



DCS

DIGITAL COMMUNICATION SYSTEM

INSTALLATION MANUAL



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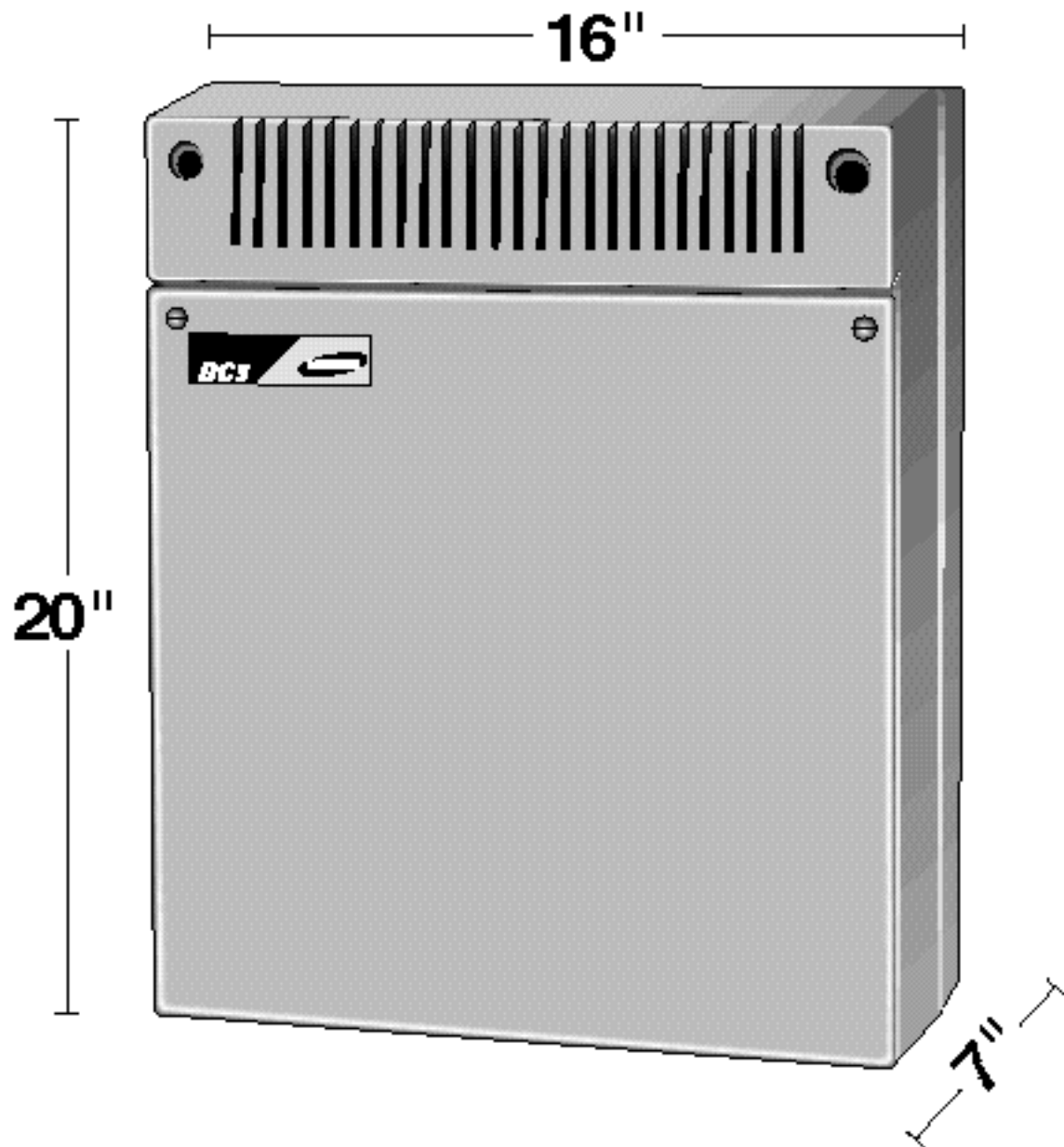
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PART 1. SITE REQUIREMENTS

When planning the installation of the DCS system, choose a site that meets the following requirements:

- ✦ Select a location for the key service unit (KSU) that has enough space for easy installation and has adequate lighting (see Figure 1–1).
- ✦ Select a location that will minimize cable lengths. See the Cable Requirements Table in the General Description section.
- ✦ The equipment should not be exposed to direct sunlight, corrosive fumes, dust, constant vibration or strong magnetic fields such as those generated by motors and copy machines.
- ✦ A direct commercial AC power outlet is required. Do not use extension cords. Preferably, a dedicated circuit should be used to minimize the risk of other electrical equipment being connected that could adversely affect system operation.
- ✦ Ensure that all wires and cable going to and coming from the KSU are properly routed. Do not cross fluorescent lights or run parallel with AC wires.
- ✦ The equipment must be located in an environment that will maintain a temperature range of 32°–104° F (0°–40° C) and a humidity range of 10%–90% non-condensing.
- ✦ Allow at least 6" clearance on both sides and 6" clearance on top of the KSU to ensure proper ventilation.
- ✦ Do not install in close proximity to a fire sprinkler head or to other sources of water.

Meeting these requirements will help to ensure proper performance and greater life expectancy of the system.



KEY SERVICE UNIT DIMENSIONS

FIGURE 1-1

PART 2. INSTALLING BASIC KSU AND EXPANSION CABINETS

2.1 UNPACKING AND INSPECTION

After unpacking the KSU and expansion cabinets, inspect for signs of physical damage. If any damage is detected, do not attempt to install. Contact Samsung Technical Support Department.

Check to see that the KSU carton includes the following items:

- Key service unit
- Wall mount bracket and four (4) screws: two long with washers and two short
- Power cord: three conductor grounding

Check to see that each expansion cabinet carton includes the following items:

- Expansion cabinet
- Power extension cable
- Wall mount bracket and four (4) screws: two long with washers and two short
- HDLC cable

2.2 SINGLE CABINET INSTALLATION

The key service unit (KSU) must be wall-mounted using the bracket supplied.

The KSU should be mounted on a plywood backboard at least 5/8" thick. Attach the mounting bracket to the backboard with the two shorter screws supplied (Figure 2-1). Next, hang the KSU on the mounting bracket and secure it to the backboard with the remaining two screws and washers (Figure 2-2). The power supply can now be removed from its unit carton and installed in the slot labeled PSU.

The final step in installing the KSU is to perform a manual RAM clear. Using an electrically conductive tool (e.g., a metal screwdriver), short out the two RAM clear pins located below the ROM card connector (see Figure 2-5). The short should be held in place for at least five seconds to ensure that the super capacitor is discharged.

2.3 MULTIPLE CABINET INSTALLATION

1. Mount the expansion cabinets in the same manner as the basic KSU. The expansion cabinets may be mounted above, below or to the left or right of the KSU within the limits of the power extension cord and the HDLC cable (see Figure 2-3).

2. Insert the EXPN-A card into the slot labeled SLOT 7/EXPN-A of the basic KSU. See Figures 2-4 and 2-7.
3. Insert the EXPN-B card into the slot labeled EXPN-B of each expansion cabinet. See Figures 2-4 and 2-8.
4. Connect the first expansion cabinet to the basic KSU by plugging one end of the HDLC cable into the lower position of the EXPN-A card (marked FIRST) and the other end into the EXPN-B card.
5. Connect the second expansion cabinet (if required) to the basic KSU by plugging one end of the HDLC cable into the upper position of the EXPN-A card (marked SECOND) and the other end into the EXPN-B card.
6. Connect AC power to each expansion cabinet using the power extension cables provided (Figure 2-4).

CAUTION: Use only the type of power extension cables supplied with the expansion cabinets. DO NOT CONNECT EXPANSION CABINETS DIRECTLY TO AN AC OUTLET. This is to prevent the connection of multiple grounds to the system in violation of the National Electrical Code.

2.4 ADDING EXPANSION CABINETS TO BASIC KSU

WARNING: Unplug all sources of AC electricity from the KSU before attempting this procedure.

1. Unplug the KSU .
2. Disconnect all cables and wires from the KSU (and the first expansion cabinet if installed).
3. Remove any card installed in slot 7 of the KSU. If a card is installed in slot 7 of the KSU, it must be removed at this time and be reinstalled in the new expansion cabinet.
4. Now proceed as instructed in Part 2.3 of this section (Multiple Cabinet Installation).

NOTE: To activate the new cabinet, open system programming and use MMC 806 to reinstall slot 7 of the basic KSU. The data pertaining to the card removed from slot 7 will be lost and must be reentered for its new position.

2.5 GROUNDING

The DCS system comes equipped ready to use with a third wire AC ground provided through the power cord. This third wire ground will be adequate for most applications. However, if it is suspected that there is a problem with the ground provided at the AC outlet or local codes require a solid earth ground be connected to the KSU, the existing third wire ground must be disconnected before power is applied. The existing third wire ground is disconnected by reaching in through the open space

provided on the inside of the KSU between slot 7 and the ROM slot and gently pulling the connector off the ground terminal. Do not pull directly on the ground wire. After this wire has been disconnected, the grounding lug on the bottom of the KSU must be connected to a ground rod or metal cold water pipe using #10 AWG solid copper wire (see Figure 2–5).

Failure to provide an adequate ground may cause confusing trouble symptoms or even circuit card failure.

When you want to clear RAM, switch off the power of basic cabinet, remove HDLC cable (Expansion cabinet connecting cable or CPM/LPM connecting cable), take out power supply and then keep the memory back-up switch off for more than 10 seconds.

WARNING: Unplug the power cord from the AC outlet before attempting to connect the ground. Hazardous voltage may cause death or injury. Observe extreme caution when working with AC power.

2.6 MDF CABLING

All connections to the DCS system are made by way of a customer-provided main distribution frame (MDF). Each interface card is connected to the MDF using a 25 pair female amphenol-type cable. These cables can be routed into the KSU and expansion cabinet from below.

Label each cable to correspond with the slot numbers (see Figure 2–6). Label each 66 type terminating block to identify the port, slot and cabinet numbers.

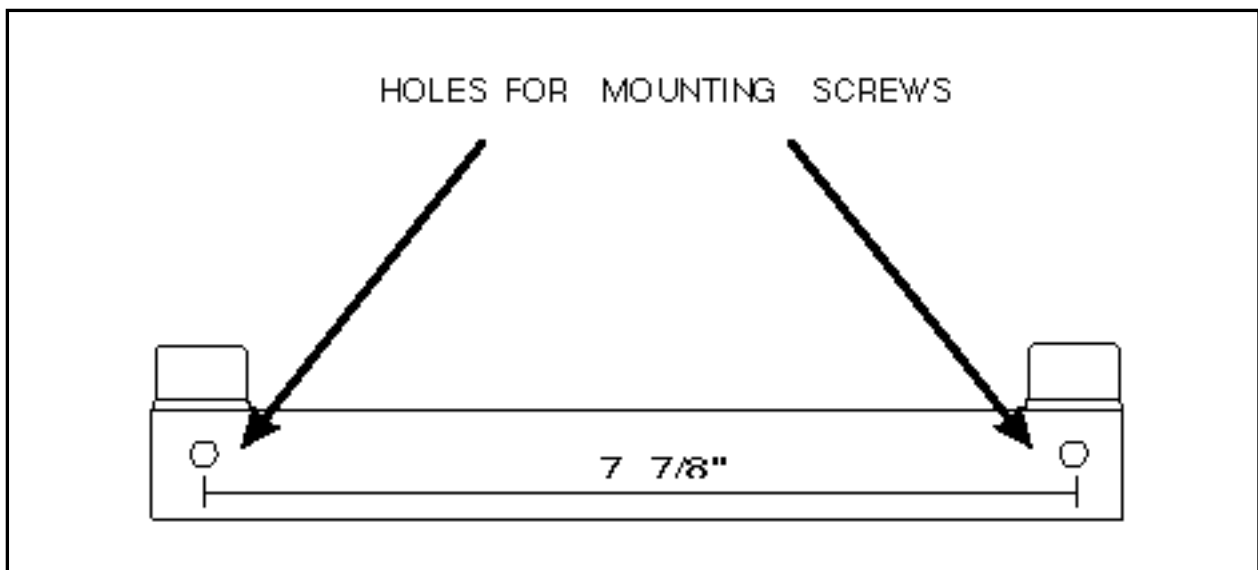
Use one pair twisted jumper wire to cross-connect stations or lines to their associated port.

2.7 EXTERNAL BATTERY INSTALLATION

DCS system will continue full system operation during AC power failure if 48V battery is connected. To supply 48V, use two 24V batteries or four 12V batteries connected in series of which the rating is not more than 40AH and not less than 6AH. Refer to Figure 2-4. Required cable with black and white leads are supplied with each cabinet. The black is for (-) connection and the white is for (+). All the cabinets, basic and expansion cabinets, should be connected to the backup batteries with their own cables.

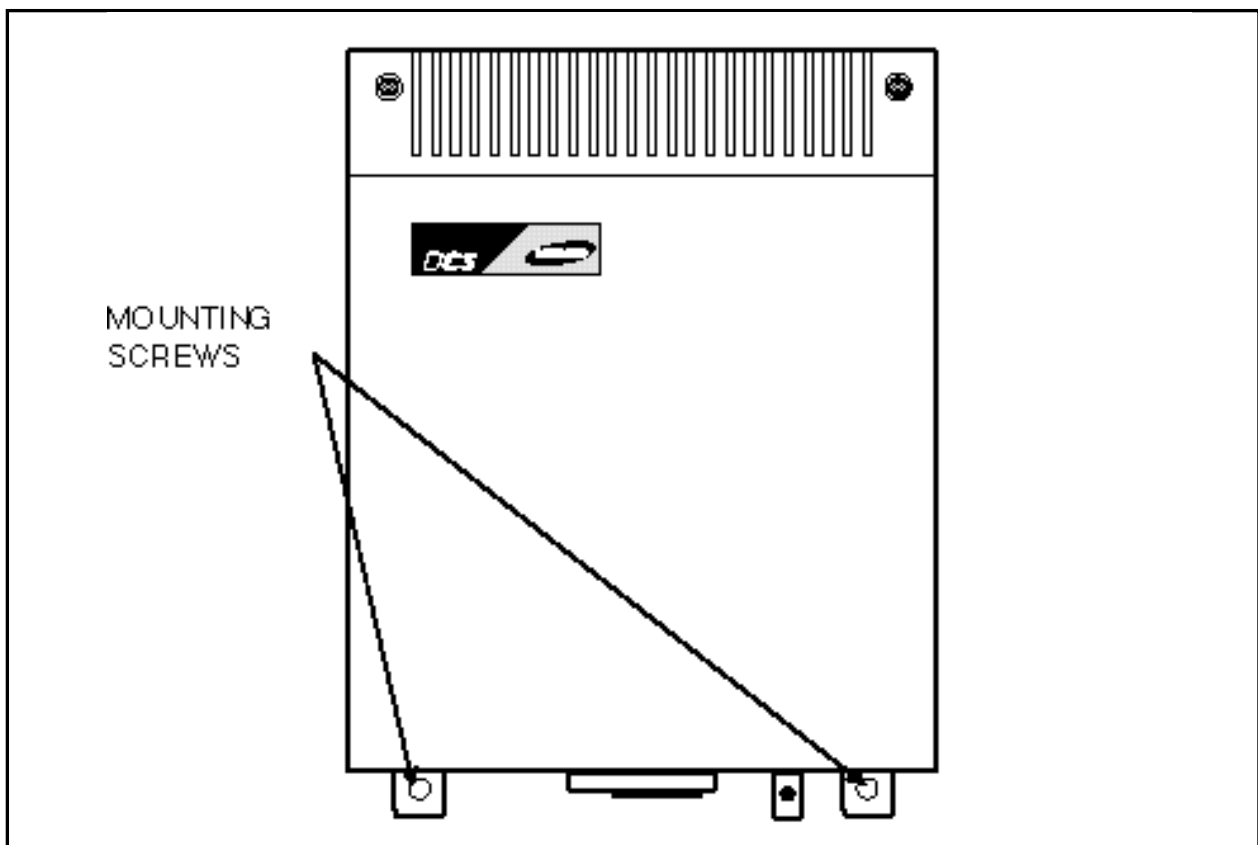
WARNING: Practice extreme caution when connecting batteries to the DCS system to avoid personal injury or damage.

CAUTION: If the DCS system is to be turned off then the batteries must be disconnected first.



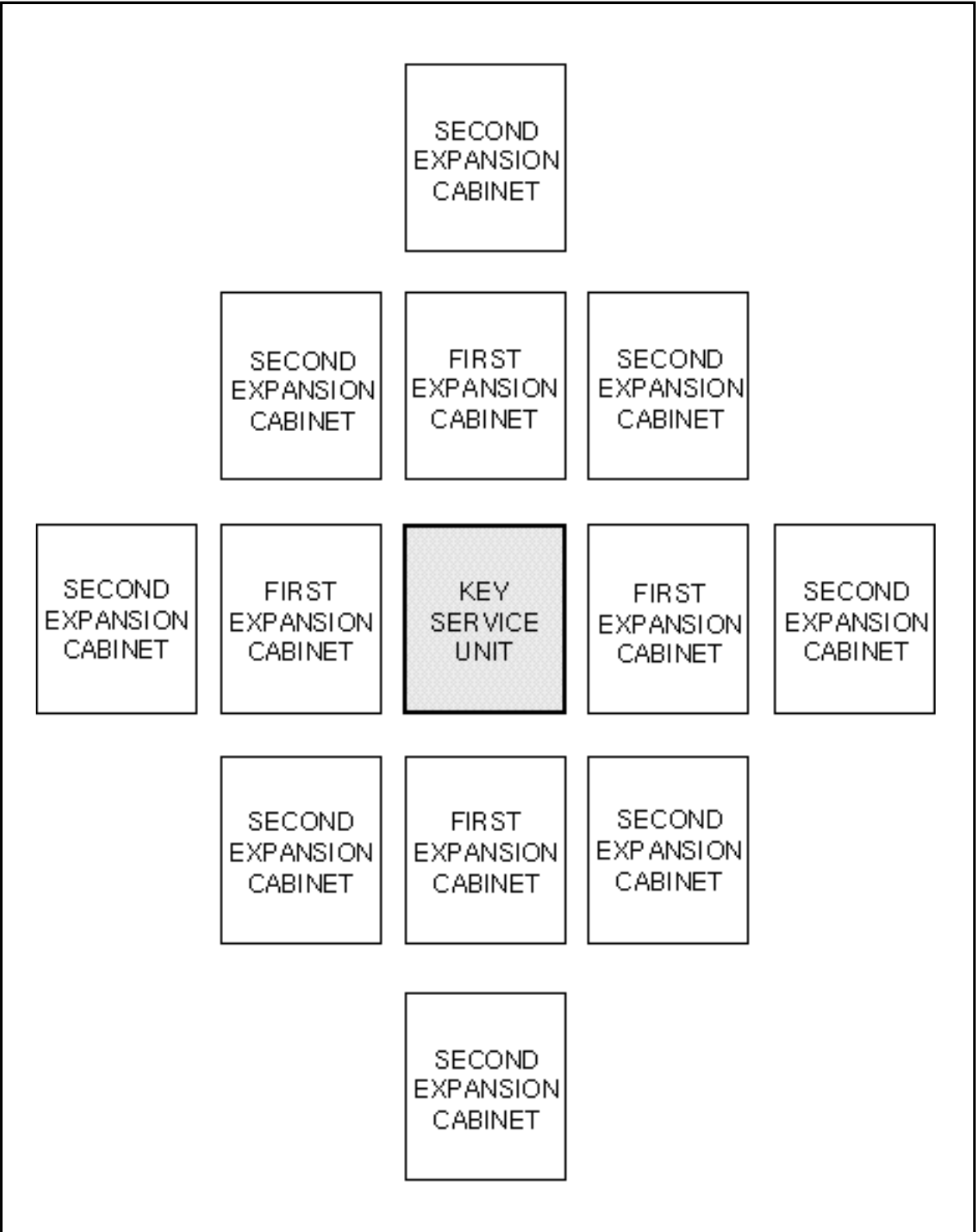
ATTACHING MOUNTING BRACKET
TO BACKBOARD

FIGURE 2-1



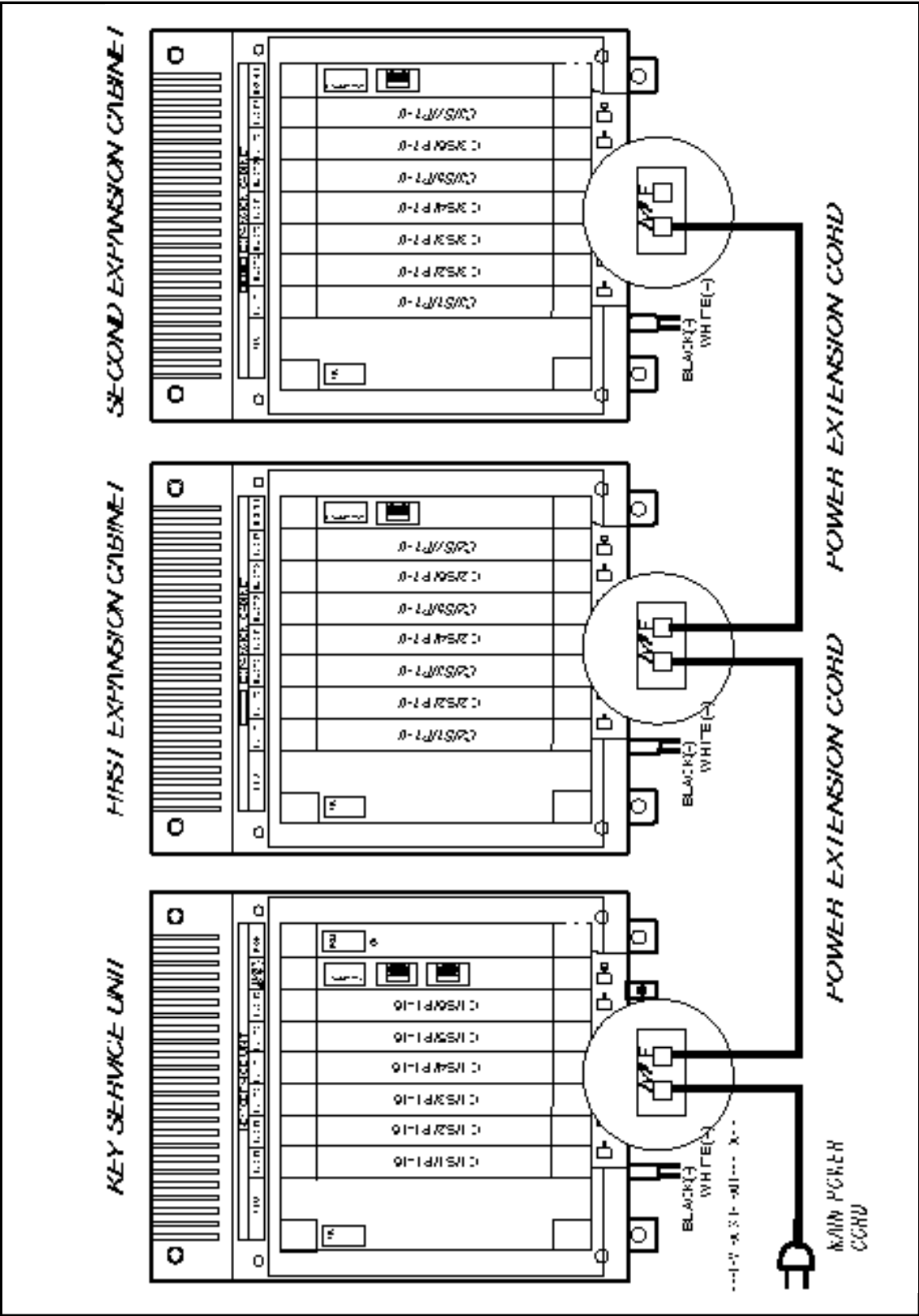
SECURING KSU TO BACKBOARD

FIGURE 2-2



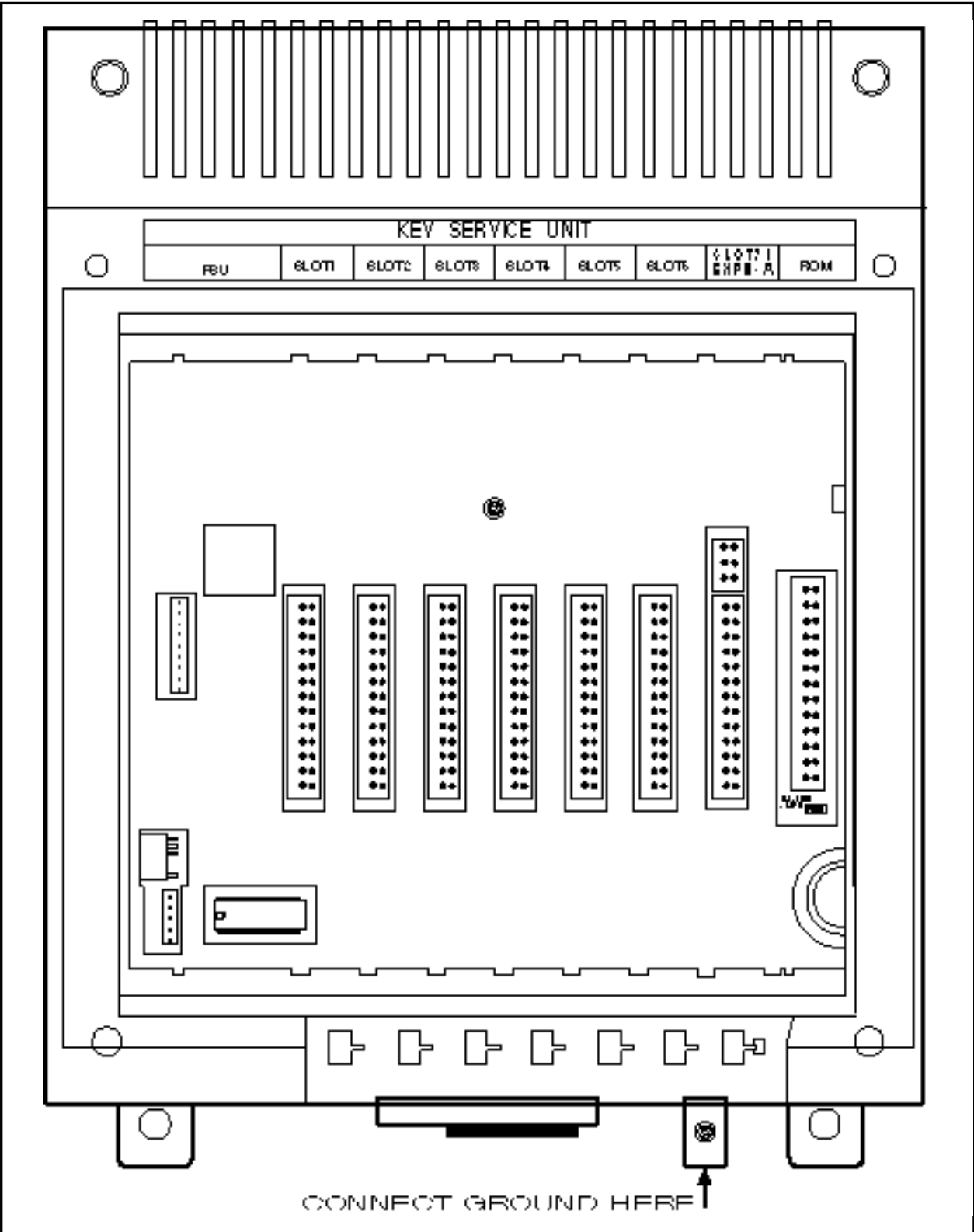
MOUNTING LOCATIONS
FOR EXPANSION CABINETS

FIGURE 2-3



CONNECTING POWER EXTENSION CORDS

FIGURE 2-4



GROUNDING THE KSU

FIGURE 2-5

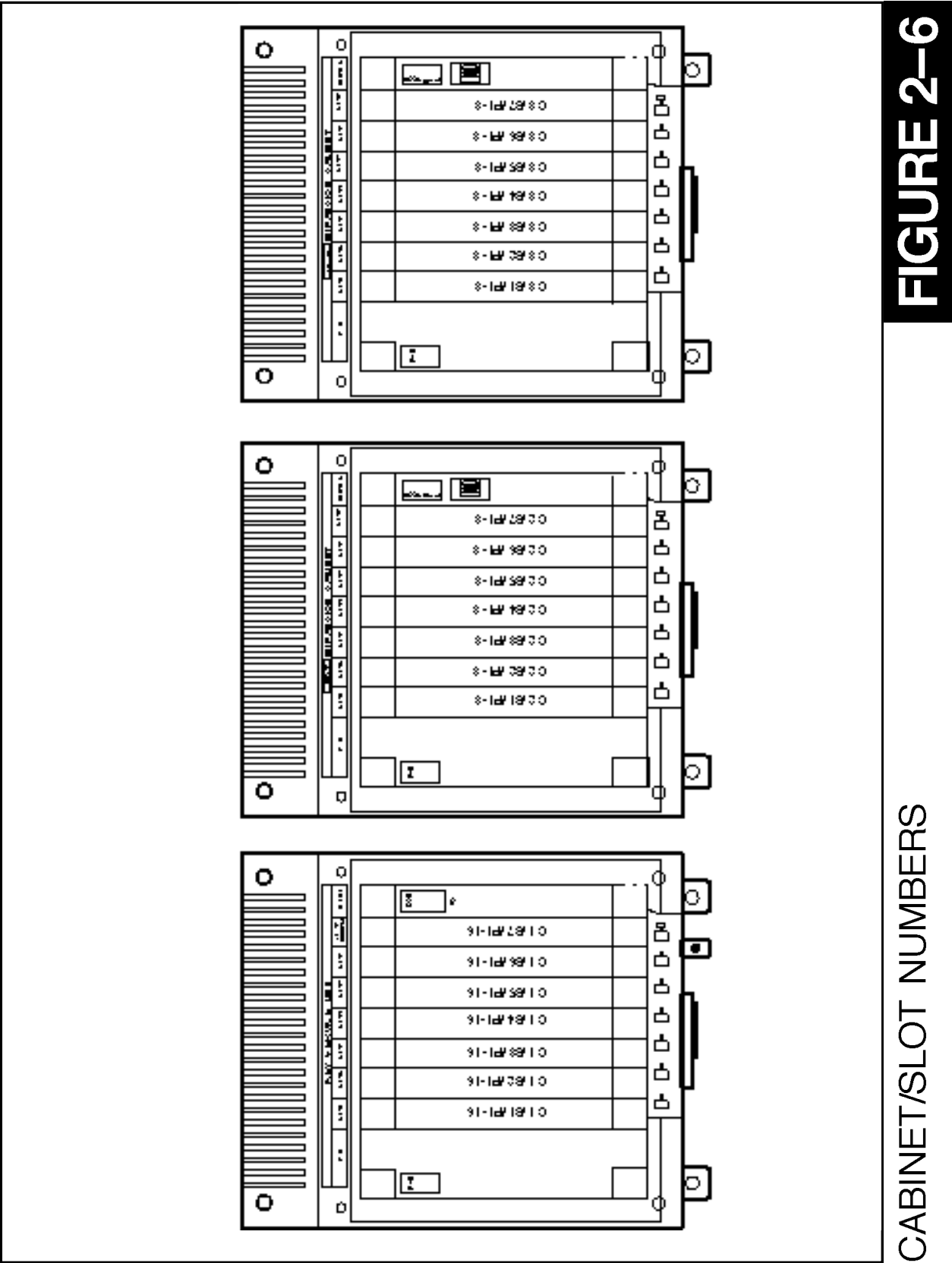
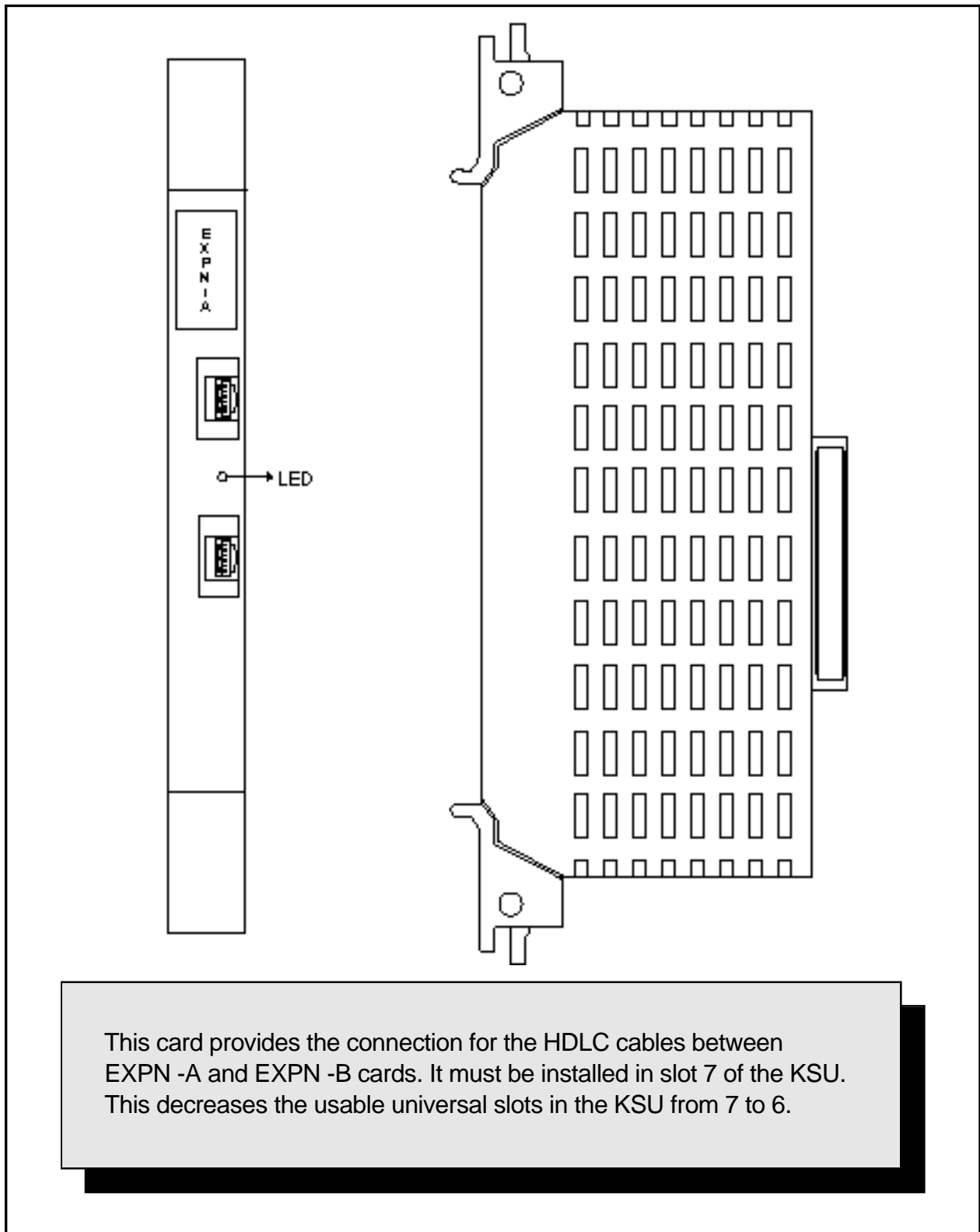


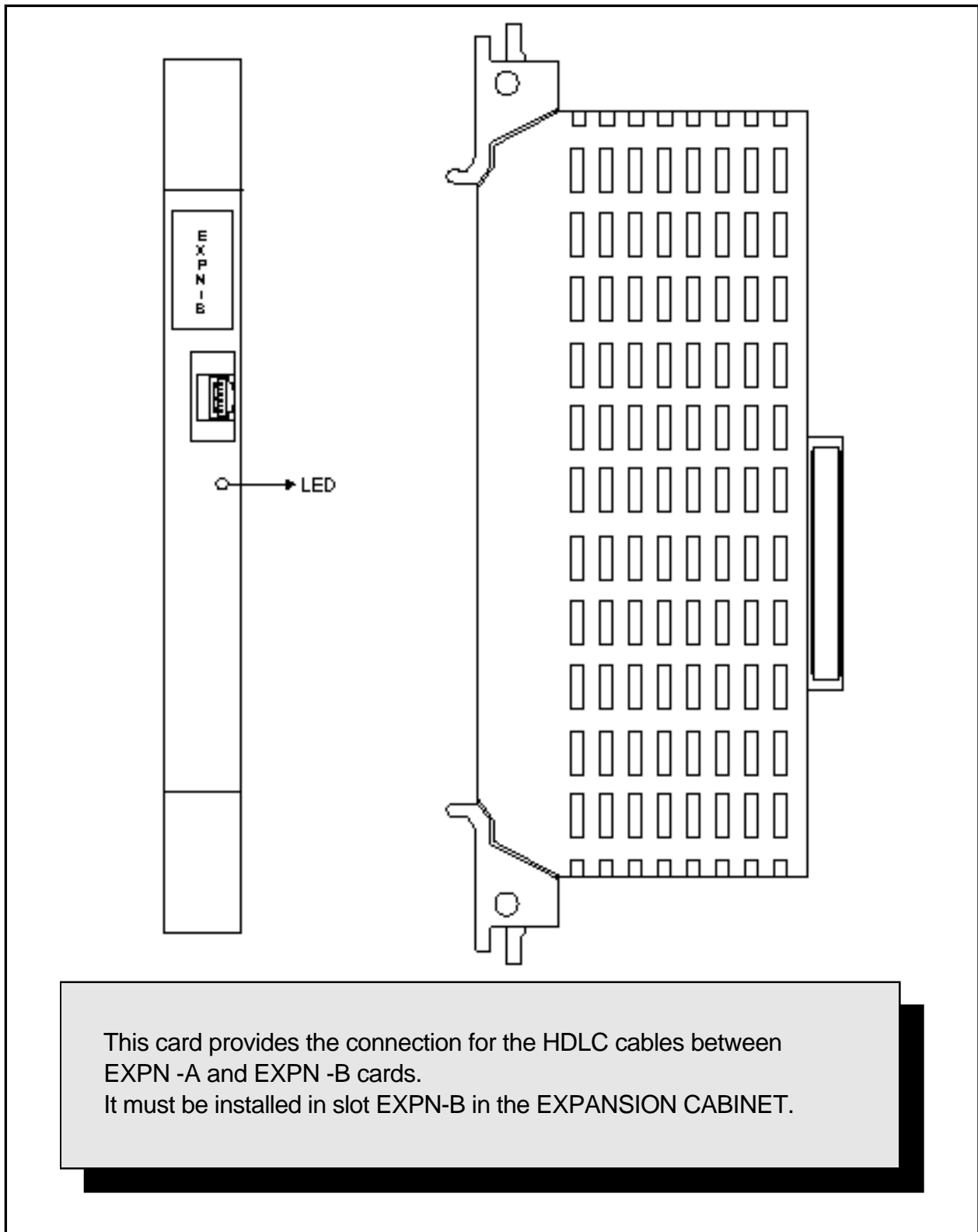
FIGURE 2-6

CABINET/SLOT NUMBERS



EXPN-A CARD

FIGURE 2-7



EXPN-B CARD

FIGURE 2-8

PART 3. INSTALLING PRINTED CIRCUIT CARDS

Unpack and inspect each card before installing. Check for signs of physical damage. If any damage is detected, do not attempt to install. Contact Samsung Technical Support immediately.

WARNING: You should not insert all the cards in the power-on state.

3.1 ROM2 CARD (Figure 3–2)

Systems requiring the simultaneous use of SMDR and remote programming must use the ROM 2 card. There are no options to select on these cards. Insert the ROM 2 card in the KSU slot labeled ROM (see Figure 3–1). Push firmly in the middle of both card ejectors to ensure that it is fully inserted into the back plane connector.

To prevent accidental damage to the ROM2 card, the ROM connector on the back plane is positioned to mate only with the ROM2 card. Other interface cards will not mate with this connector and the ROM 2 card will not mate with any other connector.

3.2 TRK_A CARD (Figure 3–3)

This card has no selectable options. Insert as many TRK_A cards as are needed into any universal slot (see Figure 3–1). Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

NOTE: If the alarm sensor is to be used the TRK_A card must be installed in the KSU.

3.3 TRK_B CARD (Figure 3–4)

This card has no selectable options. Insert as many TRK_B cards as are needed into any universal slot (see Figure 3–1). Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

3.4 6TRK CARD (Figure 3–5)

This card has no selectable options. Insert as many 6TRK cards as are needed into any universal slot (see Figure 3–1). Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

3.5 8TRK CARD (Figure 3–6)

This card has no selectable options. Insert as many 6TRK cards as are needed into any universal slot (see Figure 3–1). Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

3.6 PRI CARD (Figure 3–7)

The PRI card must be inserted in slot 1, 3 or 5 of the basic cabinet. The even-numbered slot to the right of that slot you choose must be left empty or covered by a blanking plate (see Figure 3–16).

NOTE: You should not insert the PRI card in the power-on state.

3.7 BRIN (S0T0) CARD (Figure 3–8)

The BRIN (S0T0) card must be inserted in the basic cabinet. Push firmly in the middle of both card ejectors on the card to ensure that it is fully inserted into the back plane connector.

NOTE: You should not insert the BRIN (S0T0) card in the power-on state.

3.8 DLI CARD (Figure 3–9)

There are no options to select on this card. Insert up to and including seven(7) DLI cards per cabinet as needed into any universal slots(see note below). See Figure 3–1. Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

NOTE: A maximum of 60 station devices may be connected to each cabinet. See the configuration section of the General Description section for more details.

3.9 SLI CARD (Figure 3–10)

There are no options to select on this card. Insert as many 4SLI cards as are needed into universal slots 1 through 7 (see Figure 3–1). Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

This card will automatically detect DTMF or dial pulse signals from the single line telephone set. There are no software or hardware settings required.

NOTE:

1. A maximum of 60 station devices may be connected to that cabinet. See the configuration section of the General Description section for more details.
2. Do not connect devices with a total REN greater than 2.5 to any port on this card.
3. Do not connect devices with a total REN greater than 2.5 to this card.
4. Ring Frequency: 20 Hz/25 Hz square wave.
Ring Voltage:120 volts peak to peak

3.10 8SLI CARD (Figure 3–11)

There are no options to select on this card. Insert as many 8SLI cards as are needed into universal slots 1 through 7 (see Figure 3–1). Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

This card will automatically detect DTMF or dial pulse signals from the single line telephone set. There are no software or hardware settings required. The 8SLI has no DTMF receivers; it will share the system resources. If in a medium to high concentration of 8SLI cards or traffic, an Expansion A card should be added to relieve congestion.

NOTE:

1. A maximum of 60 station devices may be connected to that cabinet. See the configuration section of the General Description section for more details.
2. Do not connect devices with a total REN greater than 3.0 to any port on this card.

3. Do not connect devices with a total REN greater than 5.0 to this card.
4. Ring Frequency: 20 Hz/25 Hz square wave or sine wave. (External)
Voltage: 120 volts peak to peak
5. This card does not contain OPX circuitry.

3.11 8MWSLI CARD (Figure 3–12)

There are no options to select on this card. Insert as many 8MWSLI cards as are needed into universal slot 1 through 7 (see Figure 3–1).

Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector. This card functions are same to 8SLI card and additionally message waiting function. This card will automatically detect DTMF or dial pulse signals from the single line telephone set. This card has no DTMF receivers; it will share the system resources. If in a medium to high concentration of 8MWSLI cards or traffic, an expansion A card should be added to relieve congestion. There are one software setting required. Refer to software (MMC) manual.

NOTE:

1. A maximum of 60 station devices may be connected to that cabinet. See the configuration section of the General Description section for more details.
2. Do not connect devices with a total REN greater than 3.0 to any port on this card.
3. Do not connect devices with a total REN greater than 5.0 to this card.
4. Ring Frequency: 20 Hz/25 Hz square wave or sine wave. (External)
Voltage: 120 volts peak to peak
5. This card does not contain OPX circuitry.
6. MW POWER
 - Output power : DC 110V
 - Cadence : 1 sec ON/1sec OFF

3.12 AUTO ATTENDANT CARD (Figure 3–13)

There are no options to select on this card. Insert the card into any universal slot (see Figure 3–1). There is a limit of one card for entire system. Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

3.13 VOICE DIAL CARD (Figure 3–14)

There are no options to select on this card. Insert the card into any universal slot (see Figure 3–1). Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

3.14 AC15 CARD (Figure 3–15) (※ U.K. only)

This card has no selectable options. Insert as many AC15 cards as are needed into any universal slot (see Figure 3–1).

3.15 BSI CARD (Figure 3–16)

This card can connect up to 3 BSI (Base Station Interface) cards in the DCS system. Each BSI cards can connect up to 4 DBSs. Each DBS can connect up to 6 DECT handsets to the DBS.

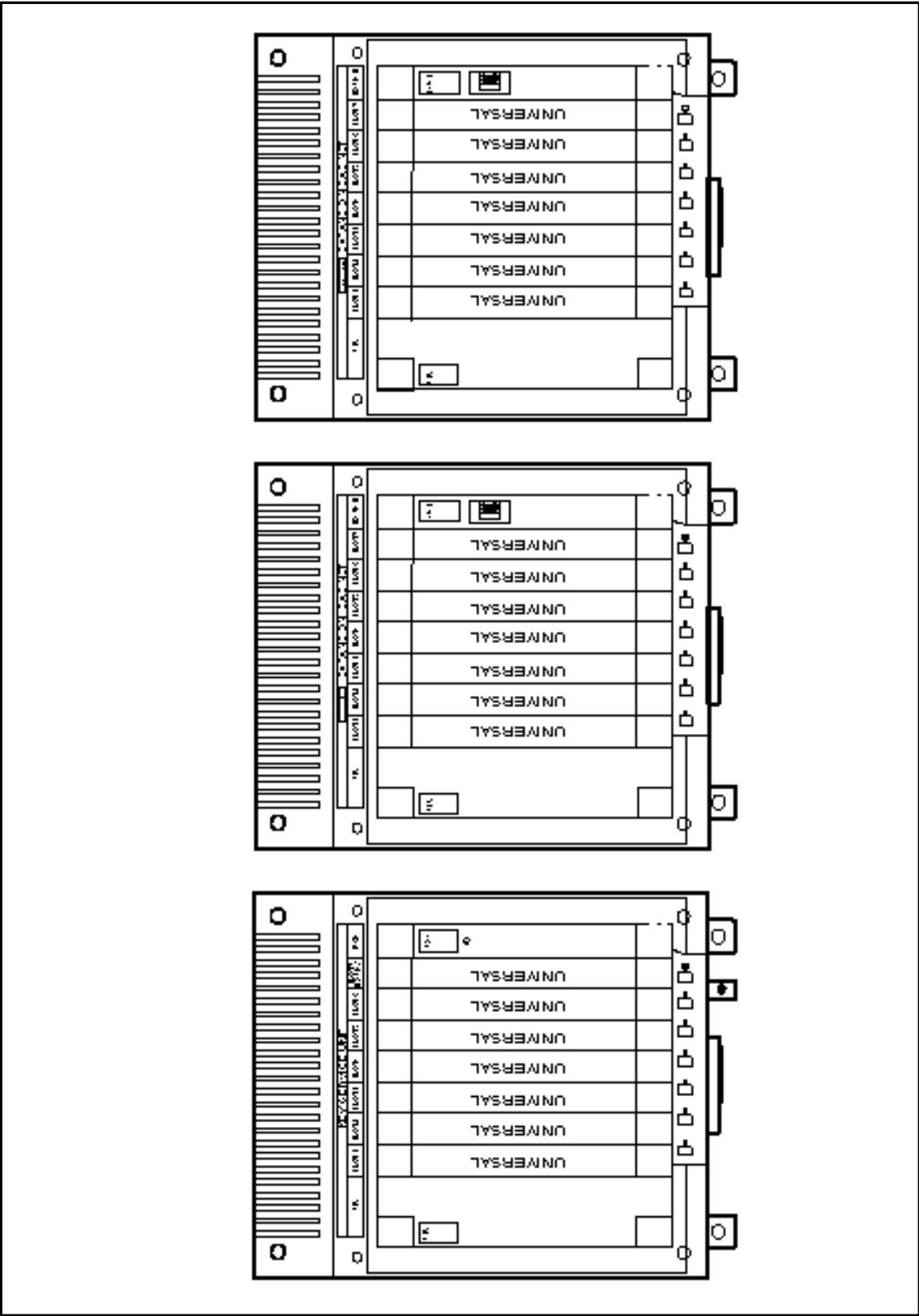
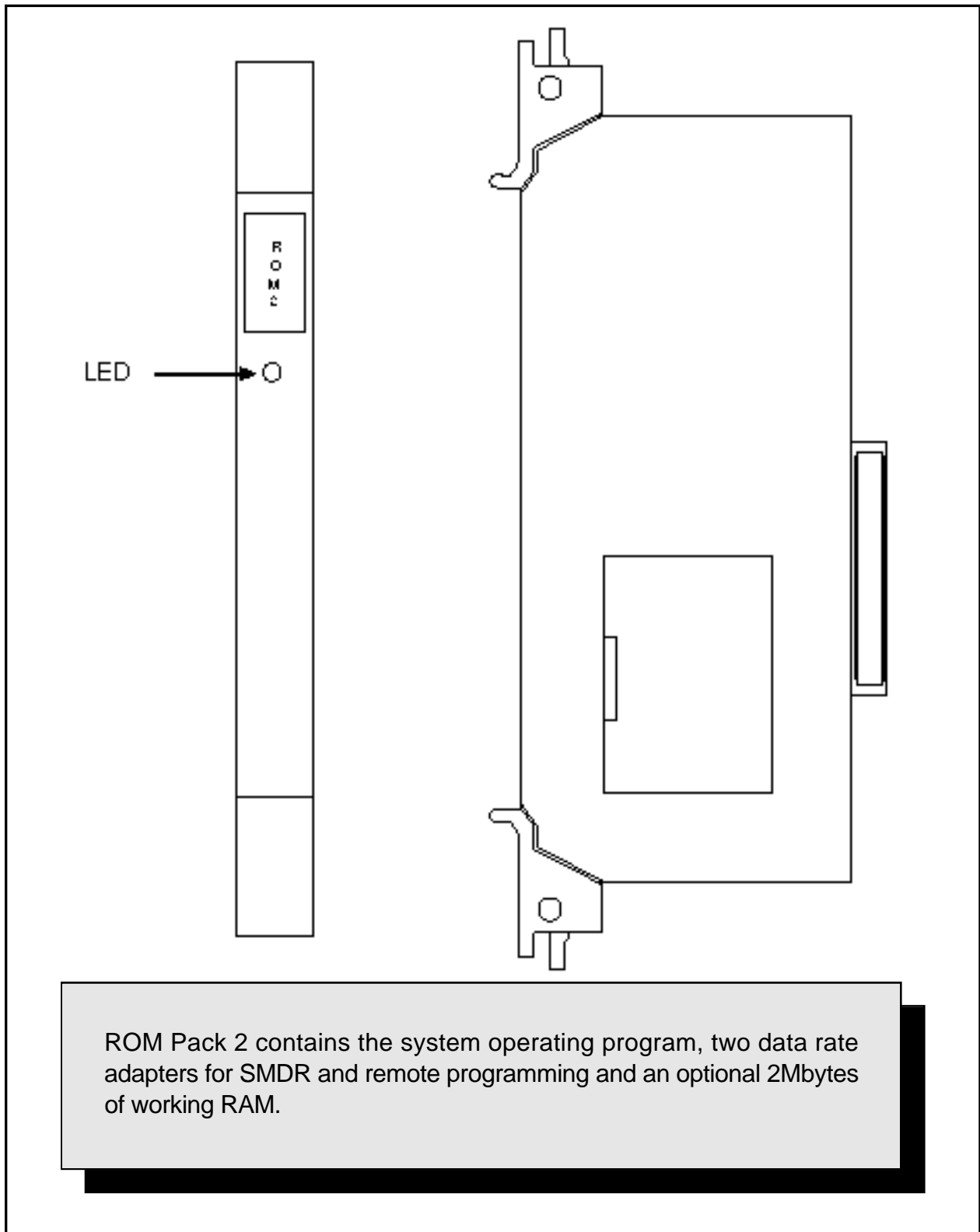
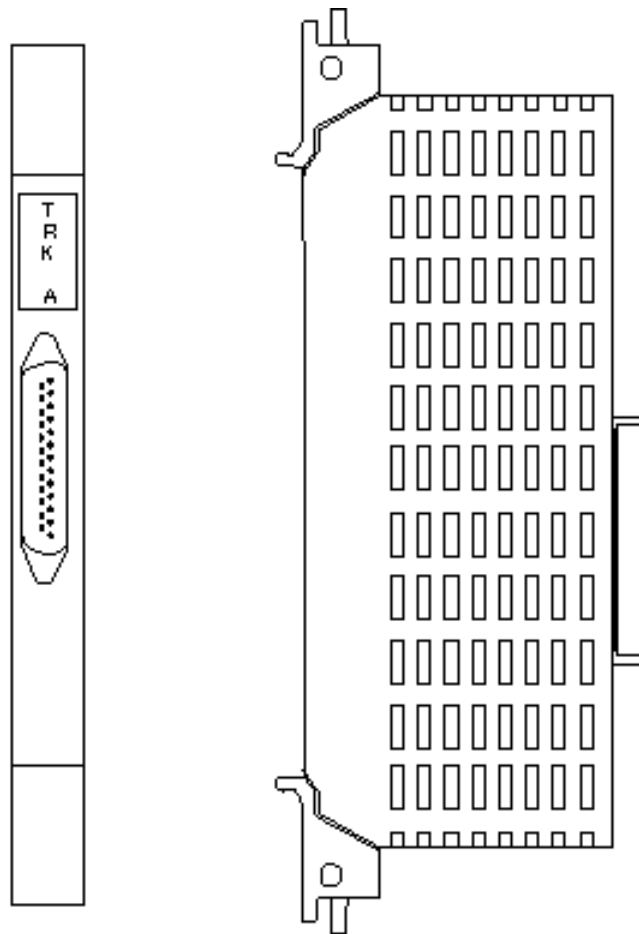


FIGURE 3-1
KSU CARD SLOT TYPES



ROM2 CARD

FIGURE 3-2



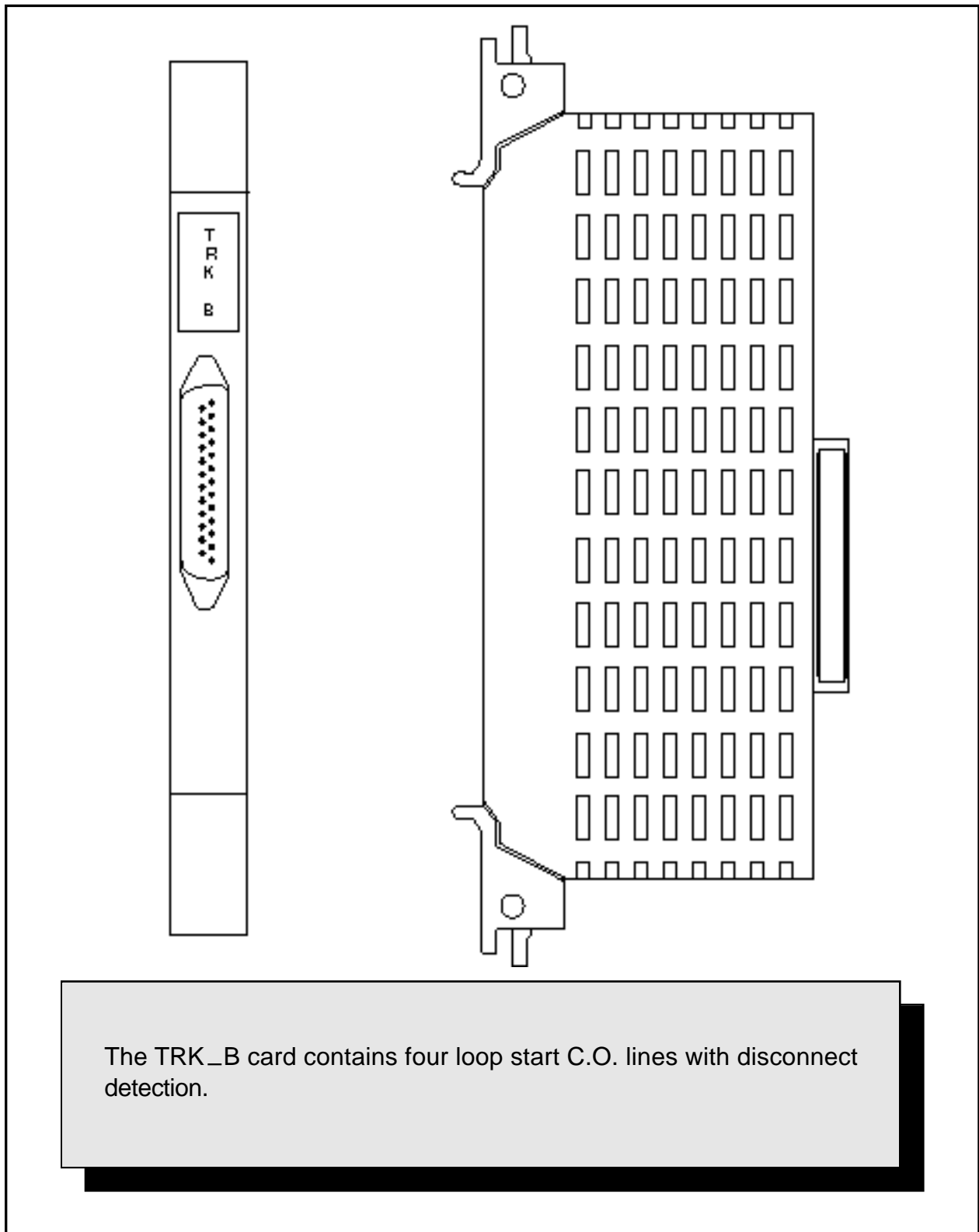
The TRK_A card is a combination loop start line card and a peripheral interface card. It contains the following circuits:

- ✦ Two loop start C.O. lines with disconnect detection
- ✦ Two power failure transfer relays
- ✦ One BGM/MOH input
- ✦ One page output
- ✦ Two page zone control relays
- ✦ One common bell relay
- ✦ One keyset ring output (Loud Bell output)
- ✦ One alarm detection sensor

NOTE: The alarm sensor will only operate when the TRK_A card is installed in the basic KSU.

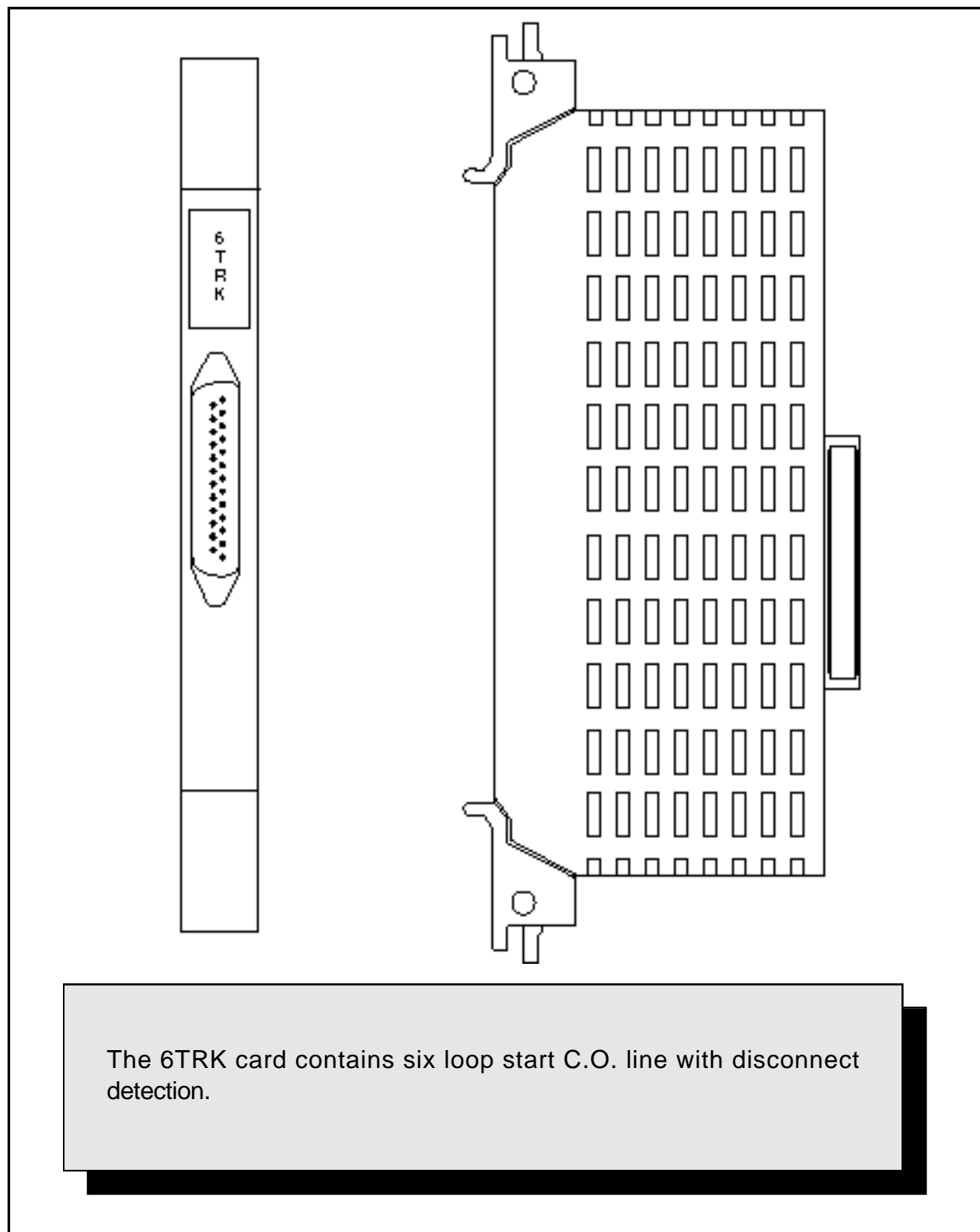
TRK_A CARD

FIGURE 3-3



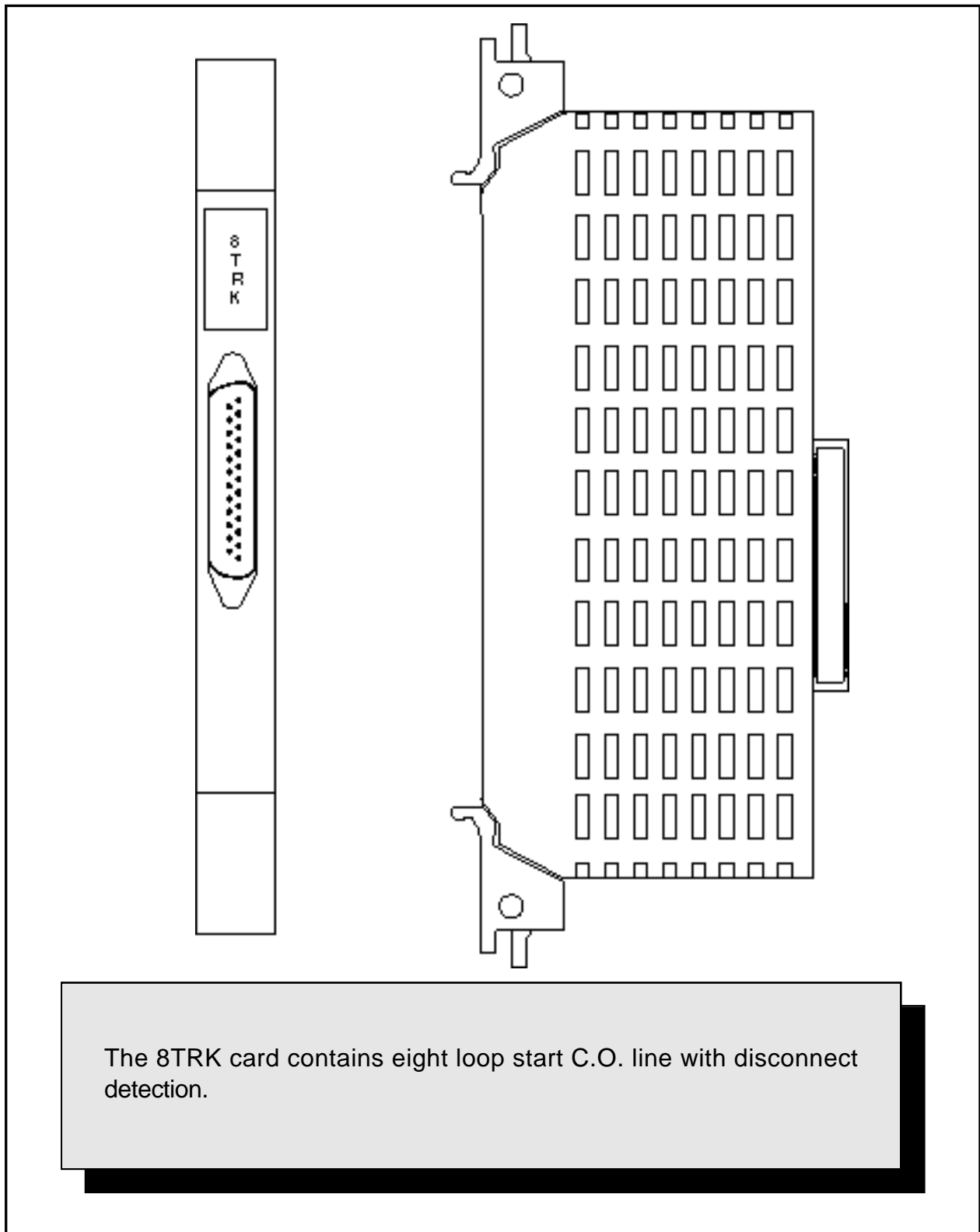
TRK_B CARD

FIGURE 3-4



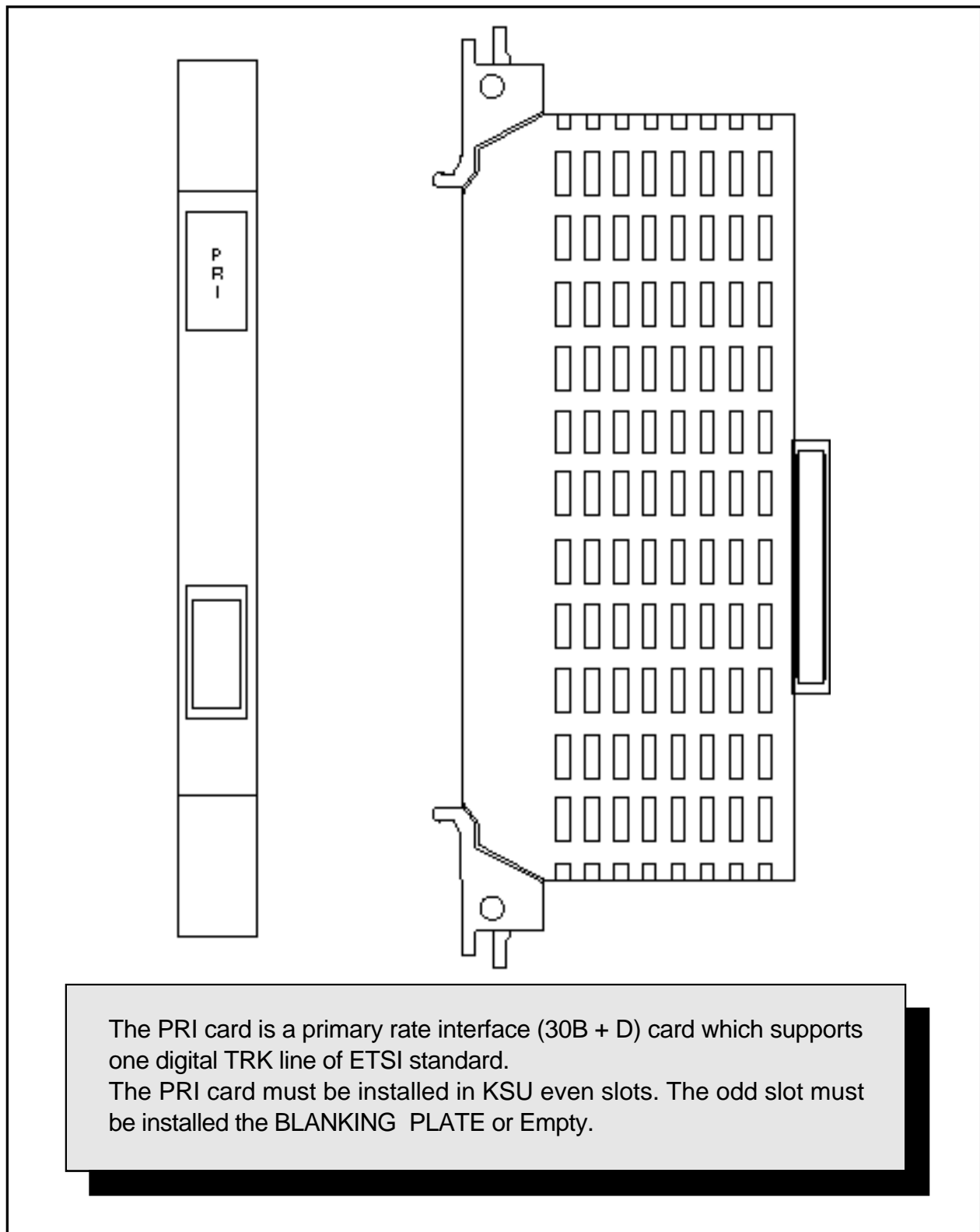
6TRK CARD

FIGURE 3-5



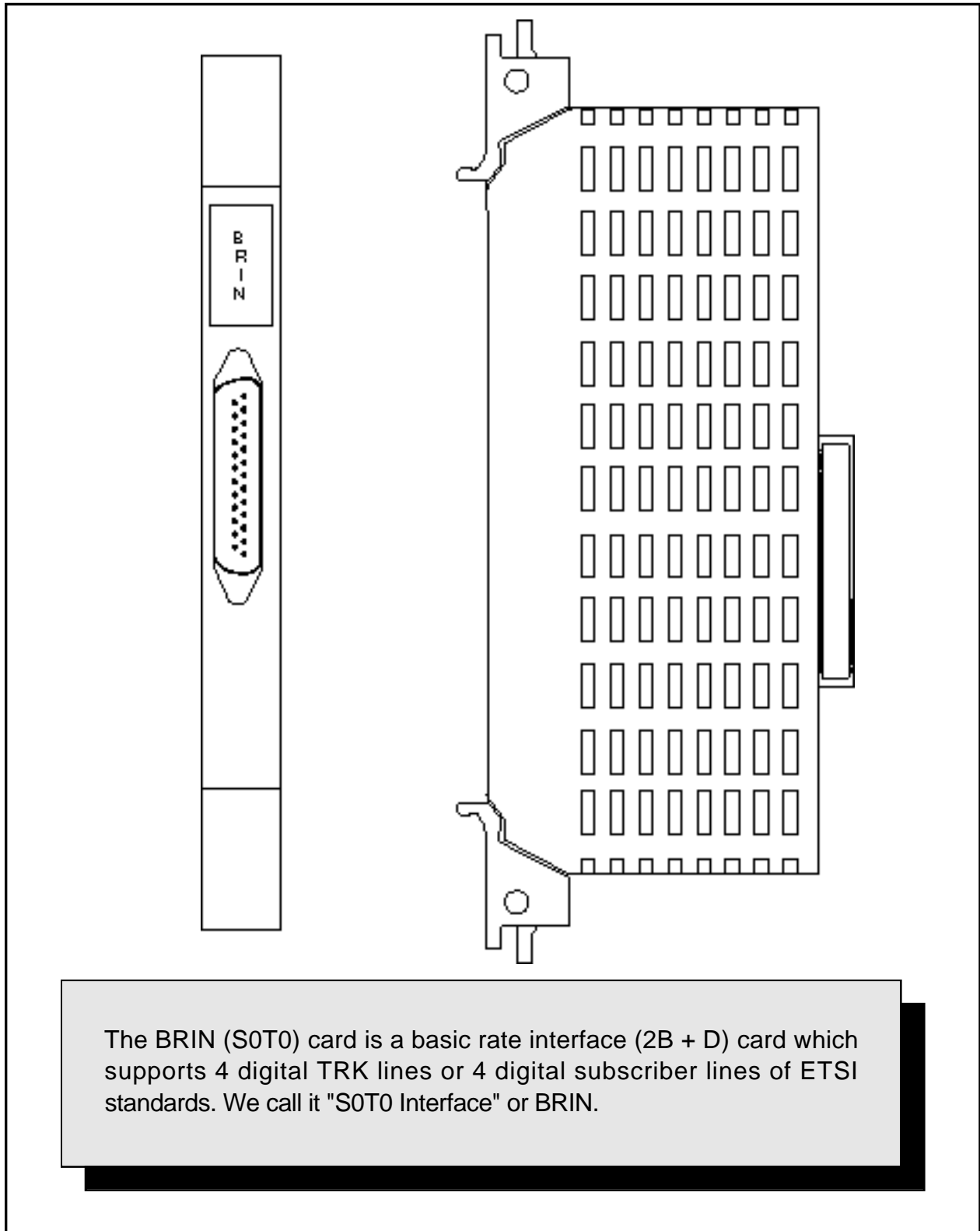
8TRK CARD

FIGURE 3-6



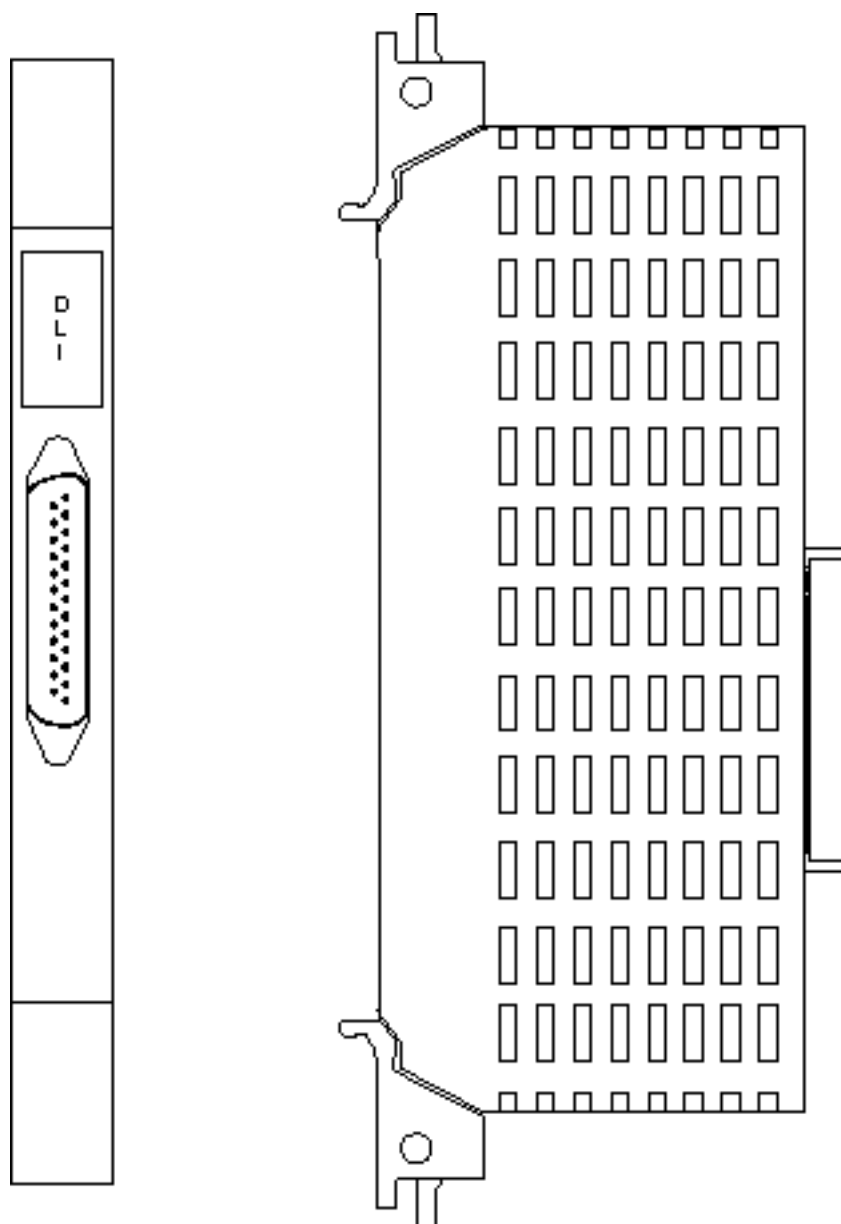
PRI CARD

FIGURE 3-7



BRIN (S0T0) CARD

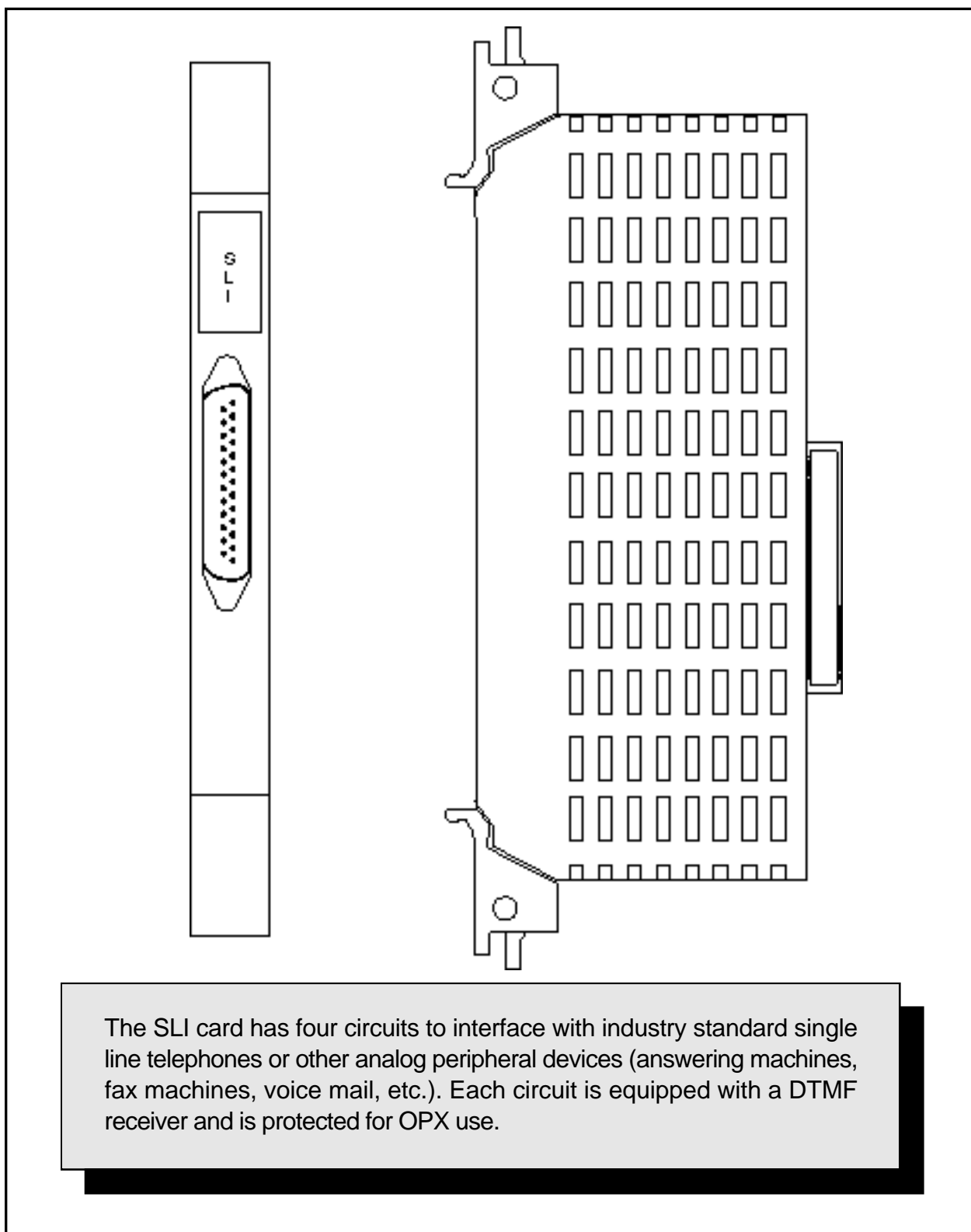
FIGURE 3-8



The DLI card is an eight port card that provides 2B + D service when installed in the KSU or 1B + D service if installed in an expansion cabinet.

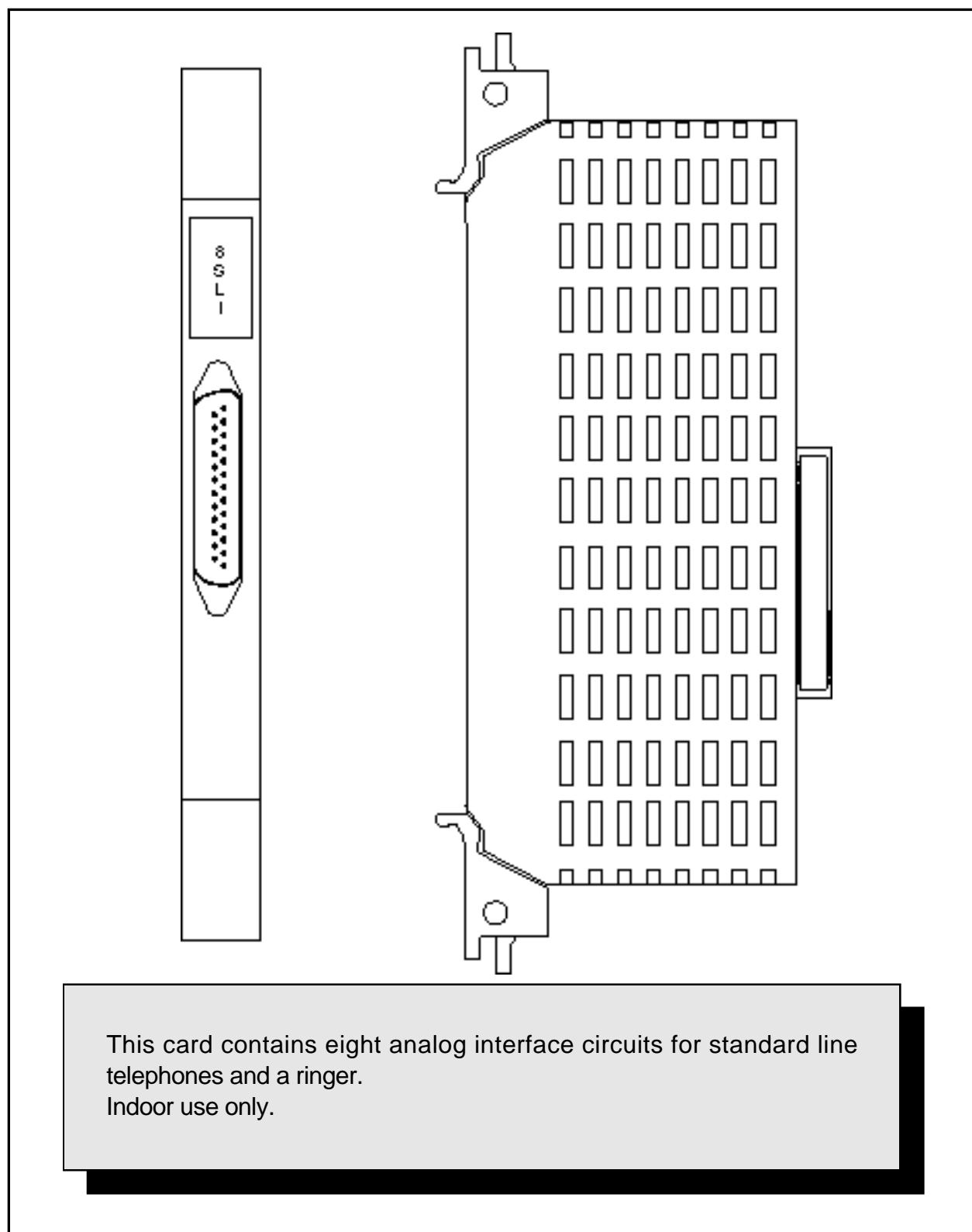
DLI CARD

FIGURE 3-9



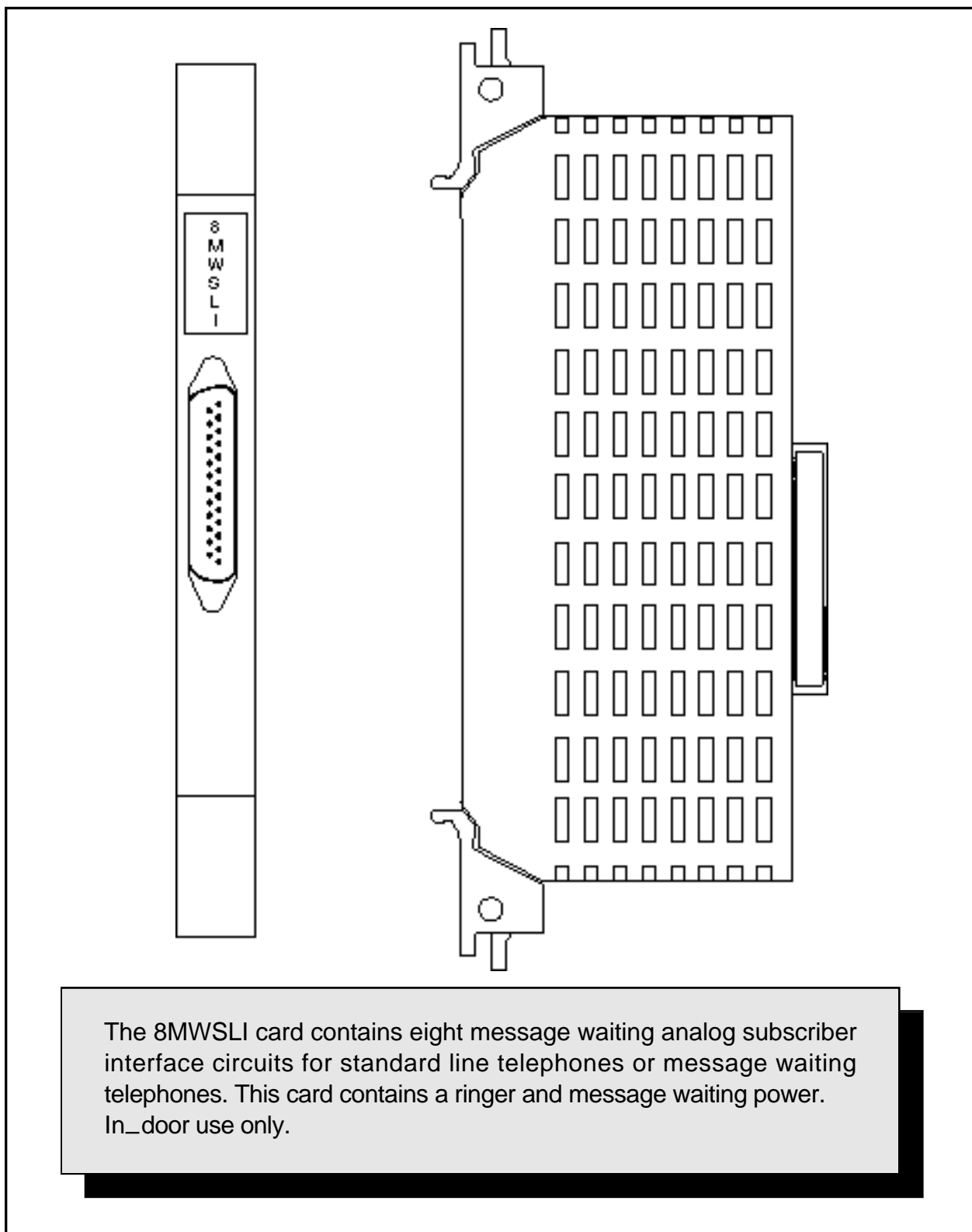
SLI CARD

FIGURE 3-10



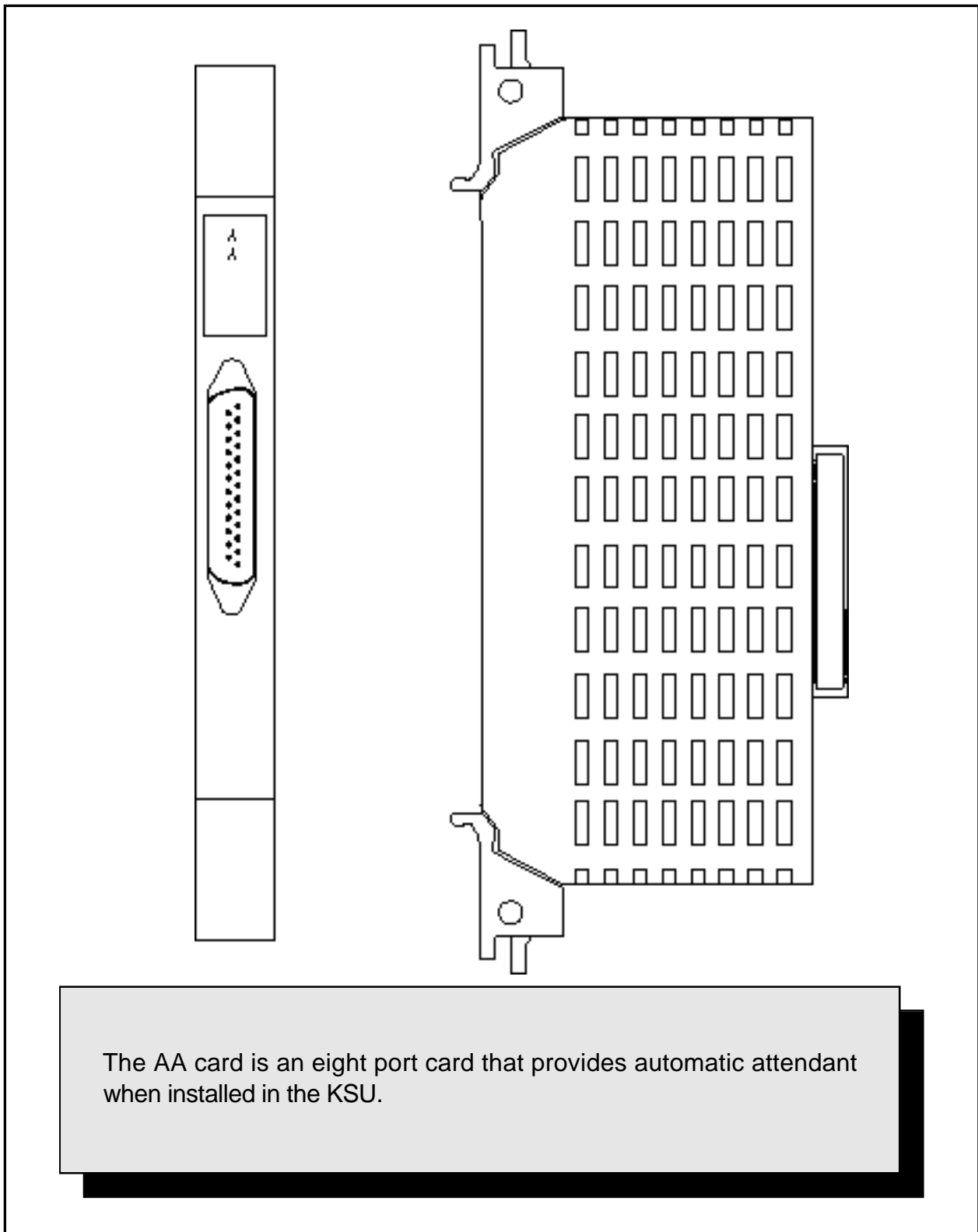
8SLI CARD

FIGURE 3-11



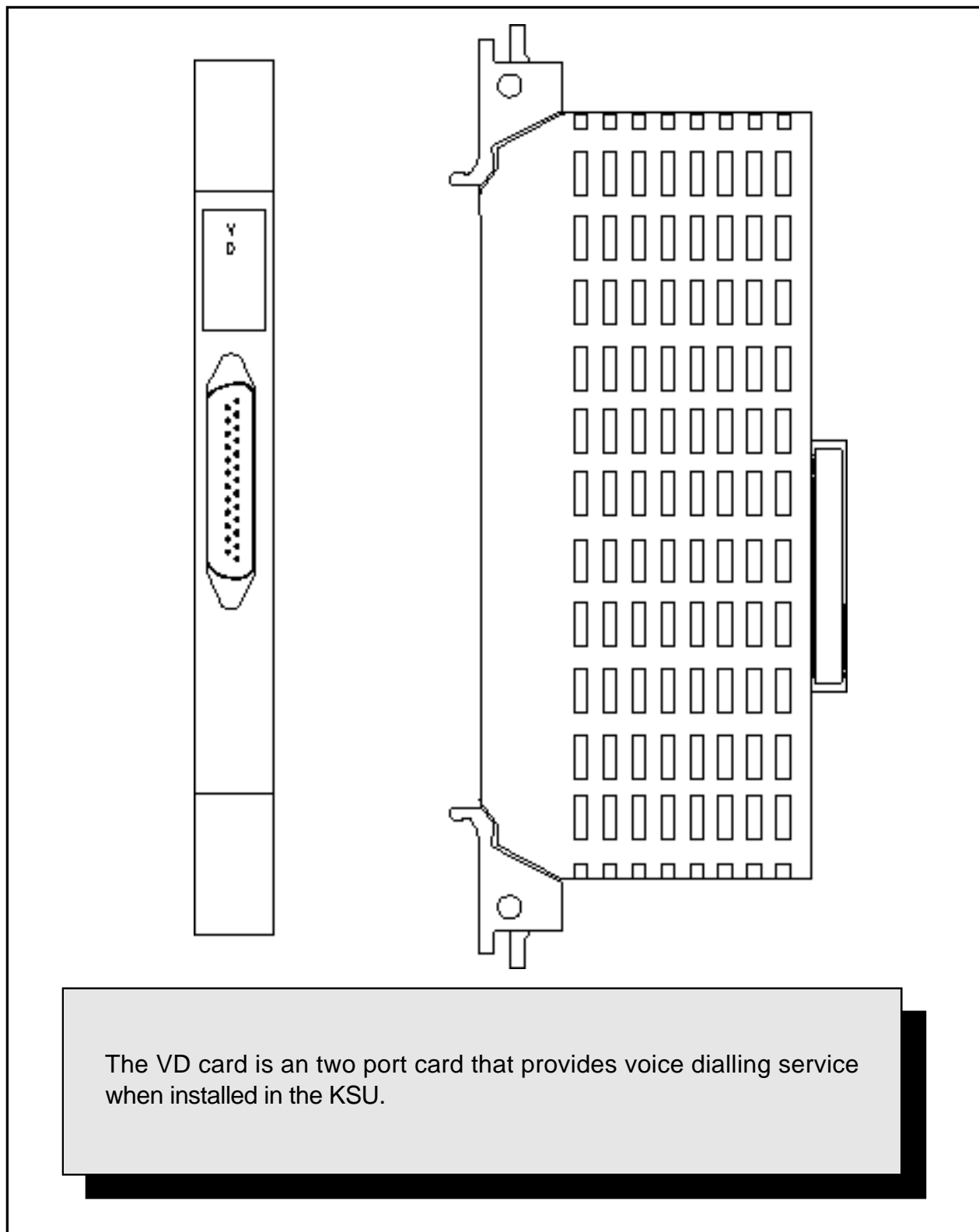
8MWSLI CARD

FIGURE 3-12



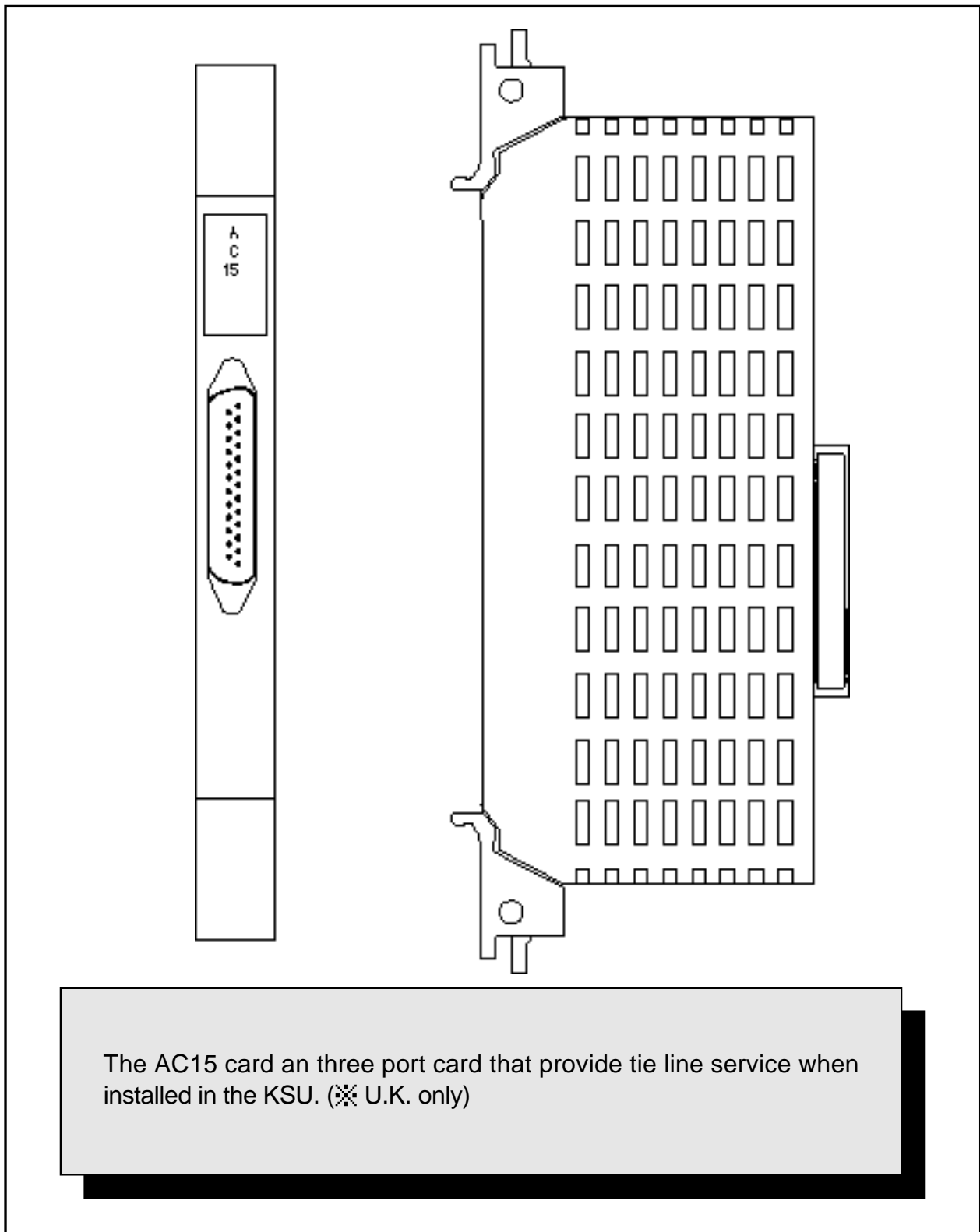
AA CARD

FIGURE 3-13



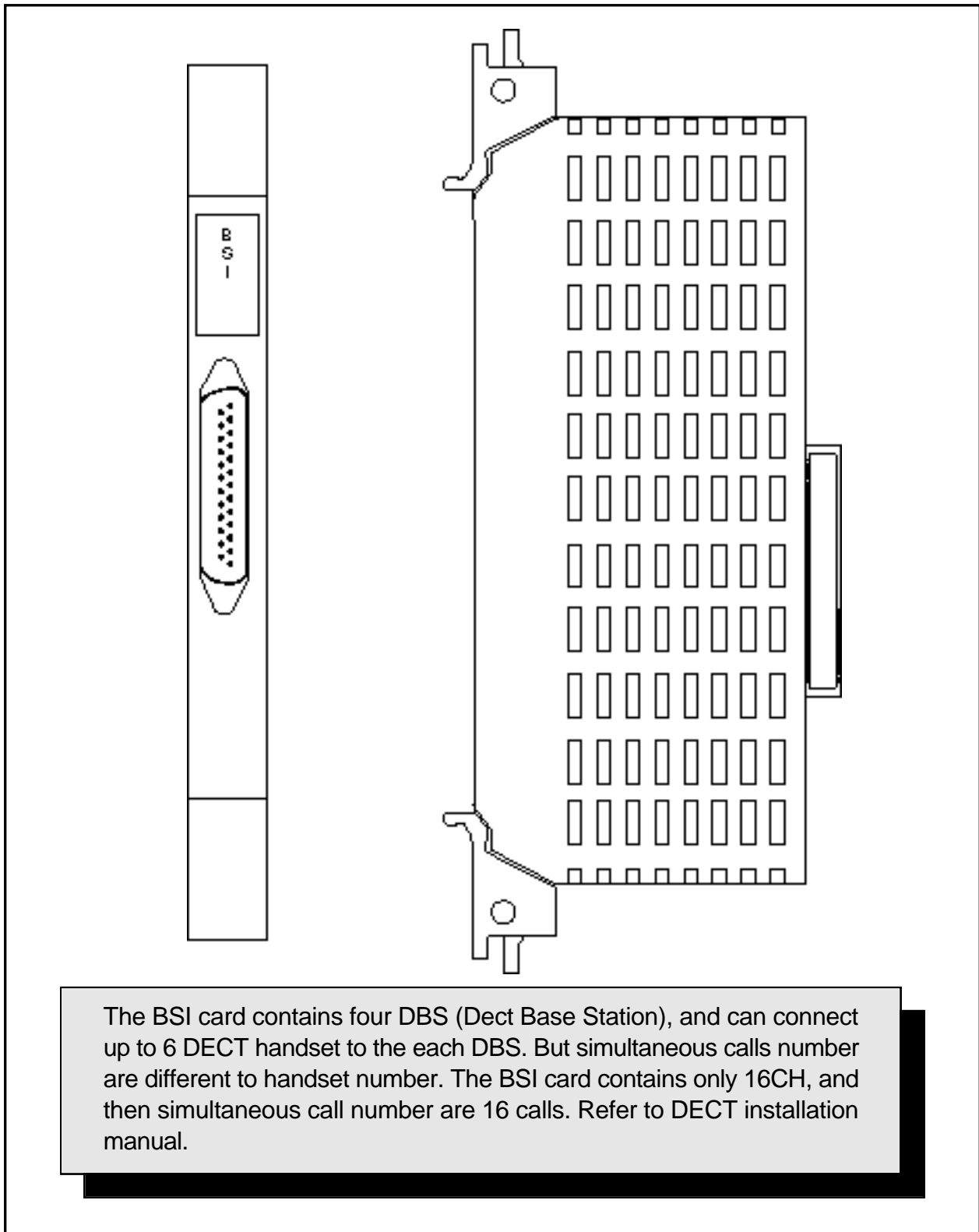
VD CARD

FIGURE 3-14



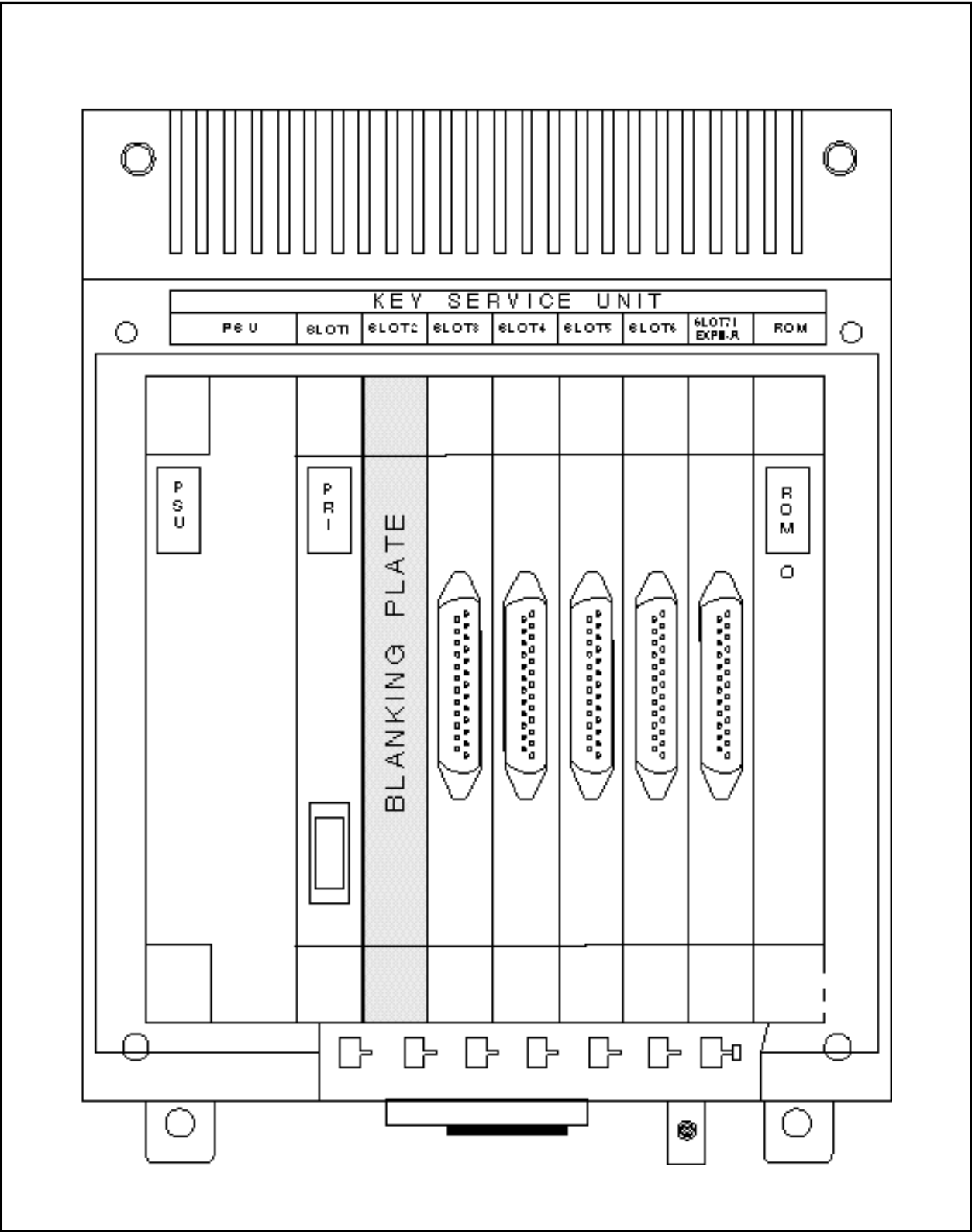
AC15 CARD

FIGURE 3-15



BSI CARD

FIGURE 3-16



PRI INSTALLATION

FIGURE 3-17

PART 4. POWER UP PROCEDURES

4.1 CONNECT POWER TO THE SYSTEM

During the initial installation, it is best to verify proper system operation before plugging in any amphenol-type cables to the MDF. If you have already plugged the cables in, unplug them.

AC input 110/220V is switch-selectable. Verify that the AC voltage at the dedicated electric outlet is in the range of 88–132 VAC for 110V, and the range of 176–264VAC for 220V.

Make sure all the AC power switches are in the OFF position. Plug one end of the KSU power cord into the power input connector on the KSU and the other into the dedicated polarized AC outlet. Confirm that all expansion cabinets are connected to the KSU with both power extension cables and HDLC cables. Verify that all power switches are in the OFF position.

Turn the AC power switch to the ON position on the expansion cabinets. Turn the AC power switch to the ON position on the KSU. The LED on the ROM pack will light steady and then start flashing to confirm the presence of power and that the processor is running. The LEDs on the EXPN cards will light steady red to indicate the presence of power and that the local processor is running. If both KSU lights fail to illuminate, unplug the system, disconnect the expansion cabinet power cords and HDLC cables and repeat the test. If the LEDs on the ROM pack and EXPN-A card still do not illuminate, unplug the system, remove the power supply and check the AC fuse located on the bottom (Figure 4–1).

If the fuse is good but the LED does not illuminate, you must correct the problem before continuing. Turn off the power switch. Unplug all cards using the card ejectors. Turn the system on. Check the LEDs again. If the problem is corrected, you have a defective card. Test and remove the faulty card before continuing. If the LEDs still do not light, unplug the KSU and change power supplies. This in all probability will solve the problem. If it does not, contact Samsung Technical Support.

If the LED on the EXPN-A card fails to illuminate, switch the KSU off, unplug the HDLC cables and turn the KSU back on. If the EXPN-A LED still does not light, replace the card and repeat the test. This in all probability will solve the problem. If it does not, contact Samsung Technical Support.

If the LED on an EXPN-B card does not light, unplug and replace the HDLC cable. If this does not cure the problem, unplug and replace the EXPN-B card. If the LED still does not light, unplug the system, remove the expansion cabinet power supply and check the AC fuse located on the bottom (Figure 4–1).

If the fuse is good but the LED does not illuminate, you must correct the problem before continuing. Turn off the power switch. Unplug all cards using the card ejectors. Turn the system on. Check the LEDs again. If the problem is corrected, you have a defective card. Test for and remove the faulty card before continuing. If the LEDs still do not light, unplug the EKSU and change power supplies. This in all probability will solve the problem. If it does not, contact Samsung Technical Support.

4.2 ROM CARD INDICATIONS

After verifying proper operation of the power supply, visually check the ROM card indications.

The LED should flicker rapidly, indicating the main processor is functioning.
The system is equipped with a halt program. When this program is running, the LED is ON steady.
The system must be reset to release the halt program and restore the system to normal operation.
See MMC 810 for operation of the halt program.

4.3 PCB VERIFICATION

Before connecting all MDF cabling, plug in a test cable to the first DLI card. Connect a display set and verify that it is working.

Use maintenance program MMC 805 to verify the system version, software version and to confirm that all cards are recognized by the CPU.

Remove the test cable and plug in all amphenol-type cables to the MDF. At this time it is recommended that the system is defaulted by means of MMC 811. See the programming section for more details. Proceed with the rest of the installation.

4.4 DEFAULT TRK AND STATION NUMBERING

Upon initial power up, the CPU reads each slot for the existence of a card and identifies the type of card. It stores this information as the default configuration.

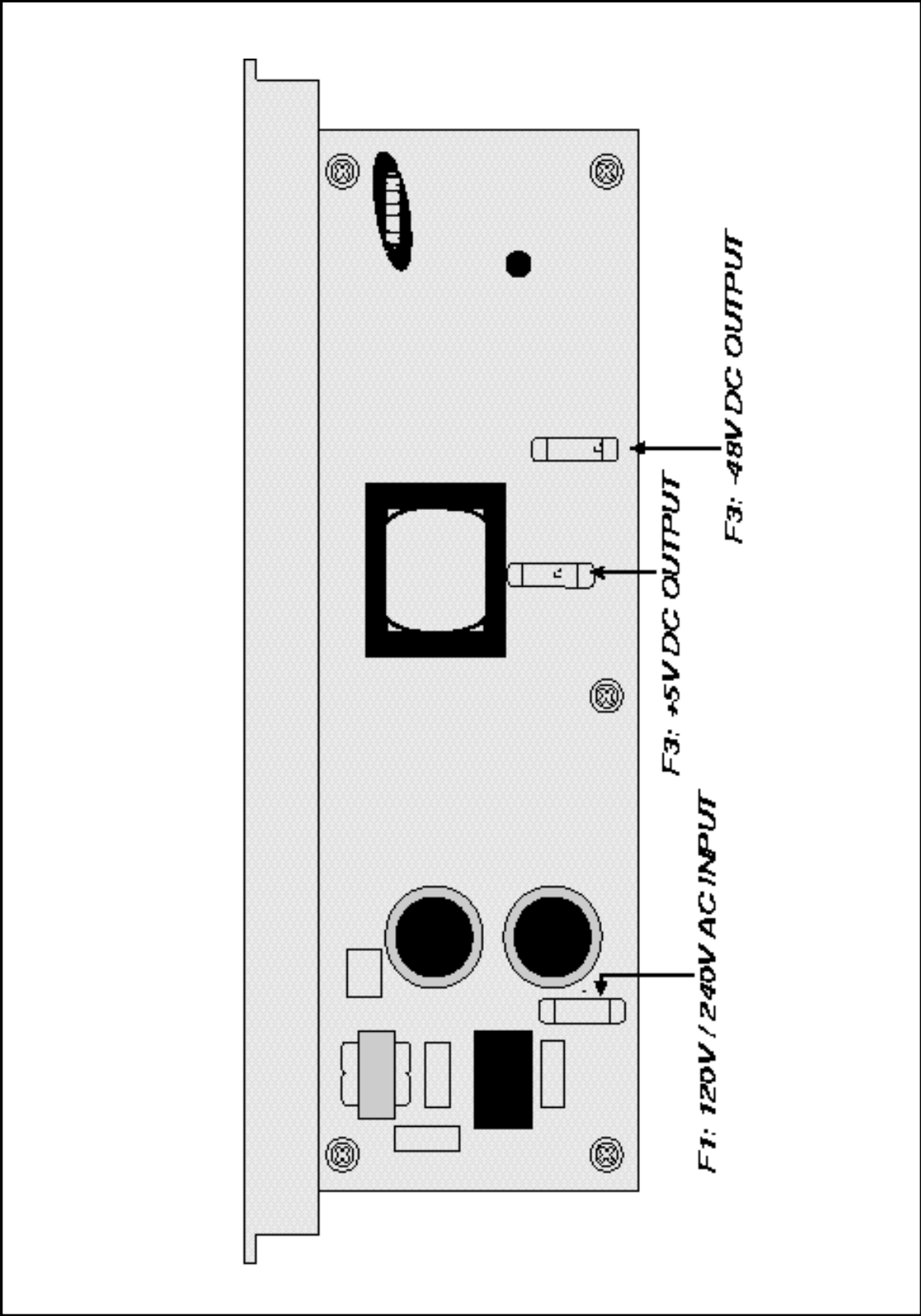
The TRK card in the lowest slot number is assigned TRK numbers beginning with 701. The next highest slot number with a TRK card is assigned TRK numbers following those of the first TRK card. This numbering sequence continues until the last TRK card in the highest slot number is assigned the last TRK number.

For example: if a TRK_A card is in the first slot, port C1/S1/P1 would be assigned TRK number 701 (first cabinet, first slot, first TRK in the system). If the second slot has a TRK_B card installed, port C1/S2/P4 would be assigned TRK number 707 (first cabinet second slot, fourth circuit, seventh TRK in the system).

Station numbers are assigned in the same manner. The lowest slot number containing any type of station card is assigned station numbers beginning with 201. The next highest slot with a station card is assigned numbers following those of the first station card. This numbering sequence continues until all of the stations are assigned. Default data assigns the 24 button keyset in the lowest port to the operator group and all TRKs ring that station until the default is changed. It is recommended that the first station card be a DLI card so that the operator station will default to a keyset as extension 201.

Using MMC 724, station and TRK numbers can be changed, rearranged and reassigned as needed.

NOTE: Changing any station or TRK number from the default number will cause newly added station or TRK cards to come up without directory numbers.



LOCATING FUSES ON THE POWER SUPPLY

FIGURE 4-1

PART 5. CONNECTING CENTRAL OFFICE CIRCUITS

5.1 SAFETY PRECAUTIONS

To limit the risk of personal injury, always follow these precautions before connecting CENTRAL OFFICE circuits:

- a. Never install telephone wiring during a lightning storm.
- b. Never install telephone jacks in a wet location unless the jack is specifically designed for wet locations.
- c. Never touch non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- d. Use caution when installing or modifying telephone lines.

5.2 LOOP START LINES

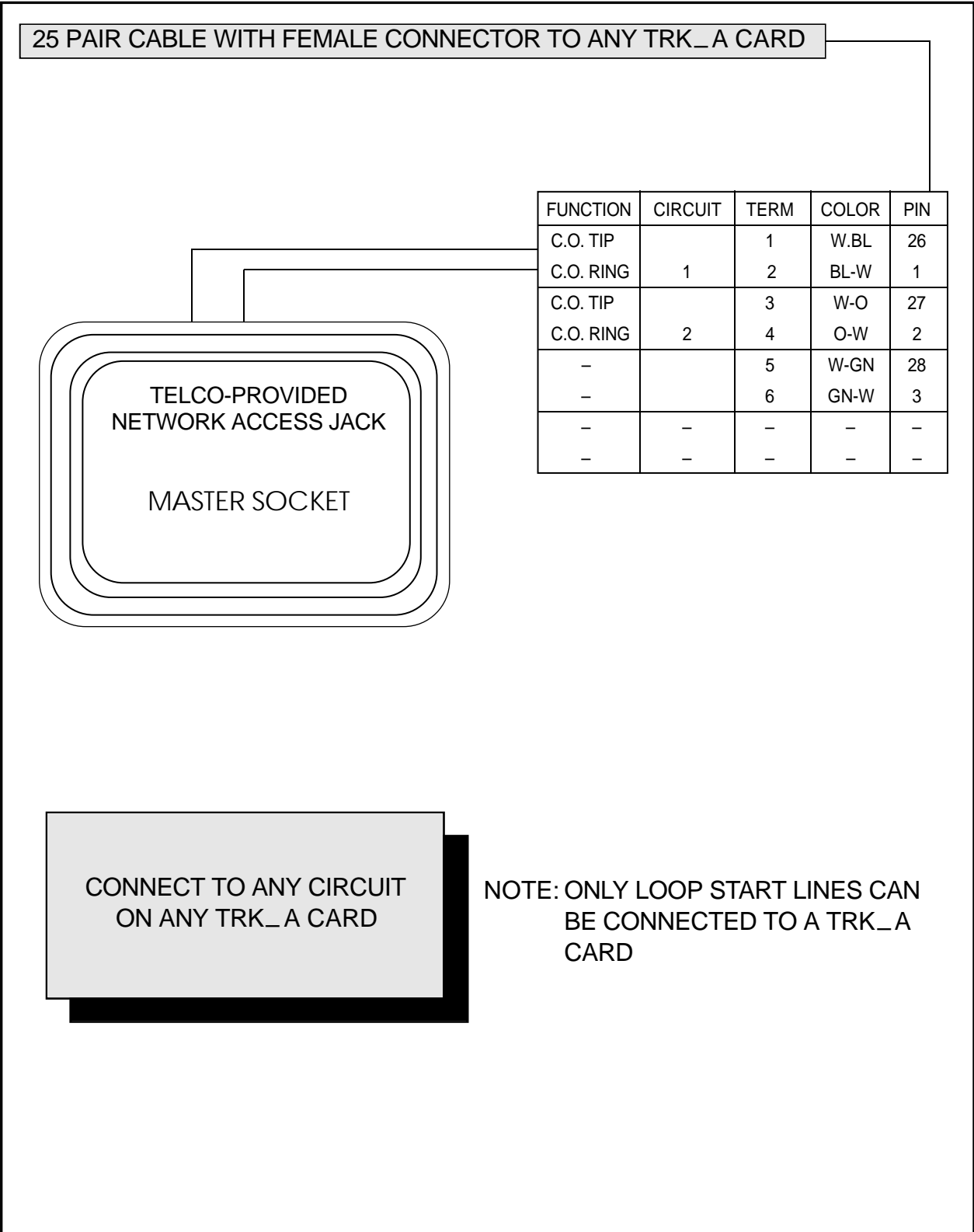
Using one pair twisted #24 AWG or #26 AWG jumper wire, cross-connect each loop start C.O. line to the TRK_A, TRK_B or TRK_C port of your choice. (see Figures 5–1 and 5–2).

5.3 OFF PREMISE EXTENSIONS (OPX)

Using one pair twisted #24 AWG or #26 AWG jumper wire, cross-connect DCS single line extensions to telephone company OPX circuits.(see Figure 5–3)

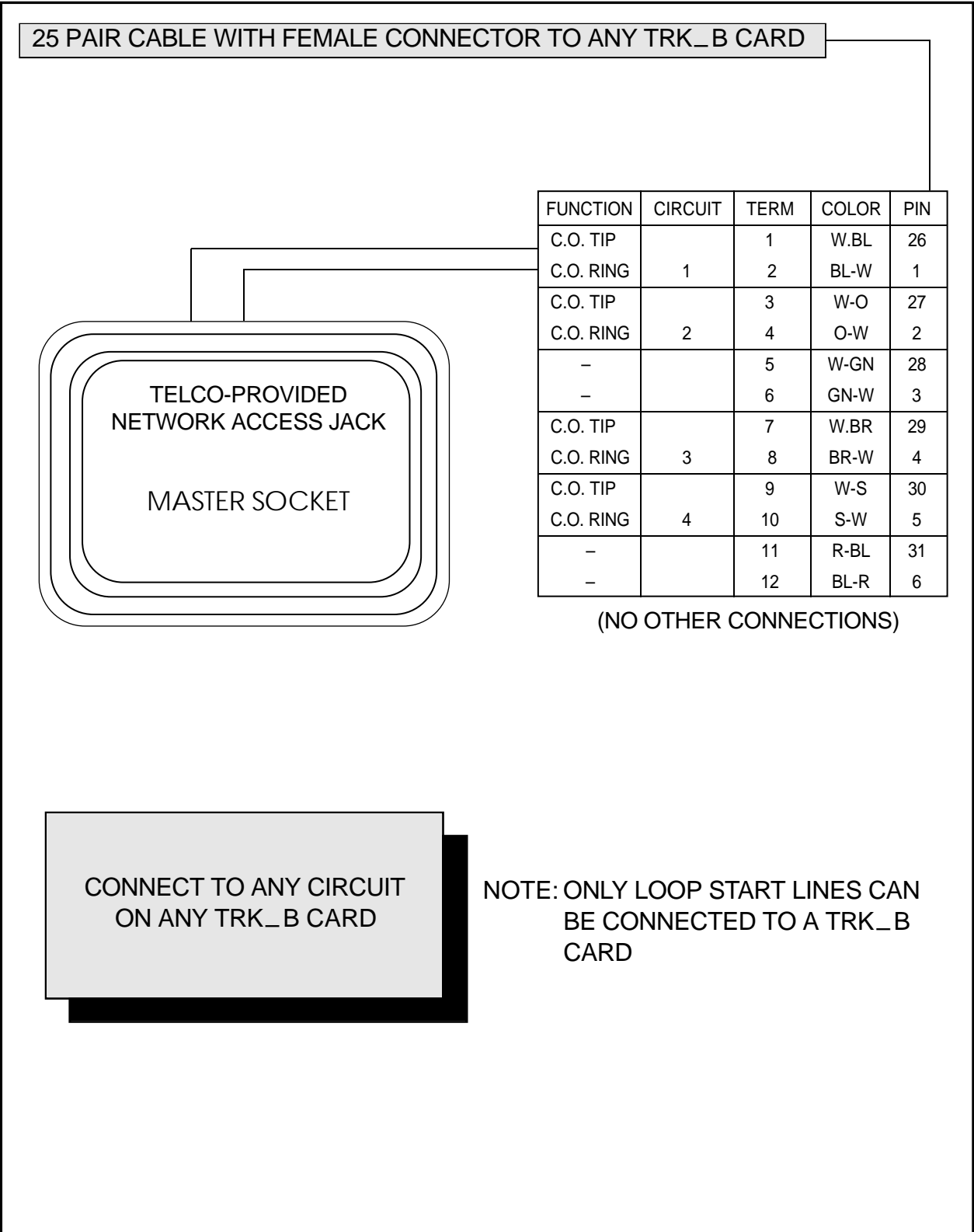
Circuits on the SLI card are specifically designed to meet CENTRAL OFFICE requirements for OPX use. These circuits are provided with the same overvoltage and overcurrent protection as C.O. line circuits. Using single line stations on a KDb-SLI may cause damage to the daughterboard and/or the keyset.

There is no special programming required for OPX use; however, it is suggested that the OPX ports are set for CO ring in MMC 208. The telephone company service facility interface code for OPX circuits is OL13C.



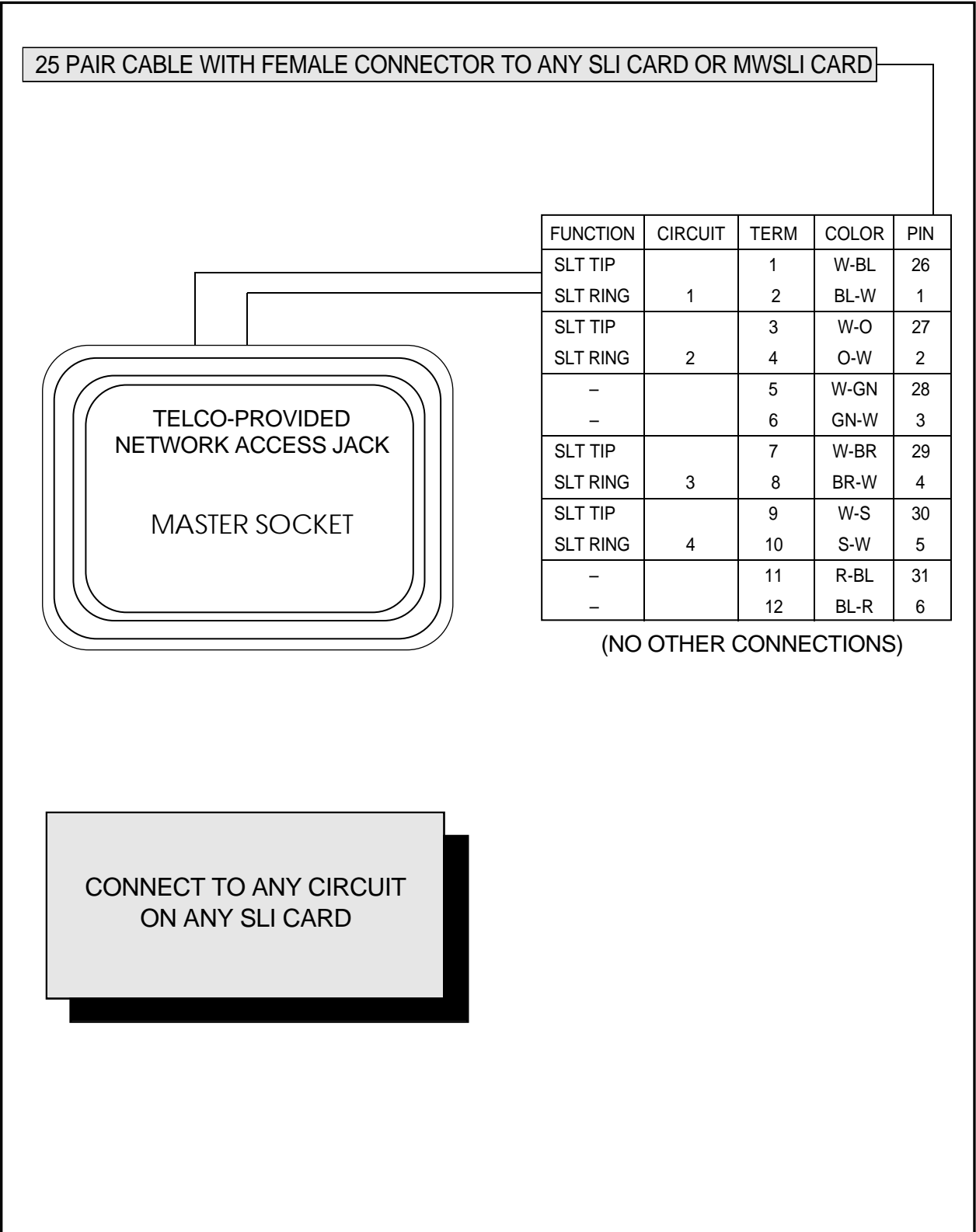
MDF CONNECTIONS
LOOP START LINE TO TRK_A CARD

FIGURE 5-1



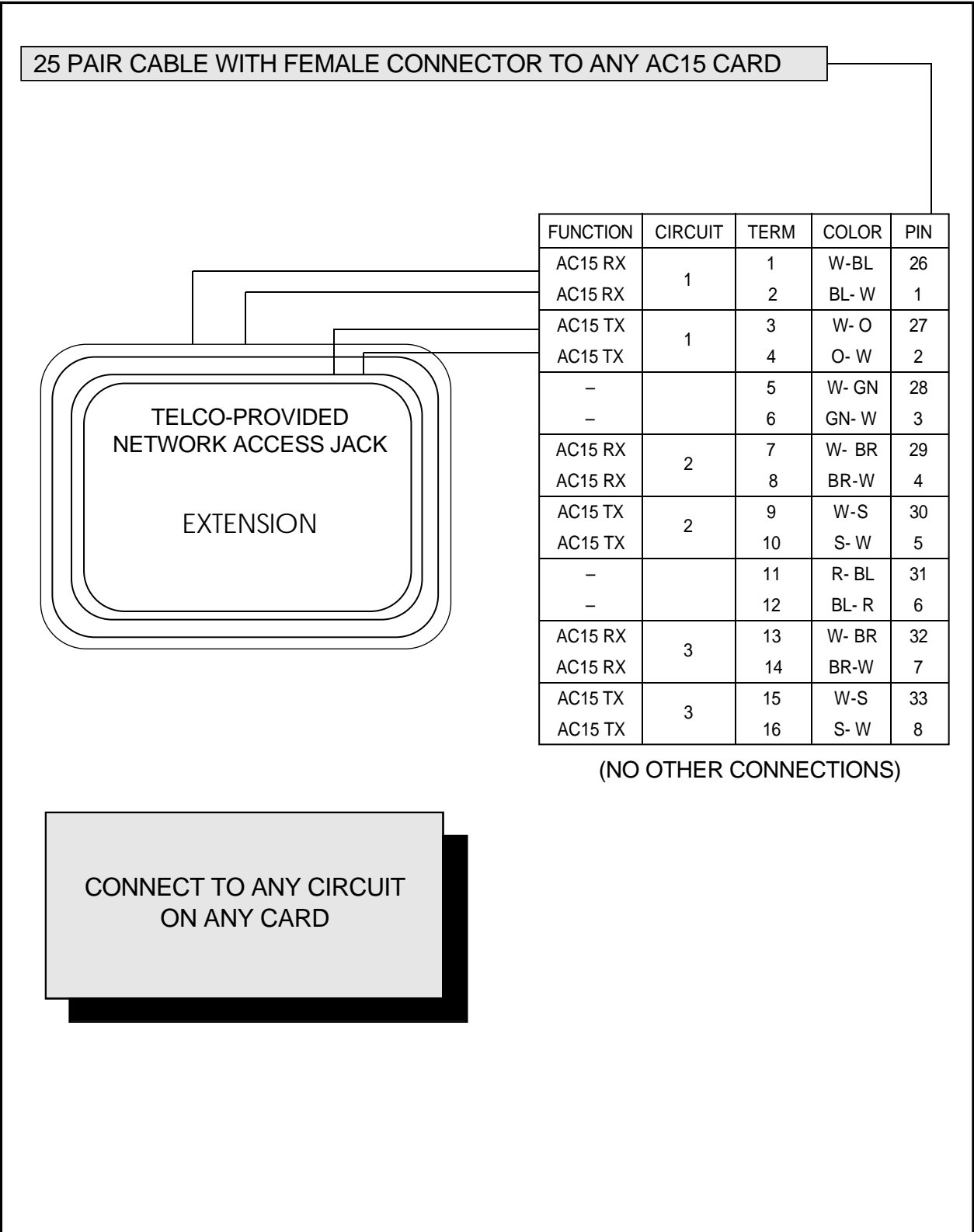
MDF CONNECTIONS
LOOP START LINE TO TRK_B CARD

FIGURE 5-2



MDF CONNECTIONS
OFF PREMISE EXTENSION FROM SLI CARD

FIGURE 5-3



MDF CONNECTIONS
TIE LINE FROM AC15

FIGURE 5-4

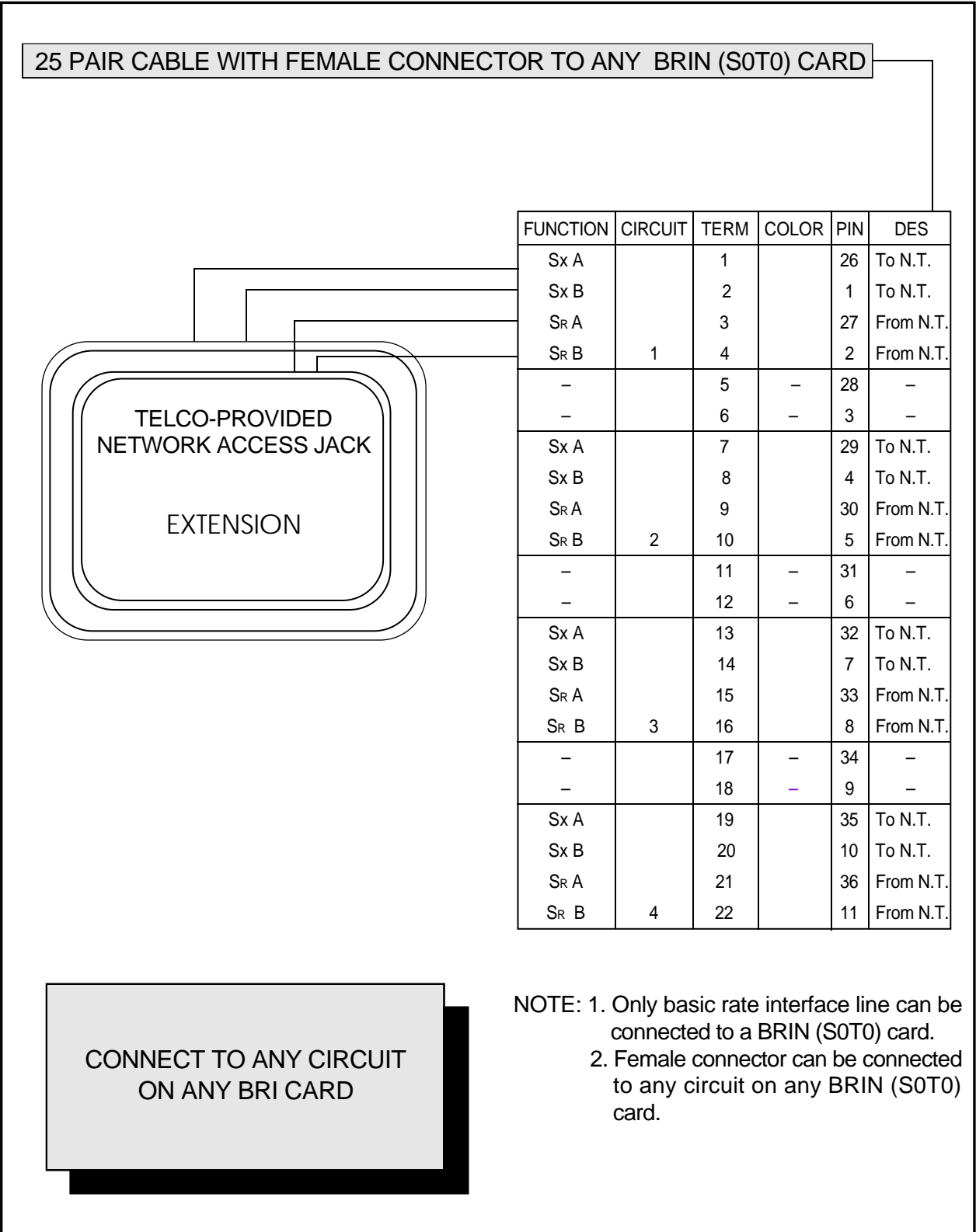


FIGURE 5-5

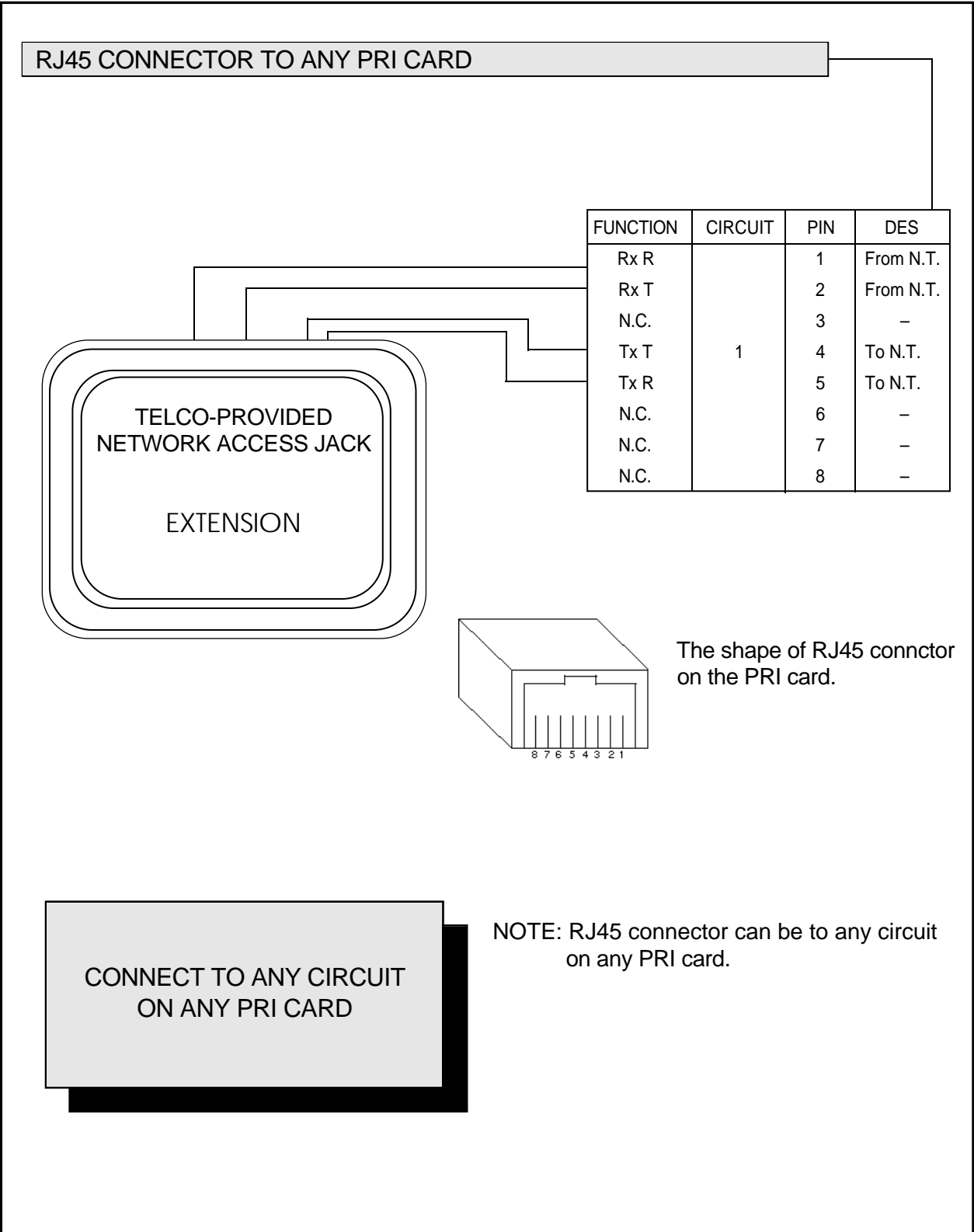


FIGURE 5-6

PART 6. CONNECTING STATION EQUIPMENT

6.1 SAFETY PRECAUTIONS

To limit the risk of personal injury, always follow these precautions before connecting telephone circuits:

- a. Never install telephone wiring during a lightning storm.
- b. Never install telephone jacks in a wet location unless the jack is specifically designed for wet locations.
- c. Never touch non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- d. Use caution when installing or modifying telephone lines.

6.2 DCS KEYSET

Using one pair twisted #24 AWG or #26 AWG jumper wire, cross-connect each keyset to the DLI port of your choice (see Figure 6-1).

NOTE: Because the DCS is a self-configuring system, if you connect a 12 button keyset to a DLI port that previously had a 24 button keyset installed, the existing data will be rewritten with 12 button keyset default data (MMC 723). This can be avoided if you first SAVE the keyset data using MMC 720.

6.3 ADD-ON MODULE

Using one pair twisted #24 AWG or #26 AWG jumper wire, cross-connect each AOM to the DLI port of your choice (see Figure 6-2).

If an add-on module (AOM) is to operate as a stand-alone unit, there is nothing else required other than assigning soft keys.

When an AOM is to be used with a station, it must be assigned to that station in MMC 309. Add-on modules can be assigned to any keyset or single line telephone.

6.4 SINGLE LINE TELEPHONE

Using one pair twisted #24 AWG or #26 AWG jumper wire, cross-connect each single line telephone to the 4SLI, 8SLI or 8MWSLI port of your choice (see Figure 6-3).

6.5 DOOR PHONE AND DOOR LOCK RELEASE

Using one pair twisted #24 AWG or #26 AWG jumper wire, cross-connect each DPIM to the DLI port of your choice (see Figure 6-4). Next, connect the DPIM to the door phone using #24 AWG or #26 AWG twisted pair wire.

When a customer-provided electric door release is installed, cross-connect the corresponding door release contacts on the DPIM to the door lock mechanism (see Figure 6–4). Use MMC 501 to program the duration of the contact closure as required. See the user guides for door lock release operation.

The door release contacts on the DPIM are to be used for low voltage relay control only. The contacts are rated at 24 VDC-1 amp.

| |
|----------------------------------------------------------------------------------|
| WARNING: Do not attempt to connect commercial AC power to these contacts. |
|----------------------------------------------------------------------------------|

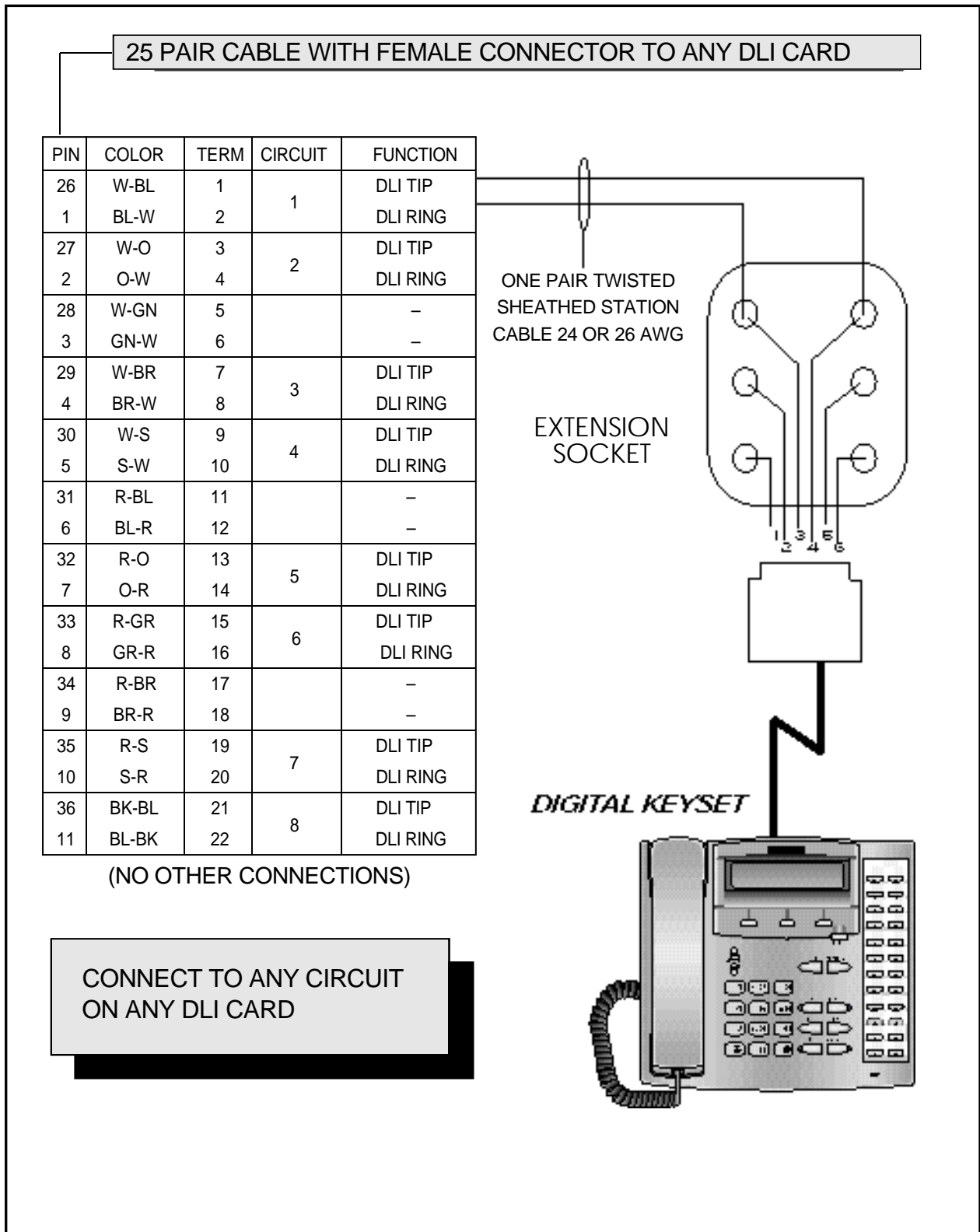
6.6 SIM (RS232C)

Using one pair twisted #24 AWG or #26 AWG jumper wire, cross-connect each SIM to the DLI port of your choice (see Figure 6–5).

6.7 WALL-MOUNTING A KEYSET

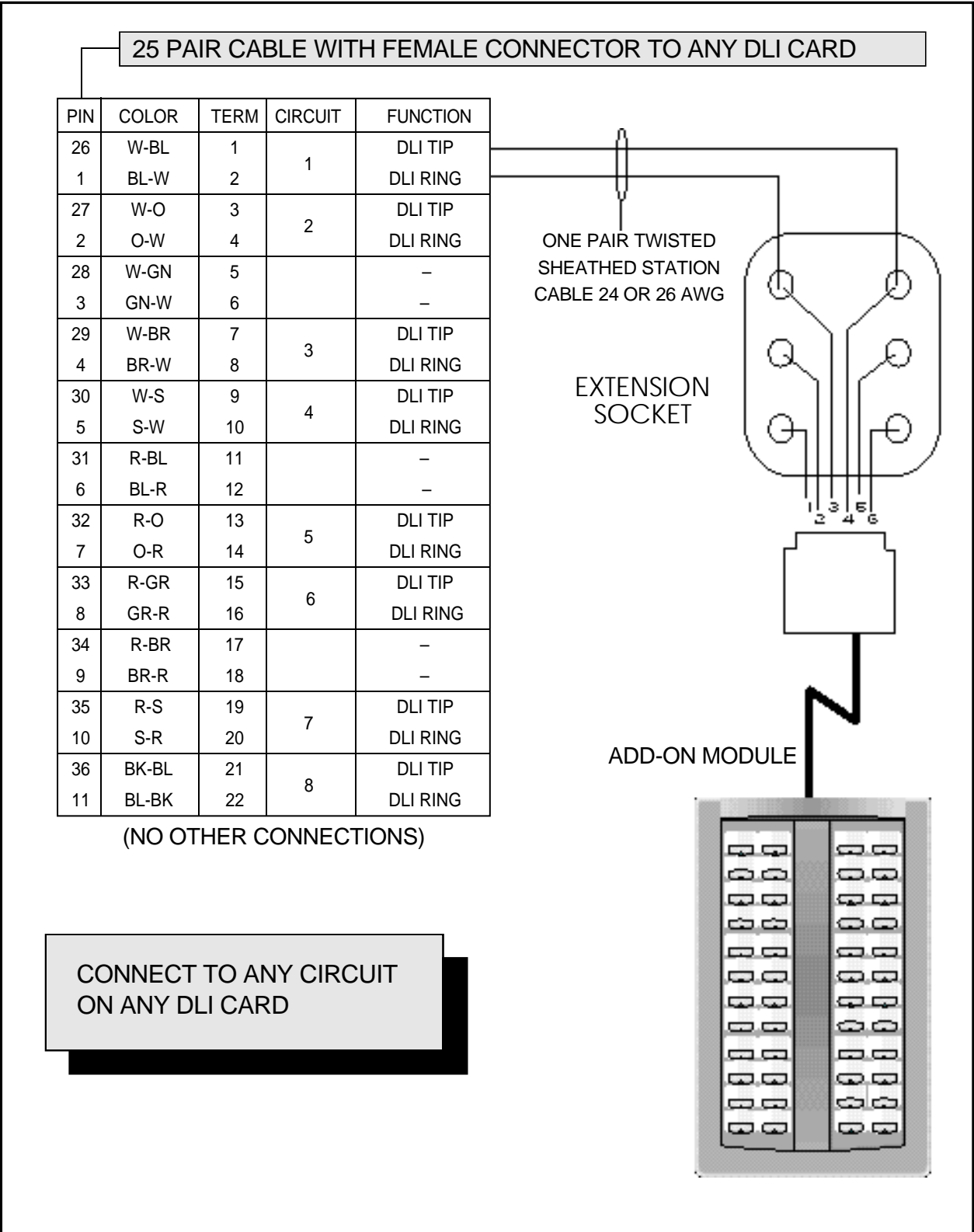
The DCS keysets come equipped with a reversible base wedge as standard. To wall-mount a keyset, remove the wedge from the keyset and remove the directory tray from the wedge. Mount the wedge to the wall using one of the methods below (see Figure 6–6).

- a. Use screw holes 1 and 2 to attach base wedge to a standard electrical outlet box.
- b. Use screw holes 1 and 3 to attach to a standard telephone wall-mount plate with locking pins. This method can cause the keyset to wobble as the keyset feet do not fit securely to the mounting surface.
- c. Use screw holes 4 and 5 if mounting on dry wall with a hole in the middle for cable access.



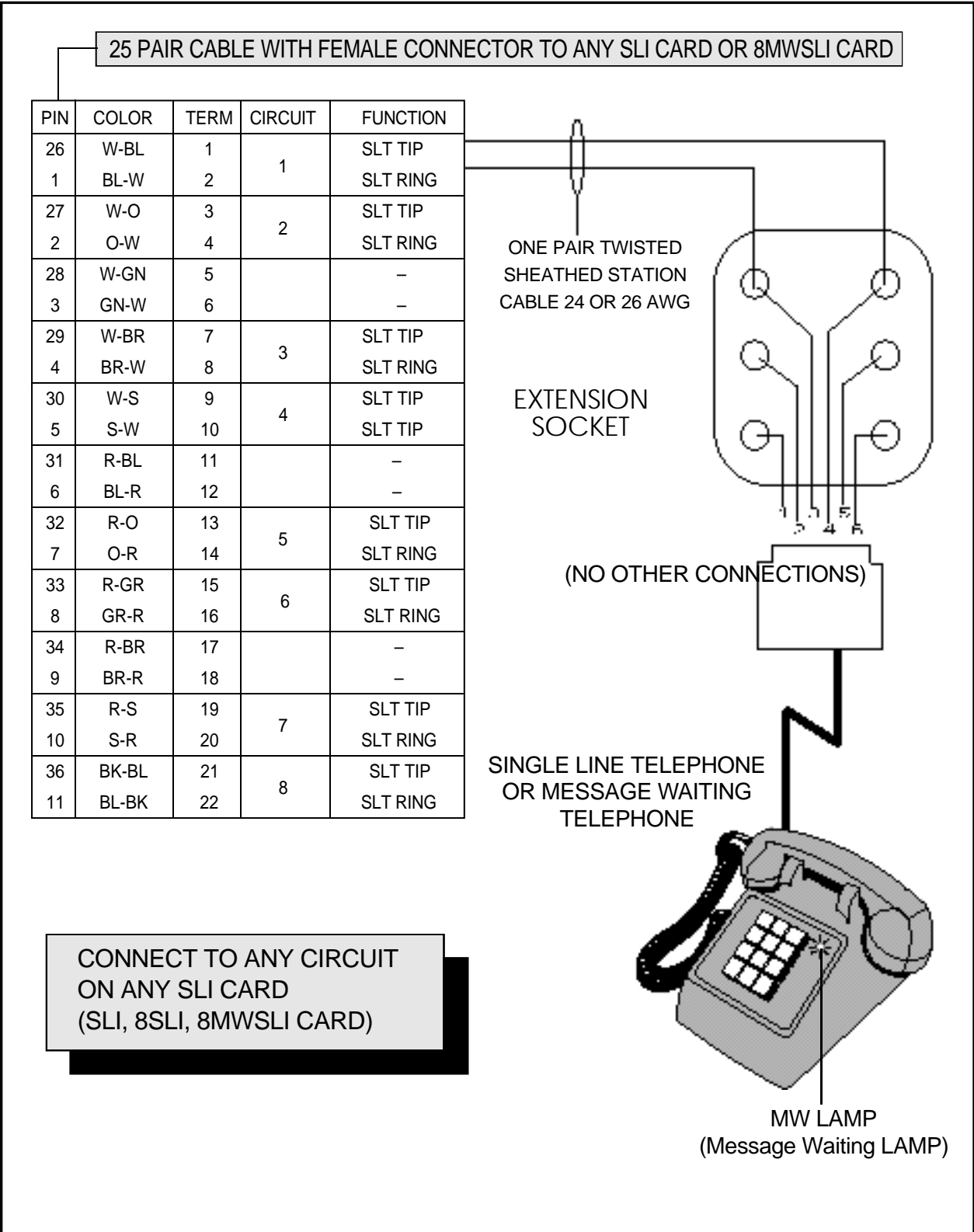
MDF CONNECTIONS
DIGITAL KEYSET TO DLI CARD

FIGURE 6-1



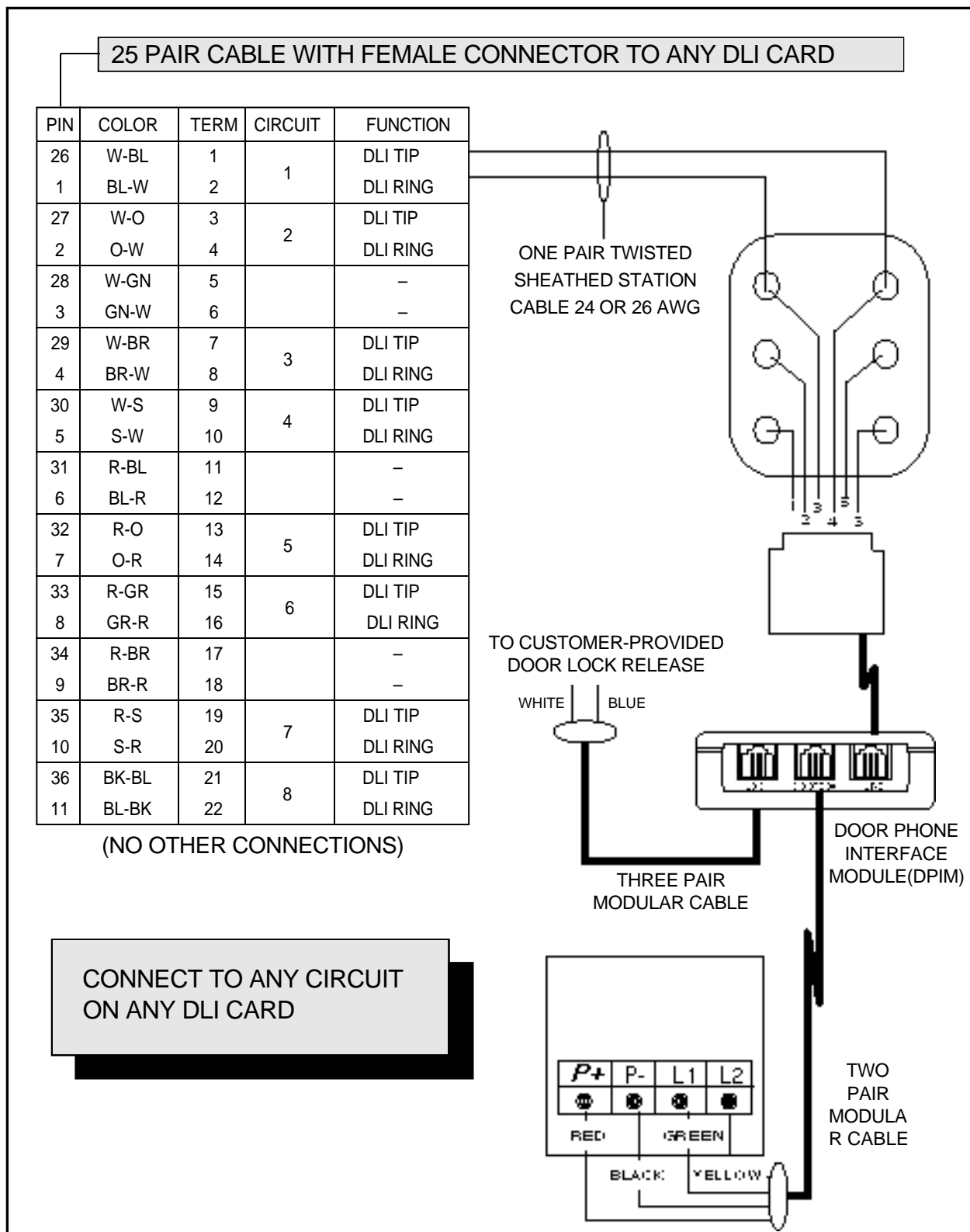
MDF CONNECTIONS
ADD-ON MODULE TO DLI CARD

FIGURE 6-2



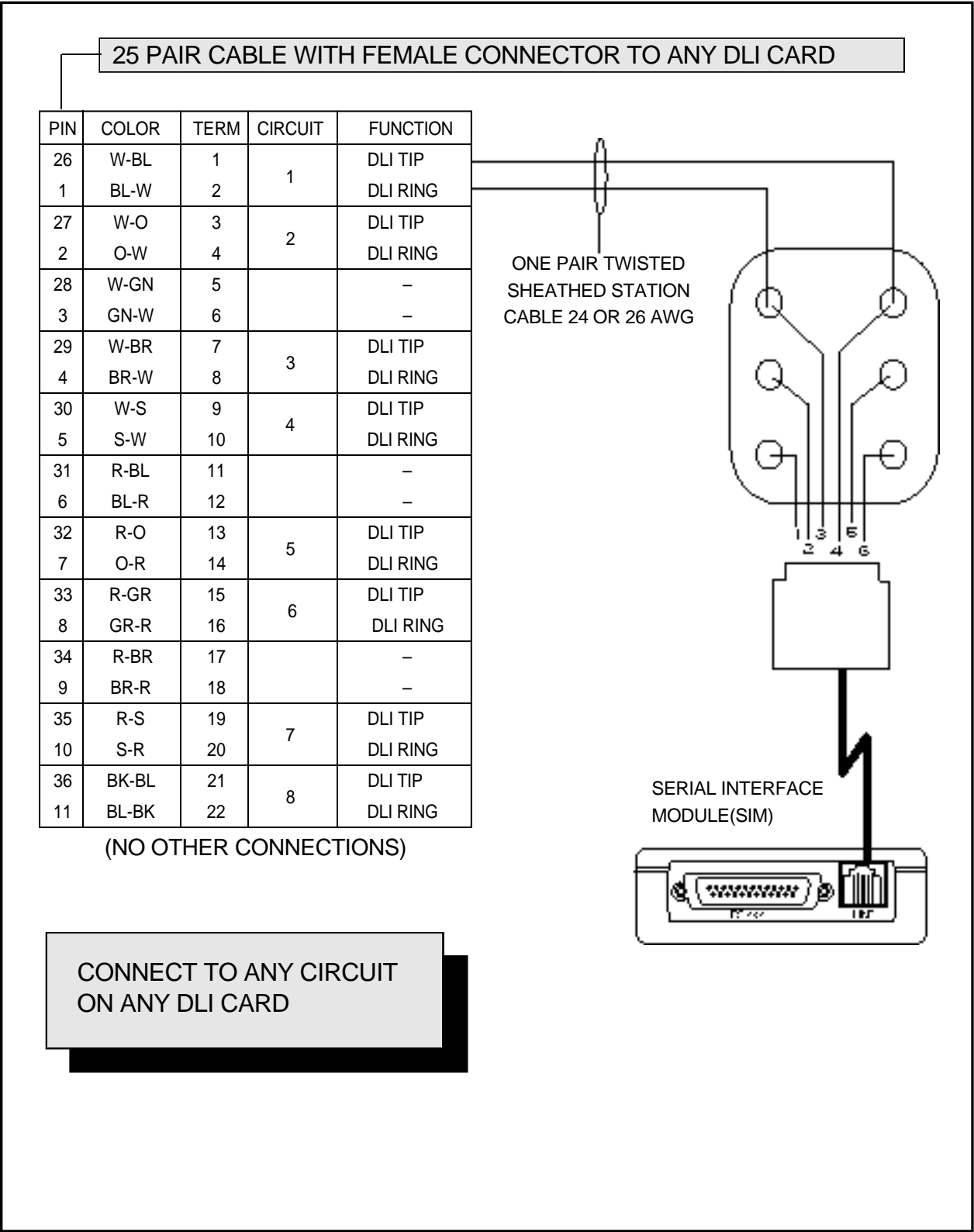
MDF CONNECTIONS SINGLE
LINE TELEPHONE TO SLI CARD

FIGURE 6-3



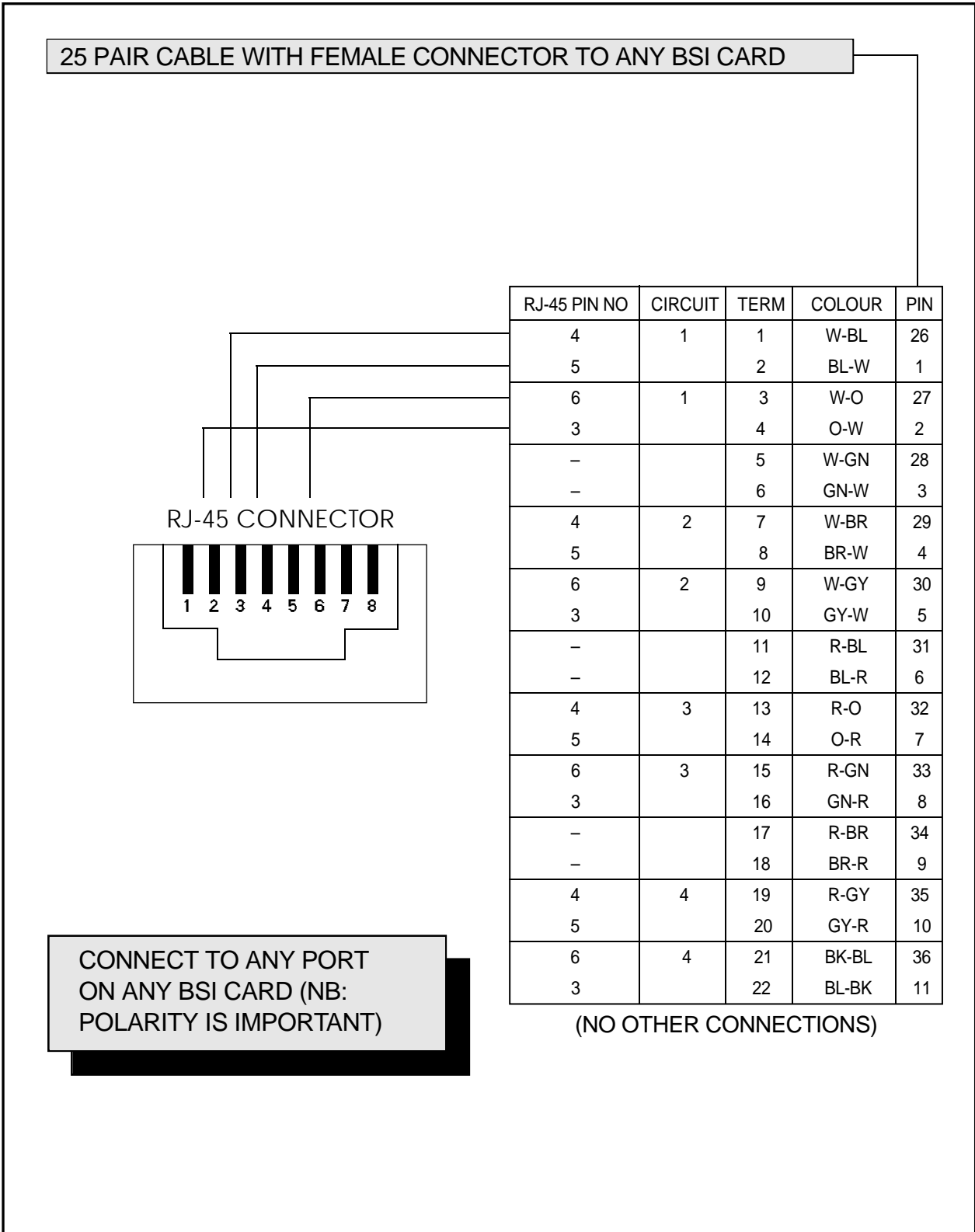
MDF CONNECTIONS DOOR
PHONE AND DPIM TO DLI CARD

FIGURE 6-4



MDF CONNECTIONS
SIM TO DLI CARD

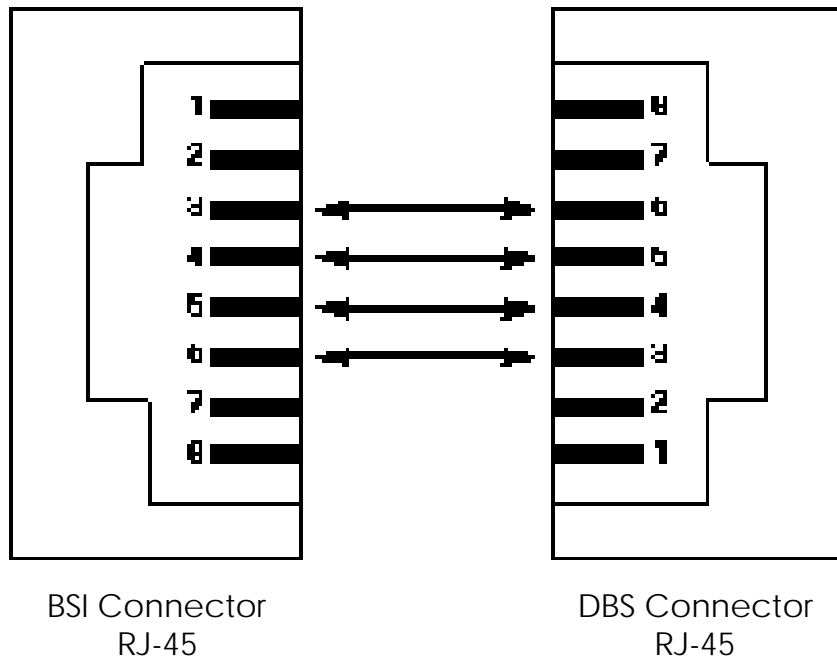
FIGURE 6-5



MDF CONNECTIONS
RJ-45 TO BSI CARD

FIGURE 6–6

RJ-45 MODULAR CONNECTOR TO BSI and DBS CONNECTOR



Two BSIs can be installed if required. Master BSI must be installed in slot to left of slave BSI.

The maximum cable length between BSI to DBS are 600m with 0.6mm diameter (400m with 0.4mm). Maximum 48 users can register on DCS system.

BSI card installed only basic KSU, and maximum number of BSI card are two. (Master/ Slave BSI card)

CABLES Between DBS and
BSI (RJ 45 to RJ-45)

FIGURE 6-7

PART 7. CONNECTING OPTIONAL EQUIPMENT

7.1 MUSIC ON HOLD/BACKGROUND MUSIC

Connect each customer-provided music source to the music input on a TRK_A card connecting block (see Figure 7-1).

The music input on the TRK_A card has internal automatic gain compensation features.

IMPORTANT NOTICE

In accordance with US copyright law, a license may be required from the American Society of Composers, Authors and Publishers (ASCAP) or another similar organization if copyrighted music is transmitted through the Music on Hold feature. Samsung Telecommunications America hereby disclaims any liability arising out of failure to obtain such a license.

Each C.O. line (trunk) can be programmed to receive a music source, system-generated tone or NO MUSIC when it is put on hold. See MMC 408.

Each keyset can receive a music source or NO MUSIC for background music. See the Programming section for instructions (MMC 308).

7.2 EXTERNAL PAGING

The TRK_A card provides a voice pair and two dry contact pairs to be used with customer-provided paging equipment.

Connect the customer provided paging equipment to the page output pins of a TRK_A connecting block (see Figure 7-2). The relays must be assigned to the page zone in MMC 605.

The page voice pair is 600 ohm impedance. When the amplifier page input is not 600 ohm, an impedance matching transformer must be used. The paging contact pairs are for control of low voltage circuits or amplifier output. The contacts are rated at 24 VDC-1 amp.

WARNING: Do not attempt to connect commercial AC power to these contacts.

7.3 COMMON BELL

A customer-provided loud ringing device can be controlled using the dry contact pair on the TRK_A card. See Figure 7-3. By using MMC 204, programming allows for interrupted or continuous operation of the contacts. The interrupted selection follows the C.O. ring cadence: one second ON/three seconds OFF.

After connecting a common bell, you must, in MMC 601, assign it to a group as a ring destination by using the code for common bell.

The basic steps for common bell operation are the following:

- a. Wire the loud ringing device to the common bell control contact pair.
- b. Set contacts for continuous or steady operation.
- c. Program the hunt group to include the common bell.
- d. Assign the TRK to ring the hunt group containing the common bell.

Common bell control can be used with station hunt groups, individual stations and Universal Night Answer. Contacts are rated at 24 VDC-1 amp.

WARNING: Do not attempt to connect commercial AC power to these contacts.

7.4 RING OVER PAGE

When a customer-provided paging system is installed, incoming calls can be assigned to ring over page. Program the line or lines to ring a hunt group. Using MMC 601, assign ROP as a destination in this hunt group. Ring over page can be used for day or night operation or both.

7.5 LOUD RINGER

The TRK_A card is equipped with a ring output. Connect this pair to a customer provided amplifying device (see Figure 7-1). Assign the output to a station in MMC 205 (Assign Loud Bell). After the loud ring output has been assigned, when the station rings the loud ringer will ring.

7.6 SMDR

To receive an SMDR printout, connect a customer-provided printer to the serial interface connector on the back of an SIM (see Figure 7-4).

Use a pin to pin RS232C cable. Only pins, 2, 3, 7 and 20 are required (see Figure 7-7). When the printer or optional call accounting device needs to be more than 15 feet away from the KSU, use shielded computer cable. Attach a male DB25 connector to the SIM end and one that matches the requirements of the call accounting device or printer to the other end. This cable must not exceed 300 feet.

Use MMC 725 to set SMDR print options and use MMC 804 to set the transmission parameters and the SIM port.

NOTE: The SIM has a minimum transmission speed of 1200 baud.

7.7 PC PROGRAMMING

To program the system via a personal computer (PC), connect a PC equipped with PCMMC to the serial interface connector on the back of an SIM (see Figure 7-5).

Use an RS232C cable with connections as shown in Figure 7–8. When the PC needs to be more than 15 feet away from the KSU, use shielded computer cable. Attach a male DB25 connector to the SIM end and one that matches the requirements of the PC to the other end. This cable must not exceed 300 feet.

Use MMC 804 and 311 to set the transmission parameters for the SIM port.

NOTE: The SIM has a minimum transmission speed of 1200 baud.

7.8 REMOTE PROGRAMMING

To remotely program a system, connect a customer-provided modem to the serial interface connector on the back of an SIM (see Figure 7–6).

Use an RS232C cable as shown in Figure 7–9. When the modem needs to be more than 15 feet away from the KSU, use shielded computer cable. Attach a male DB25 connector to the SIM end and one that matches the requirements of the modem to the other end. This cable must not exceed 300 feet.

Use MMC 804 and 311 to set the transmission parameters for the SIM port to be used.

NOTE: The SIM has a minimum transmission speed of 1200 baud.

7.9 POWER FAILURE TRANSFER (PFT)

When the system loses AC power, the first two loop start lines on a TRK_A card are automatically switched to PFT stations. Cross-connect these outputs as shown in Figure 7–10 to the tip and ring pairs of the single line phones that are to have power failure operation. The allowable number of PFT stations is determined by the number of TRK_A cards.

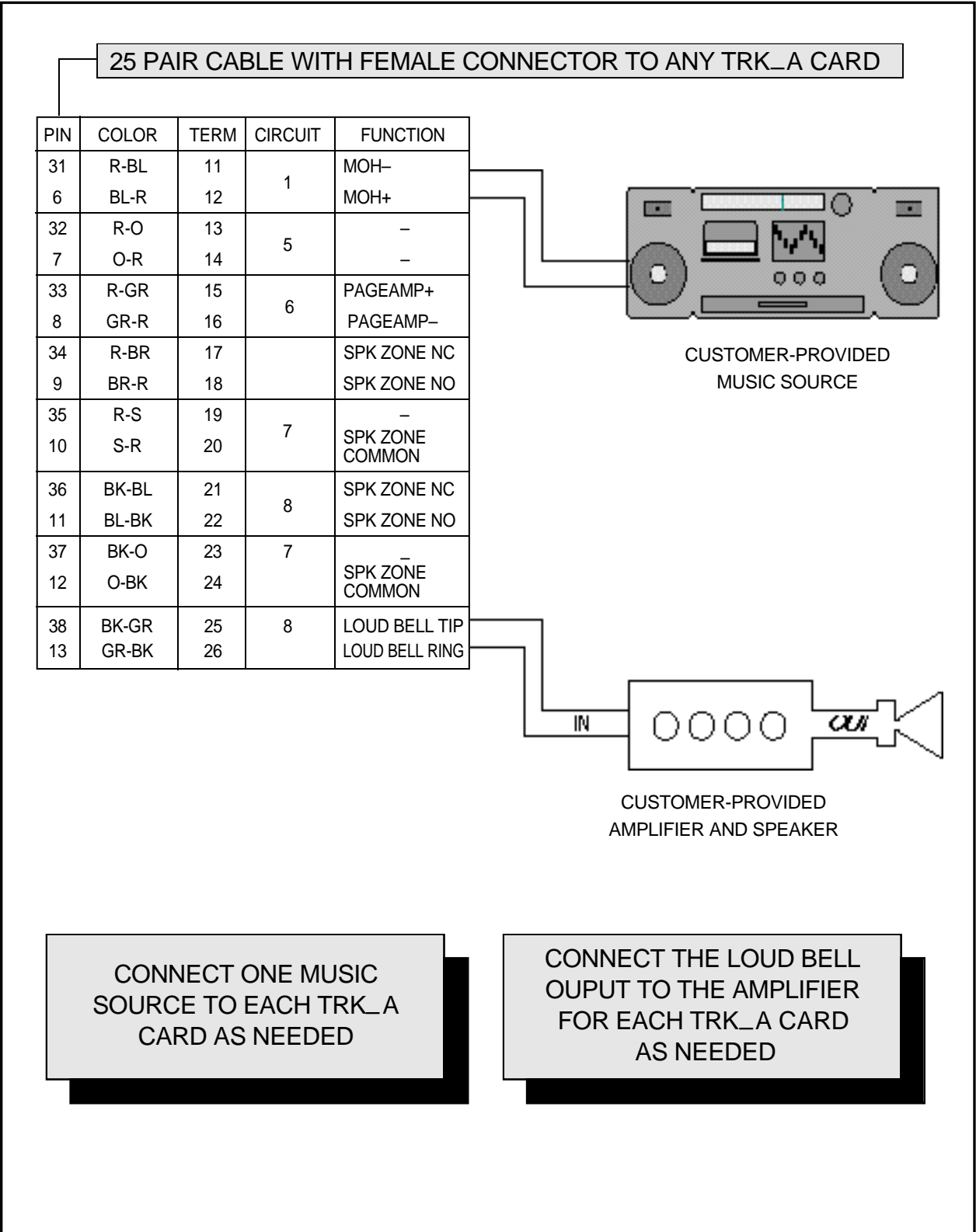
7.10 VOICE MAIL/AUTO ATTENDANT

System operation provides special programming and hardware for use with a customer-provided voice mail/auto attendant system.

All single line stations on the 4SLI card provide a disconnect signal required for VM/AA operation.

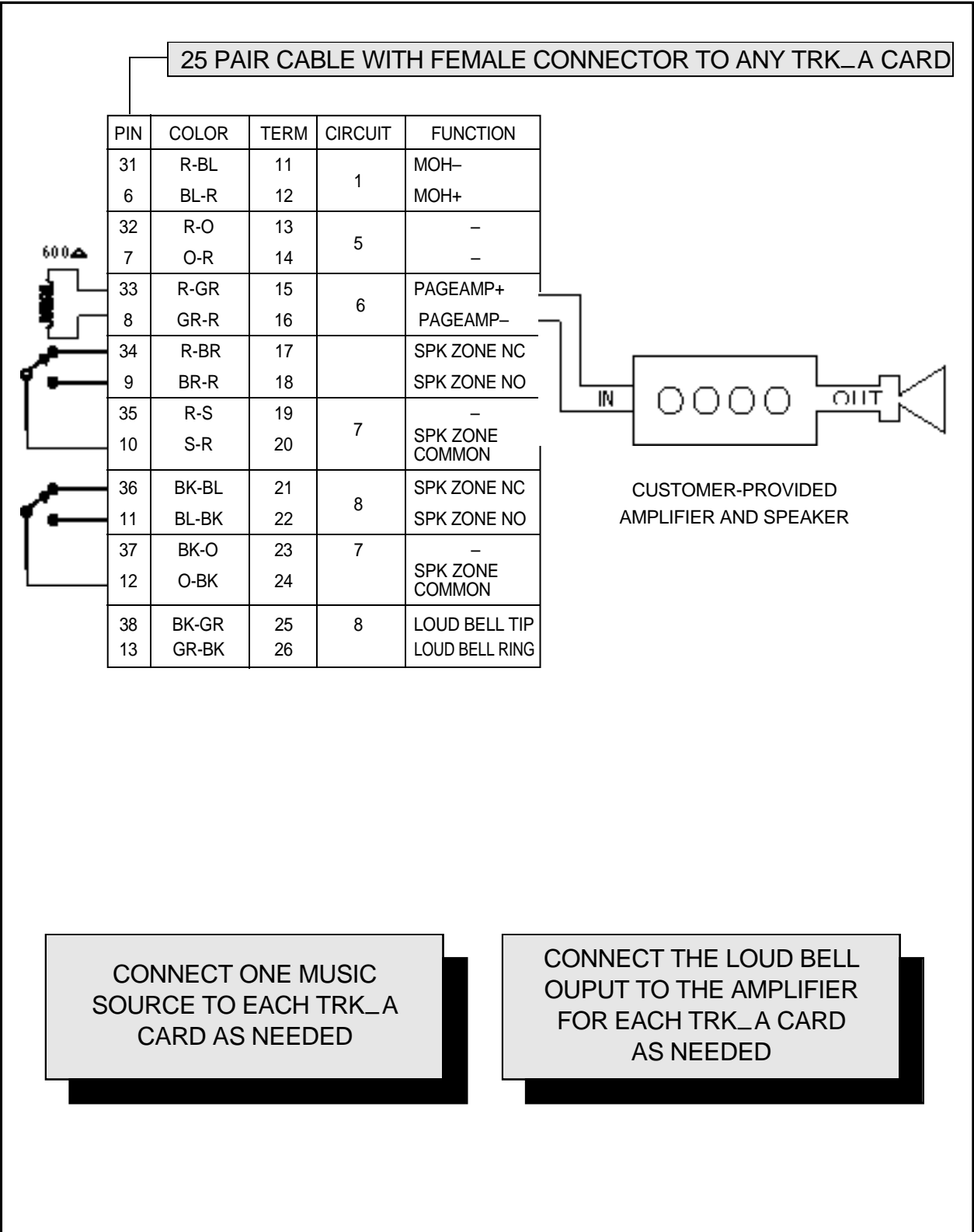
Use one pair twisted #24 AWG or #26 AWG jumper wire to cross-connect 4SLI circuits to the VM/AA system (see Figure 7–11).

Program these ports for VM/AA use in MMC 207 and set VM/AA options in MMC 726. See standard telephone user guide for feature codes and instructions.



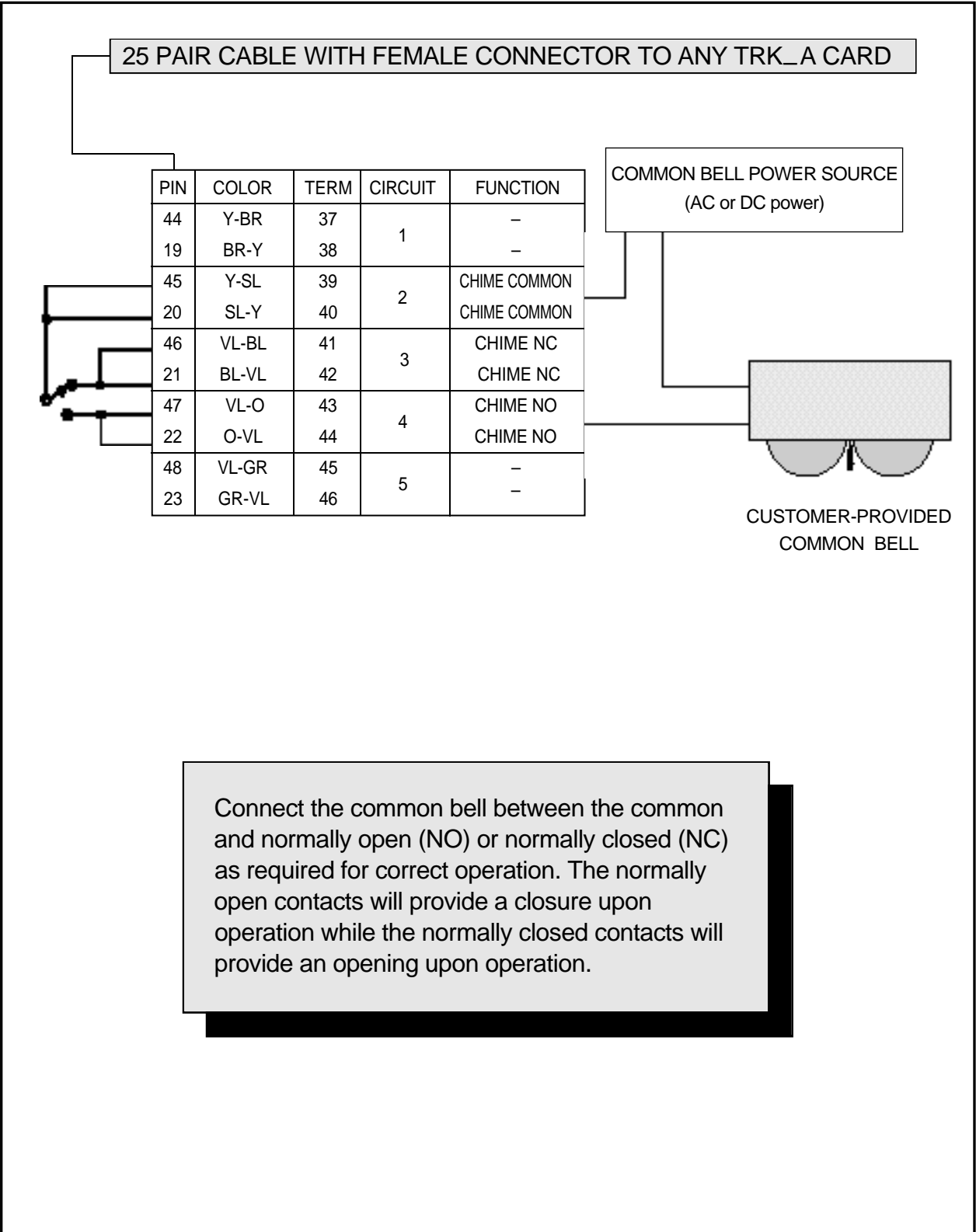
MDF CONNECTIONS
CONNECTING MOH SOURCE AND
LOUD BELL TO TRK_A CARD

FIGURE 7-1



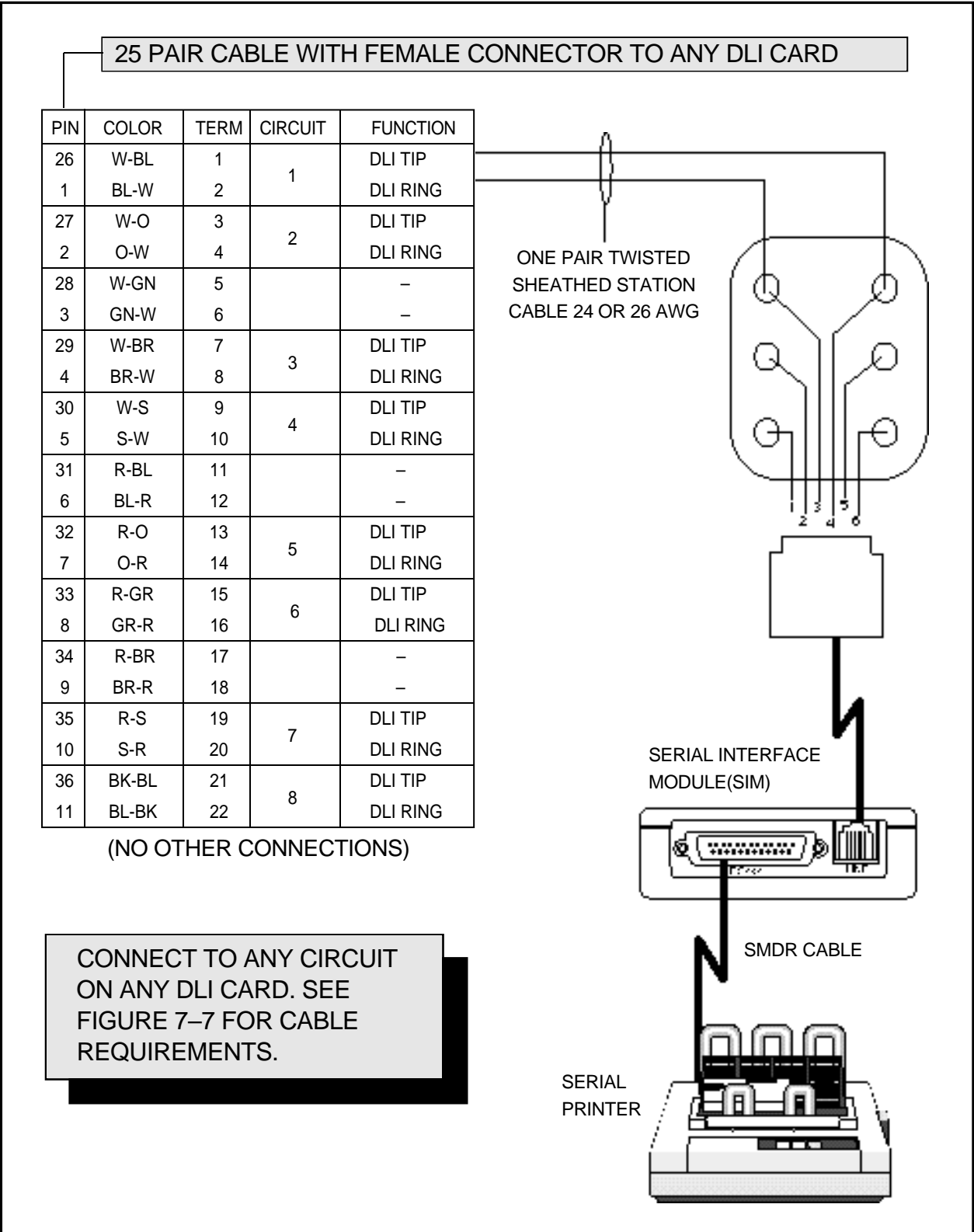
MDF CONNECTIONS
CONNECTING PAGING TO TRK_A
CARD

FIGURE 7-2



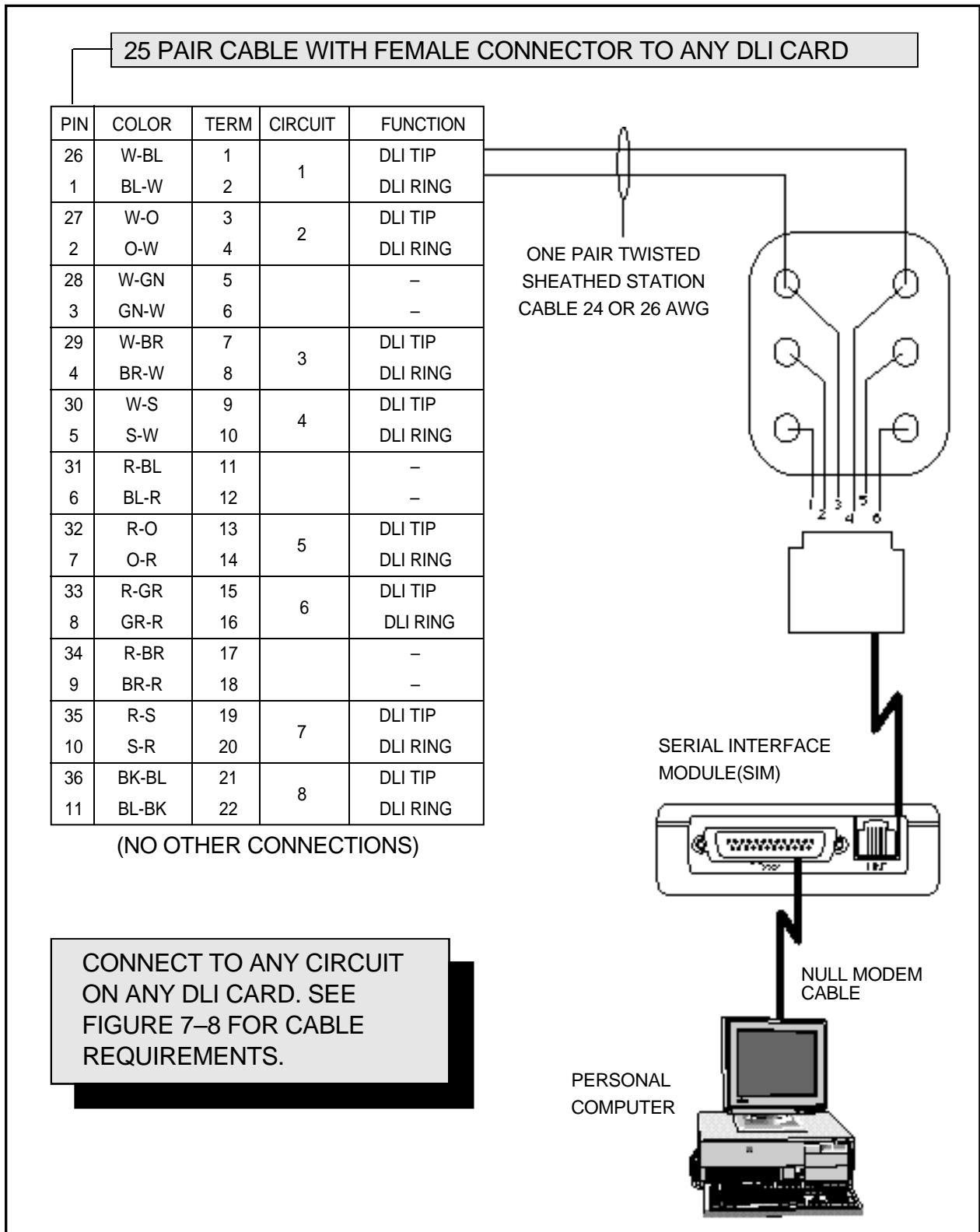
MDF CONNECTIONS
CONNECTING COMMON BELL TO
TRK_A CARD

FIGURE 7-3



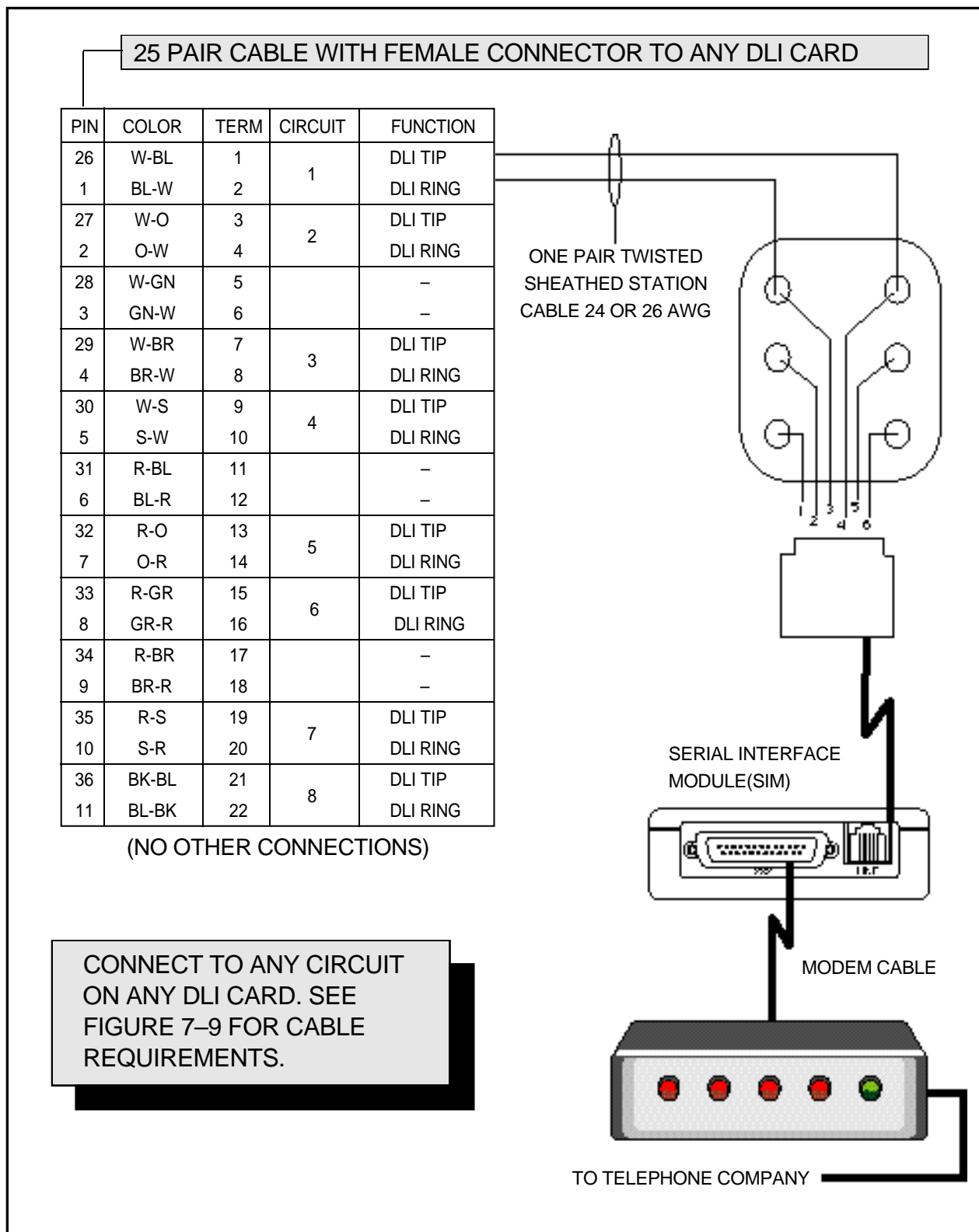
MDF CONNECTIONS
SIM TO DLI CARD FOR SMDR

FIGURE 7-4



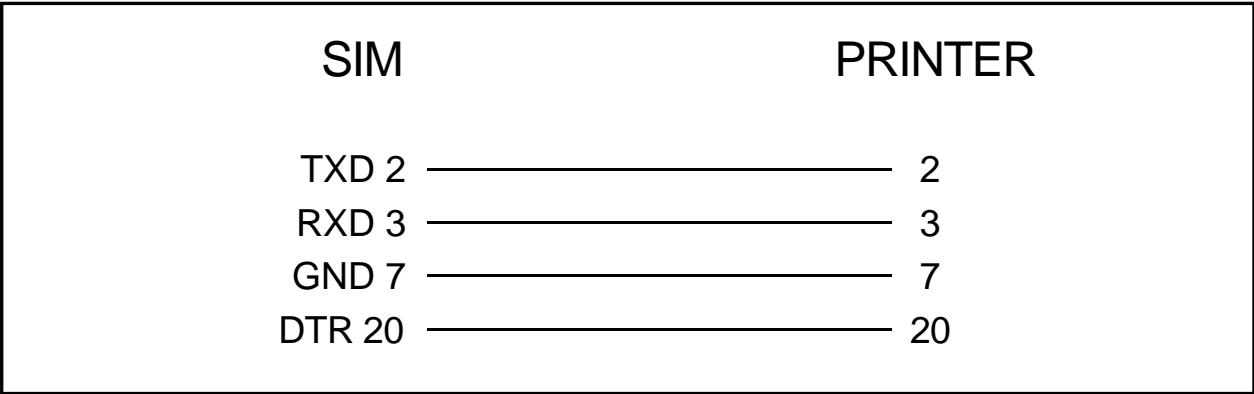
**MDF CONNECTIONS
SIM TO DLI CARD FOR ON-SITE
PC PROGRAMMING**

FIGURE 7-5



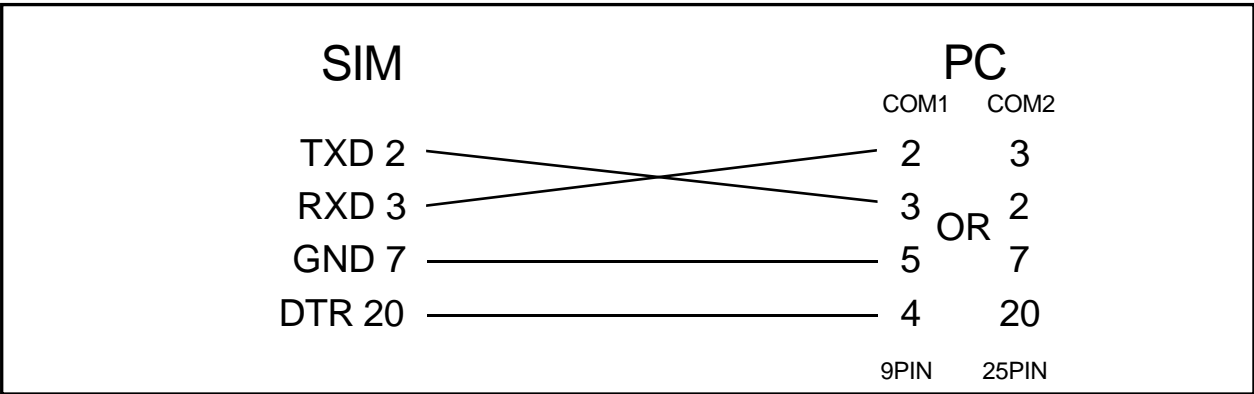
MDF CONNECTIONS
SIM TO DLI CARD FOR REMOTE
PROGRAMMING

FIGURE 7-6



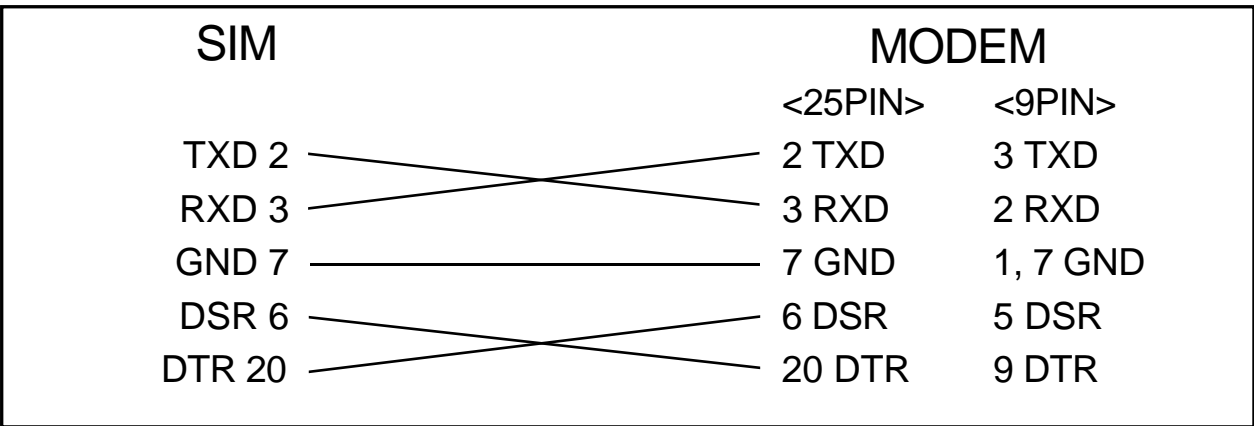
PIN CONNECTIONS FOR SIM
TO PRINTER

FIGURE 7-7



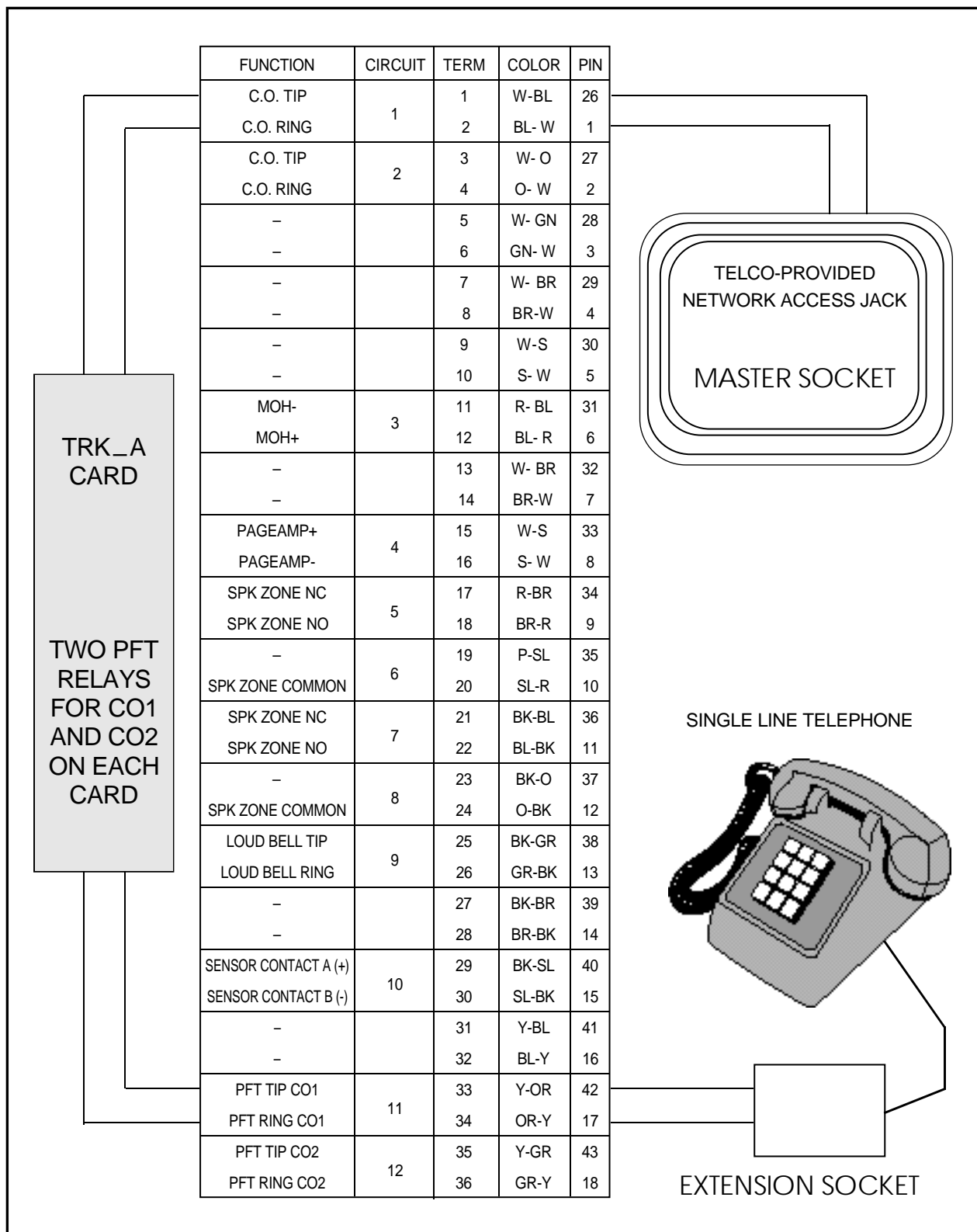
PIN CONNECTIONS FOR SIM
TO PERSONAL PRINTER

FIGURE 7-8



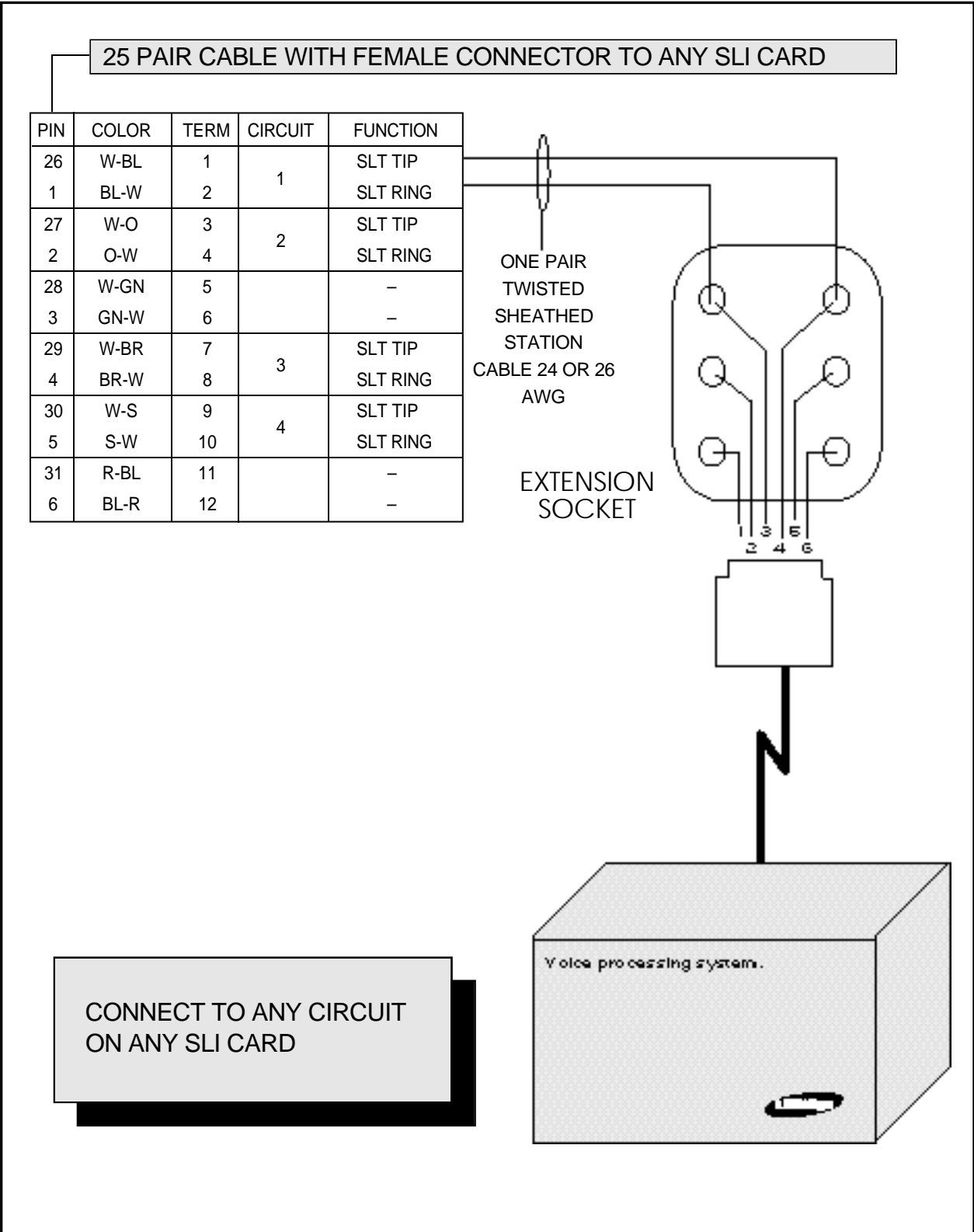
PIN CONNECTIONS FOR SIM
TO MODEM

FIGURE 7-9



POWER FAILURE TRANSFER
CONNECTIONS TO TRK_A CARD

FIGURE 7-10



MDF CONNECTIONS
VOICE MAIL TO SLI CARD

FIGURE 7-11

PART 8. INSTALLING KEYSET DAUGHTER BOARDS

8.1 KDB–SLI

- 1) Unplug line code of the phone before performing this procedure.
- 2) Remove with a driver molding substances of expansion module of base housing.
- 3) Remove extra molding substances by the same method as no.2.
- 4) Mount module KDB – SLI.
- 5) Tighten two (2) screws of KDB – SLI.
- 6) Connect modular jack of phone line with DLI line of basic system.
- 7) Connect extra modular jack with a general phone.

8.2 KDB–DLI

- 1) Unplug line code of the phone before performing this procedure.
- 2) Remove with a driver molding substances of expansion module of base housing.
- 3) Remove extra molding substances by the same method as no.2.
- 4) Mount module KDB – DLI.
- 5) Tighten two (2) screws of KDB – DLI.
- 6) Connect modular jack of phone line with DLI line of basic system.
- 7) Connect extra modular jack with a key phone.

8.3 CONNECTING TO THE KDB–D & KDB–S

See Figure 8–7, 8–8 and 8–9.

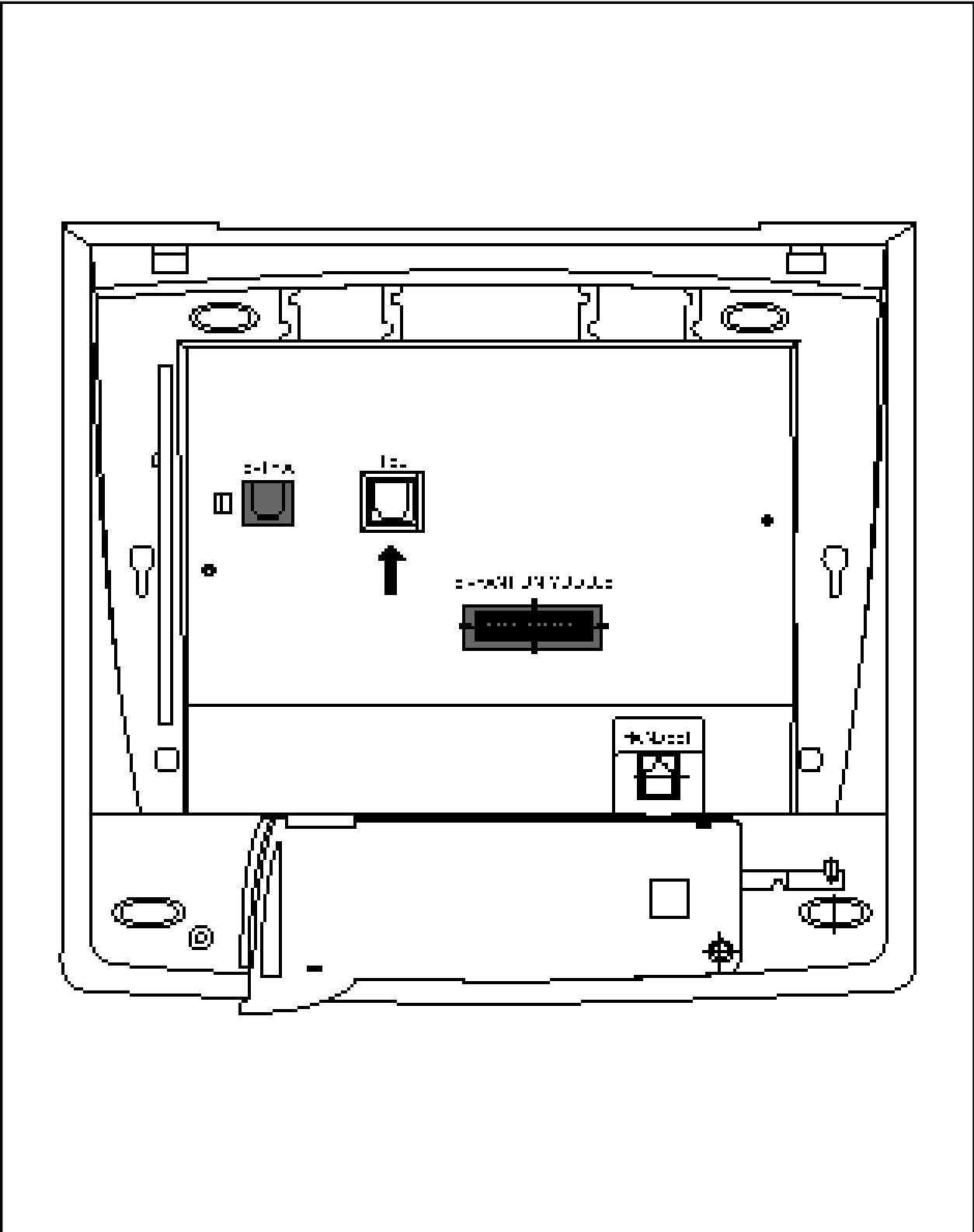


FIGURE 8-1

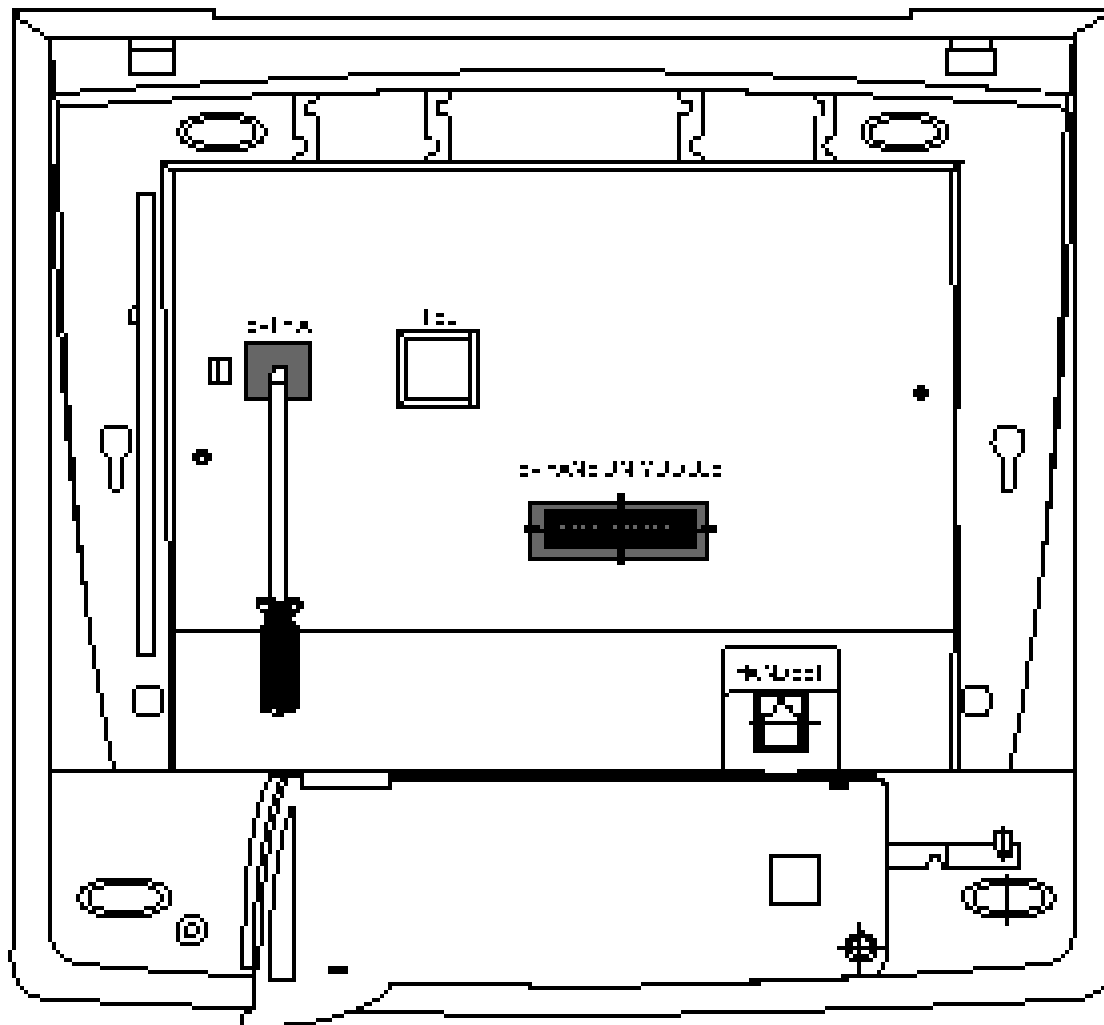


FIGURE 8-2

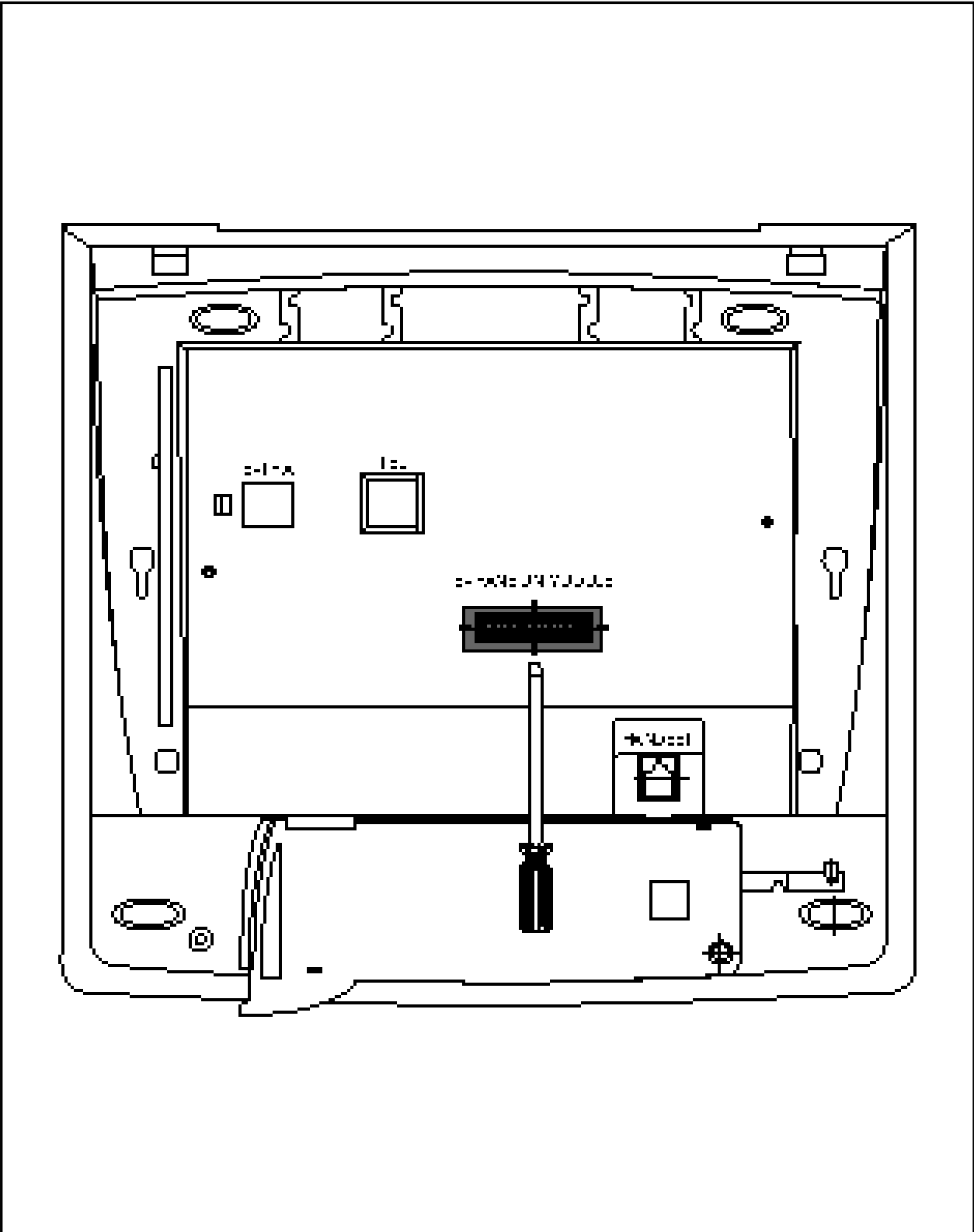


FIGURE 8-3

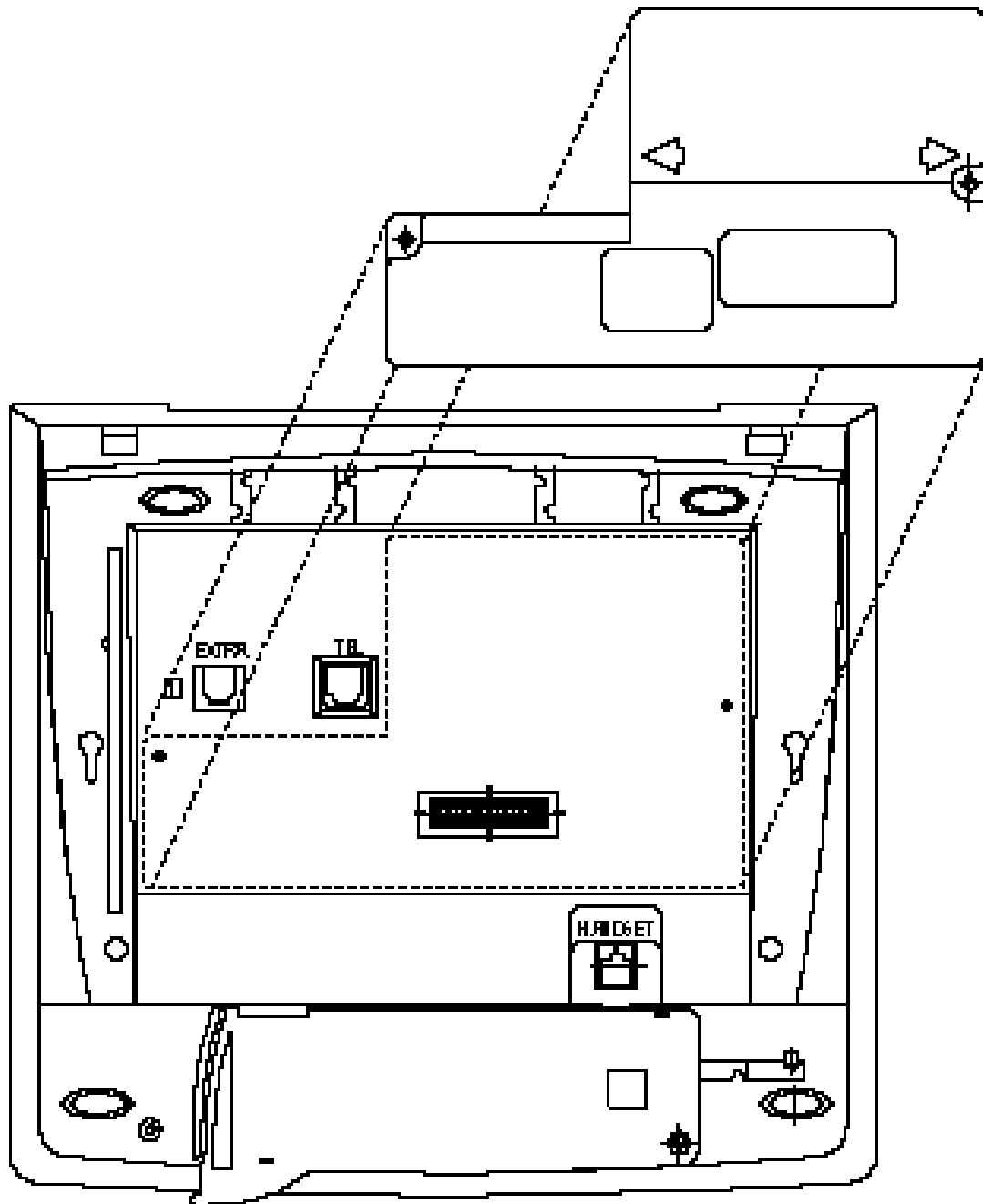


FIGURE 8-4

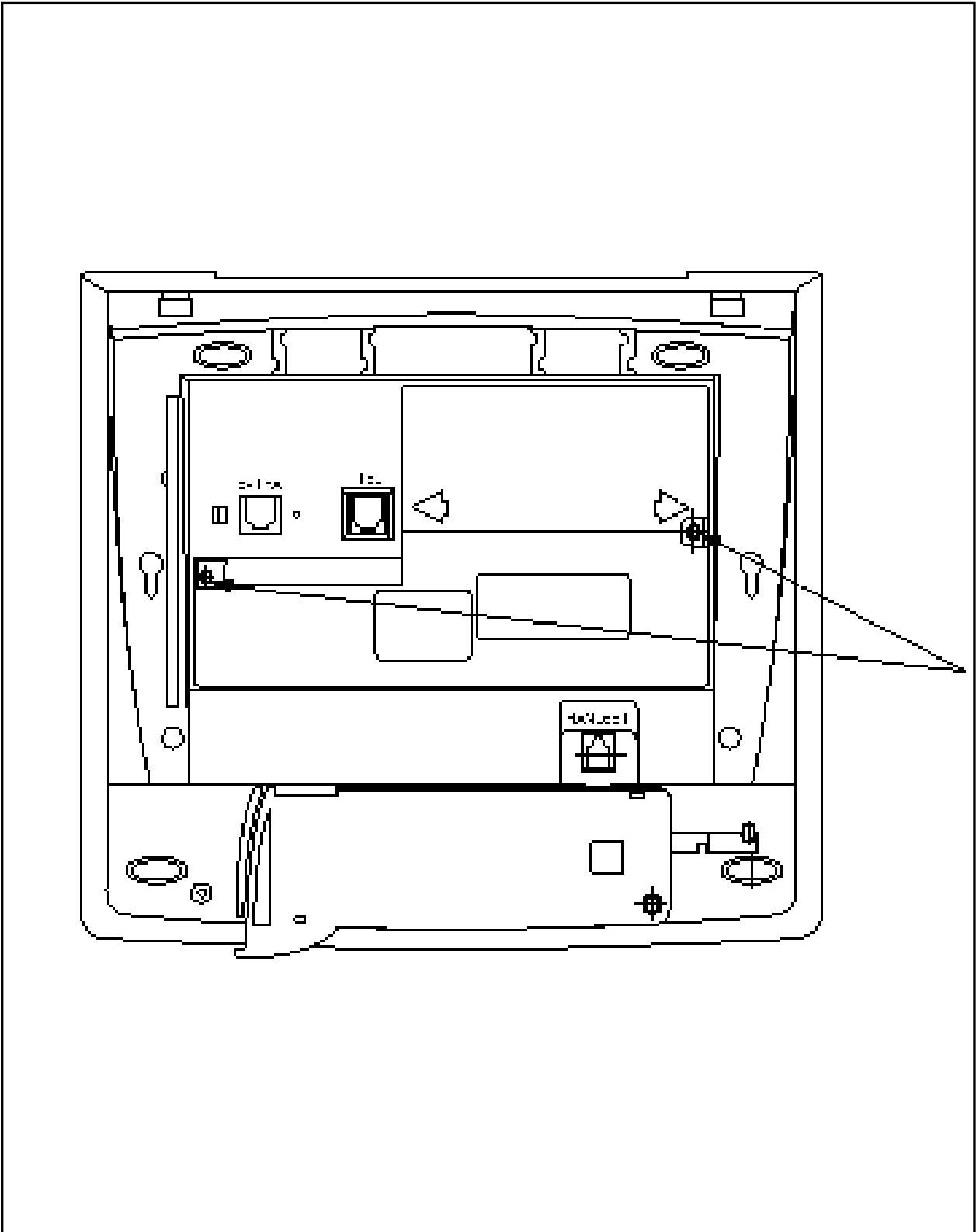


FIGURE 8-5

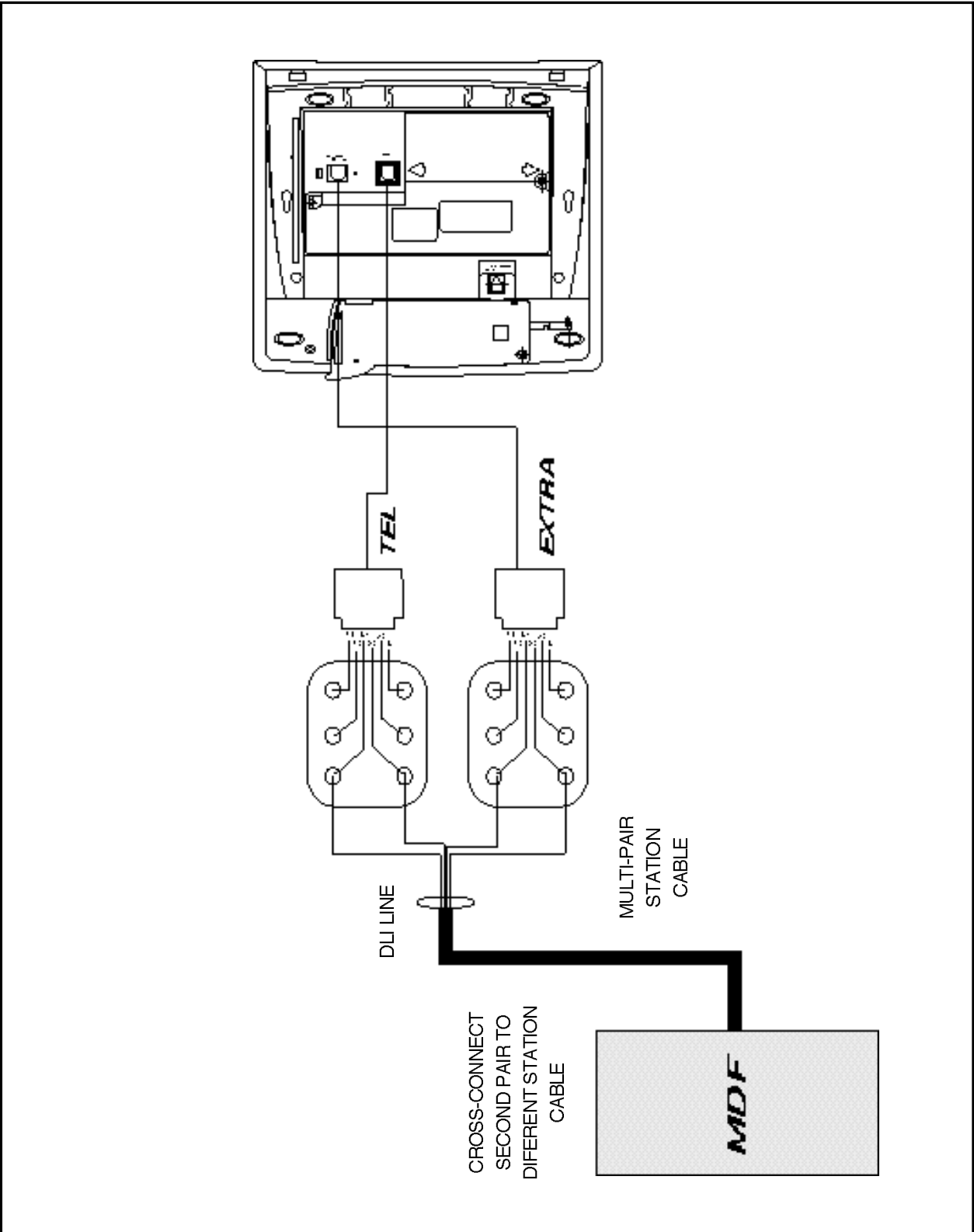


FIGURE 8-6

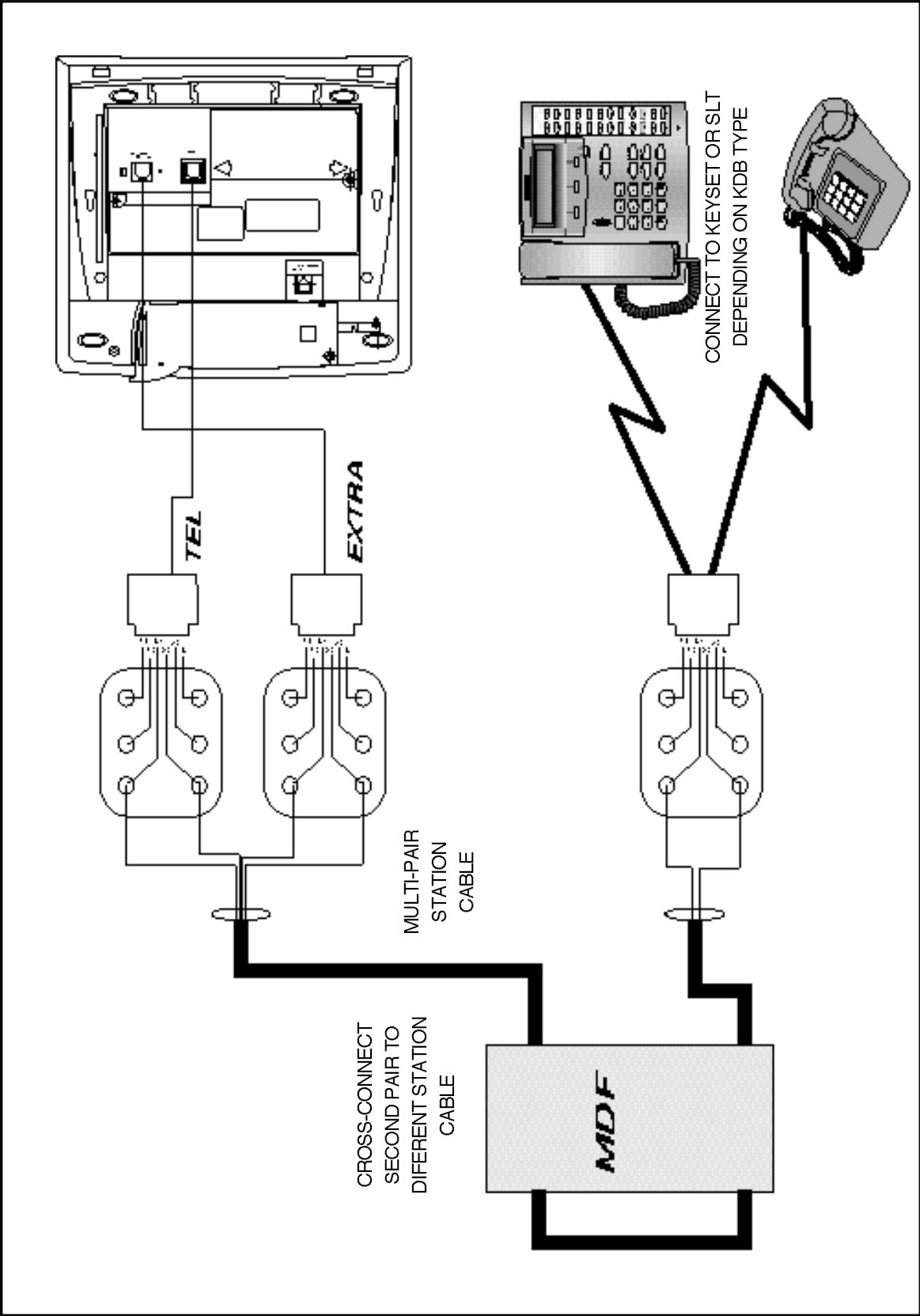
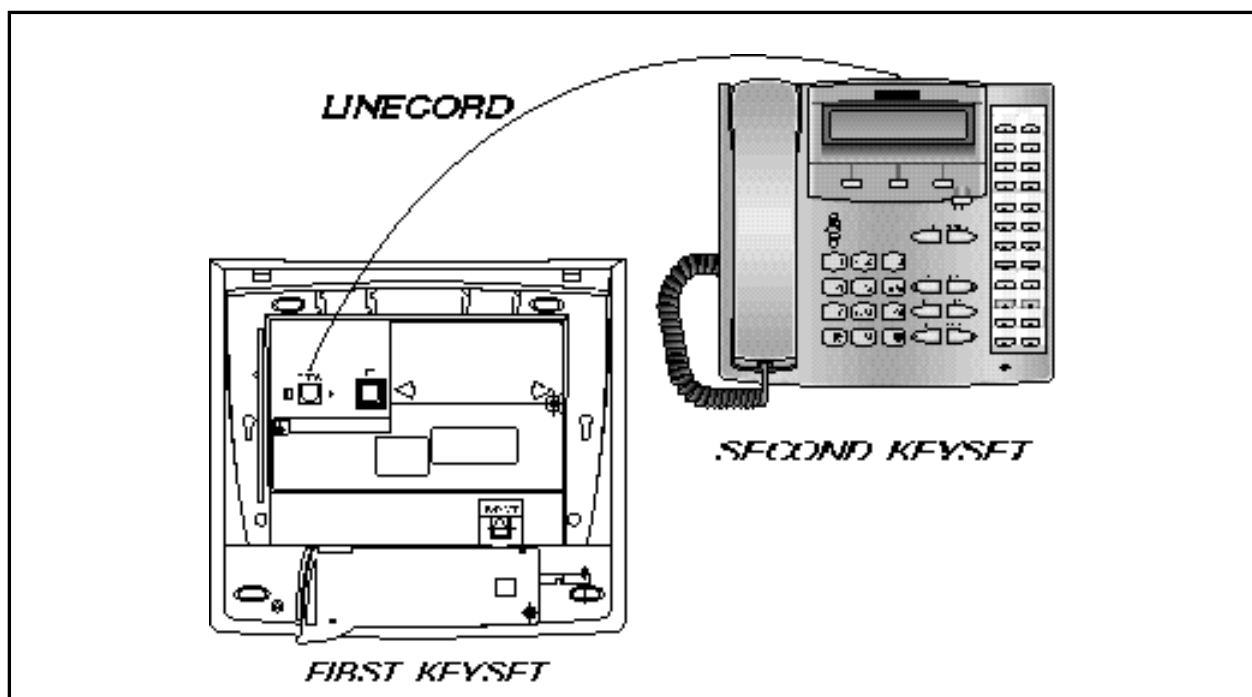


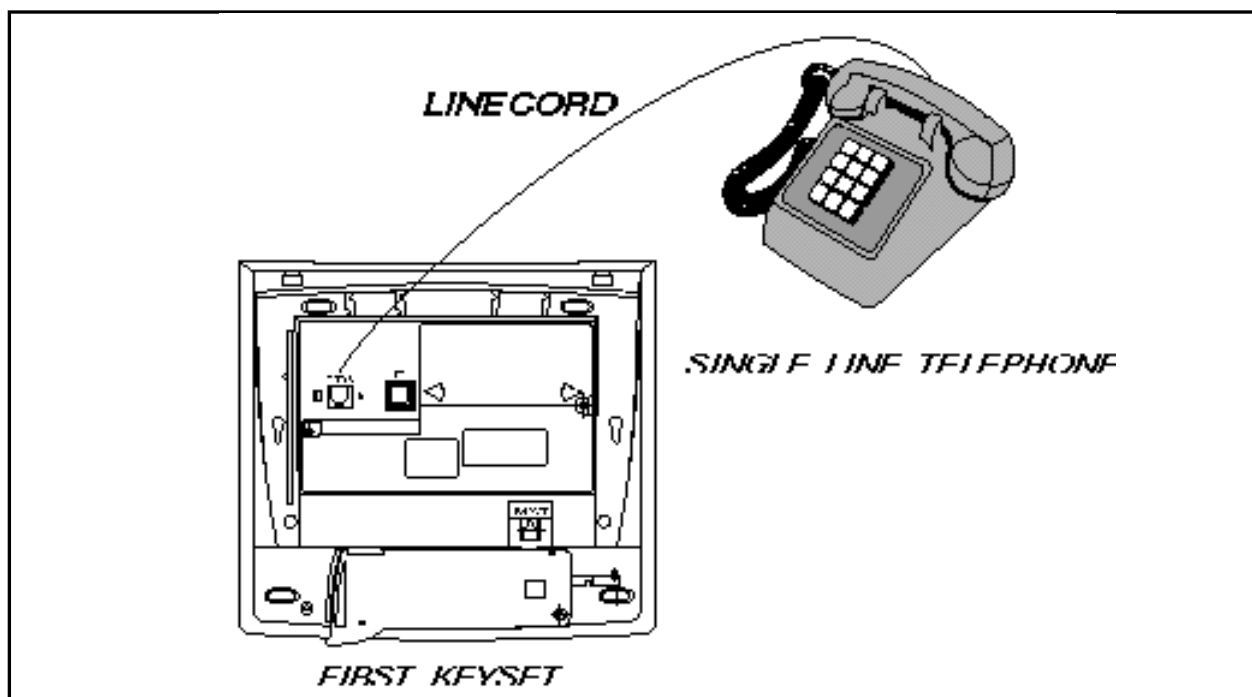
FIGURE 8-7

CONNECTING A STATION DEVICE TO A
KDB VIA THE MAIN DISTRIBUTION FRAME



CONNECTING A KEYSET
TO A KDB-DLI

FIGURE 8-8



CONNECTING A SINGLELINE
TELEPHONE TO A KDB-SLI

FIGURE 8-9

PART 9. CHANGING SOFTWARE

9.1 CHANGING SYSTEM SOFTWARE

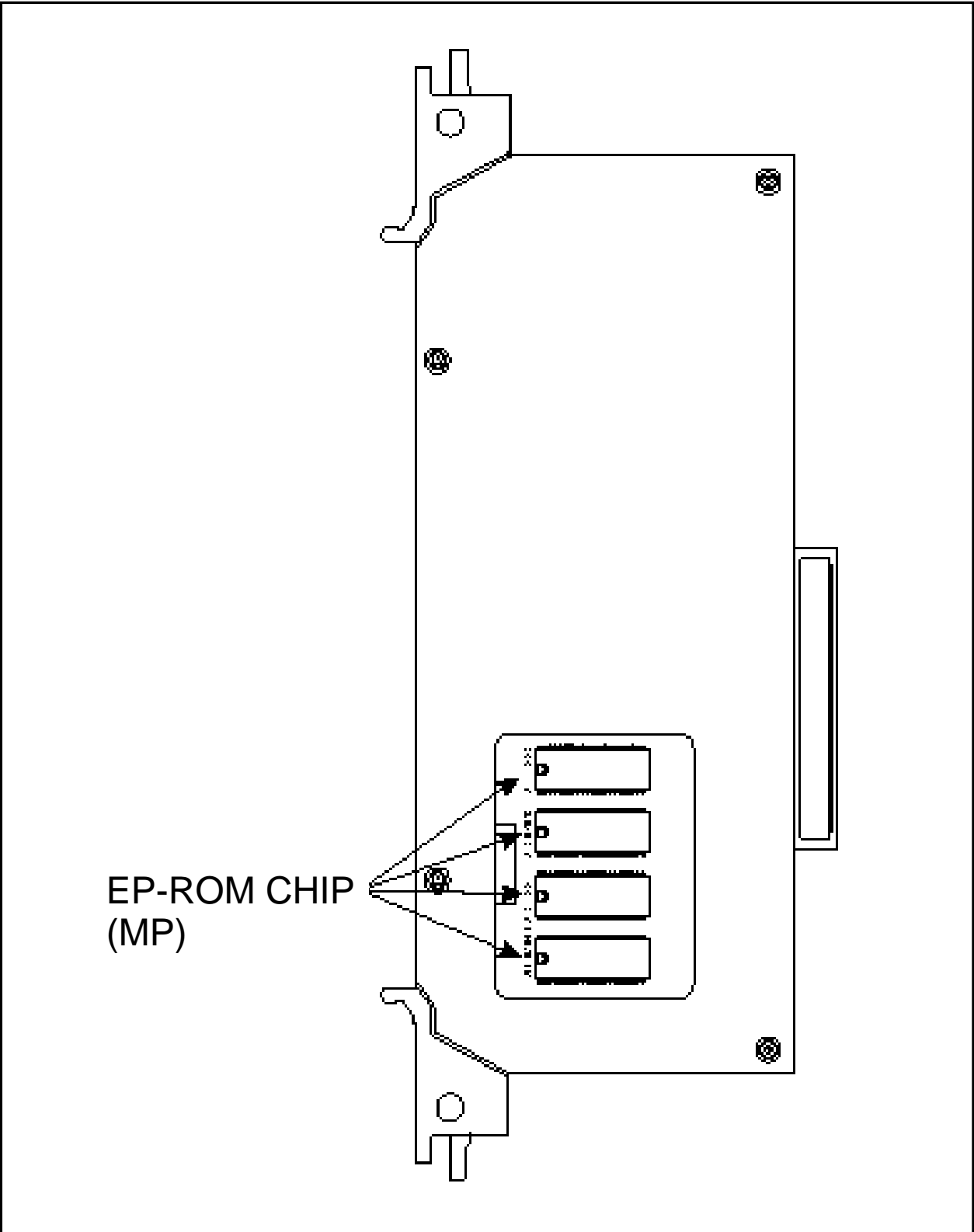
The system software on the DCS is contained in the ROM card. This card module must first be disassembled to allow the software to be changed. This will release the ROM card PCB. The two EPROM chips are located at one end of the PCB (see Figure 9–2) and are labeled U11, U12, U13, U14. These chips should be removed gently using a flat blade screwdriver or a chip extraction tool while taking note of the orientation of the chips. After the old chips have been removed, place the new chips over the appropriate sockets and while making sure that the legs are aligned correctly, gently press the chips into their sockets. The ROM card can now be reassembled by reversing the instructions described above.

9.2 CHANGING CENTRAL PROCESSOR (CPM) SOFTWARE IN KSU

The KSU has a separate processor that is used for local control. This is known as the signal processor or CPM. At times it may be necessary to change this processor's software. The CPM software consists of a single EPROM located on the KSU motherboard under the power supply unit (PSU) (see Figure 9–2). To change this software, the PSU must be removed from the cabinet along with any card modules that prevent access to the EPROM. The EPROM can now be gently removed using a flat blade screwdriver or chip extraction tool while taking note of the orientation of the chip. The new EPROM can now be inserted by aligning the legs with the socket on the motherboard and gently pressing the chip into place.

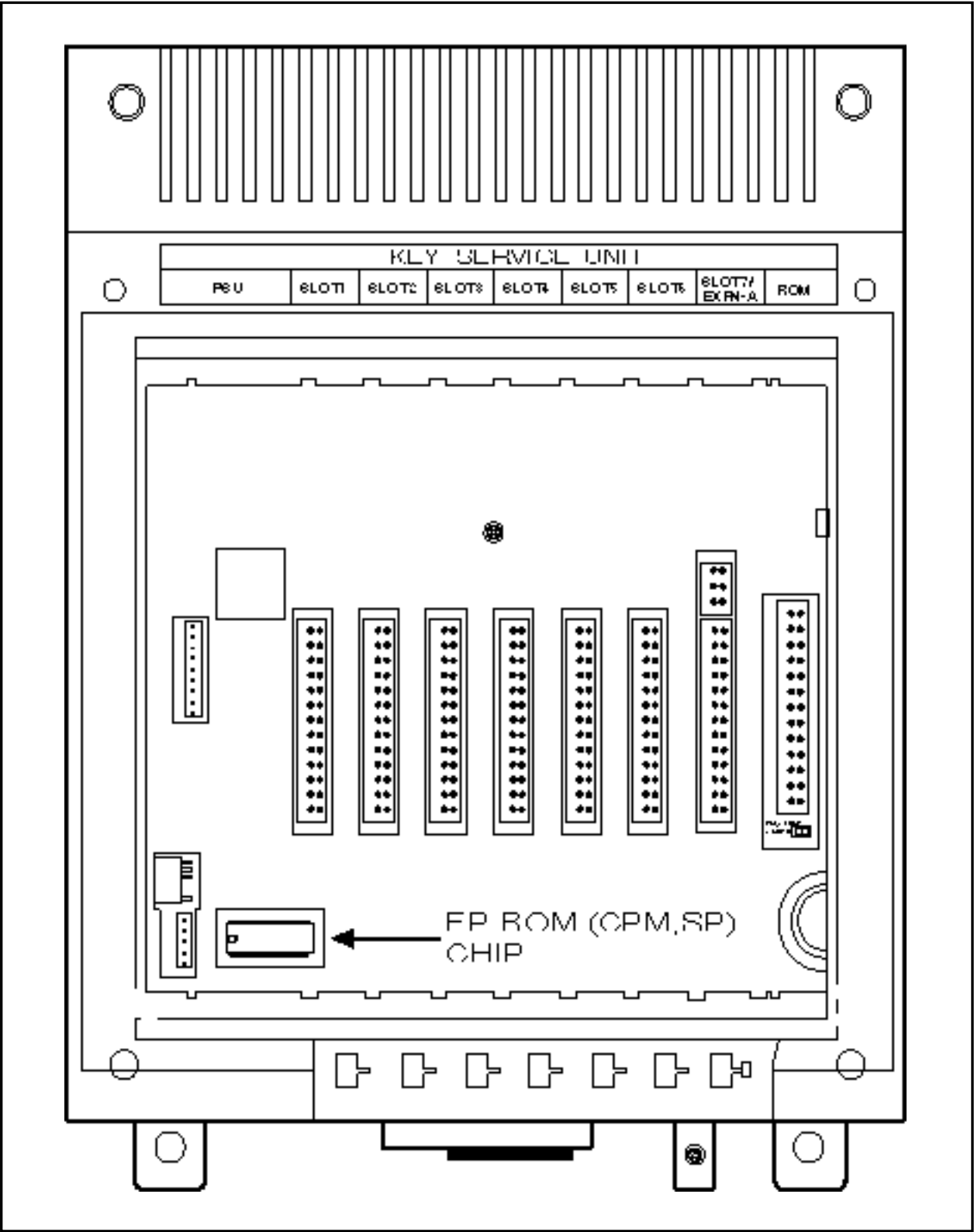
9.3 CHANGING LOCAL PROCESSOR (LPM) SOFTWARE IN EXPANSION KSU

Each EKSU has a separate processor that is used for local control. This is known as the local processor or LPM. At times it may be necessary to change this processor's software. The LPM software consists of a single EPROM located on the EKSU motherboard under the power supply unit (PSU) (see Figure 9–3). To change this software, the PSU must be removed from the cabinet along with any card modules that prevent access to the EPROM. The EPROM can now be gently removed using a flat blade screwdriver or chip extraction tool while taking note of the orientation of the chip. The new EPROM can now be inserted by aligning the legs with the socket on the motherboard and gently pressing the chip into place.



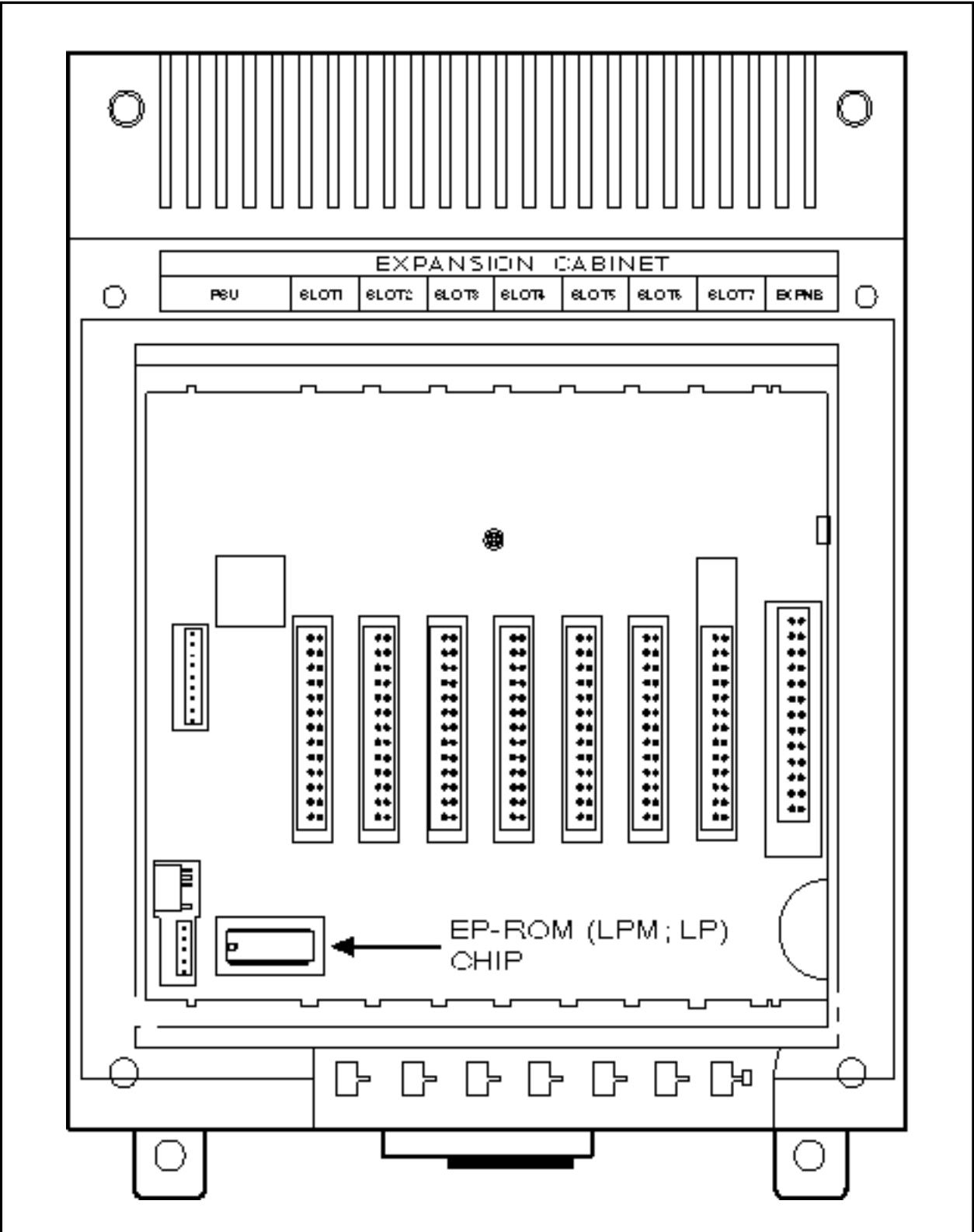
ROM CARD WITH COVER

FIGURE 9-1



LOCATION OF CPM CHIP

FIGURE 9-2



LOCATION OF LPM CHIP

FIGURE 9-3

