



7-Inch Fiber Distribution System Splice Module User Manual

Content	Page
INTRODUCTION	1
Revision History	1
List of Changes	2
Trademark Information	2
Related Publications	2
Admonishments	2
1. GENERAL	3
2. FIBER DISTRIBUTION SYSTEM SPLICE MODULE	3
3. FDS ACCESSORIES	3
4. DESCRIPTION	5
A. Chassis	6
B. Front and Rear Covers	6
C. Splice Drawers	7
5. INSTALLATION	7
A. Unpack	7
B. Chassis Installation	7
C. Cable Routing	9
D. Fiber Storage	12
E. Pigtails	12
6. SPLICING	13
7. SYSTEM INTEGRATION SERVICES	14
8. CUSTOMER SUPPORT SERVICES	15

INTRODUCTION

This manual describes the ADC 7-Inch Fiber Distribution System (FDS) Splice Module. The Splice Module provides splicing and storage capabilities for the 7-Inch FDS. It contains physical and functional descriptions, installation, and operation information, and is intended for persons involved in installing and maintaining the fiber distribution system. The user of this manual must have a basic understanding of fiber optic terminology and concepts.

Revision History

ISSUE	DATE	REASON FOR CHANGE
Issue 1	02/94	Original
Issue 2	01/98	Update to reflect product changes and reformat to current standards.

List of Changes

PAGE	IDENTIFIER	DESCRIPTION OF CHANGE
All pages	–	Reformat to current standards with editorial and technical changes.

Trademark Information

The following trademarks are documented in this manual:

FibrLok is a trademark of 3M

Lucent is a registered trademark of Lucent Technologies, Inc.

Related Publications

Listed below are related manuals and their publication numbers. Copies of these publications can be ordered by contacting the ADC Technical Assistance Center at 1-800-366-3891 (in U.S.A. or Canada) or 612-946-3000, extension 3475 (outside U.S.A. and Canada).

Title	ADCP Number
7-Inch Fiber Distribution System Application Guide and User Manual	ADCP-90-198
7-Inch Fiber Distribution System Equipment Rack Installation Instructions	ADCP-90-193

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.*

1. GENERAL

1.01 The ADC 7-Inch Fiber Distribution System (FDS) (Figure 1) provides the termination, splicing, and storage requirements of a large fiber optic cable system. The splice module is compatible with the 7-Inch FDS or it can be used with or as a replacement for the Lucent LGX splice modules.

1.02 The FDS is modular in design so that additional capacity and functions can be added as the system requirements change. A 7-Inch FDS consists of these major components.

- FDS Frame
- FDS Splice Module
- FDS Connector Module (72 terminations)
- Accessories including vertical cable guides

2. FIBER DISTRIBUTION SYSTEM SPLICE MODULE

2.01 The splice module permits splicing outside plant (OSP) or intrafacility fiber cable (IFC) fibers to each other or to pigtail assemblies. The module provides a protective enclosure for mounting splices and for coiling the service loop required in the splicing process.

2.02 The splice module can be used as a direct replacement for the LGX splice module and can be installed in the same frame.

3. FDS ACCESSORIES

3.01 Optional Interbay Management Panels (IMPs) are available for installation between frames. The panels provide storage for patch cords between frames. Other accessories such as connector adapters, connector retainers, blank panels, and outside plant and intrafacility fiber cable clamp kits are available to complete the installation.

3.02 Optional vertical cable guides can be attached at each side of the chassis (see Figure 2), unless the splice module is installed in an ADC equipment frame which includes guides. The cable guides form a vertical pathway and provide protection and organization for patch cords. Four vertical cable guide styles are available. Their use is determined by frame spacing and whether they are used with the 7-Inch FDS or LGX frames. Choose one of the vertical cable guides that match what is installed on the other FDS equipment in the rack:

- 2-inch/2-finger design - Used with LGX modules only, when no rack spacing is used and a retrofit IMP panel is installed.
- 2-inch/2-finger design – Used with 7-Inch FDS modules when no rack spacing is used and a retrofit IMP is installed.
- 4-inch/7-finger design – Used with 7-inch FDS modules when no rack spacing is used and an IMP is not installed, or when racks are spaced five inches apart and an IMP is used.
- Rear vertical cable guide – Used in a cross-connect application, to organize and route fiber optic terminal (FOT) equipment patch cords to the rear of the module.

3.03 Splice trays are available in nine configurations which provide splice chips to support individual splices. See **Table 1** for catalog numbers.

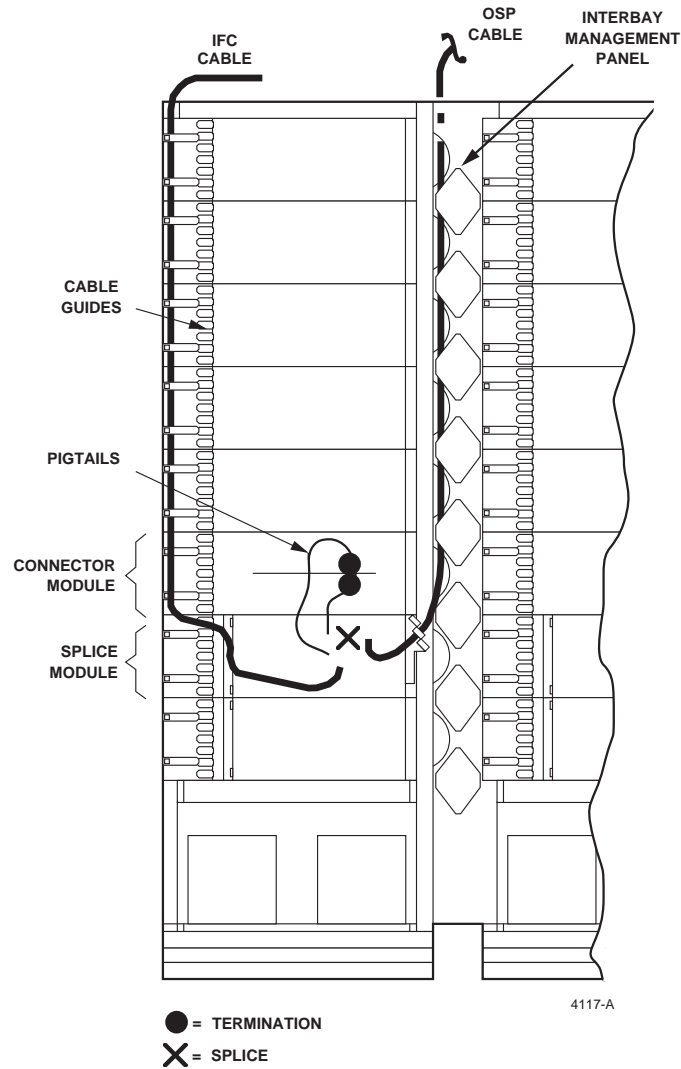


Figure 1. 7-Inch FDS

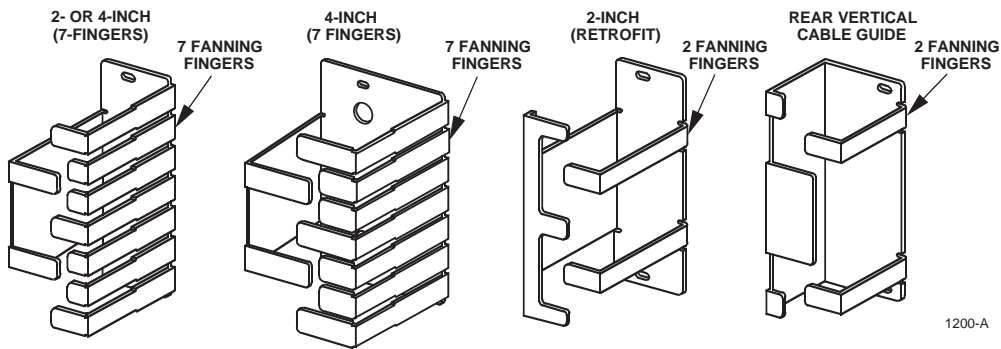


Figure 2. Optional Vertical Cable Guides

4. DESCRIPTION

4.01 The splice module requires a 7-inch (17.8 cm) mounting space within the frame. Major components of the splice module are shown in **Figure 3** and are described in the following paragraphs. Specifications for the module are listed in **Table 1**.

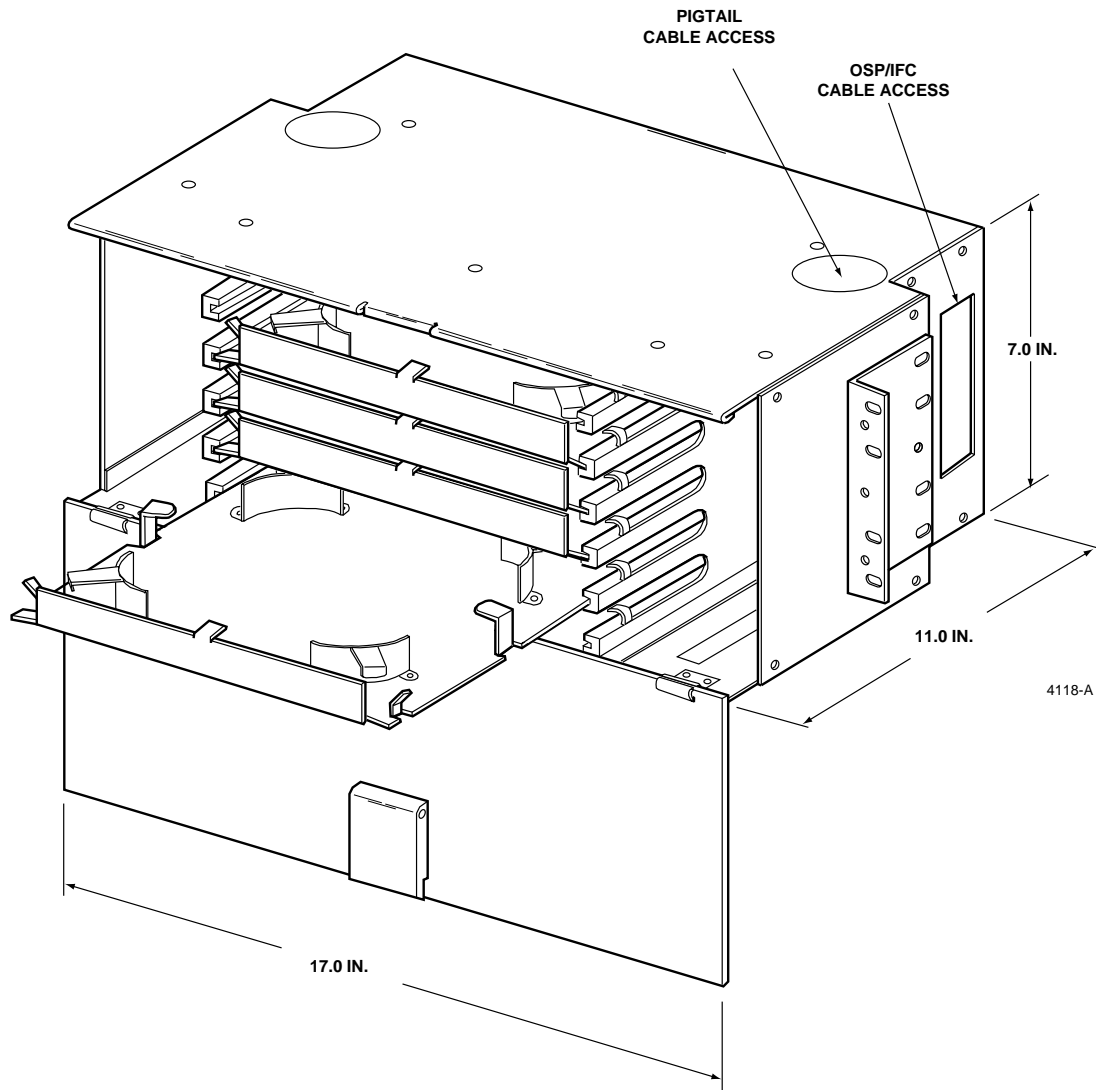


Figure 3. 7-Inch FDS Splice Module Components and Dimensions

Table 1. Splice Module Specifications

FEATURE	SPECIFICATION
Dimensions Height Width Depth Mounting	7 in. (17.78 cm) 17 in. (43.18 cm) 11 in. (27.94 cm) 19-inch or 23-inch rack
Splice Details Splice Drawers Splice Trays <u>Catalog Number:</u> FST-F3DF-FT FST-F3DF-HS FST-F3DF-MT FST-F3DF-RT FST-F3DF-3M FST-F3DF-NT FST-F3DF-RC FST-F3DF-HS18 FST-F3DF-HSAC Splice Capacity	6 12 (One or two splice trays per drawer) <u>Splice Chip Type:</u> Bare Fusion Heat Shrink Fusion Mechanical (Elastomeric) Rotary FibrLok Qpak Raychem Heat Shrink Fusion (18 splices) AOFR Clip 144 splices (12 splices per splice tray)*
Cable Clamp Kits IFC/OSP Cable Clamp FL2-ACC007	Outside diameter 0.5-0.8 in. (13-20 mm)

* Except where otherwise noted.

A. Chassis

4.02 The splice module chassis is constructed of heavy gauge aluminum and has a baked powder paint finish. The module is compatible with the 7-inch FDS connector module. Cable access holes at the left and right side of both modules provide IFC or OSP cable fiber access. Fiber access holes in the top and bottom of both modules permit protected routing of pigtails to a connector module mounted either above or below the splice module.

B. Front and Rear Covers

4.03 A transparent front cover, hinged at the bottom, protects the fibers and pigtails from normal activity near the module. The circuit designation labels provided are to be attached to the front of each splice drawer. Circuit identification can be written on labels and attached to the designation cards. The front cover can be removed for convenience and protection during installation or other activity. The metal rear cover is hinged at the bottom and is removable. The removable cover provides access to the interior of the chassis for fiber activity.

C. Splice Drawers

4.04 The splice module contains up to six splice drawers. Each splice drawer can handle two ADC splice trays. Each ADC splice tray can handle 12 Fusion, heat shrink, mechanical (elastomeric), rotary, FibrLok, Qpak, AOFR clip, or Raychem splices using the appropriate splice chips. The FST-F3DF-HS18 splice tray can handle 18 heat shrink splices. Individual catalog numbers are shown in [Table 1](#).

5. INSTALLATION

5.01 This section describes how to install the splice module in the 7-Inch FDS or LGX frame. The sequence of procedures is as follows:

- Unpack and inspect
- Chassis installation
- Cable routing and termination
- Fiber storage and splicing

A. Unpack

5.02 Unpack and inspect the various components as follows:

1. Inspect the exterior of the shipping container(s) for evidence of rough handling that may have damaged the components in the container.
2. Unpack each container while carefully checking the contents for damage.
3. If damage is detected or if parts are missing, file a claim with the commercial carrier and notify ADC Customer Service. Save damaged cartons for inspection by the carrier.
4. Refer to the Customer Service section at the back of this instruction sheet for repair, replacement, and warranty information.
5. Save all shipping containers for use if the equipment requires shipment at a future date.

B. Chassis Installation

5.03 This procedure describes how to install the standard 7-inch FDS splice module in either an ADC supplied frame or an LGX frame.

1. Release the latch on the front cover and open it about 2 inches (5 cm).
2. Lift the front cover from the hinges and place it where it will not be scratched or damaged.
3. The splice module brackets are installed for a 19-inch equipment rack. If a 23-inch equipment rack is being used, remove the brackets and install them with the short bracket side against the splice module side as shown in [Figure 4](#).

► **Note:** If a vertical cable guide is installed on the frame, it must be removed before installing the splice module.

4. If applicable, remove the vertical cable guide from each side of the frame position in which the splice module is being installed.
5. Place the splice module in its assigned position in the frame.
6. Insert two #12-24 screws supplied through the mounting bracket at each side of the chassis and in the frame as shown in **Figure 4**.
7. Install optional vertical cable guides or reinstall the removed guides (see **Figure 5**).
8. Re-attach the front cover.

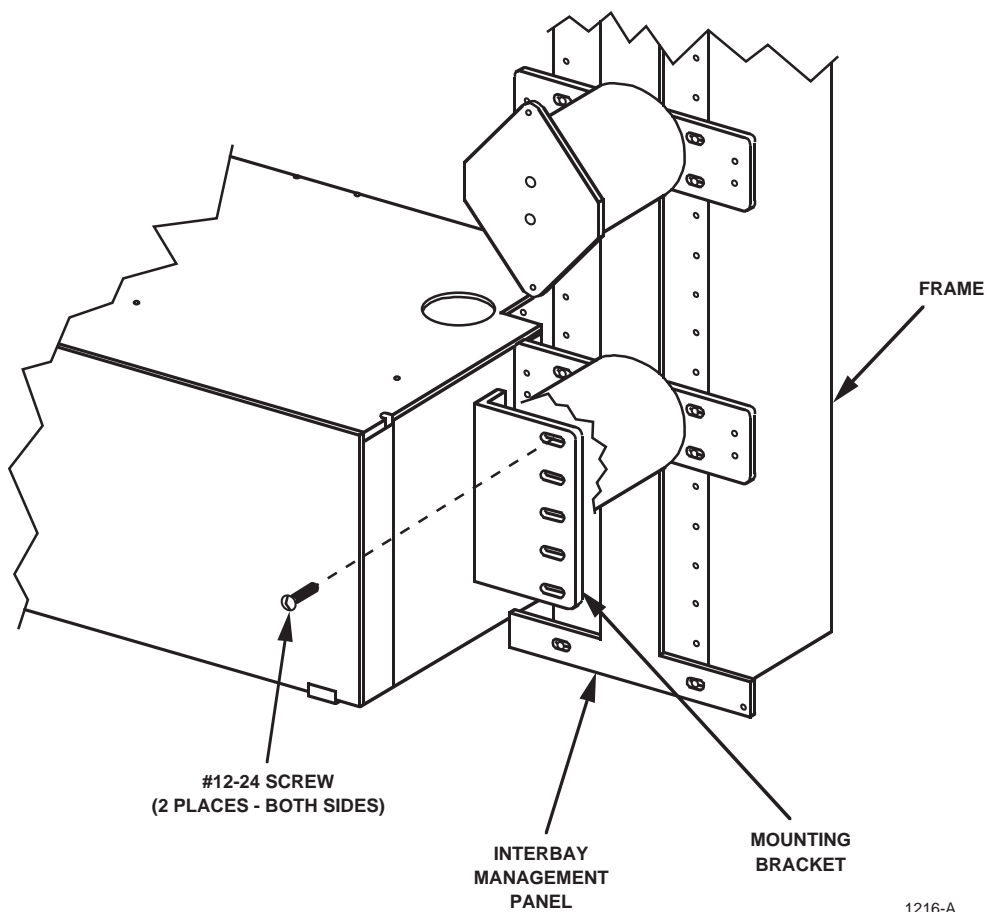
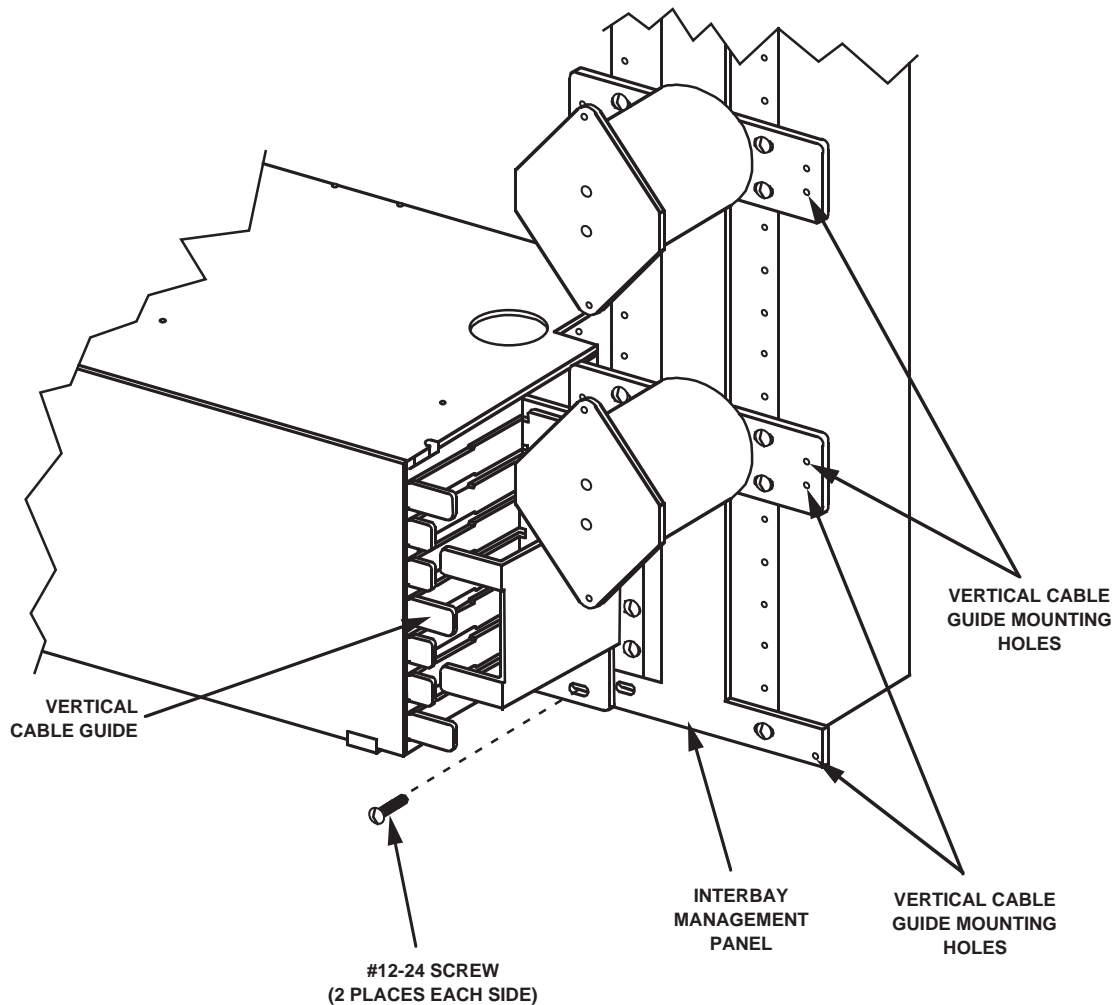


Figure 4. Splice Module Installation in an Equipment Rack



1217-A

Figure 5. Vertical Cable Guide Installation in an Equipment Rack

C. Cable Routing

5.04 Cable installation is performed from the rear side of the splice module. The OSP or IFC cables are routed to the back of the module chassis from either above or below the module. The pigtails are routed to the connector module through the fiber access holes in the top and bottom of the chassis.

5.05 Prior to splicing, all cables (OSP and IFC) are routed to and secured to the side of the splice module using a cable clamp kit. A total of eight cable clamp positions are available at both sides of the chassis. To avoid congestion, OSP and IFC cables should be installed on opposite sides of the module. Cables should be clamped as close as possible to the splice module to which the fibers will be routed to reduce the length of cable sheath that needs to be stripped and cleaned.



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 launching (output) end of an active fiber. A clean, protective cap or hood MUST be immediately placed over any radiating bulkhead receptacle or optical fiber connector to avoid exposure to potentially dangerous amounts of radiation. This practice also helps prevent contamination of connectors and adapters.*

5.06 Strip the outer sheath of the cable to expose the inner fiber bundles. Clean the cable core as necessary per local practice. The cable sheath must extend about 0.75 inches (1.9 cm) beyond the cable clamp. The service loop length shown in **Figure 6** includes approximately 30 inches (76.2 cm) of fiber within the splice tray for splicing. If buffer tubes or fiber protector sleeves are needed add them at this time.

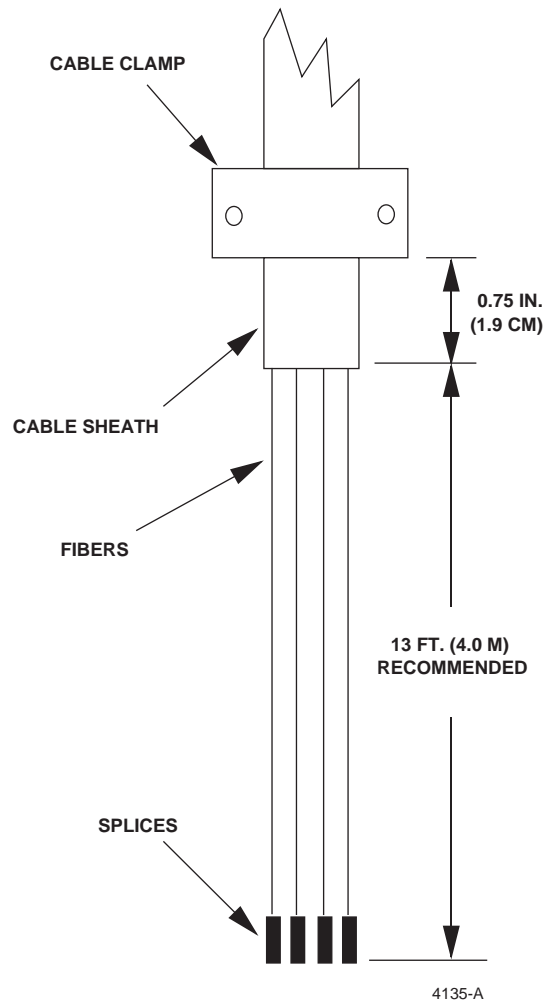


Figure 6. Sheath Opening for OSP/IFC Cables

5.07 One cable clamp kit is currently available. The OSP cable clamp kit accommodates cables with outside diameters that range from 0.5 to 0.8 inches (13-20 mm).

5.08 Select a grommet that when placed around the cable, has a gap of nearly 0 to 0.30 inches (0 - 8 mm). The grommet is not required if the cable diameter is between 0.7 inch and 0.8 inches (1.78 cm and 2.03 cm).

5.09 Assemble the cable clamp components as shown in **Figure 7** and attach to the side of the chassis (see **Figure 3**). If the cable is routed to the chassis from above, install the cable clamp in the upper part of the chassis. If the cable is routed to the chassis from below, install the cable clamp in the lower part of the chassis.

5.10 Some outside plant cables are constructed with a metallic strength member or a metallic inner sheath. Since OSP cables are exposed to electrical hazards, all metallic member OSP cables must be bonded to ground. Follow local practice using an approved sheath grounding kit connected to the #6 framework ground lead.

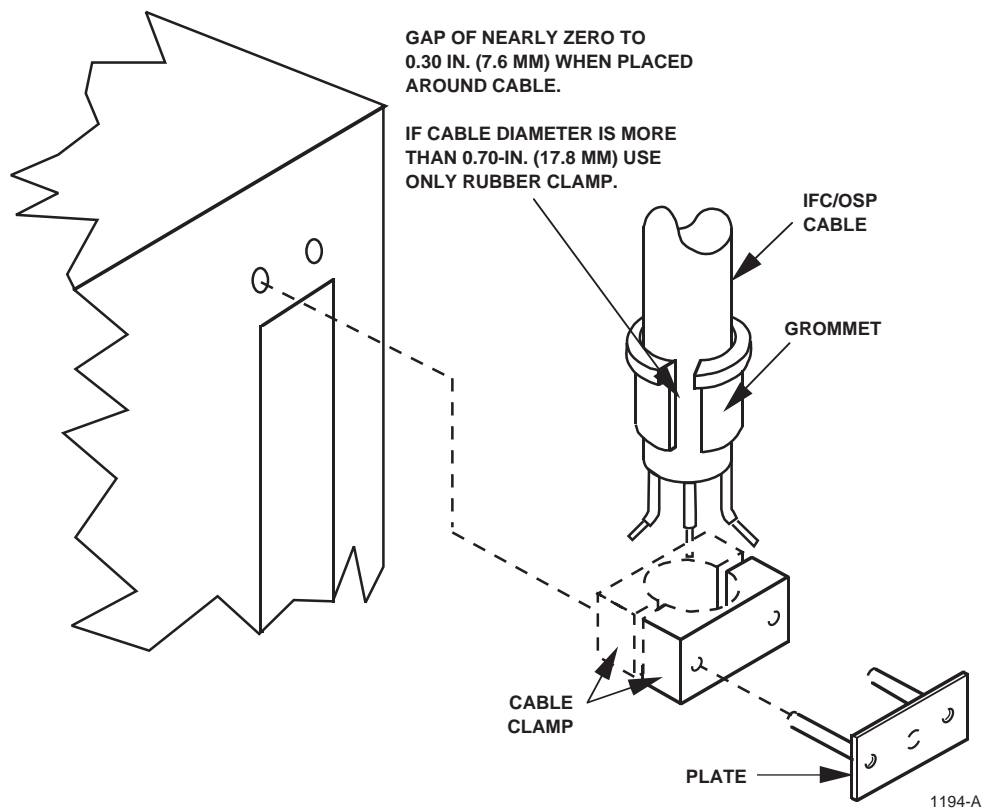


Figure 7. Cable Clamp Assembly

D. Fiber Storage

5.11 Open the rear door about 2 inches (5 cm) and lift it from its hinges. Place the cover where it will not be scratched or damaged.

5.12 Route OSP/IFC fibers through a side access opening in the chassis to the assigned drawer of the splice module. Service loop should be stored in the assigned drawer per **Figure 8**. Make sure to route fibers through the retaining ring in the back of the drawer. Passing the fibers through the retaining ring is required for the first pass only. The fiber bundles (service loop) should make three and one-half passes around the radius limiters and then be routed such that the end of the braided sleeve or protective sleeve occurs at a point between the two side radius limiters, noted as position “A” in **Figure 8**, and just onto the splice tray. Coil the fiber bundles around the four radius limiters, either counter-clockwise if entering the splice drawer from the right, or clockwise if entering the splice drawer from the left.

E. Pigtails

5.13 Individual fibers with a factory installed connector on one end should be bundled together in groups (usually 12) and protected by a braided sleeve or loose tubing, and routed from the FDS connector module to the splice module splice drawer through fiber pass-through holes at the top or bottom of the module, depending on the location of the FDS connector module.

5.14 Because the pigtails and IFC/OSP fiber bundles must form a single service loop to enter the splice tray, both bundles must enter the splice module from the same side (either left or right side).

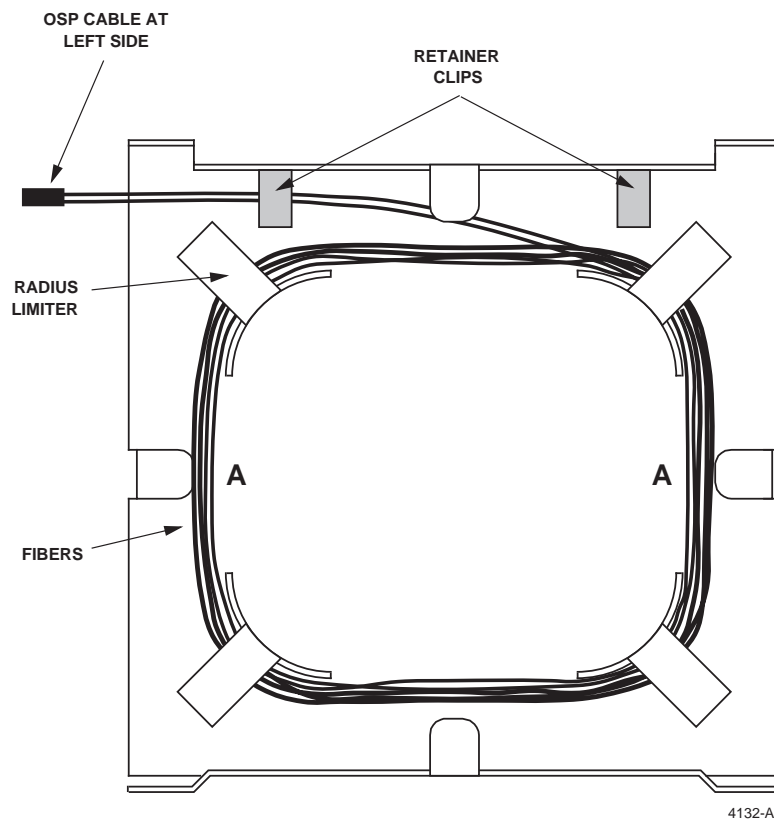


Figure 8. Fiber Routing in Splice Module

6. SPLICING

6.01 The splice module accommodates most splicing methods which should be performed in accordance with local practices. The splice tray splice chip should be selected to match the local splice method.

6.02 Open the drawer and remove the splice tray while carefully uncoiling the service loop.

6.03 Secure the fiber bundles to the splice tray with tie wraps as shown in **Figure 9**. The tie wraps should secure the protective sleeve or jacket but must not pinch the fibers.

6.04 Route the fibers on the splice tray as shown in **Figure 9**. The routing in the splice tray is dependent on the fiber entry direction (either from the left or the right).

6.05 Splice using local practice.

6.06 When splicing is complete, snap the protective cover on the splice tray.

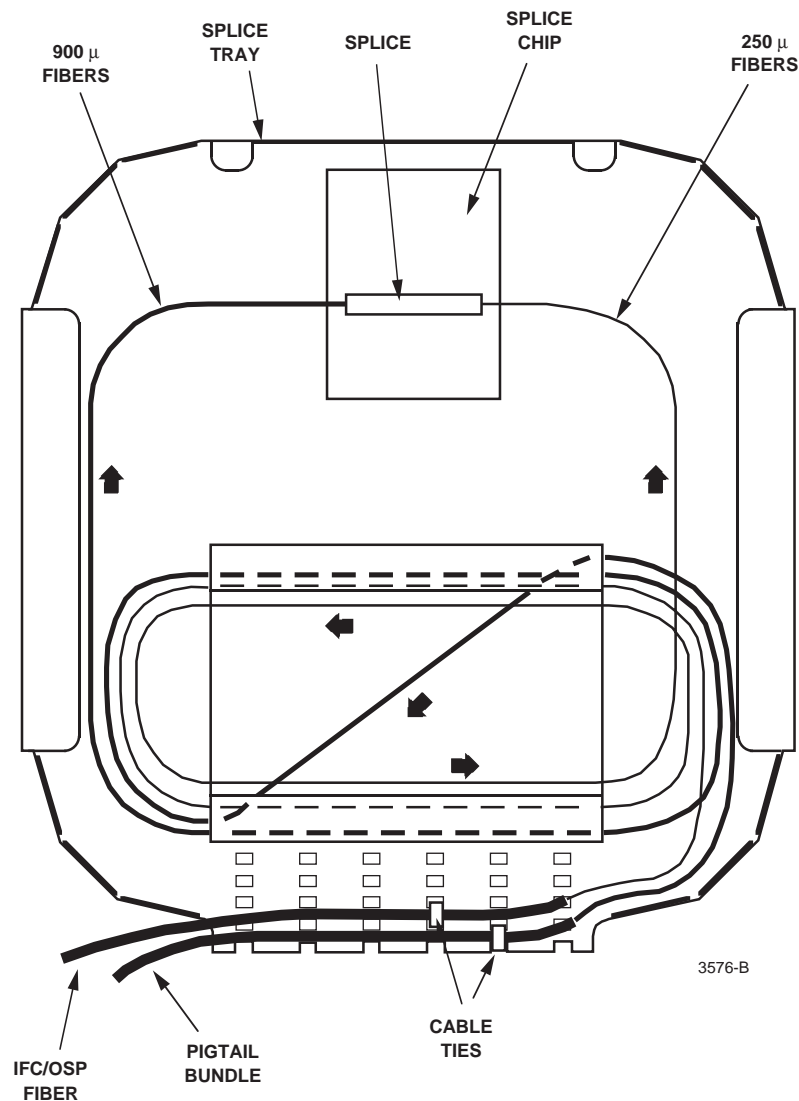


Figure 9. Fiber Routing in Splice Tray

- 6.07** Coil the service loop clockwise (if the fiber entry is from the right) or counter-clockwise (if the fiber entry is from the left), around the radius limiters in the splice drawer. Avoid twisting the service loop when coiling around the radius limiters.
- 6.08** Place the splice tray in the center of the drawer and push the drawer into the chassis.
- 6.09** Record the cable fiber identification on the designation label attached to the front cover.
- 6.10** Repeat steps 6.02 through 6.09 for additional splice trays as required.

7. SYSTEM INTEGRATION SERVICES

7.01 ADC offers the following system integration services. For calls originating in the U.S.A. or Canada, dial **1-800-366-3891, extension 3000**. For calls originating outside the U.S.A. or Canada, dial **612-946-3000**.

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- Project Administration
- Network Design
- Broadband Design (RF Design and Strand Mapping)
- Integration Network Testing
- Network Monitoring (Upstream or Downstream)
- Power Monitoring
- Remote Surveillance
- System Turn-Up and Test
- Service/Maintenance Agreements

Technical Training

- Product Technology
- Custom Designed Training

Technical Operations

- Detail Engineering
 - End-to-End Installation
 - Drafting Services
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8. CUSTOMER SUPPORT SERVICES

8.01 ADC offers the following customer support services. For calls originating in the U.S.A. or Canada, dial **1-800-366-3891**, then request the extension listed. For calls originating outside the U.S.A. or Canada, dial **612-946-3475** or **612-946-3000**.

BCG Technical Assistance Center Extension 3475 E-Mail: begtac@adc.com	<ul style="list-style-type: none">• Technical Information• System/Network Configuration• Product Specification• Product Application• Training• Installation and Operation Assistance• Troubleshooting and Repair• Field Assistance
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Product Return Department Extension 3000 E-Mail: repair&return@adc.com	<ul style="list-style-type: none">• ADC Return Authorization number and instructions must be obtained before returning products.

8.02 Product information and service can also be obtained by writing ADC Telecommunications, Inc., P.O. Box 1101, Minneapolis, Minnesota 55440-1101, U.S.A.

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