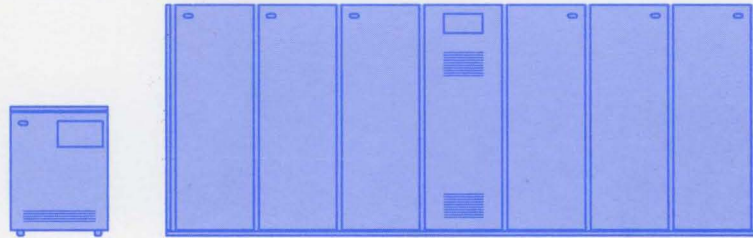IBM

3745 Communication Controller

SY33-2075-3

External Cable References

3745
3745
3745
3745

IBM

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

> **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)

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About this Book

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

Chapter 1	Presents the cables used to connect the 3745 to the consoles (local, alternate, remote) and to the RSF modem.
Chapter 2	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.
Chapter 3	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.
Chapter 4	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

```
                              3745                              Local Console
                                                                ┌─────────┐
          ┌──────────┬──────────┐                               │  31XX   │
          │  MOSS    │ Console  │                               ├─────────┤
          │  Board   │ Tailgate │ (1)                    (2)    │  3727   │
┌─────────┤          │          │  ┌─┐ Local Console Cable ┌─┐  ├─────────┤
│ Console │::::::::::│::::::::::│  │ │═══════════════════════│ │  │ PS/2*   │
│ Adapter │          │          │  └─┘                     └─┘  │ or PC   │
│ Card    │ (Note 1) │ (Note 2) │                               └─────────┘
└─────────┤          │          │  25 Pins        25 Pins         ▲
          │          │          │  Female         Female          │
          └──────────┴──────────┘                              Cable
                                                               Adapter
```
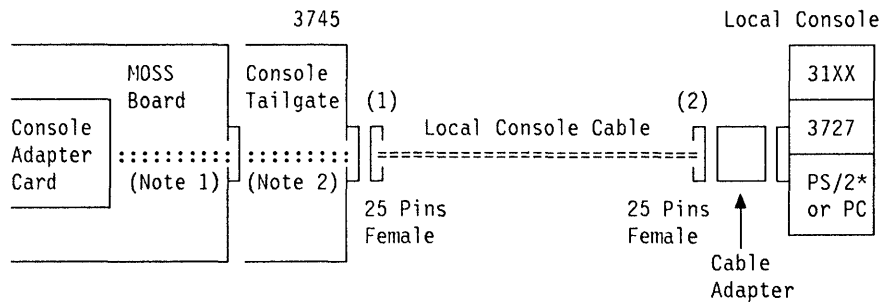
Note 1: Connection is 01A-Y0C5 in 3745 Models 130, 150 and 170
Connection is 01A-W0C2 in 3745 Models 210, 310, 410, and 610

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

```
      (1)                                   (2)
      Pin                                   Pin
      Female                                Female

      Transmitted Data                RD
  2   ──────────────────▶            11
      Received Data                   TD
  3   ──────────────◀────            12
      Request To Send                RTS
  4   ──▶          ┌──────────◀──    10
      Clear to │ Send               CTS
  5   ─────────┘   ┌──────────▶──    9
                   │               CD
                   │   ┌──────▶──    6
      Carrier Detector │
  8   ────────◀──────┘
      Data set Ready                 DTR
  6   ──────────────◀────            19
      Data Terminal Ready            DSR
 20   ──────▶────────────            8
      LED Driver
 14   ─────────────────────         25 LED
      LED Return (+5V)
 18   ─────────────────────         24 LED
              0 Volt
  7   ─────────────────────────      7
              Shield
  1   ***********************************************  13
```
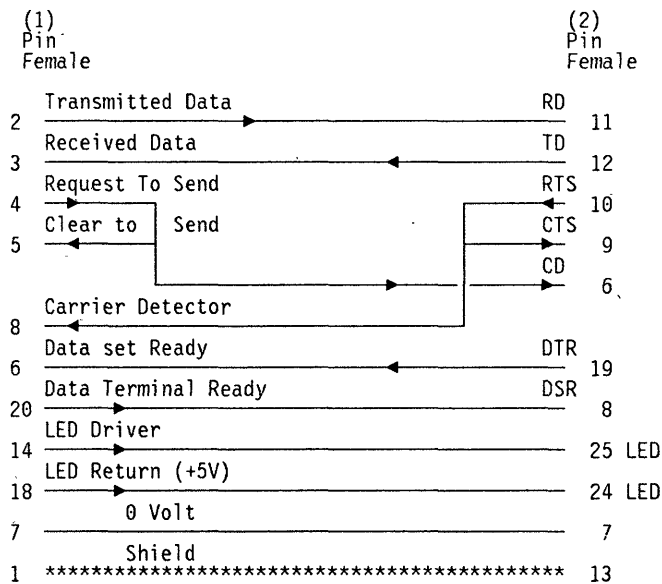
Local Console Cable Assembly

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

1-1

Cable from the 3745 to an Alternate Console
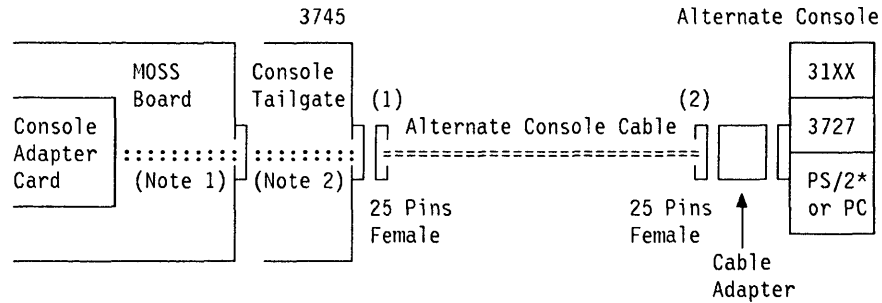
```
                        3745                          Alternate Console
    ┌─────────┬─────────┬─────────┐                      ┌─────────┐
    │         │ MOSS    │ Console │                      │  31XX   │
    │         │ Board   │ Tailgate│ (1)          (2)     ├─────────┤
    ├─────────┤         │         │ ┌ Alternate Console Cable ┐    │  3727   │
    │ Console │         │         │ │                         │    ├─────────┤
    │ Adapter │:::::::::│:::::::::│ │ ========================= │  │  PS/2*  │
    │ Card    │ (Note 1)│ (Note 2)│ │                         │    │  or PC  │
    │         │         │         │ └                         ┘    └─────────┘
    └─────────┤         │         │  25 Pins      25 Pins       ▲
             └─────────┴─────────┘  Female       Female        │
                                                            Cable
                                                            Adapter
```

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

```
                                               Console
                                    Cable     ┌──────┐
                                    Adapter   │ 31XX │
                                              ├──────┤
           Console Cable      ┌┐   ┌───┐  ┌─  │ 3727 │
         ========================┘   │   │  │   ├──────┤
                                 └   └───┘  └─  │ PS/2 │
                                   (a) (b)      │or PC │
                                               └──────┘
```
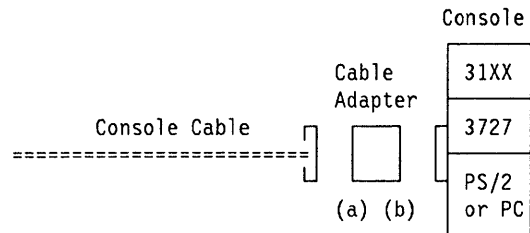
Cable Adapter P/N 54F0489 for a 31XX Console
Wiring

```
(a)                                            (b)
Pin                                            Pin
(Male)                                         (Male)

        Transmitted Data                RD
11 ──────────────────►──────────────────────── 3
        Received Data                   TD
12 ──────────────────────────◄───────────────── 2
        Request To Send                 RTS
10 ──◄─────────────────────────────────◄─────── 4
        Clear to Send                   CTS
9 ──►──────────────────────────────────►─────── 5
        Carrier Detector                CD
6 ─────────────────────────────────────►─────── 8
        Data set Ready                  DTR
19 ──────────────────────────◄───────────────── 20
        Data Terminal Ready             DSR
8 ──►─────────────────────────────────────────── 6
              0 Volt
7 ─────────────────────────────────────────────── 7
                   Shield
   *********************************************
```
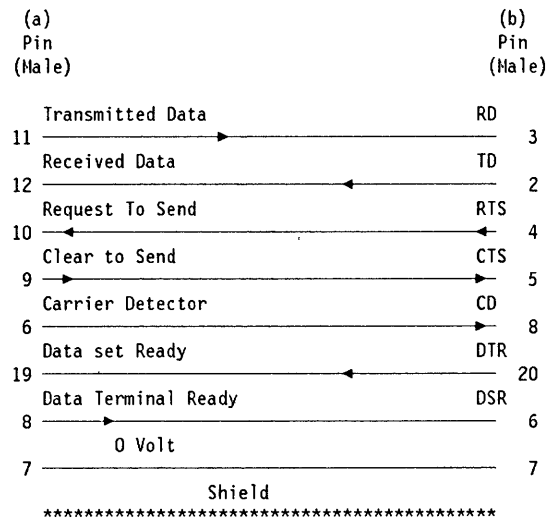
Warning: Use care installing the 31XX adapter as it can be reversed and prevent console operation. Observe the label on the adapter and install as indicated.

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

```
(a)                                            (b)
Pin                                            Pin
(Male)                                         (Female)

        Transmitted Data                RD
11 ──────────────────►──────────────────────── 11
        Received Data                   TD
12 ──────────────────────────◄───────────────── 12
        Request To Send                 RTS
10 ──◄──────────────────────────────────◄─── 10
        Clear to Send                   CTS
9 ──►───────────────────────────────────►─── 9
        Carrier Detector                CD
6 ──────────────────────────────────────►─── 6
        Data set Ready                  DTR
19 ──────────────────────────◄───────────────── 19
        Data Terminal Ready             DSR
8 ──►─────────────────────────────────────────── 8
              0 Volt
7 ─────────────────────────────────────────────── 7
                   Shield
   *********************************************
```
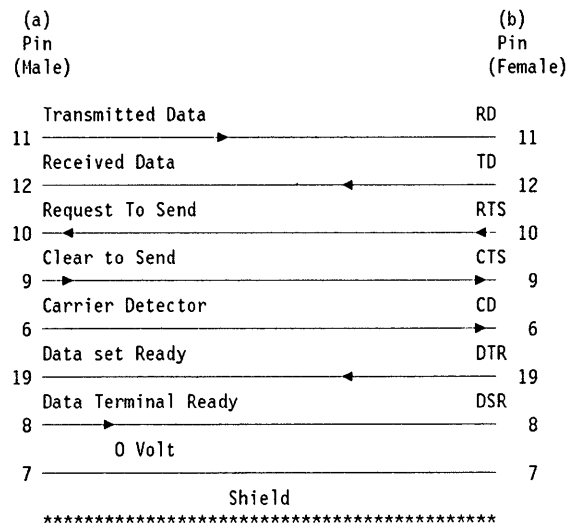
Cable Adapter P/N 54F0490 for a PS/2 or PC Console

Wiring

```
(a)                                            (b)
Pin                                            Pin
(Male)                                         (Female)

     Transmitted Data                     RD
11 ──────────────▶─────────────────────────────  3
     Received Data                        TD
12 ───────────────────────◀───────────────────  2
     Request To Send                      RTS
10 ─◀──────────────────────────────────◀──  4
     Clear to Send                        CTS
 9 ──·▶─────────────────────────────▶──  5
     Carrier Detector                      CD
 6 ───────────────────────────────▶──  8
     Data set Ready                       DTR
19 ───────────────────────◀───────────────── 20
     Data Terminal Ready                  DSR
 8 ────────▶─┬────────────────────────────  6
          0 Volt
 7 ──────────────────────────────────────────  7
                  Shield
***********************************************
```
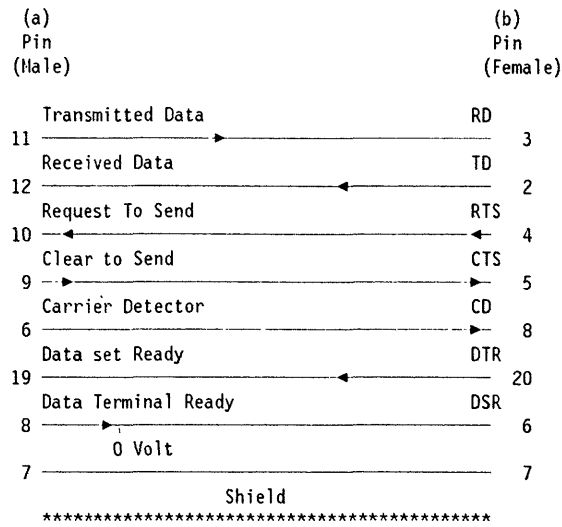
Console Connection through the IBM 7427 Console Switching Unit

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.

```
                                                    Local or
                                                    Alternate
                                                    Console
 ┌────┐                      ┌────┐                 ┌──────┐
 │3745│ (1)        (A)   (2) │7427│                 │ 31XX │
 │    │┌┐=====================┌┐                     ├──────┤
 │    │└┘                     └┘   (3)      (B)  (4) │ 3727 │
 │    │                       ┌┐====================┌┐├──────┤
 └────┘                       └┘                    └┘│ PS/2 │
                                                     │or PC │
 ┌────┐ (1)        (A)   (2)  ┌┐                     └──────┘
 │3745│┌┐=====================┌┐
 │    │└┘                     └┘
 │    │
 └────┘
```
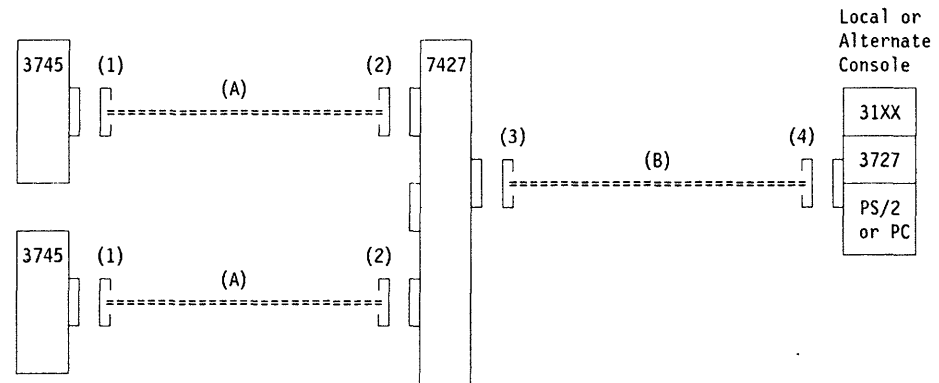
Cables from the 3745 to the 7427 Switching Unit (A)

(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

```
(3)                                              (4)
Pin                                              Pin
(Male)                                           (Male for 31XX)
                                                 (Female for PS/2 or PC)

    Transmitted Data
12 ─────────────────────────►─────────────── 2
    Received Data
11 ─────────────────────────◄─────────────── 3
    Request To Send
10 ─────────────────────────►─────────────── 4
    Clear to Send
 9 ─────────────────────────◄─────────────── 5
    Data set Ready
 8 ─────────────────────────◄─────────────── 6
    Carrier Detector
 6 ─────────────────────────◄─────────────── 8
    Data Terminal Ready
19 ─────────────────────────►─────────────── 20
         0 Volt
 7 ───────────────────────────────────────── 7
         Shield
    ********************************************* 1
```
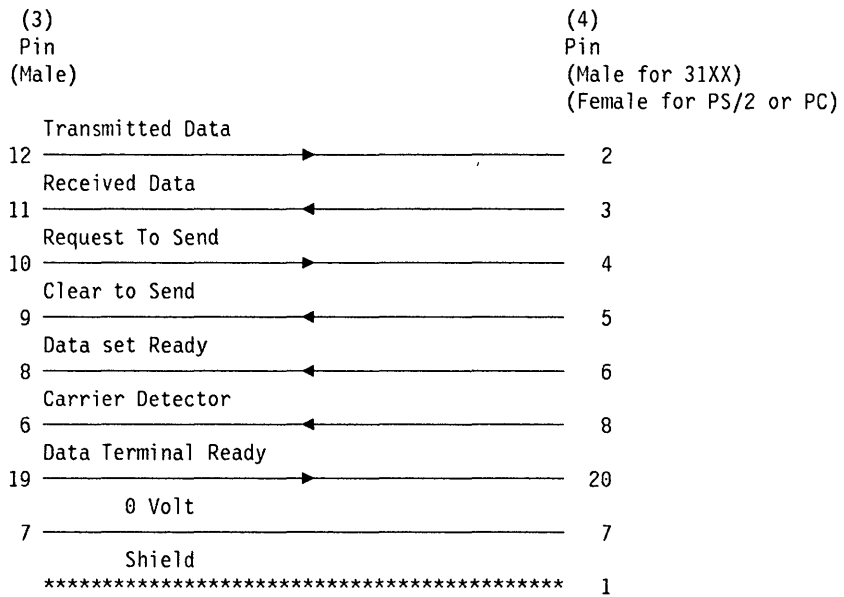
Cable Assembly for a 31XX Console

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)

```
                    (3)                                    (4)
                    Pin                                    Pin
                    (Male)                                 (Female)

             Transmitted Data
      12 ─────────────────────────────────────────── 12
             Received Data
      11 ─────────────────────────────────────────── 11
             Request To Send
      10 ─────────────────────────────────────────── 10
             Clear to Send
       9 ─────────────────────────────────────────── 9
             Data set Ready
       8 ─────────────────────────────────────────── 8
             Carrier Detector
       6 ─────────────────────────────────────────── 6
             Data Terminal Ready
      19 ─────────────────────────────────────────── 19
                  0 Volt
       7 ─────────────────────────────────────────── 7
             Shield
         ************************************************ 1
```
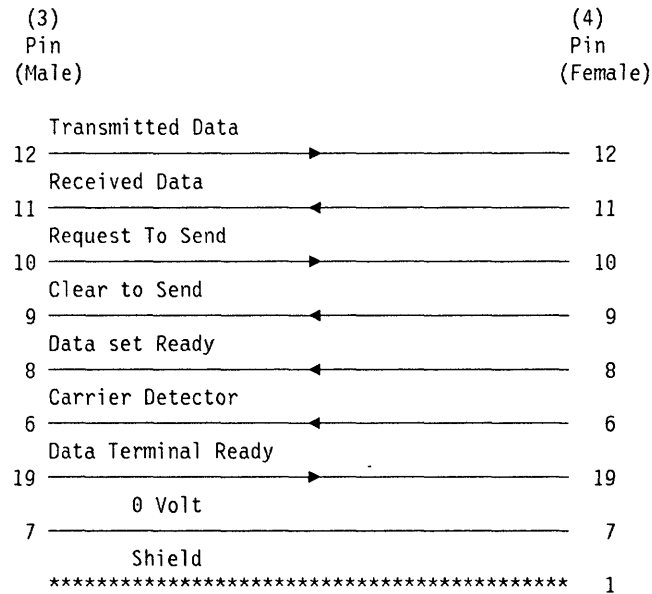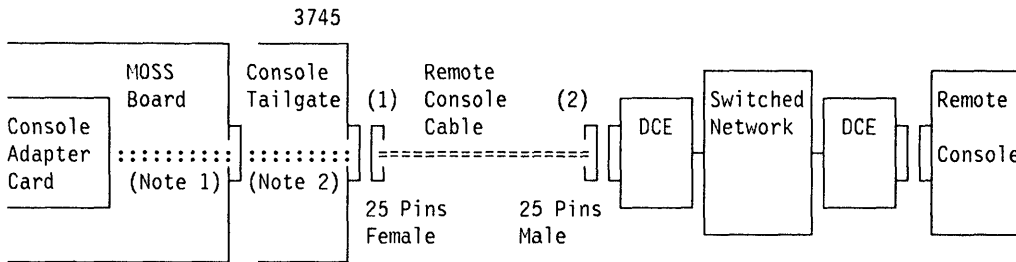
Cable Assembly

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

```
                           3745
┌─────────┬───────────┬───────────┐                ┌──────────┐          ┌──────────┐
│         │   MOSS    │ Console   │   Remote       │          │          │          │
│         │   Board   │ Tailgate  │(1)Console  (2) │ Switched │          │ Remote   │
│ Console │           │           │   Cable     ┌──┤ DCE      ├──┐       │          │
│ Adapter │::::::::::├┤::::::::::│===============│  │ Network  │  │ DCE  │ Console  │
│ Card    │           │           │             └──┤          ├──┘       │          │
│         │ (Note 1) │ (Note 2) │                │          │          │          │
│         │           │           │   25 Pins  25 Pins       │          │          │
└─────────┴───────────┴───────────┘   Female   Male └────────┘          └──────────┘
```
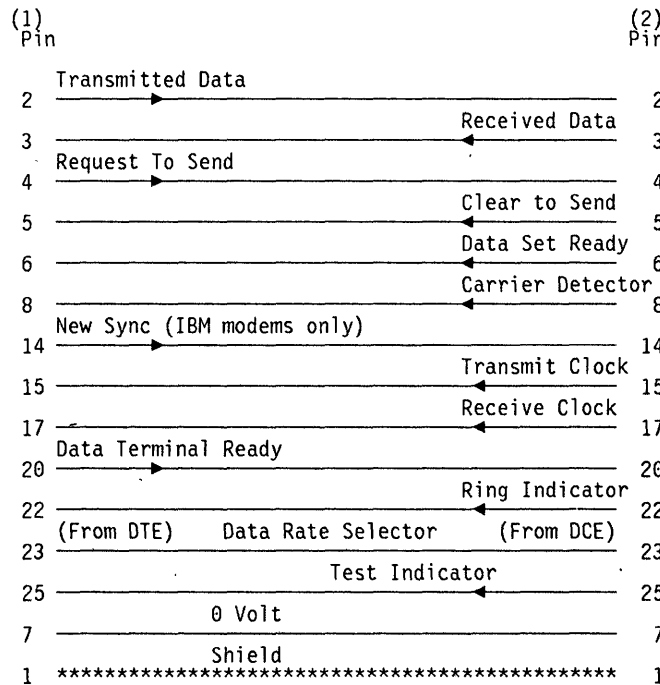
Note 1: Connection is 01A-Y0B5 in 3745 Models 130, 150 and 170
             Connection is 01A-W0B1 in 3745 Models 210, 310, 410, and 610

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

```
     (1)                                                      (2)
     Pin                                                      Pin

         Transmitted Data
     2   ─────────────────────►────────────────────────        2
                                         Received Data
     3   ─────────────────────◄────────────────────────        3
         Request To Send
     4   ─────────────────────►────────────────────────        4
                                         Clear to Send
     5   ─────────────────────◄────────────────────────        5
                                         Data Set Ready
     6   ─────────────────────◄────────────────────────        6
                                         Carrier Detector
     8   ─────────────────────◄────────────────────────        8
         New Sync (IBM modems only)
    14   ─────────────────────►────────────────────────       14
                                         Transmit Clock
    15   ─────────────────────◄────────────────────────       15
                                         Receive Clock
    17   ─────────────────────◄────────────────────────       17
         Data Terminal Ready
    20   ─────────────────────►────────────────────────       20
                                         Ring Indicator
    22   ─────────────────────◄────────────────────────       22
         (From DTE)   Data Rate Selector   (From DCE)
    23   ────────────────────────────────────────────────      23
                                         Test Indicator
    25   ─────────────────────◄────────────────────────       25
                        0 Volt
     7   ────────────────────────────────────────────────       7
                        Shield
     1   *******************************************************  1
```

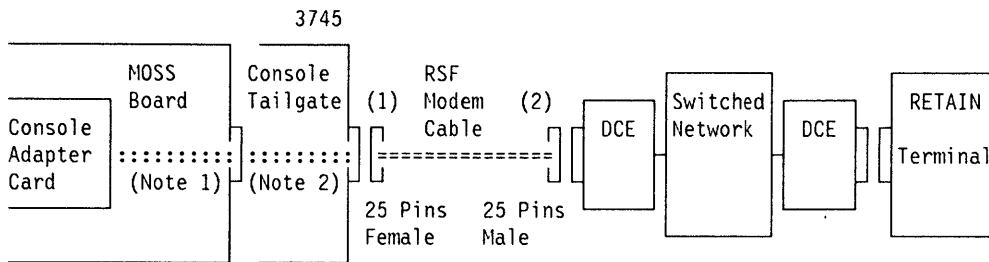**Note:** The MOSS microcode monitors data set ready (DSR) and ring indicator (RI) to know whether the remote or the alternate console tries to log on.

- If DSR is up without RI, the alternate console is connected.
- If RI goes up first without DSR, the remote console is calling.
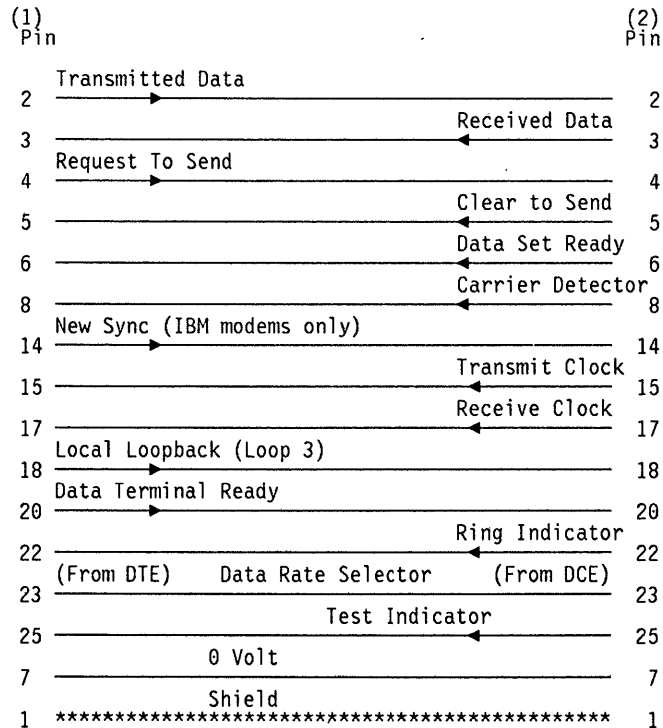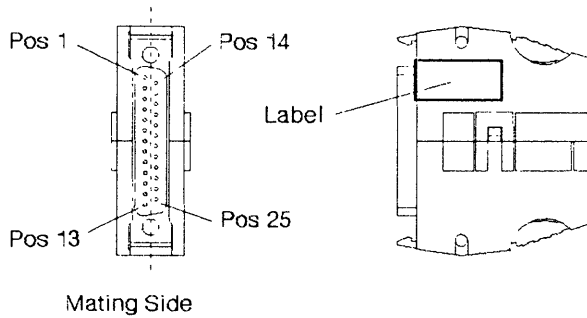
Cable to Modem for RSF

```
                           3745
         ┌──────────┬──────────┐
         │   MOSS   │ Console  │         RSF
         │   Board  │ Tailgate │ (1)    Modem    (2)
┌────────┤          │          │┌┐      Cable     ┌┐  ┌──────┐ ┌──────────┐ ┌──────┐ ┌──────────┐
│Console │          │          │││ ==============  ││  │ DCE  │ │ Switched │ │ DCE  │ │  RETAIN  │
│Adapter │::::::::::│::::::::::│││ ==============  ││  │      │ │ Network  │ │      │ │          │
│Card    │          │          │└┘                └┘  │      │ │          │ │      │ │ Terminal │
│        │ (Note 1) │ (Note 2) │                      └──────┘ └──────────┘ └──────┘ └──────────┘
└────────┴──────────┴──────────┘ 25 Pins   25 Pins
                                 Female     Male
```

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

```
                  (1)                                             (2)
                  Pin                                             Pin
                       Transmitted Data
                    2  ──────────►────────────────────────────────  2
                                                    Received Data
                    3  ────────────────────────────────◄─────────   3
                       Request To Send
                    4  ──────────►────────────────────────────────  4
                                                   Clear to Send
                    5  ────────────────────────────────◄─────────   5
                                                   Data Set Ready
                    6  ────────────────────────────────◄─────────   6
                                                   Carrier Detector
                    8  ────────────────────────────────◄─────────   8
                       New Sync (IBM modems only)
                   14  ──────────►────────────────────────────────  14
                                                   Transmit Clock
                   15  ────────────────────────────────◄─────────   15
                                                   Receive Clock
                   17  ────────────────────────────────◄─────────   17
                       Local Loopback (Loop 3)
                   18  ──────────►────────────────────────────────  18
                       Data Terminal Ready
                   20  ──────────►────────────────────────────────  20
                                                   Ring Indicator
                   22  ────────────────────────────────◄─────────   22
                       (From DTE)    Data Rate Selector    (From DCE)
                   23  ──────────────────────────────────────────   23
                                                   Test Indicator
                   25  ────────────────────────────────◄─────────   25
                                   0 Volt
                    7  ──────────────────────────────────────────   7
                                   Shield
                    1  **********************************************  1
```

Console Wrap Tools


```
Pos 1          Pos 14

                       Label

Pos 13         Pos 25
```

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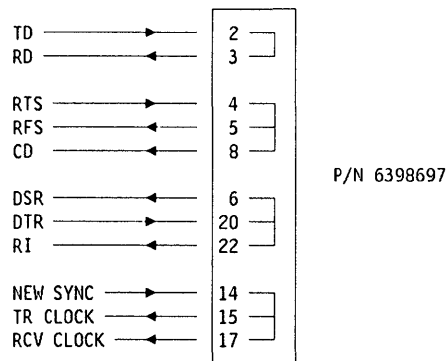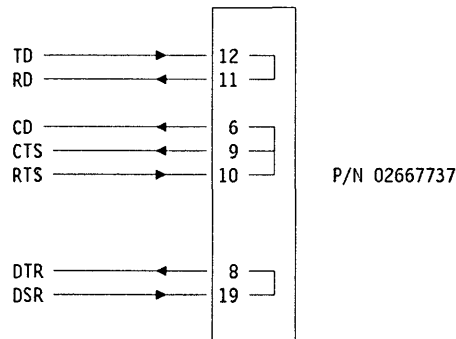
Wrap Tool (P/N 6398697) for Console Tailgate Connectors:

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).
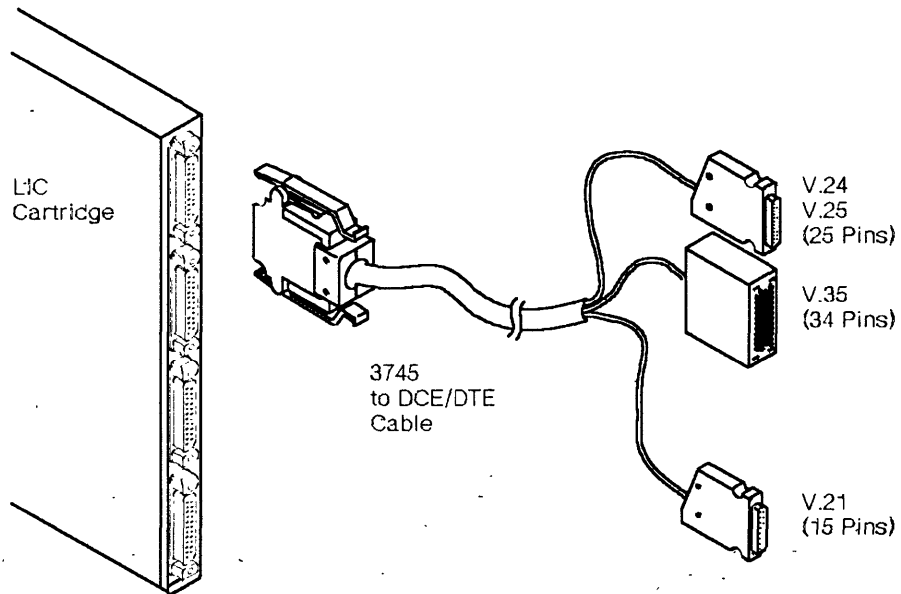
```
TD  ─────────►─────── 2
RD  ─────────◄─────── 3

RTS ─────────►─────── 4
RFS ─────────◄─────── 5
CD  ─────────◄─────── 8          P/N 6398697

DSR ─────────◄─────── 6
DTR ─────────►─────── 20
RI  ─────────◄─────── 22

NEW SYNC ────►─────── 14
TR CLOCK ────◄─────── 15
RCV CLOCK ───◄─────── 17
```

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.

```
TD  ─────────►─────── 12
RD  ─────────◄─────── 11

CD  ─────────◄─────── 6
CTS ─────────◄─────── 9
RTS ─────────►─────── 10         P/N 02667737

DTR ─────────◄─────── 8
DSR ─────────►─────── 19
```

Chapter 2. TSS Interface Cables

LIC1 through LIC4 Interfaces and Cables

LIC
Cartridge

3745
to DCE/DTE
Cable

V.24
V.25
(25 Pins)

V.35
(34 Pins)

V.21
(15 Pins)

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).
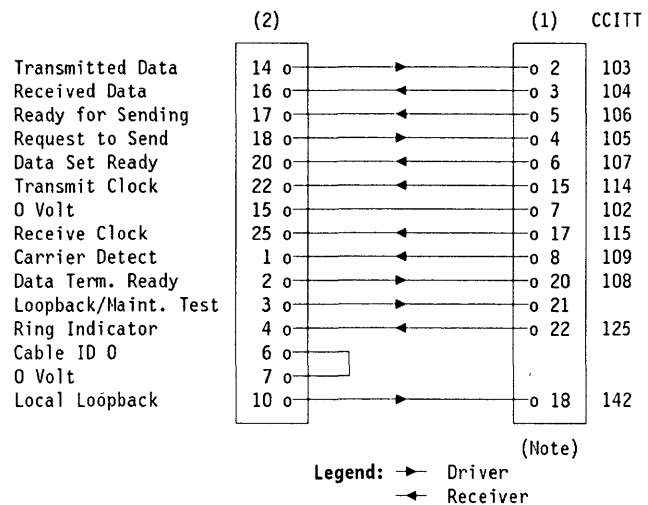
```
  0              (2)              (1)
                                             Telecommunication
LIC 1      LIC Ports: 0, 1,                  ─────v──v──────────
Ports   2  ================== DCE            Line
                2 or 3
  3
        25 Pins          25 Pins
        Male             Male
```
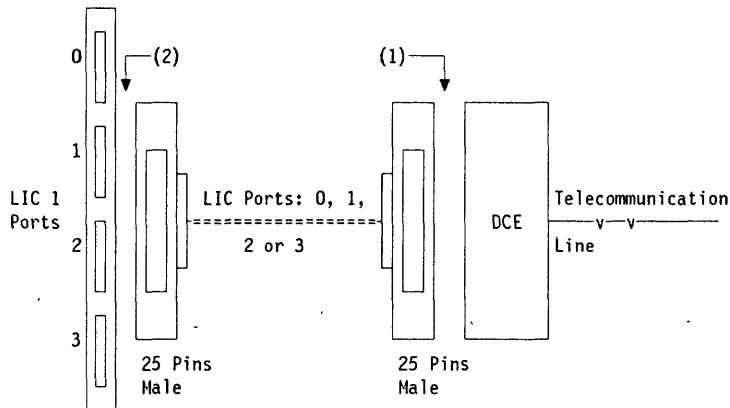
Interchange Circuits

To V.24 DCE (Except Japan NTT)

	(2)	(1)	CCITT
Transmitted Data	14 o	o 2	103
Received Data	16 o	o 3	104
Ready for Sending	17 o	o 5	106
Request to Send	18 o	o 4	105
Data Set Ready	20 o	o 6	107
Transmit Clock	22 o	o 15	114
0 Volt	15 o	o 7	102
Receive Clock	25 o	o 17	115
Carrier Detect	1 o	o 8	109
Data Term. Ready	2 o	o 20	108
Ring Indicator	4 o	o 22	125
Data Rate Selector	5 o	o 23	111
Cable ID 0	6 o		
0 Volt	7 o		
New Sync	9 o	o 14	sp*
Local Loopback	10 o	o 18	141
Test Indicator	12 o	o 25	142

Legend: → Driver
        ← Receiver

To X.21 Bis DCE (Except Japan NTT)

	(2)	(1)	CCITT
Transmitted Data	14 o	o 2	103
Received Data	16 o	o 3	104
Ready for Sending	17 o	o 5	106
Request to Send	18 o	o 4	105
Data Set Ready	20 o	o 6	107
Transmit Clock	22 o	o 15	114
0 Volt	15 o	o 7	102
Receive Clock	25 o	o 17	115
Carrier Detect	1 o	o 8	109
Data Term. Ready	2 o	o 20	108
Loopback/Maint. Test	3 o	o 21	
Ring Indicator	4 o	o 22	125
Cable ID 0	6 o		
0 Volt	7 o		
Local Loopback	10 o	o 18	141
Test Indicator	12 o	o 25	142

Legend: → Driver
        ← Receiver

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)
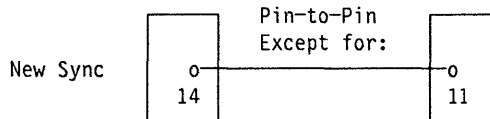
```
                  Pin-to-Pin
              ┌──┐ Except for: ┌──┐
New Sync      │  o─────────────o │
              │14│             │11│
              └──┘             └──┘
```
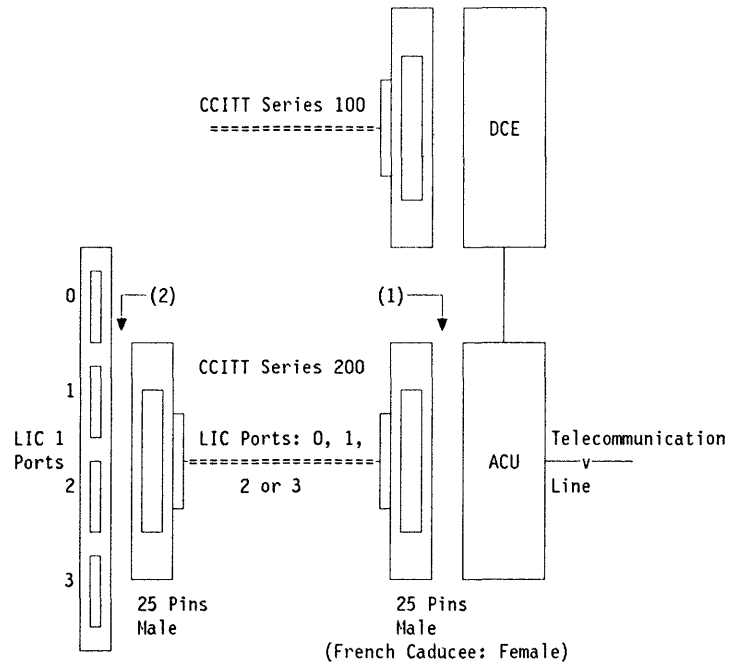
Wrapping

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.
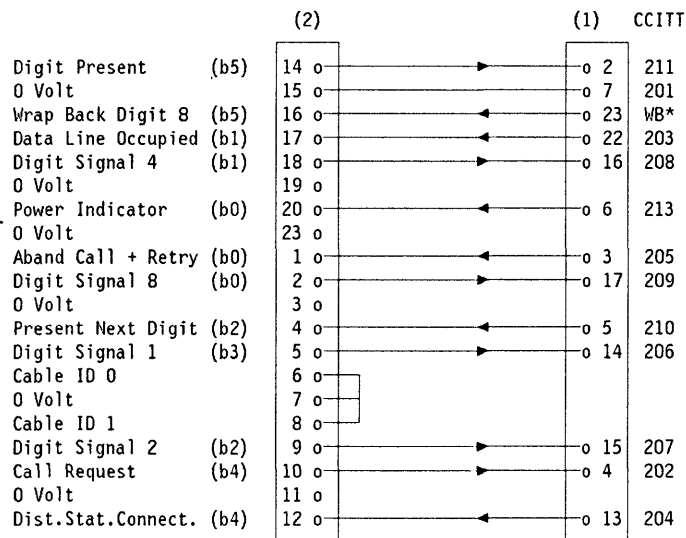
Voltage Levels

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)

	(2)		(1)	CCITT
Transmitted Data	14 o	▶	o 2	103
Received Data	16 o	◀	o 3	104
Ready for Sending	17 o	◀	o 5	106
Request to Send	18 o	▶	o 4	105
Data Set Ready	20 o	◀	o 6	107
Transmit Clock	22 o	◀	o 15	114
0 Volt	15 o		o 7	102
Receive Clock	25 o	◀	o 17	115
Carrier Detect	1 o	◀	o 8	109
Data Term. Ready	2 o	▶	o 20	108
Ring Indicator	4 o	◀	o 22	125
Data Rate Selector	5 o	▶	o 23	111
Cable ID 0	6 o			
0 Volt	7 o			
New Sync	9 o	▶	o 11	
Local Loopback	10 o	▶	o 18	141

(Note)

Legend: ▶ Driver
◀ Receiver

To X.21 Bis DCE (Japan Only)

	(2)		(1)	CCITT
Transmitted Data	14 o	▶	o 2	103
Received Data	16 o	◀	o 3	104
Ready for Sending	17 o	◀	o 5	106
Request to Send	18 o	▶	o 4	105
Data Set Ready	20 o	◀	o 6	107
Transmit Clock	22 o	◀	o 15	114
0 Volt	15 o		o 7	102
Receive Clock	25 o	◀	o 17	115
Carrier Detect	1 o	◀	o 8	109
Data Term. Ready	2 o	▶	o 20	108
Loopback/Maint. Test	3 o	▶	o 21	
Ring Indicator	4 o	◀	o 22	125
Cable ID 0	6 o			
0 Volt	7 o			
Local Loopback	10 o	▶	o 18	142

(Note)

Legend: ▶ Driver
◀ Receiver

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.

Install at (1)

```
                            CCITT
    ┌──►┐
    │   ┌──►┐
    └►│ │   │  ──o 2    103
      └►│   └►      o 3    104

        ┌►│ └►┐
        │ │   │ ┌►┐  o 4    105
        └►│   │ │ │  o 5    106
          └►│ │ └►   o 8    109

              ┌►┐  o 6    107
              └►┘  o 20   108

          ┌──►┐
      ┌►│ vvvv └►┐  o 15   114
      └►┘     └►   o 17   115

                  o 7    102
                  o 18   142
                  o 21
                  o 22   125
```

Male
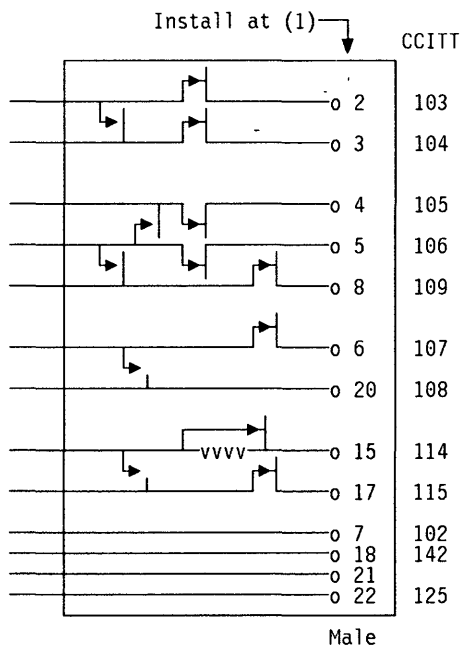
Legend: −vvvv− 1.6 kΩ Resistor

⌐►L Contact normally closed

⌐►L Contact normally open
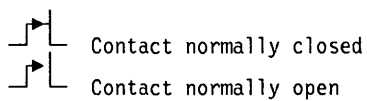
Test Logical Function

The diagram below shows the test function with the switch in the 'test' position.
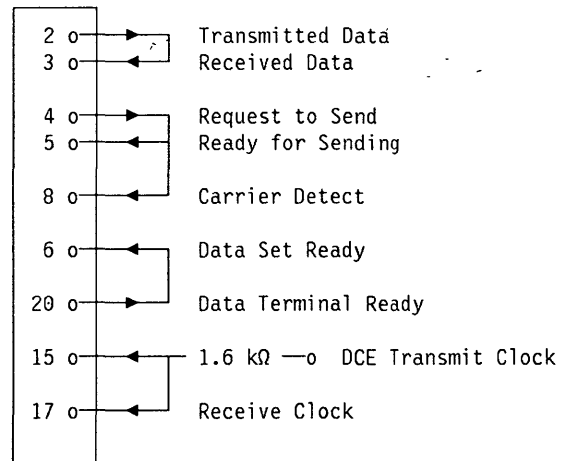
```
2 o──►┐    Transmitted Data
3 o◄──┘    Received Data

4 o──►┐    Request to Send
5 o◄──┘    Ready for Sending

8 o◄───    Carrier Detect

6 o◄──┐    Data Set Ready

20 o──►┘   Data Terminal Ready

15 o◄── 1.6 kΩ ─o  DCE Transmit Clock

17 o◄──┘   Receive Clock
```

Wrapping
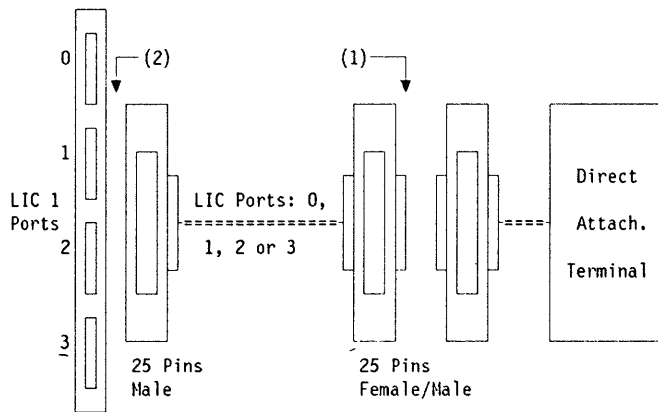
At Cartridge Connector

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.
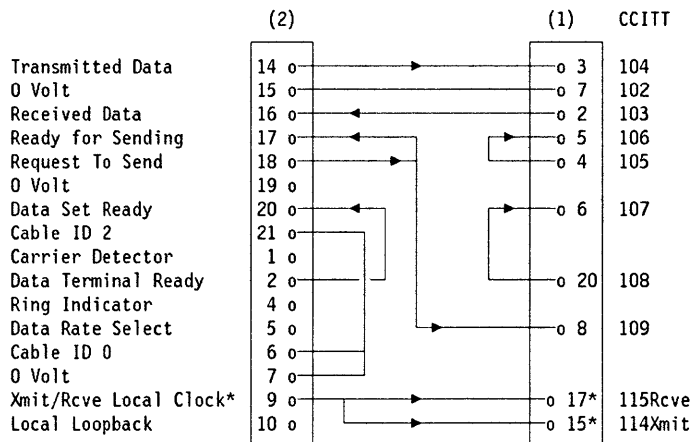
Voltage Levels

See "6.5 Volts" on page 2-31.

LIC Type 1 Auto-Call Unit Interface
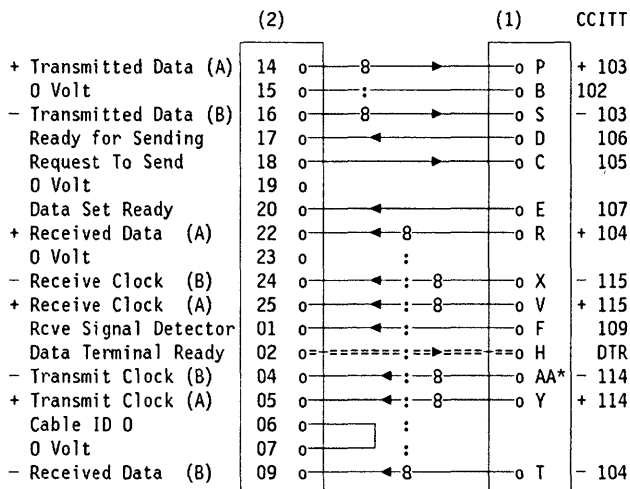
Interface	CCITT V.25 (EIA RS 366)
Number of lines	Up to four

```
                                    ┌───┐┌─────┐
                                    │ ▌ ││     │
               CCITT Series 100     │ ▌ ││ DCE │
               ================═════│ ▌ ││     │
                                    │ ▌ ││     │
                                    └───┘└─────┘
                                               │
   ┌───┐                                       │
   │ ▌ │0   ┌─(2)            (1)─┐              │
   │   │    │                    │             │
   │ ▌ │1   ▼   CCITT Series 200 ▼             │
   │   │  ┌───┐               ┌───┐┌─────┐
LIC 1│ ▌ │  │ ▌ │ LIC Ports: 0, 1, │ ▌ ││     │ Telecommunication
Ports│   │  │   │ ================═ │   ││ ACU │──v──
   2 │ ▌ │  │ ▌ │    2 or 3        │ ▌ ││     │ Line
   │   │  │   │               │   ││     │
   3 │ ▌ │  └───┘               └───┘└─────┘
   └───┘   25 Pins              25 Pins
           Male                 Male
                          (French Caducee: Female)
```

Interchange Circuits

```
                                (2)                    (1)  CCITT
                              ┌─────┐               ┌─────┐
Digit Present      (b5)       │14 o─┼──────►────────┼─o 2 │  211
0 Volt                        │15 o─┼───────────────┼─o 7 │  201
Wrap Back Digit 8  (b5)       │16 o─┼──────◄────────┼─o 23│  WB*
Data Line Occupied (b1)       │17 o─┼──────◄────────┼─o 22│  203
Digit Signal 4     (b1)       │18 o─┼──────►────────┼─o 16│  208
0 Volt                        │19 o │               │     │
Power Indicator    (b0)       │20 o─┼──────◄────────┼─o 6 │  213
0 Volt                        │23 o │               │     │
Aband Call + Retry (b0)       │ 1 o─┼──────◄────────┼─o 3 │  205
Digit Signal 8     (b0)       │ 2 o─┼──────►────────┼─o 17│  209
0 Volt                        │ 3 o │               │     │
Present Next Digit (b2)       │ 4 o─┼──────◄────────┼─o 5 │  210
Digit Signal 1     (b3)       │ 5 o─┼──────►────────┼─o 14│  206
Cable ID 0                    │ 6 o─┤               │     │
0 Volt                        │ 7 o─┤               │     │
Cable ID 1                    │ 8 o─┘               │     │
Digit Signal 2     (b2)       │ 9 o─┼──────►────────┼─o 15│  207
Call Request       (b4)       │10 o─┼──────►────────┼─o 4 │  202
0 Volt                        │11 o │               │     │
Dist.Stat.Connect. (b4)       │12 o─┼──────◄────────┼─o 13│  204
                              └─────┘               └─────┘
```

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)
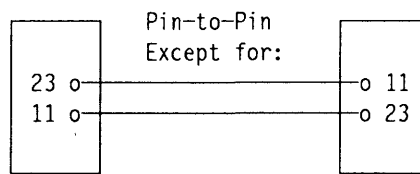
```
            Pin-to-Pin
            Except for:
┌─────────┐              ┌─────────┐
│ 23 o────┼──────┐   ┌───┼──o 11   │
│ 11 o────┼───┐  └───┼───┼──o 23   │
│         │   └──────┘   │         │
└─────────┘              └─────────┘
```

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

```
0 ┌─┐    ┌─(2)
  │ │    ▼
  │ │  ┌──────┐   ┌──────┐     ┌──────┐
1 │ │  │      │   │      │     │ Direct │
  │ │  │      │   │      │     │      │
LIC 1 │ │  LIC Ports: 0, │     │ Attach.│
Ports │ │  ================     │      │
2 │ │  │  1, 2 or 3  │   ════ │ Terminal│
  │ │  │      │   │      │     │      │
  │ │  │      │   │      │     │      │
3 │ │  └──────┘   └──────┘     └──────┘
  └─┘  25 Pins     25 Pins
       Male        Female/Male
```

Interchange Circuits

```
                              (2)          (1)    CCITT
Transmitted Data          14 o────────►────o 3    104
0 Volt                    15 o─────────────o 7    102
Received Data             16 o────◄────────o 2    103
Ready for Sending         17 o────◄──────►─o 5    106
Request To Send           18 o────────►────o 4    105
0 Volt                    19 o
Data Set Ready            20 o────◄──────►─o 6    107
Cable ID 2                21 o
Carrier Detector           1 o
Data Terminal Ready        2 o────────────o 20    108
Ring Indicator             4 o
Data Rate Select           5 o──────►─────o 8     109
Cable ID 0                 6 o
0 Volt                     7 o
Xmit/Rcve Local Clock*     9 o────────►────o 17*   115Rcve
Local Loopback            10 o────────►────o 15*   114Xmit
```

Legend: ─►─ Driver
        ─◄─ Receiver
        *   3745 provides Xmit (transmit) and Rcve (receive)
             clocks to the terminal.

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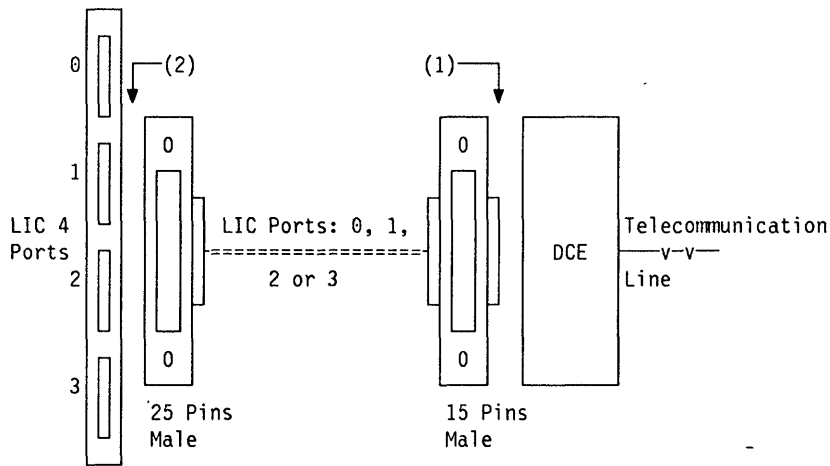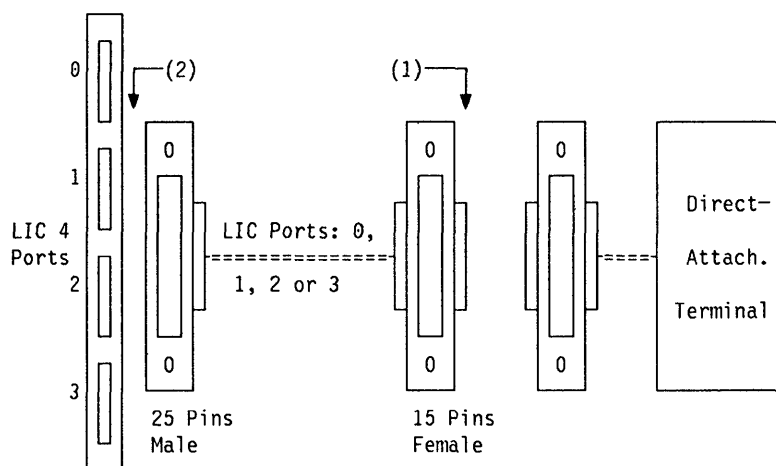See "TSS Wrap Tools" on page 2-28 for pin-to-pin assignment.
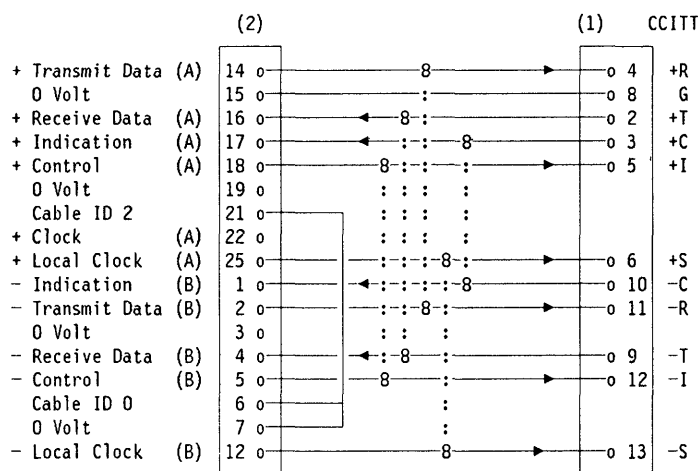
Voltage Levels

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
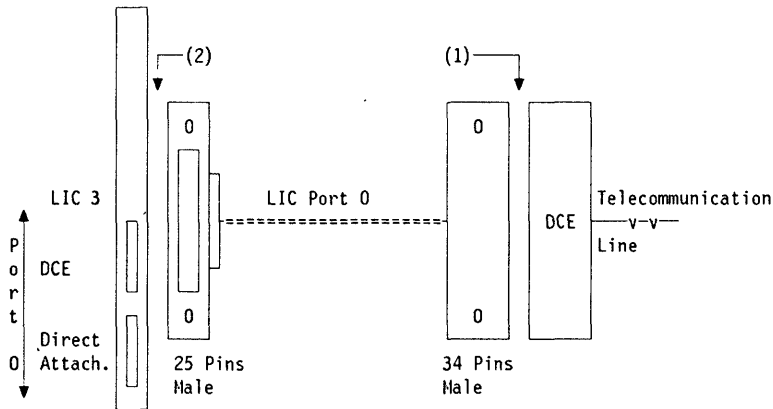
Notes:

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

Interchange Circuits

```
                                      (2)              (1)     CCITT
      + Transmitted Data (A)  14  o——8————————▶—————o P  + 103
        0 Volt               15  o——:————————————o B   102
      - Transmitted Data (B)  16  o——8————————▶—————o S  - 103
        Ready for Sending     17  o——————◀—————————o D   106
        Request To Send       18  o——————————▶—————o C   105
        0 Volt               19  o
        Data Set Ready        20  o——————◀—————————o E   107
      + Received Data  (A)    22  o——————◀—8———————o R  + 104
        0 Volt               23  o        :
      - Receive Clock  (B)    24  o——————◀—:—8—————o X  - 115
      + Receive Clock  (A)    25  o——————◀—:—8—————o V  + 115
        Rcve Signal Detector  01  o——————◀—:———————o F   109
        Data Terminal Ready   02  o=======:==▶====≡=o H   DTR
      - Transmit Clock (B)    04  o——————◀—:—8—————o AA* - 114
      + Transmit Clock (A)    05  o——————◀—:—8—————o Y  + 114
        Cable ID 0            06  o——————:
        0 Volt               07  o——————:
      - Received Data  (B)    09  o——————◀—8———————o T  - 104
```

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	BM 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	BM 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
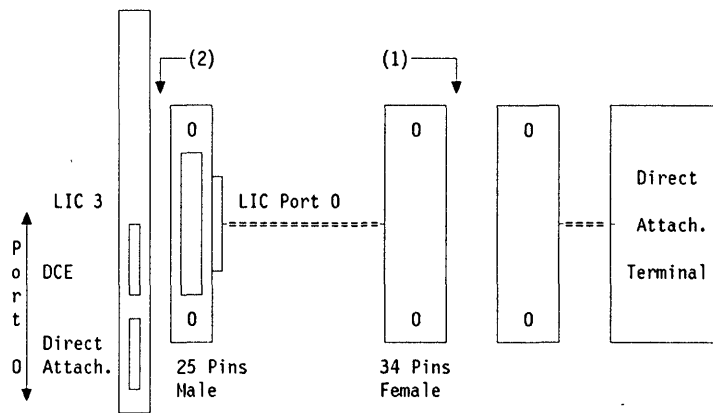
Notes:

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

Interchange Circuits

	(2)		(1)	CCITT
+ Transmitted Data (A)	14 o	—8—	o R	+ RD
0 Volt	15 o	—:—	o B	SG
− Transmitted Data (B)	16 o	—8—	o T	− RD
Ready for Sending	17 o			
Request To Set	18 o	========	o F	RLSD
0 Volt	19 o		o C	RTS
Data Set Ready	20 o		o N	
Cable ID 2	21 o		o D	RFS
+ Received Data (A)	22 o	—8—	o P	+ TD
0 Volt	23 o			
+ Rcve Clock Local (B)	24 o	—8—	o V	+ RSET
− Rcve Clock Local (A)	25 o	—8—	o X	− RSET
Rcve Signal Detector	1 o		o H	
Data Terminal Ready	2 o	=======	o E	DSR
+ Transmit Ck Local (B)	4 o	—8—	o Y	+ TSET
− Transmit Ck Local (A)	5 o	—8—	o AA*	− TSET
Cable ID 0	6 o			
0 Volt	7 o			
− Received Data (B)	9 o	—8—	o S	− TD

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

```
  0                                                                    
         ┌─(2)                    (1)─┐                                 
         ▼                          ▼                                   
       ┌───┐                      ┌───┐                                 
       │ 0 │                      │ 0 │                                 
  1    │   │                      │   │     ┌──────┐                     
LIC 4  │   │  LIC Ports: 0, 1,    │   │     │      │ Telecommunication   
Ports  │   │  ================    │   │ DCE │      │ ──v─v──             
  2    │   │    2 or 3            │   │     │      │ Line                
       │ 0 │                      │ 0 │     └──────┘                     
  3    └───┘                      └───┘                                 
       25 Pins                    15 Pins                               
       Male                       Male                                  
```

Interchange Circuits

```
                          (2)              (1)   CCITT
+ Transmit Data  (A)   14 o────────8────────o 2   +T
  0 Volt               15 o────────:─────────o 8    G
+ Receive Data   (A)   16 o─────8──:─────────o 4   +R
+ Indication     (A)   17 o──8──:──:─────────o 5   +I
+ Control        (A)   18 o──:──:──:─────────o 3   +C
  0 Volt               19 o   :  :  :
+ Clock          (A)   22 o──:──:──:──8───────o 6   +S
  0 Volt               23 o   :  :  :  :
+ Local Clock          25 o   :  :  :  :
- Indication     (B)    1 o──8──:──:──:───────o 12  -I
- Transmit Data  (B)    2 o────:──8──:─────────o 9  -T
  0 Volt                3 o      :     :
- Receive Data   (B)    4 o─────8────:────────o 11  -R
- Control               5 o──────────:────────o 10  -C
  Cable ID 0            6 o─┐        :
  0 Volt                7 o─┘        :
- Clock          (B)   10 o──────────8────────o 13  -S
- Local Clock    (B)   12 o
```

Legend: -8- Twisted pair
        -►   Driver
        -◄   Receiver

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.
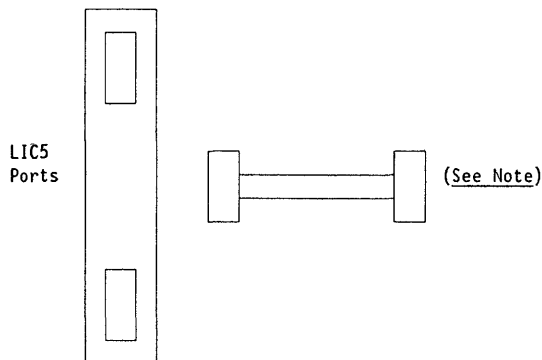
Voltage Levels

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


```
                                (2)                    (1)   CCITT
+ Transmit Data (A)  14 o------------8------------►------o  4   +R
  0 Volt             15 o----------------:----------------o  8    G
+ Receive Data  (A)  16 o------◄--8-:---------------------o  2   +T
+ Indication    (A)  17 o------◄--:-:--8-------------------o  3   +C
+ Control       (A)  18 o--------8-:-:--:---------►--------o  5   +I
  0 Volt             19 o            :  :  :     :
  Cable ID 2         21 o            :  :  :     :
+ Clock         (A)  22 o            :  :  :     :
+ Local Clock   (A)  25 o------:-:-:-8-:-------►--------o  6   +S
- Indication    (B)   1 o----◄-:-:-:-:--8-----------------o 10   -C
- Transmit Data (B)   2 o------:-:-8-:--------►-----------o 11   -R
  0 Volt              3 o            :  :     :
- Receive Data  (B)   4 o------◄-:-8--:-------------------o  9   -T
- Control       (B)   5 o--------8------:---------►--------o 12   -I
  Cable ID 0          6 o--|           :
  0 Volt              7 o--|           :
- Local Clock   (B)  12 o--------------8---------►--------o 13   -S
```

Legend: -8- Twisted pair
        ─►─ Driver
        ─◄─ Receiver

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 EMEA)	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

```
  0 |                  ┌─(2)              (1)─┐
    |        ┌───▼──┐              ┌───▼──┐  ┌──────┐
    |        │ 0    │              │ 0    │  │      │ Telecommunication
LIC 4       │  ┌─┐ │  LIC Port 0  │  ┌─┐ │  │ DCE  │──v-v──
    |        │  │ │ │==============│  │ │ │  │      │ Line
    |        │  └─┘ │              │  └─┘ │  │      │
    |        │ 0    │              │ 0    │  └──────┘
    |        └──────┘              └──────┘
           25 Pins               15 Pins
           Male                  Male
```

Interchange Circuits

```
                          (2)                    (1)  CCITT
  + Transmit Data  (A)  14 o────────8────────────o 2   +T
    0 Volt              15 o────────:────────────o 8    G
  + Receive Data   (A)  16 o────8──:─────────────o 4   +R
  + Indication     (A)  17 o──8─:─:─────────────o 5   +I
  + Control        (A)  18 o──:─:─:─────────────o 3   +C
    0 Volt              19 o   : : :
  + Clock          (A)  22 o──:─:─:──8──────────o 6   +S
  + Local Clock         25 o   : : :  :
  - Indication     (B)   1 o──8─:─:──:──────────o 12  -I
  - Transmit Data  (B)   2 o────:─8──:─────────o 9   -T
    0 Volt               3 o      :     :
  - Receive Data   (B)   4 o────8────:─────────o 11  -R
  - Control              5 o─────────:─────────o 10  -C
    Cable ID 0           6 o─┐       :
    0 Volt               7 o─┘       :
    Cable ID 1           8 o         :
  - Clock          (B)  10 o─────────8──────────o 13  -S
  - Local Clock    (B)  12 o
```
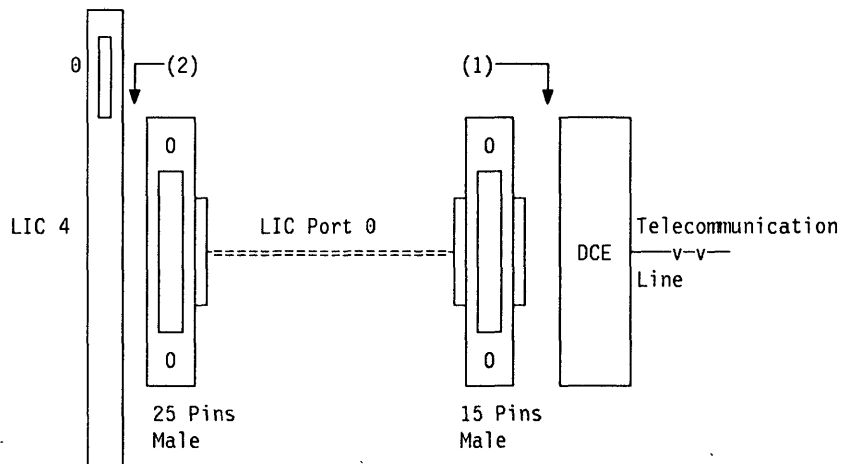
Legend: -8- Twisted pair
        ►- Driver
        ◄- Receiver

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)	4942 (LIC4B)	1606	03F4914 (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), 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


```
                                         (2)              (1)   CCI
    + Transmit Data   (A)    14 o────────8───────►──────o 2    +T
      0 Volt                 15 o──────────:────────────o 8     G
    + Receive Data    (A)    16 o────◄───:─8────────────o 4    +R
    + Indication      (A)    17 o────◄     : :
    + Control         (A)    18 o────┐     : :
      0 Volt                 19 o          : :
    + Clock           (A)    22 o────◄───:─:─8──────────o 6    +S
    + Local Clock     (A)    25 o          : : :
    - Indication      (B)     1 o───◄      : : :
    - Transmit Data   (B)     2 o────────8─:─:─────►─────o 9    -T
    - Receive Data    (B)     4 o───◄───8─:───────────o 11     -R
    - Control         (B)     5 o───►        :
      Cable ID 0              6 o─┐          :
      0 Volt                  7 o─┘          :
    - Clock           (B)    10 o────◄───────8─────────o 13    -S
      0 Volt                 11 o
    - Local Clock     (B)    12 o
```
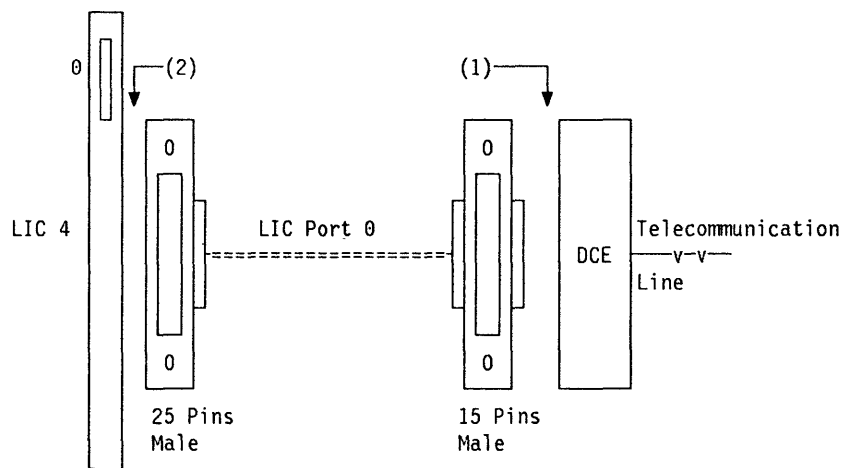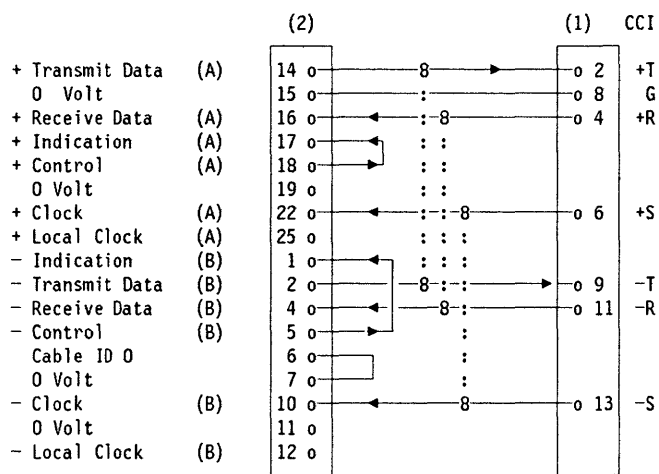
Legend: ─8─ Twisted pair
        ─►─ Driver
        ─◄─ Receiver

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 (EMEA)	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

```
                              (2)                        (1)   CCITT
        + Transmit Data  (A)  14 o─────────────8─────────────o 4  +R
            0 Volt            15 o────────────:─────────────o 8   G
        + Receive Data   (A)  16 o──────◄───8─:─────────────o 2  +T
        + Indication     (A)  17 o──────◄─:─:──8────────────o 3  +C
        + Control  (A)        18 o───────8─:─:─:─────►───────o 5  +I
            0 Volt            19 o         : : :       :
            Cable ID 2        21 o         : : :       :
        + Clock          (A)  22 o         : : :       :
            0 Volt            23 o         : : :       :
        + Local Clock    (A)  25 o────────:─:─:─8─:────►──────o 6  +S
        - Indication     (B)   1 o──────◄─:─:─:─:─8──────────o 10 -C
        - Transmit Data  (B)   2 o──────────:─:─8─:────►──────o 11 -R
        - Receive Data   (B)   4 o──────◄─:─8──:──────────o 9  -T
        - Control        (B)   5 o────────8──:──────►───────o 12 -I
            Cable ID 0         6 o─┐                  :
            0 Volt             7 o─┘                  :
            Cable ID 1         8 o                    :
        - Clock          (B)  10 o                    :
            0 Volt            11 o                    :
        - Local Clock    (B)  12 o─────────────8────────►──────o 13 -S
```

Legend: –8– Twisted pair
       –►– Driver
       –◄– Receiver

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 EMEA)	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

```
┌────────┐
│   ┌─┐  │    ┌─┐
│   │ │  │    │ ├───────//───────  To Telecommunication Line
│   └─┘  │    └─┘
│ 3745   │
│ LICs 5/6│
│Cartridge│
│   ┌─┐  │    ┌─┐
│   │ │  │    │ ├───────//───────  To Telecommunication Line
│   └─┘  │    └─┘                  (LIC5 only)
└────────┘
```
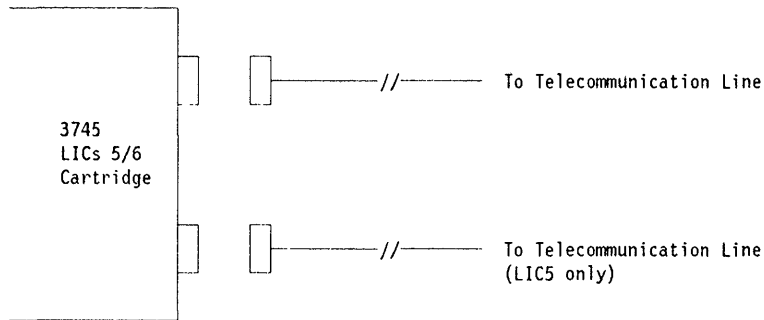
The 3745 provides line cables to the customer's telecommunication socket (see
Power Supply and Telecommunication Connections for IBM Modems,
GA33-0054).

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

```
┌──────┐
│ ┌──┐ │
│ │  │ │
│ └──┘ │
│      │        ┌─┐         ┌─┐
│ LIC5 │        │ ├─────────┤ │   (See Note)
│ Ports│        └─┘         └─┘
│      │
│ ┌──┐ │
│ │  │ │
│ └──┘ │
└──────┘
```

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
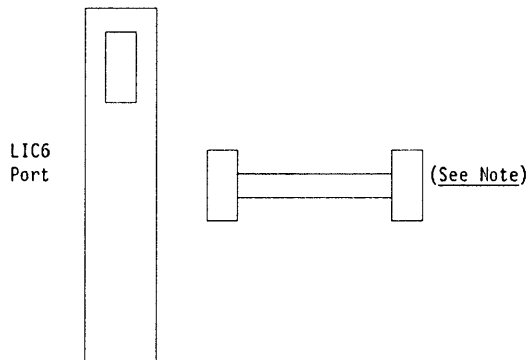
LIC6
Port

(See Note)

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


```
RLSD                  1  o
DTR            DR     2  o
RI                    4  o
DRS            DR     5  o
0 Volt               7  o
New Sync       DR     9  o
Local Loopback DR    10  o
                     11  o
TI                   12  o
                     13  o
Xmit Data      DR    14  o
                     15  o
Rcve Data            16  o
RFS                  17  o
RTS            DR    18  o
DSR                  20  o
Cable ID 2           21  o
Xmit Clock  -        22  o
Rcve Clock           25  o
```
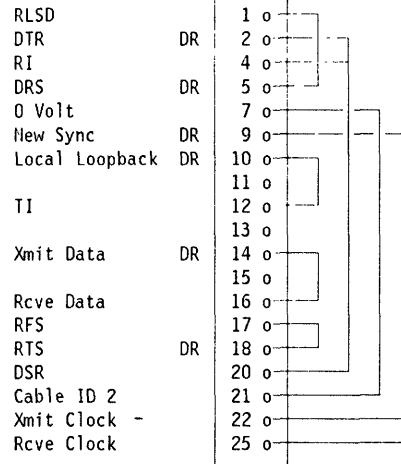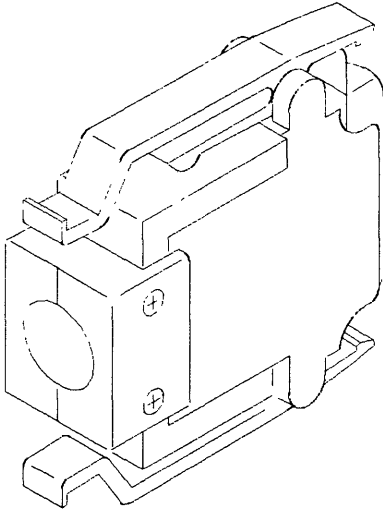
Wrap Tool PN 65X8928

For LIC 3


```
DCRLSD           1  o              o  1   DCRLSD
DTR              2  o              o  2   DTR

--Xmit Clock     4  o--8--         o  4   -Xmit Clock
                    :
+Xmit Clock      5  o--8--         o  5   +Xmit Clock
0 Volt           7  o              o  7   0 Volt
Cable ID 1       8  o              o  8   Cable ID 1
-Rcve Data       9  o              o  9   -Rcve Data
Local Loopback  10  o              o 10   Local Loop
TI              12  o              o 12   TI
+Xmit Data      14  o--8--         o 14   +Xmit Data
-Xmit Data      16  o--8--         o 16   -Rcve Data
RFS             17  o              o 17   RFS
RTS             18  o              o 18   RTS
DSR             20  o              o 20   DSR
Cable ID 2      21  o              o 21   Cable ID 2
+Rcve Data      22  o              o 22   +Rcve Data
-Rcve Clock     24  o--8--         o 24   -Rcve Clock
                    :
+Rcve Clock     25  o--8--         o 25   +Rcve Clock
```

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

```
1 o──┐      Receive 1
2 o──┼──┐   Receive 2
     │  │
     │  │
7 o──┘  │   Transmit 1
8 o─────┘   Transmit 2
```

PKD Interface

```
┌──────────┐        ┌─┐
│          │        └─┤
│          │          │
│ LIC 5/6  │      ┌───┴───┐
│          │      │       │
│          │    ┌─┘  PKD  └─┐
│          │    │           │
└──────────┘    └───────────┘
```
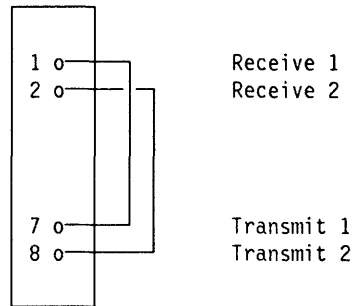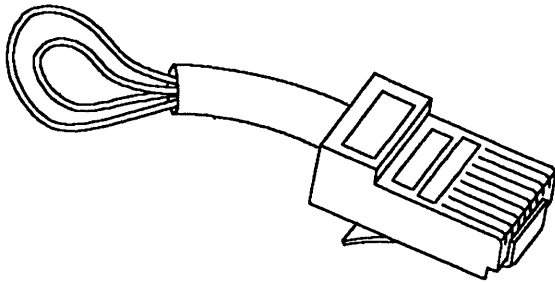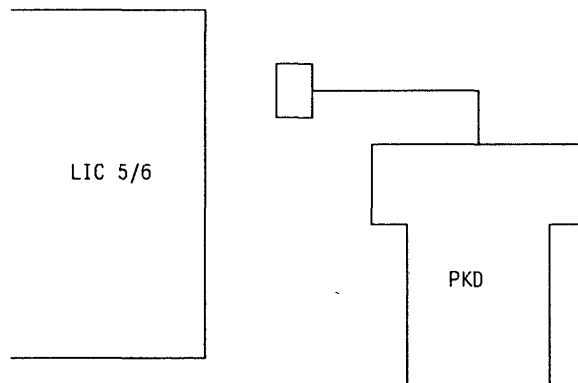
Connector And Pin Assignment

```
+ Line from DCE  ──────┤  6

- Line to DCE    ──────┤  5

  Frame Ground   ──────┤  4

  Signal Ground  ──────┤ . 3

- Reset          ──────┤  2

+ 5 V            ──────┤  1
```

PT2/3 Interface

```
┌──────────────┐                              ┌──────────────┐
│              │    ┌──┐  ┌──┐  ┌───┐          │              │
│   LIC 5/6    │────┤  ├──┤  │  │   ├──────────│    PT2/3     │
│              │    └──┘  └──┘  └───┘          │              │
│              │         ▲                     │              │
│              │         │                     │              │
└──────────────┘         │                     └──────────────┘
                         │
            Adapter Cable (P/N 11F4816, provided with the 3745)
```
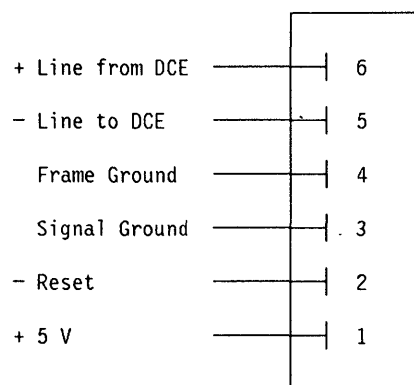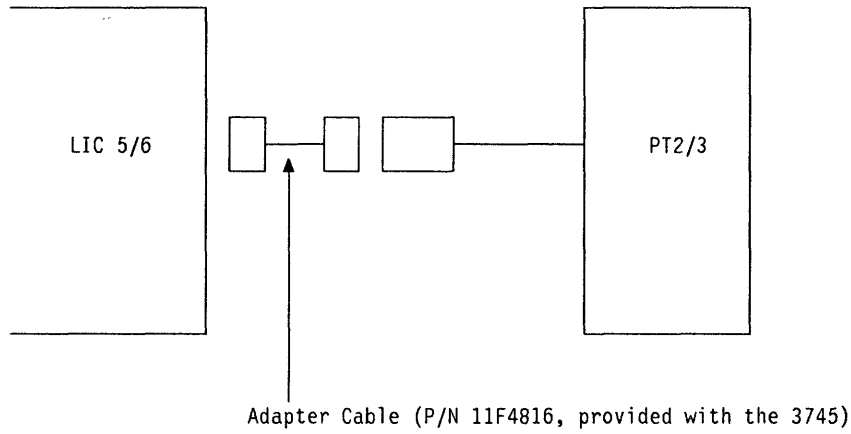
Note: When using the PT2/3 device, the SLT/VTL switch must be set to ON.

Pin Assignments on Adapter Cable

```
                    Connector at LIC Side          Connector at PT2/3 Side
                          A      B
                       ┌────────────┐               ┌────────────┐
    0 Volt      ───────┤─o1         │               │        7o──┤──────── 0 Volt
                       │            │               │            │
    Xmit Data   ───────┤─o2         │               │        2o──┤──────── Xmit Data
                       │            │               │            │
    Xmit Clock  ───────┤─o3         │               │       15o──┤──────── Xmit Clock
                       │            │               │            │
    RTS         ───────┤─o4         │               │        4o──┤──────── RTS
                       │            │               │            │
    CD          ───────┤ o5         │               │        8o──┤──────── CD
                       │            │               │            │
    Not Used    ───────┤────────o1──┤──/ /──────────┤            │
                       │            │  / /           │            │
    Rcve Data   ───────┤────────o2──┤───────────────┤        3o──┤──────── Rcve Data
                       │            │               │            │
    Rcve Clock  ───────┤────────o3  │               │       17o──┤──────── Rcve Clock
                       │            │               │            │
    RFS         ───────┤────────o4  │               │        5o──┤──────── RFS
                       │            │               │            │
    DTR         ───────┤────────o5  │               │       20o──┤──────── DTR
                       └────────────┘               └────────────┘
```
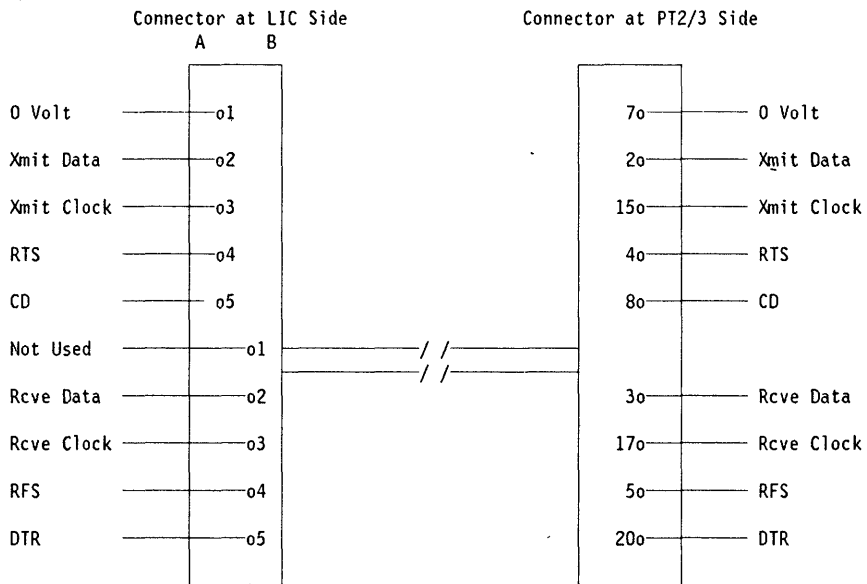
Driver/Receiver Typical Voltage Operating Ranges

3 Volts

```
        Driver                         Receiver
——————————————— + 6 V        + 6 V ———————————————
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
——————————————— + 2.8 V            %%%%%%%%%%%%%
                                   %%%%%%%%%%%%%
                         + 0.3 V ———————————————
                         - 0.3 V ———————————————
                                   %%%%%%%%%%%%%
——————————————— - 2.8 V            %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
——————————————— - 6 V        - 6 V ———————————————
```

6.5 Volts

```
        Driver                         Receiver
——————————————— + 15 V       + 15 V ———————————————
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
                    + 6.5 V
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
——————————————— + 5 V              %%%%%%%%%%%%%
                             + 3 V ———————————————
                    Typical
                             - 3 V ———————————————
——————————————— - 5 V              %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
                    - 6.5 V
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
——————————————— - 15 V       - 15 V ———————————————
```

0.55 Volt (V.35 Balanced Circuits)

```
        Driver                         Receiver
——————————————— + 0.66 V     + 12 V ———————————————
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
——————————————— + 0.44 V           %%%%%%%%%%%%%
                                   %%%%%%%%%%%%%
                         + 0.3 V ———————————————
                         - 0.3 V ———————————————
                                   %%%%%%%%%%%%%
——————————————— - 0.44 V           %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
%%%%%%%%%%%%%                      %%%%%%%%%%%%%
——————————————— - 0.66 V     - 12 V ———————————————
```
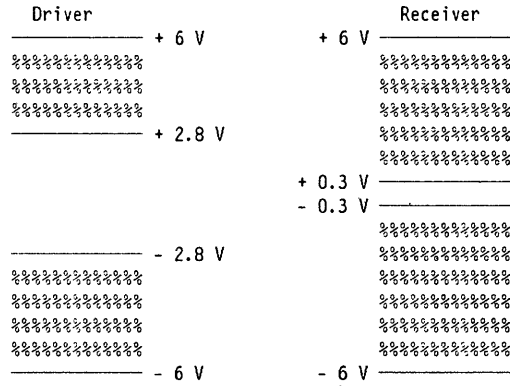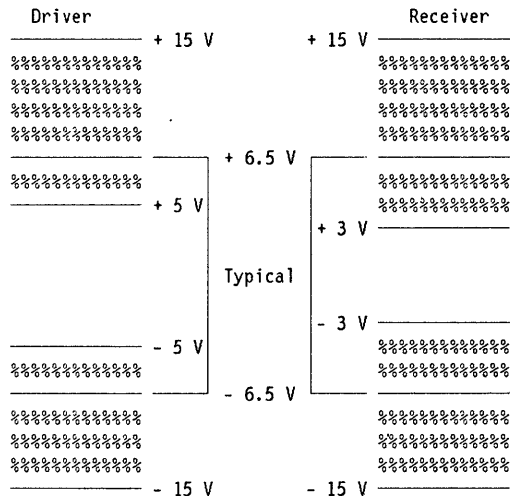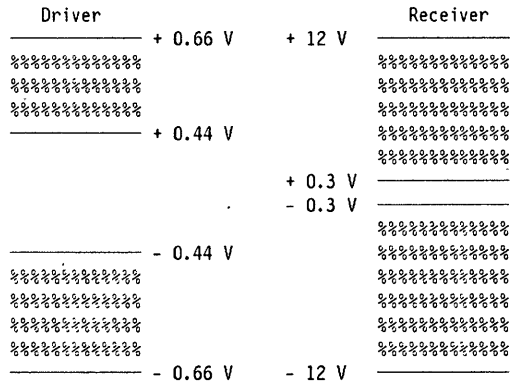
Between wires A and B of given signal for:

± Transmitted data
± Received data
± Receiver signal element timing
± Transmitter signal element timing

Chapter 3. HPTSS Interface Cables

DTE/DCE Cable Connectors
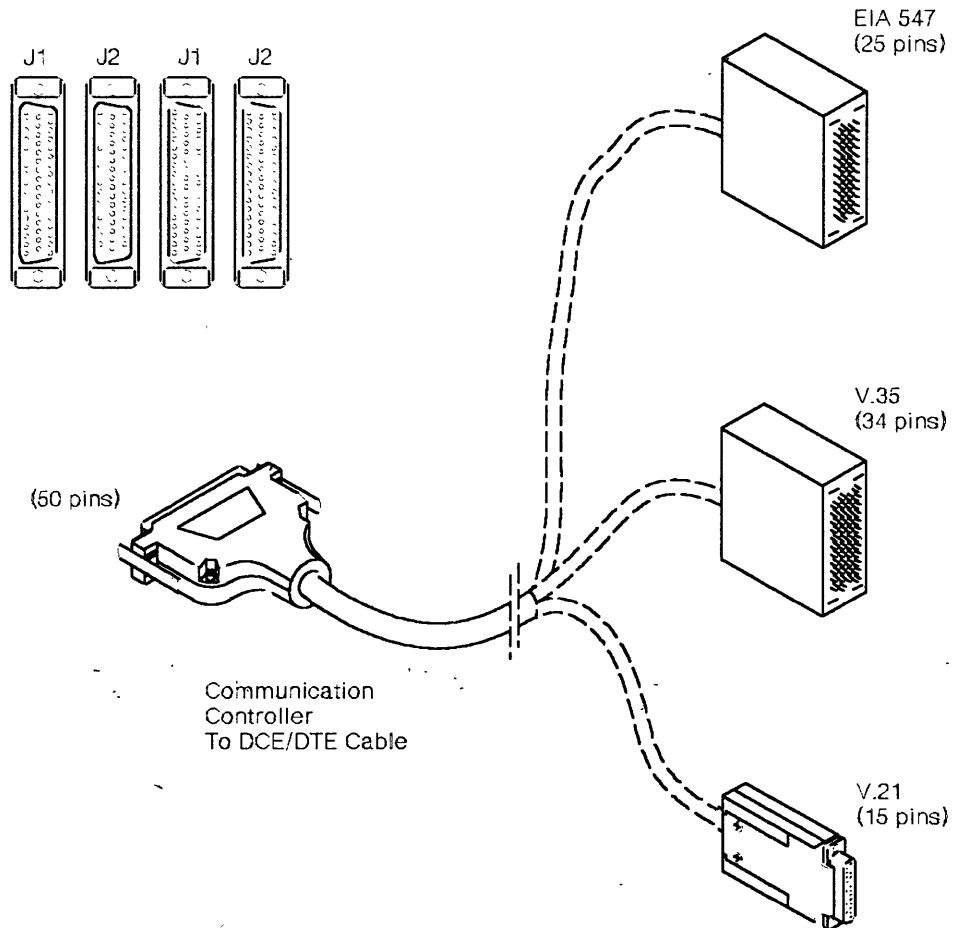
For cable ordering, see the HPTSS cable descriptions in the following pages.

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).
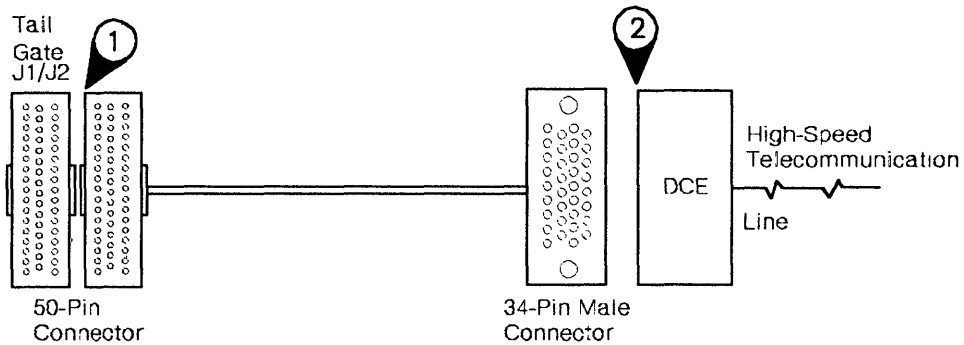
Interchange Circuits
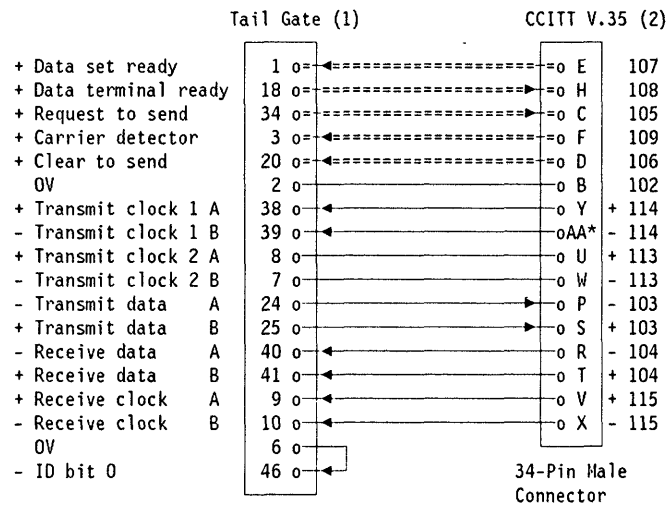
Legend: == Shielded wires
* AA is also named 'a'

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

50-Pin Connector   34-Pin Female Connector   34-Pin Male Connector

Interchange Circuits

```
                          Tail Gate (1)              CCITT V.35 (2)
+ Data set ready          1 o=|=◄==┐           ┌─o E    107
+ Data terminal ready    18 o=|=====┘           ◄──o H    108
+ Request to send        34 o=|=====┐           ┌──o C    105
+ Clear to send          20 o=|=◄==┘           └──►o D    106
  0V                      2 o────────────────────o B    102
+ Transmit clock2  A      8 o────────8──────────►o V  + 115
- Transmit clock2  B      7 o────────8──────────►o X  - 115
- Transmit data    A     24 o────────8──────────►o R  - 104
+ Transmit data    B     25 o────────8──────────►o T  + 104
- Receive data     A     40 o◄───────8───────────o P  - 103
+ Receive data     B     41 o◄───────8───────────o S  + 103
- Rcve l.att.clock B     26 o────────8──────────►oAA* - 114
+ Rcve l.att.clock A     27 o────────8──────────►o Y  + 114
+ Receive clock    A      9 o◄───────────────────o U  + 113
- Receive clock    B     10 o◄───────────────────o W  - 113
  0V                      6 o┐
- ID bit 0               46 o┤◄         15-Pin Female
- ID bit 2               15 o┘          Connector
```

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

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

Tail Gate J1/J2 (1)   (2)

50-Pin Connector

15-Pin Male Connector

High-Speed Telecommunication Line

DCE

Interchange Circuits

```
                        Tail Gate (1)          CCITT X.21 (2)
       0V                 2 o─────────────────────o 8   | G
     - Modem clock   B   42 o◄─────────8──────────o 13  | - S
     + Modem clock   A   43 o◄─────────8──────────o 6   | + S
     - Transmit data A   28 o─────────8────────►──o 2   | - T
     + Transmit data B   29 o─────────8────────►──o 9   | + T
     - Receive data  A   44 o◄────────8───────────o 4   | - R
     + Receive data  B   45 o◄────────8───────────o 11  | + R
     + Control       A   14 o──────────8───────►──o 3   | + C
     - Control       B   13 o──────────8───────►──o 10  | - C
     + Indicator     A   30 o◄─────────8──────────o 5   | + I
     - Indicator     B   31 o◄─────────8──────────o 12  | - I
       0V                 6 o─┐
     - ID bit 0          46 o◄┤
                                            15-Pin Male
       X.21              16 o◄─┘            Connector
```
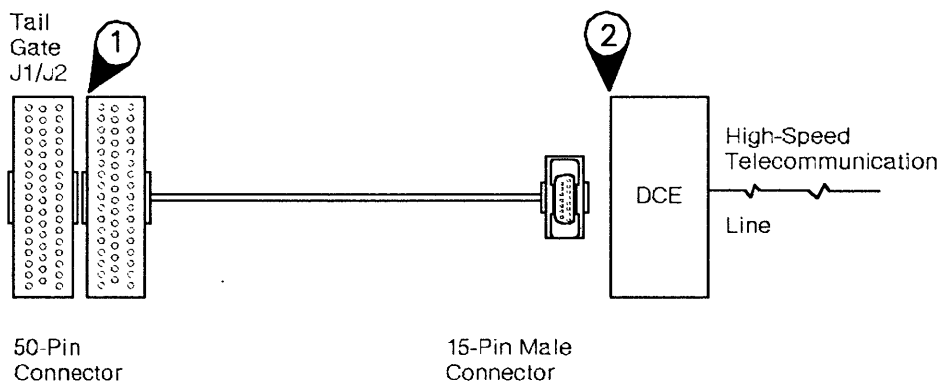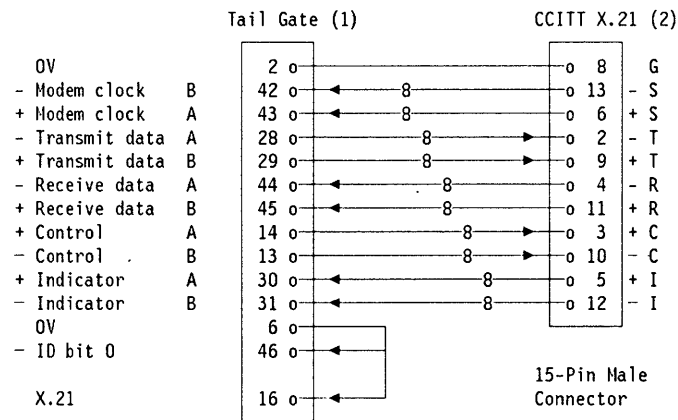
Legend: 8   Twisted wires

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
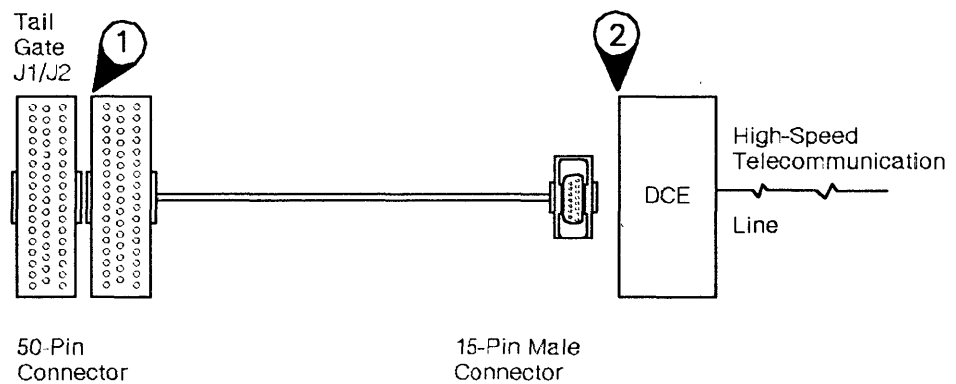
Interchange Circuits
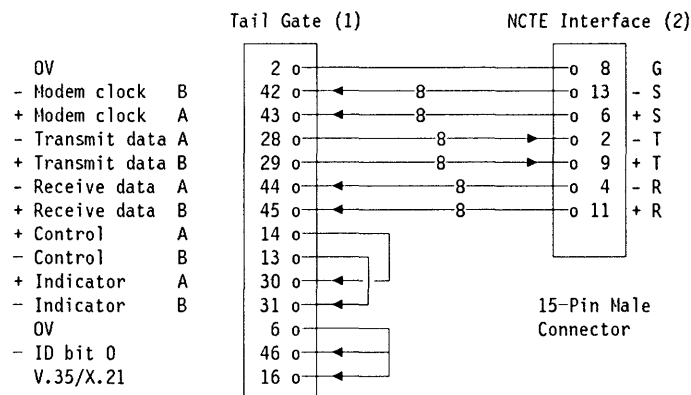
Legend: 8   Twisted wires

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
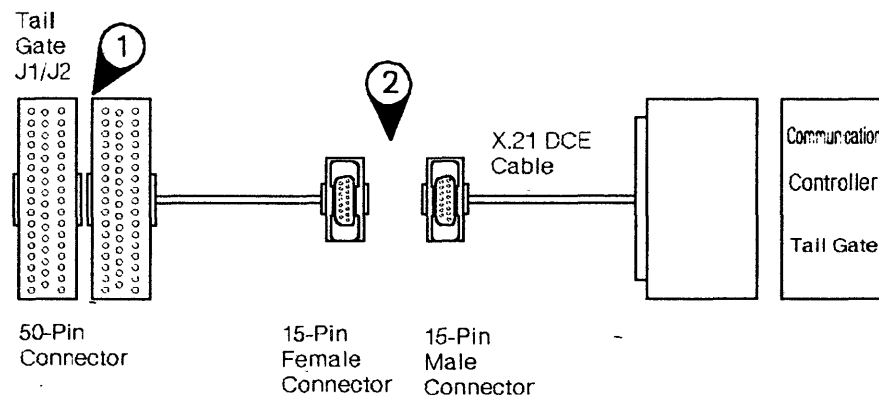
Interchange Circuits
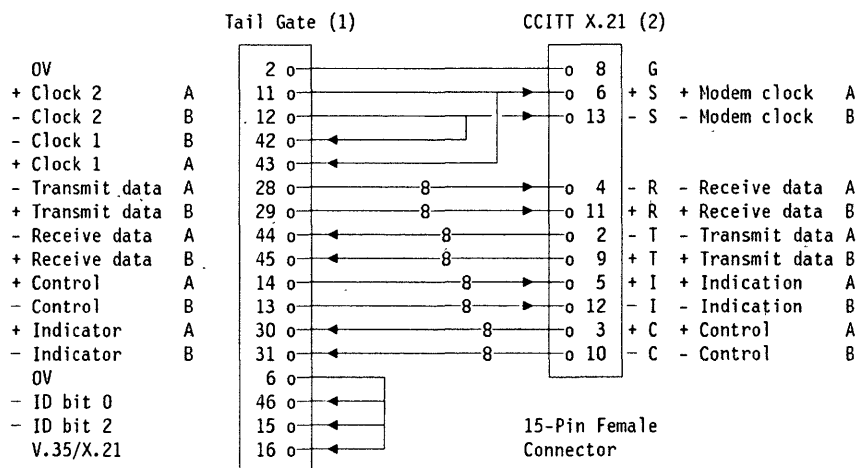
Legend: 8 Twisted wires

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
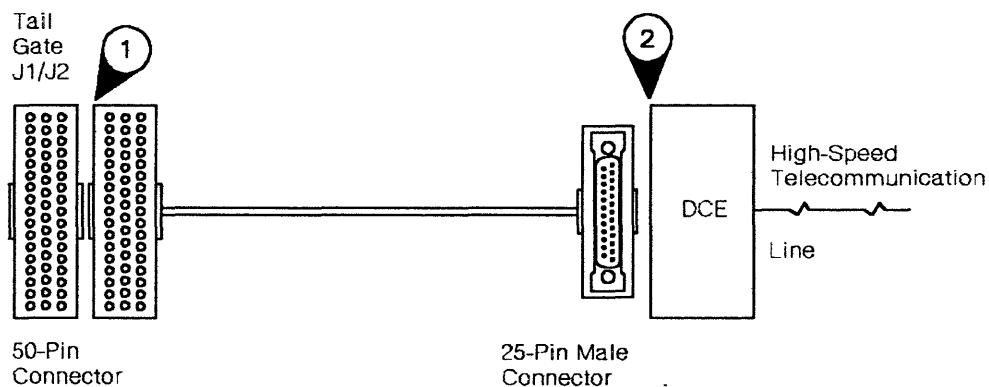
Interchange Circuits
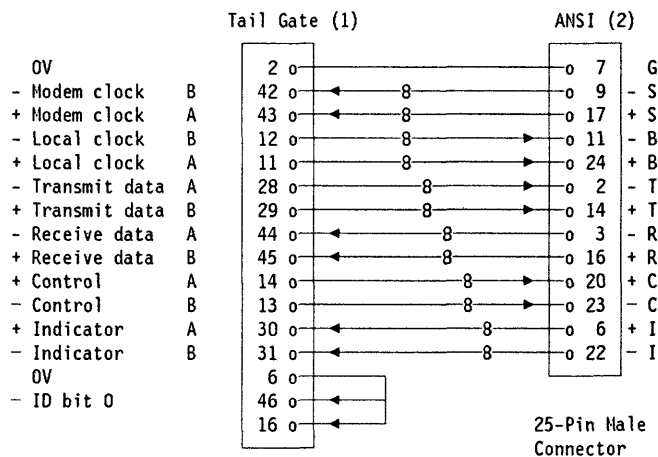
Legend: 8 Twisted wires

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

Tail
Gate
J1/J2

1   2

EIA-547 DCE
Cable

Communication
Controller

Tail Gate

50-Pin
Connector

25-Pin
Female
Connector

25-Pin
Male
Connector

Interchange Circuits

	Tail Gate (1)		ANSI (2)	
0V	2		7	G
- Local clock A	43		24	+ S + Modem clock A
+ Local clock B	42		11	- S - Modem clock B
- Clock 2 B	12		9	- B - Local clock B
+ Clock 2 A	11		17	+ B + Local clock A
- Transmit data A	28	8	3	- R - Receive data A
+ Transmit data B	29	8	16	+ R + Receive data B
- Receive data A	44	8	2	- T - Transmit data A
+ Receive data B	45	8	14	+ T + Transmit data B
+ Control A	14	8	6	+ I + Indication A
- Control B	13	8	22	- I - Indication B
+ Indicator A	30	8	20	+ C + Control A
- Indicator B	31	8	23	- C - Control B
0V	6			
- ID bit 0	46			25-Pin Female
- ID bit 2	15			Connector
	16			

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

Wiring Side

Label

Wrap Plug V.35 PN 58X9349

+ Data set ready		1 o
+ Data terminal ready		18 o
+ Request to send		34 o
+ Carrier detect		3 o
+ Clear to send		20 o
+ Test control		36 o
+ Test indicator		5 o
0V		6 o
+ Transmit clock1	A	38 o
− Transmit clock1	B	39 o
+ Transmit clock2	A	8 o
− Transmit clock2	B	7 o
+ Transmit data	A	24 o
− Transmit data	B	25 o
+ Receive data	A	40 o
− Receive data	B	41 o
+ Receive clock	A	9 o
− Receive clock	B	10 o
− ID bit 2		15 o
+ Receive l.att clock	A	27 o
− Receive l.att clock	B	26 o

Wrap Plug X.21 PN 58X9354

0V		6 o
+ Clock1	A	42 o
− Clock1	B	43 o
+ Clock2	A	12 o
− Clock2	B	11 o
+ Transmit	A	28 o
− Transmit	B	29 o
+ Receive	A	44 o
− Receive	B	45 o
+ Control	A	14 o
− Control	B	13 o
+ Indicator	A	30 o
− Indicator	B	31 o
X.21		16 o
− ID Bit 2		15 o

Chapter 4. TRSS Interface Cable

TIC Card to Tailgate Cable

To TIC Card

To Tailgate

2	1
4	3
6	5

12	11
14	13
16	15
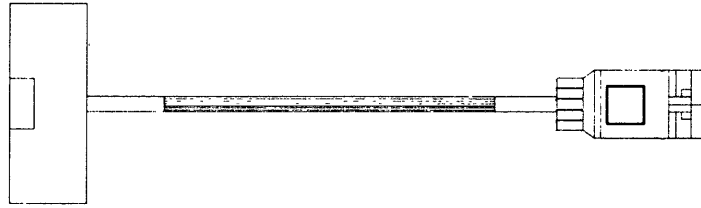
Black
Orange
Green
Red
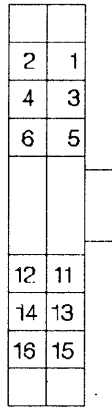
Pin Position
(Mating Side)
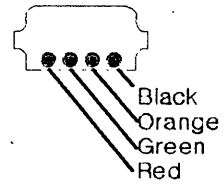
Interchange Circuits

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).

Green Label — Twisted Telephone Pair
To Communication Controller — To Ring
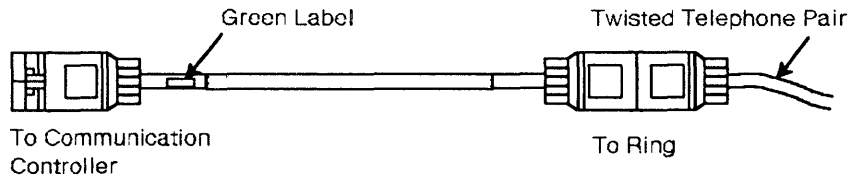
Voltage Levels (Ring Transmitter/Receiver)

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 %

Typical $\pm$ 3 V
Driver   Receiver
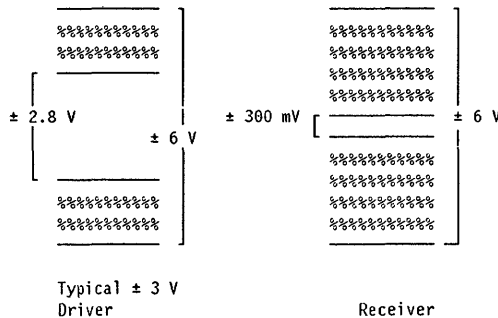
Chapter 5. AUI Ethernet** Interface Cables.

Both the office and standard access unit interface (AUI) Ethernet cables are pro-
vided by vendors and are not described in this document. The cable connec-
tors 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
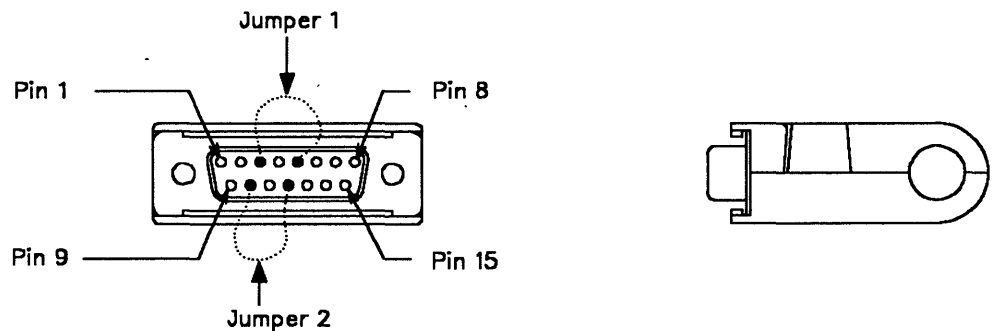
JUMPER	FROM	TO	DESCRIPTION
1	3	5	+TX to +RX
2	10	12	-TX to -RX

List of Abbreviations

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

S/370 I/O IMPP GC22-7064	Provides information for doing physical site planning

Principles of Operation (POP) SA33-0102	Describes the 3745 instruction set in order to write or modify a control program

Basic Operations Guide (BOG) SA33-0146 *	Provides procedures for carrying out daily routine operations

Problem Determination Guide (PDG) SA33-0096 *	Provides procedures for performing problem determination

Master Index (MI) SA33-0142 *	Provides references to 3745 Models 130, 150, and 170 customer documentation

Remote Load./ Activation Guide (RLA) SA33-0161	Provides information for loading and activating a remote controller

Configuration Program (CP) GA33-0093	Provides information for configuring a 3745

Preparing for Connection (PFC) GA33-0140	Provides information for preparing cable installation and LIC 5/6 configuration

Connection Integration Guide (CIG) SA33-0141 *	Provides information for installing and testing LICs and customizing the 3745 after installation

Advanced Operations Guide (AOG) SA33-0097 *	Provides procedures for carrying out advanced operations and tests from the 3745 console

Console Setup Guide (CSG) SA33-0158 *	Provides information on setting consoles for the 3745

Telecommun. Prod. Safety Handbook TPSH GA33-0126 *	Recalls safety principles

* This manual is part of the shipping group.

3745 Models 130, 150, and 170 Service Documentation

Product-Trained CE   **Product-Support-Trained CE**

| Installation Guide (IG) SY33-2067 * | Provides instructions for installing or relocating a 3745 |

| Hardware Maintenance Refer. (HMR) SY33-2066 * | Provides in-depth hardware reference information |

| Service Functions (SF) SY33-2069 * | Describes the MOSS functions used from a 3745 console |

| Diagnostic Descriptions (DD) SY33-2076 * | Describes the 3745 diagnostic programs |

| Maintenance Information Proc. (MIP) SY33-2070 * | Provides procedures for isolating and fixing a 3745 problem |

| External Cable Refer. (ECR) SY33-2075 * | Provides references to console and line cables used for connecting a 3745 |

| Parts Catalog (PC) S135-2012 * | Provides reference information for ordering 3745 parts |

| Service Master Index (SMI) SY33-2079 * | Provides references 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 |

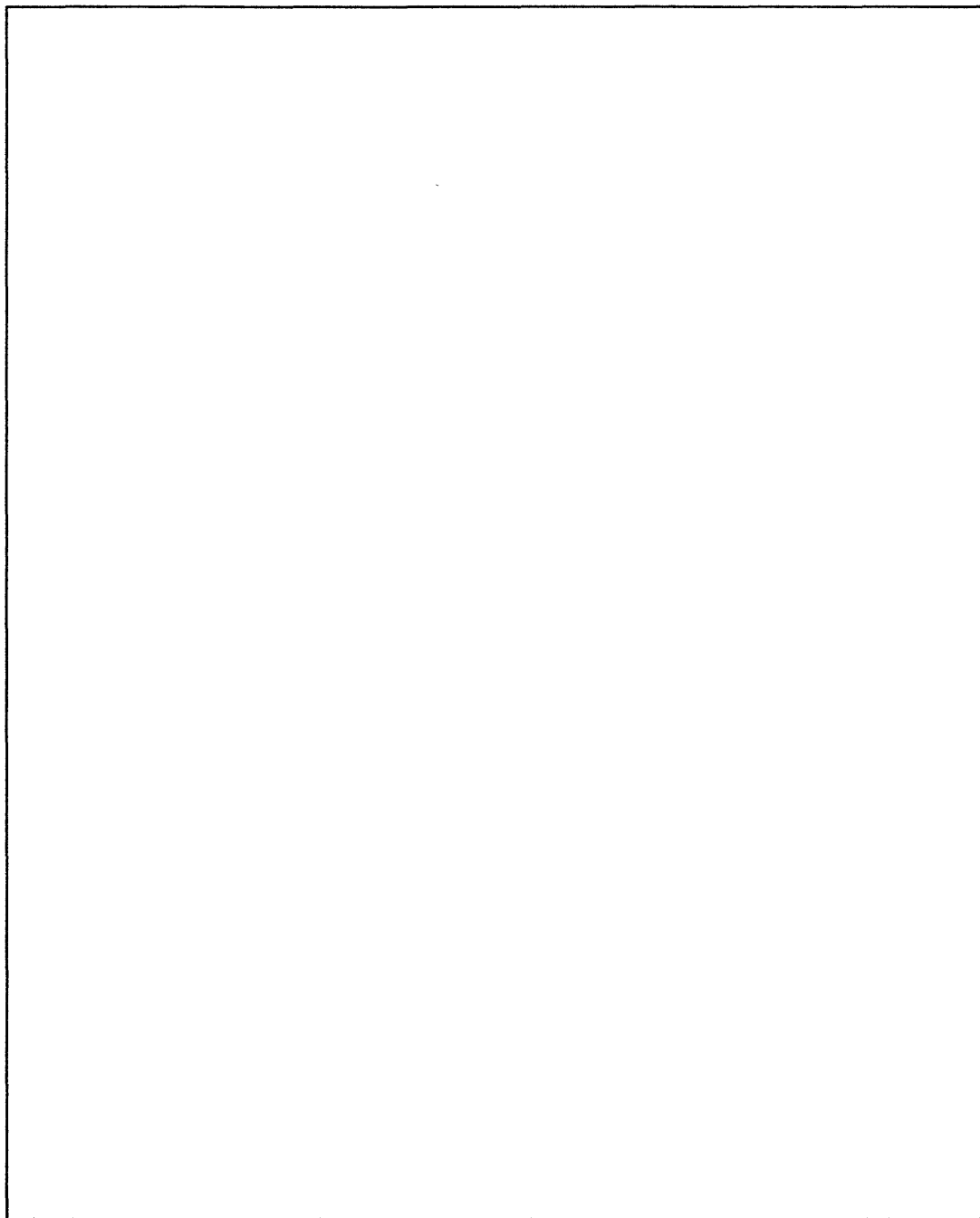*   This manual is part of the shipping group.

Index

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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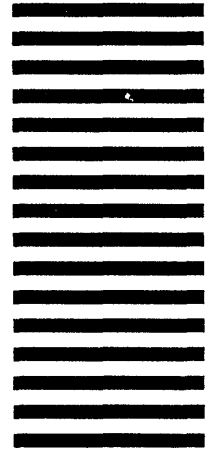# BUSINESS REPLY MAIL

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