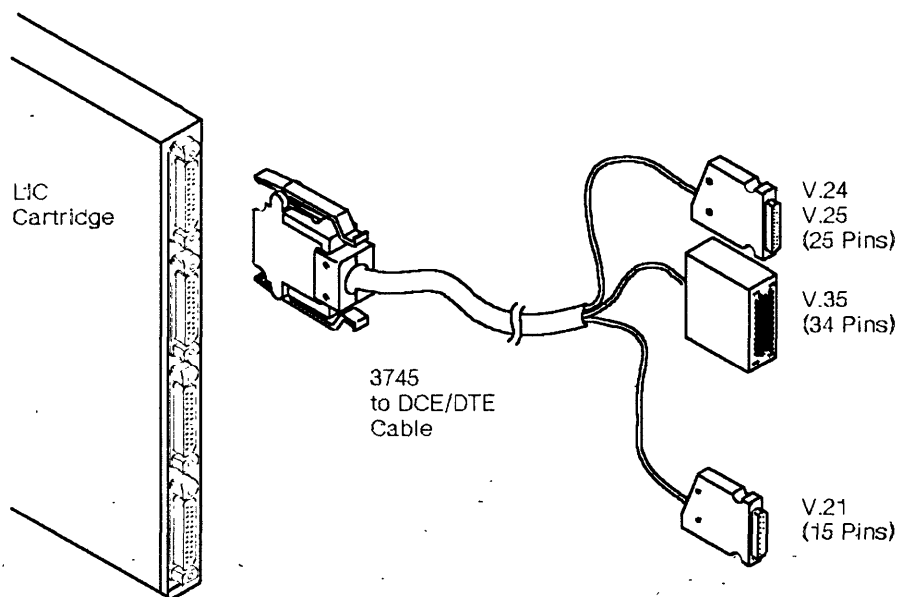
## Wrap Tool P/N 02667737 for Local/Alternate/7427 Cable:

For a test of the cable when running a console link test, you can install this 25-pin wrap plug (male) in the connector at the console end of the 3745-to-local/alternate/7427 cable.



## Chapter 2. TSS Interface Cables

### LIC1 through LIC4 Interfaces and Cables



#### Ordering DCE/DTE Cables

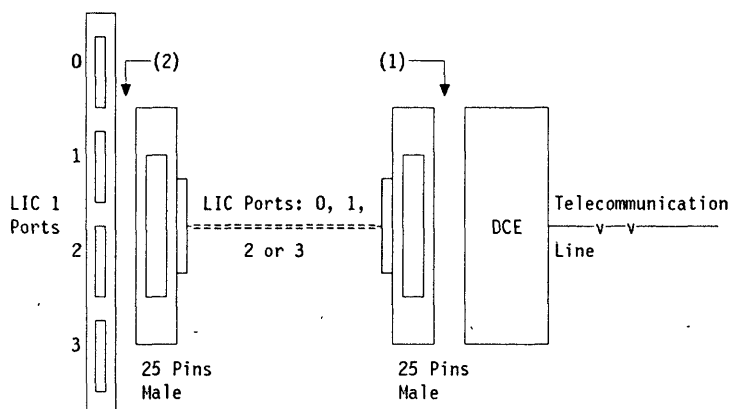
1. For cables less than 13.5 m long, order through cable group.
2. For European, Middle Eastern and African countries (fixed/standard length of 13.5 m) cables, order through BM number.
3. For the U.S.A. (fixed/standard length of 13.5 m) cables, order through cable group.
4. For cables longer than 13.5 m, order through part number.

## LIC Type 1 DCE Interface (Except Japan)

Interface	CCITT V.24 (EIA 232C) CCITT X.21 Bis
Transmission speed	Externally clocked up to 19 200 bps
Number of lines	Up to four
Transfer mode	Half-duplex or duplex
Protocols	Start-stop, BSC, SDLC
DTE clocking	Up to 1200 bps for synchronous Up to 19 200 bps for start-stop

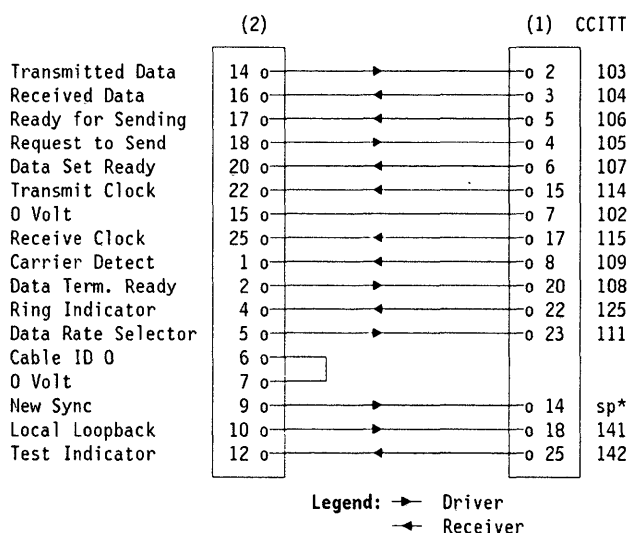
### Notes:

1. JAPAN NTT: See "LIC Type 1 DCE Interface (Japan NTT Only)" on page 2-4.
2. Belgium: See "Adapter Cable" on page 2-3.
3. Cable identifier bit 1 set to 0 indicates modem function (100-series).  
Cable identifier bit 1 set to 1 indicates autocall equipment installed (200-series).

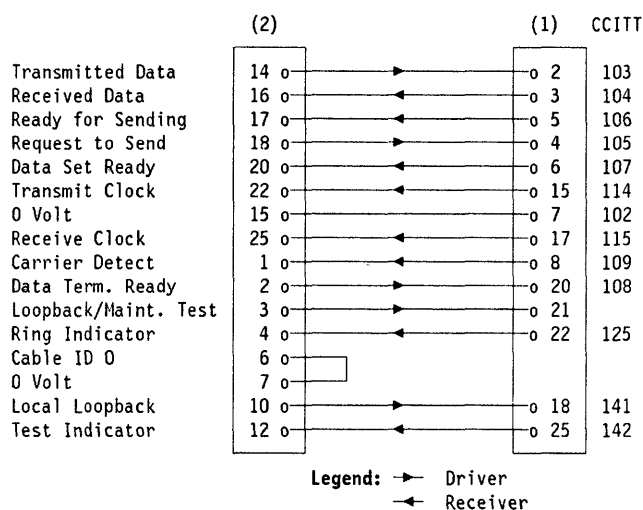


## Interchange Circuits

### To V.24 DCE (Except Japan NTT)



### To X.21 Bis DCE (Except Japan NTT)



## Interface Cables

### To V.24 DCE (Except Japan and Belgium)

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
Fixed length: 13.5 m (45)	4911 (LIC1)	1604	03F4907	6398643
13.5 m (45) or less		1628	6398643	6398643
More than 13.5 m (45) and up to 100 m (330)		N/A	6398785	6398785

### To V.24 DCE Belgium Only (Adapter PN 1743585 Included)

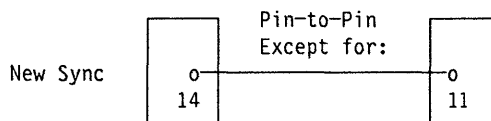
Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
Fixed length: 13.5 m (45)	4911 (LIC1)	1620	03F4908	65X9520
13.5 m (45) or less		1620	6398672	6398672
More than 13.5 m (45) and up to 100 m (330)		N/A	6398780	6398780

### To X.21 Bis DCE (All Countries Except Japan)

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
Fixed length: 13.5 m (45)	4911 (LIC1)	8154	61F4508	61F4504
13.5 m (45) or less		8152	61F4504	61F4504
More than 13.5 m (45) and up to 100 m (330)		N/A	61F4506	61F4506

## Adapter Cable

### To V.24 DCE in Belgium (PN 1489985)



## Wrapping

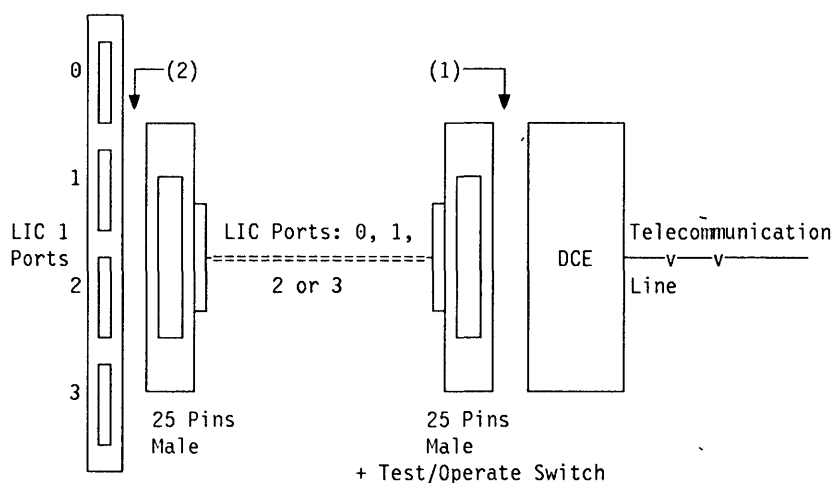
**At Cartridge Connector:** Install wrap plug PN 65X8927 in (2), ports 0, 1, 2, or 3. See "TSS Wrap Tools" on page 2-28 for pin-to-pin assignment.

## Voltage Levels

See "6.5 Volts" on page 2-31.

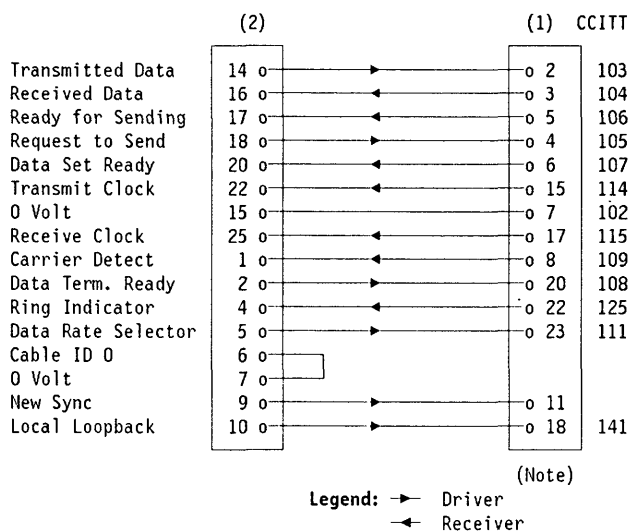
## LIC Type 1 DCE Interface (Japan NTT Only)

Interface	CCITT V.24 (EIA 232C) CCITT X.21 Bis
Transmission speed	Externally clocked up to 19 200 bps
Number of lines	Up to four
Transfer mode	Half-duplex or duplex
Protocols	Start-stop, BSC, SDLC
DTE clocking	Up to 1200 bps for synchronous Up to 19 200 bps for start-stop

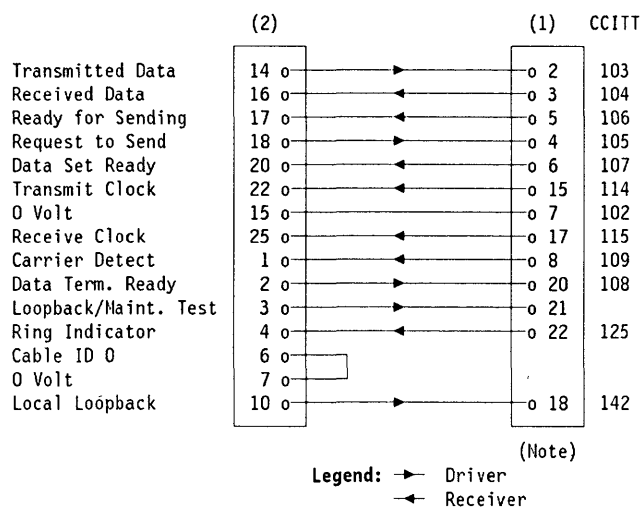


## Interchange Circuits

### To V.24 DCE (Japan Only)



### To X.21 Bis DCE (Japan Only)



**Note:** This connector is equipped with a test/operate switch (see page 2-5).

## Interface Cables

### To V.24 DCE (Japan Only)

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
13.5 m (45) or less	4911 (LIC1)	1621	6398662	6398662
More than 13.5 m (45) and up to 100 m (330)		N/A	6398782	6398782

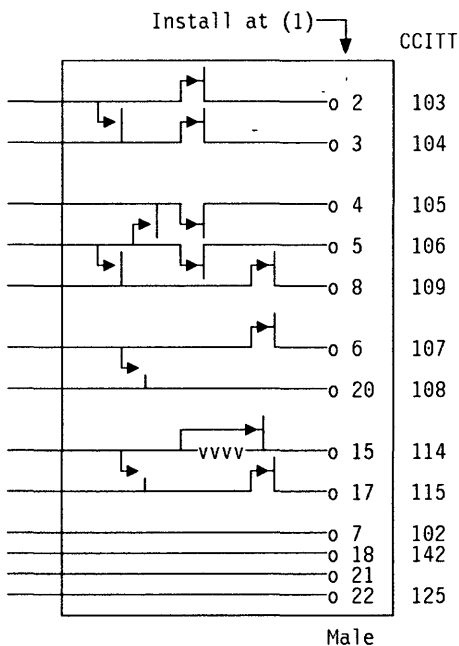
### To X.21 Bis DCE (Japan Only)

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
13.5 m (45) or less	4911 (LIC1)	8153	61F4505	61F4505
More than 13.5 m (45) and up to 100 m (330)		N/A	61F4507	61F4507

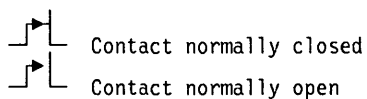
## Test/Operate Switch

### Wiring Diagram

The diagram below shows the test/operate switch in the 'operate' position.

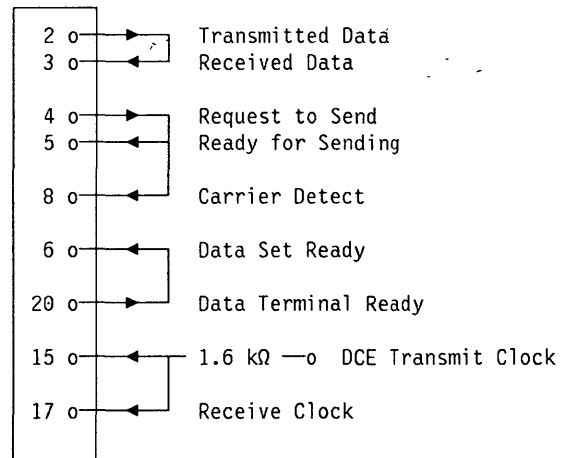


**Legend:** -vvvv- 1.6 kΩ Resistor



### Test Logical Function

The diagram below shows the test function with the switch in the 'test' position.





## Wrapping

### At Cartridge Connector

Install wrap plug PN 65X8927 in (2), ports 0, 1, 2, or 3.

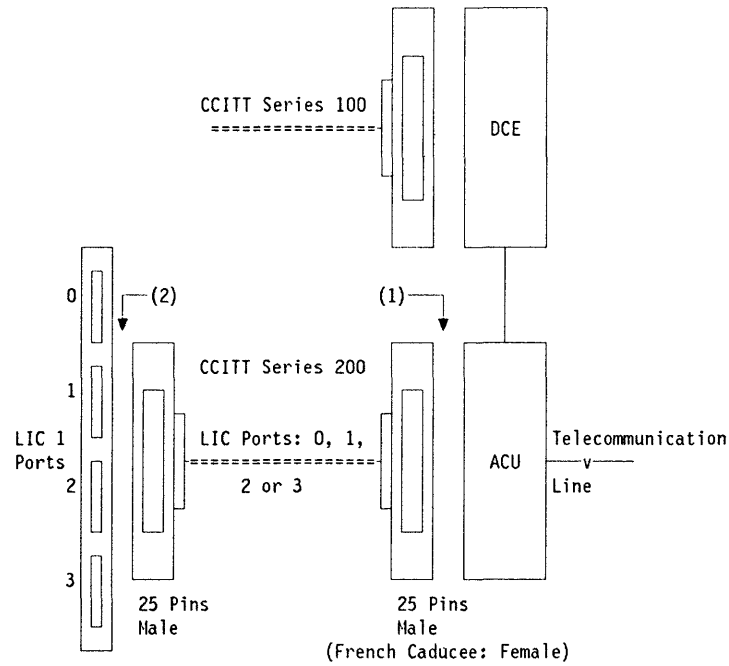
See "TSS Wrap Tools" on page 2-28 for pin-to-pin assignment.

## Voltage Levels

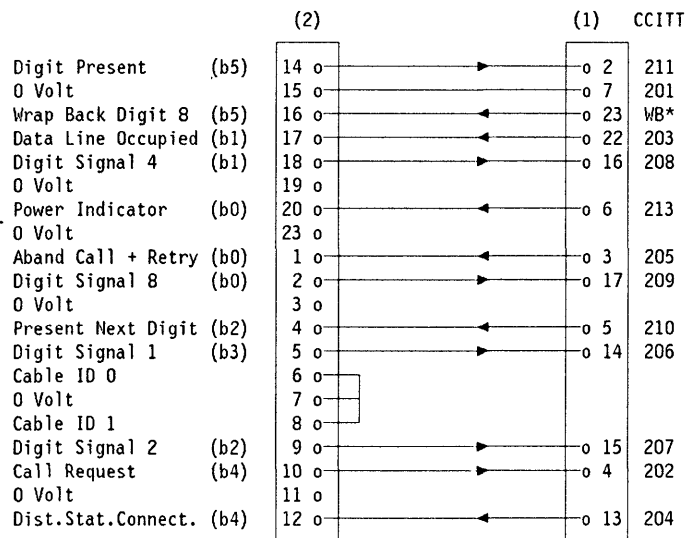
See "6.5 Volts" on page 2-31.

## LIC Type 1 Auto-Call Unit Interface

Interface	CCITT V.25 (EIA RS 366)
Number of lines	Up to four



## Interchange Circuits



Legend: → Driver  
 ← Receiver  
 \* Japan only (for maintenance purposes)

## Interface Cables

### To V.25 DCE Autocall Unit (Except U.K., France, Japan)

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
Fixed length: 13.5 m (45)	4911 (LIC1)	1616	N/A	6398668
13.5 m (45) or less		1610	N/A	6398668
More than 13.5 m (45) and up to 35 m (115.5)		N/A	6398788	6398788

### To V.25 DCE Autocall Unit U.K. (Adapter PN 674570 Included)

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
13.5 m (45) or less	4911 (LIC1)	1635	6398670	6398670
More than 13.5 m (45) and up to 35 m (115.5)		N/A	6398787	6398787

\* Cable group 1618 includes the cable and the adapter

### To V.25 DCE France (Caducee)

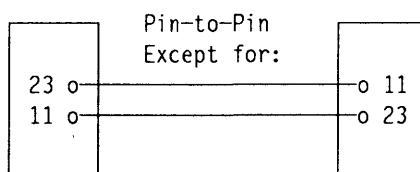
Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
13.5 m (45) or less	4911 (LIC1)	1622	6398667	6398667
More than 13.5 m (45) and up to 35 m (115.5)		N/A	6398783	6398783

### To V.25 DCE Japan NTT

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
13.5 m (45) or less	4911 (LIC1)	1634	6398664	6398664
More than 13.5 m (45) and up to 35 m (115.5)		N/A	6398786	6398786

## Adapter Cable

U.K. (PN 674570)



## Wrapping

### At Cartridge Connector

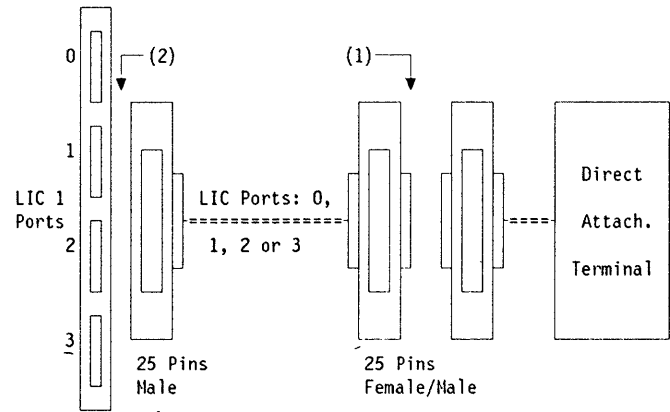
Install wrap plug PN 65X8927 in (2), ports 0, 1, 2, or 3.  
See "TSS Wrap Tools" on page 2-28 for pin-to-pin assignment.

## Voltage Levels

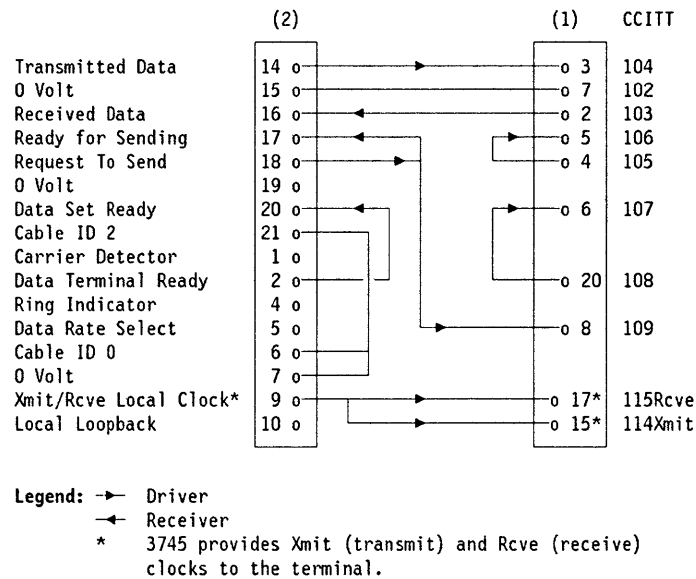
See "6.5 Volts" on page 2-31.

# LIC Type 1 Direct Attachment Interface

Interface	CCITT V.24 (EIA 232C) CCITT X.21 Bis
Transmission speed	Up to 19 200 bps
Number of lines	Up to four
Transfer mode	Half-duplex or duplex
Protocols	Start-stop, BSC, SDLC
DTE clocking	Up to 19 200 bps



## Interchange Circuits



## Interface Cables

### To V.24 Direct Attachment Synchronous

This cable has a female connector at the terminal side.

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
Fixed length: 13.5 m (45) (See the note below)	4911 (LIC1)	1611	7837395	7837395
13.5 m (45) or less		1627	7837395	7837395
More than 13.5 m (45) and up to 122 m (400)		N/A	7837396	7837396

**Note:** Fixed length is not available in European, Middle Eastern, and African countries.

### To V.24 Direct Attachment Asynchronous (Teletype)

This cable has a male connector at the terminal side.

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
Fixed length: 13.5 m (45) (See the note below)	4911 (LIC1)	1607	7837397	7837397
13.5 m (45) or less		1612	7837397	7837397
More than 13.5 m (45) and up to 122 m (400)		N/A	7837398	7837398

**Note:** Fixed length is not available in European, Middle Eastern, and African countries.

## Wrapping

### At Cartridge Connector

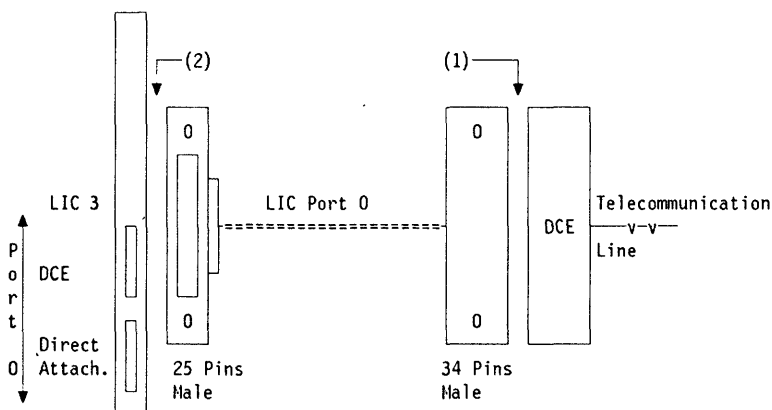
Install wrap plug PN 65X8927 in (2), ports 0, 1, 2, or 3.  
See "TSS Wrap Tools" on page 2-28 for pin-to-pin assignment.

## Voltage Levels

See "6.5 Volts" on page 2-31.

## LIC Type 3 DCE Interface

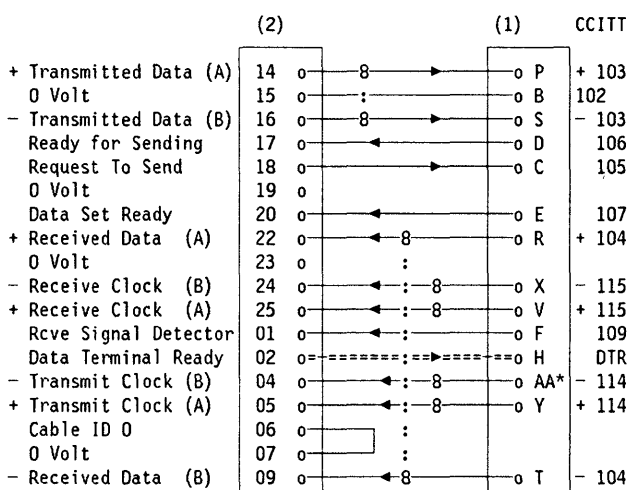
Interface	CCITT V.35
Transmission speed	Up to 256 000 bps
Number of lines	One
Transfer mode	Half-duplex or duplex
Protocols	BSC and SDLC
DTE clocking	Not allowed



### Notes:

1. Upper socket is for DCE attachment.
2. Lower socket is for direct attachment to a terminal.

## Interchange Circuits



**Legend:** -8- Twisted pairs      ==- Shielded wire  
 → Driver      ← Receiver  
 \* AA is also called 'a'

## Interface Cables

### To V.35 DCE Except France

Cable Type and Length m (ft)	Feature Code	Cable Group	BH Number	Cable PN
Fixed length: 13.5 m (45)	4931 (LIC1)	1613	58X9485	58X9485
13.5 m (45) or less		1618	58X9485	58X9485
More than 15 m (49.5) and up to 100 m (328)		N/A	6398665	6398665

### To V.35 DCE France Only (Adapter PN 1749352 Included)

Cable Type and Length m (ft)	Feature Code	Cable Group	BH Number	Cable PN
Fixed length: 13.5 m (45)	4931 (LIC1)	1619	58X9198	65X9522
13.5 m (45) or less		1619	6398671	6398671
More than 15 m (49.5) and up to 100 m (328)		N/A	6398789	6398789

## Wrapping

### At Cartridge Connector

Install wrap cable PN 65X8928 in (2), between port 0 and the DCE socket. See "TSS Wrap Tools" on page 2-28 for pin-to-pin assignment.

**Note:** For a full test, run the test with the wrap cable installed, then reverse the cable ends (between port 0 and DCE socket) and repeat the test.

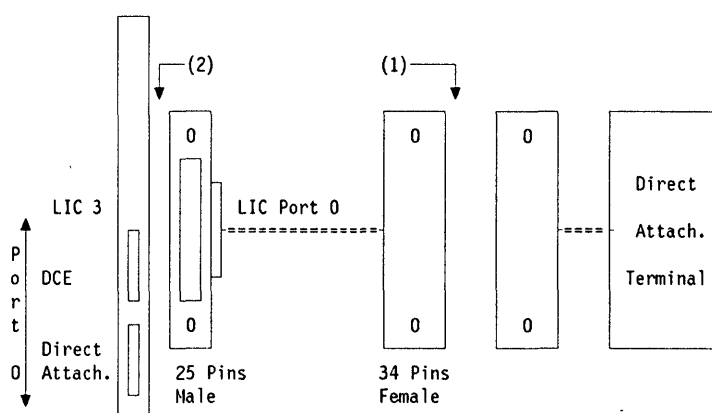
## Voltage Levels

See "0.55 Volt (V.35 Balanced Circuits)" on page 2-31.



## LIC Type 3 Direct Attachment Interface

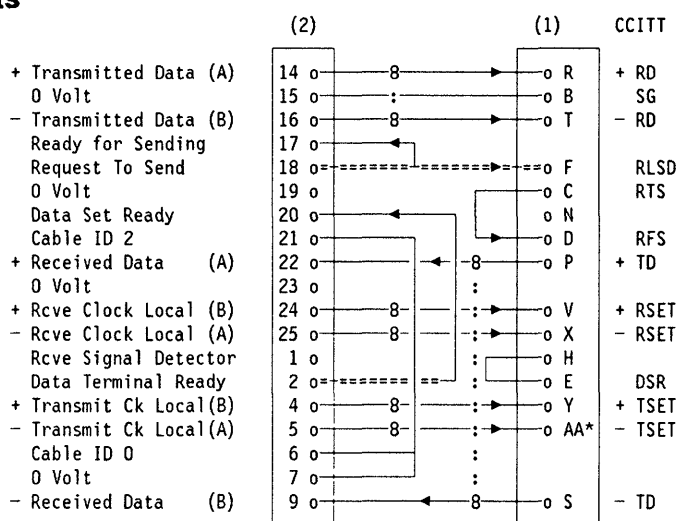
Interface	CCITT V.35
Transmission speed	Up to 245 760 bps (Up to 256 000 bps through RPQ)
Number of lines	One
Transfer mode	Half-duplex or duplex
Protocols	BSC and SDLC
DTE clocking	Up to 256 000 bps



### Notes:

1. Upper socket is for DCE attachment.
2. Lower socket is for direct attachment to terminal.

## Interchange Circuits



**Legend:** -8- Twisted pair  
 === Shielded wire  
 → Driver  
 ← Receiver  
 \* AA is also called 'a'

## Interface Cables

### To V.35 Direct Attachment (Except France)

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
Fixed length: 13.5 m (45)	4931 (LIC1)	1605	58X9484	58X9484
13.5 m (45) or less		1623	58X9484	58X9484
More than 13.5 m (45) and up to 122 m (400)		N/A	6398657	6398657

### To V.35 Direct Attachment (France Only)

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
13.5 m (45) or less	4931 (LIC1)	1623F	65X9900	65X9900
More than 13.5 m (45) and up to 122 m (400)		N/A	65X9900	65X9900

## Wrapping

### At Cartridge Connector

Install wrap cable PN 65X8928 in (2), between port 0 and the DCE socket. See "TSS Wrap Tools" on page 2-28 for pin-to-pin assignment.

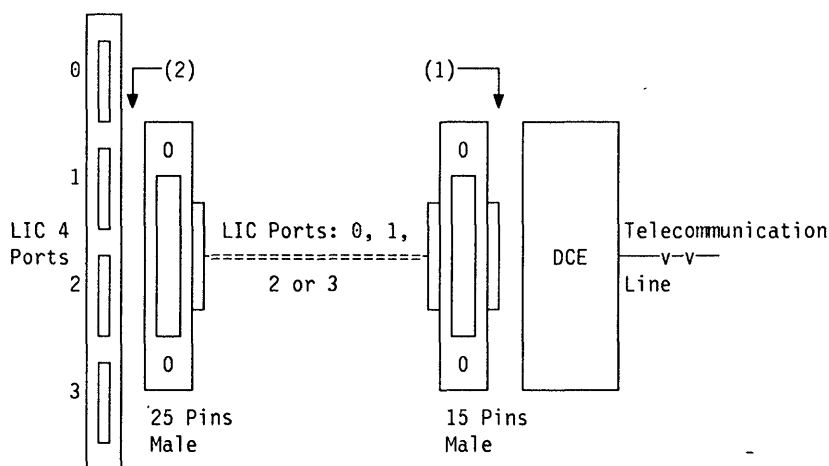
**Note:** For a full test, run the test with the wrap cable installed, then reverse the cable ends (between port 0 and DCE socket) and repeat the test.

## Voltage Levels

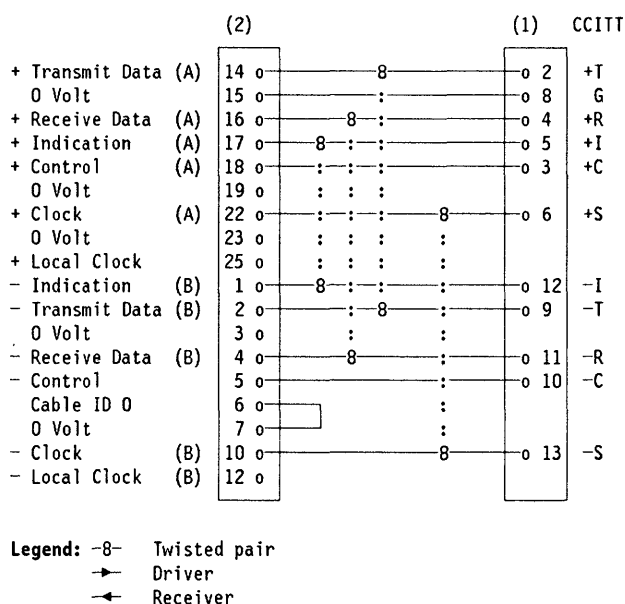
See "0.55 Volt (V.35 Balanced Circuits)" on page 2-31.

## LIC Type 4A DCE Interface

Interface	CCITT X.21
Transmission speed	Up to 9600 bps
Number of lines	Four
Transfer mode	Half-duplex or duplex
Protocols	SDLC
DTE clocking	Not allowed



## Interchange Circuits



## Interface Cables

### To X.21 DCE

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
Fixed length: 13.5 m (45)	4941 (LIC1)	1606	03F4913 (EMEA)	58X9487
13.5 m (45) or less		1624	58X9487	58X9487
More than 13.5 m (45) and up to 122 m (400)		N/A	6398658	6398658

## Wrapping

### At Cartridge Connector

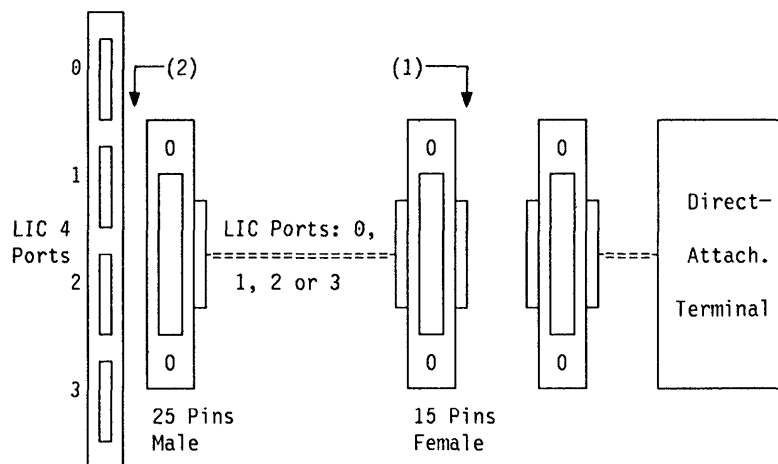
Install wrap plug PN 65X8927 in (2), ports 0, 1, 2, or 3.  
See "TSS Wrap Tools" on page 2-28 for pin-to-pin assignment.

## Voltage Levels

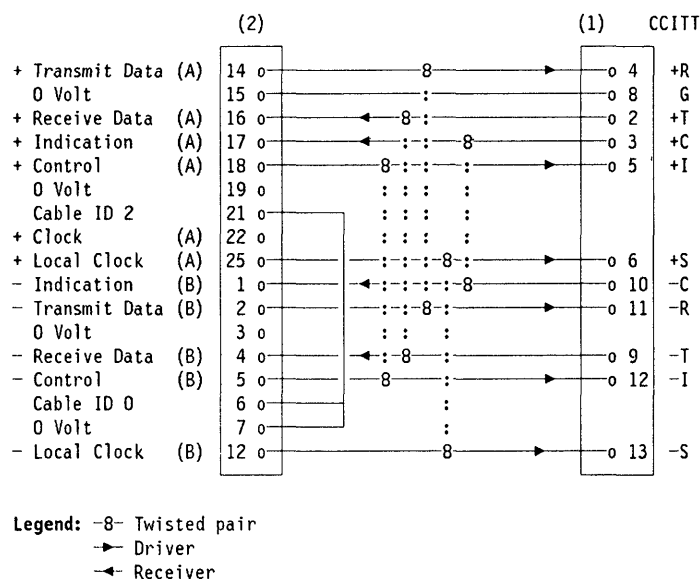
See "3 Volts" on page 2-31.

## LIC Type 4A Direct Attachment Interface

Interface	CCITT X.21
Transmission speed	Up to 9600 bps
Number of lines	Four
Transfer mode	Half-duplex or duplex
Protocols	SDLC
DTE clocking	Up to 9600 bps



## Interchange Circuits



## Interface Cables

### To X.21 Direct Attachment

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
Fixed length: 13.5 m (45)	4941 (LIC4A) (No EHEA)	1608	58X9486	58X9486
30 m (99) or less		1625	58X9486	58X9486
More than 30 m (99) and up to 122 m (400)		N/A	6398660	6398660

## Wrapping

### At Cartridge Connector

Install wrap plug PN 65X8927 in (2), port 0.

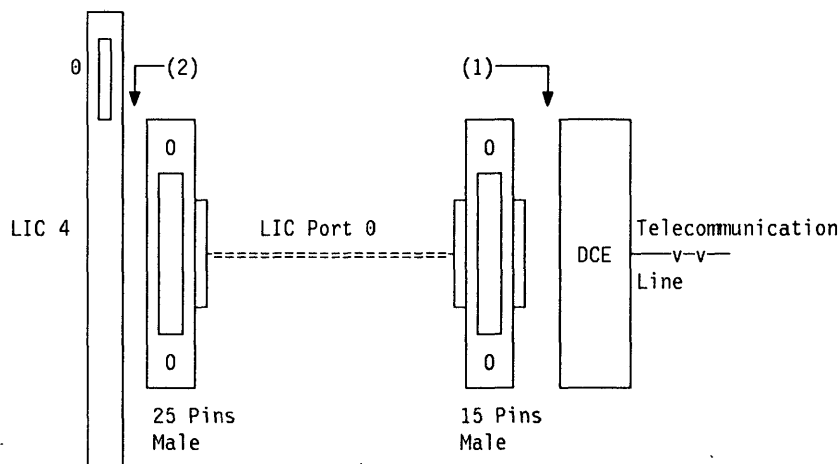
See "TSS Wrap Tools" on page 2-28 for pin-to-pin assignment.

## Voltage Levels

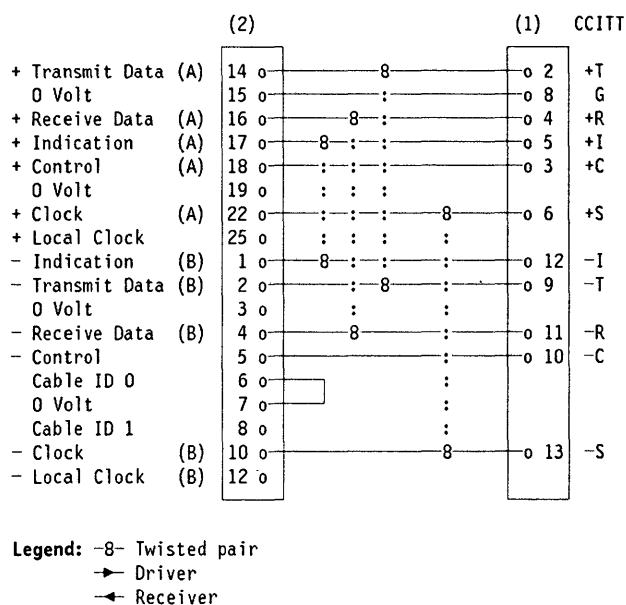
See "3 Volts" on page 2-31.

## LIC Type 4B DCE Interface (Except France)

Interface	CCITT X.21
Transmission speed	Up to 256 000 bps
Number of lines	One
Transfer mode	Half-duplex or duplex
Protocols	SDLC
DTE clocking	Not allowed



## Interchange Circuits



## Interface Cables

### To X.21 DCE

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PH
Fixed length: 13.5 m (45)	4942 (LIC4B)	1606	03F4914 (ENEA)	58X9487
13.5 m (45) or less		1624	58X9487	58X9487
More than 13.5 m (45) and up to 122 m (400)		N/A	6398658	6398658

## Wrapping

### At Cartridge Connector

Install wrap plug PN 65X8927 in (2), port 0.

See "TSS Wrap Tools" on page 2-28 for pin-to-pin assignment.

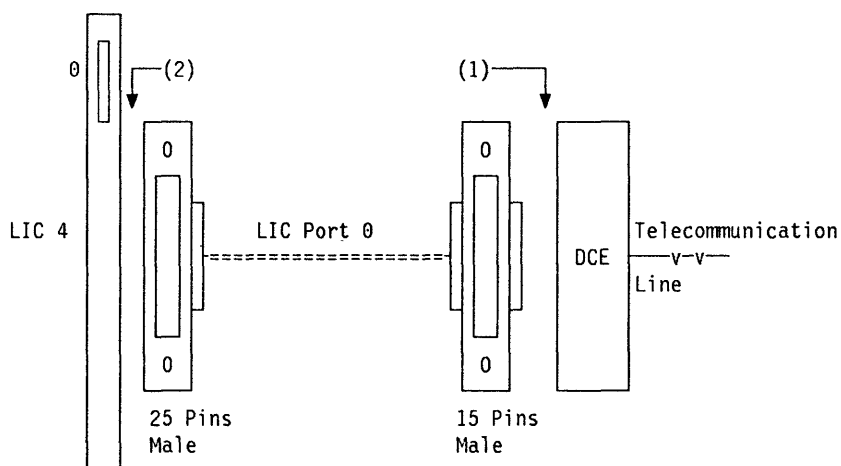
## Voltage Levels

See "3 Volts" on page 2-31.

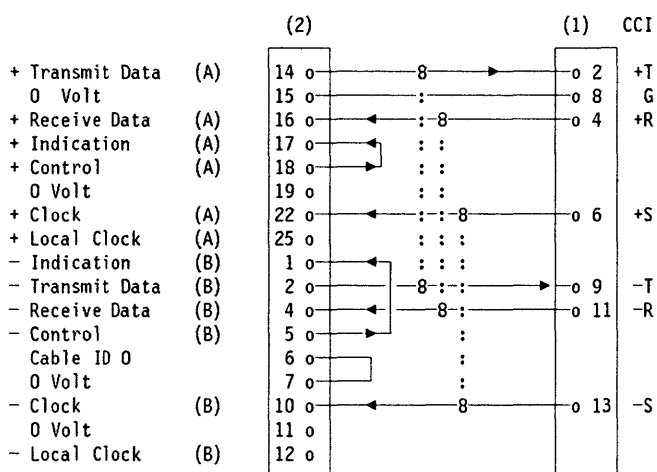


## LIC Type 4B DCE Interface (France Transfix Only)

Interface	CCITT X.21
Transmission speed	Up to 256 000 bps
Number of lines	One
Transfer mode	Half-duplex or duplex
Protocols	SDLC
DTE clocking	Not allowed



## Interchange Circuits



Legend: -8- Twisted pair  
 → Driver  
 ← Receiver

## Interface Cables

### To X.21 DCE Transfix France

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
Fixed length: 13.5 m (45)	4942 (LIC4B)	1609	03F4915 (EHEA)	58X9488
13.5 m (45) or less		1609	58X9488	58X9488
More than 13.5 m (45) and up to 122 m (400)		N/A	6398661	6398661

## Wrapping

### At Cartridge Connector

Install wrap plug PN 65X8927 in (2), port 0.

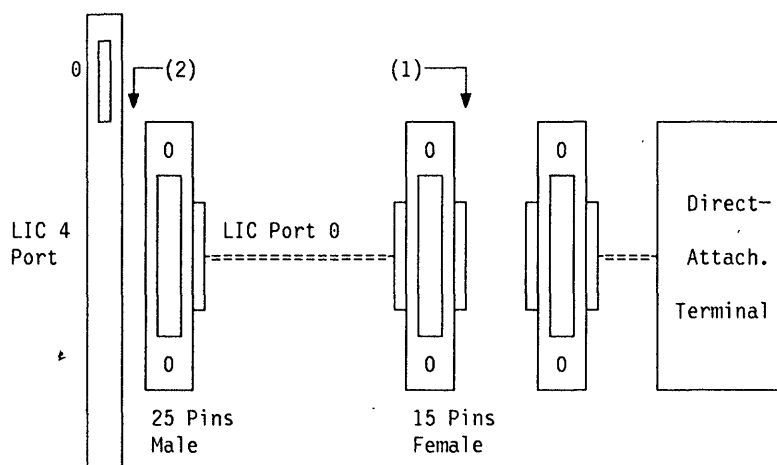
See "TSS Wrap Tools" on page 2-28 for pin-to-pin assignment.

## Voltage Levels

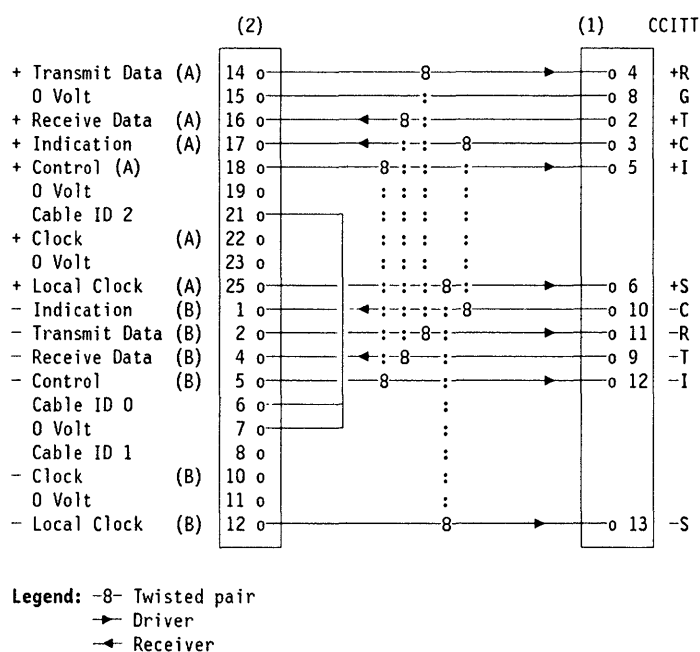
See "3 Volts" on page 2-31.

## LIC Type 4B Direct Attachment Interface

Interface	CCITT X.21
Transmission speed	Up to 256 000 bps
Number of lines	One
Transfer mode	Half-duplex or duplex
Protocols	SDLC
DTE clocking	Up to 256 000 bps



## Interchange Circuits



## Interface Cables

### To X.21 Direct Attachment

Cable Type and Length m (ft)	Feature Code	Cable Group	BM Number	Cable PN
Fixed length: 13.5 m (45)	4942 (LIC4B) (No ENEA)	1608	58X9486	58X9486
30 m (99) or less		1625	58X9486	58X9486
More than 30 m (99) and up to 122 m (400)		N/A	6398660	6398660

## Wrapping

### At Cartridge Connector

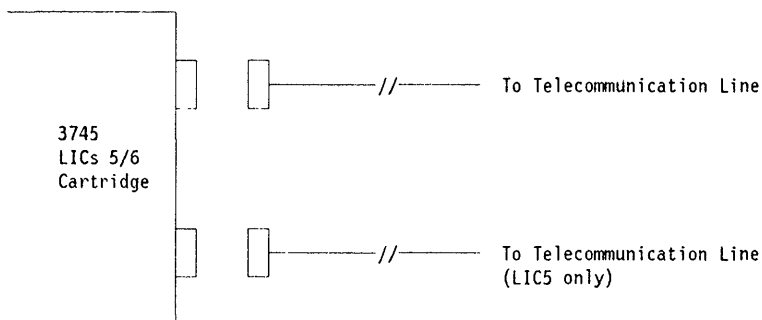
Install wrap plug PN 65X8927 in (2), port 0.

See "TSS Wrap Tools" on page 2-28 for pin-to-pin assignment.

## Voltage Levels

See "3 Volts" on page 2-31.

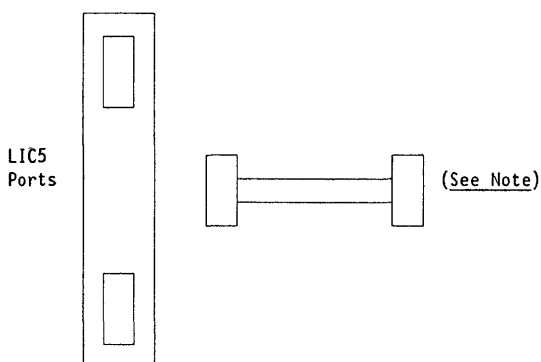
## LIC5 and LIC6 Interfaces and Cables



The 3745 provides line cables to the customer's telecommunication socket (see *Power Supply and Telecommunication Connections for IBM Modems*, GA33-0054).

## LIC Type 5 Line Interface

Transmission speed	4800 or 9600 or 14 400 bps
Number of lines	Two
Transfer mode	Half-duplex or duplex
Protocols	BSC, SDLC



**Note:** See *Power Supply and Telecommunication Connections for IBM Modems*, GA33-0054.

## Interchange Circuits

Lead Color	Pin Assignments (LIC5 Side)	Pin Assignments (Line Side)	Signal Name
Blue	1	(See Note above)	Receive (Rec) 1
Orange	2		Receive (Rec) 2
Yellow	7		Transmit (Tsm) 1
Black	8		Transmit (Tsm) 2

## Interface Cables

Refer to *Power Supply and Telephone Connections for IBM Modems*, GA33-0054.

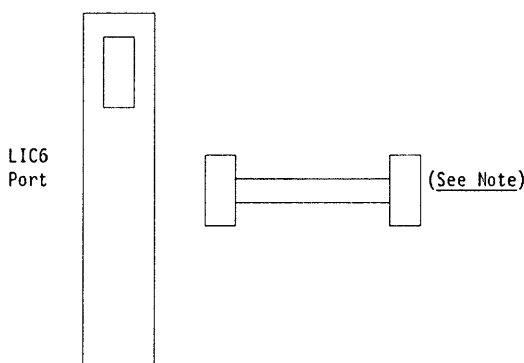
### Wrapping

**At Cartridge Connector:** Install wrap plug PN 11F4815. See "TSS Wrap Tools" on page 2-28 for pin-to-pin assignment.

**At Cable End:** Install national wrap plug at cable end (see MIP for PNs). All wrap plugs wrap Receive 1 to Transmit 1 and Receive 2 to Transmit 2.

## LIC Type 6 Line Interface

Transmission speed	Up to 56 000 bps
Number of lines	One
Transfer mode	Half-duplex or duplex
Protocols	BSC, SDLC



**Note:** See *Power Supply and Telecommunication Connections for IBM Modems*, GA33-0054.

## Interchange Circuits

Lead Color	Pin Assignments (LIC6 Side)	Pin Assignments (Line Side)	Signal Name
Blue	1	(See Note above)	Receive (Rec) 1
Orange	2		Receive (Rec) 2
Yellow	7		Transmit (Tsm) 1
Black	8		Transmit (Tsm) 2

## Interface Cables

Refer to *Power Supply and Telephone Connections for IBM Modems*, GA33-0054.

### Wrapping

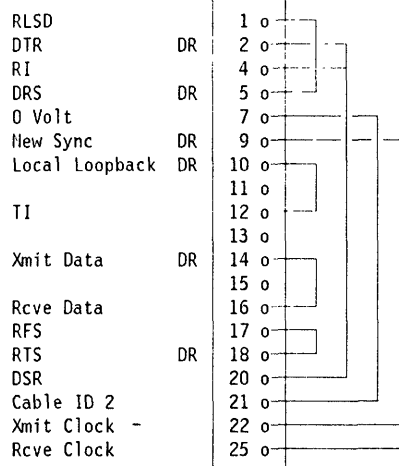
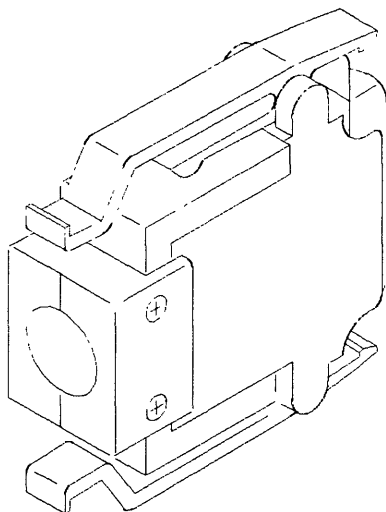
**At Cartridge Connector:** Install wrap plug PN 11F4815. See "TSS Wrap Tools" on page 2-28 for pin-to-pin assignment.

**At Cable End:** Install national wrap plug at cable end (see MIP for PNs). All wrap plugs wrap Receive 1 to Transmit 1 and Receive 2 to Transmit 2.

# TSS Wrap Tools

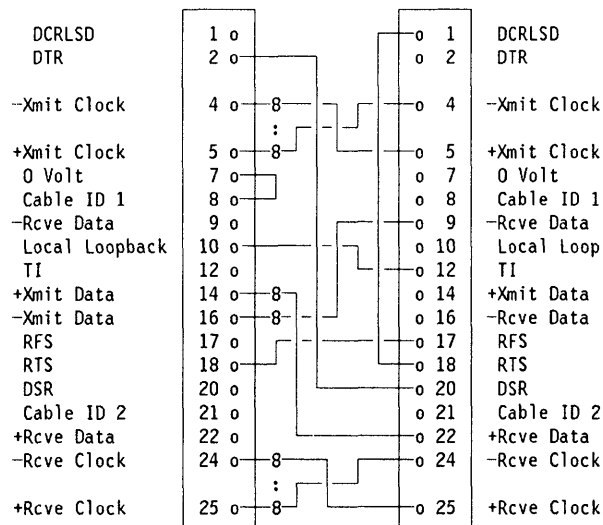
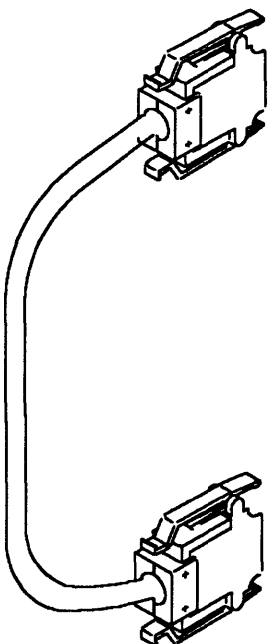
## Wrap Plug PN 65X8927

For LIC 1 and LIC 4



## Wrap Tool PN 65X8928

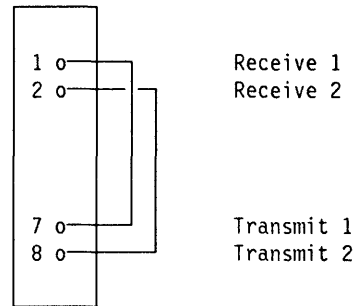
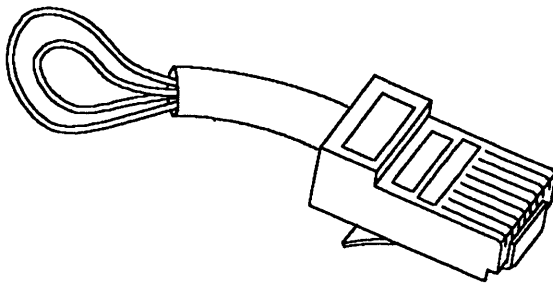
For LIC 3



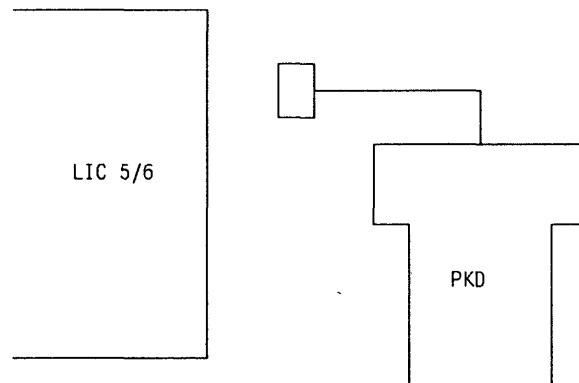
This wrap cable is plugged between the upper socket and the lower socket of a LIC 3 (plugging is interchangeable).

## Wrap Plug PN 11F4815

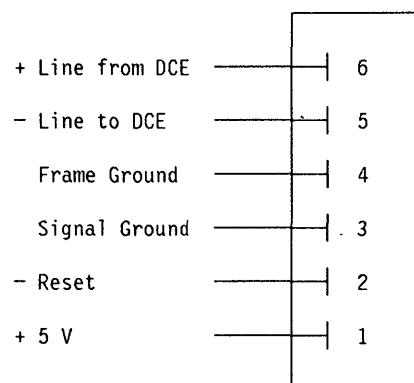
For LIC 5 and LIC 6



## PKD Interface

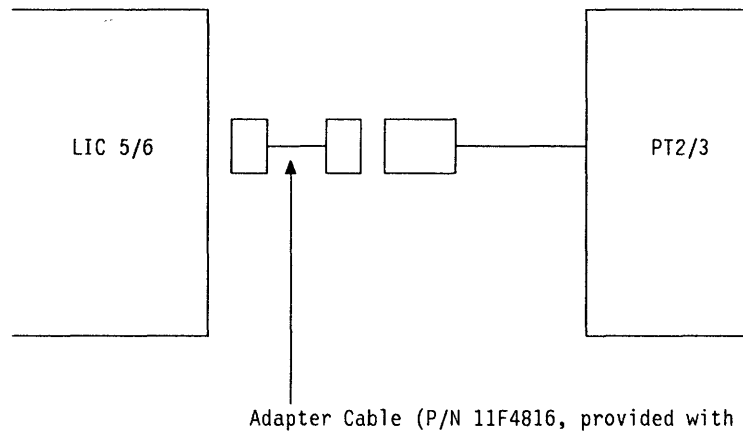


## Connector And Pin Assignment



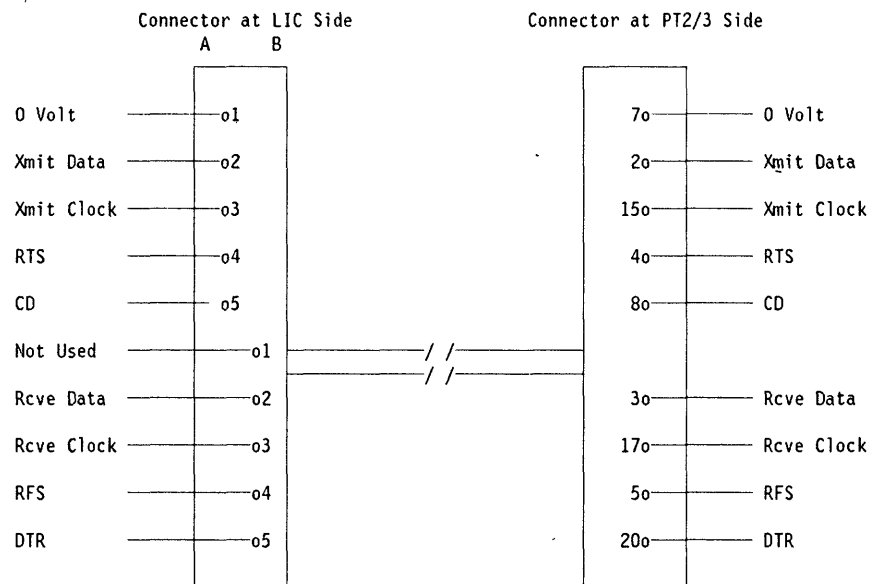


## PT2/3 Interface



**Note:** When using the PT2/3 device, the SLT/VTL switch must be set to ON.

### Pin Assignments on Adapter Cable



### 3 Volts

## 6.5 Volts

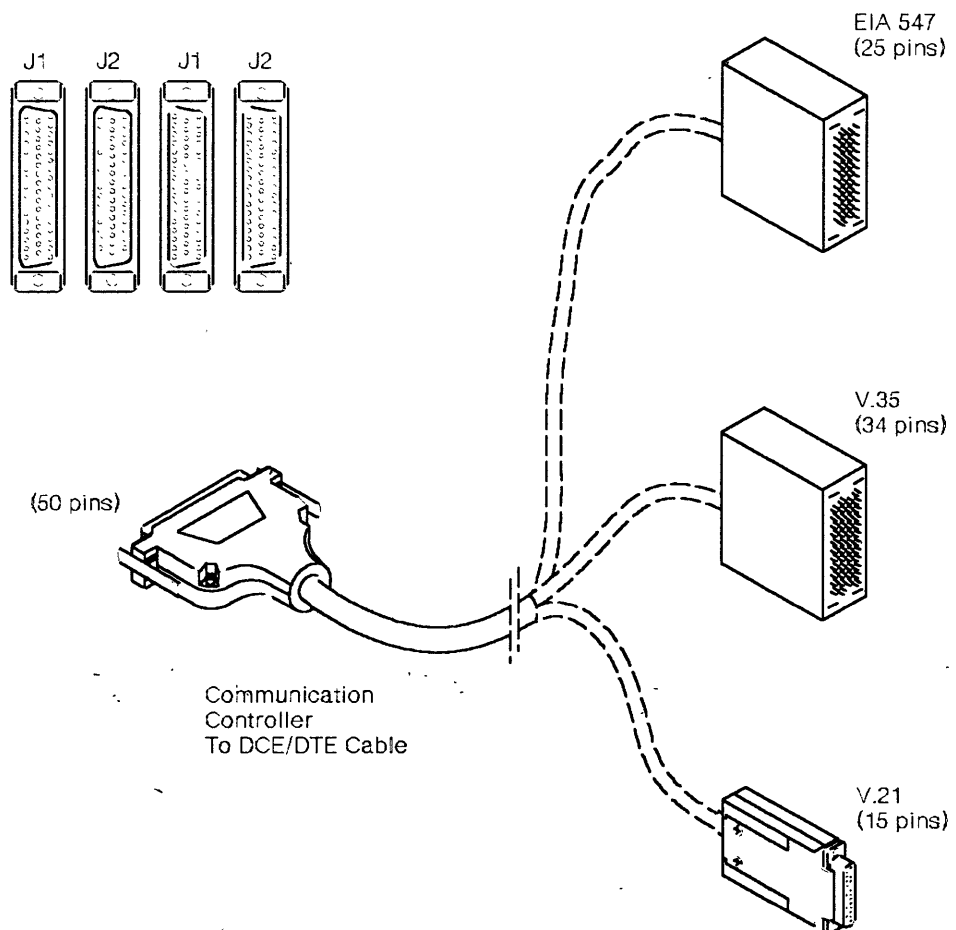
### 0.55 Volt (V.35 Balanced Circuits)

Between wires A and B of given signal for:



## Chapter 3. HPTSS Interface Cables

### DTE/DCE Cable Connectors



For cable ordering, see the HPTSS cable descriptions in the following pages.

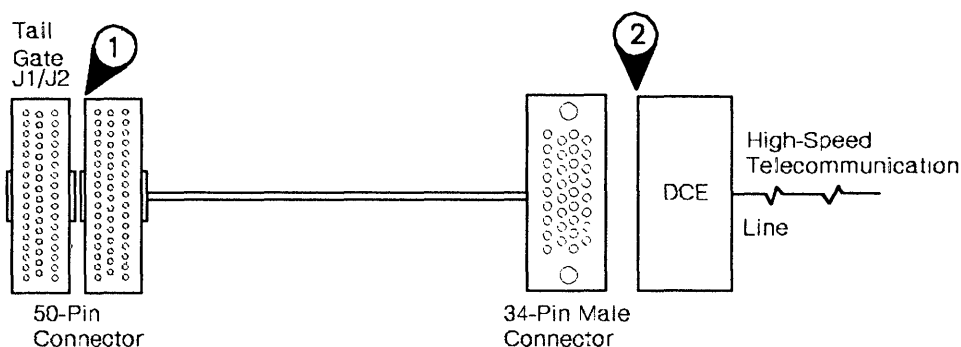
**Feature Code:** The HPTSS cable feature code is **4740** for 3745 Models 210, 310, 410, and 610 and feature code **4741** for 3745 Models 130, 150, and 170.

## V.35 Interface to DCE

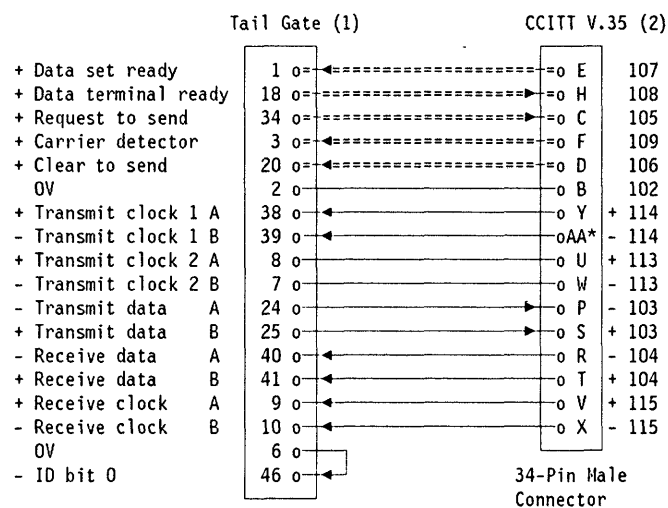
Cable Type	Length, m (ft)	Feature Code *	Cable Group	Cable PN
Standard Fixed	10 m (33)	4740/4741	5831	58X9344
Variable	Less than 10 m (33)	4740/4741	5830	58X9344
Variable	Up to 35 m (115) (See note below)	4740/4741	NA	58X9344

\* **Feature Code:** 4740 is for 3745 Models 210, 310, 410, and 610  
4741 is for 3745 Models 130, 150, and 170

**Note:** The 35 m (115 ft) maximum cable length is authorized only if the DCE provides support of circuit 113 (Transmit Clock 2) for clocking in the transmit data from the HPTSS. Circuit 113 is circuit 114 (Transmit Clock 1) from the DCE looped back to the DCE. The option to support circuit 113 may or may not be available on the manufacturer's DCE. Verify that this support exists by reading the documentation on your DCE, and select the options that correspond to your cable length. When circuit 113 is not supported by the DCE, the cable length is limited to 15 m (50 ft).



## Interchange Circuits



**Legend:** == Shielded wires  
\* AA is also named 'a'

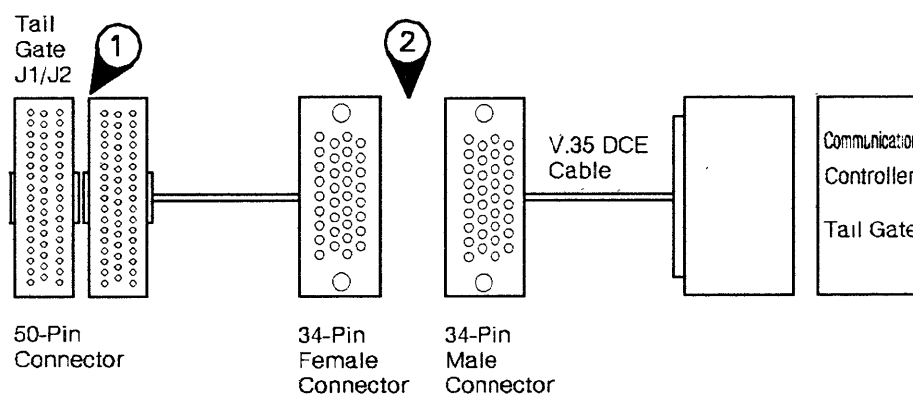
**Voltage levels:** Refer to "Voltage Interface Measurements" on page 3-9 for information.

## V.35 Direct Attach Cable

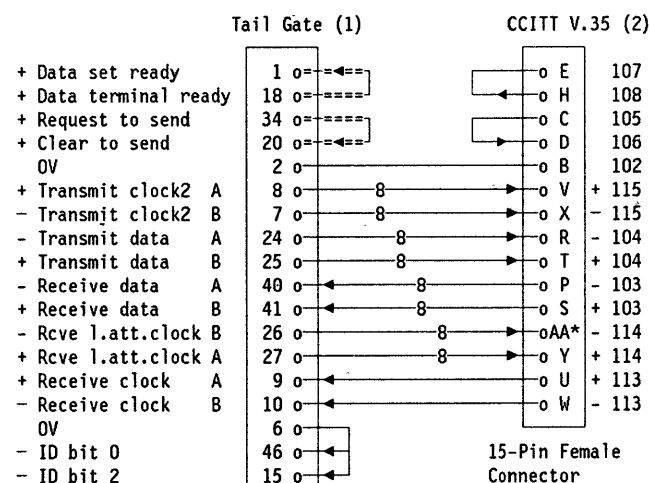
Cable Type	Length, m (ft)	Feature Code *	Cable Group	Cable PN
Standard Fixed	10 m (33)	4740/4741	5837	58X9347
Variable	Less than 10 m (33)	4740/4741	5836	58X9347
Variable	Up to 100 m (330)	4740/4741	NA	58X9347

\* Feature Code: 4740 is for 3745 Models 210, 310, 410, and 610  
4741 is for 3745 Models 130, 150, and 170

## Cable to DTE



## Interchange Circuits



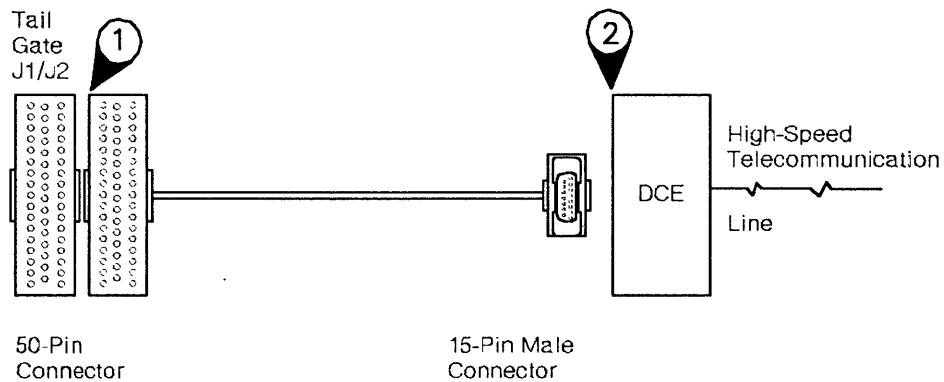
Voltage levels: Refer to "Voltage Interface Measurements" on page 3-9 for information.

## X.21 Interface to DCE (Including Transfix France at 1.920 Mbps)

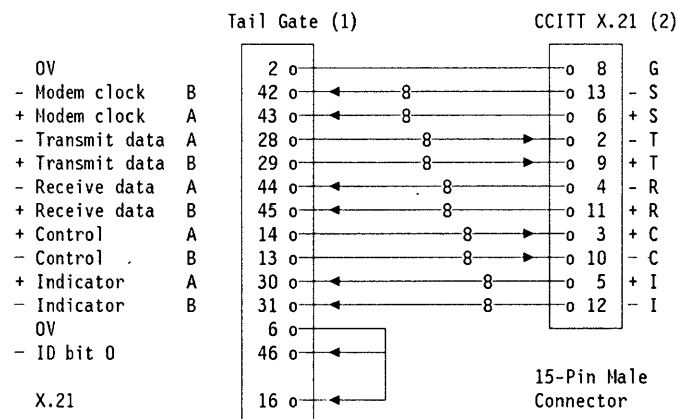
Cable Type	Length, m (ft)	Feature Code *	Cable Group	Cable PN
Standard Fixed	10 m (33)	4740/4741	5833	58X9345
Variable	Less than 10 m (33)	4740/4741	5832	58X9345

\* **Feature Code:** 4740 is for 3745 Models 210, 310, 410, and 610  
4741 is for 3745 Models 130, 150, and 170

### Cable to DCE



### Interchange Circuits



Legend: 8 Twisted wires

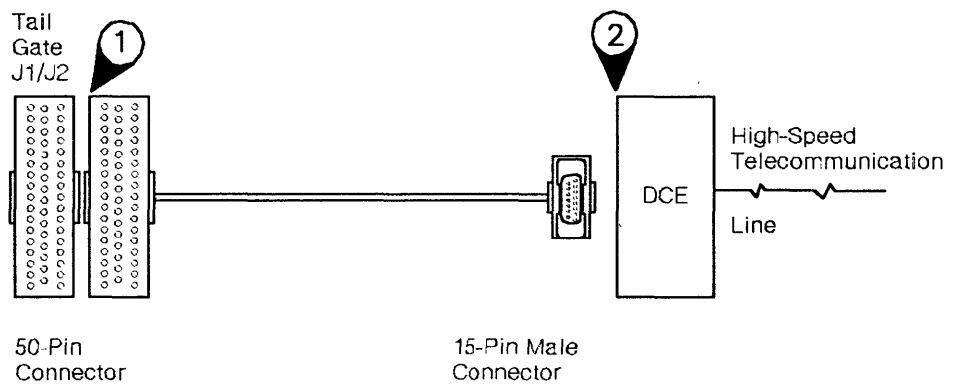
**Voltage levels:** Refer to "Voltage Interface Measurements" on page 3-9 for information.

## X.21 Interface to DCE (Transfix France, Except 1.920 Mbps)

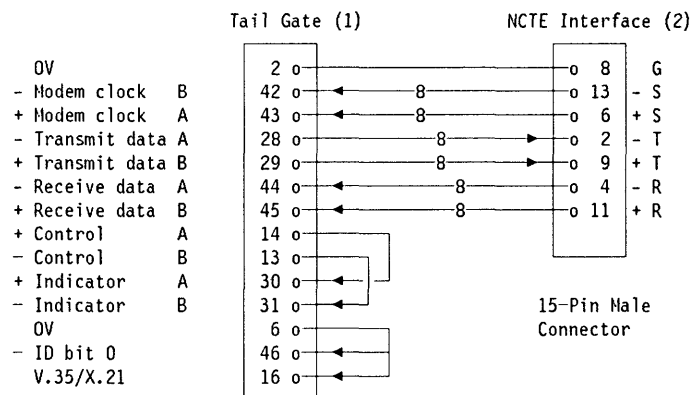
Cable Type	Length, m (ft)	Feature Code *	Cable Group	Cable PN
Standard Fixed	10 m (33)	4740/4741	5835	58X9346
Variable	Less than 10 m (33)	4740/4741	5834	58X9346

\* **Feature Code:** 4740 is for 3745 Models 210, 310, 410, and 610  
4741 is for 3745 Models 130, 150, and 170

### Cable to DCE



### Interchange Circuits



Legend: 8 Twisted wires

Voltage levels: Refer to "Voltage Interface Measurements" on page 3-9 for information.

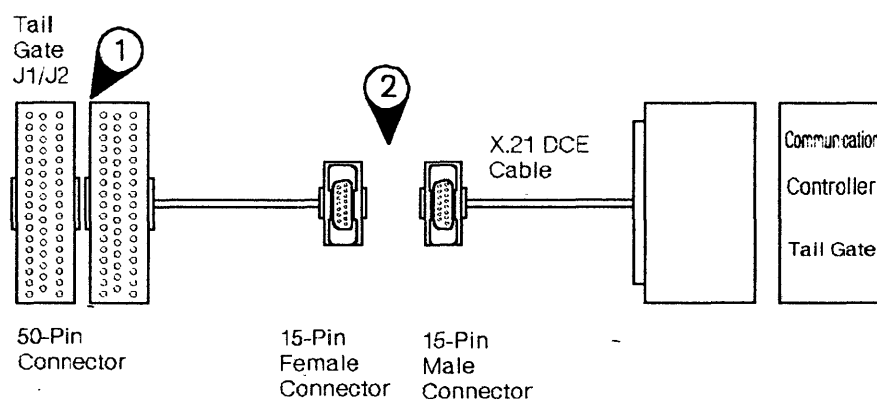


## X.21 Direct Attach Cable

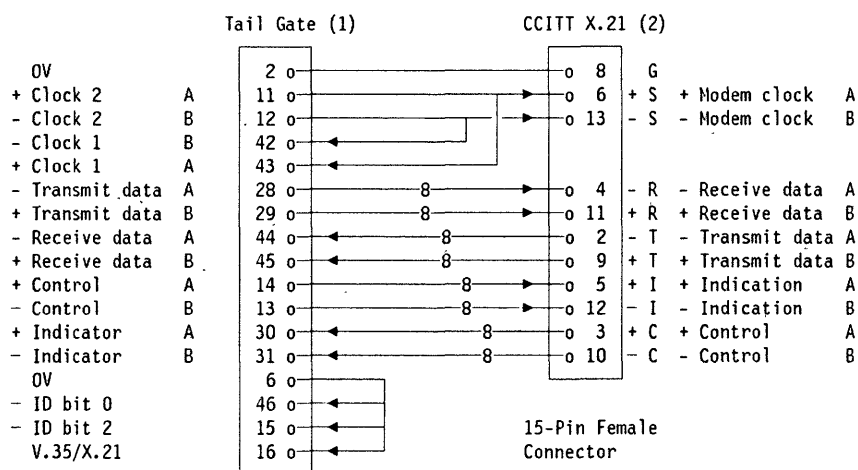
Cable Type	Length, m (ft)	Feature Code *	Cable Group	Cable PN
Standard Fixed	10 m (33)	4740/4741	5839	58X9348
Variable	Less than 10 m (33)	4740/4741	5838	58X9348

\* **Feature Code:** 4740 is for 3745 Models 210, 310, 410, and 610  
4741 is for 3745 Models 130, 150, and 170

## Cable to DTE



## Interchange Circuits



Legend: 8 Twisted wires

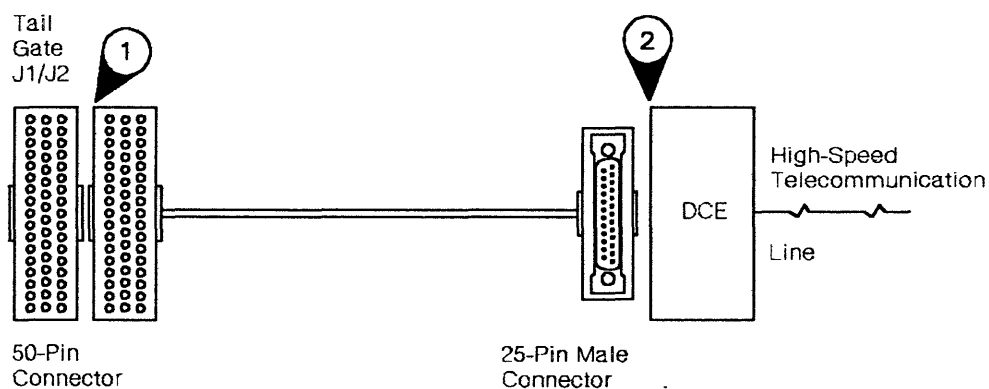
**Voltage levels:** Refer to "Voltage Interface Measurements" on page 3-9 for information.

## EIA-547 Interface to DCE

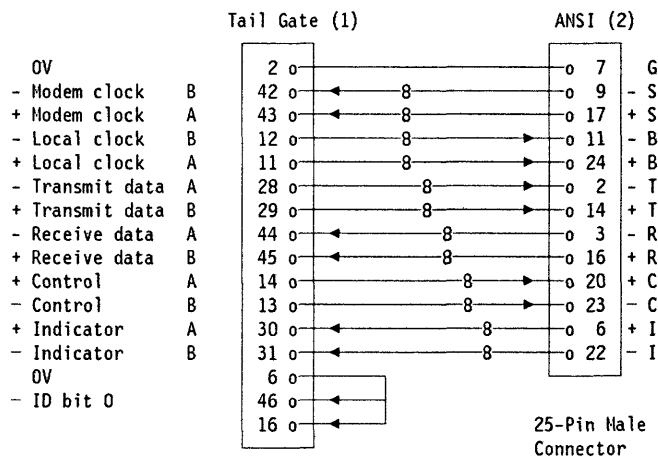
Cable Type	Length, m (ft)	Feature Code *	Cable Group	Cable PN
Standard Fixed	10 m (33)	4740/4741	5844	11F4837
Variable	Less than 10 m (33)	4740/4741	5842	11F4837
Variable	Up to 35 m (115)	4740/4741	NA	11F4837

\* **Feature Code:** 4740 is for 3745 Models 210, 310, 410, and 610  
4741 is for 3745 Models 130, 150, and 170

## Cable to DCE



## Interchange Circuits



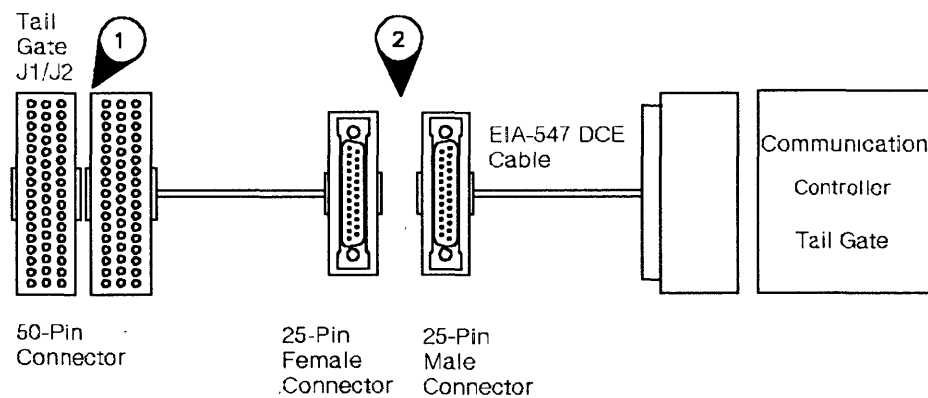
**Voltage levels:** Refer to "Voltage Interface Measurements" on page 3-9 for information.

## EIA-547 Direct Attach Cable

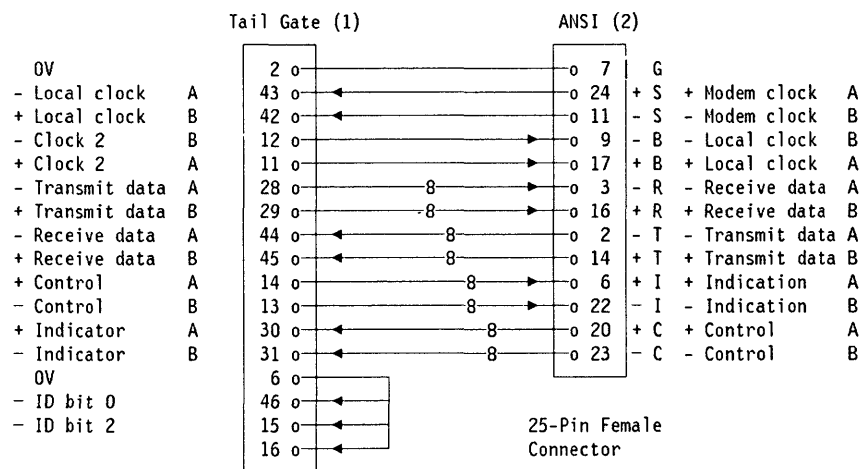
Cable Type	Length, m (ft)	Feature Code *	Cable Group	Cable PN
Standard Fixed	10 m (33)	4740/4741	5845	11F4838
Variable	Less than 10 m (33)	4740/4741	5843	11F4838
Variable	Up to 100 m (328)	4740/4741	NA	11F4838

\* **Feature Code:** 4740 is for 3745 Models 210, 310, 410, and 610  
4741 is for 3745 Models 130, 150, and 170

## Cable to DTE



## Interchange Circuits



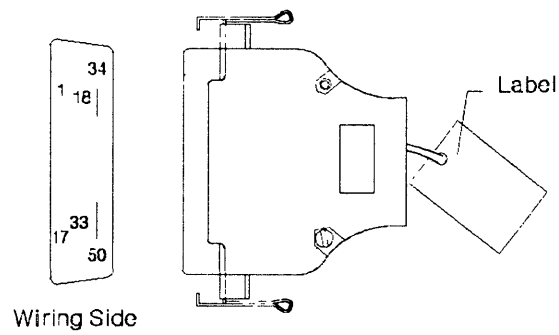
Legend: 8 Twisted wires

Voltage levels: Refer to "Voltage Interface Measurements" on page 3-9 for information.

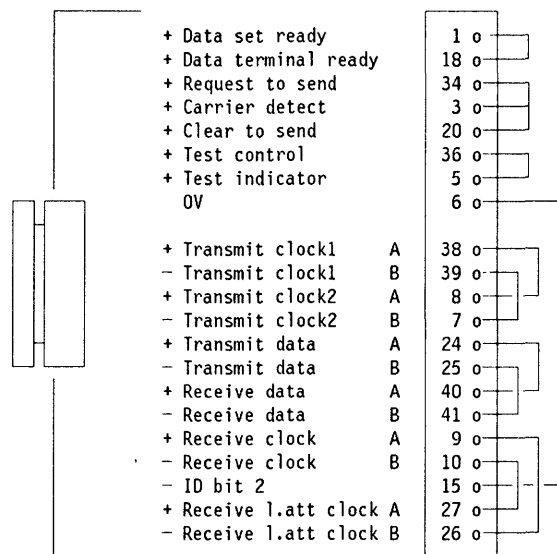
## Voltage Interface Measurements

V.35 Interface Signal Name	CCITT Circuit Number	Level	Voltage
CTS	105	ON OFF	> +3 V < -3 V
DTR	108.2	ON OFF	> +3 V < -3 V
TC	140	ON OFF	> +3 V < -3 V
Transmit Data	103	0 1	a>b 0.275 V a<b 0.275 V
Transmit Clock2	113	0 1	a>b 0.275 V a<b 0.275 V
Receive Local Attach	—	0 1	a>b 0.275 V a<b 0.275 V
X.21 Interface			
Transmit Data	T	0 1	a>b 0.275 V a<b 0.275 V
Control	C	0 1	a>b 0.275 V a<b 0.275 V

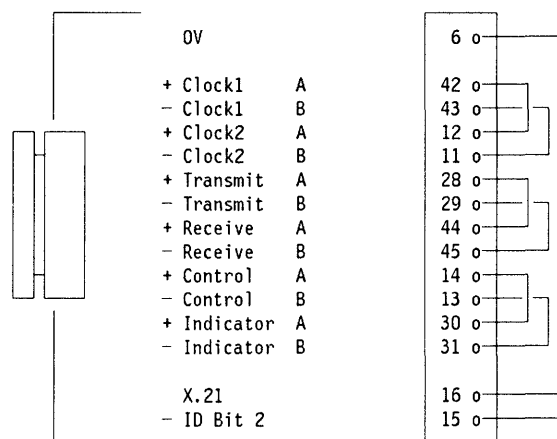
## HPTSS Wrap Plugs



### Wrap Plug V.35 PN 58X9349

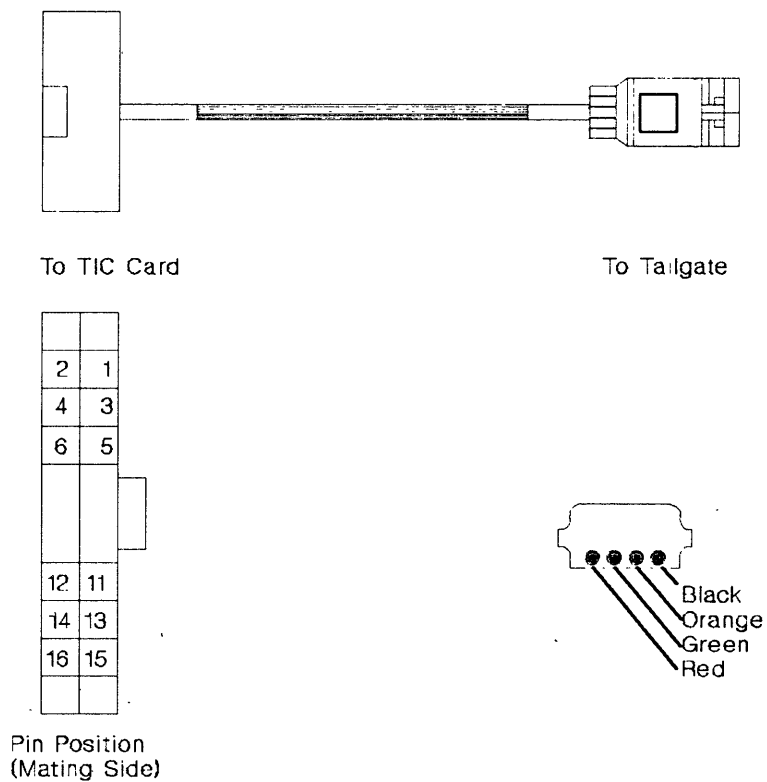


### Wrap Plug X.21 PN 58X9354



## Chapter 4. TRSS Interface Cable

### TIC Card to Tailgate Cable



### Interchange Circuits

Signal Name	Color	Pin Connector (Socket Side)
+ Ring out A	Black	Position 16
+ Ring out B	Orange	Position 15
+ Ring in A	Green	Position 1
+ Ring in B	Red	Position 2

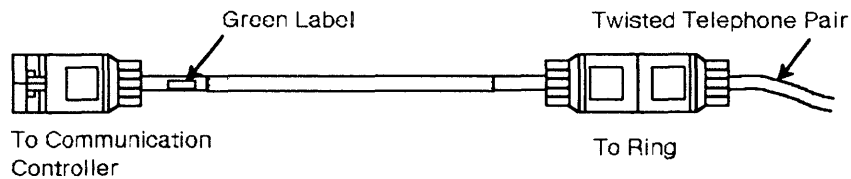
## Cable to Ring Wall Connector

The access to the ring interface is via the attachment cable.

Cable Type	Length, m (ft)	Feature Code *	Cable Group	Cable PN	BM Number
Fixed (U.S.A.)	21.3 m (70)	4760/4771	1666	61X3229	61X3229
Fixed (EMEA)	9 m (30)	4760/4771	1666	8642552	03F4906
Variable	Up to 21.3 m (70)	4760/4771	1667	61X3229	61X3229
Variable	Up to 44.2 m (145)	4760/4771	NA	61X3229	61X3229

\* **Feature Code:** 4760 is for 3745 Models 210, 310, 410, and 610  
4771 is for 3745 Models 130, 150, and 170

**Note:** In the case where the ring is made of a twisted telephone pair, a 'Data Grade Media to Type 3 Media Filter' must be inserted between the end of the twisted telephone pair and the 3745 (see the following figure).



## Voltage Levels (Ring Transmitter/Receiver)

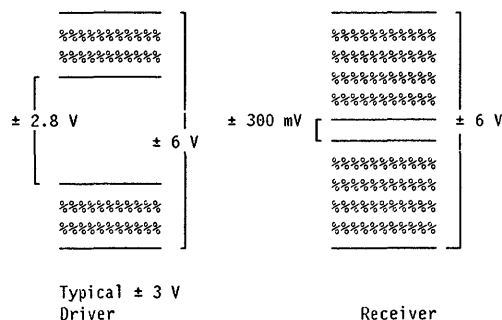
### Ring Receiver

Minimum input signal: 50 millivolts peak-to-peak

### Ring Transmitter

Output signal: Between 3.0 and 4.5 Volts peak to peak.

Output load: 150 Ohms  $\pm 10\%$



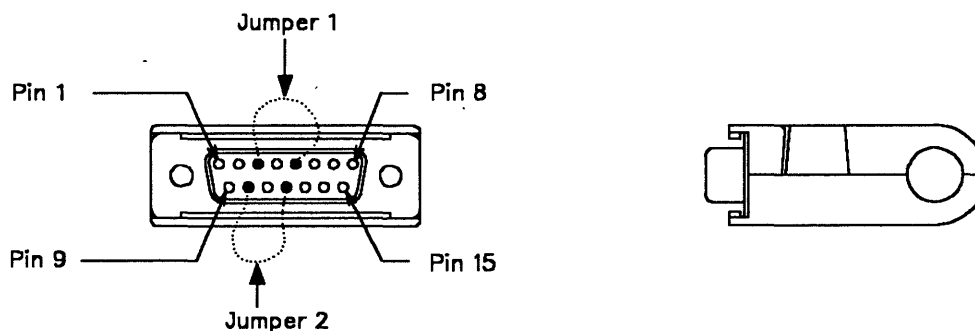
## Chapter 5. AUI Ethernet\*\* Interface Cables.

Both the office and standard access unit interface (AUI) Ethernet cables are provided by vendors and are not described in this document. The cable connectors must be equipped with a slide latch.

### Warning:

1. All AUI Ethernet cables **must** conform to the ISO 8802-3.
2. Before connecting the AUI Ethernet cables to the media access unit (MAU), you should be aware of the following notes:
  - a. The Ethernet feature's performances have been checked with a wide range of OEMs media access units. Although meeting the 802.3 standards, some MAUs are more sensitive than others to electromagnetic environment and may degrade the box performance related to the noise margin.
  - b. The MAU must be equipped with the SQE-TEST (also called HEARTBEAT) function.

### ESS Wrap Plug PN 70X8670



JUMPER	FROM	TO	DESCRIPTION
1	3	5	+TX to +RX
2	10	12	-TX to -RX





## List of Abbreviations

<b>AUI</b>	Access Unit Interface	<b>MAU</b>	media access unit
<b>BSC</b>	binary synchronous communication	<b>MOSS</b>	maintenance and operator subsystem
<b>CCITT</b>	Consultative Committee on International Telegraph and Telephone	<b>NCTE</b>	network communication terminal equipment
<b>CD</b>	carrier detector (signal)	<b>PC</b>	personal computer
<b>CTS</b>	clear to send (signal, same as RFS)	<b>PKD</b>	portable keypad display
<b>DCE</b>	data-circuit-terminating equipment	<b>PT2/3</b>	portable tool 2/3
<b>DCRLSD</b>	data channel receive line signal detector (same as CD)	<b>RD</b>	receive data (signal)
<b>DRS</b>	data rate select (signal)	<b>RFS</b>	ready for sending (signal), same as CTS
<b>DSR</b>	data set ready (signal)	<b>RI</b>	ring indicator (signal)
<b>DTE</b>	data terminal equipment	<b>RLSD</b>	receive line signal detector
<b>DTR</b>	data terminal ready (signal)	<b>RPQ</b>	request for price quotation
<b>EIA</b>	Electronic Industries Association	<b>RSF</b>	remote support facility
<b>EMEA</b>	European, Middle Eastern, and African countries	<b>RLSD</b>	receive line signal detector (same as CD)
<b>ESS</b>	Ethernet subsystem	<b>RTS</b>	request to send (signal)
<b>FESH</b>	front-end scanner (high-speed)	<b>SDLC</b>	synchronous data link control
<b>HPTSS</b>	high-performance transmission subsystem	<b>TD</b>	transmitted data (signal)
<b>HSS</b>	high-speed scanner	<b>TI</b>	test indicator (signal)
<b>LIC</b>	line interface coupler card	<b>TIC</b>	token-ring interface coupler card
<b>LSS</b>	low-speed scanner	<b>TRSS</b>	token-ring subsystem
		<b>TSS</b>	transmission subsystem

## 3745 Models 210, 310, 410, and 610 Customer Documentation

Introduction (INTRO) GA33-0092	Provides information for learning about and evaluating 3745 capabilities	Configuration Program (CP) GA33-0093	Provides information for configuring a 3745
S/370 I/O IMPP GC22-7064	Provides information for doing physical site planning	Preparing for Connection (PFC) GA33-0127	Provides information for preparing cable installation and LIC 5/6 configuration
Principles of Operation (POP) SA33-0102	Describes the 3745 instruction set in order to write or modify a control program	Connection Integration Guide (CIG) SA33-0129 *	Provides information for installing and testing LICs and customizing the 3745 after installation
Basic Operations Guide (BOG) SA33-0098 *	Provides procedures for carrying out daily routine operations	Advanced Operations Guide (AOG) SA33-0097 *	Provides procedures for carrying out advanced operations and tests from the 3745 console
Problem Determination Guide (PDG) SA33-0096 *	Provides procedures for performing problem determination	Master Index (MI) SA33-0172 *	Provides references to 3745 Models 130, 150, and 170 customer documentation
Console Setup Guide (CSG) SA33-0158 *	Provides information on setting consoles for the 3745	Telecommun. Prod. Safety Handbook TPSH GA33-0126 *	Recalls safety principles
Remote load./ Activation Guide (RLA) SA33-0161	Provides information for loading and activating a remote controller		

\* This manual is part of the shipping group

## 3745 Models 210, 310, 410, and 610 Service Documentation.

### Product-Trained CE

Installation  
Guide  
(IG)  
SY33-2057 \*

Provides instructions  
for installing or  
relocating a 3745

Service  
Functions  
(SF)  
SY33-2055 \*

Describes the MOSS  
functions used from  
a 3745 console

Maintenance  
Information  
Proc. (MIP)  
SY33-2054 \*

Provides procedures  
for isolating and fixing  
a 3745 problem

Parts Catalog  
(PC)

S135-2010 \*

Provides reference  
information for  
ordering 3745 parts

### Product-Support-Trained CE

Maintenance  
Information  
Ref. (NIR)  
SY33-2056 \*

Provides in-depth  
hardware reference  
information

Diagnostic  
Descriptions  
(DD)  
SY33-2059 \*

Describes the  
3745 diagnostic  
programs

External  
Cable  
Refer. (ECR)  
SY33-2075 \*

Provides references  
to console and line  
cables used for  
connecting a 3745

Service  
Master  
Index (SMI)  
SY33-2080 \*

Provides references  
to 3745 models  
210, 310, 410, and 610  
shipping group  
documentation

Channel  
Adapter OLTs  
(CAOLT)  
D99-3745A

Provides procedures  
for running the CA OLTs  
on a 3745

\* This manual is part of the shipping group.

## 3745 Models 130, 150, and 170 Customer Documentation

Introduction (INTRO) GA33-0138	Provides information for learning about and evaluating 3745 capabilities	Configuration Program (CP) GA33-0093	Provides information for configuring a 3745
S/370 I/O IMPP GC22-7064	Provides information for doing physical site planning	Preparing for Connection (PFC) GA33-0140	Provides information for preparing cable installation and LIC 5/6 configuration
Principles of Operation (POP) SA33-0102	Describes the 3745 instruction set in order to write or modify a control program	Connection Integration Guide (CIG) SA33-0141 *	Provides information for installing and testing LICs and customizing the 3745 after installation
Basic Operations Guide (BOG) SA33-0146 *	Provides procedures for carrying out daily routine operations	Advanced Operations Guide (AOG) SA33-0097 *	Provides procedures for carrying out advanced operations and tests from the 3745 console
Problem Determination Guide (PDG) SA33-0096 *	Provides procedures for performing problem determination	Console Setup Guide (CSG) SA33-0158 *	Provides information on setting consoles for the 3745
Master Index (MI) SA33-0142 *	Provides references to 3745 Models 130, 150, and 170 customer documentation	Telecommun. Prod. Safety Handbook TPSH GA33-0126 *	Recalls safety principles
Remote Load./ Activation Guide (RLA) SA33-0161	Provides information for loading and activating a remote controller		

\* This manual is part of the shipping group.

## 3745 Models 130, 150, and 170 Service Documentation

### Product-Trained CE

Installation  
Guide  
(IG)  
SY33-2067 \*

Provides instructions  
for installing or  
relocating a 3745

Service  
Functions  
(SF)  
SY33-2069 \*

Describes the MOSS  
functions used from  
a 3745 console

Maintenance  
Information  
Proc. (MIP)  
SY33-2070 \*

Provides procedures  
for isolating and fixing  
a 3745 problem

Parts Catalog  
(PC)  
S135-2012 \*

Provides reference  
information for  
ordering 3745 parts

### Product-Support-Trained CE

Hardware  
Maintenance  
Refer. (HMR)  
SY33-2066 \*

Provides in-depth  
hardware reference  
information

Diagnostic  
Descriptions  
(DD)  
SY33-2076 \*

Describes the  
3745 diagnostic  
programs

External  
Cable  
Refer. (ECR)  
SY33-2075 \*

Provides references  
to console and line  
cables used for  
connecting a 3745

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Index (SMI)  
SY33-2079 \*

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to 3745 models  
130, 150, and 170  
shipping group  
documentation

Channel  
Adapter OLTs  
(CAOLT)  
D99-3745A

Provides procedures  
to run the CA OLTs  
on a 3745

\* This manual is part of the shipping group.



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IBM 3745 Communication Controller  
Models 130, 150, 170, 210, 310, 410, and 610  
IBM 3746 Expansion Unit  
Models A11, A12, L13, L14, and L15  
External Cable References  
Order No. SY33-2075-3

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