FPL Series Termination/Splice Panel
User Manual

17807-A

FPL Termination/Splice Panel

(continued)

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INTRODUCTION

This user manual describes the FPL Series Termination/Splice Panel, and provides all information required to install and operate this product. All FPL panels can be mounted on either a 19-inch or 23-inch WECO or EIA rack.

Revision History

| ISSUE	DATE	REASON FOR CHANGE
Issue 1	07/2002	Original.
Issue 2	11/2005	Added 1RU 12/24 position panels.

Trademark Information

ADC is a registered trademark of ADC Telecommunications, Inc.

1 DESCRIPTION

The FPL Series Termination/Splice Panel documented in this manual may be any of a number of rack-mounted panels built using the same chassis style and incorporating similar features such as angled adapters and vertical cable guides. Panel configurations include the following:

- **Termination Only Panels**—Available with 12, 24, 48, 72, or 96 termination positions. LX.5 and LC connectors may be used with the 12, 24, 48, and 72 position panels to double the density. These panels require connectorized fibers on both sides of the termination bulkhead.

- **Termination and Splice Panels**—Available with 12, 24, 48, 72, or 96 termination positions. LX.5 and LC connectors may be used with the 12, 24, 48, and 72 position panels to double the density. These panels provide a transition between bare fibers and connectorized fibers.

- **High Density Termination and Splice Panel**—Provides 144 termination and splice positions in the same chassis, using standard connector types. The bulkhead on this panel is slanted inward in a "V" design to provide room for a greater number of adapters.

Figure 1 shows an example of a termination only panel, the 72 position model. Other models have analogous features.
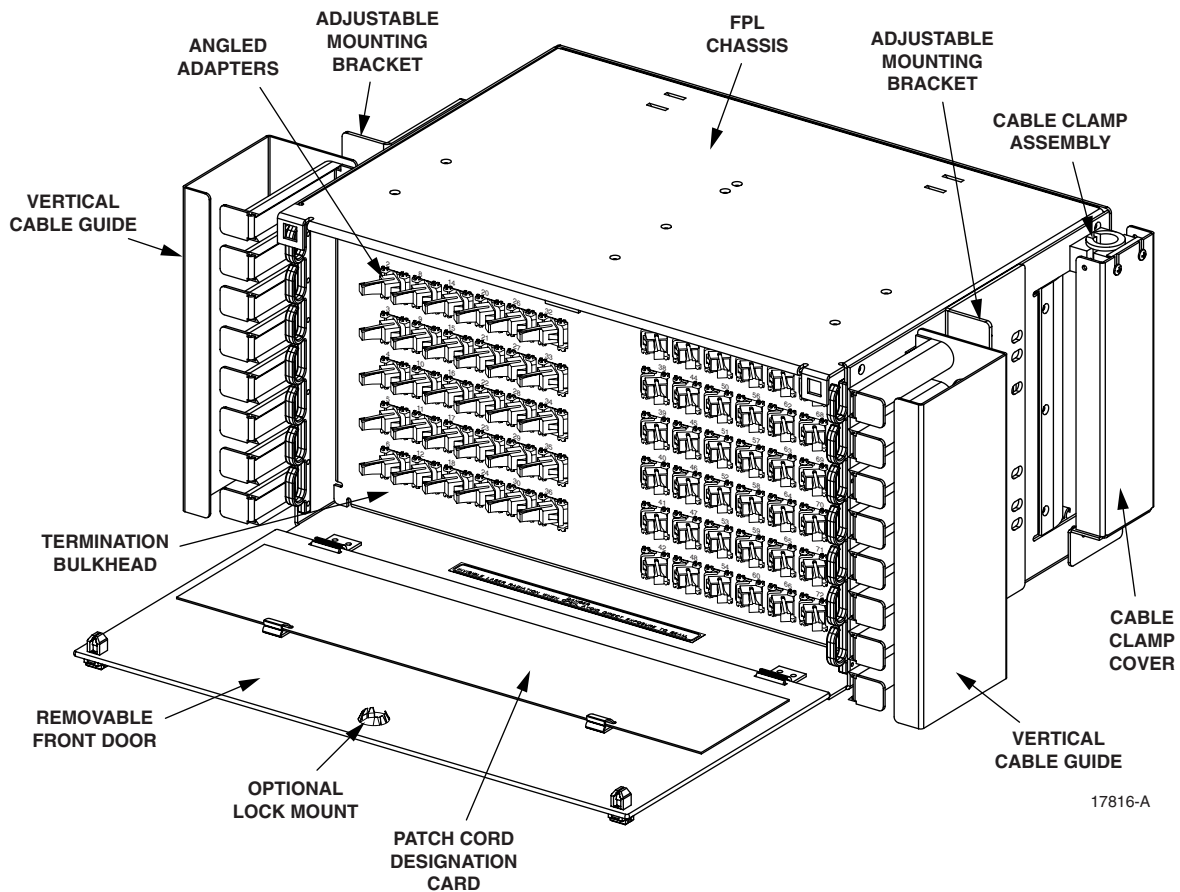
Figure 1. 72 Position Termination Only Panel

The features called out are as follows (from top center clockwise):

- **FPL Chassis—**is the boxlike, solid metal frame on which the panel is built. The chassis shown is 8.7 inches (22.1 cm) high, 16.4 inches (41.7 cm) wide, and 12.0 inches (30.5 cm) deep. This same chassis is also used for the 48 and 96 position panels, as well as for the 48, 72, and 96 position termination and splice panels. Shorter-height chassis are used for the 12 and 24 position panels and a deeper chassis is used for the 144 position high density panel. For details, refer to Table 1 on Page 8.

- **Adjustable Mounting Bracket—**(one on each side) can be oriented to provide either 19-inch or 23-inch WECO or EIA rack mounting with either a 4-inch or 5-inch recess. The panel is shipped with the mounting brackets positioned for installation in a 19-inch rack with a 5-inch recess.

- **Cable Clamp Assembly—**is a kit used to clamp a cable to the panel. Two cable clamp assemblies are provided with every FPL panel. Each clamp can accommodate a maximum cable diameter of 0.80 inch (2.03 cm). A grounding lug is included with each cable clamp for use if needed.

- **Cable Clamp Cover**—protects cable at entry to the panel (not present on 12 and 24 position panels).

- **Vertical Cable Guide**—(one on each side) is a metal cable retainer designed to provide cable management by confining and directing patch cords to and from the panel and along the frame on which the panel is installed.

- **Patch Cord Designation Card**—is a laminated card fastened to the inside of the panel front door. The designation card is used to record the near-end and far-end termination locations of each patch cord installed on the panel.

- **Optional Lock Mount**—provides ability to lock front door.

- **Removable Front Door**—protects the termination bulkhead and can be removed to provide access to the bulkhead for connecting patch cords.

- **Termination Bulkhead**—provides a location for connecting patch cords. The bulkhead shown has 72 holes for 72 adapters. Other bulkheads for the chassis size shown provide 48 or 96 locations for mounting connectors.

- **Angled Adapters**—are pass-through receptacles for connectors. They are angled to either left or right to hold terminated fibers at an angle with respect to the bulkhead. The purpose of the angle is prevent fiber bend.

Figure 2 and Figure 3 show the 48 and 96 position panels, respectively. Figure 4 shows the three rack unit 24 position panel. Figure 5 shows the one rack unit 12/24 position panel.
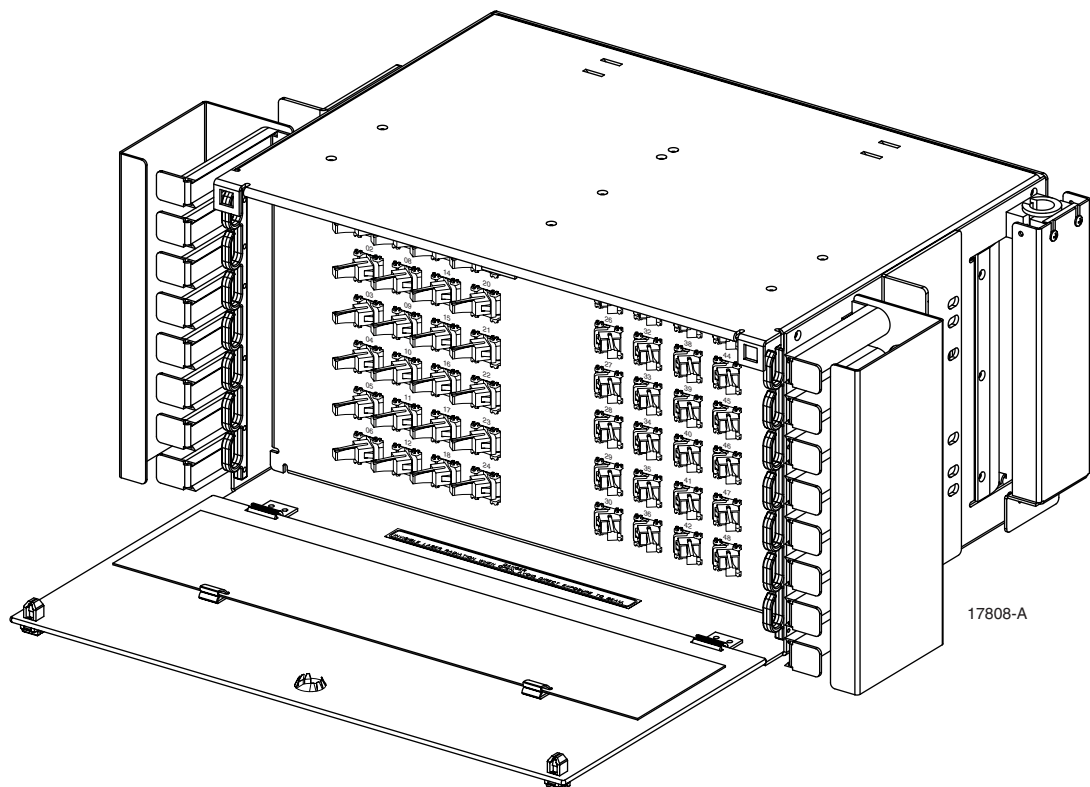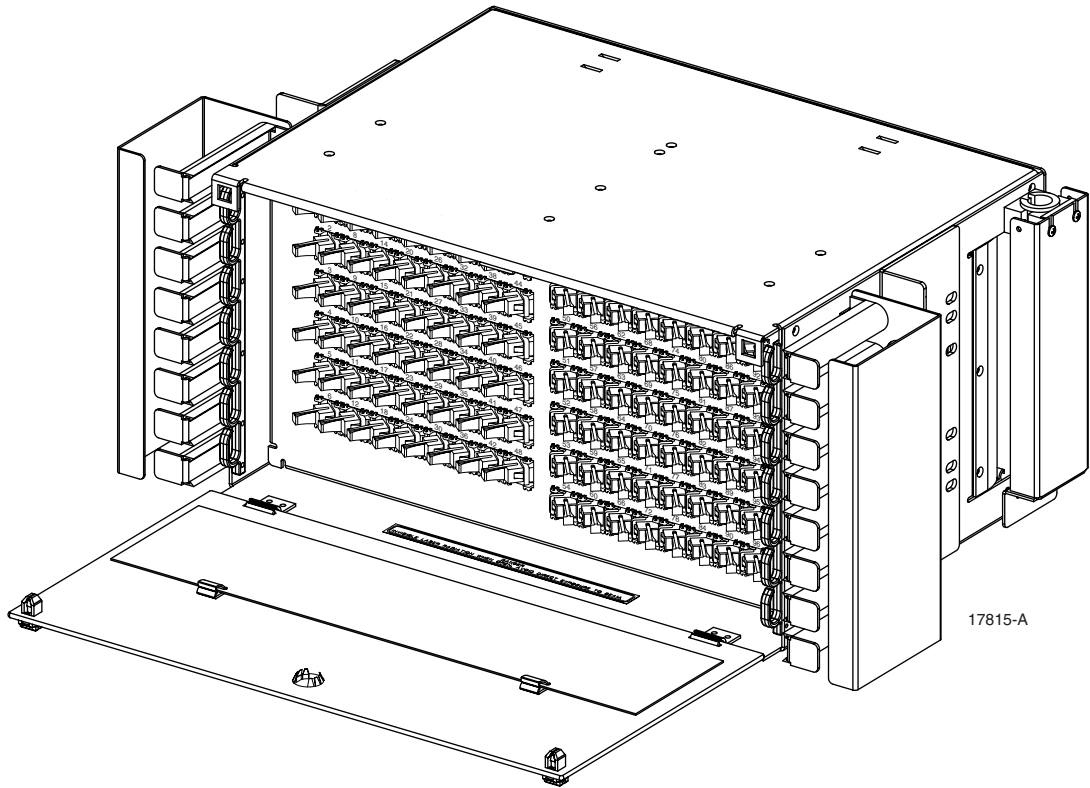

Figure 2. 48 Position FPL Termination Panel

Figure 3. 96 Position FPL Termination Panel

17815-A
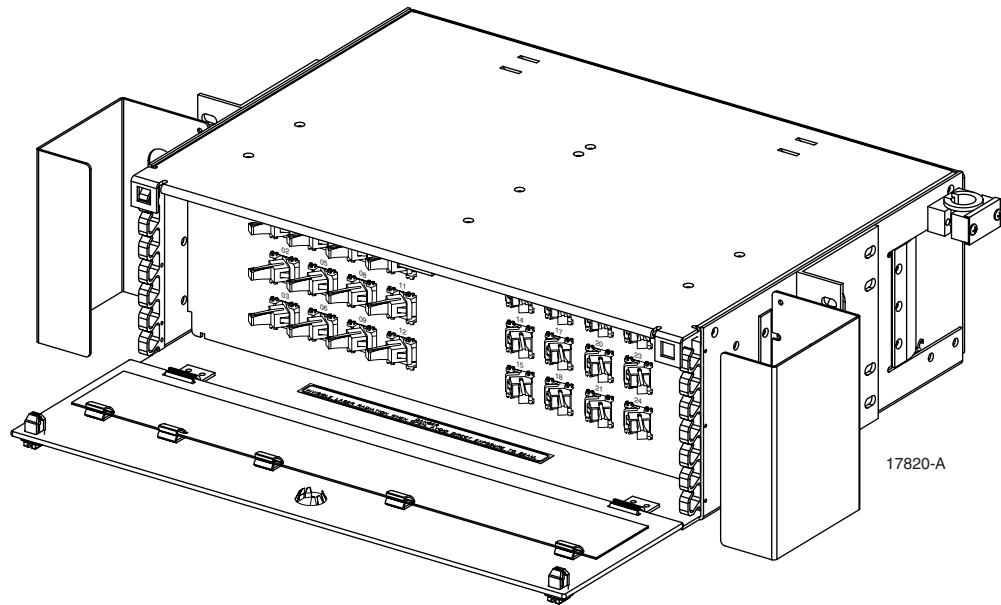
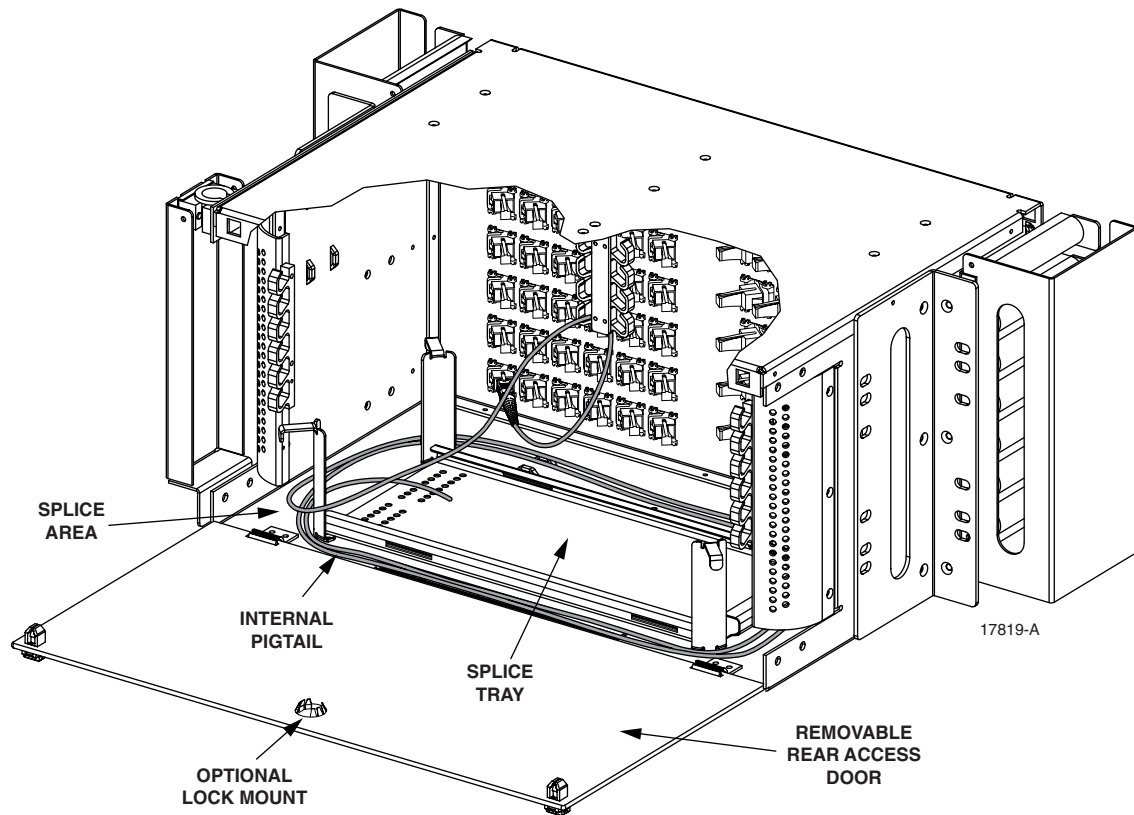**Figure 4. 24 Position FPL Termination Panel (3RU)**

17820-A

20973-A
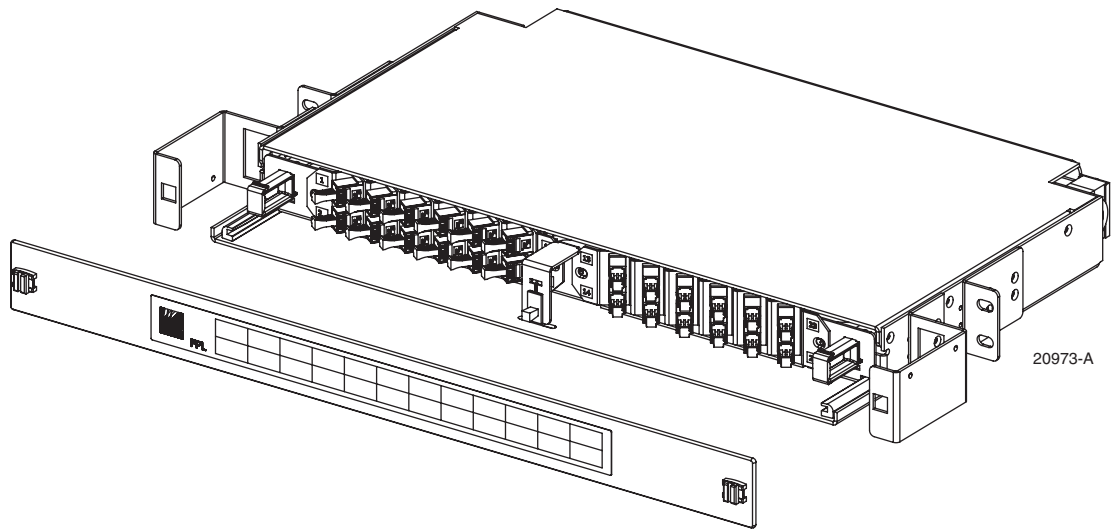
Figure 5. 12/24 Position FPL Termination Panel (1RU)

Figure 6 shows a rear view of a termination and splice panel. The panel shown is the 72 position termination and splice panel.

SPLICE
AREA

INTERNAL
PIGTAIL

SPLICE
TRAY

REMOVABLE
REAR ACCESS
DOOR

OPTIONAL
LOCK MOUNT

17819-A

Figure 6. FPL Termination and Splice Panel

The front side of the 72 position termination and splice panel is identical to the termination only panel shown in Figure 1. In general, the termination components of any FPL termination and splice panel are identical to the termination components of the panel's termination and splice panel counterpart. Only the splice components are different.

Figure 6 on the preceding page shows the typical components unique to the splice function of a termination and splice panel. They are as follows (from left to right in the figure):

- **Splice Area—**is a protected chamber within the chassis intended for splice trays. In termination only panels, this area can be used for cable storage.

- **Internal Pigtail—**is a factory-installed fiber optic cable with a connector at one end and a bare fiber on the other end. The connector end of the pigtail is terminated on the rear side of the termination bulkhead. The bare end of the pigtail is available for splicing to a bare fiber at the customer site. The cable from which the bare fibers are broken out for splicing may be either Outside Plant (OSP) or Intra Facility Cable (IFC).

- **Splice Tray—**is a tray installed in the splice area. Each tray holds one or more splice chips of a selected type.

- **Removable Rear Access Door—**provides access to the splice area.

- **Optional Lock Mount—**provides ability to lock rear access door.

Figure 7 shows the 144 position high density termination and splice panel. Additional features called out here are the split termination bulkhead, which provides the room required for the greater number of adapters, and the splice area access door, which opens into a locked horizontal position to serve as a splice deck.
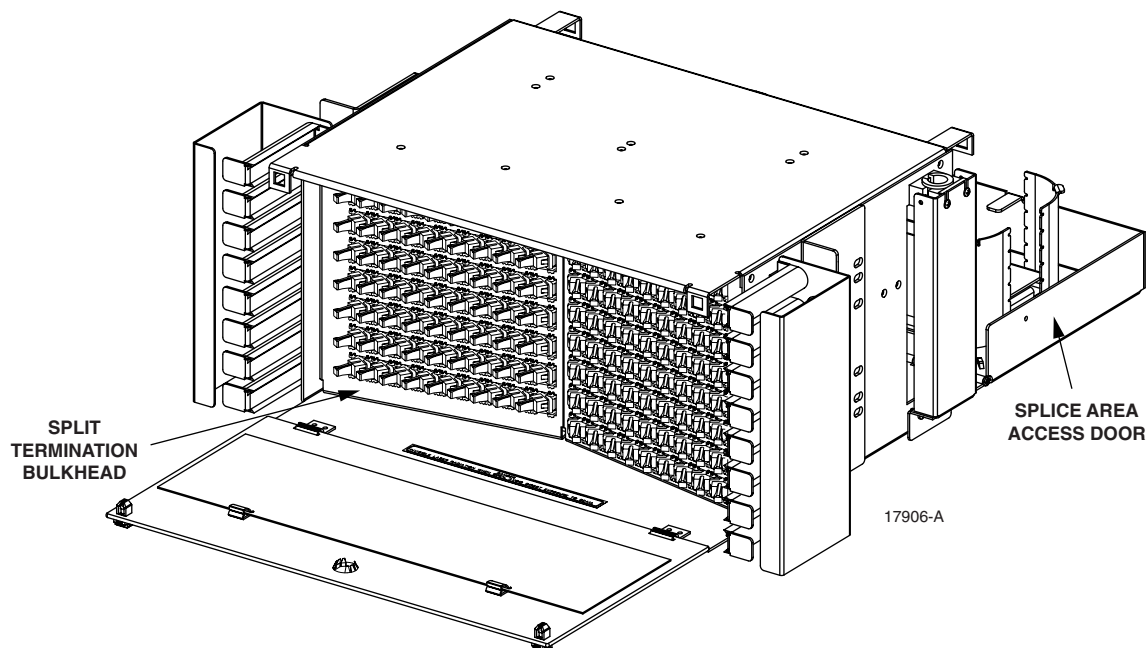

Figure 7. 144 Position High Density Termination and Splice Panel

2 ACCESSORIES

The following accessory items may be ordered separately for FPL panels:

- Single and dual splice trays (for types, see Splice Type in Table 1 below)
- Additional kits for clamping and grounding cables
- Key locks for front and rear doors
- Buildout attenuators (ST and biconic)
- Bulkhead attenuators (ST, SC, D4, FC, and biconic)

3 SPECIFICATIONS AND DIMENSIONS

Table 1 lists specifications for the FPL modules.

Table 1. FPL Modules Specifications

PARAMETER	SPECIFICATION
Common to All Panels	
Rack mounting	19-inch (48.26 cm) or 23-inch (58.42 cm)
Hole spacing	EIA or WECO
Recess options	4-inch (10.16 cm) or 5-inch (12.7 cm) recess
Connector types	Multimode SC, SC duplex, ST©, LX.5©, and LC; Singlemode FC, FC (zirconia adapter), FC (8º polish), SC, SC (zirconia adapter), SC (8º polish), SC duplex, ST©, ST© (zirconia adapter), E-2000 (8º polish), E-2000 (flat polish), LX.5©, LC
Pigtail type	Stranded or ribbon
Splice type	Bare fusion, heat shrink fusion, mechanical, rotary, FibrLok, Raychem Universal (R), Nortel, AFL
Pre-termination (optional) cable types	Multimode IFC stranded 62.5/125; Singlemode IFC stranded, IFC plenum stranded, OSP single armor stranded, indoor-outdoor, OSP dielectric stranded, IFC Maxi-Strip, IFC ribbon, OSP single armor ribbon, OSP dielectric ribbon
12/24 Position Panel (1RU)	
Dimensions (H x W x D)	1.72 inch x 17.0 in. x 11.48 in. (4.4 cm x 43.2 cm x 29.2 cm)
Capacity	12 or 24 termination positions LX.5© and LC connectors double the termination capacity
24 Position Panel (3RU)	
Dimensions (H x W x D)	5.0 inch x 16.4 in. x 12.0 in. (12.7 cm x 41.7 cm x 30.5 cm)
Capacity	24 termination positions LX.5© and LC connectors double the termination capacity

Table 1. FPL Modules Specifications

PARAMETER	SPECIFICATION
48/72/96 Position Panel (5RU)	
Dimensions (H x W x D)	8.7.0 inch x 21.9 in. x 12.0 in. (22.1 cm x 56.7 cm x 30.5 cm)
Capacity	48, 72, or 96 termination positions LX.5© and LC connectors double the termination capacity
144 Position High Density Panel (5RU)	
Dimensions (H x W x D) Depth with rear door splice deck open	8.7.0 inch x 21.9 in. x 15.0 in. (22.1 cm x 56.7 cm x 38.1 cm) 23.0 inch (58.42 cm)
Capacity	144 termination positions

Figure 8 shows dimensions for the 12/24 position 1RU panel.
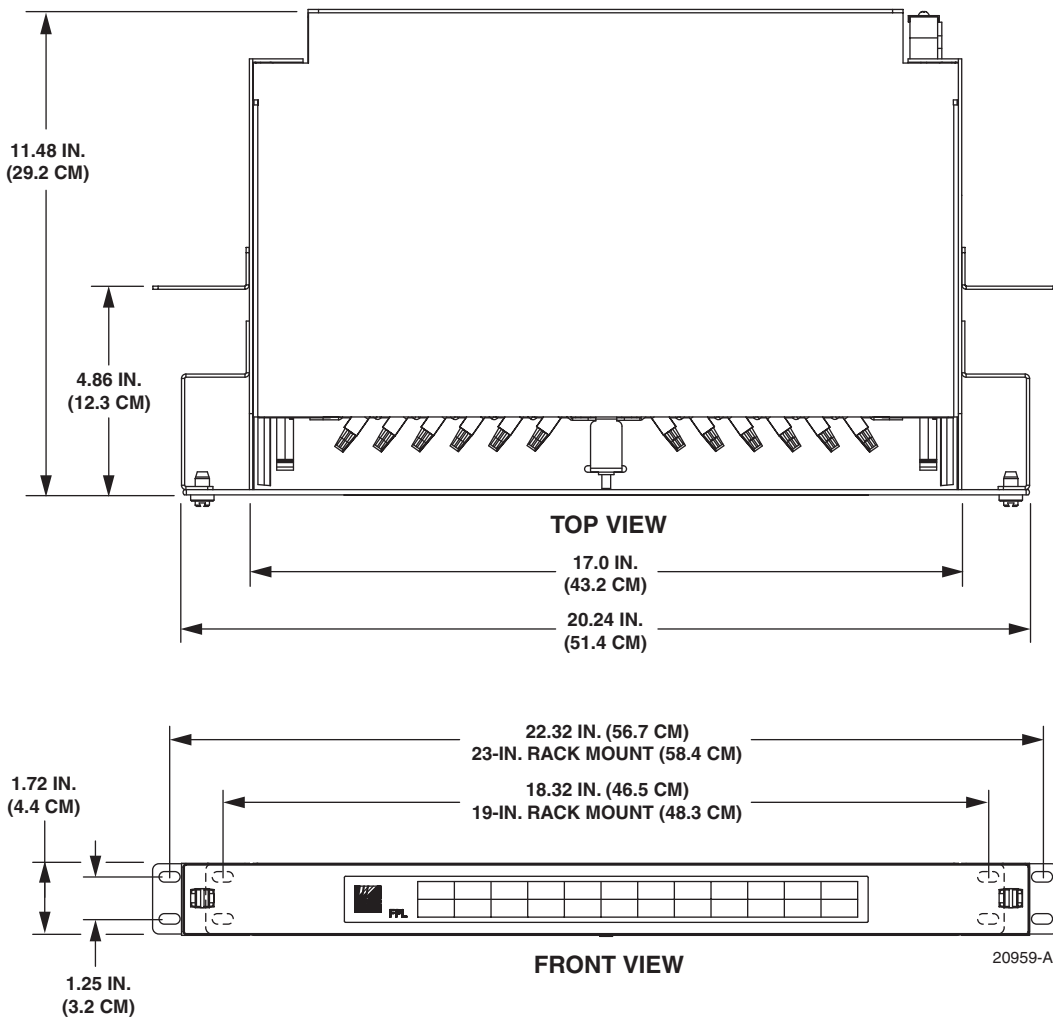
Figure 8. 12/24 Position 1RU Panel

Figure 9 shows dimensions of the 24 position 3RU panel.

**12.0 IN.
(30.5 CM)**

**5.0 IN.
(12.7 CM)**

TOP VIEW

**16.4 IN.
(41.7 CM)**

**21.9 IN.
(55.5 CM)**

**22.32 IN. (56.7 CM)
23-IN. RACK MOUNT (58.4 CM)**

**18.32 IN. (46.5 CM)
19-IN. RACK MOUNT (48.3 CM)**

**4.0 IN.
(10.2 CM)**

**2.25 IN.
(5.7 CM)**

**5.0 IN.
(12.7 CM)**

UNLOCK ( ) LOCK

ADC

DANGER

FRONT VIEW

17822-A
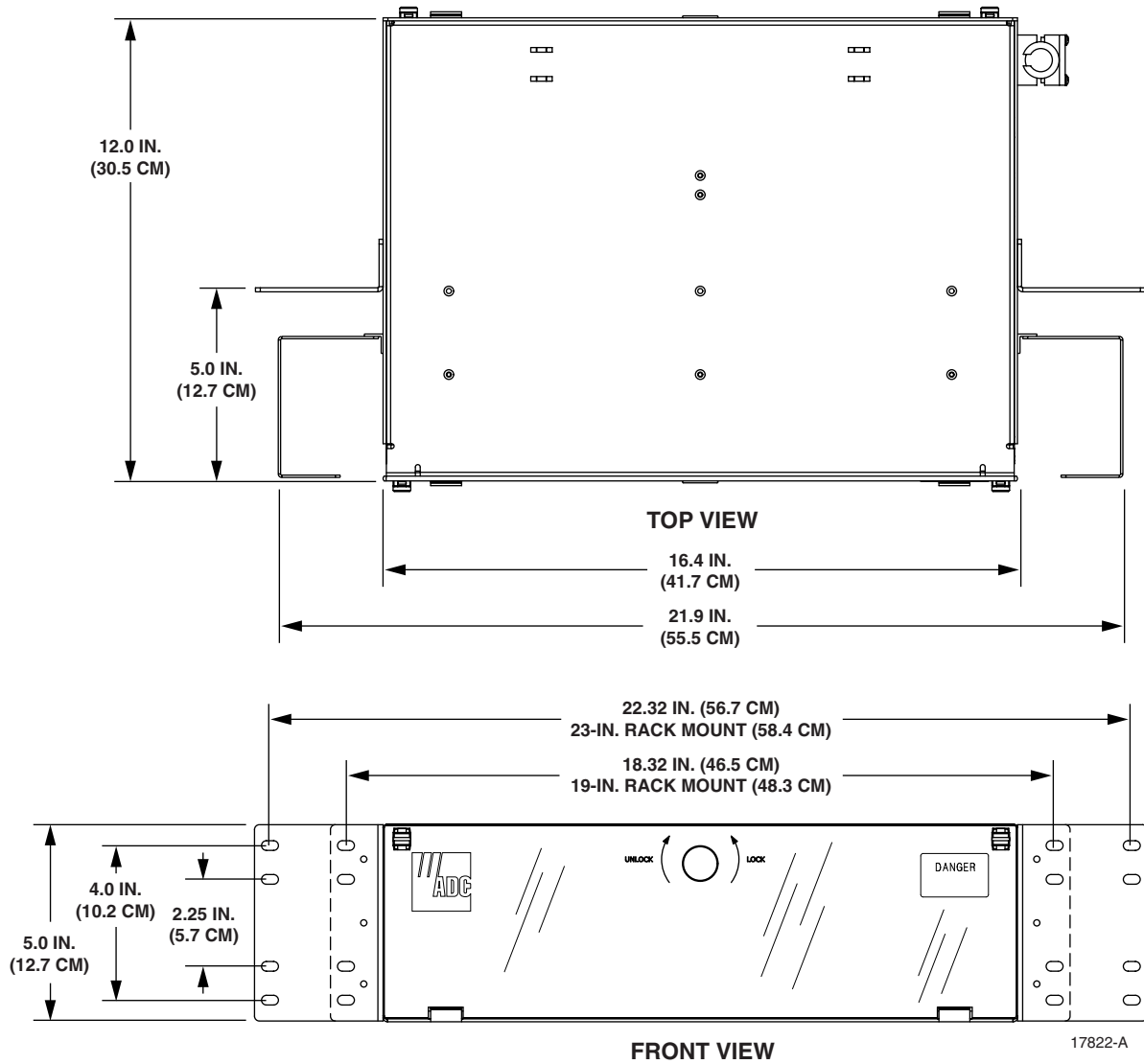
Figure 9. Panel Dimensions (24 Position 3RU)

Figure 10 shows dimensions of the 48/72/96 position panel.

TOP VIEW

12.0 IN. (30.5 CM)

5.0 IN. (12.7 CM)

16.4 IN. (41.7 CM)

21.9 IN. (55.5 CM)

22.32 IN. (56.7 CM)
23-IN. RACK MOUNT (58.4 CM)

18.32 IN. (46.5 CM)
19-IN. RACK MOUNT (48.3 CM)

8.7 IN. (22.1 CM)

4.0 IN. (10.2 CM)

2.25 IN. (5.7 CM)

5.0 IN. (12.7 CM)

UNLOCK LOCK

DANGER

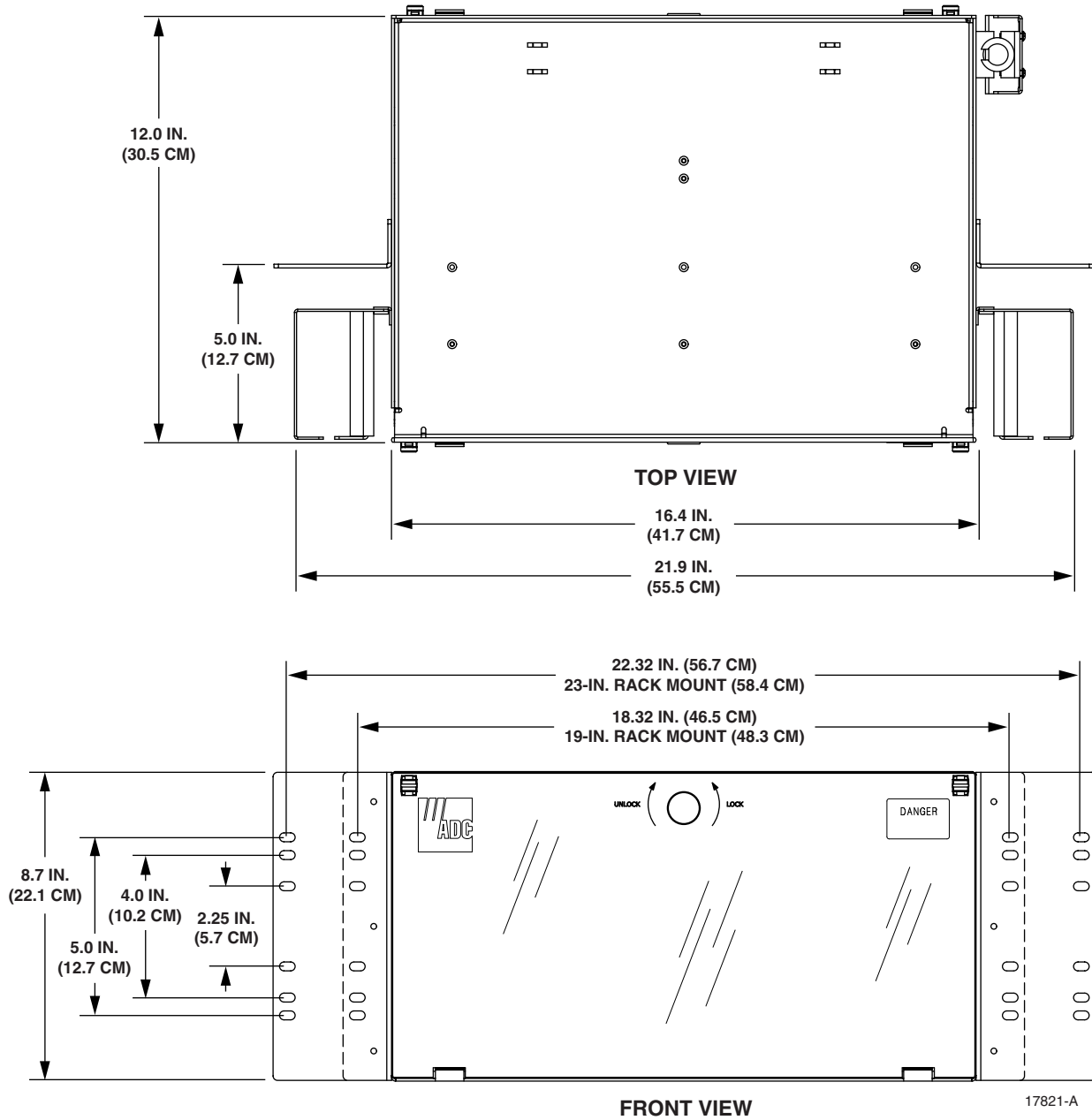**FRONT VIEW**

17821-A

Figure 10. Panel Dimensions (48/72/96 Position)

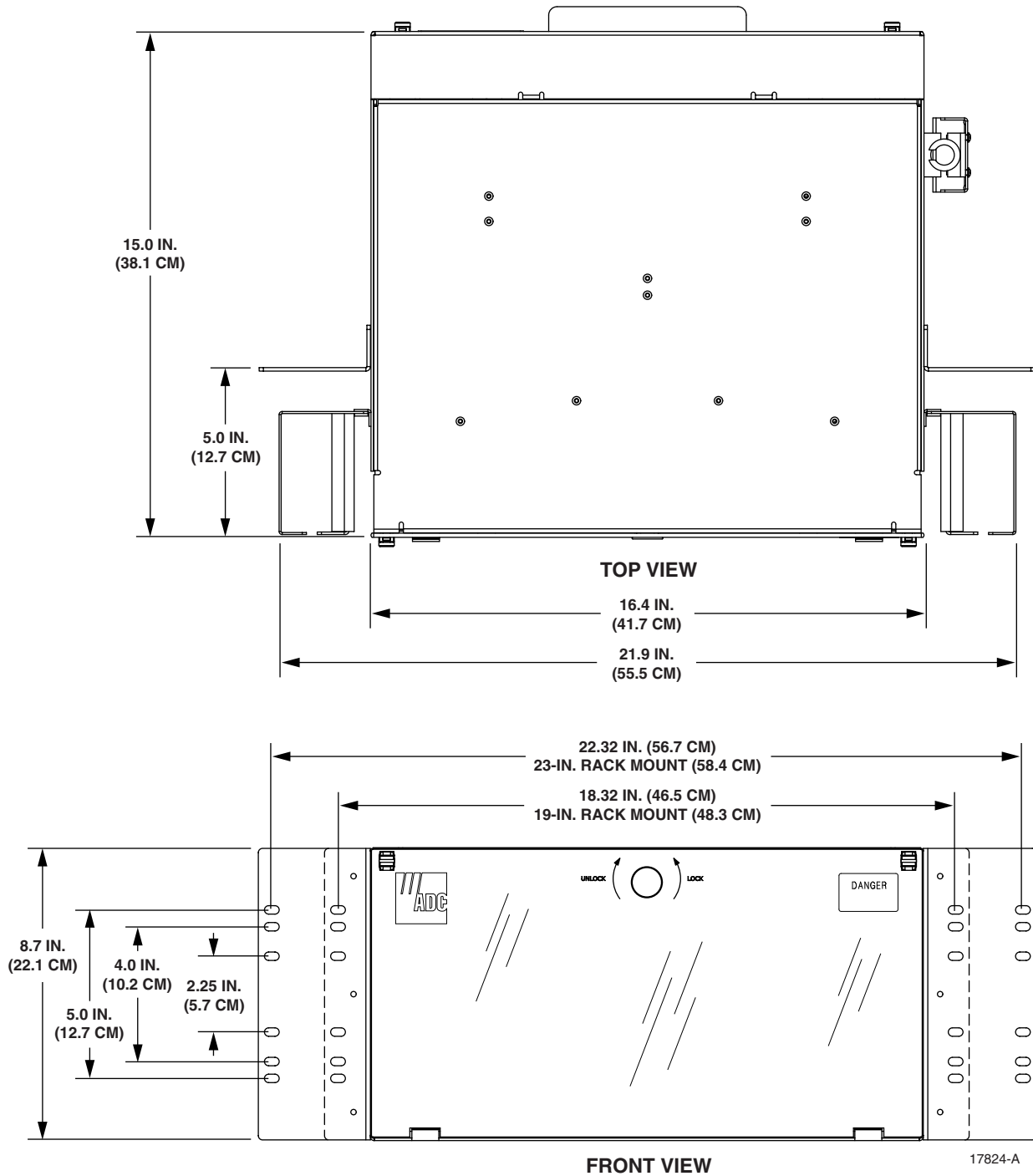Figure 11 shows dimensions of the 144 position high density panel

**Figure 11. Panel Dimensions (144 Position)**

4   APPLICATION

The FPL Series Termination/Splice Panel is designed for use in central offices, remote offices, and in local area networks (LANs) that use a fiber optic cable system. The panel provides a common point for performing any of the following functions:

- Terminating OSP or IFC cables

- Terminating Fiber Optic Terminal (FOT) equipment patch cords

- Storing excess FOT equipment patch cord length

- Connecting FOT equipment with OSP cables

- Mounting and protecting splices

When used with OSP cable, the FPL panel may be used for either interconnect or cross-connect applications. Figure 12 and Figure 13 provide a pictorial comparison of these two types of applications. As shown, in both interconnect and cross-connect applications, the OSP cable is terminated on the rear side of the panel and spliced to the internal pigtails within the panel. Also, in both applications, the pigtails are connected to the rear side of the adapters on the termination bulkhead. The applications differ in what occurs on the front side of the panel.

- In an interconnect application, shown in Figure 12, patch cords from the FOT equipment are connected directly to fibers spliced and terminated on the rear side of the same panel.

- In a cross-connect application, shown in Figure 13, patch cords from the FOT equipment are terminated on one panel and the fibers are spliced and terminated on a second panel, with cross-connect patch cords providing links between the two panels. This two-panel arrangement provides more flexibility in testing and patching optical circuits than is provided by a single panel arrangement.
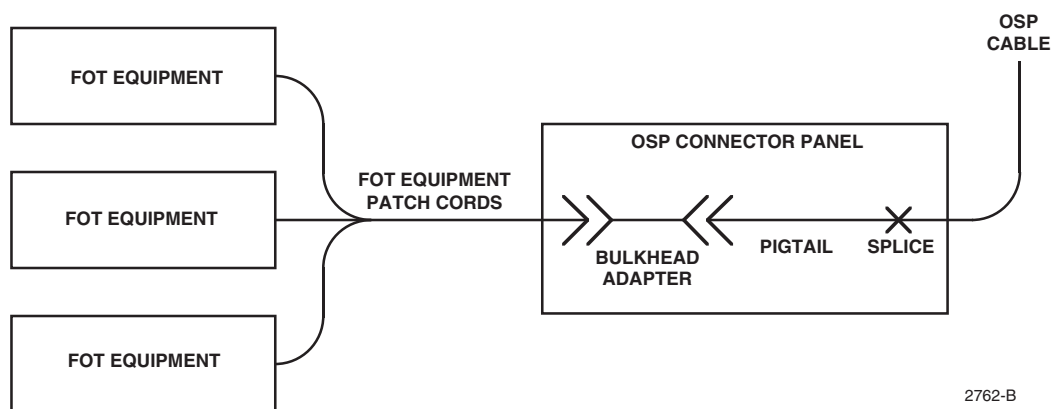
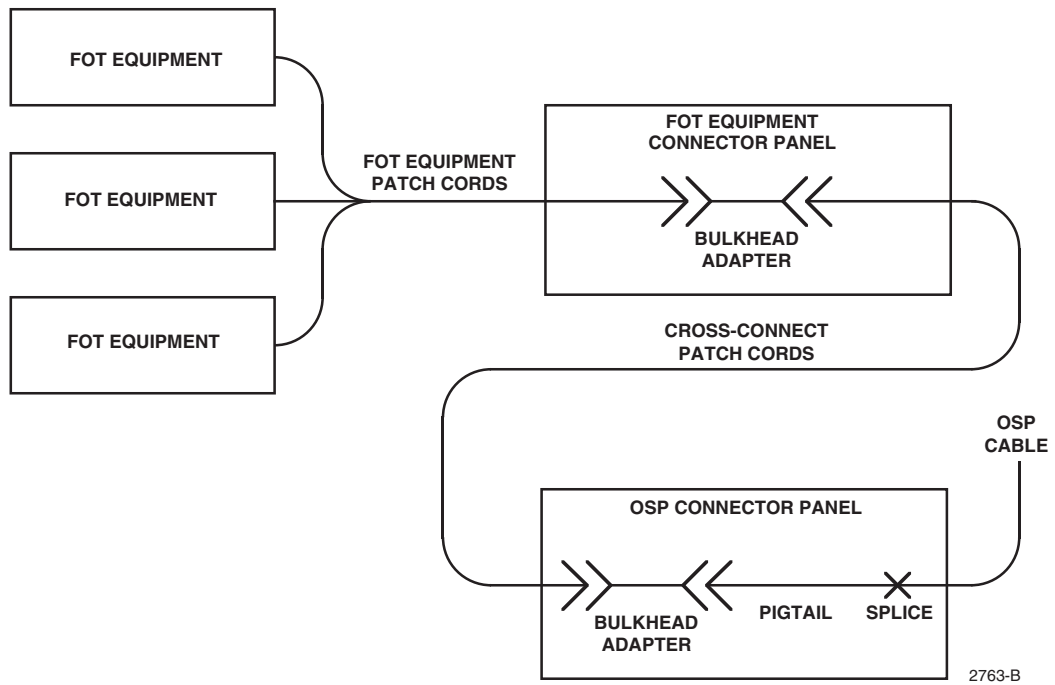**Figure 12. Interconnect Application**

Figure 13. Cross-Connect Application

5 INSTALLATION

Installation will vary depending on how the panel was outfitted in the factory and how it will be used. Installation may include any of the following tasks: installing adapters; installing internal pigtails; mounting the panel on the rack; installing OSP or IFC cable (either connectorized or bare fiber); installing FOT patch cords; and installing cross-connect patch cords (in a cross-connect application only). For step by step instructions, refer to the following subsections.

5.1 Installing Adapters

FPL panels are usually shipped with adapters already installed; however, in some case, you may need to install adapters. The exact procedure to be used depends on the adapter type. Figure 14 shows an example. For specific instructions, refer to the installation drawing that came with the adapters.

▶ **Note:** To avoid getting dirt into the adapter, leave the dust covers in place on the adapters when mounting them on the retainers. If dirt does enter the adapter, use the ADC Fiber Connector/Adapter Cleaning Kit (sold separately) to clean the adapter. Follow the cleaning instructions provided with the kit.
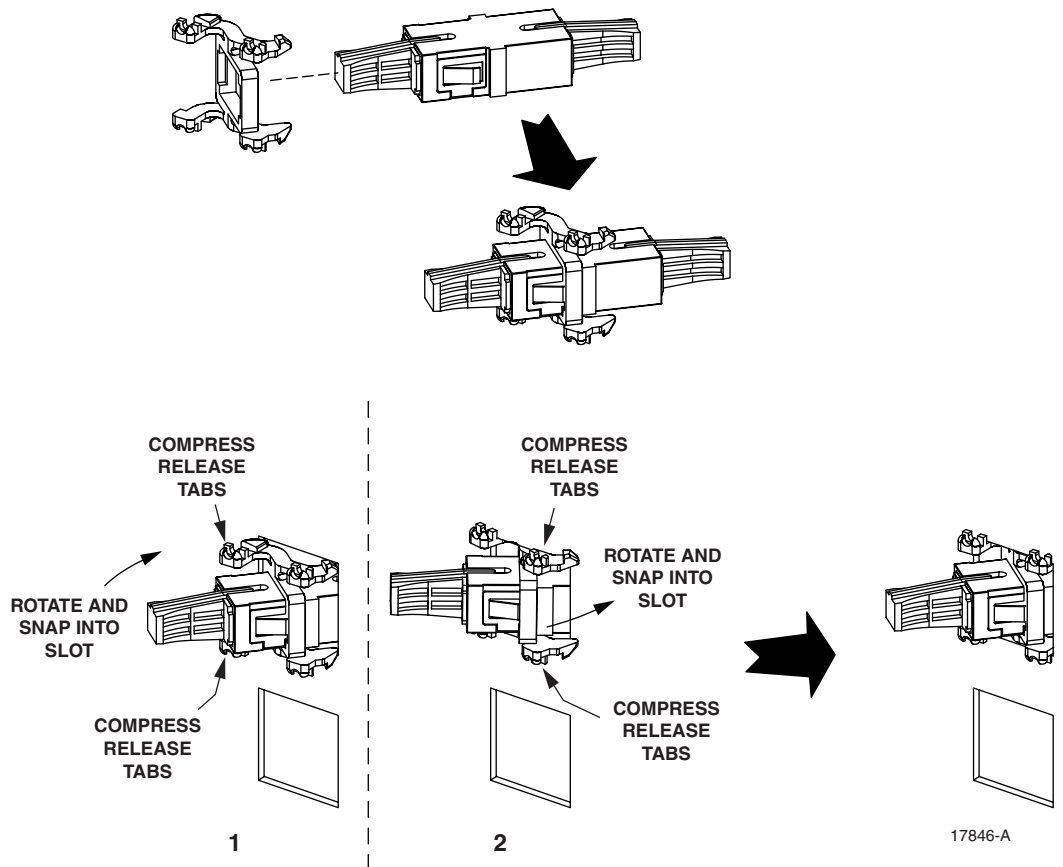
Figure 14. Example of Installing Adapters

5.2   Installing Pigtails

Pigtails may be installed in any FPL panel (including termination only panels) to utilize the rear area of the panel for splicing. Pigtails are installed with the connectorized end connected to the adapters on the rear side of the termination panel and with the bare fiber ends positioned within a splice tray (for an illustration, see Figure 6 on Page 6). 3m pigtails are used with the excess slack coiled within the chassis to provide a service loop for future use if needed.
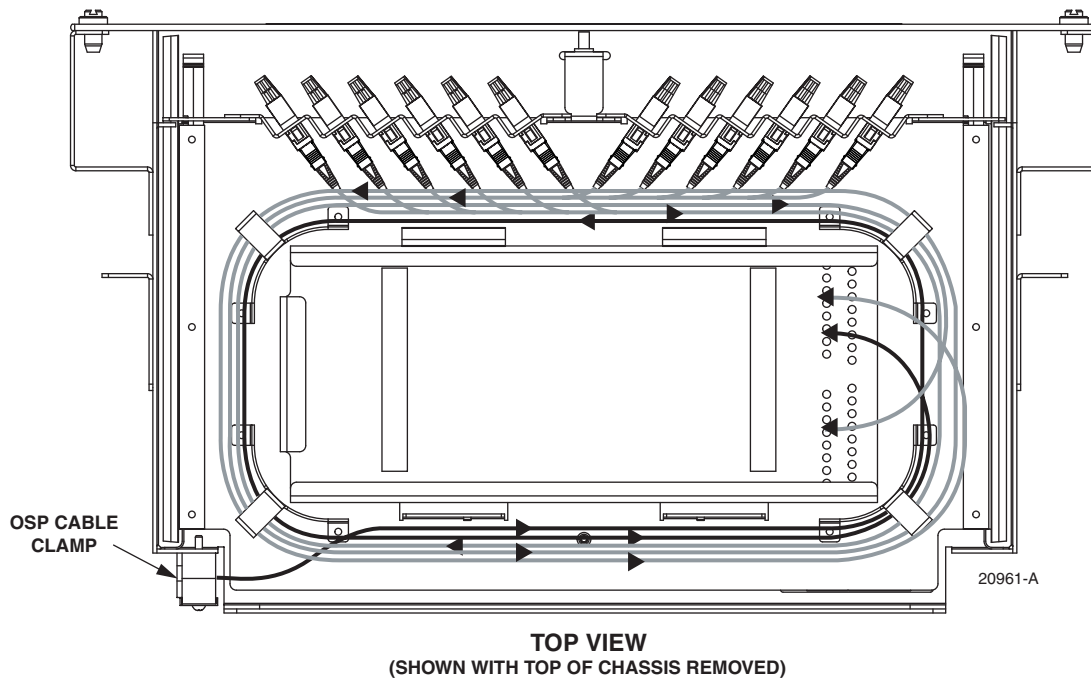
Use the following procedure to install pigtails:

1. Separate out 12 pigtails. Apply a pair of designation tags to each pigtail for identification. Attach one tag next to the connector and the other tag near the bare fiber end.

2. Working from the rear side of the panel, connect the pigtails to the interior side of adapters/receptacles marked with the corresponding numbers. The connector numbers are silk-screened on the interior side of the bulkhead, as shown in Figure 15 for the 72 position panel.

3. Group the 12 pigtails into a bundle and use the twist-lock fiber retainers provided to hold the bundle together.

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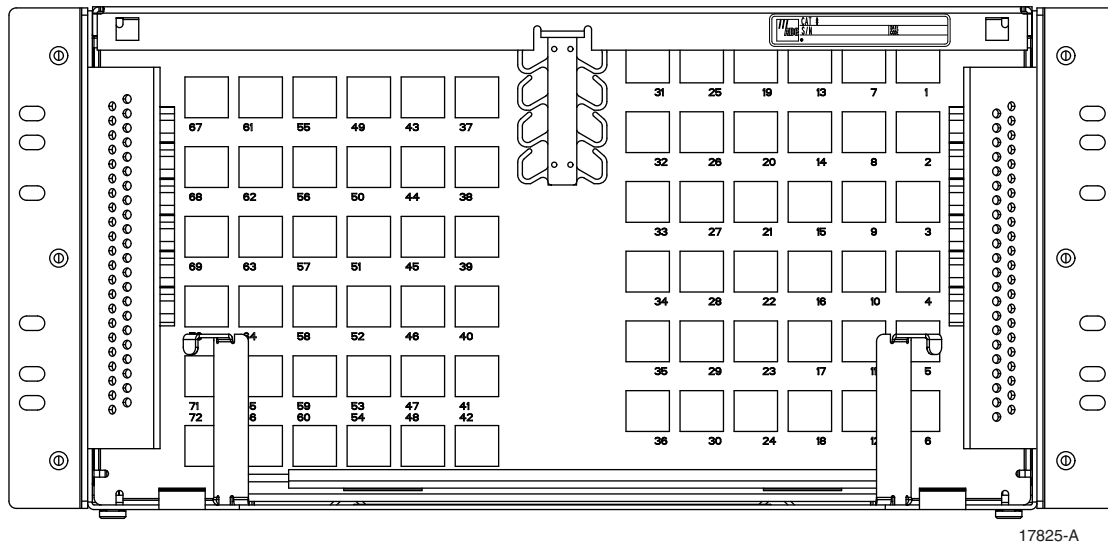
Figure 15. Connector Numbers on Rear of 72 Position Bulkhead

4. Route the pigtails within the panel as shown in Figure 16 (12/24 position 1RU panel), Figure 17 (24 position 3RU panel), Figure 18 (48/72/96 position panel), or Figure 19 (144 position panel).

5. Continue installing the pigtails in groups of 12 until all of the pigtails are labeled, connected, and routed to the splice area.

OSP CABLE CLAMP

TOP VIEW
(SHOWN WITH TOP OF CHASSIS REMOVED)

Figure 16. Pigtail Routing (12/24 Position 1RU Panel)

TOP VIEW
(SHOWN WITH TOP OF CHASSIS REMOVED)

LEFT SIDE PIGTAILS (AS VIEWED FROM REAR)

RIGHT SIDE PIGTAILS (AS VIEWED FROM REAR)

KURLYLOCKS OR FANNING TREE (ATTACHED TO TOP OF CHASSIS)

OSP CABLE CLAMP

DANGER INVISIBLE LASER RADIATION WHEN OPEN, AVOID DIRECT EXPOSURE TO BEAM.

17920-A
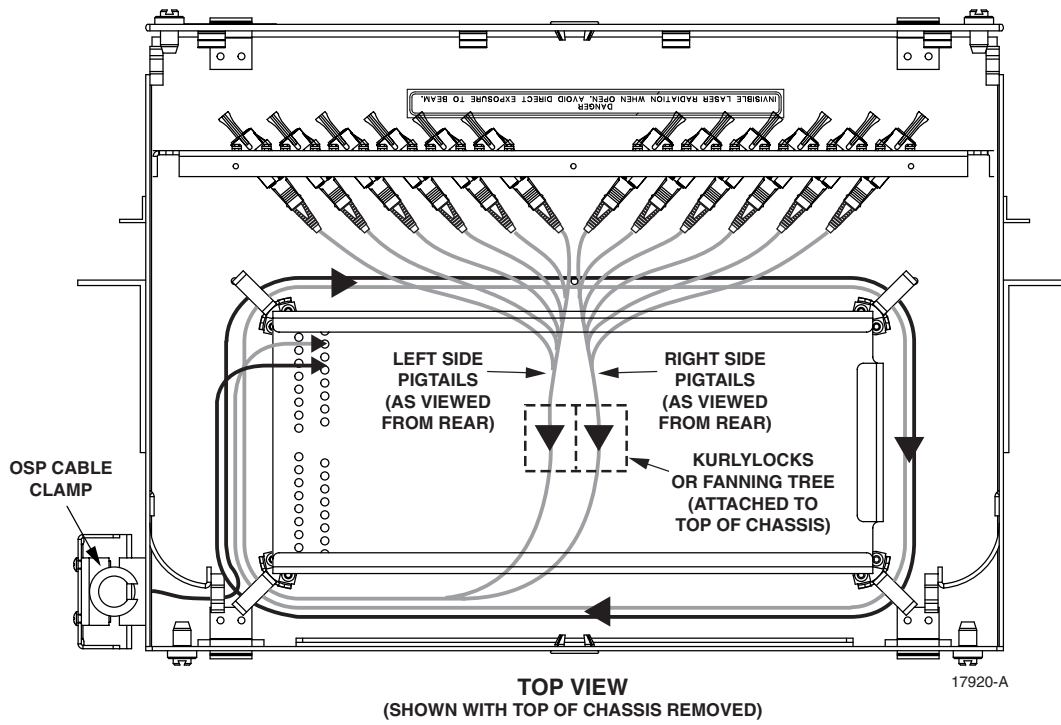
Figure 17. Pigtail Routing (24 Position 3RU Panel)

TOP VIEW
(SHOWN WITH TOP OF CHASSIS REMOVED)

LEFT SIDE PIGTAILS (AS VIEWED FROM REAR)

RIGHT SIDE PIGTAILS (AS VIEWED FROM REAR)

KURLYLOCKS OR FANNING TREE (ATTACHED TO TOP OF CHASSIS)

OSP CABLE CLAMP

DANGER INVISIBLE LASER RADIATION WHEN OPEN, AVOID DIRECT EXPOSURE TO BEAM.

17919-A
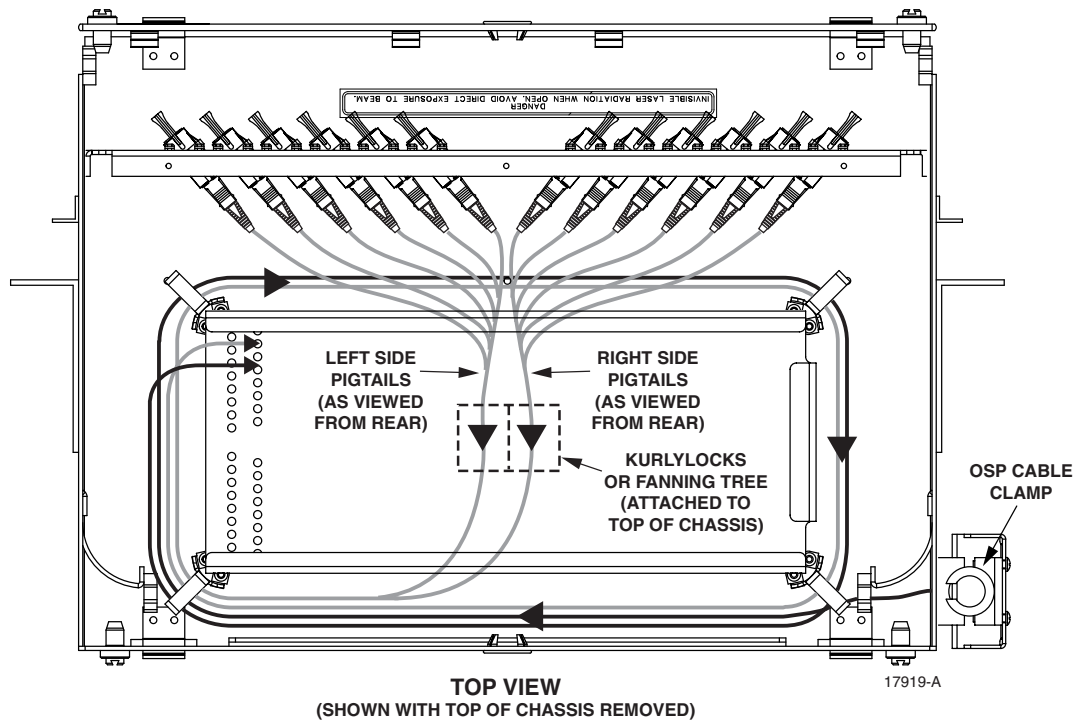
Figure 18. Pigtail Routing (48/72/96 Position Panel)

TOP VIEW
(SHOWN WITH TOP OF CHASSIS REMOVED)
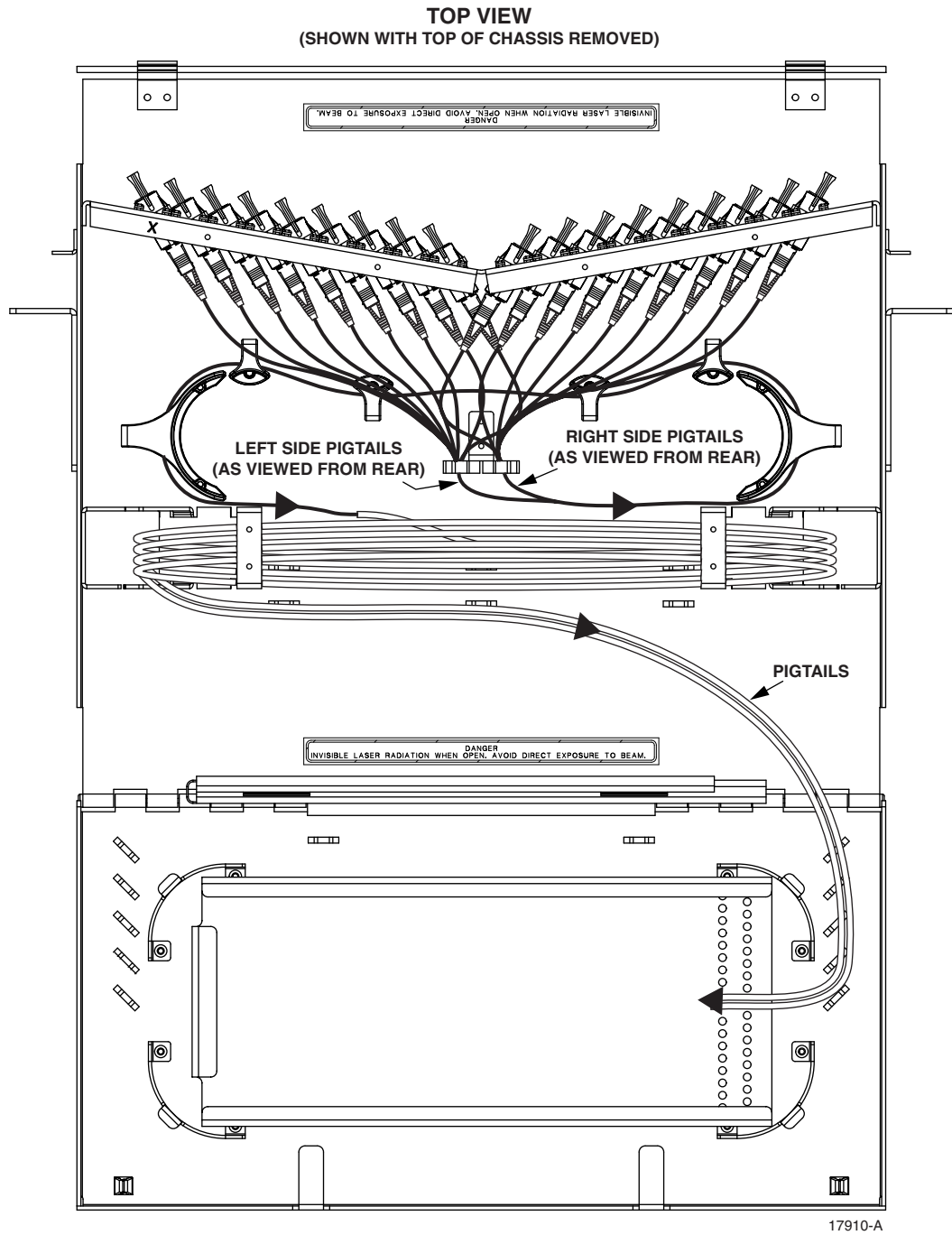
**Figure 19. Pigtail Routing (144 Position High Density Panel Shown)**

5.3   Mounting the Panel on the Rack

Installation always requires mounting the panel on a rack.

The panel can be mounted in either a 19- or 23-inch EIA or WECO equipment rack with either a 4-inch or 5-inch recess. The panel is shipped with the mounting brackets positioned for installation in a 19-inch rack with a 5-inch recess. For other mounting configurations, the brackets must be removed and reinstalled in a different orientation.

Use the following procedure to mount the panel on the rack:

1. If installing the FPL panel in a 23-inch equipment rack, or if changing from a 5-inch to a 4-inch recess:

    a. Remove the screws that secure each mounting bracket to the sides of the chassis and then remove each bracket from the chassis.

    b. Orient each bracket for the required mounting position as shown in Figure 20.

    c. Refasten the mounting brackets to the chassis using the original mounting screws.
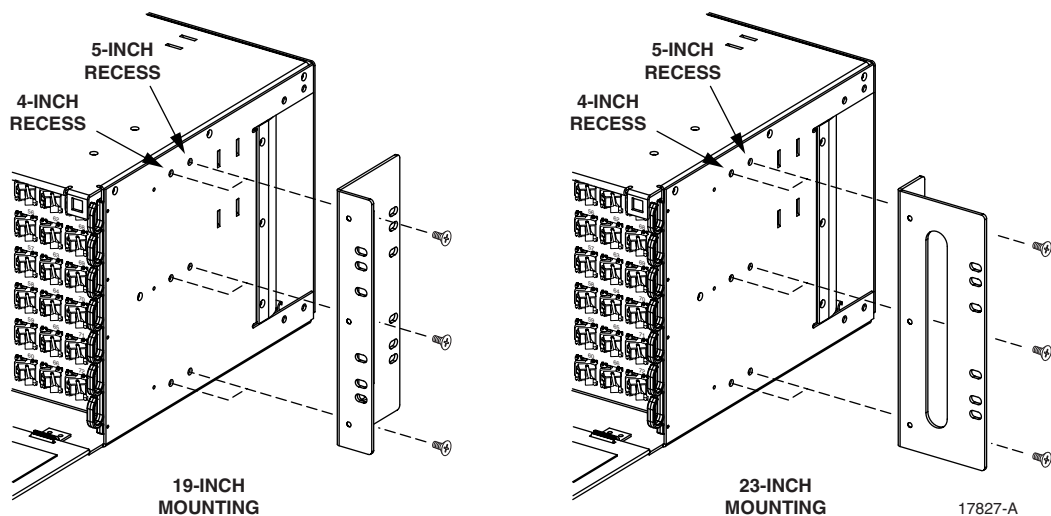
Figure 20. Mounting Bracket Installation

2. Align the bracket holes with the holes in the rack channel.

3. Secure the mounting brackets to the rack channel using the #12 machine screws and flat washers provided.

5.4 Installing OSP or IFC Cable

Cable installation should occur after the panel is mounted in the equipment rack, as described in Section 5.3. Installation consists of routing the cable to the panel, stripping back the outside sheath of the cable to expose the optical fibers, installing a cable clamp to secure the cable to the panel, and routing the fibers to the splice tray. The cable must also be grounded if it has a metallic sheath or metallic strength member.

The cable clamp used in cable installation is shipped with the panel. Two clamps are provided since two cables may be installed on a single panel if desired. Each clamp can accommodate one cable with an outside diameter of 0.4 to 0.8 inches (1.02 to 2.03 cm).

Typically, only one cable is installed per panel. The cable clamp can be installed on either side. A grounding lug is included with each clamp for grounding OSP cables that have metallic strength members or metallic sheaths.

Allow a fiber service loop of at least 8 feet (2.5 meters) when stripping the sheath off the cable. This will provide sufficient length for routing the buffer tubes within the FPL panel and for splicing. After entry, the buffer tubes are routed to the splice tray. The splice tray mounts on the bottom of the FPL panel.

Use the following procedure to secure the OSP cable at the fiber entry point and to route the optical fibers into the FPL panel:

1. Route the OSP cable to the selected entry opening at the side of the FPL panel.

▶ **Note:** Cables may enter the FPL panel from either the top or bottom and may be clamped to either the left or right side
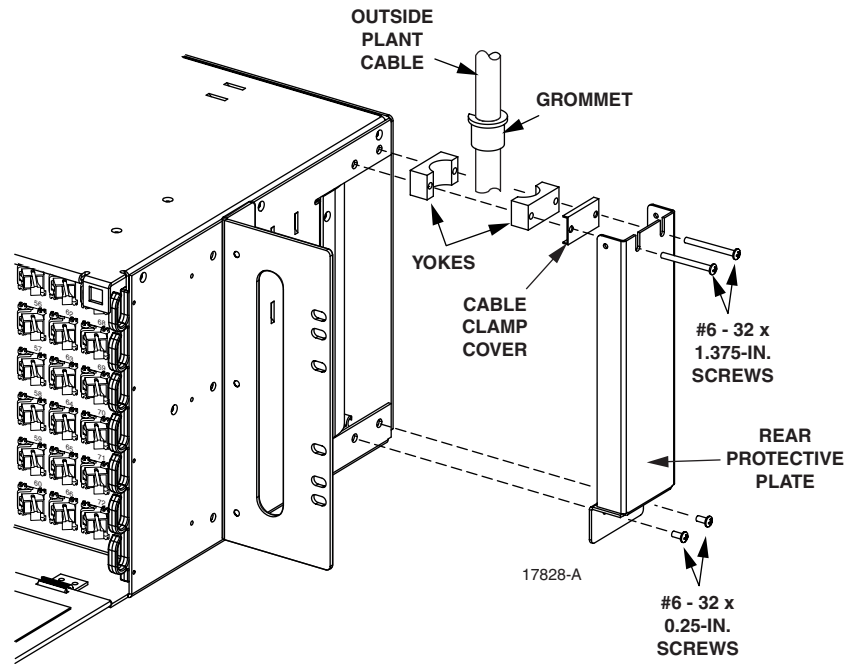
2. Strip back the cable sheath approximately 96 inches (2.5 meters) to expose the optical fibers. Follow the cable manufacturer's recommendations when stripping the sheath.

▶ **Note:** If the cable is filled with water blocking compound, the cable end must be sealed to prevent leakage. A blocking kit (accessory item) is required for sealing the cable end. Install the kit according to the instructions provided with the kit.

▶ **Note:** If cable has a metallic sheath, a special connector is provided with the cable grounding kit (accessory item FIP-ACC-GK) for grounding the sheath. Refer to Appendix A for the installation procedures for ScotchLok 4460 Shield Connectors which are manufactured by the 3M Company.
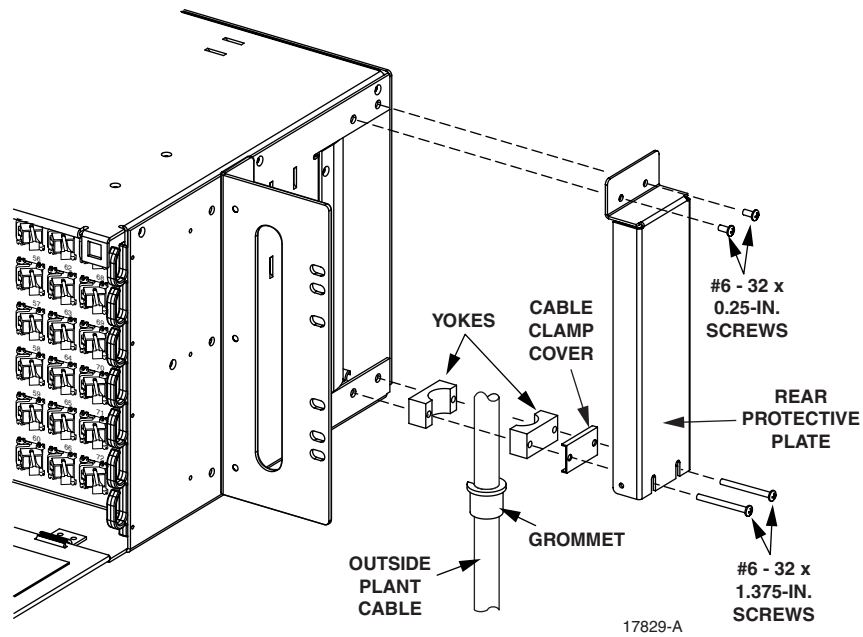
3. Determine the correct clamp and grommet combination required to secure the cable to the panel. A rubber clamp and three grommets of various sizes are provided. Select a grommet that when placed around the cable, has a gap of nearly zero to 0.30 inches (0.76 cm). If the cable diameter is greater than 0.70 inches (1.78 cm), only the rubber clamp is required.

4. Use the rubber clamp, clamp cover, grommet (if required), and two screws to secure the cable end to the side of the FPL panel chassis, as shown in Figure 21 for a top entry cable and in Figure 22 for a bottom entry cable.

▶ **Note:** The Rear Protective Plate, identified in the figures, is not used with the 24 position panel. The plate is not included in the cable clamp kit.

OUTSIDE
PLANT
CABLE

GROMMET

YOKES

CABLE
CLAMP
COVER

#6 - 32 x
1.375-IN.
SCREWS

REAR
PROTECTIVE
PLATE

17828-A

#6 - 32 x
0.25-IN.
SCREWS

Figure 21. Cable Clamp Assembly (Top Entry)

▶ **Note:** Rear Protective Plate shown in these figures is not used on 24 position panel.

#6 - 32 x
0.25-IN.
SCREWS

YOKES

CABLE
CLAMP
COVER

REAR
PROTECTIVE
PLATE

GROMMET

OUTSIDE
PLANT
CABLE

17829-A

#6 - 32 x
1.375-IN.
SCREWS

Figure 22. Cable Clamp Assembly (Bottom Entry)

5. A grounding lug is provided for grounding metallic sheaths and metallic core members. Use the nut and screw provided to fasten the grounding lug to the chassis at the point shown in Figure 23. If the sheath bonding kit was installed, connect a bonding wire between the connector stud and the lug. If the cable has a metallic core member, insert the core member into the lug and tighten.

6. If splicing will not be done at this time, coil the buffer tubes around the radius limiters on the bottom of the FPL panel and close the rear cover. If splicing will be done immediately, proceed to the section that covers splicing.
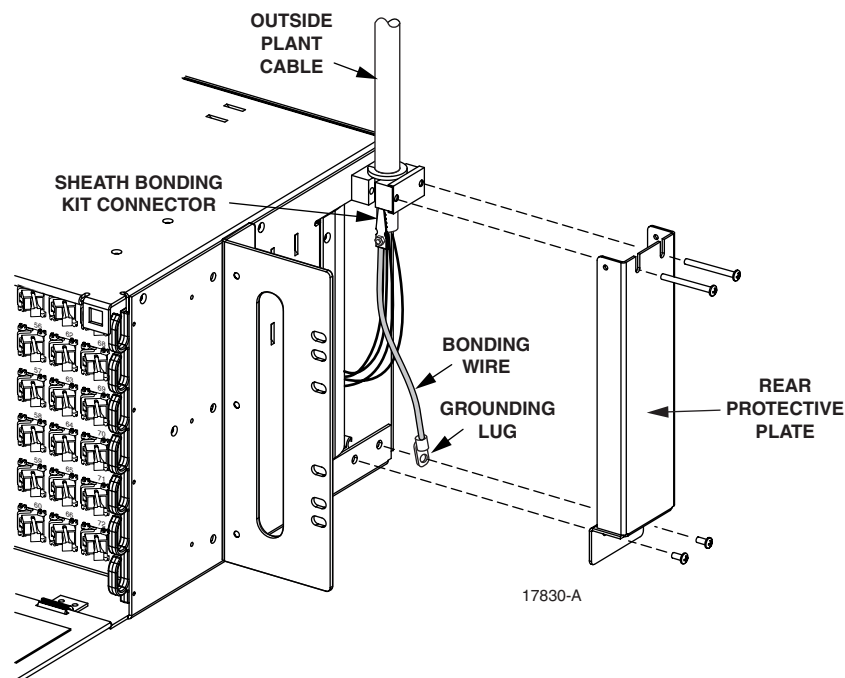
Figure 23. Grounding the OSP Cable

5.5   Splicing

If you are installing a termination and splicing panel, and have just finished installing your OSP or IFC cable, you can now proceed to the splicing procedure provided in this section. You will be doing one splice tray at a time to completion, then going on to complete the next splice tray (if the panel has more than one). For each splice tray, you will assign paired fibers and cable subunits bundles of 12, measure for correct service loop length, remove the splice tray to a working surface for splicing, and return the splice tray to the panel.
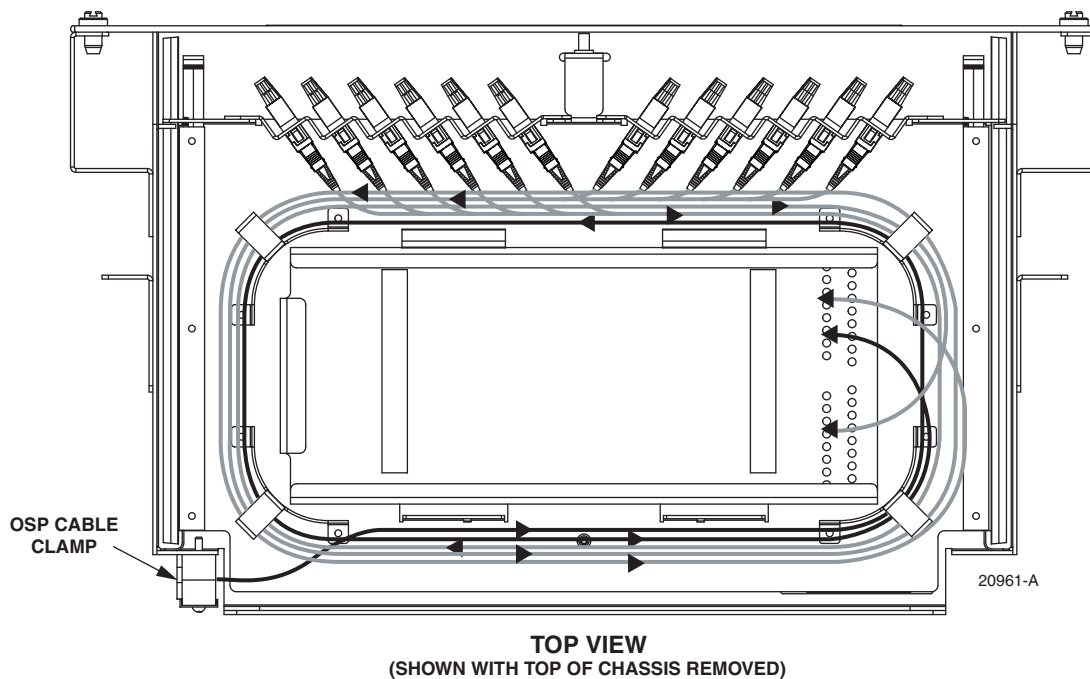
The purpose of a splice tray is to protect the splices. The splice tray mounts on the bottom of the FPL panel, within the chassis in the mid-size models and on the splice area access door in the high density model. A rubber strap is used to secure the splice tray to the bottom of the FPL panel or to the splice area access door.

In a typical installation, the methods and procedures that will be used for splicing are determined by local practice. Use the following procedure to organize the pigtails and buffer tubes for splicing and to store completed splices:

⚠ **Danger:** *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the optical bulkhead of an operational transmitter or into the receiver end of an active fiber. A protective cap or hood MUST be immediately placed over any radiating bulkhead adapter/receptacle or optical fiber connector to avoid potential exposure to dangerous infrared optical radiation. The protective cover also prevents dirt particles from entering the connector.*

1. Uncoil all the pigtail bundles and buffer tubes from the radius limiters within the FPL panel.

2. Group the pigtails and buffer tubes for fibers 1 - 12 into a single common bundle. Use the twist-lock retainers provided to hold the pigtail and buffer tube bundle together.

3. Group the remaining pigtails and buffer tubes into similar bundles with one bundle for each group of 12 pigtails and buffer tubes. Secure the bundles together using twist-lock retainers.

4. Identify the first splice tray and the one or two bundles to be assigned to it. For a single height tray, assign one bundle. For a dual height tray, assign two bundles.

5. Place the splice tray in its correct location in the panel and coil the one or two bundles assigned to it around the radius limiters as shown in Figure 24 (12/24 position 1RU panel), Figure 25 (right cable exit, 24/48/72/96 position panel), Figure 26 (left cable exit, 48/72/96 position panel), Figure 27 (right cable exit, 144 position panel), or Figure 28 (left cable exit, 144 position panel).

TOP VIEW
(SHOWN WITH TOP OF CHASSIS REMOVED)

Figure 24. Pigtail Routing (12/24 Position 1RU Panel)

TOP VIEW
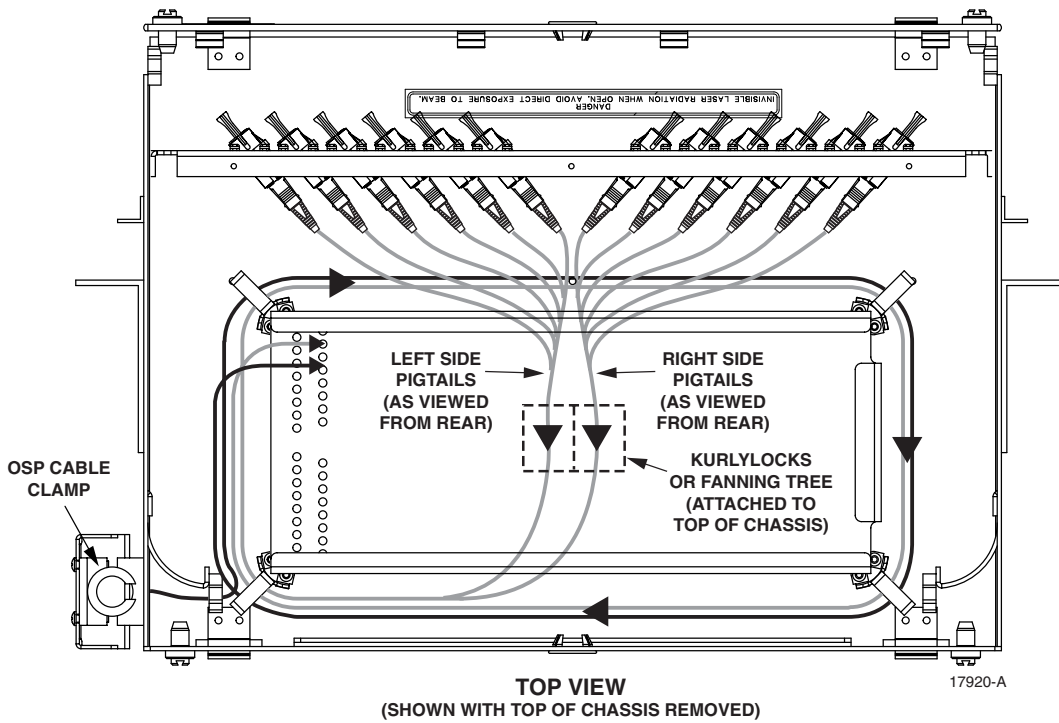(SHOWN WITH TOP OF CHASSIS REMOVED)

17920-A

Figure 25. Right Cable Exit (Left as Viewed from Rear), 24/48/72/96 Position Panel

TOP VIEW
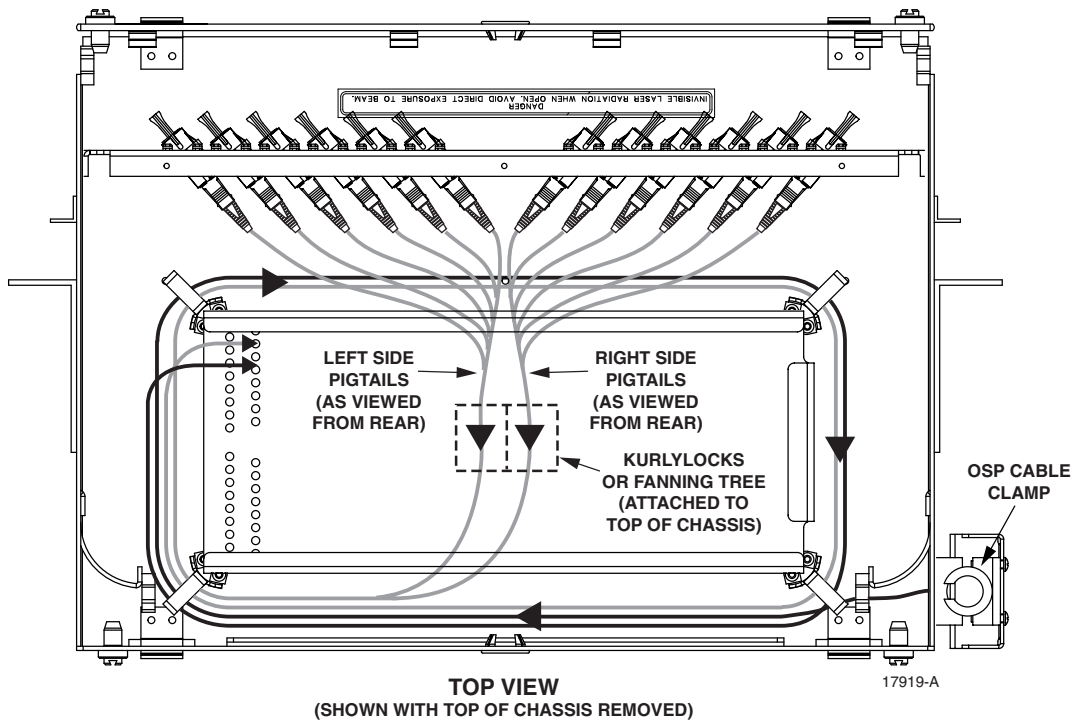(SHOWN WITH TOP OF CHASSIS REMOVED)

17919-A

Figure 26. Left Cable Exit (Right as Viewed from Rear), 24/48/72/96 Position Panel

TOP VIEW
(SHOWN WITH TOP OF CHASSIS REMOVED)

DANGER
INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM.

LEFT SIDE PIGTAILS
(AS VIEWED FROM REAR)

RIGHT SIDE PIGTAILS
(AS VIEWED FROM REAR)

OSP CABLE
CLAMP

PIGTAILS

BUFFER
TUBES

DANGER
INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM.

17909-A

Figure 27. Right Cable Exit (Left as Viewed from Rear), 144 Position Panel

TOP VIEW
(SHOWN WITH TOP OF CHASSIS REMOVED)

**Figure 28. Left Cable Exit (Right as Viewed from Rear),144 Position Panel**

6. Lay the bundle(s) across the top of the splice tray as shown in the figures and determine the point at which each pigtail and cable subunit should be attached to the splice tray.

▶ **Note:** All fibers must enter the splice tray from the same side as shown in Figure 29.

BUFFER TUBES

**SECURE PIGTAILS AND BUFFER TUBES
TO SPLICE TRAY WITH TIE WRAPS**

2776-A
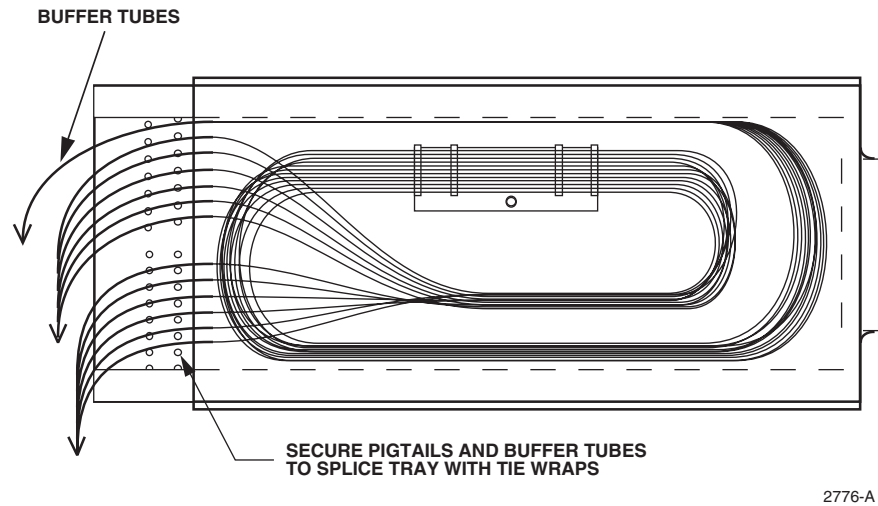
Figure 29. Routing Bundles into Splice Tray

7. Mark each buffer tube and pigtail to indicate the attachment point to the splice tray. Make sure approximately 2 feet (61 cm) of fiber are left beyond the attachment point for splicing.

8. Remove the splice tray from the FPL panel and uncoil the bundles from the radius limiters.

9. Beginning at the points marked in step 7, remove the buffer tubes and pigtail jackets to expose the optical fibers. Clean fibers as recommended by cable manufacturer.

10. Secure the cable subunits and pigtails to the splice tray using tie wraps. The tie wraps should be tight enough to secure the pigtail jackets and cable subunits but should not pinch the fibers inside.

11. Complete each splice according to local splicing practice. Note that the numbered tag that is attached to each pigtail corresponds to the number on the bulkhead connector plate.

12. Carefully secure each completed splice to the splice chip on the inside of the splice tray.

13. When all splices are complete, place the clear plastic cover over the splice tray to protect the finished splices.

14. Coil up the bundles around the radius limiters (in the same direction as coiled in step 5) and place the splice tray on the bottom of the FPL panel.

15. Secure the splice tray(s) to the bottom of the FPL panel using the rubber strap provided. An example of a splice tray mounted in a FPL panel is shown in Figure 30.

16. Record all terminations on the front designation cards as required by local practice.

17. Repeat steps 4 through 16 for the next splice tray, if any remains. Continue until all the splice trays have been installed.
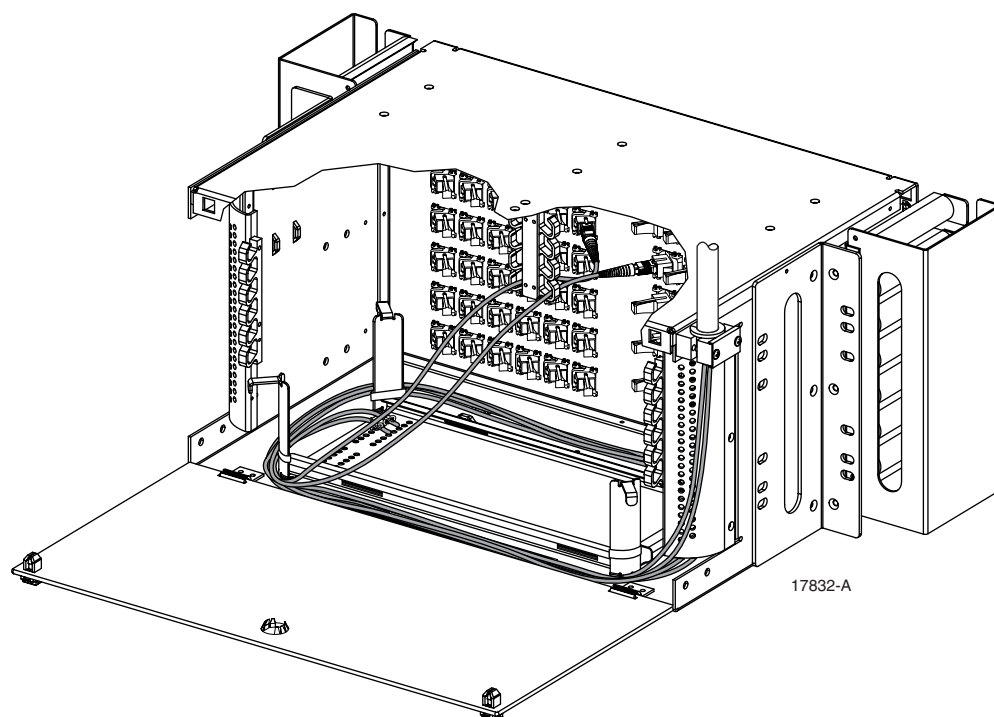
Figure 30. Splice Tray Mounted in 24 Position FPL Panel

18. Close and latch front and rear covers.

5.6 Installing FOT Patch Cords

In both interconnect and cross-connect applications, FOT equipment patch cords are installed between the FOT equipment and the FLP panel. The following sections describe the installation procedure to use based on the application.

⚠ **Danger:** *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the optical bulkhead of an operational transmitter or into the receiver end of an active fiber. A protective cap or hood MUST be immediately placed over any radiating bulkhead adapter/receptacle or optical fiber connector to avoid the potential exposure to dangerous infrared optical radiation. The protective cover also prevents dirt particles from entering the connector.*

5.6.1 Interconnect Application

In an interconnect application, the FOT equipment patch cords are connected to the appropriate bulkhead adapters/receptacles at the OSP-dedicated FPL panel and then routed to the FOT equipment. Any excess patch cord slack must be stored at the FOT equipment or in a separate storage panel.

Use the following procedure to install FOT equipment patch cords in interconnect applications:

1. Connect the FOT equipment patch cord to the appropriate bulkhead adapter/receptacle at the front side of the FPL panel as shown in Figure 31.

▶ **Note:** If using biconic or ST receptacles, install a 0 dB build-out to permit installation of the patch cord.

2. Use the retainers at the left and right sides of the FPL panel to route patch cords away from the front side of the FPL panel.

3. Route patch cord from the FPL panel to the FOT equipment.

4. Connect the FOT equipment patch cord to the FOT equipment.

5. When all FOT patch cords have been connected, install the patch cord shields at the front of the FPL panel. (For better access to the vertical cable guides, the patch cord shield may optionally be removed during installation, as shown in Figure 31.)

6. Close FPL panel front cover and latch.
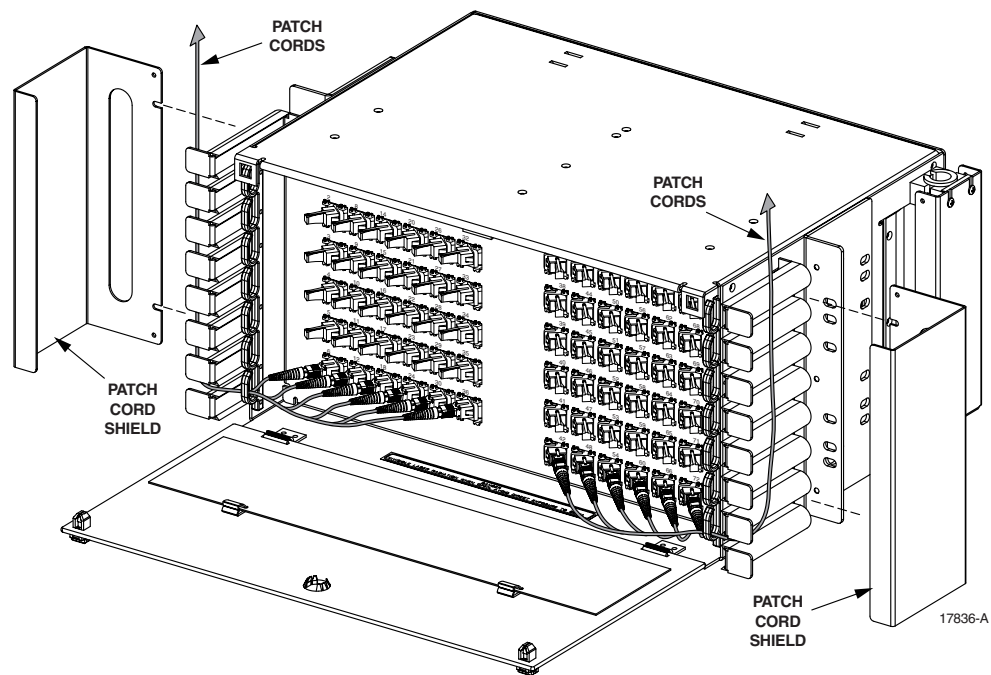
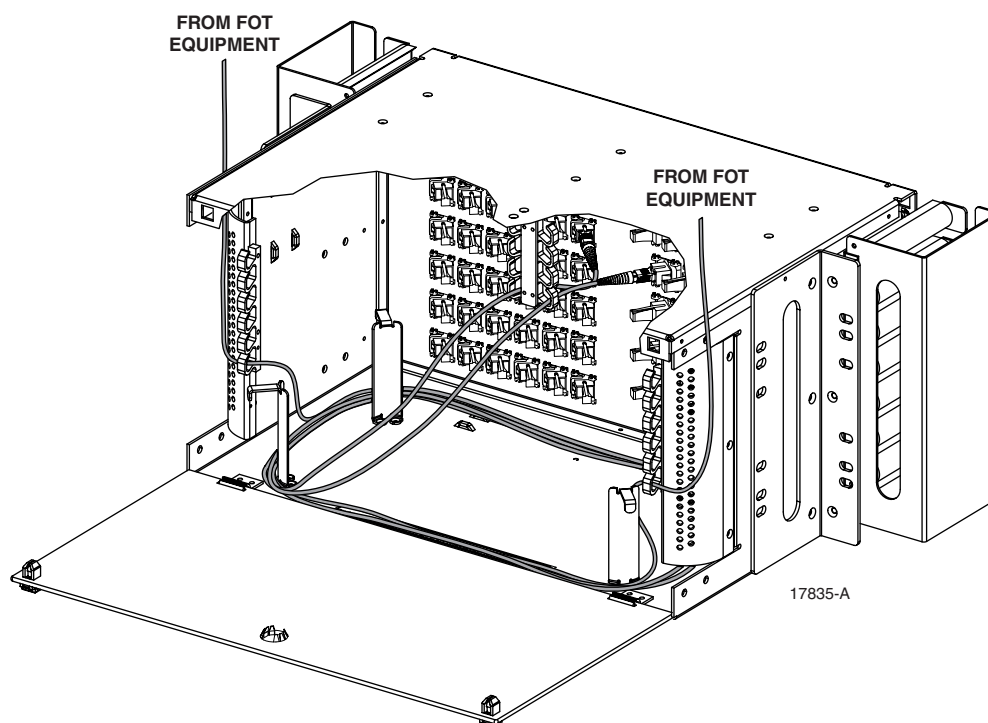**Figure 31. Connecting FOT Equipment Patch Cords — Interconnect Application**

5.6.2 Cross-Connect Application

In a cross-connect application, the FOT equipment patch cords are connected to the FOT equipment and then routed to the FOT equipment FPL panel. Some of the excess patch cord slack may be stored on the bottom of the FPL panel.

Use the following procedure to install FOT equipment patch cords in cross-connect applications:

1. Connect the FOT equipment patch cord to the FOT equipment.

2. Route the patch cord from the FOT equipment to the rear side of the FPL panel.

3. Connect the FOT equipment patch cord to the appropriate bulkhead adapter/receptacle within the FPL panel as shown in Figure 32.

▶ **Note:** If using biconic or ST receptacles, install a 0 dB build-out to permit installation of the patch cord.

4. Coil excess patch cord slack around the radius limiters on the bottom of the FPL panel.

5. Use the retainers at the top, left, and right sides of the FPL panel to route patch cords away from the rear side of the panel.

6. When all FOT patch cords have been connected, close the rear cover and latch.

Figure 32. Connecting FOT Equipment Patch Cords — Cross-Connect Application

6 OPERATION (CROSS-CONNECT PATCH CORDS)

Cross-connect patch cords are routed between FPL panels by way of vertical cable guides and horizontal troughs. Any excess patch cord length must be taken up within the guideways or stored using Interbay Management Panels or a separate storage panel.

Use the following procedure for routing and connecting each cross-connect patch cord:

1. Open the front cover of both the FOT equipment and OSP-dedicated FPL panel.

⚠ **Danger:** *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the optical bulkhead of an operational transmitter or into the receiver end of an active fiber. A protective cap or hood MUST be immediately placed over any radiating bulkhead adapter/receptacle or optical fiber connector to avoid the potential exposure to dangerous infrared optical radiation. The protective cover also prevents dirt particles from entering the connector.*

2. Connect the cross-connect jumper to the appropriate bulkhead adapter/receptacle at the front side of the first FPL panel as shown in Figure 33.

◆ **Note:** If using biconic or ST receptacles, install a 0 dB build-out to permit installation of the patch cord.

3. Use the retainers at the left and right sides of the FPL panel to route patch cords away from the front side of the FPL panel.

4. Route patch cord from the first FPL panel to the second FPL panel.

5. Connect the cross-connect jumper to the appropriate bulkhead adapter/receptacle at the front side of the second FPL panel as shown in Figure 33.

◆ **Note:** For better access to the vertical cable guides, the patch cord shield may optionally be removed during installation, as shown in Figure 33.

6. Close the front covers on both FPL panels and latch.
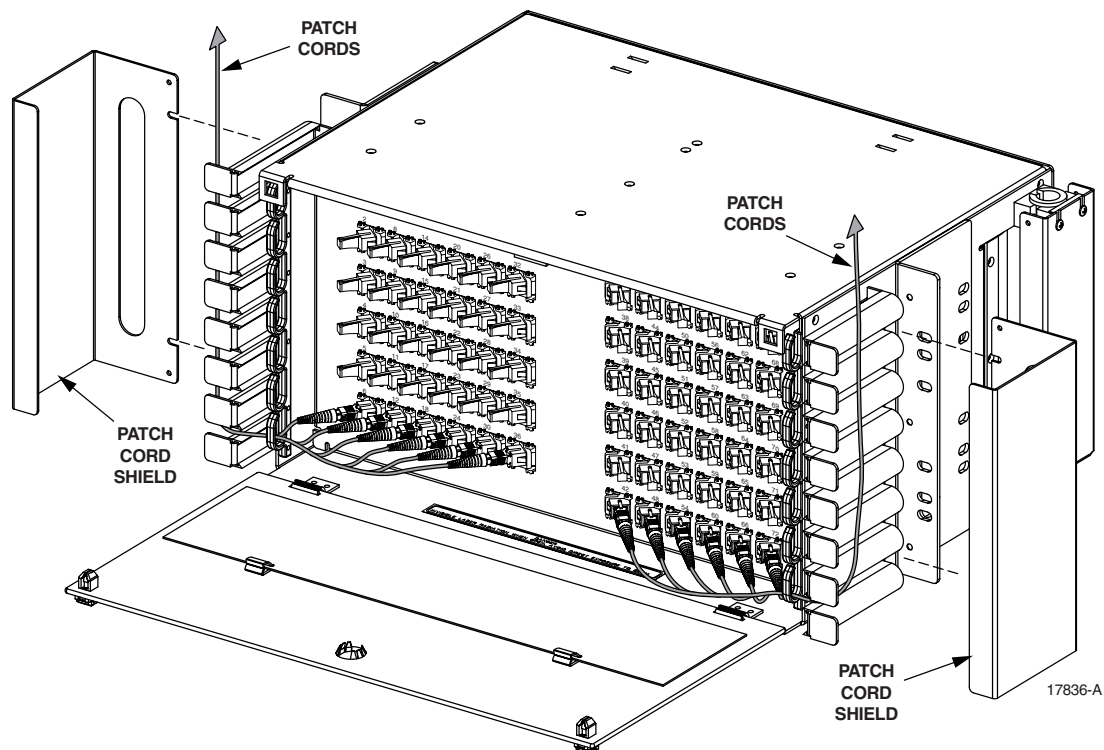
Figure 33. Connecting Cross-Connect Patch Cords

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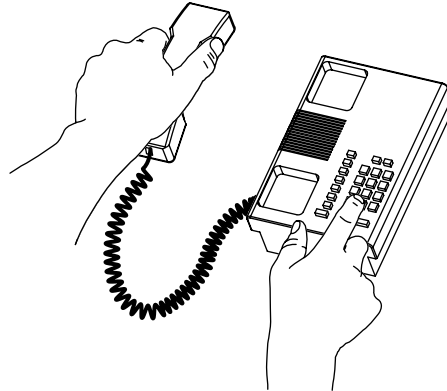France: 0800 914032
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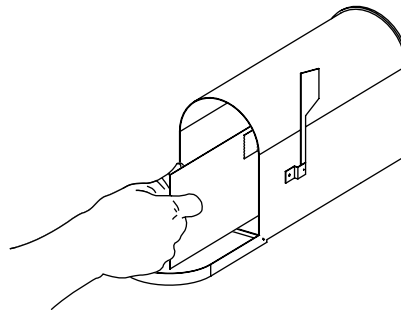Sales Administration: +1-952-938-8080
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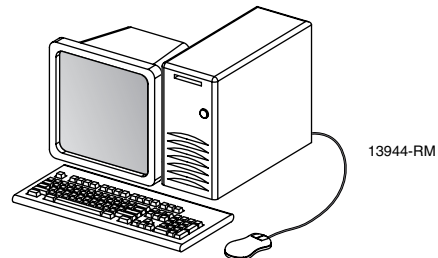**BELGICASTRAAT 2,**
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APPENDIX A: SHIELD CONNECTOR INSTALLATION

This appendix provides the procedures for installing Scotchlok 4460 Shield Connectors, which are manufactured by the 3M Company and utilized in the Fiber Management Panel. The shield connector kit provides a means for grounding cables that have a metallic shield. Use the following procedure to install each kit:

1. The shield connector kit is comprised of the components shown in Figure 34.
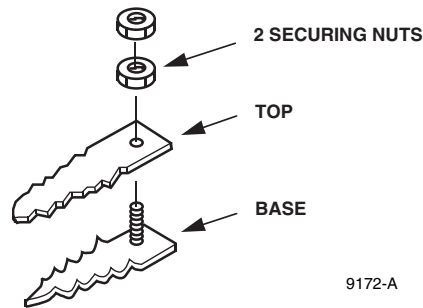
Figure 34. Kit Components

2. Prepare the cable by cutting the shield flush with the outer cable sheath as shown in Figure 35. If the cable has a double sheath, cut only the outer sheath and shield leaving the inner sheath intact as shown.
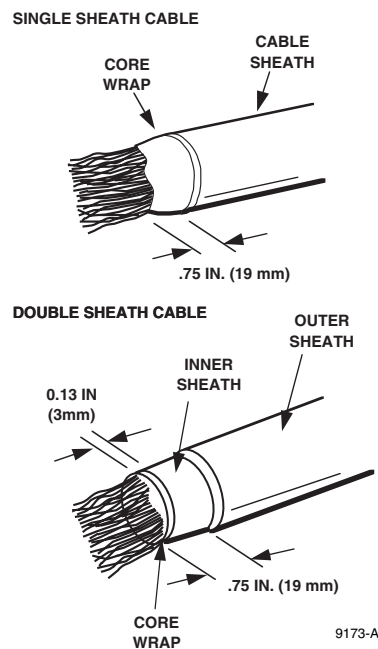

Figure 35. Cable Preparation

3. Make a one-inch cut in the cable sheath opposite the point at which the connector will be attached as shown in Figure 36.
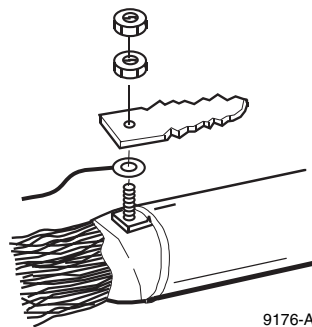
1.0 IN. (25 mm)

9174-A
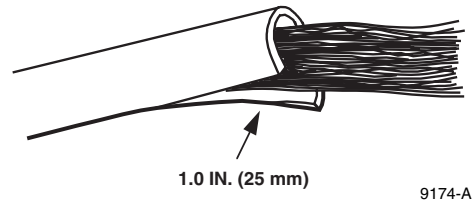
Figure 36. Cutting Cable Sheath

4. If installing single shield cable, insert connector base between shield and core wrap. If installing double shield cable, insert connector base between shield and inner sheath.

5. Slide connector into cable until stops contact outer sheath. Tap on shield above connector at point shown in Figure 37 to set teeth.

TAP HERE

9175-A
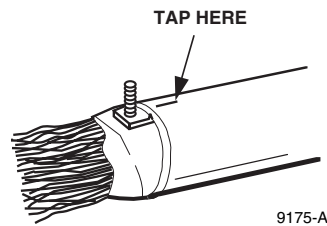
Figure 37. Setting Connector Teeth

6. Install bonding wire on stud and place connector top over bonding wire. Do not tap on connector top.

7. Install both nuts on connector as shown in Figure 38 and tighten.

9176-A

Figure 38. Bonding Wire Installation

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