

NG3

High-Density Fiber Distribution Frame System Termination, VAM, and MPO Panels

User Manual

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REVISION HISTORY

ISSUE	DATE	REASON FOR CHANGE
1	1/2003	Original.
2	1/2003	Changed format to reduce file size for electronic distribution.
3	7/2003	Add cautionary statements and notes.
4	12/2003	Updated for new shorter top cover and related clearance dimensions.
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6	1/2005	Added information and specifications for 72-position termination and splice panel and MicroVAM Chassis. Add current Customer Information and Assistance drawing and edit for clarity.
7	7/2006	Added Subsection 3.5 (breakout cable installation). Change patch cord length to 65 inches (165.10 cm) in Subsections 4.2.1 and 4.4.1.
8	1/2010	Added instructions on how to remove the NG3 panel and an attached cable from the packaging and spool. Added Subsection 3.6 Installing an IFC Cable Kit and Preterminated IFC Cable
9	3/2010	Added MPO Termination Panel description (Subsections 1.5 and 1.6) and routing and installation procedures for Rapid Fiber cable (Section 5).
10	05/2011	Added NG3 VAM chassis with front and rear ports.
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ABOUT THIS MANUAL

This manual describes the 72-Position Standard Termination Panel, the NG3 MicroVAM Chassis, and the 72-Position MPO Panel. It also provides the information and procedures required to install and use each of the three types of NG3 panels. The NG3 panels are part of the NG3 High-Density Fiber Distribution Frame System.

RELATED PUBLICATIONS

Listed below are related manuals and their publication numbers. Copies of these publications can be ordered by contacting the CommScope Technical Assistance Center at 1.800.830.5056, or by e-mail to TAC.Americas@commscope.com.

Title/Description	Publication Number
NG3 High-Density Fiber Distribution Frame System Rack Installation Manual: Raised Floor	90-295
Provides step by step pictorial instructions for installing an NG3 rack on a raised floor.	
NG3 High-Density Fiber Distribution Frame System Patch Cord Routing Guide	90-296
Provides pictorial guidelines for routing patch cords on a lineup consisting of one or more NG3 frames. This manual consists of laminated cards that hang on the lineup.	
NG3 High-Density Fiber Distribution Frame System User Manual	90-298
Contains an NG3 system overview and information for planning and operating the system.	
NG3 High-Density Fiber Distribution Frame System Rack Installation Manual: Concrete Floor	90-299
Provides step by step pictorial instructions for installing an NG3 rack on a concrete floor.	
ADC Multifiber-Push On (MPO) Assembly Connector Cleaning Instructions	96-150
Provides cleaning procedures for MPO connectors.	
Rapid Panel User Manual	90-601
Provides installation and operation procedures for the Rapid Panel	

ADMONISHMENTS

Important safety admonishments are used throughout this manual to warn of possible hazards to persons or equipment. An admonishment identifies a possible hazard and then explains what may happen if the hazard is not avoided.

The admonishments — in the form of Dangers, Warnings, and Cautions — must be followed at all times. These warnings are flagged by use of the triangular alert icon (seen below) and are listed in descending order of severity of injury or damage and likelihood of occurrence.



Danger: *Danger is used to indicate the presence of a hazard that **will** cause severe personal injury, death, or substantial property damage if the hazard is not avoided.*



Warning: *Warning is used to indicate the presence of a hazard that **can** cause severe personal injury, death, or substantial property damage if the hazard is not avoided.*



Caution: *Caution is used to indicate the presence of a hazard that **will** or **can** cause minor personal injury or property damage if the hazard is not avoided.*

GENERAL WARNINGS AND CAUTIONS



Danger: *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical adapters of the adapter packs. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood **MUST** be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

LIST OF ACRONYMS AND ABBREVIATIONS

The following acronyms are used in this manual:

FOT	Fiber Optic Terminal
IFC	Intra Facility Cable
MPO	Multi-fiber Push On
NG3	New Generation High-Density Fiber Distribution Frame
OSP	Outside Plant
SAP	Sliding Adapter Pack
VAM	Value Added Module
WDM	Wavelength Division Multiplexer

RECOMMENDED TOOLS

#3 Phillips screwdriver with at least an 8-inch shaft.

1 DESCRIPTION

The NG3 High-Density Frame System consists of the NG3 frame and the various types of NG3 panels that can be mounted on the frame, including the following:

- NG3 72-Position Standard Termination Panel
- NG3 72-position MPO Termination Panel
- NG3 MicroVAM Chassis (13-unit Front-Only or 12-Unit Front/Rear)

1.1 NG3 High-Density Frame System Example

Figure 1 shows an example of an NG3 frame mounted with panels.

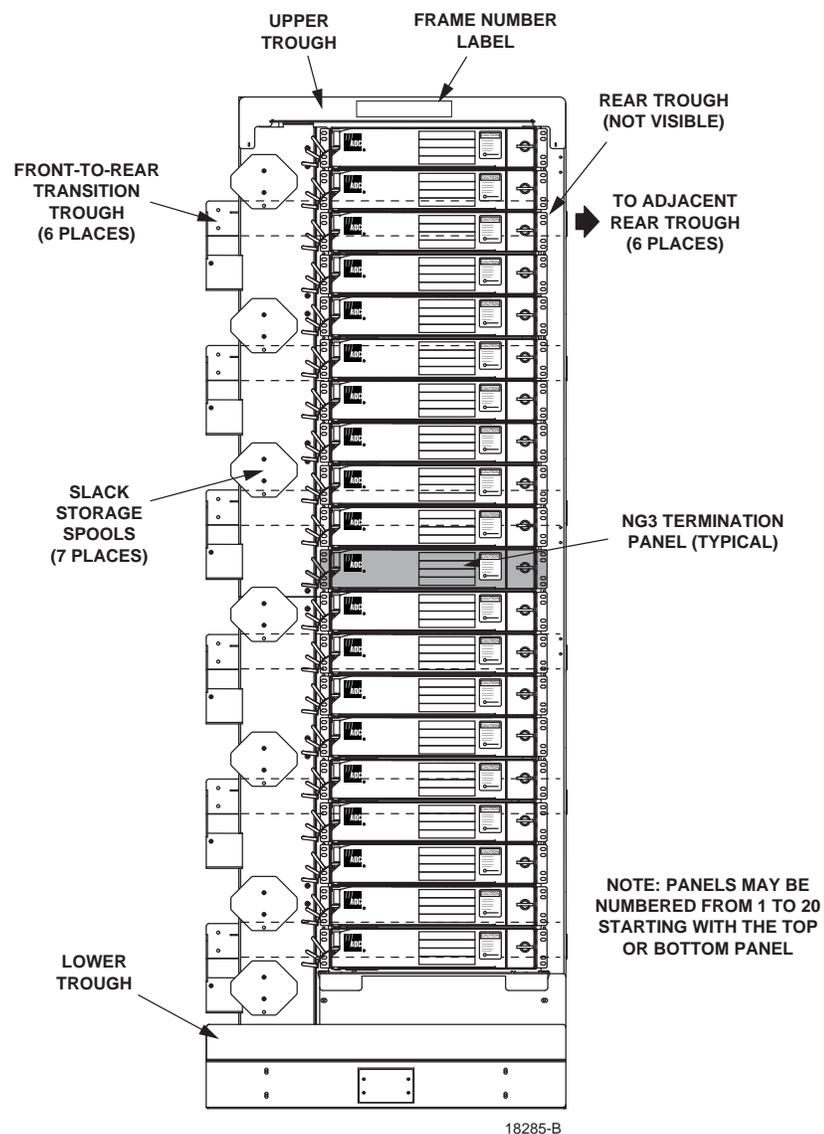


Figure 1. NG3 Panels on NG3 Frame

The NG3 frame and the optical panels mounted in the frame function as a distribution point for fiber optic cables in a high density application. Each frame provides 20 mounting spaces for NG3 panels with each panel providing up to 72 fiber ports. An NG3 frame also contains cable management features including slack storage spools and cable troughs. A fully loaded frame can support 1440 terminations using 2 mm patch cords.

1.2 NG3 72-Position Standard Termination Panel

The NG3 72-Position Standard Termination Panel is a rack-mount panel designed for mounting on the NG3 frame. The panel has a hinged drawer that swings out to provide access to the adapter packs within. The design of the panel allows for flexible deployment of all circuits without a required termination plan or scheme.

The standard panel provides 72 adapter mounting positions (12 adapter packs, each with six adapters). The adapters may be any of the standard single mode and multimode types including SC and FC. For a complete list of adapter options, contact your CommScope representative. The primary components of the NG3 panel are shown in [Figure 2](#) and consist of the following:

- **Panel Chassis**—The foundation structure of the panel. It is 17.18 inches (43.6 cm) wide and 3.44 inches (8.7 cm) high. Each frame holds up to 20 panels of this size.
- **Radius Limiters**—Hold cables to a 1.5 inch minimum bend radius within the drawer to protect the cable from being damaged by too severe a bend.
- **Cable Spool**—Holds cables to a 1.5 inch minimum bend radius within the drawer and keeps cables in position when the drawer is opened.
- **Mounting Tabs**—Used to fasten the panel on the NG3 rack.
- **Drawer Cover**—Protects cables when closed and provides access to adapters when open. The cover is cut out above the adapter packs so as not to press on them when closed. The cover, when open, acts as a stop to prevent the drawer from being accidentally closed.
- **Designation Cards**—Provide two square inches each of port designation space for all 72 ports, front and rear.
- **Adapter Packs**—Separately mountable assemblies, each consisting of a housing and six adapters. The adapter packs swing up individually from their home position, providing full access to front and rear terminations.
- **Door Latch**—Holds the door in a closed position, can be replaced with a key lock for locations where security is a concern.
- **Hinged Drawer**—Swings out from within the panel to the position shown.
- **Radius Limiters**—Guide patch cords routed out of panel to front of frame.

The adapter pack ports are numbered in ascending numeric order from top to bottom in each individual pack and from rear to front among the adapter packs. Port number 1 is at the top of the adapter pack furthest to the rear of the drawer and port number 72 is at

the bottom of the adapter pack furthest to the front. Each of the four designation cards at the front of the drawer have room for 18 port designations.

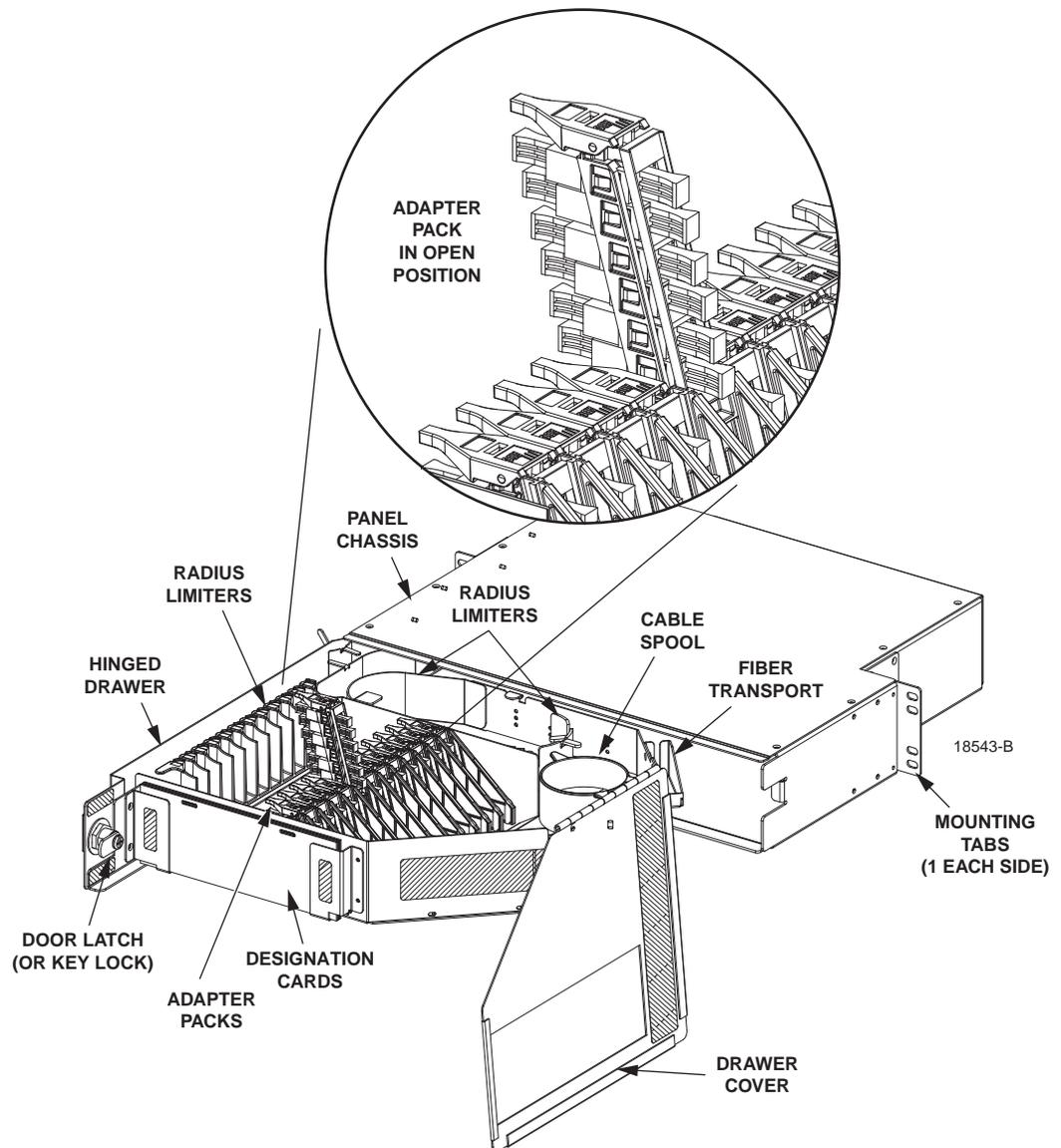


Figure 2. NG3 72-Position Standard Termination Panel

1.2.1 NG3 Standard Termination Panel Options

The NG3 Standard Termination Panel may be ordered in either of two configurations:

- **Unterminated**—Panel is equipped with adapter packs only.
- **Preterminated**—Panel is equipped with adapter packs and an IFC cable that is pre-installed in the panel. The stub end of the cable is coiled up or placed on a spool.

1.2.2 NG3 Standard Termination Panel Accessories

The following accessories are available for use with the NG3 Standard Termination Panel:

- **Cable Clamp Kit**—provides a clamp and other hardware required for securing an IFC or OSP cable to the rear side of the NG3 panel.
- **IFC Cable Assemblies**—are available with single mode or multimode fiber in specified lengths and with specified connectors.
- **Patch Cords**—are available with specified connectors in standard lengths of 3.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0, and 12.0 meters.
- **Adapter Packs**—are available separately with specified adapters, and can be used either as replacements for existing adapter packs. The adapters may be any of the standard single mode and multimode types, including SC and FC. For a current list of adapter options, contact your CommScope representative.
- **Inline Attenuators**—are installed between a connector and an adapter to protect equipment by attenuating optical signals to acceptable levels. CommScope inline attenuators are fused attenuators providing exceptional optical performance.
- **TracerLight Connector Identification System**—offers a quick and accurate method of identifying the termination point of optical patch cords. Each end of a TracerLight patch cord features a flashing light source allowing technicians to visually trace individual patch cords from one end to the other without pulling or affecting the patch cord. Use of a TracerLight system minimizes the risk of taking the incorrect fiber out of service, improving system turn-up speed and accuracy. TracerLight patch cords meet all performance criteria of standard CommScope patch cords.

1.3 NG3 72-Position MPO Termination Panel

The NG3 72-Position MPO Termination Panel, shown in [Figure 3](#), provides the same functionality as the Standard Termination Panel described in [Section 1.2](#), but with additional features that allow a 72-fiber MPO-type Rapid Panel cable to be connected directly to the panel through a pre-installed MPO cable assembly. The MPO panel mounts in the NG3 rack and has a hinged drawer that swings out to provide access to the adapter packs.

The MPO panel provides 72 adapter mounting positions (12 adapter packs, each with six adapters) for connecting individual patch cords to the terminated cable fibers. One end of the pre-installed MPO cable assembly is broken out into individual fibers. Depending on the option ordered, the individual fibers may be terminated with SC or LC connectors. The individual fiber connectors are connected to the rear side of the panel's adapter packs.

The other end of the pre-installed MPO cable assembly is separated into groups of 12 fibers and each fiber group is terminated with a 12-fiber MPO connector. The 12-fiber MPO connectors are connected to MPO adapters mounted on a bracket at the rear

side of the MPO panel. An MPO-type Rapid Panel cable may be connected to the pre-installed cable assembly through the MPO adapters on the bracket.

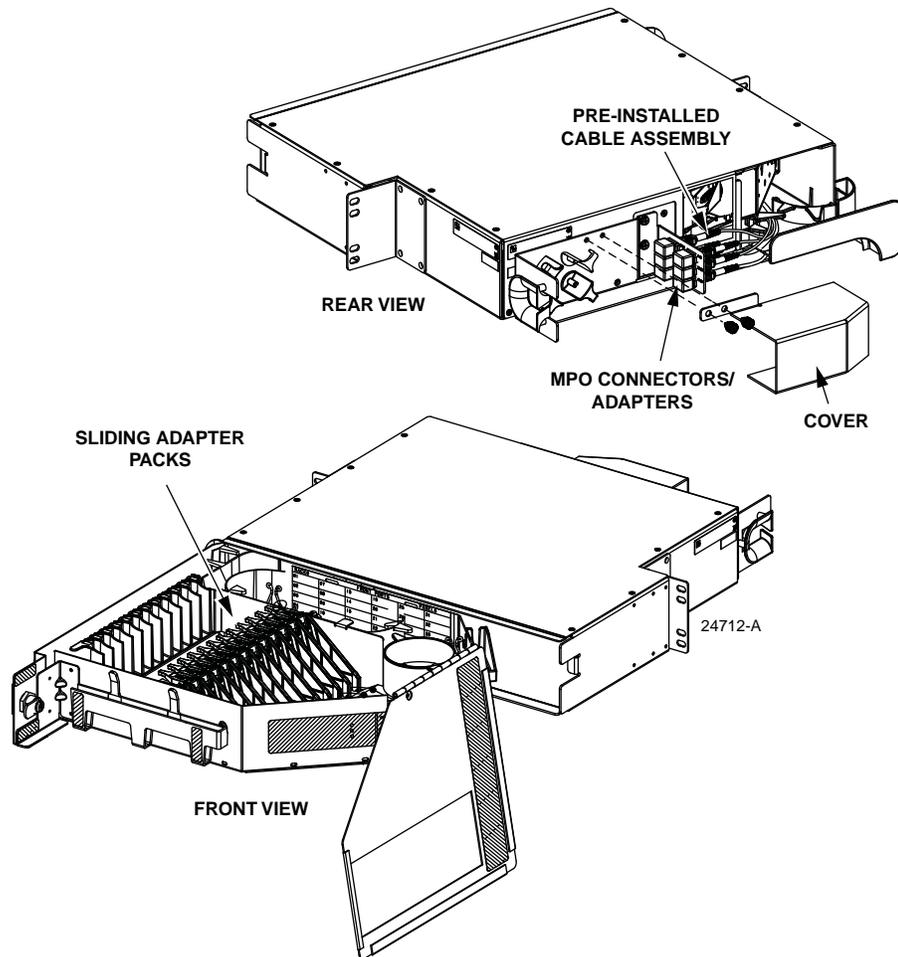


Figure 3. NG3 72-Position MPO Termination Panel

1.4 NG3 MicroVAM Chassis

The NG3 MicroVAM Chassis is a rack-mount panel designed for mounting on the NG3 rack. The panel has a hinged drawer that swings out to provide access to the VAM's within. The following functional types are available:

- **Splitter**—Distributes the optical signal to multiple circuits.
- **Monitor**—Provides a test or access point in an optical circuit.
- **Wavelength Division Multiplexer**—Allows transmission of multiple optical wavelengths in the same direction on the same fiber (unidirectional) or transmission of multiple optical wavelengths in the opposite direction on the same fiber (bidirectional).

Physically, there are two types of NG3 MicroVAM Chassis:

- **13-Slot Chassis**—holds 13 MicroVAM modules with front adapters only.
- **12-Slot Chassis**—holds 12 MicroVAM modules, either with front adapters only or with both front and rear adapters.

Table 1 summarizes the connector/adaptor options for NG3 MicroVAM modules.

Table 1. NG3 MicroVAM Module Connector/Adapter Options

	CONNECTOR/ADAPTER STYLE	
	SC	LC
NG3 MicroVAM modules with front adapters only	6 front ports	8 front ports
NG3 MicroVAM modules with front and rear adapters	6 front ports 3 rear ports	8 front ports 6 rear ports

1.4.1 NG3 13-Slot MicroVAM Chassis

The 13-slot MicroVAM Chassis holds 13 MicroVAM modules with front adapters only. The front adapters can be either six SC adapters or eight LC adapters. Figure 4 shows the 13-slot MicroVAM Chassis. Figure 5 shows an individual MicroVAM module with SC adapters.

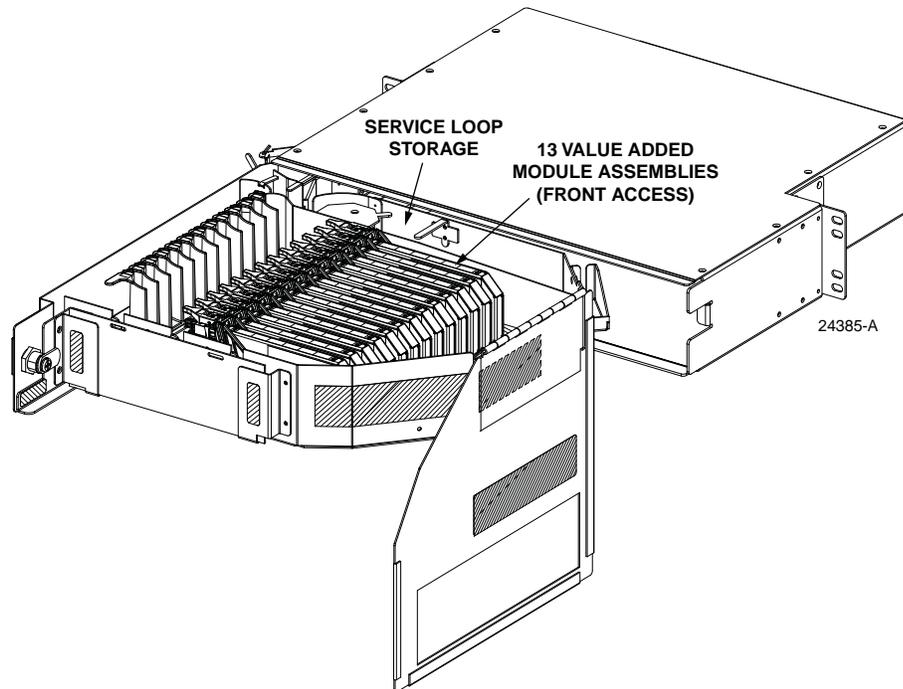


Figure 4. NG3 13-Slot MicroVAM Chassis

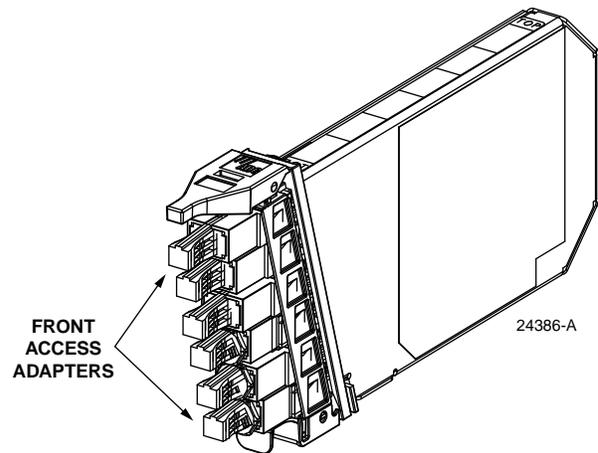


Figure 5. Typical Micro VAM (Front Ports Only)

1.4.2 NG3 12-Slot MicroVAM Chassis

The 12-slot MicroVAM Chassis holds up to 12 MicroVAM modules either with front adapters only or with both front and rear adapters. [Figure 5](#) shows the 12-slot MicroVAM Chassis. [Figure 6](#) shows the MicroVAM module with six front and three rear SC adapters.

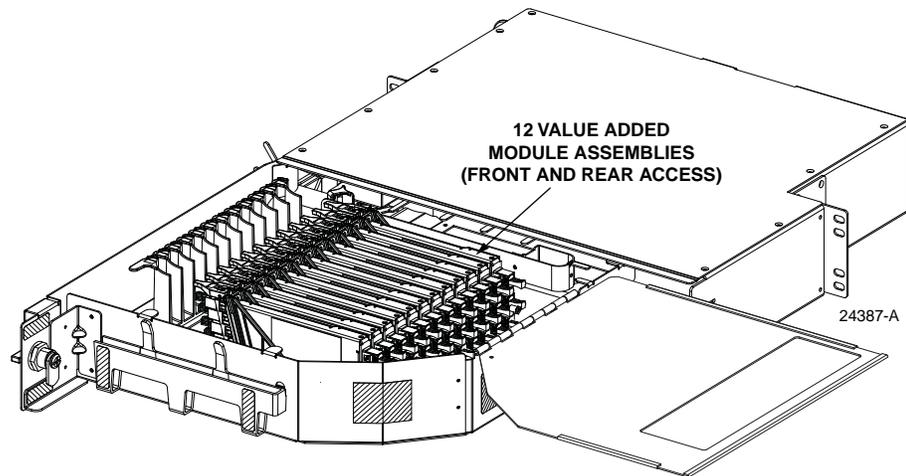


Figure 6. NG3 12-Slot MicroVAM Chassis

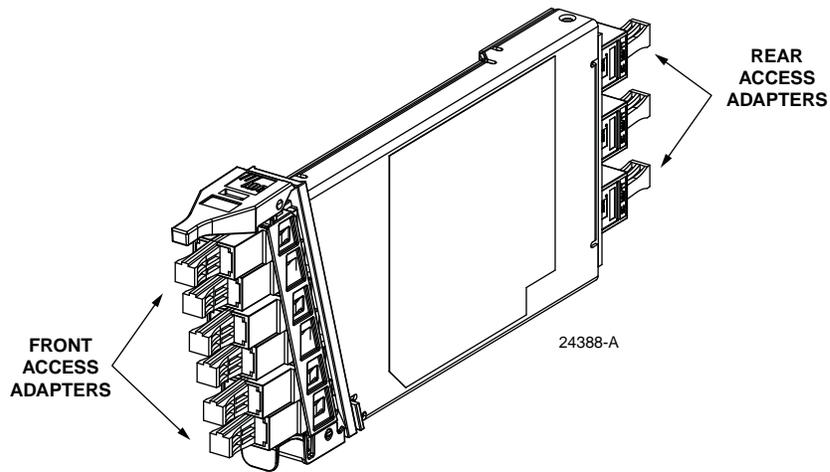


Figure 7. Typical Micro VAM (Front and Rear Ports)

1.5 Specifications and Dimensions

Table 2 provides specifications for the various NG3 Frame System panels and chassis. Figure 8 shows the dimensions of a typical Standard Termination Panel or MicroVAM Chassis. Figure 9 shows the dimensions of a typical MPO termination panel.

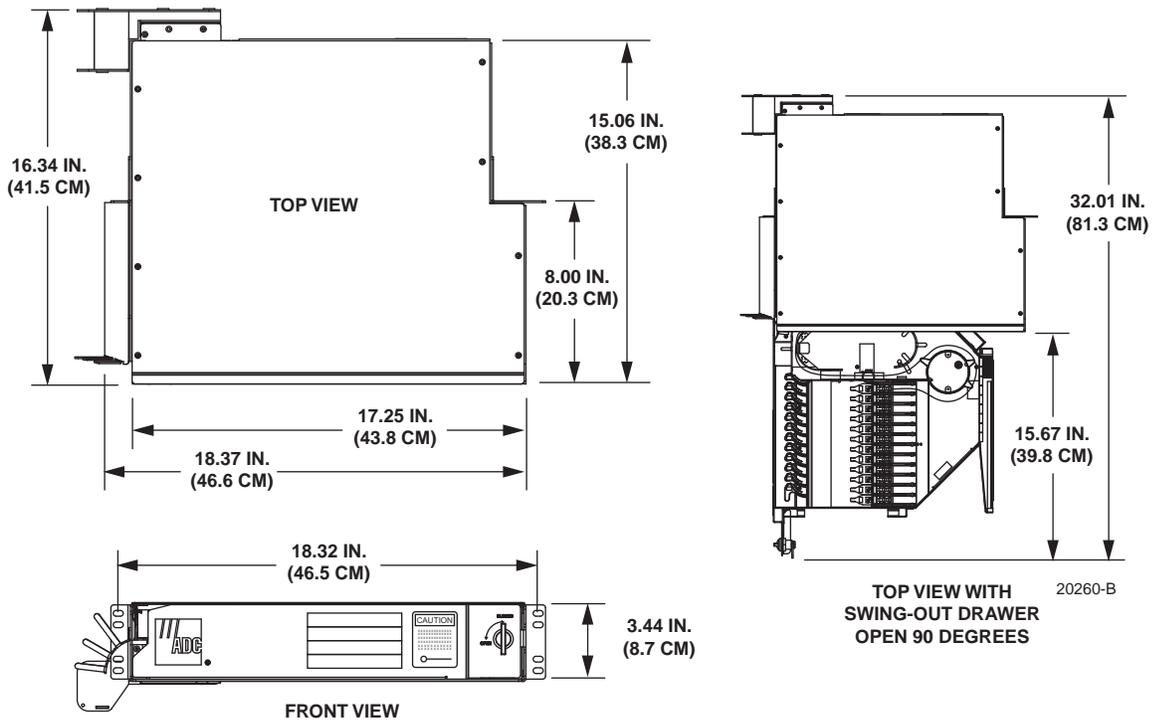


Figure 8. Standard Termination Panel or MicroVAM Chassis Dimensions

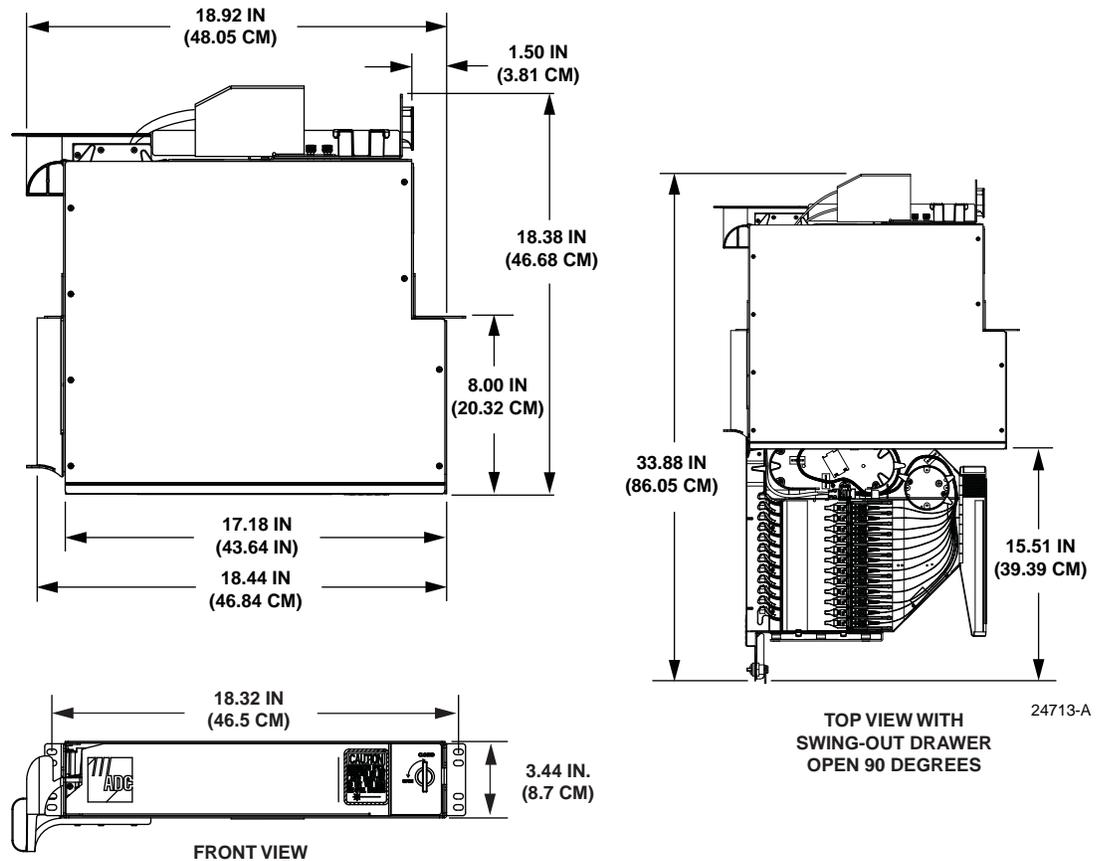


Figure 9. MPO Termination Panel Dimensions

Table 2. NG3 Frame System Panel Specifications

PARAMETER	SPECIFICATION	REMARKS
Physical		
Number of terminations (maximum)	72 (NG3 Standard Termination Panel or NG3 MPO Termination Panel)	
Number of adapter packs	12 or 13 depending on panel type (13-slot MicroVAM Chassis only has 13)	Each with 6 adapters
Number of VAMs (maximum)	12 for 12-slot NG3 MicroVAM Chassis 13 for 13-slot NG3 MicroVAM Chassis	
Number of MicroVAM ports	See Table 1 on Page 6	
Dimensions (H x W x D) for standard termination, standard termination with splicing, and MicroVAM Chassis	3.44 x 18.31 x 16.38 in. (8.7 x 46.6 x 41.6 cm)	With hinged drawer closed
	3.44 x 18.31 x 30.57 in. (8.7 x 46.6 x 77.6 cm)	With hinged drawer open
Dimensions (H x W x D) for MPO termination panel	3.44 x 18.31 x 18.10 in (8.7 x 46.6 x 46 cm)	With hinged drawer closed
	3.44 x 18.31 x 33.61 in (8.7 x 46.6 x 85.36 cm)	With hinged drawer open

Table 2. NG3 Frame System Panel Specifications

PARAMETER	SPECIFICATION	REMARKS
Connector and adapter types available (Note: The MPO panel is available with SC and LC connectors/adapters only)	Available in most standard types including singlemode PCFC, 8° SC/APC, 8° FC/APC, 8° E-2000/APC, and duplex 8° SC/APC, and multimode SC and FC	Contact CommScope for connector recommendations and performance information.
Environment		
Temperature		
Operating	-40° C to 65° C (-40° F to 149° F)	
Storage	-40° C to 85° C (-40° F to 185° F)	
Relative humidity		
Operating	Up to 80%	No condensation
Storage	Up to 95%	No condensation

2 UNPACKING AND INSPECTION

Some panels are shipped in a box and some are shipped on an unwinding spool with the panel enclosed in a “hatbox” on top of the spool. Select the appropriate procedure from those provided in the following sections.

2.1 Unpacking a Panel Shipped in a Box

Use the following procedure to unpack and inspect the NG3 panel:

1. Inspect the shipping carton for signs of damage and note any evidence of rough handling.
2. Open the carton and carefully unpack each item from the protective packing material.
3. If damage is detected or if parts are missing, file a claim with the commercial carrier. Save the damaged carton for inspection by the carrier.
4. Contact CommScope for an RMA (Return Material Authorization) and to reorder if replacement is required.

2.2 Unpacking a Panel Shipped With a Spool

If the panel is shipped within a “hat box” container on top of the spool, use the following procedure to install the module:

1. Move the shipment container internally to the installation location, and place it on the floor near the frame that the panel will be installed on.
2. Take off the external packing as shown in [Figure 10](#).

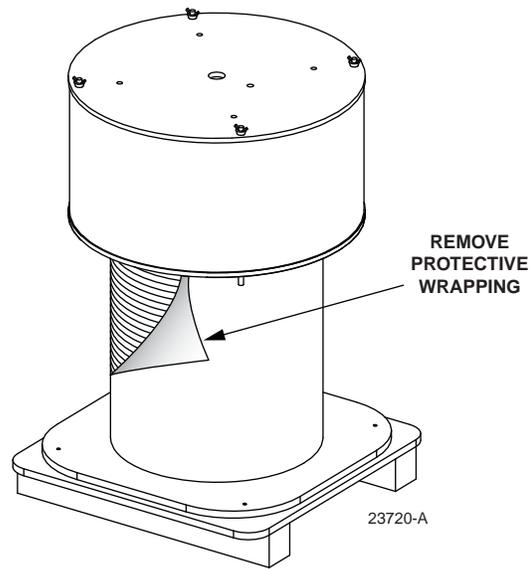


Figure 10. Removing Base Screws and Unwinding Cable

3. Remove the four screws at the base of the spool as shown in [Figure 11](#).

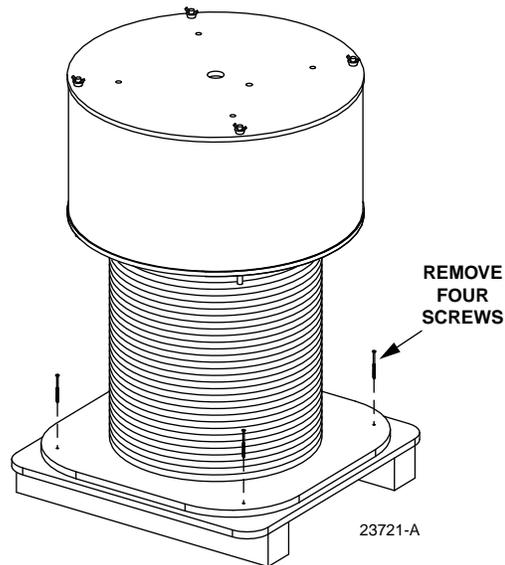


Figure 11. Extracting Connector Module from Hatbox

4. Unwind the cable in a clockwise direction and pull the cable end to the assigned termination point.

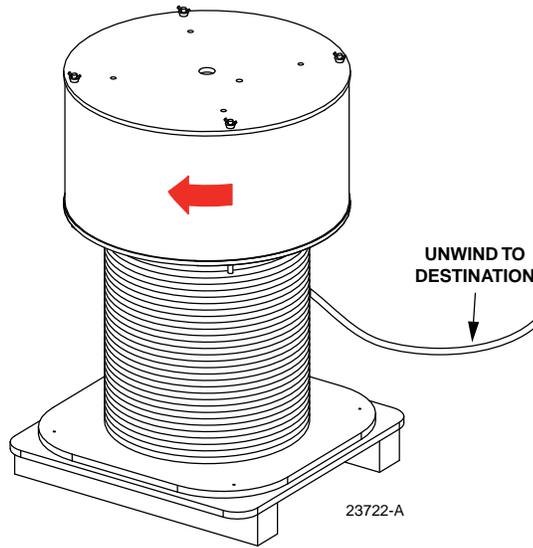


Figure 12. Extracting Connector Module from Hatbox

5. Remove the four wing nuts at the top of the hatbox and remove the hatbox cover.

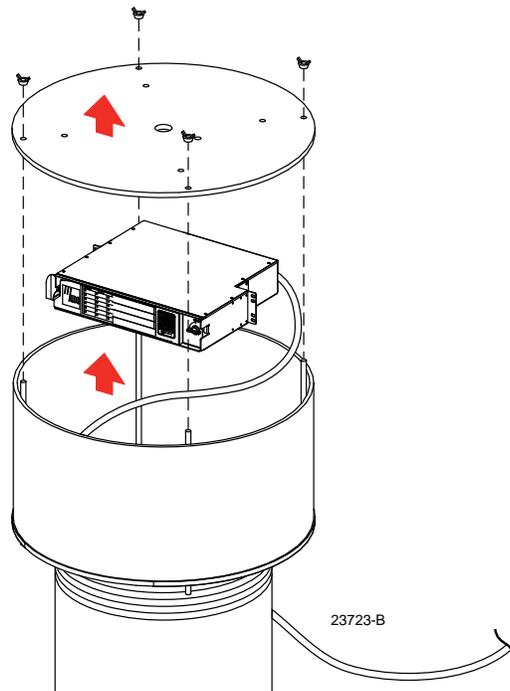


Figure 13. Extracting Connector Module from Hatbox

6. Lift the panel out of the hatbox and install the panel following the instructions in the next section of this manual.

3 NG3 PANEL INSTALLATION

NG3 panel installation includes mounting the panel on the frame, installing the panel label, and installing VAM's. Installation of an NG3 panel into the frame should take less than ten minutes. CommScope does not recommend mounting NG3 panels in any frame except the NG3 High Density Fiber Distribution Frame. When splicing or using test equipment, work on a secure surface at a convenient work level. Do not use the NG3 panel to support splice or test equipment.

- **Note:** The NG3 panel is to be installed in environmentally controlled network telecommunications facilities in COs, CEVs, and data centers.

3.1 Mounting the NG3 Panel on the Frame

Use the following procedure to mount any NG3 panel on the NG3 frame:

1. Determine where the panel will be located on the frame.
2. Align the mounting holes in the panel with the mounting holes in the frame as shown in [Figure 14](#).
3. Secure panel to frame using the four screws and washers provided with panel.

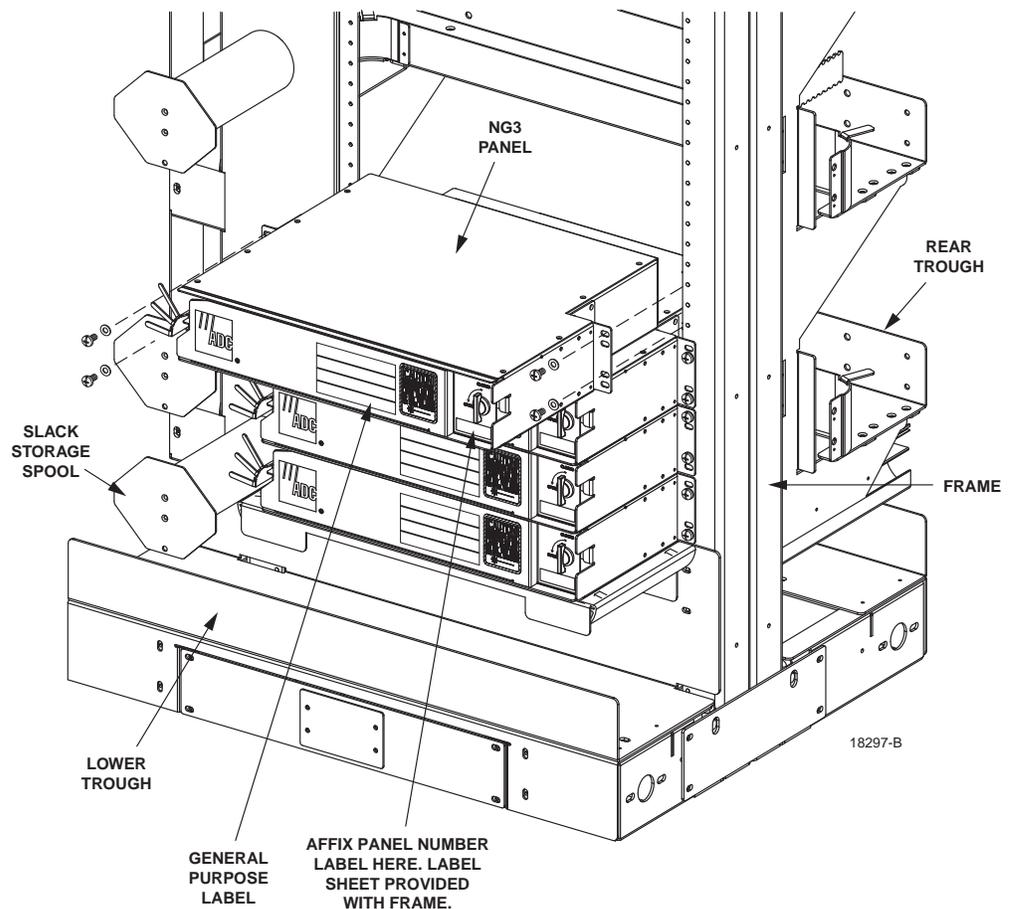


Figure 14. Mounting the Panel on the Frame

4. Record the panel number and/or connector type on the general purpose label provided on the front of the panel.

3.2 Grounding the Panel

All NG3 panels ship with a grounding kit containing a grounding strap and hardware shown in [Figure 15](#). The grounding strap provided should be attached from the panel chassis to the panel top cover in each panel. In addition to this grounding location, each panel has a grounding stud marked with the standard grounding symbol on the rear of the panel. Because of the wide variation of mounting configurations, this second grounding strap is not provided. The customer should locate and install a grounding strap based on the configuration being used. Use the following procedure.

- ▶ **Note:** Ground the unit to the local facility CBN (Common Bonding Network) or IBN (Isolated Bonding Network) per local practice.

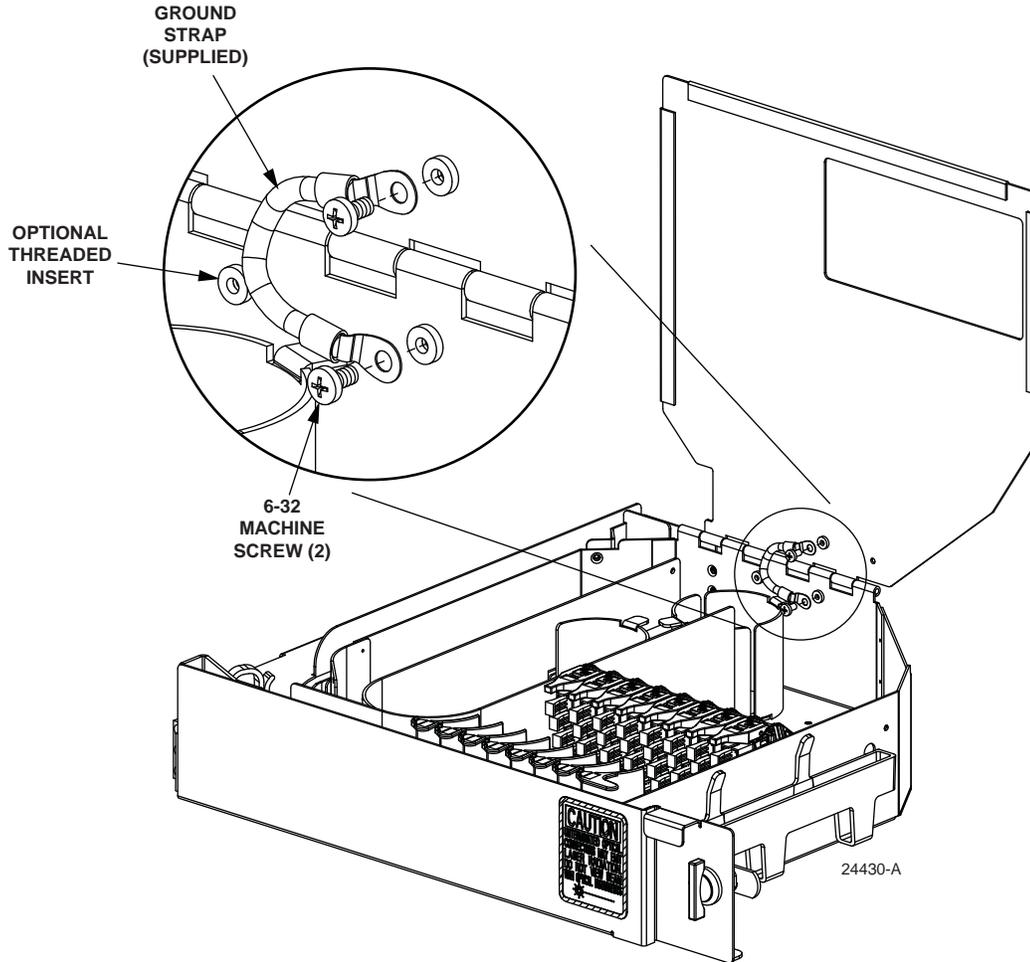


Figure 15. Attaching Ground Strap to Cover

1. Attach the ground strap provided to the panel and panel cover with two 6-32 machine screws. Bend the ground strap as shown in [Figure 15](#) so that the cover will swing freely when both open and closed. There are two threaded inserts in the tray to choose from. Use the one that works best for your product configuration.
2. Locate the threaded stud on the rear of the chassis. Assemble split-lock washers, ground strap, and 8-32 hex nut on the grounding stud, as shown in [Figure 16](#), using an appropriate, customer-supplied ground strap. Follow local procedure.

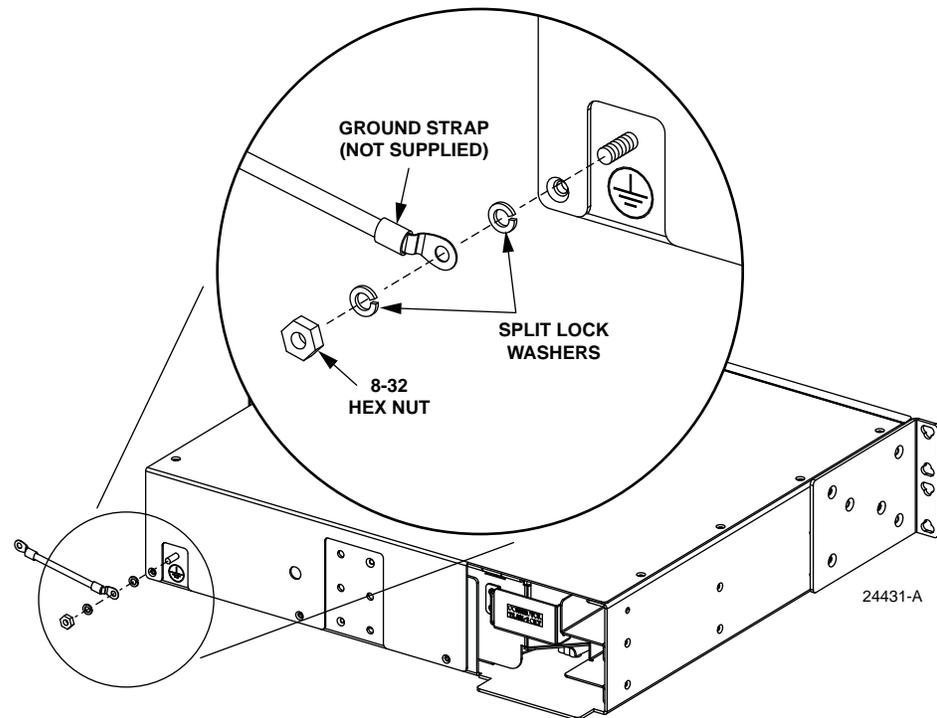


Figure 16. Attaching Ground Strap to Panel Rear

3.3 Opening the NG3 Panel or Chassis

Use the following procedure to open any NG3 panel or MicroVAM Chassis:

1. Rotate the door latch 90° counterclockwise.
2. Swing out the drawer as shown in [Figure 17](#).
3. When the hinged drawer comes to rest in a position 90° out from the panel chassis, rotate the top cover up and to the right. Allow the cover to hang down beside the drawer when accessing the adapter packs or routing fibers within the drawer.



Caution: *Placing a load in excess of 20 pounds onto an open drawer will result in misalignment or damage to the drawer.*

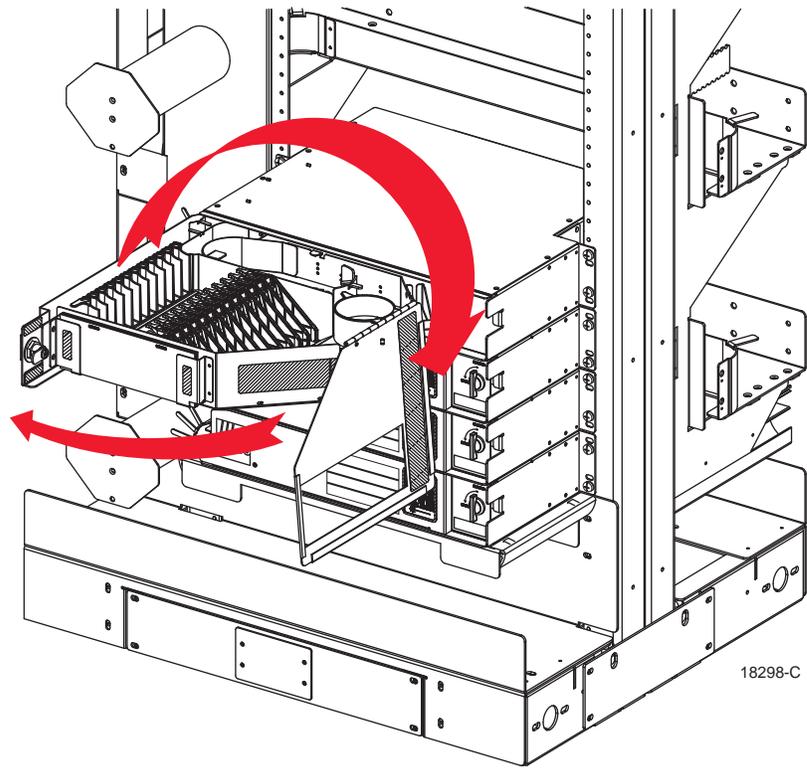


Figure 17. Opening the Hinged Drawer

3.4 Installing MicroVAM Modules

To prevent damage during shipment, all NG3 MicroVAM Chassis are shipped without the micro VAMs installed in the chassis mounting slots. Use the following procedure to install the MicroVAM modules in the MicroVAM Chassis:

1. Open the MicroVAM Chassis as described in [Subsection 3.2](#).
2. Position the MicroVAM module at the selected mounting position as shown in [Figure 18](#).
3. Slide the MicroVAM module down into the mounting slot.

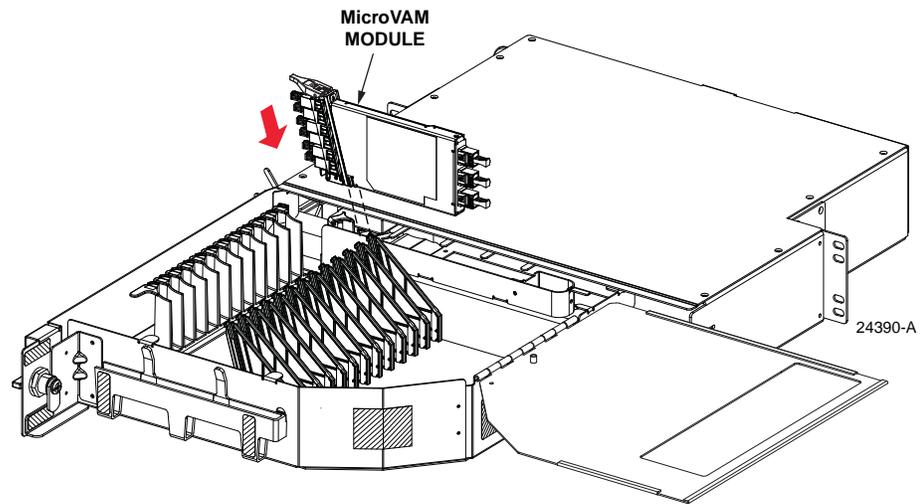


Figure 18. Installing a MicroVAM Module (12-Slot MicroVAM Chassis Shown)

4 IFC CABLE ROUTING AND INSTALLATION

This section provides instructions for routing an IFC cable through an NG3 frame and installing the cable in a Standard Termination Panel or MicroVAM Chassis. If the IFC cable is pre-installed in the panel, disregard subsections 3.2 through 3.4. IFC cables may be of stranded or ribbon type construction. This section does not apply to MPO termination panels.

4.1 General IFC Cable Routing Guidelines

IFC cables are routed to the rear side of the frame from either above or below the NG3 panel. Each IFC cable is routed vertically up or down the left rear side of the frame to the designated panel as shown in [Figure 19](#).

The IFC cable is then routed horizontally from left to right to the rear of the designated panel and into the opening on the right rear side of the panel. A clamp secures the IFC cable to the rear side of the panel. The cable should also be secured to the frame using wax lacing tied to the tie down bars located on the left rear side of the frame.



Caution: *Applying excessive tension on lacing cables can cause physical damage and attenuation of optical fibers.*

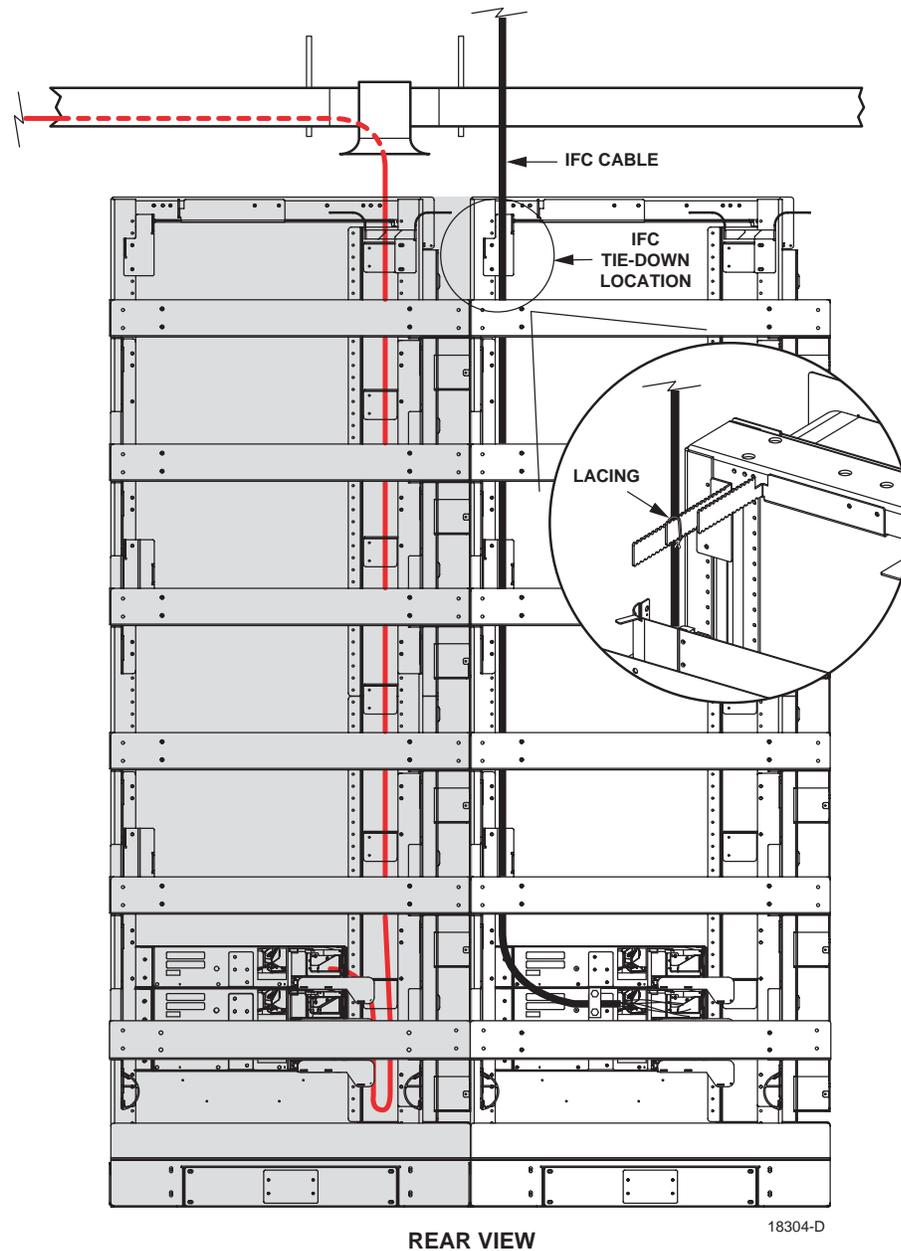


Figure 19. IFC Cable Routing on Rear of Frame

The cable shall maintain a minimum bend radius of 1.5 inches or ten times the cable outside diameter, whichever is greater, inside the cable raceways and within the NG3 frame. Secure the cable to the overhead raceway per local practice. CommScope does not recommend storing slack cable on the NG3 frame. If cable storage is required, follow local practice.

4.2 Standard Termination Panel IFC Cable Installation

Use the following procedure to install a connectorized IFC stranded cable in an unterminated (adapters only) Standard Termination Panel. A conversion kit (NG3-ACCIFCKIT) is required.

- ▶ **Note:** This procedure is most efficiently done by two people, with one person at the front of the panel and the other person at the rear.
1. Break out the cable according to the dimensions provided in [Figure 20](#) (stranded cable) or [Figure 21](#) (ribbon cable). For ribbon cable, install protective tubing, fanouts, and upjackets in the locations shown.

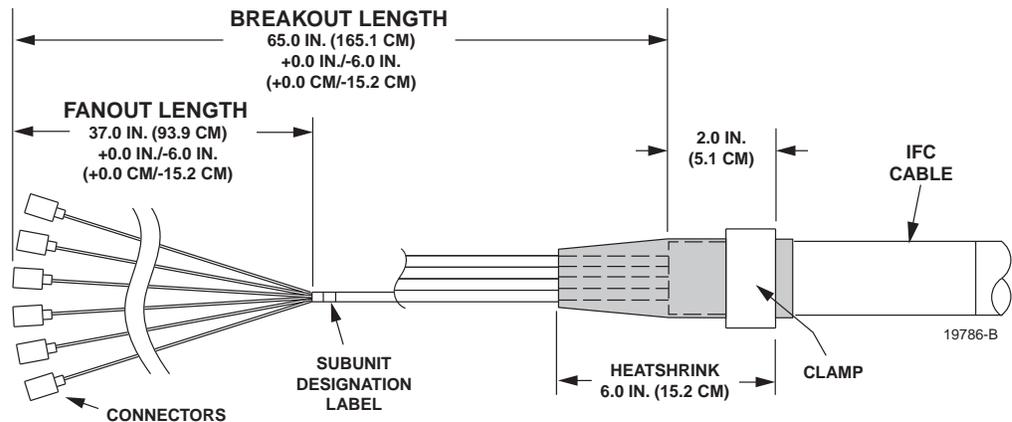


Figure 20. Breakout Dimensions for Stranded Cable Routed to Standard Termination Panel

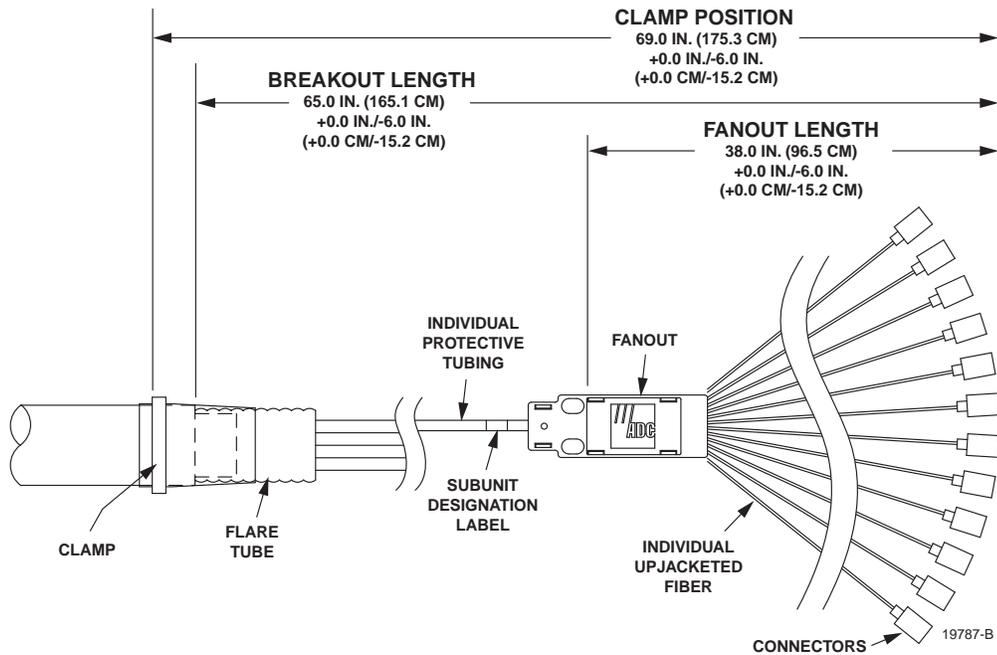


Figure 21. Breakout Cable Dimensions for Ribbon Cable Routed to Standard Termination Panel

2. Locate the panel where the cable will be installed and position one person at the front of the panel and another person at the rear.
3. At the front of panel, fully open the hinged drawer (refer to [Subsection 3.2](#)).



Caution: *Placing a load in excess of 20 pounds onto an open drawer will result in misalignment or damage to the drawer.*

4. At the rear of the panel, insert the bundled connector end of the cable into the panel rear entry hole, as shown in [Figure 22](#), and slide it through to the front.

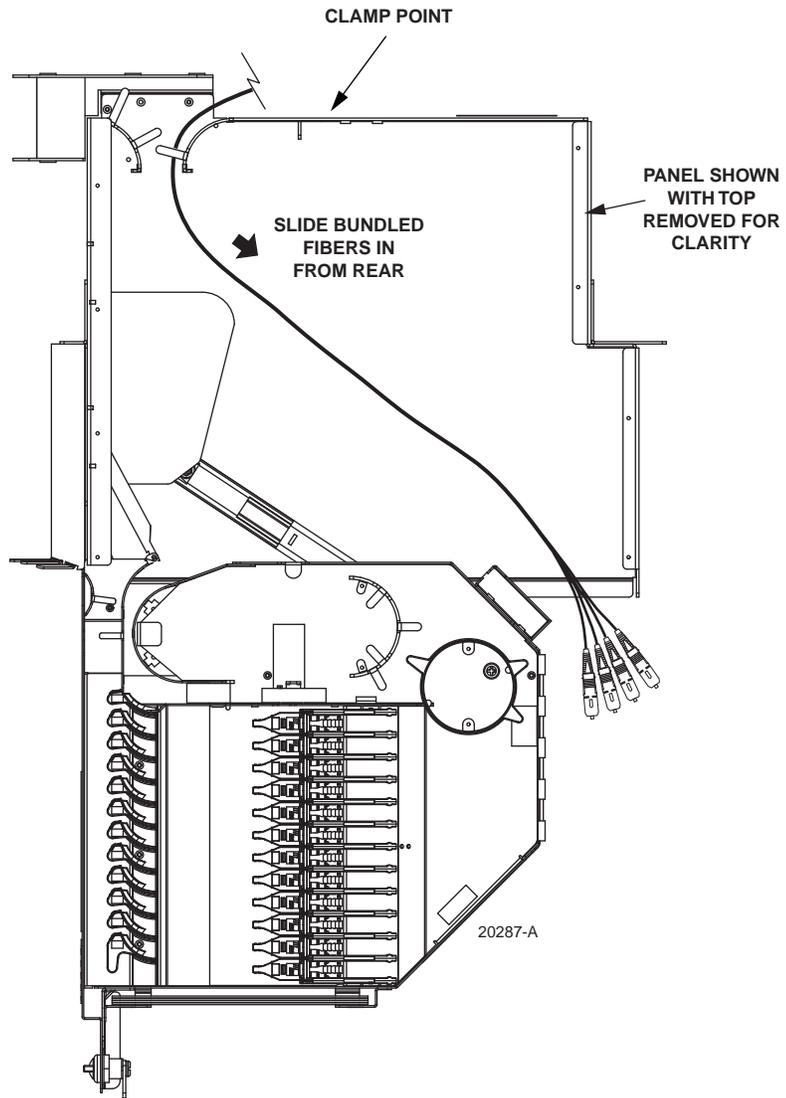


Figure 22. Routing IFC Cable Into Standard Termination Panel

5. At the front of the panel, lift the cable up over the top edge of the hinged drawer and move the cable to the cable entry hole on the left side of the drawer, as shown in [Figure 23](#).

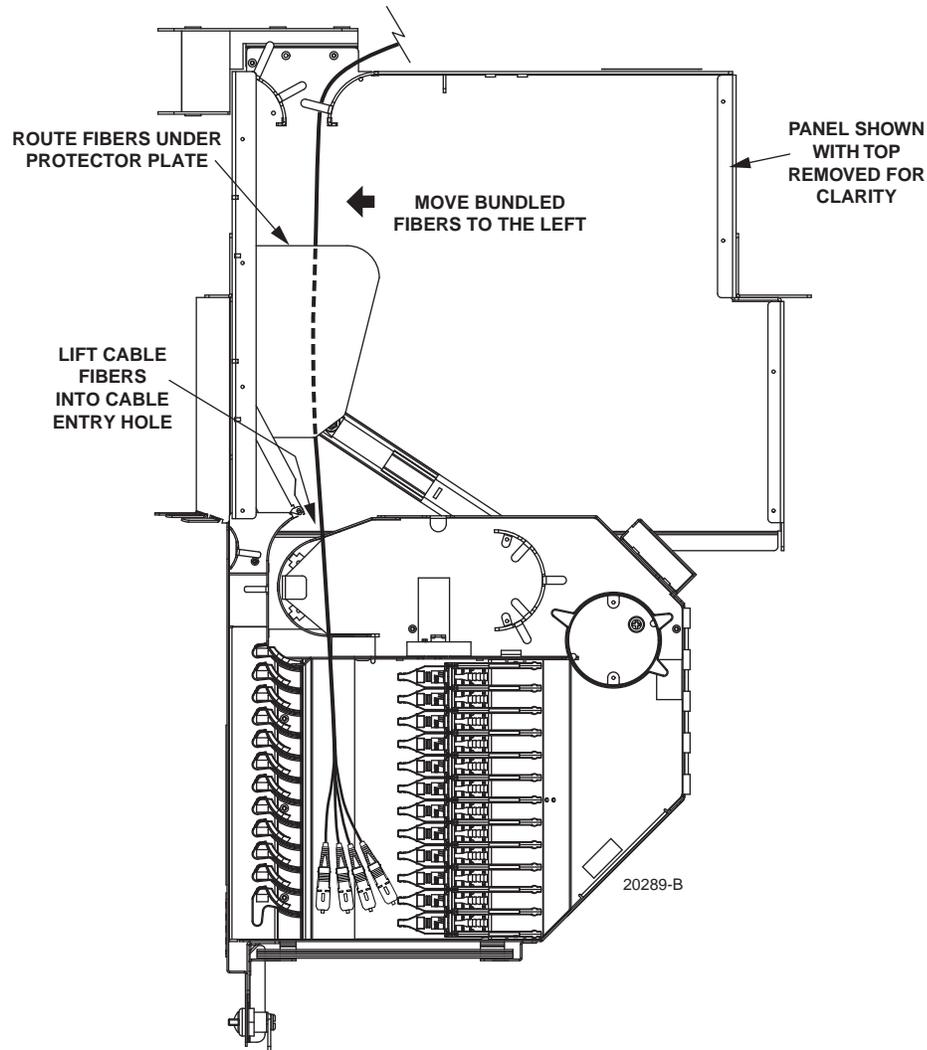


Figure 23. Positioning IFC Cable Within Standard Termination Panel

6. At the rear of the panel, clamp the cable to the panel using a cable clamp kit. The components of the cable clamp kit are shown in [Figure 24](#).
 - ▶ **Note:** Position the cable clamp on the cable at the point indicated in the cable breakout diagrams. For ribbon cable, refer to [Figure 20](#). For stranded cable, refer to [Figure 21](#).

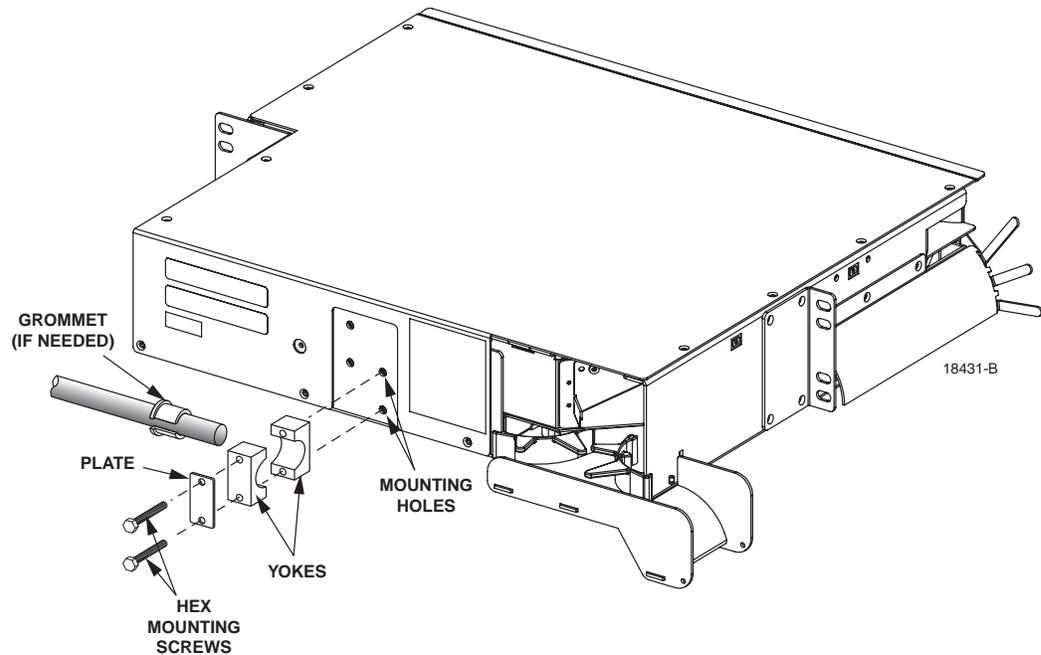


Figure 24. Clamping Cable to Standard Termination Panel

7. Route cable fibers within drawer as shown in [Figure 25](#) (stranded cable) or [Figure 26](#) (ribbon cable).
 8. Locate the assigned adapter and lift up the adapter pack. (refer to [Subsection 7.1](#)).
 9. Remove the dust caps from the connectors and the rear side of the adapters and then insert each connector into the appropriate adapter.
- **Note:** Clean and inspect the connectors and adapters before mating them. For guidelines, refer to [Subsection 7.3](#).



Danger: Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber connector or adapter. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood **MUST** be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.

10. Secure the cable to the drawer at the cable retention area using the O-ring provided with the panel. Refer to [Figure 25](#) or [Figure 26](#) for details.
11. Return the adapter pack to its home position.
12. Continue routing and connecting any remaining connectors on the same cable.

13. When done, close the panel (refer to [Subsection 7.5](#)).
14. Remove the splice tray cover and then secure the ribbon tube to the splice tray at the point indicated in [Figure 25](#). Use wax lacing to attach the ribbon tube to the splice tray.

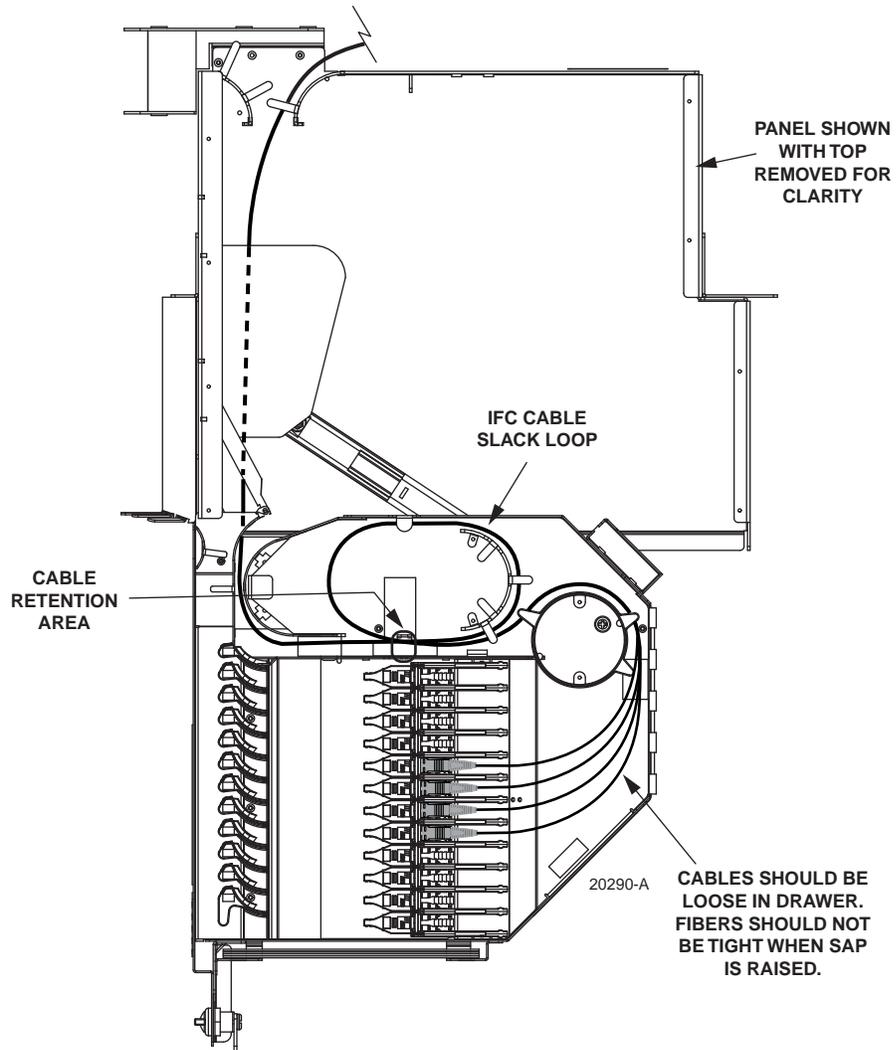


Figure 25. Stranded Cable Routing Within Standard Termination Panel

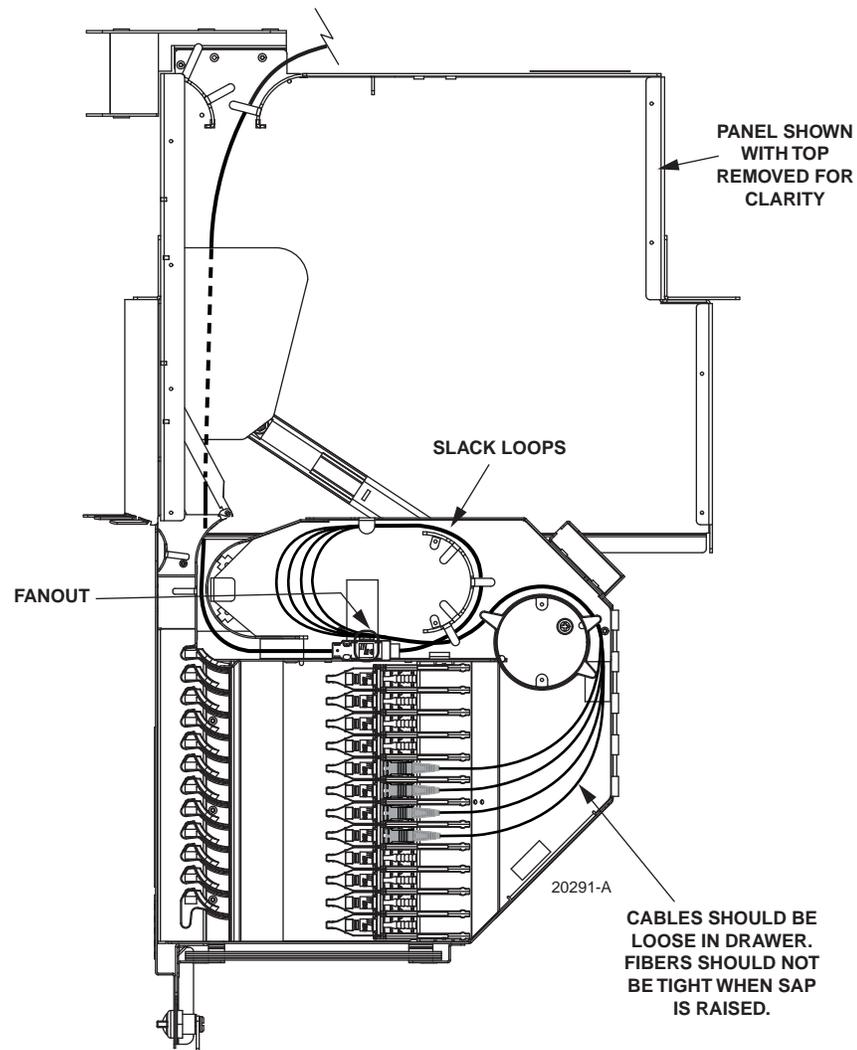


Figure 26. Ribbon Cable Routing Within Standard Termination Panel

4.3 13-Slot MicroVAM Chassis IFC Cable Installation

To install a connectorized stranded-type IFC cable in a 13-slot MicroVAM Chassis:

1. Break out the IFC cable according to the dimension shown in [Figure 27](#).
2. Locate the panel where the cable will be installed and position one person at the front of the panel and another person at the rear.
3. At the front of panel, fully open the hinged drawer (refer to [Subsection 3.2](#)).



Caution: *Placing a load in excess of 20 pounds onto an open drawer will result in misalignment or damage to the drawer.*

4. At the rear of the panel, insert the bundled connector end of the cable into the panel rear entry hole, as shown in [Figure 28](#), and slide it through to the front.

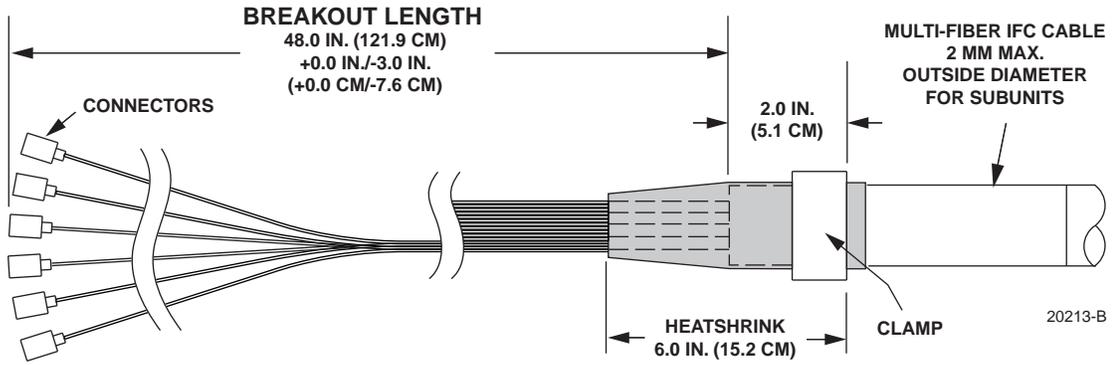


Figure 27. Breakout Dimension for Stranded IFC Cable Routed to 13-Slot MicroVAM Chassis

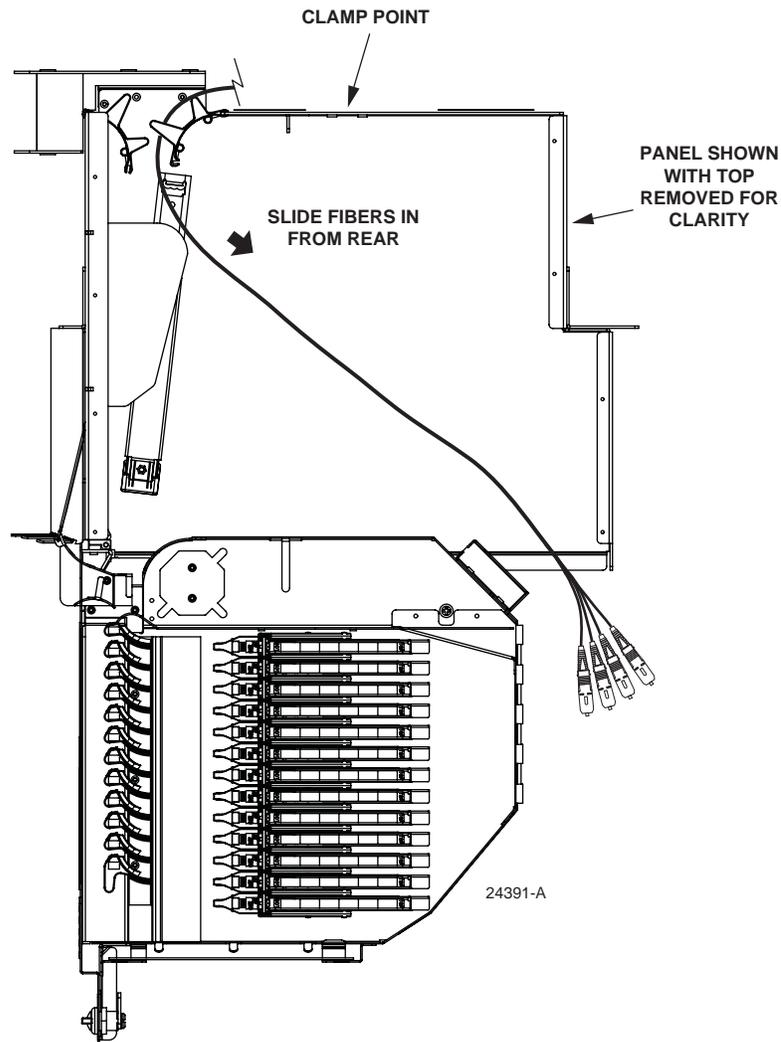


Figure 28. Routing IFC Cable Into 13-Slot MicroVAM Chassis

5. At the front of the panel, lift the cable up over the top edge of the hinged drawer and move the cable to the cable entry hole on the left side of the drawer, as shown in [Figure 29](#).

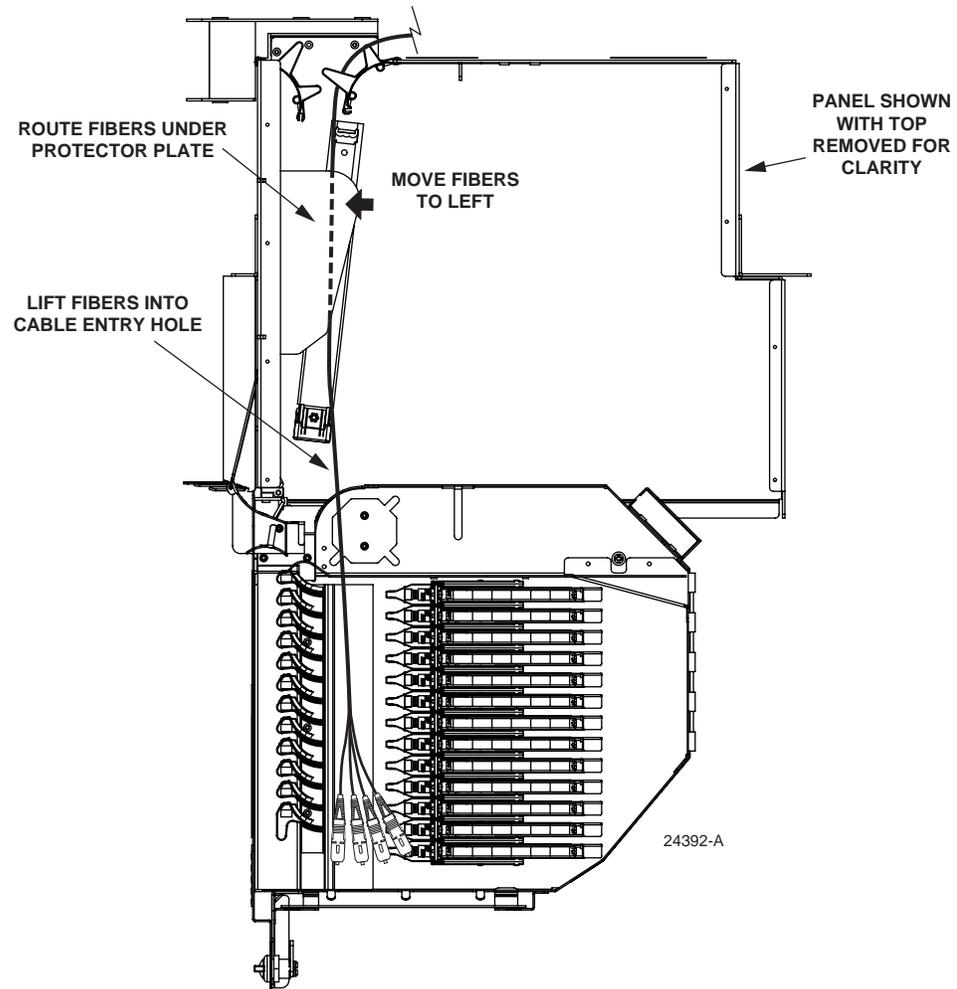


Figure 29. Positioning IFC Cable Within 13-Slot MicroVAM Chassis

6. At the rear of the panel, clamp the cable to the panel using a cable clamp kit. The components of the cable clamp kit are shown in [Figure 30](#).
7. Route the cable fibers within the drawer as shown in [Figure 31](#).
8. Locate the assigned VAM and lift it up to access the adapters (refer to [Subsection 7.2](#)).

9. Remove the dust caps from the connectors and the VAM adapters and then insert each connector into the appropriate adapter.

► **Note:** Clean and inspect the connectors and adapters before mating them. For guidelines, refer to [Subsection 7.3](#).

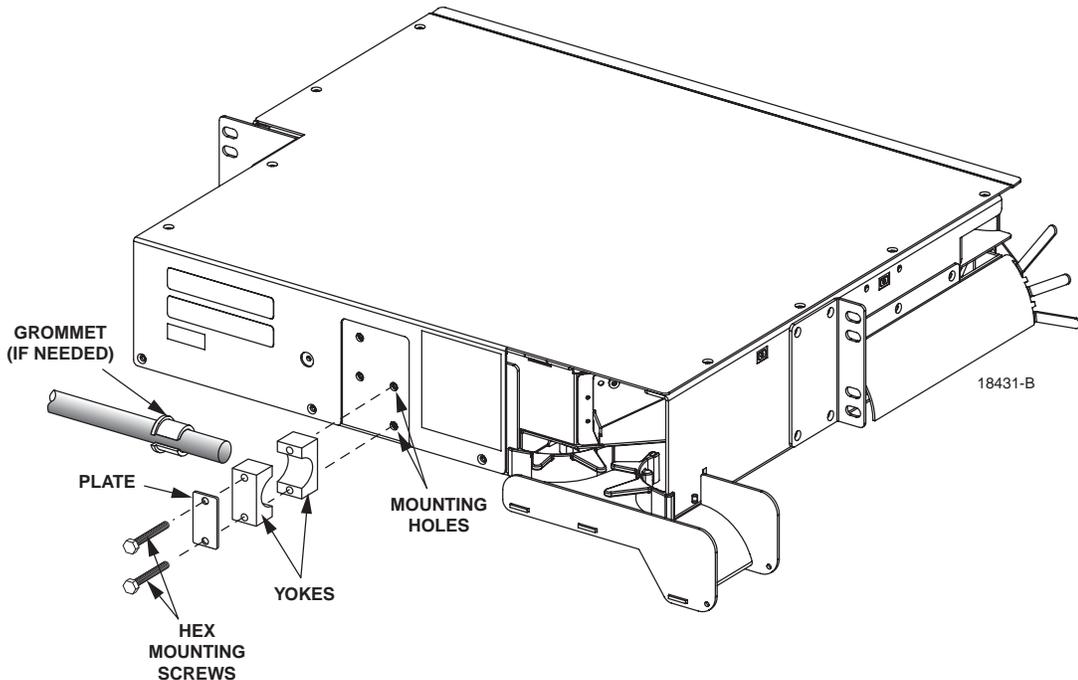


Figure 30. Clamping IFC Cable To 13-Slot MicroVAM Chassis



Danger: Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber connector or adapter. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood **MUST** be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.

10. Store the excess slack by routing the cable fibers around the radius limiter provided (see [Figure 31](#)).
11. Return the VAM to its home position.
12. Continue routing and connecting any remaining connectors on the same cable.
13. When done, close the panel (refer to [Subsection 7.5](#)).

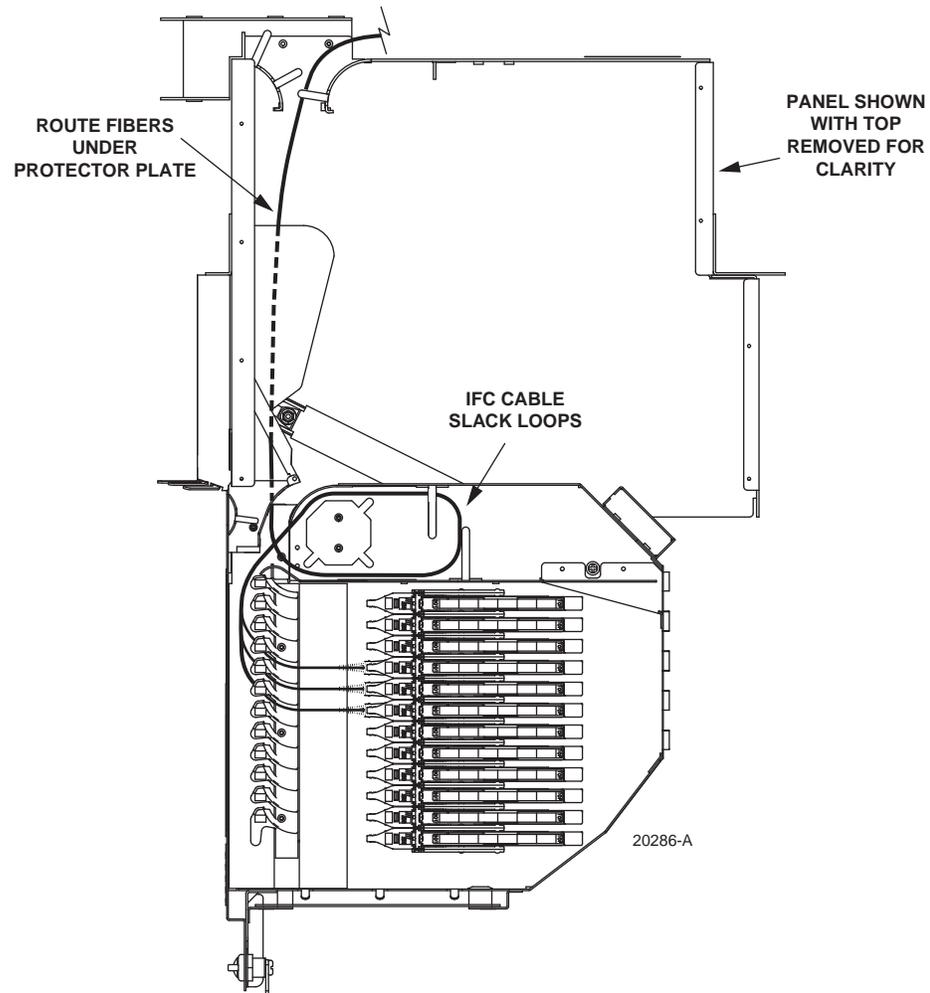


Figure 31. IFC Cable Installed In 13-Slot MicroVAM Chassis

4.4 Standard Termination Panel Breakout Cable Installation

Use the following procedure to install a connectorized breakout cable in an unterminated (adapters only) Standard Termination Panel. A conversion kit (NG3-ACCIFCKIT) is required.

► **Note:** This procedure is most efficiently done by two people, with one person at the front of the panel and the other person at the rear.

1. Break out the cable according to the dimensions provided in [Figure 32](#).

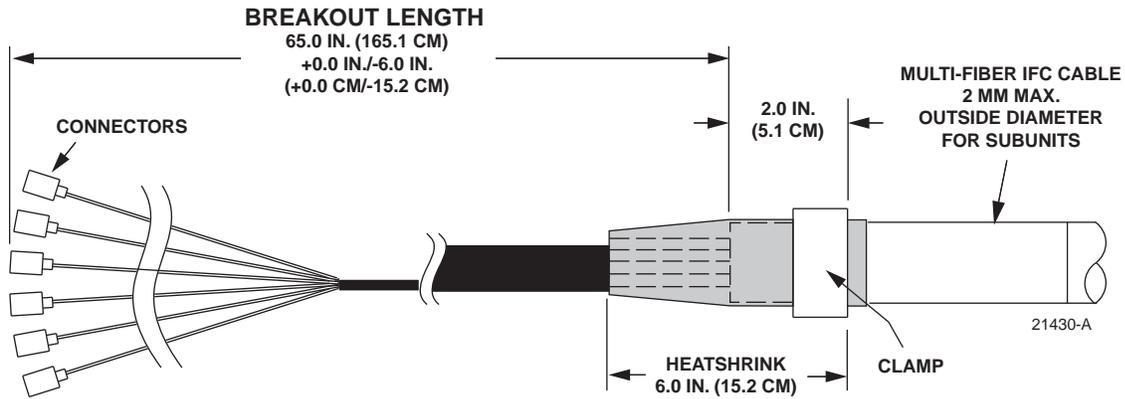


Figure 32. Breakout Dimensions for Breakout Cable Routed to Standard Termination Panel

2. Locate the panel where the cable will be installed and position one person at the front of the panel and another person at the rear.
3. At the front of panel, fully open the hinged drawer (refer to [Subsection 3.2](#)).



Caution: *Placing a load in excess of 20 pounds onto an open drawer will result in misalignment or damage to the drawer.*

4. At the rear of the panel, insert the bundled connector end of the cable into the panel rear entry hole, as shown in [Figure 33](#), and slide it through to the front.

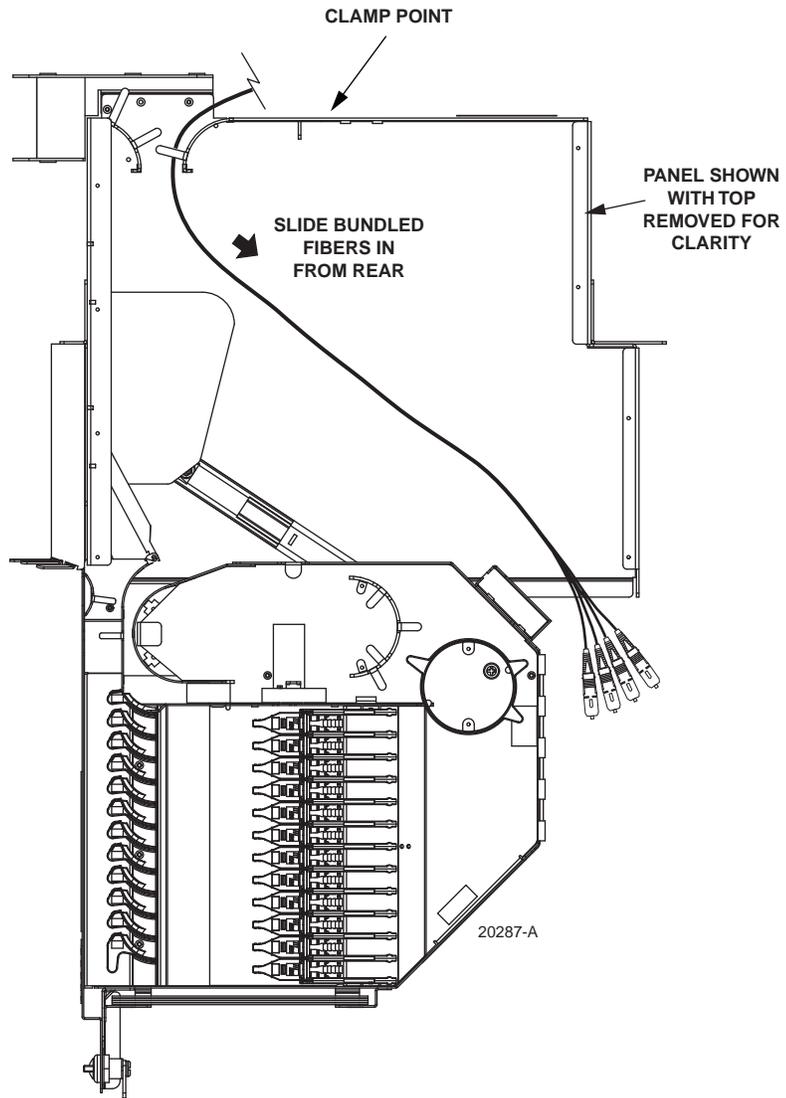


Figure 33. Routing Breakout Cable Into Standard Termination Panel

5. At the front of the panel, lift the cable up over the top edge of the hinged drawer and move the cable to the cable entry hole on the left side of the drawer, as shown in [Figure 34](#).

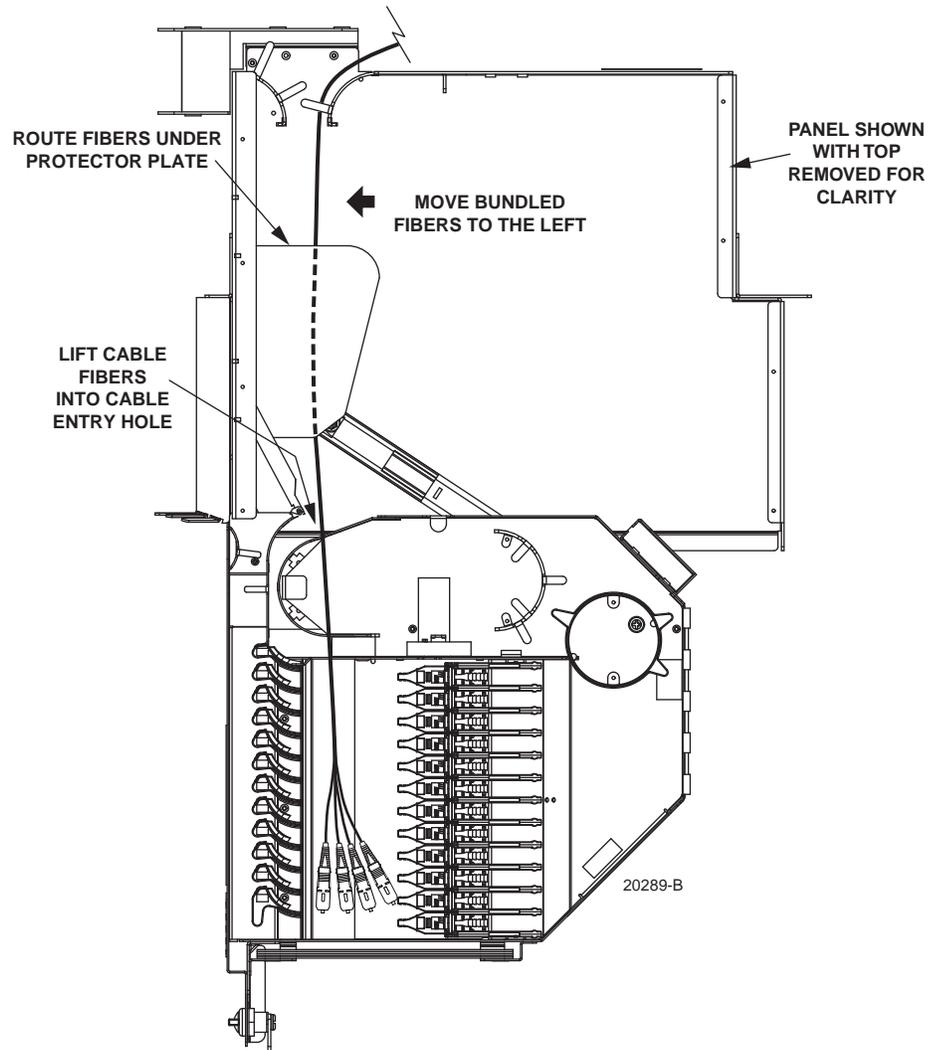


Figure 34. Positioning Breakout Cable Within Standard Termination Panel

6. At the rear of the panel, clamp the cable to the panel using a cable clamp kit. The components of the cable clamp kit are shown in [Figure 35](#).

► **Note:** Position the cable clamp on the cable at the point indicated in the cable breakout diagrams.

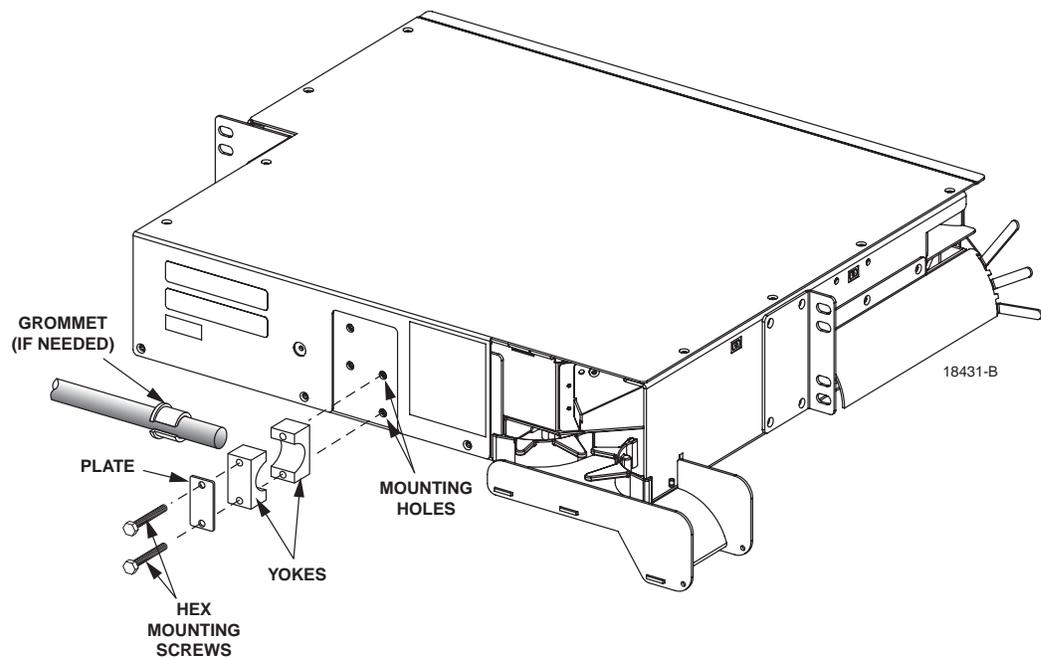


Figure 35. Clamping Cable to Standard Termination Panel

7. Route the cable fibers within the drawer as shown in [Figure 36](#).
8. Locate the assigned adapter and lift up the adapter pack. (refer to [Subsection 7.1](#)).
9. Remove the dust caps from the connectors and the rear side of the adapters and then insert each connector into the appropriate adapter.

► **Note:** Clean and inspect the connectors and adapters before mating them. For guidelines, refer to [Subsection 7.3](#).



Danger: Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber connector or adapter. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood **MUST** be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.

10. Secure the cable to the drawer at the cable retention area using the O-ring provided with the panel. Refer to [Figure 36](#) for details.
11. Return the adapter pack to its home position.
12. Continue routing and connecting any remaining connectors on the same cable.
13. When done, close the panel (refer to [Subsection 7.5](#)).

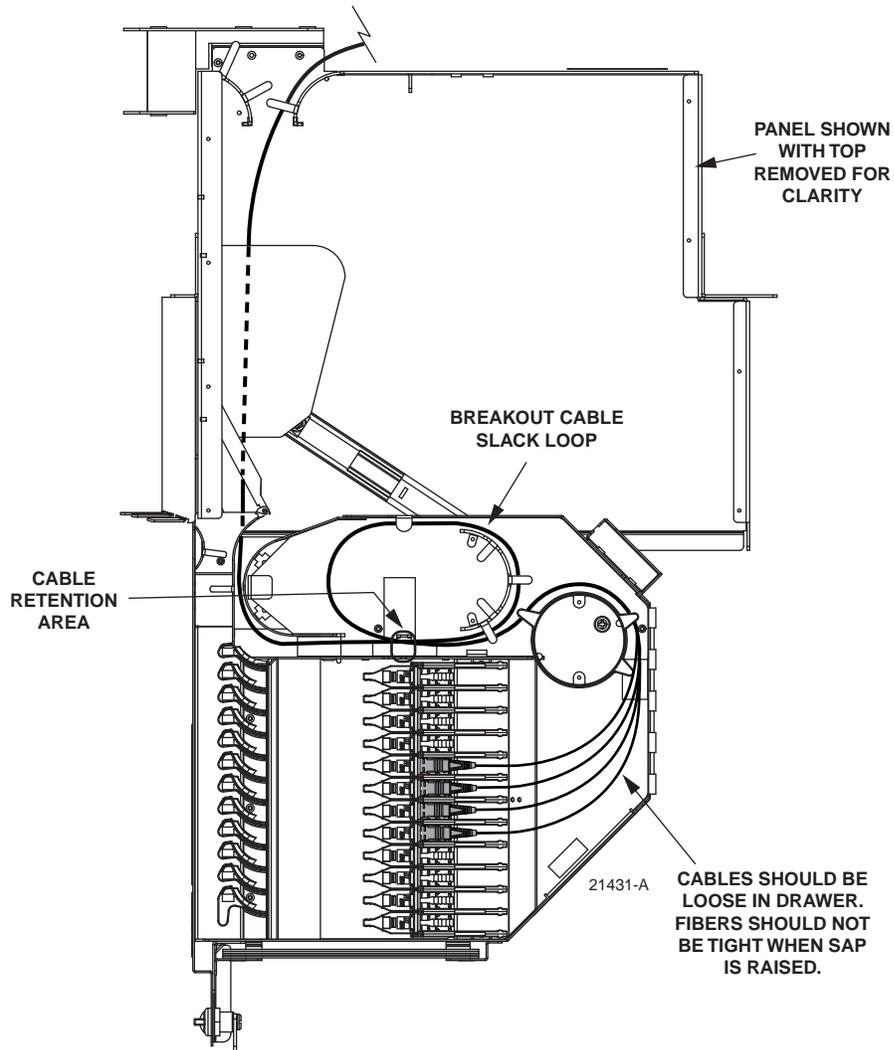


Figure 36. Breakout Cable Routing Within Standard Termination Panel

5 ROUTING AND INSTALLING MPO-TYPE RAPID PANEL CABLES

This section provides guidelines for routing MPO-type Rapid Panel cables to an NG3 frame and then connecting them to an MPO termination panel. Fiber cables terminated with MPO connectors are an integral part of the CommScope Rapid Panel and are pre-installed on a spool for quick deployment. An example of a typical application using the Rapid Panel and the MPO Termination Panel is shown in [Figure 37](#). For additional information on the Rapid Panel, refer to the Rapid Panel User Manual (ADCP-90-601).

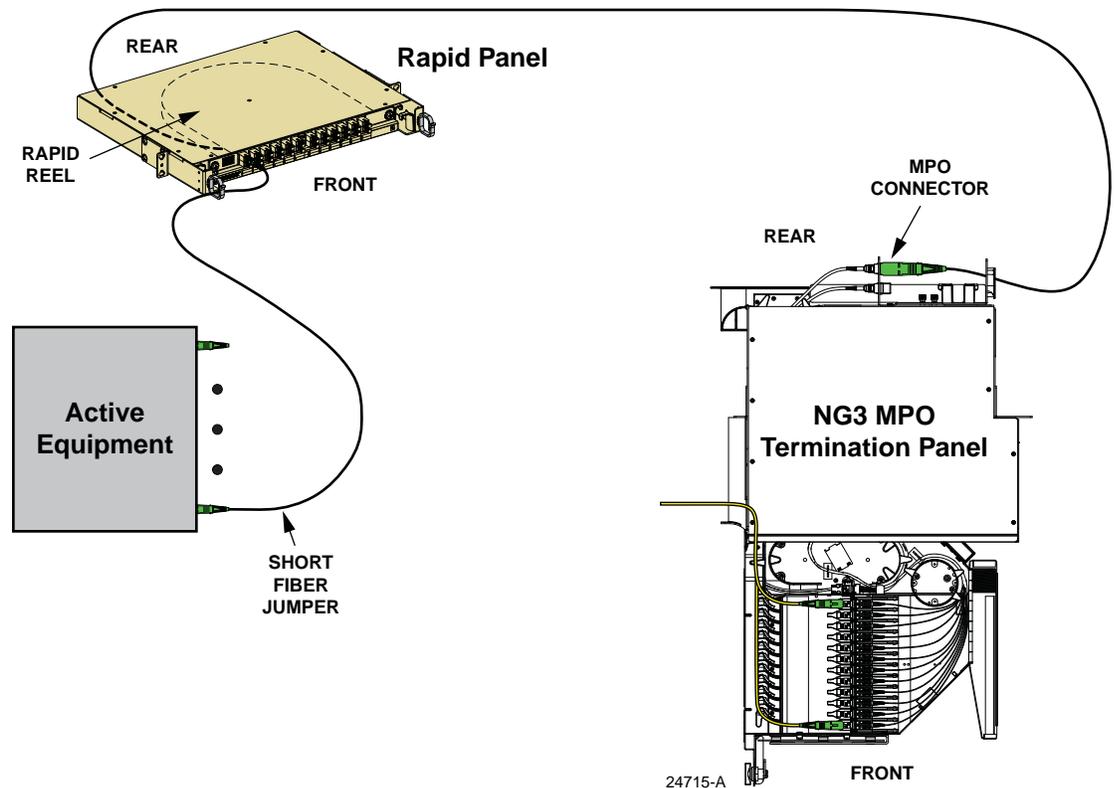


Figure 37. Typical MPO Termination Panel Application

5.1 Routing Guidelines for Rapid Panel MPO Cables

Rapid Panel cables may be routed to the rear side of the frame from either above or below the NG3 panel. Route each Rapid Panel cable vertically up or down the left rear side of the frame to the designated panel as shown in [Figure 38](#). Then route the Rapid Panel cable horizontally from left to right to the rear of the designated MPO termination panel.

Carefully secure the Rapid Panel cable to the frame using the tie down bars located on the left side of the frame. Maintain a minimum bend radius of 1.5 inches when routing cables. Leave the cable pulling eye in place until ready to connect the cable to the MPO termination panel.



Caution: Applying excessive tension when securing cables can physically damage the optical fibers and cause signal loss. Use only light pressure when securing cables. It is recommended that fish paper be wrapped around the cable at the points where the cable will be secured to the frame to avoid applying too much pressure.

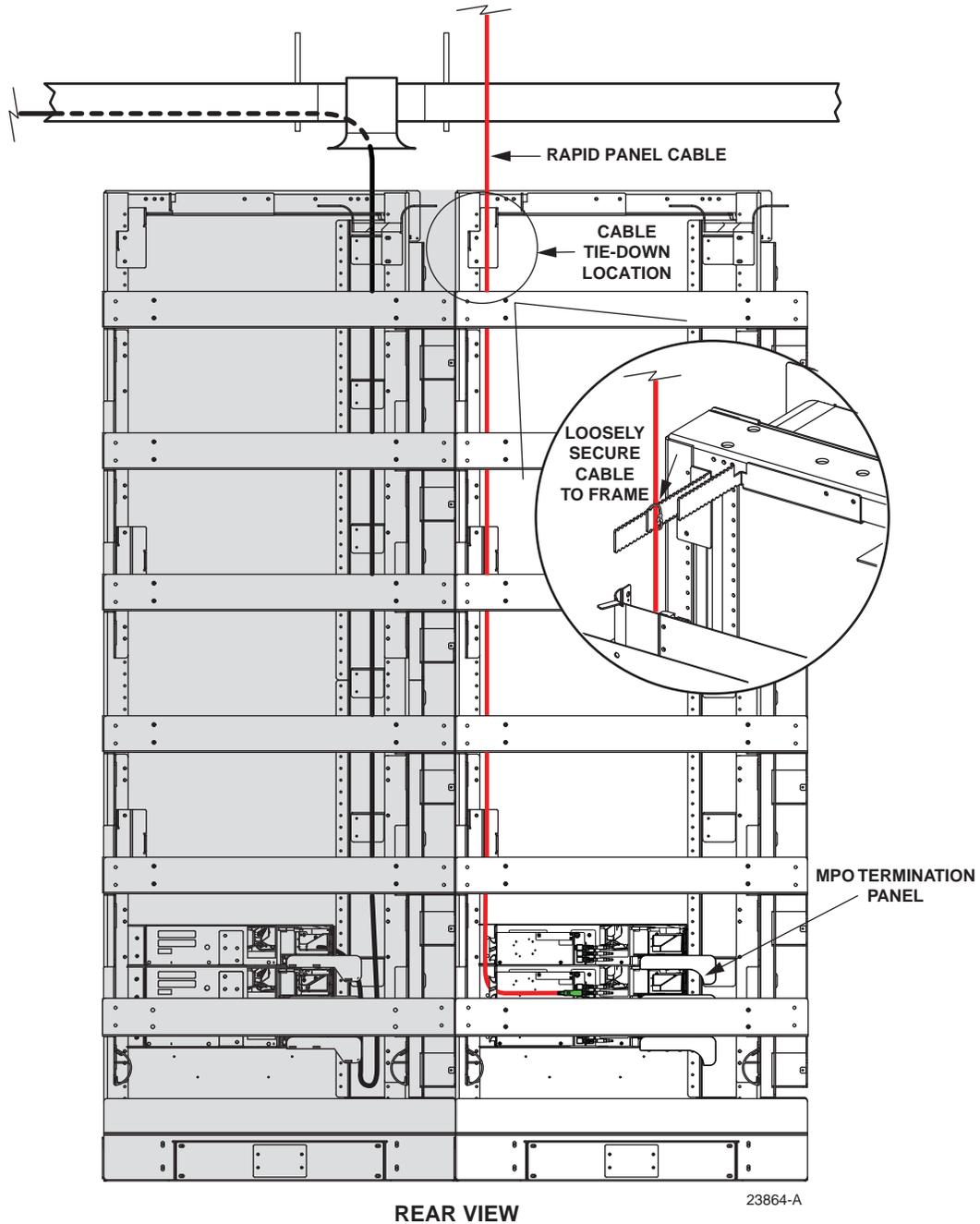


Figure 38. Rapid Panel Cable Routing on Rear of Frame

5.2 Rapid Panel Cable Connection to MPO Termination Panel

Use the following procedure to connect a Rapid Panel cable (with MPO connector) to a bulkhead adapter at the rear side of the MPO termination panel:

1. Locate the bulkhead adapter at the rear side of the MPO termination panel where the Rapid Panel cable will be terminated. Each adapter is labeled with the numbers of the corresponding optical ports.
2. Remove the pulling eye from the end of the cable by inserting and twisting a screwdriver or coin as shown in [Figure 39](#).



Warning: *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical adapters or connectors. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood **MUST** be immediately placed over any radiating adapter or optical connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

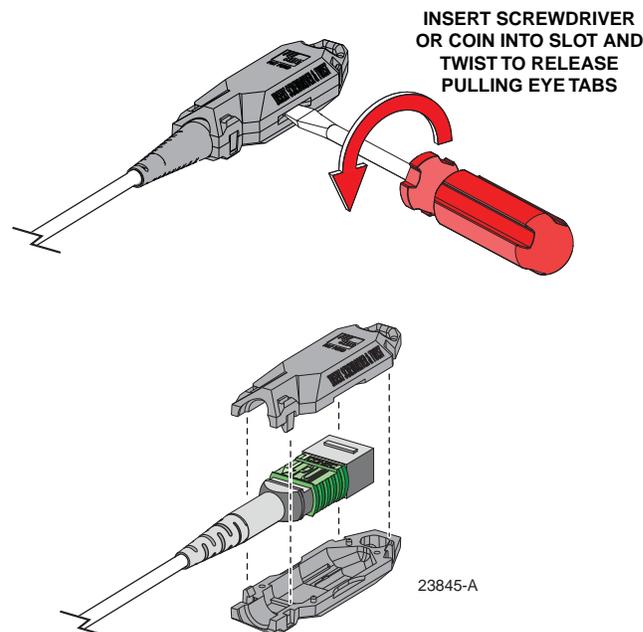


Figure 39. Removing a Pulling Eye

3. Remove the dust cap from the MPO connector and then clean the connector as specified in the CommScope Multifiber-Push On (MPO) Assembly Connector Cleaning Instructions (ADCP-96-150).

4. Remove the dust cap from the MPO bulkhead adapter and then connect the cable connector to the adapter as shown in [Figure 40](#).

▶ **Note:** A keyway is provided in the adapter to insure that the connector will be properly oriented when installed.

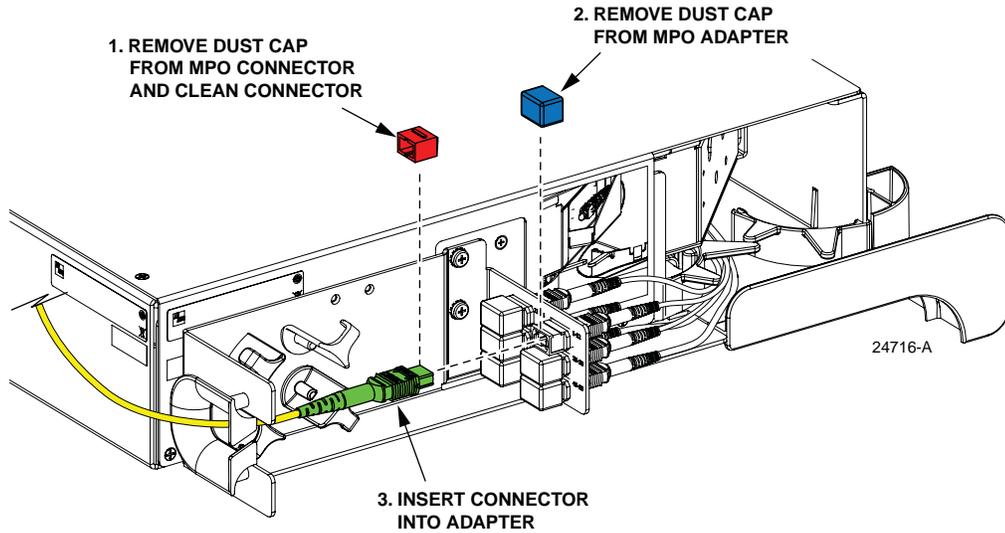


Figure 40. Connect MPO Connector To Bulkhead Adapter

6 FOT EQUIPMENT PATCH CORD ROUTING AND INSTALLATION

This section provides instructions for routing FOT equipment patch cords through an NG3 frame to the appropriate NG3 panel. This section does not apply to MPO Termination Panels.

6.1 General FOT Equipment Patch Cord Routing - All Panel Types

Depending on the application, FOT equipment patch cords are routed to either the rear or front side of the frame. When routed to the rear side, entry to the frame may be from either **above** or **below** the NG3 panel. Each rear entry FOT patch cord is routed vertically up or down the right rear side of the frame to the designated panel as shown in [Figure 41](#). Storage for rear entry patch cords may be provided by installing a Fiber Optic Terminal Storage Panel (FOTSP) between each frame.

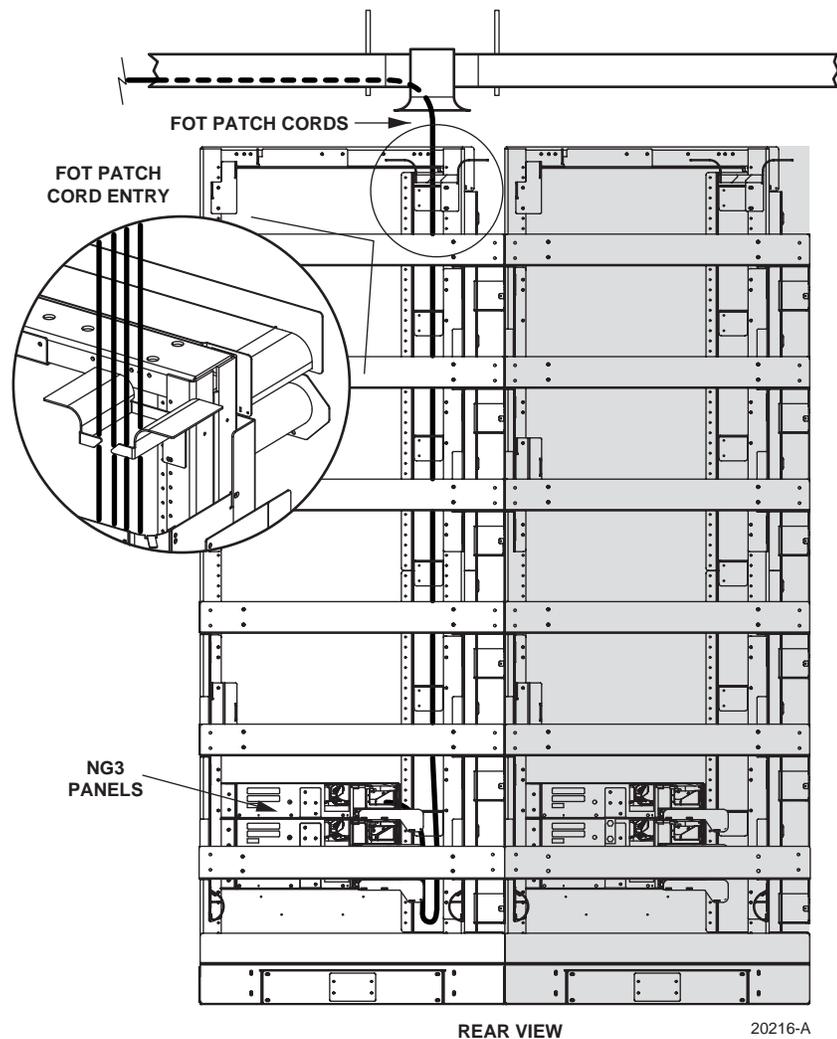


Figure 41. Routing FOT Equipment Patch Cords to Rear Side of Frame

When routed to the front side, entry to the frame may be from **above** the NG3 panel only. Each front entry patch cord is routed vertically down the left side of the frame to the designated panel as shown in [Figure 42](#). Storage for front entry patch cords is provided by the slack storage spools on the left side of the frame.

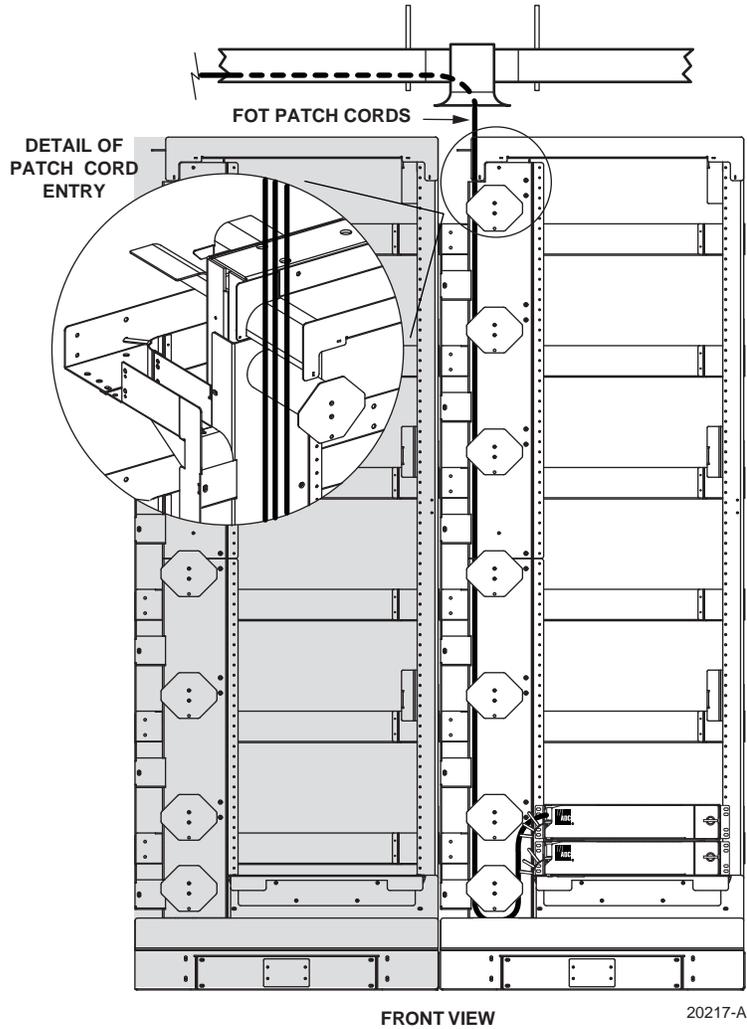


Figure 42. Routing FOT Equipment Patch Cords to Front Side of Frame

The FOT patch cords must maintain a minimum bend radius of 1.5 inches or ten times the jacket outside diameter (whichever is greater) inside cable raceways and within the NG3 frame. The outside jacket diameter of the FOT patch cords should not exceed 2 mm.

6.2 Standard Termination Panel FOT Patch Cord Installation

The procedure that should be used for installing FOT equipment patch cords in the Standard Termination Panel is dependent on whether the panel is used in a cross-connect or interconnect application. The following subsections provide the installation procedures for both applications.

- ▶ **Note:** The photographs used in these procedures show an early version of the Standard Termination Panel. However, the basic routing instructions apply to both the early and current versions of the panel.

6.2.1 Cross-Connect Application

In a cross-connect application, FOT patch cords are routed up or down the right rear side of the frame and into the opening at the rear of the Standard Termination Panel. Within the panel, each patch cord is routed to the specified adapter pack (right side when drawer is open) and connected to the appropriate adapter. Use the following procedure to install each FOT patch cord in the Standard Termination Panel:

1. Route the FOT patch cord to the rear of the panel as described in [Subsection 6.1](#)
2. Make sure the hinged drawer on the front of the panel is closed.
3. Locate the fiber transport on the rear of the panel as shown in [Figure 43](#).

- ▶ **Note:** When the hinged drawer is opened, the fiber transport moves to the front right corner of the panel. The fiber transport holds the patch cord connector as it is pulled to the front of the panel.

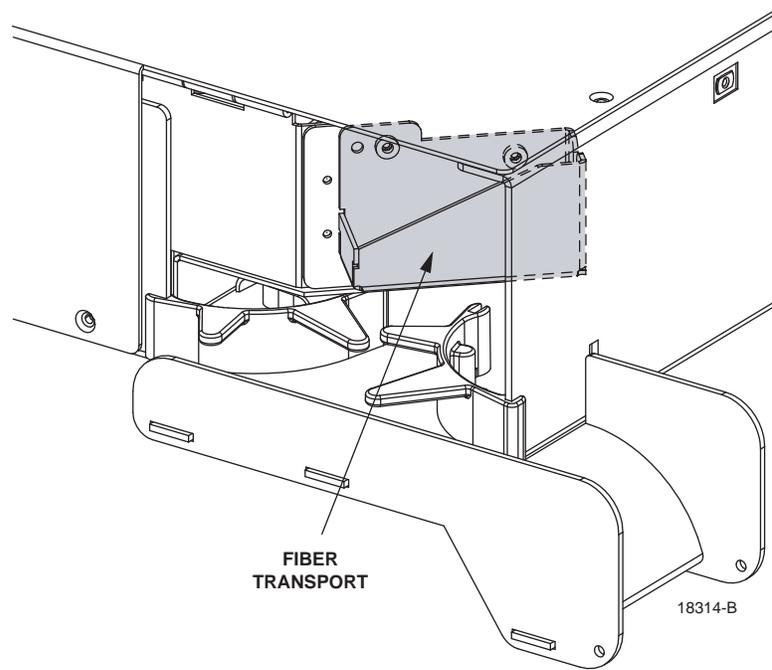


Figure 43. Fiber Transport

4. Hold the patch cord at its connector end and position it in an arc as shown in [Figure 44](#).



Figure 44. Holding Patch Cord

5. Rotate the looped patch cord over and route it through the radius limiters just below the fiber transport, as shown in [Figure 45](#).



Figure 45. Positioning Patch Cord in Radius Limiters

6. Place the patch cord connector in the fiber transport with the connector end facing to the rear as shown in [Figure 46](#). Be sure the patch cord has about 65 inches (165.10 cm) of slack so it will not snag when pulled through from the front of the panel.



Figure 46. Connector Oriented Correctly for Placement in Fiber Transport

7. Go to the front of the panel and open the hinged drawer. Locate the patch cord connector in the fiber transport, now located in the rear right of the drawer, as shown in [Figure 47](#).



Caution: *Placing a load in excess of 20 pounds onto an open drawer will result in misalignment or damage to the drawer.*



Figure 47. Connector in Fiber Transport When Hinged Drawer is Opened

8. Lift up the connector and route the patch cord above and behind the rear top edge of the hinged drawer and then through the opening on the rear left of the drawer as shown in [Figure 48](#).



Figure 48. Patch Cord Routed To Left Rear Side of Open Drawer

9. Route the patch cord around radius limiters and spool to the position shown in [Figure 49](#) and [Figure 50](#).



Figure 49. Patch Cord Routed To Rear Side of Adapter Pack

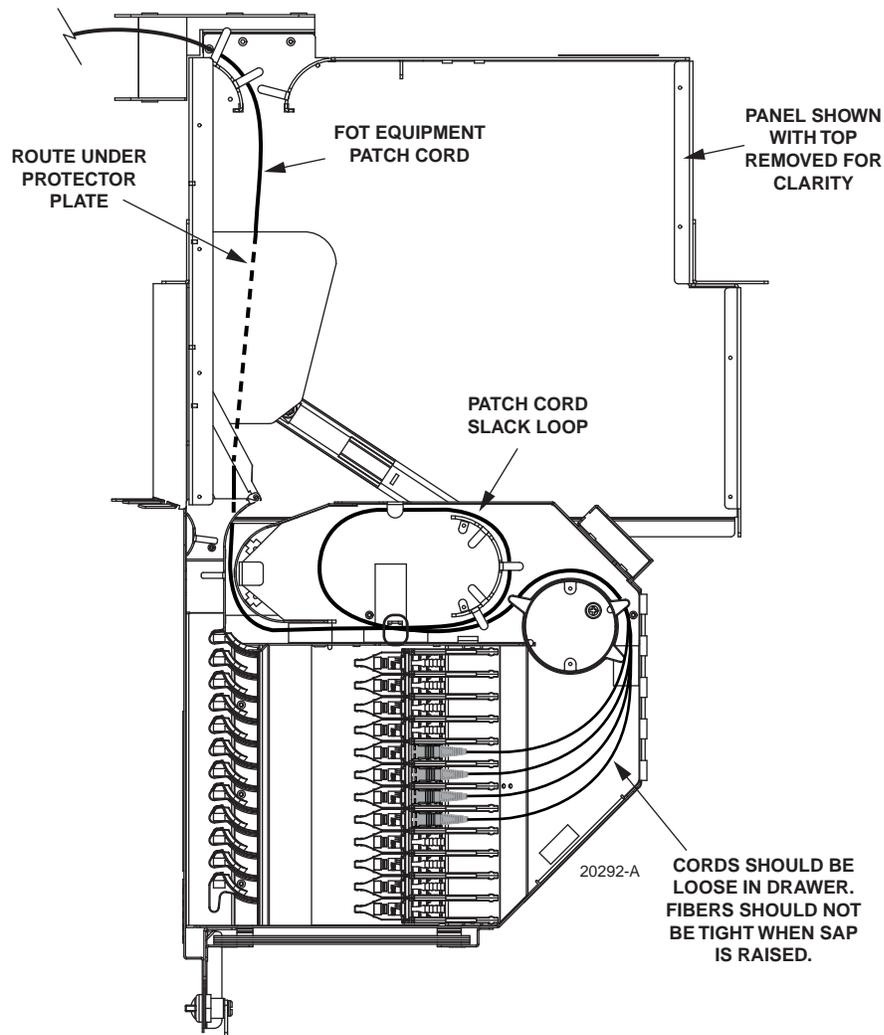


Figure 50. Routing FOT Patch Cords Within Standard Termination Panel - Cross-Connect Application

10. Locate and access the adapter pack and adapter ([Subsection 7.1](#)) where the patch cord will be connected.



Danger: *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into optical adapters or connectors. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood MUST be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

11. Remove the dust cap from the adapter and connect the patch cord connector to the adapter.

- ▶ **Note:** Always clean and inspect connectors and adapters before mating them. For guidelines on cleaning connectors, refer to [Subsection 7.3](#).
- 12. Adjust the patch cord to provide adequate slack within the drawer. Route extra slack out through the back of the drawer and secure the patch cords in the cable retention area with the O-ring provided.
- ▶ **Note:** Make sure the patch cords are not pulled tight when the adapter pack is raised.
- 13. Close the top cover and shut the drawer.
- 14. Turn the door latch a quarter turn clockwise to secure the door in the closed position.

6.2.2 Interconnect Application

In an interconnect application, FOT patch cords are routed down the front side of the frame and into the opening on the left side of the Standard Termination Panel. Within the panel, each patch cord is routed to a specified adapter pack (left side when drawer is open) and connected to the appropriate adapter. Use the following procedure to install each FOT patch cord in the Standard Termination Panel:

1. Route the FOT patch cord to the front of the panel as described in [Subsection 6.1](#).
2. Open the panel as described in [Subsection 3.2](#).



Caution: *Placing a load in excess of 20 pounds onto an open drawer will result in misalignment or damage to the drawer.*

3. Locate and access the adapter pack and adapter ([Subsection 7.1](#)) where the patch cord will be connected.



Warning: *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical adapters or connectors. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood MUST be immediately placed over any radiating adapter or optical connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

4. Remove the dust cap from the adapter and connect the patch cord connector to the adapter.
5. Route the patch cord within the panel as shown in [Figure 51](#).
- ▶ **Note:** Always clean connectors and adapters before mating them. For guidelines on cleaning connectors, refer to [Subsection 7.3](#).
6. Route the patch cord out and down from the panel as shown in [Figure 52](#).
7. Close the top cover and shut the drawer.

8. Turn the door latch a quarter turn clockwise to secure the door in the closed position.
 9. Use the front slack storage spools to take up patch cord slack.
- ▶ **Note:** For additional instructions on routing patch cords, refer to the laminated cards (ADCP-90-296) provided with the frame or the NG3 Fiber Distribution Frame System User Manual (ADCP-90-298).

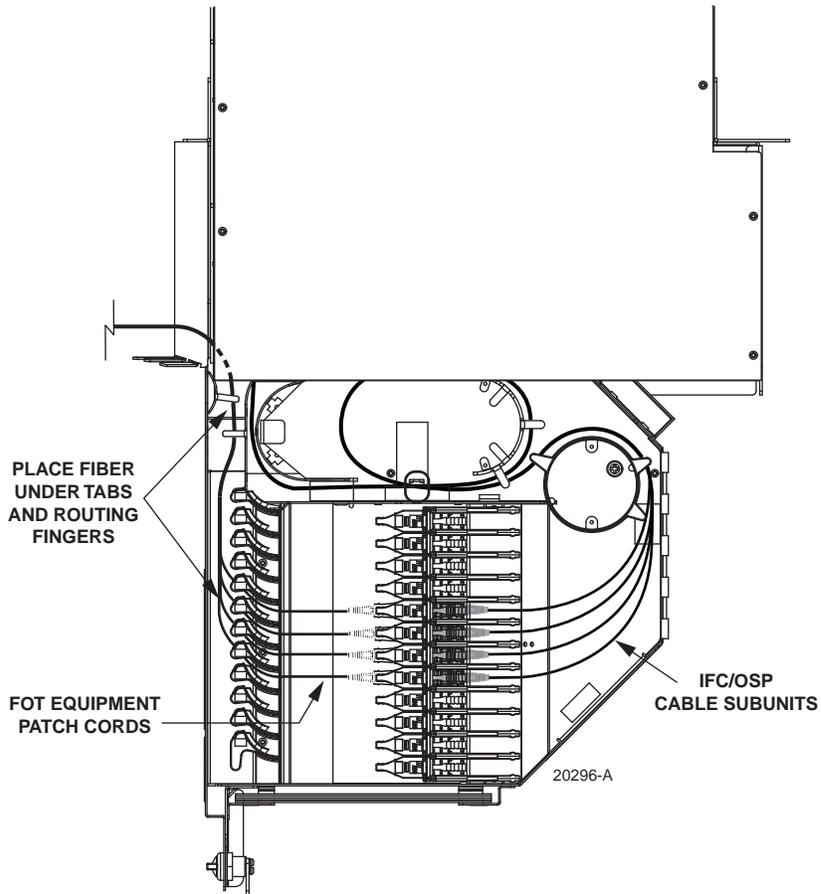


Figure 51. Routing FOT Patch Cords Within Standard Termination Panel- Interconnect Applications

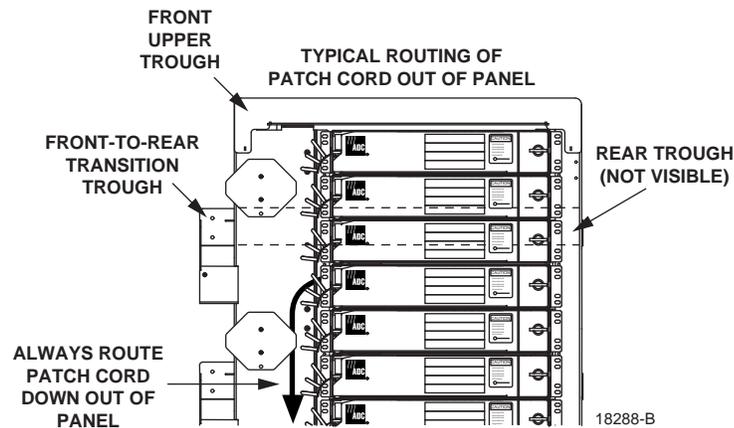


Figure 52. Routing FOT Patch Cords Out of Panel - Interconnect Applications

6.3 Termination/Splice Panel FOT Patch Cord Installation

The termination and splice panel is primarily used in “tie panel” applications and is usually linked to a Standard Termination Panel with IFC cable. Tie panels are typically used to bridge any gaps that may exist in between frames. If the termination and splice panel is used in an application that makes it necessary to route FOT patch cords to the front of the panel, follow the FOT patch cord routing procedures provided in [Subsection 6.2.2](#).

6.4 MicroVAM Chassis FOT Patch Cord Installation

The NG3 MicroVAM Chassis allows optical splitter or wavelength division multiplexing (WDM) functionality to be incorporated into specified optical circuits at the NG3 frame. FOT patch cords may be routed into the MicroVAM Chassis from either the rear side or the front side of the frame. Whether the FOT patch cords are routed into the MicroVAM Chassis from the front or rear side is a matter of convenience and is not related to whether the NG3 frame is used for an interconnect or cross-connect application. The following subsections provide the procedures for both rear and front entry FOT patch cord installation:

6.4.1 Rear Entry

For entry from the rear side, FOT patch cords are routed up or down the right rear side of the frame and into the opening at the rear of the MicroVAM Chassis. Within the chassis, each patch cord is routed to the specified MicroVAM module (left side when drawer is open) and connected to the appropriate adapter. A label showing the MicroVAM configuration is attached to the side of each MicroVAM module. Use the following procedure when installing FOT patch cords from the rear side of the MicroVAM Chassis:

1. Route the FOT patch cord to the rear of the MicroVAM Chassis as described in [Subsection 6.1](#)
 2. Make sure the hinged drawer on the front of the chassis is closed.
 3. Locate the fiber transport on the rear side of the chassis as shown in [Figure 53](#).
- ▶ **Note:** When the hinged drawer is opened, the fiber transport moves to the front right corner of the panel. The fiber transport holds the patch cord connector as it is pulled to the front of the panel.
4. Hold the patch cord at the connector and position it in an arc as shown in [Figure 54](#).
- ▶ **Note:** The photographs used in this procedure show an early version of the Standard Termination Panel. However, the basic routing instructions also apply to the current version of the MicroVAM Chassis.

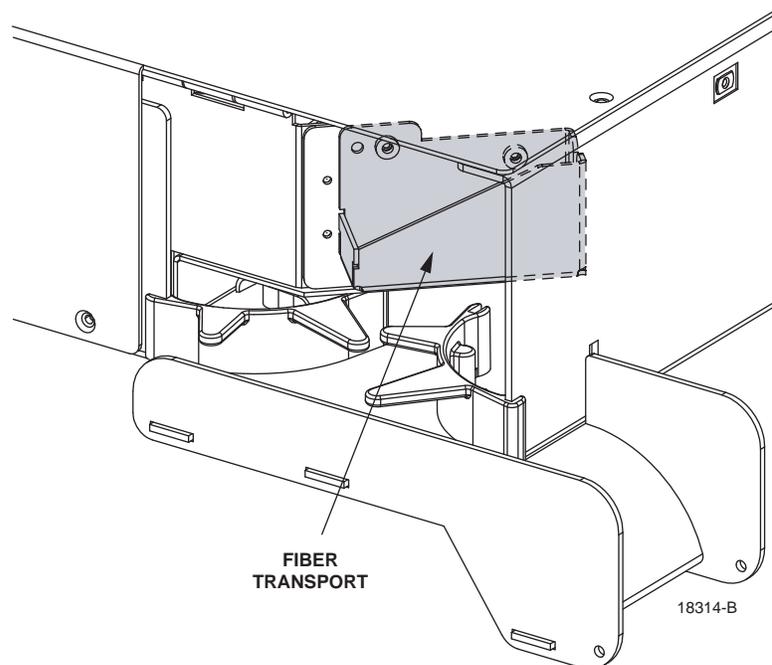


Figure 53. Fiber Transport



Figure 54. Holding Patch Cord

5. Rotate the looped patch cord over and route it through the radius limiters just below the fiber transport as shown in [Figure 55](#).



Figure 55. Positioning Patch Cord in Radius limiters

6. Place the patch cord connector in the fiber transport with the connector end facing to the rear as shown in [Figure 56](#). Be sure the patch cord has about 65 inches (165.10 cm) of slack so it will not snag when pulled through from the front of the panel.



Figure 56. Connector Oriented Correctly for Placement in Fiber Transport

7. Go to the front of the MicroVAM Chassis and open the hinged drawer. Locate the patch cord connector in the fiber transport now located on the right rear side of the drawer as shown in [Figure 57](#) and [Figure 58](#).

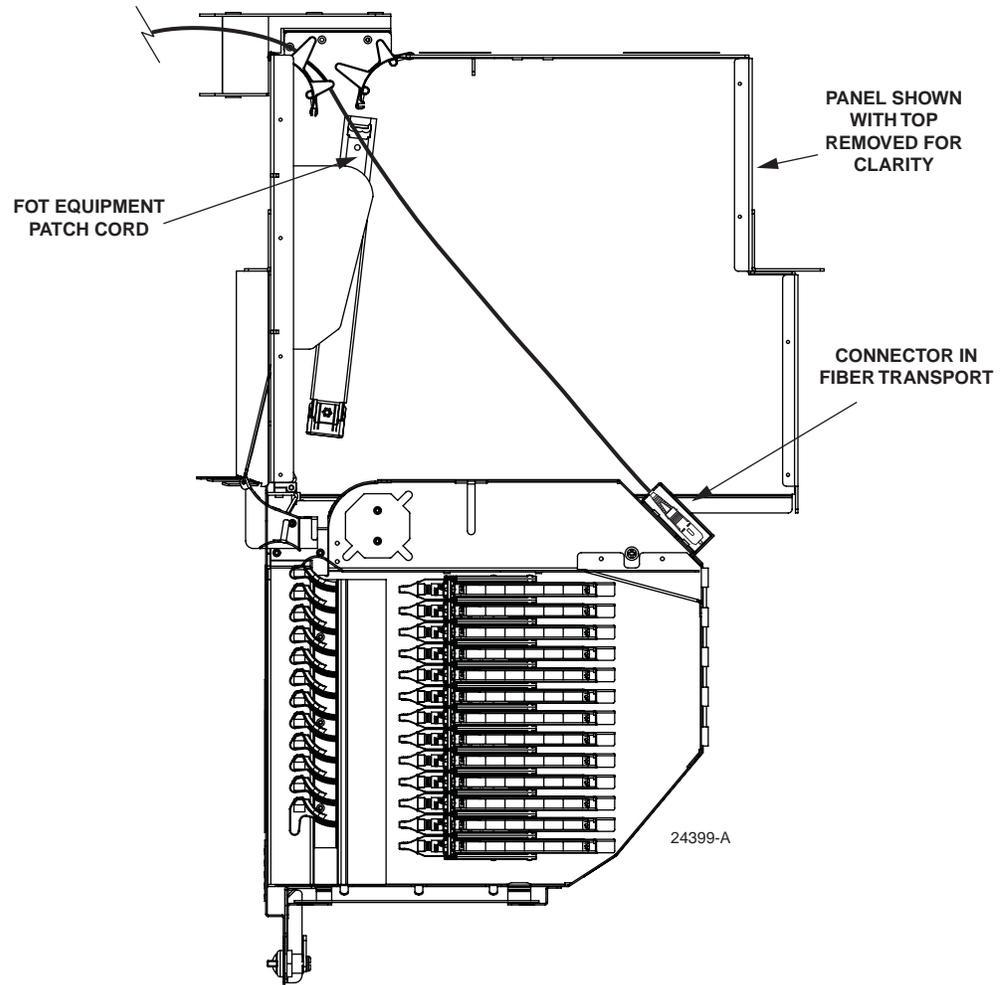
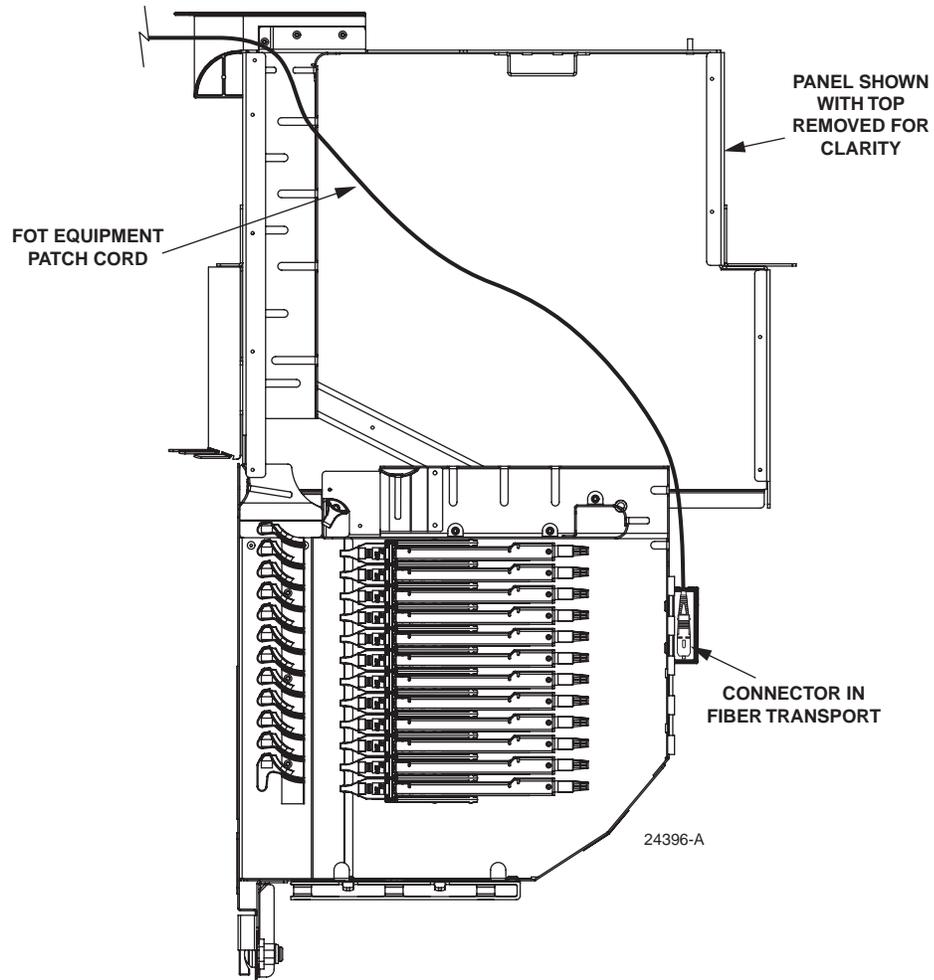


Figure 57. Connector in Fiber Transport When Hinged Drawer is Opened - Rear Entry (13-Slot Chassis Shown)



**Figure 58. Connector in Fiber Transport When Hinged Drawer is Opened - Rear Entry
(12-Slot Chassis Shown)**

8. Lift up the connector and route the patch cord above and behind the rear top edge of the hinged drawer and then through the opening at the rear left corner of the drawer as shown in [Figure 59](#) and [Figure 60](#).

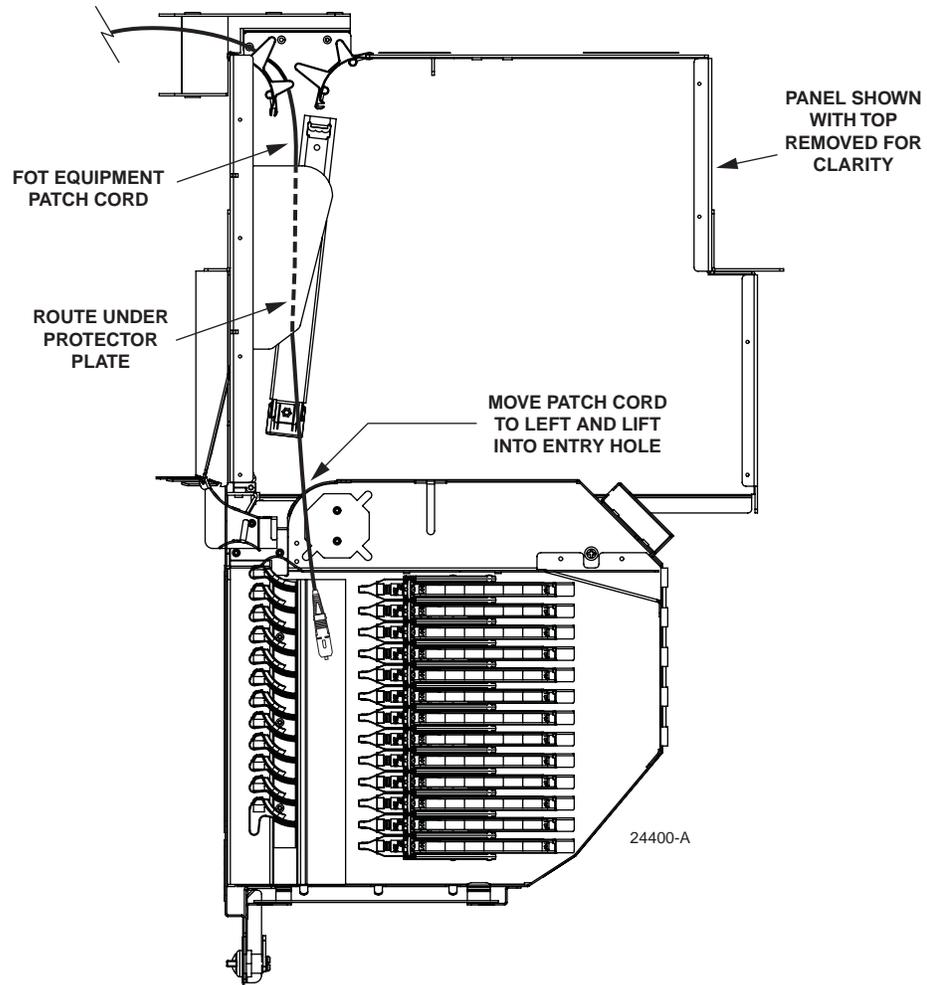


Figure 59. Positioning Patch Cord Within MicroVAM Chassis - Rear Entry (13-Slot Chassis Shown)

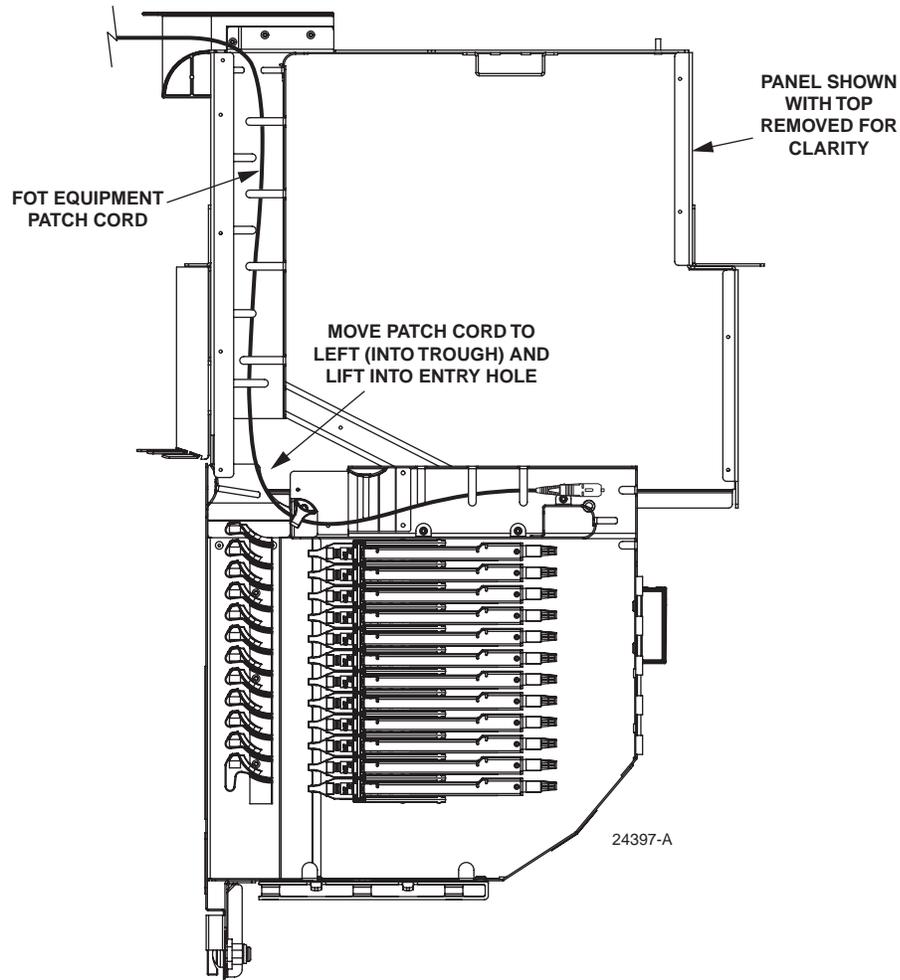
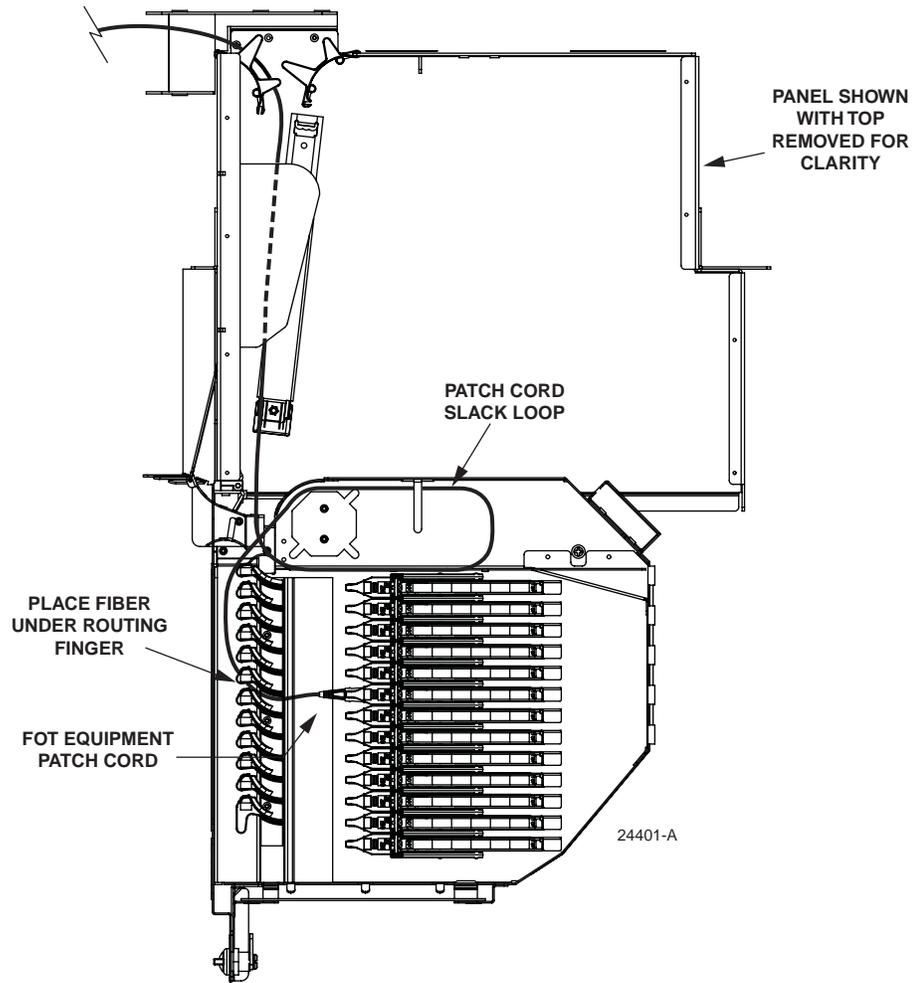


Figure 60. Positioning Patch Cord Within MicroVAM Chassis - Rear Entry (12-Slot Chassis Shown)

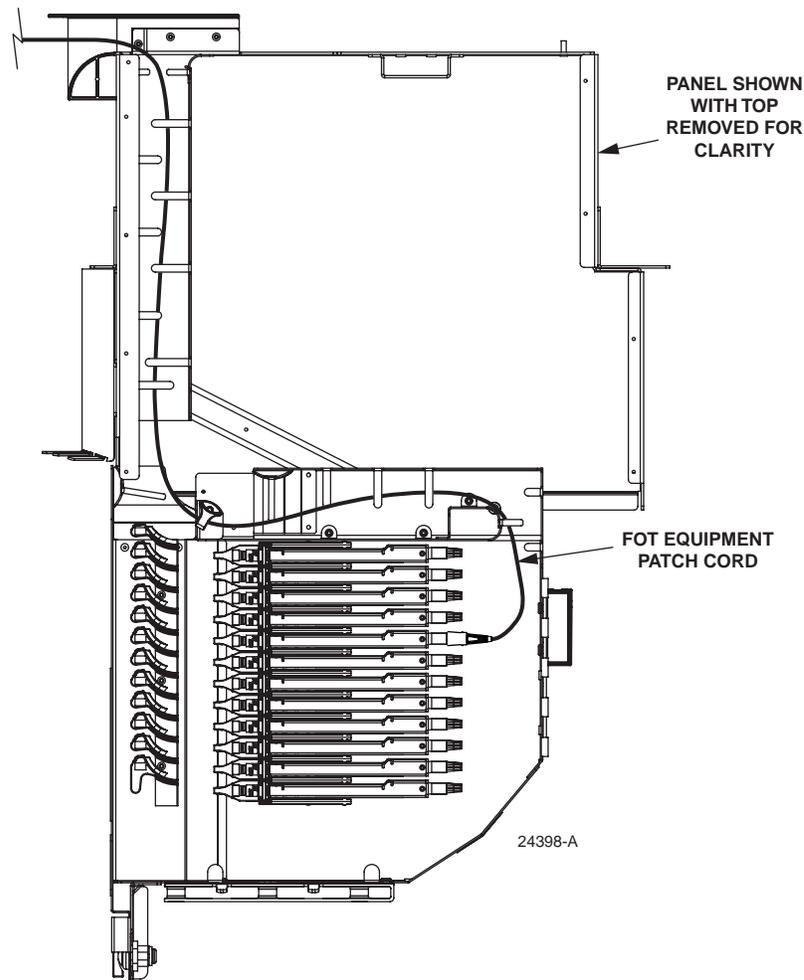
9. Remove the dust caps from the connectors and the MicroVAM adapters and then insert each connector into the appropriate adapter.

► **Note:** Clean and inspect the connectors and adapters before mating them. For guidelines, refer to [Subsection 7.3](#).

- Route the patch cord within the drawer as shown in [Figure 61](#) and [Figure 62](#).



**Figure 61. Patch Cord Installed In MicroVAM Chassis - Rear Entry
(13-Slot Chassis Shown)**



**Figure 62. Patch Cord Installed In MicroVAM Chassis - Rear Entry
(12-Slot Chassis Shown)**



Danger: *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any active optical fiber connector or adapter. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood MUST be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

11. Store the excess slack by routing the cable fibers around the radius limiter provided (see [Figure 61](#)).
12. Return the VAM to its home position.

13. Continue routing and connecting any remaining connectors on the same cable.
14. When done, close the panel (refer to [Subsection 7.5](#)).

6.4.2 Front Entry

For entry from the front side, FOT patch cords are routed down the left front side of the frame and into the opening on the left side of the MicroVAM Chassis. Within the chassis, each patch cord is routed to the specified MicroVAM module (left side when drawer is open) and connected to the appropriate adapter. A label showing the MicroVAM configuration is attached to the side of each MicroVAM module. Use the following procedure when installing FOT patch cords from the front side of the MicroVAM Chassis:

1. Route the FOT patch cord to the front of the MicroVAM Chassis as described in [Subsection 6.1](#).
2. Open the chassis as described in [Subsection 3.2](#).



Caution: *Placing a load in excess of 20 pounds onto an open drawer will result in misalignment or damage to the drawer.*

3. Locate and access the MicroVAM module and adapter ([Subsection 7.2](#)) where the patch cord will be connected.



Warning: *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any active optical fiber. Do not look directly into the optical adapters or connectors. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood MUST be immediately placed over any radiating adapter or optical connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

4. Remove the dust cap from the adapter and connect the patch cord connector to the adapter.
5. Route the patch cord within the chassis as shown in [Figure 63](#) and [Figure 64](#).

► **Note:** Always clean connectors and adapters before mating them. For guidelines on cleaning connectors, refer to [Subsection 7.3](#).

6. Route the patch cord out and down from the chassis as shown in [Figure 65](#).
7. Close the top cover and shut the drawer.
8. Turn the door latch a quarter turn clockwise to secure the door in the closed position.
9. Use the front slack storage spools to take up patch cord slack.

► **Note:** For additional instructions on routing patch cords, refer to the laminated cards (ADCP-90-296) provided with the frame or the NG3 Fiber Distribution Frame System User Manual (ADCP-90-298).

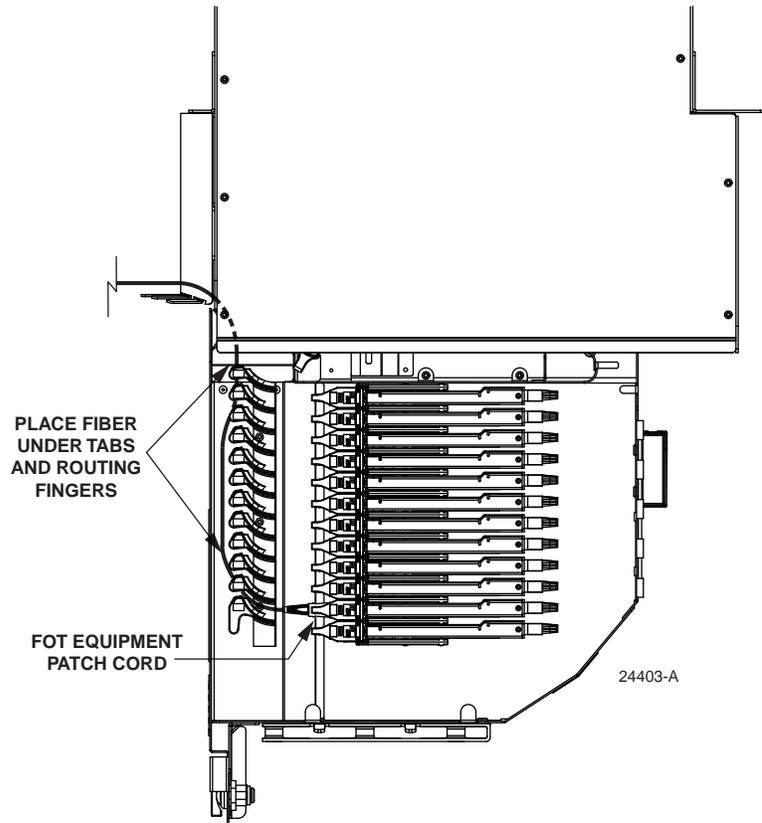


Figure 64. Routing FOT Patch Cords Within MicroVAM Chassis - Front Entry (12-Slot Chassis Shown)

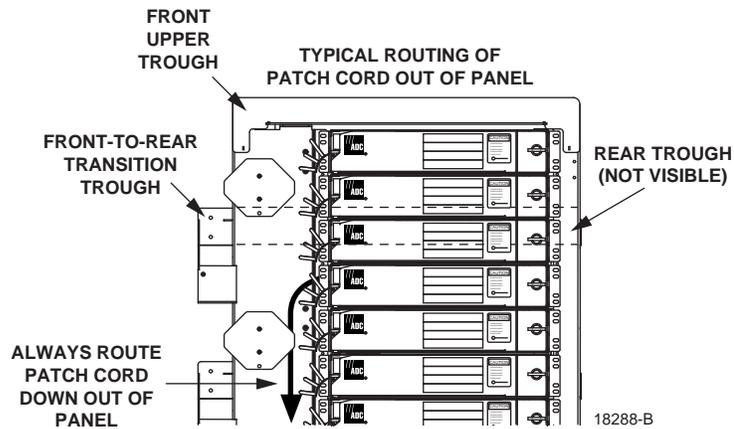


Figure 65. Routing Patch Cords Out of MicroVAM Chassis - Front Entry

7 OPERATION

Operation of the NG3 termination panel consists of tasks that are typically done after the panel is installed. Operational tasks include accessing the adapter packs and VAM's, cleaning connectors and adapters, installing cross-connect patch cords, and updating designation cards.



Danger: *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any active optical fiber. Do not look directly into the optical adapters of the adapter packs. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood **MUST** be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

7.1 Adapter Pack Access

Accessing an adapter pack is necessary in order to connect or disconnect a connector and adapter. Use the following procedure to access an adapter pack:

1. Open the panel as described in [Subsection 3.2](#).
2. Lift up the small tab on top of the adapter pack and lift up the adapter pack to the position shown in [Figure 66](#).

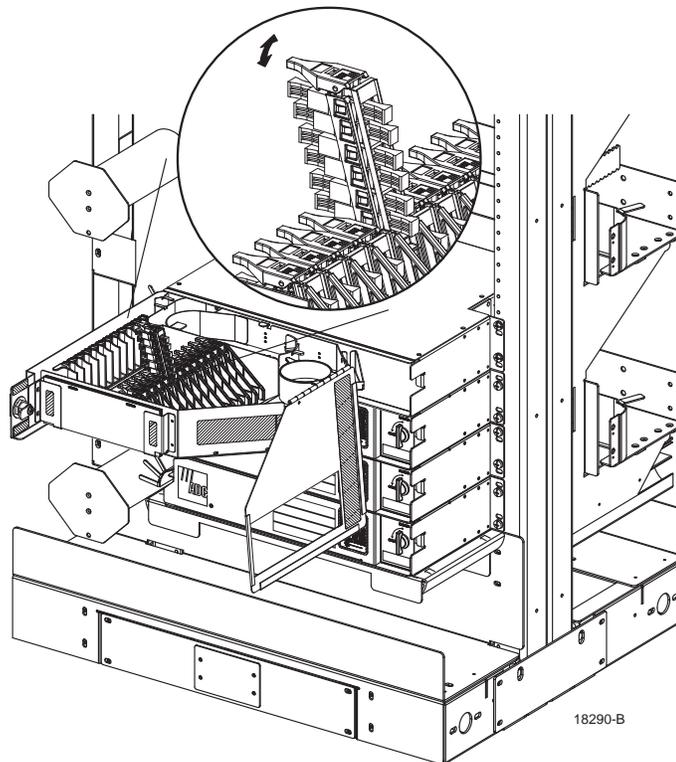
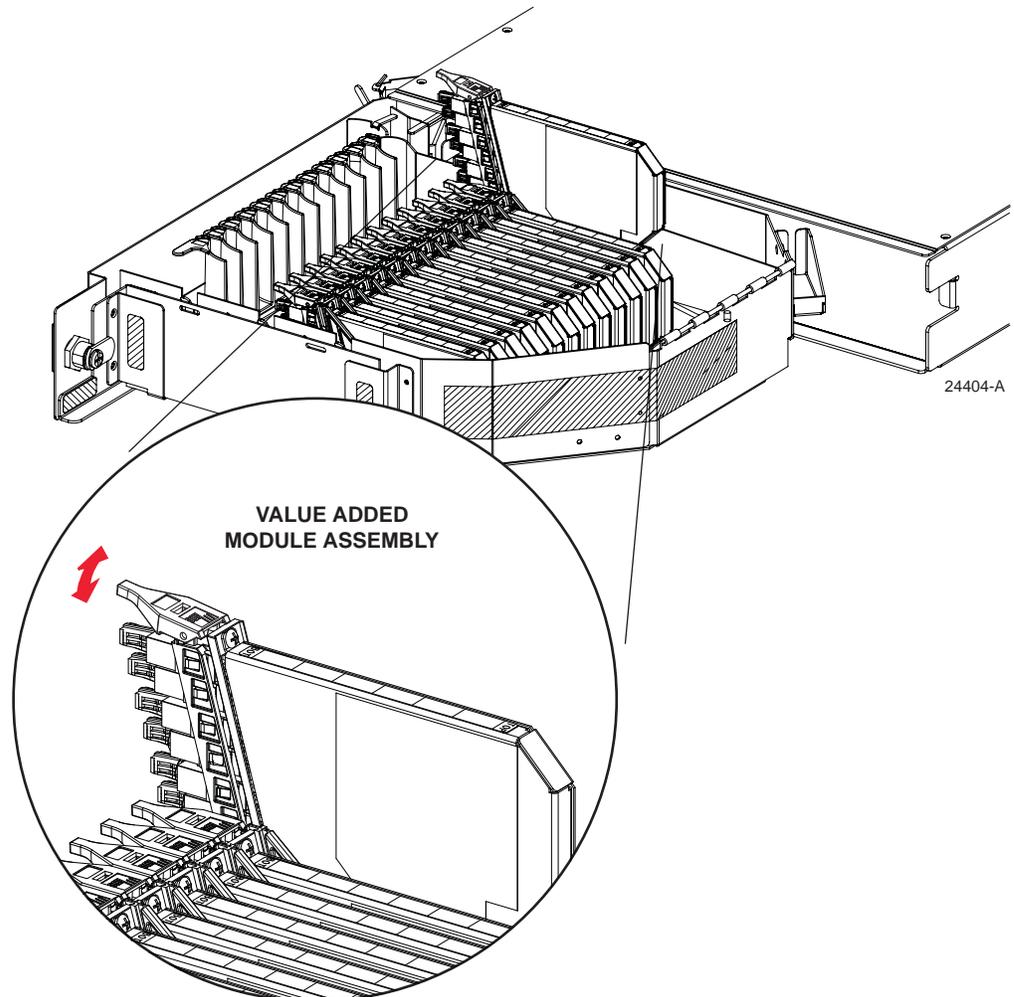


Figure 66. Adapter Pack In Access Position

7.2 VAM Access

Accessing a VAM adapter is necessary in order to connect or disconnect a patch cord from a VAM. Use the following procedure to access a VAM adapter:

1. Open the panel as described in [Subsection 3.2](#).
2. Lift up the small tab on top of the VAM and lift up the VAM into the position shown in [Figure 67](#) and [Figure 68](#).



**Figure 67. VAM In Access Position
(13-Slot Chassis Shown)**

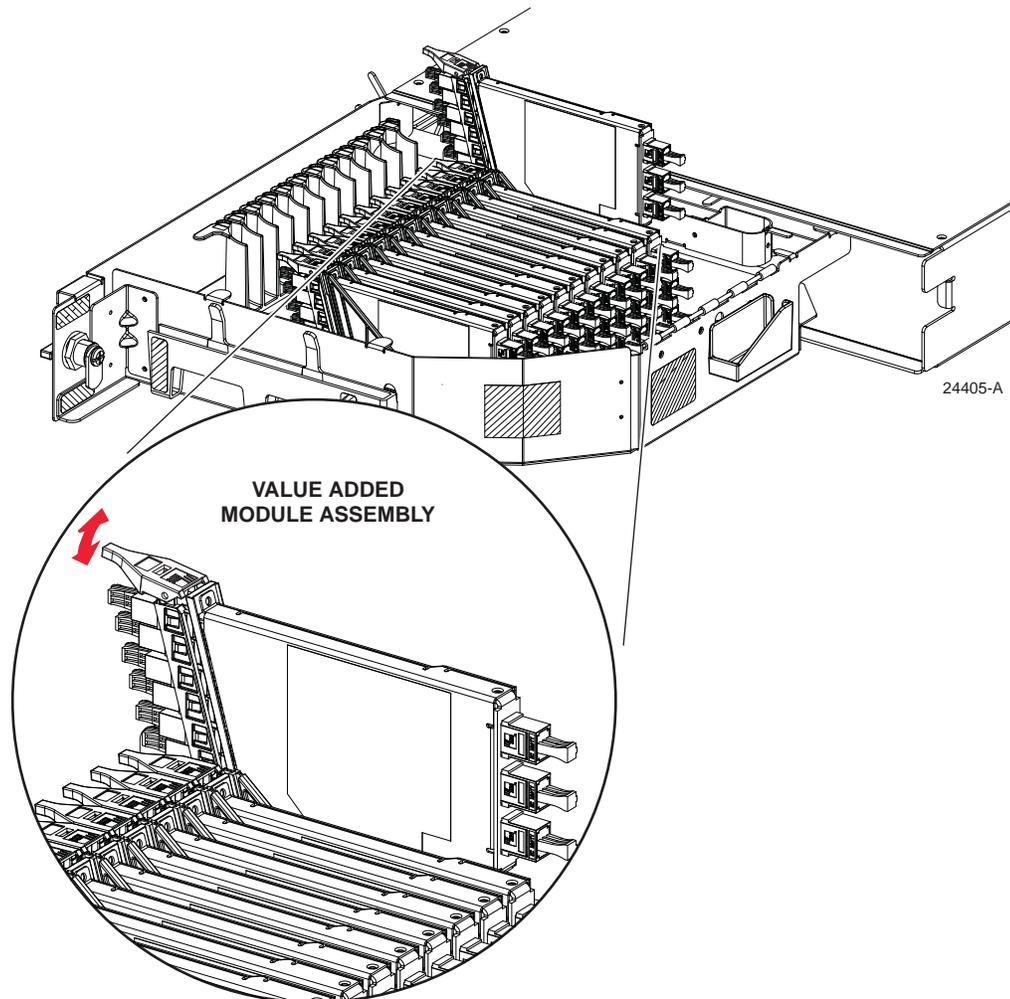


Figure 68. VAM In Access Position
(12-Slot Chassis Shown)

7.3 Cleaning Connectors and Adapters – Standard and Termination/Splice Panels

The connectors and adapters should be carefully cleaned whenever connecting or disconnecting a fiber optic cable or patch cord. Refer to the Optical Fiber Systems Cleaning and Mating Instructions (ADCP-90-159) provided with ADC patch cords and optical cable assemblies for the connector and adapter cleaning procedures. In addition, observe the following guidelines:

1. A single connector is one-third of an interconnection system comprised of two connectors and an adapter. If any one of the three components is dirty, it is likely that all three components are dirty and must be cleaned. **Don't mate a "clean" connector with another connector whose cleanliness is unknown or suspect.** If necessary, disconnect and inspect an **installed** connector before installing another (clean) connector. Cleaning the adapter is often also necessary

when it is apparent that two pre-cleaned connectors have become contaminated after installation.



Danger: *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the end of an active optical fiber connector or adapter. Exposure to invisible laser radiation may result. Use an optical power meter to verify that an optical signal is not present before looking at a connector endface. Disconnect the signal source if a signal is detected.*

2. Inspect the connector endface at 200X. Adjust the microscope to place the fiber in the **upper center** of the field of view and **rotate the connector** to view a 360° area. Focus on the fiber. Adjust the illuminator and the monitor contrast and brightness so that particles **on** the endface and **adjacent** to the endface are observed. For some inspection systems, this may involve more than one adjustment at each viewing.
3. If the endface appears to be “very dirty” (liquid-looking droplets, many particles, smears, etc.), **pre-clean** the endface with a lint-free laboratory tissue (Kimwipes EX-L or equivalent) or a Fiberclean cartridge cleaner. When using a cartridge cleaner, use very light pressure to the non-woven cleaning fabric. Apply 2-3 strokes over the fabric with a slight rotation of the endface. Keep the endface surface **parallel to the cleaning fabric** (this is especially important on angled connectors) and **do not** reuse any area of the cartridge fabric. When possible, clean the “sides” (outside diameter) of the ferrule as well as the endface. If available, use alcohol (reagent or technical grade isopropyl alcohol) with a lint-free tissue. Moisten (do not **saturate**) several folds of the tissue with a very small amount of alcohol and firmly rub/twist the alcohol-moistened portion of the tissue onto the connector endface, then immediately “final polish” the endface per step 4 or with another folded dry laboratory tissue.
4. If the endface is just “slightly” dirty (a few very small particles), use a cleaning cartridge that contains a finely-woven cleaning fabric (such as “reel cleaner” optical connector cleaner or equivalent) to provide a spot-free, scratch-free, connector endface. Use a very light pressure to the cleaning fabric. Apply 2-3 strokes over the fabric with a slight rotation of the endface. Keep the endface surface **parallel to the cleaning media** (this is especially important on angled connectors) and **do not** reuse any area of the cartridge fabric. Folding a lint-free tissue into 4 to 6 layers and lightly applying it to the endface will also accomplish this purpose.
5. **Reject** any connectors that do not clean up, are scratched (**no** defects permitted in the fiber **core**), or have many or large pits in the endface ceramic adjacent to the fiber (within approximately 100 microns or roughly a fiber diameter).
6. Avoid the use of compressed air or “canned gas” to clean non-angled endfaces. If canned gas is used to clean any components, exercise extreme care not to tip/tilt the container during its use as liquid material will be ejected and deposited onto the endface. Low quality compressed air or improper use of canned gas can cause more endface contamination than it removes.
7. Re-inspect each endface after cleaning.

7.4 Cross-Connect Jumper Patch Cord Routing

7.4.1 Standard Panel, Termination/Splice Panel, and MPO Panel Cross-Connect Routing

Cross-connect patch cords are used in a cross-connect application to provide a link between adapters located in different panels. Usually, one of these panels is dedicated to OSP cable terminations and the other panel is dedicated to FOT equipment terminations. Use the following procedure install a cross-connect patch cord:

1. Open the panel as described in [Subsection 3.2](#).
2. Locate and access the adapter pack of interest as described in [Subsection 7.1](#).



Danger: Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical adapters of the adapter packs. Exposure to invisible laser radiation may result. A protective cap or hood **MUST** be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.

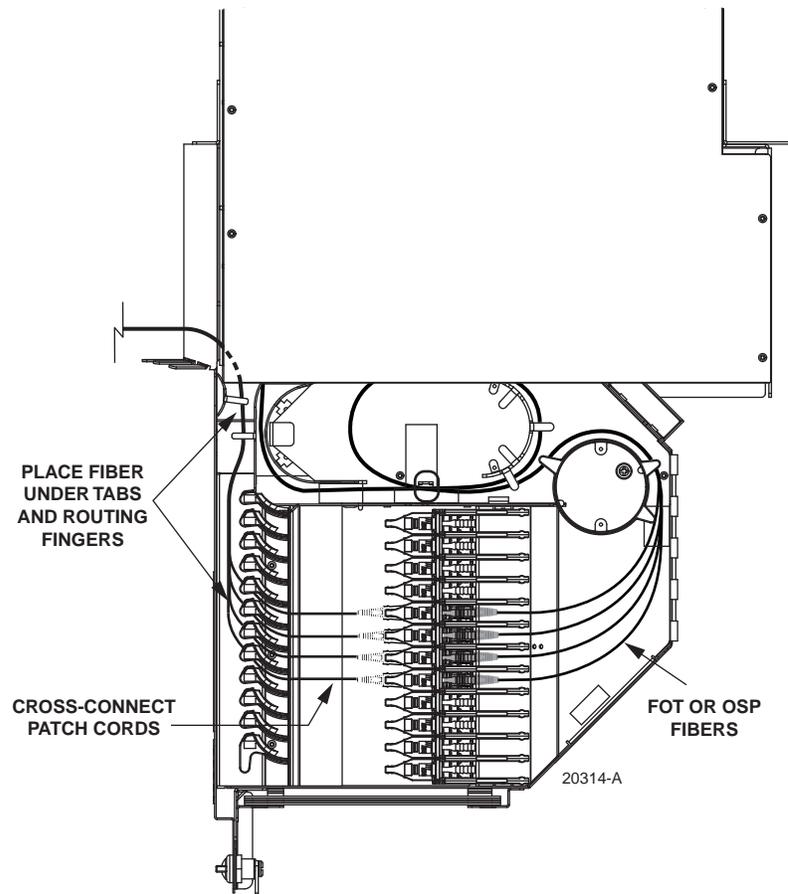


Figure 69. Connecting a Cross-Connect Patch Cord

3. Remove the dust cap from the adapter and connect the patch cord connector to the front side of the adapter pack (left side when drawer is open), as shown in [Figure 69](#).
- ▶ **Note:** Always clean connectors and adapters before mating them. For guidelines on cleaning connectors, refer to [Subsection 7.3](#).
4. Route the patch cord within the drawer through the radius limiters as also shown in [Figure 69](#).
5. Route the patch cord out of the drawer and down along the front of the frame, as shown in [Figure 70](#).
- ▶ **Note:** Never route up out the panel. Always route down.
6. For routing guidelines beyond this point, refer to the laminated card hanging on the frame (ADCP-90-296) or to the frame user manual (ADCP-90-298).

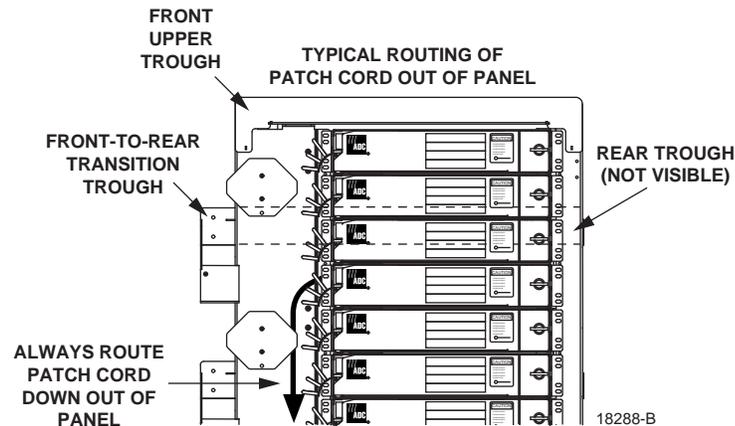


Figure 70. Patch Cord Routing From Panel

7.4.2 MicroVAM Chassis Cross-Connect Patch Cord Routing

The MicroVAM Chassis may be used in applications where it is necessary to route cross-connect patch cords to the front of the panel. If this is the case, follow the FOT equipment patch cord routing procedures provided in [Subsection 6.4.2](#) when routing cross-connect patch cords to the front side of the MicroVAM Chassis.

7.5 Closing the Panel

1. Check to ensure that all unterminated adapters are capped with dust covers. Return all adapter packs or VAMs to their home positions (seated fully down).
2. Close the top cover of the drawer.
3. Close the hinged drawer.
4. Turn door latch a quarter turn clockwise to secure door in closed position.

8 MAINTENANCE

8.1 Cable Replacement – Standard Termination Panel

Use the following procedure to remove and replace an installed IFC cable from a Standard Termination Panel. Refer to [Figure 71](#) as needed during the procedure.



Danger: *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical adapters of the adapter packs. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood MUST be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

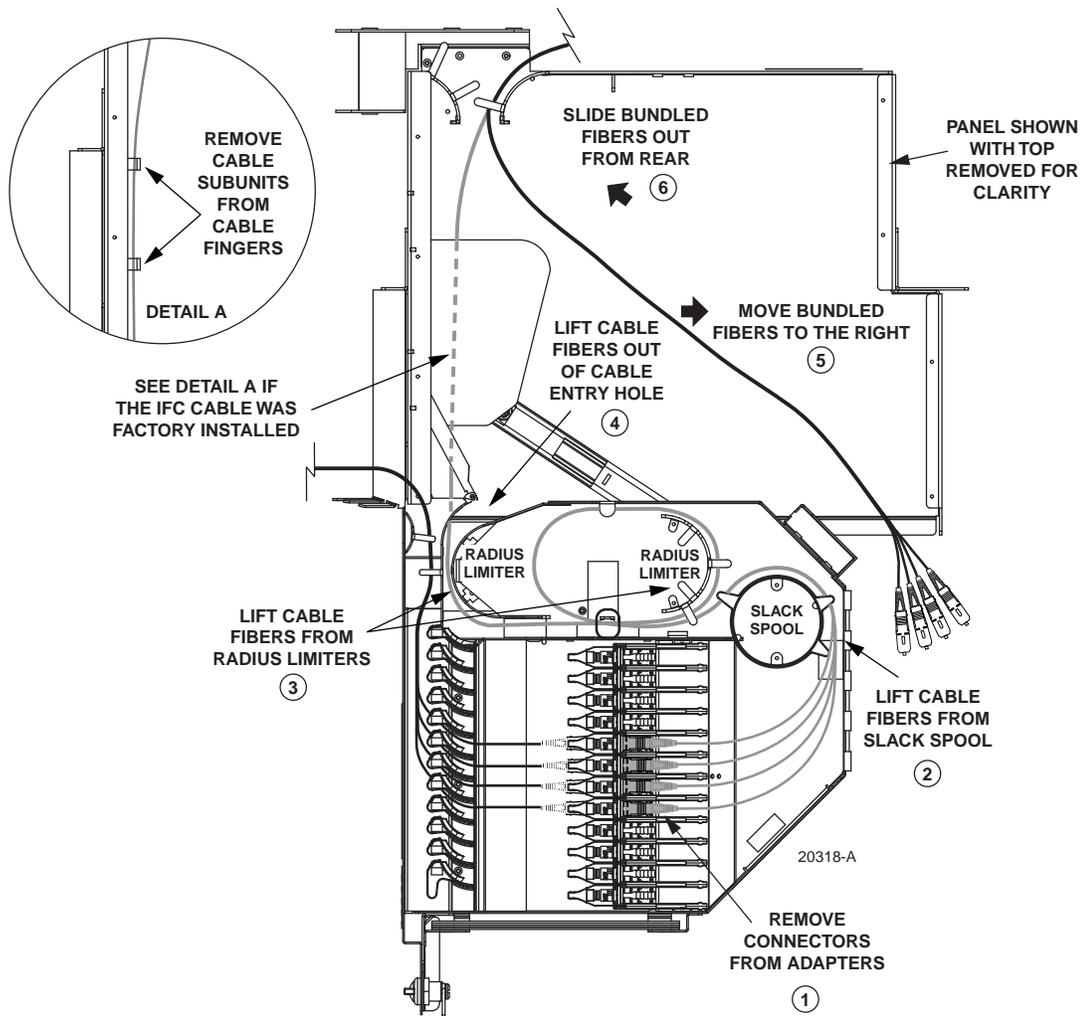


Figure 71. Removing an IFC Cable From a Standard Termination Panel

1. Verify that the cable being removed has no active circuits. If it does, inactivate the circuits before proceeding.
2. Open the panel as described in [Subsection 3.2](#).
3. Locate and access the adapter packs (see [Subsection 7.1](#)) one at a time, removing all the cable connectors from the adapters. As each connector is disconnected, immediately cover the exposed adapter with a dust cover.
4. Unlatch the O-ring in the cable retention area.
5. Bundle together the connectors and lift the cable fibers from the slack spool and radius limiters within the hinged drawer.
6. Lift the cable fibers out of the cable entry hole (left rear side of the drawer) and move the bundled fibers to the right along the top rear edge of the drawer to the opening on the right between the drawer and the panel chassis.
7. Place the cable bundle just inside the panel chassis and close top cover of hinged drawer.
8. Go to the rear of the panel and slide the bundled connectors out of the panel through the opening on the right rear side.
- ▶ **Note:** If the IFC cable was factory installed, you will need to release the cable fibers from the cable fingers on the interior right side of the chassis.
9. Disassemble the cable clamp to release the cable from the clamp. Set aside the cable clamp components for use with the replacement cable, if any.
10. Trace the cable back along the frame, removing any wax lacing securing the cable to cable tie bars. If other cables are secured by the same lacing and no other cable is being installed at this time, secure the remaining using wax lacing.
11. Remove the cable completely from the frame and any external support. Set the cable aside for removal from the building.
12. Install a new cable following the cable installation procedure (see [Section 4](#)).

8.2 Removing a Patch Cord – All Panel Types

Use the following procedure to remove a patch cord:

1. Open the panel as described in [Subsection 3.2](#).
2. Locate and access the adapter pack as described in [Subsection 7.1](#).
3. Carefully disconnect the patch cord connector from the adapter and immediately cover the adapter with a dust cover.
4. Carefully trace back the patch cord along its route, extricating it from other patch cords. Be careful not to bend or damage other patch cords.

8.3 Replacing an Adapter – All Panels Except MicroVAM Chassis

If an individual adapter becomes damaged or contaminated, it can be replaced. Any connectors connected to the adapter must first be removed. The adapter can then be released from the adapter pack. Use the following procedure to replace an adapter:

1. Open the panel as described in [Subsection 3.2](#).



Caution: *Placing a load in excess of 20 pounds onto an open drawer will result in misalignment or damage to the drawer.*

2. Verify that the optical fibers that you are about to disconnect are not carrying an active signal. Inactivate the signal before proceeding.



Danger: *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical adapters of the adapter packs. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood **MUST** be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

3. Locate and access the adapter pack as described in [Subsection 7.1](#) and as shown in [Figure 72](#).

► **Note:** The photographs used in this procedure show an early version of the Standard Termination Panel. However, the adapter replacement instructions also apply to current versions of the Standard Termination Panel and the termination/splice panel.



Figure 72. Accessing Adapter Pack

4. Remove the front side connector from the adapter pack and immediately cover it with a dust cap as shown in [Figure 73](#). Set aside the front side connector.

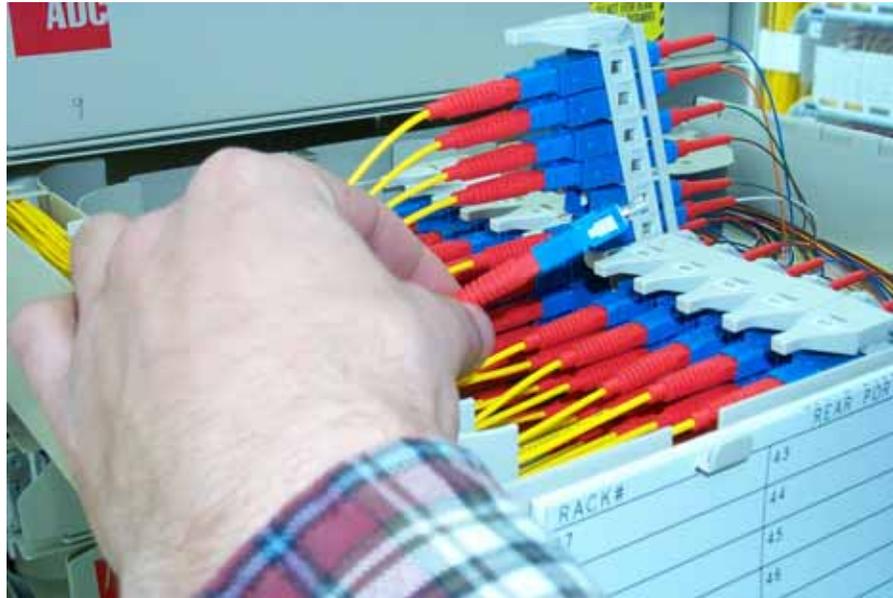


Figure 73. Removing Front Side Connector

5. Remove the rear side connector and immediately cover it with a dust cap as shown in [Figure 74](#). Set aside the rear side connector.

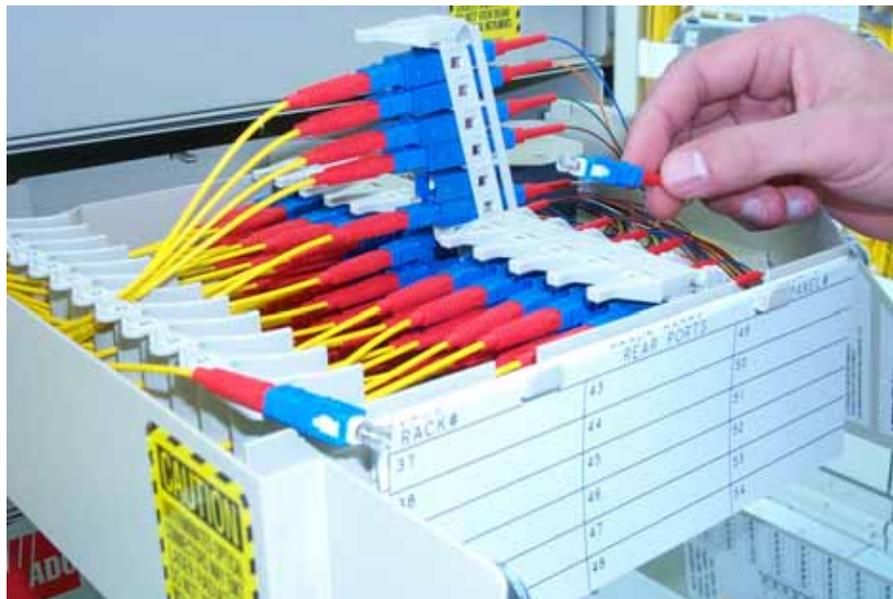


Figure 74. Removing Rear Side Connector

- Using a small flat screwdriver, press against the adapter spring clip in the location shown in [Figure 75](#). While pressing in the spring clip, push the adapter gently with your finger to prevent the spring clip from snapping back into position.

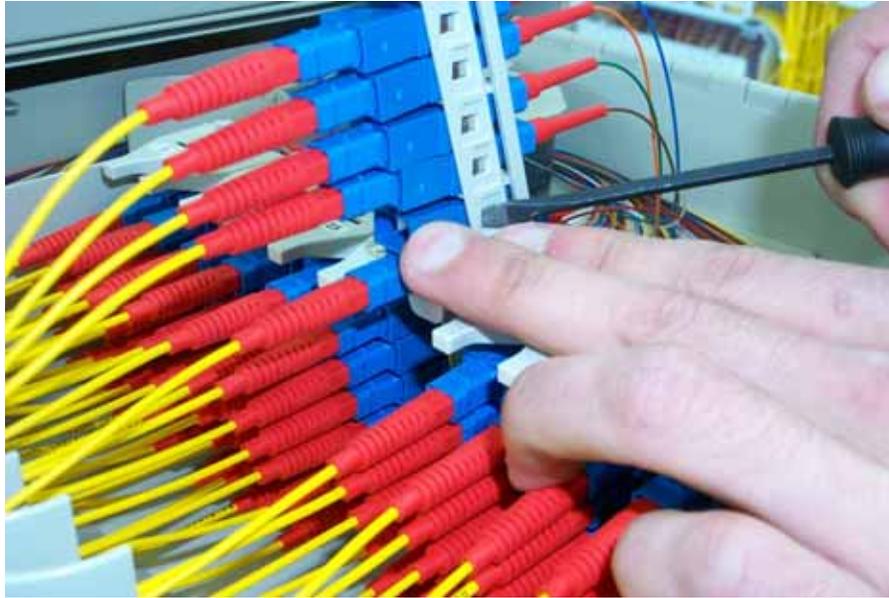


Figure 75. Pressing in Spring Clip on Adapter

- Using the small flat screw driver, press in the spring clip on the other side of the adapter as shown in [Figure 76](#). This will free the adapter from the adapter pack.

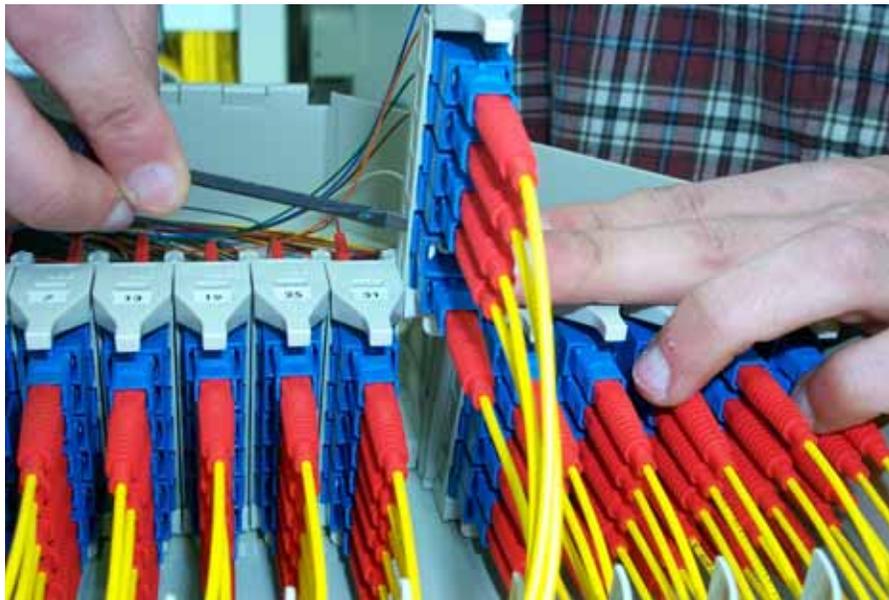


Figure 76. Pressing in Spring Clip on Other Side of Adapter

8. Remove the adapter fully from the adapter pack by gently sliding the adapter forward as shown in [Figure 77](#).



Figure 77. Removed Adapter

9. Position the new adapter for installation as shown in [Figure 78](#).

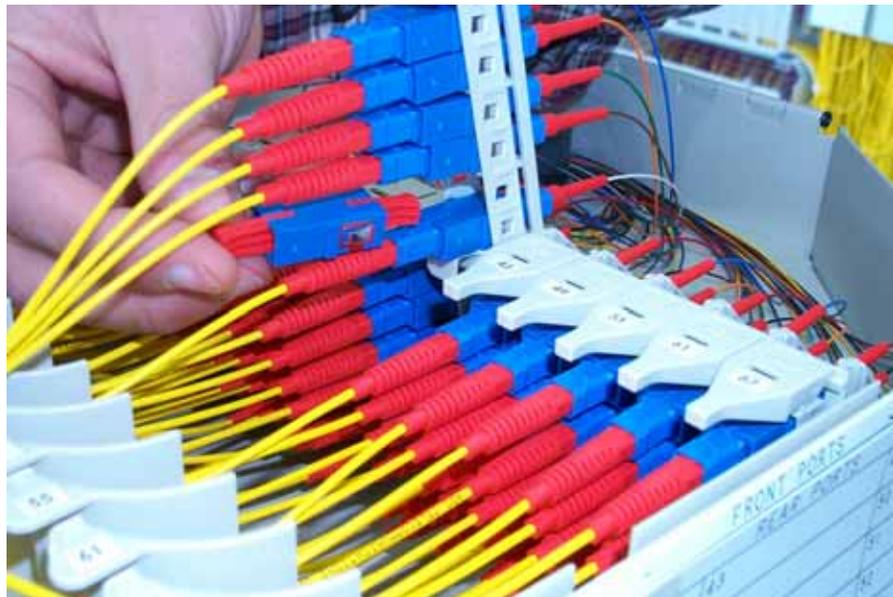


Figure 78. Positioning New Adapter for Installation

10. Slide the new adapter into the adapter pack until it clicks into place as shown in [Figure 79](#).



Figure 79. Installed New Adapter

11. Remove dust caps from new adapter and from the connectors previously set aside.
 - ▶ **Note:** Always clean and inspect connectors and adapters before mating them. For guidelines on cleaning connectors, refer to [Subsection 7.3](#).
12. Re-connect the connectors as shown in [Figure 80](#) and then slide down the adapter pack into the closed position. Close the panel when finished.



Figure 80. Reinstalled Connectors

8.4 Replacing an Adapter Pack – All Panels Except MicroVAM Chassis

All NG3 termination panels ship with the adapters loaded. Use the following procedure if it is necessary to remove and replace an adapter pack.

1. Open the panel as described in [Subsection 3.2](#).



Caution: *Placing a load in excess of 20 pounds onto an open drawer will result in misalignment or damage to the drawer.*

2. Locate and access the adapter pack as described in [Subsection 7.1](#) and as shown in [Figure 81](#).

► **Note:** The photographs used in this procedure show an early version of the Standard Termination Panel. However, the adapter replacement instructions also apply to current versions of the Standard Termination Panel and the termination/splice panel.



Figure 81. Accessing Adapter Pack

3. Verify that any optical fibers that may need to be disconnected are not carrying an active optical signal. Inactivate the signal before proceeding



Warning: *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical adapters or connectors. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood **MUST** be immediately placed over any radiating adapter or optical connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

4. Remove each front side connector from the adapter pack adapter and immediately cover with a dust cap as shown in [Figure 82](#). Label and then set aside.

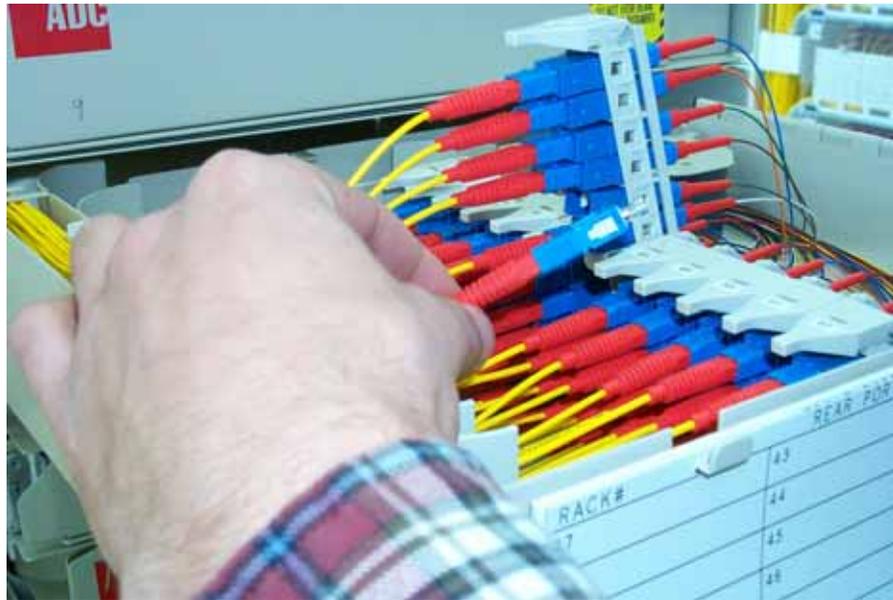


Figure 82. Removing Front Side Connectors

5. Remove each rear side connector from the adapter pack adapter and immediately cover with a dust cap as shown in [Figure 83](#). Label and then set aside.

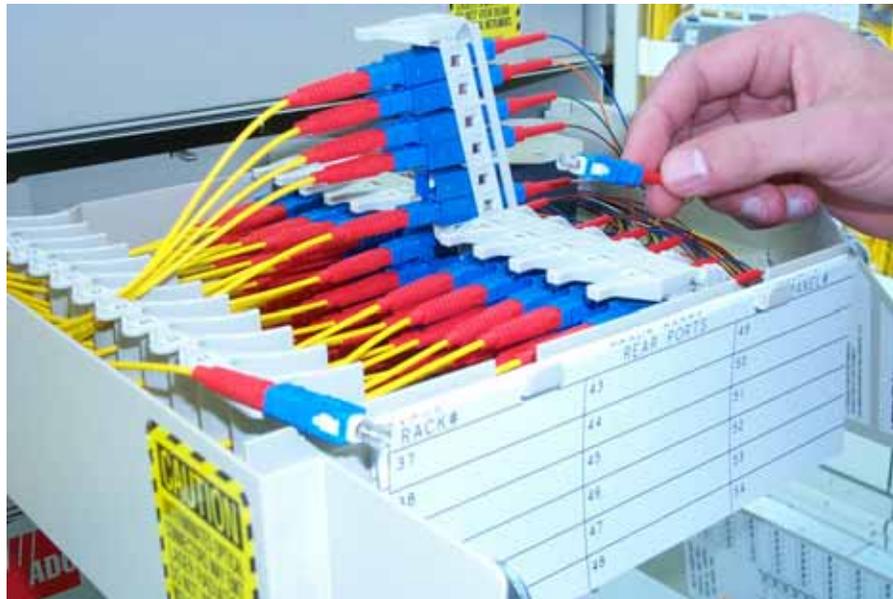


Figure 83. Removing Rear Side Connectors

6. From the front, pull outward on the tab located underneath the adapter pack assembly while at the same time pulling upward on the adapter pack as shown in [Figure 84](#).

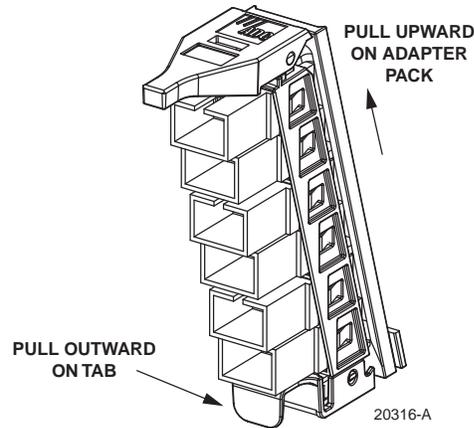


Figure 84. Removing Adapter Pack

7. When the adapter pack releases, pull it free of the mounting slot.
 8. Align the replacement adapter pack with the opening in the mounting slot and slide it down until it clicks into the access position.
 9. Remove the dust caps from the adapters on the replacement adapter pack and from the connectors previously set aside.
- **Note:** Always clean and inspect connectors and adapters before mating them. For guidelines on cleaning connectors, refer to [Subsection 7.3](#).
10. Re-connect the connectors as shown in [Figure 85](#) and then slide down the adapter pack into the closed position. Close the panel when finished.



Figure 85. Reinstalled Connectors

8.5 Replacing a MicroVAM Module

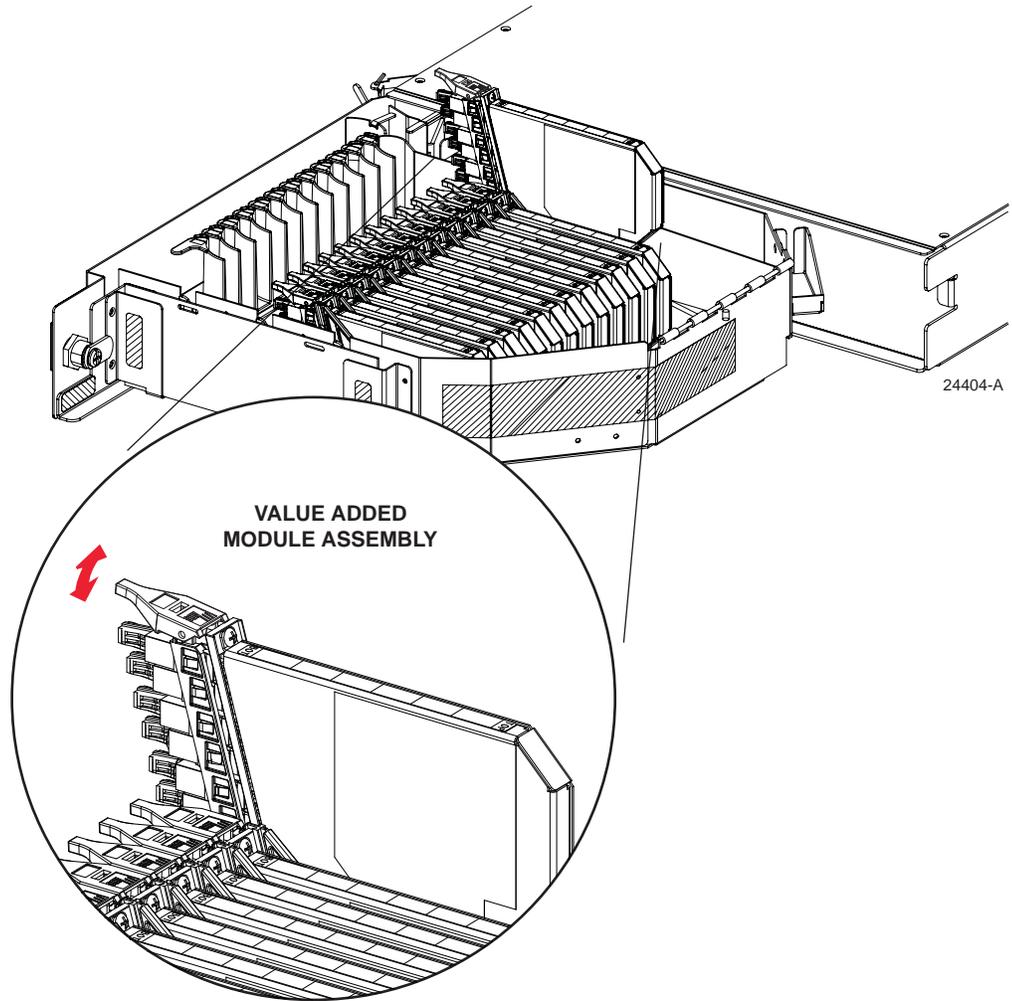
Use the following procedure if it is necessary to remove and replace a MicroVAM module:

1. Open the MicroVAM Chassis as described in [Subsection 3.2](#).

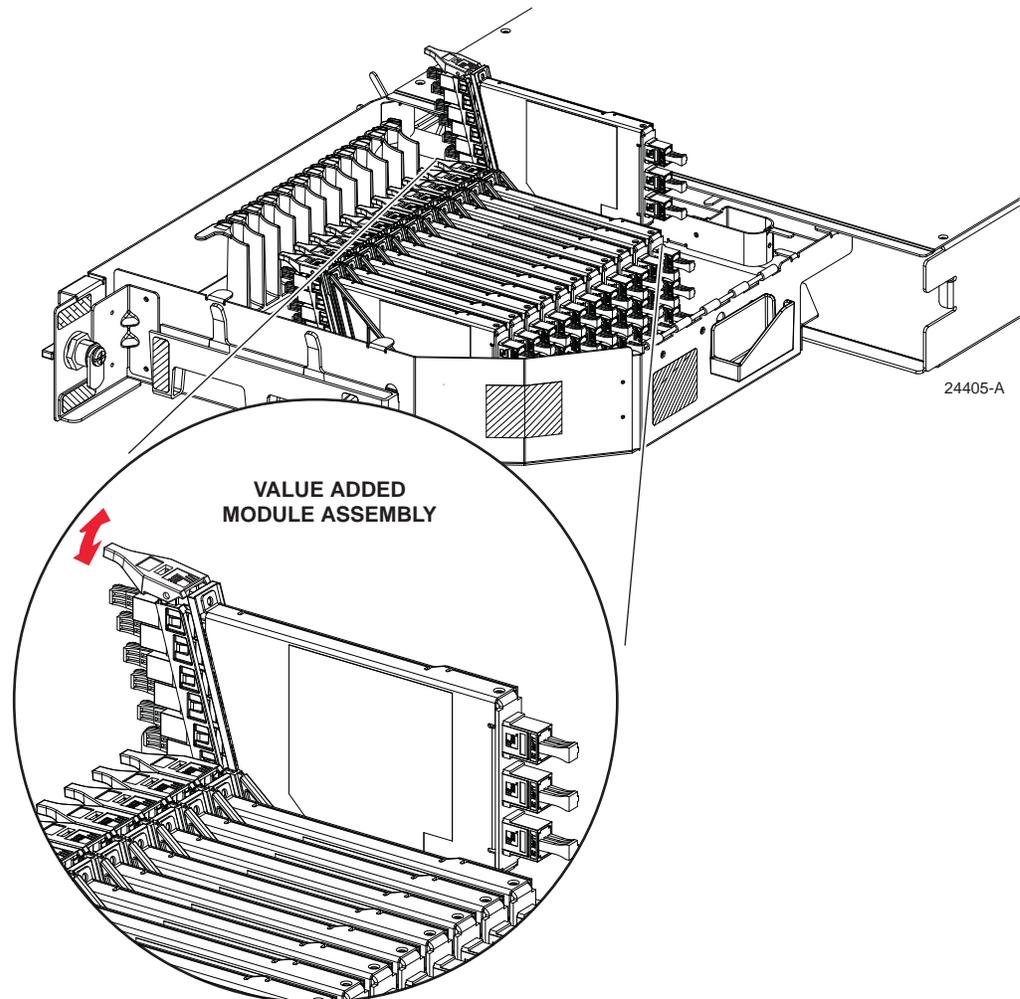


Caution: *Placing a load in excess of 20 pounds onto an open drawer will result in misalignment or damage to the drawer.*

2. Lift up the small tab on top of the MicroVAM module and lift up the module into the position shown in [Figure 86](#) and [Figure 87](#).



**Figure 86. Replacing MicroVAM Module
(13-Slot Chassis Shown)**



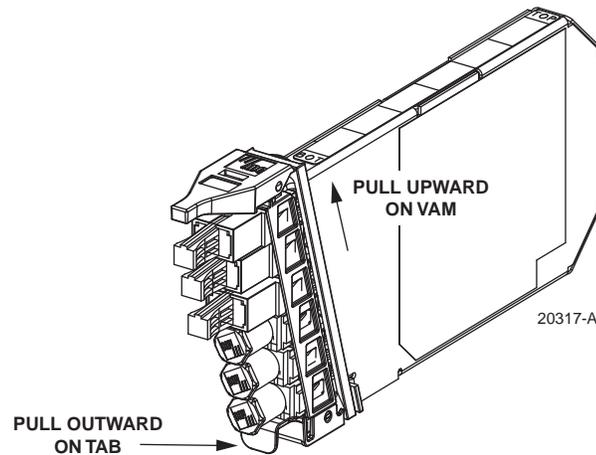
**Figure 87. Replacing MicroVAM Module
(12-Slot Chassis Shown)**

3. Verify that any optical fibers that may need to be disconnected are not carrying an active optical signal. Inactivate the signal before proceeding.



Warning: *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical adapters or connectors. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood MUST be immediately placed over any radiating adapter or optical connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

4. Remove each patch cord connector from the VAM adapter and then immediately cover the exposed connector with a dust cap. Label and then set aside.
5. From the front, pull outward on the tab located underneath the VAM assembly while at the same time pulling upward on the VAM as shown in [Figure 88](#).



**Figure 88. Removing MicroVAM Module
(Module With Front Adapters Only)**

6. When the MicroVAM module releases, pull it free of the mounting slot.
 7. Align the replacement MicroVAM module with the opening in the mounting slot and slide it down until it clicks into the access position.
 8. Remove the dust caps from the adapters on the replacement MicroVAM module and from the patch cord connectors previously set aside.
- **Note:** Always clean and inspect connectors and adapters before mating them. For guidelines on cleaning connectors, refer to [Subsection 7.3](#).
9. Re-connect the patch cord connectors to the MicroVAM module adapters and then slide down the MicroVAM module into the closed position. Close the panel when finished.

9 TECHNICAL ASSISTANCE

Contact the Technical Assistance Center (TAC) for technical question. Call 800.830.5056 or send an email to TAC.Americas@commscope.com.

