

Installation Guidelines – HELIAX® FiberFeed® Direct

Solution: 6x6, 6x12 Multimode Configurations

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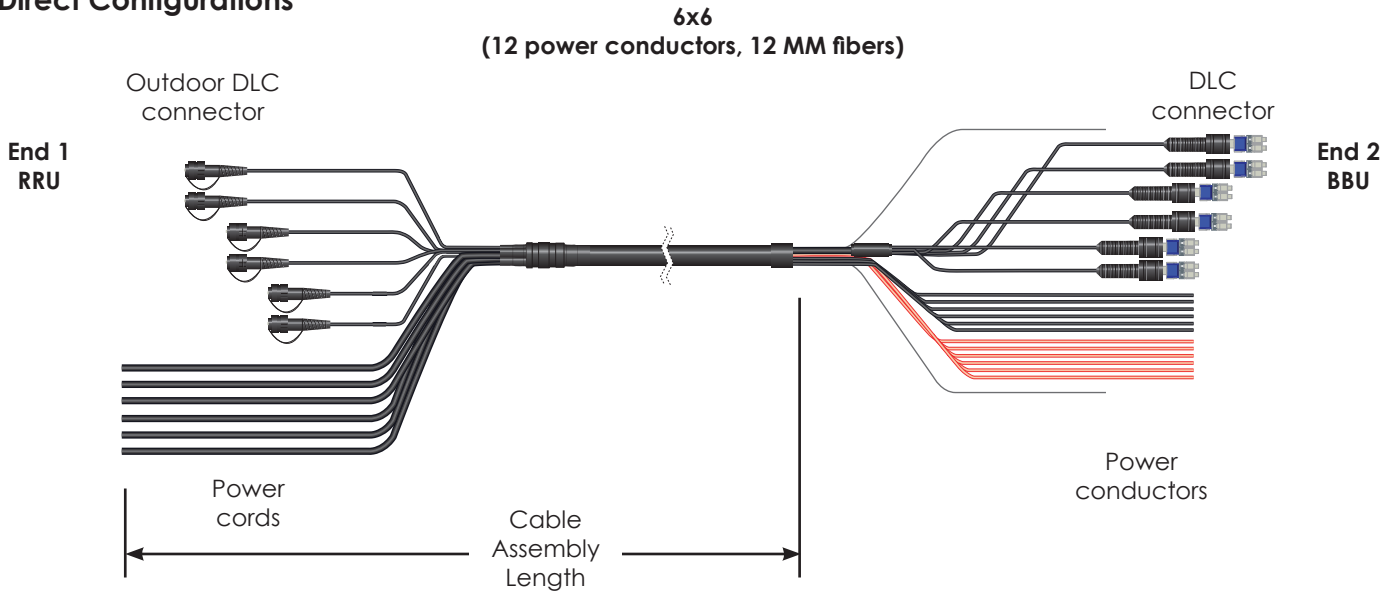


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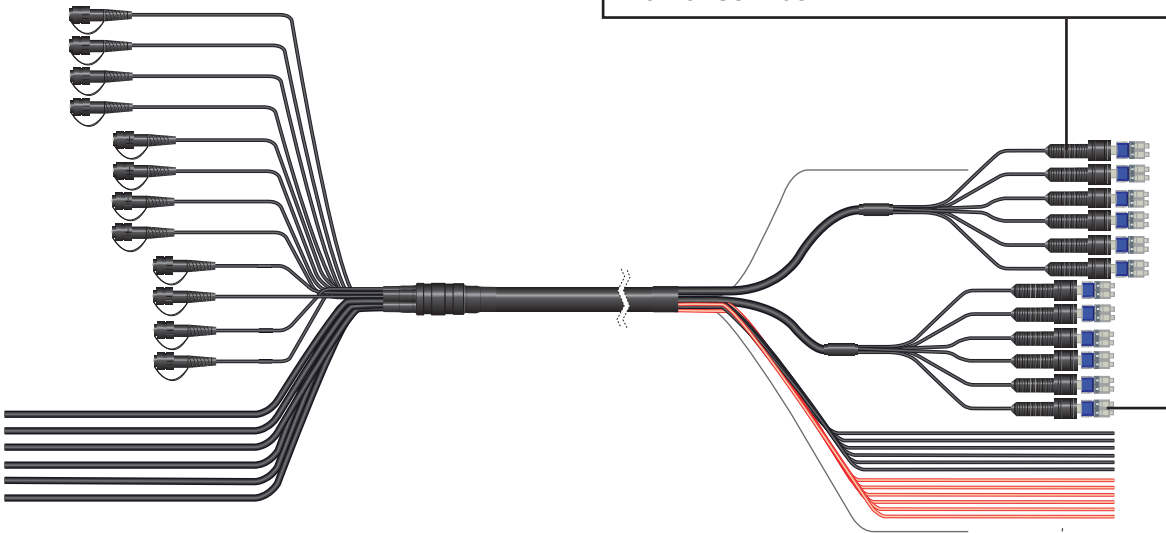
Direct Configurations



6x12
(12 power conductors, 24 MM fibers)

Boot Removal
If boot is not required for installation it can be removed by splitting back end with a pair of cutters and carefully slid over interface.

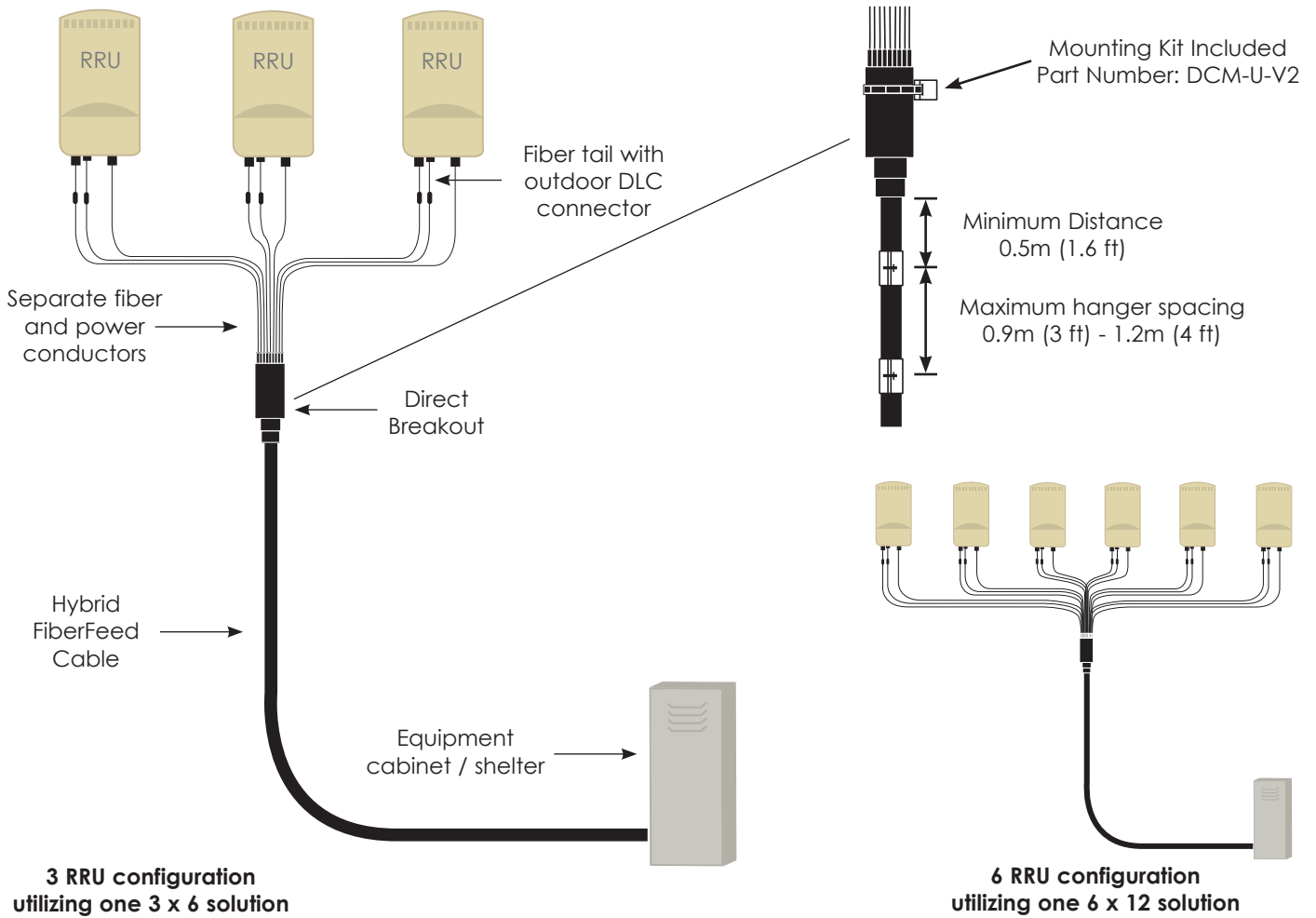
Do Not Cut Fiber



Flex angle connector
Bottom breakout connectors can be adjusted from straight to 90° by carefully bending the connector while supporting the back.

Do Not Bend Past 90°

HELIAX® FiberFeed® Direct Components



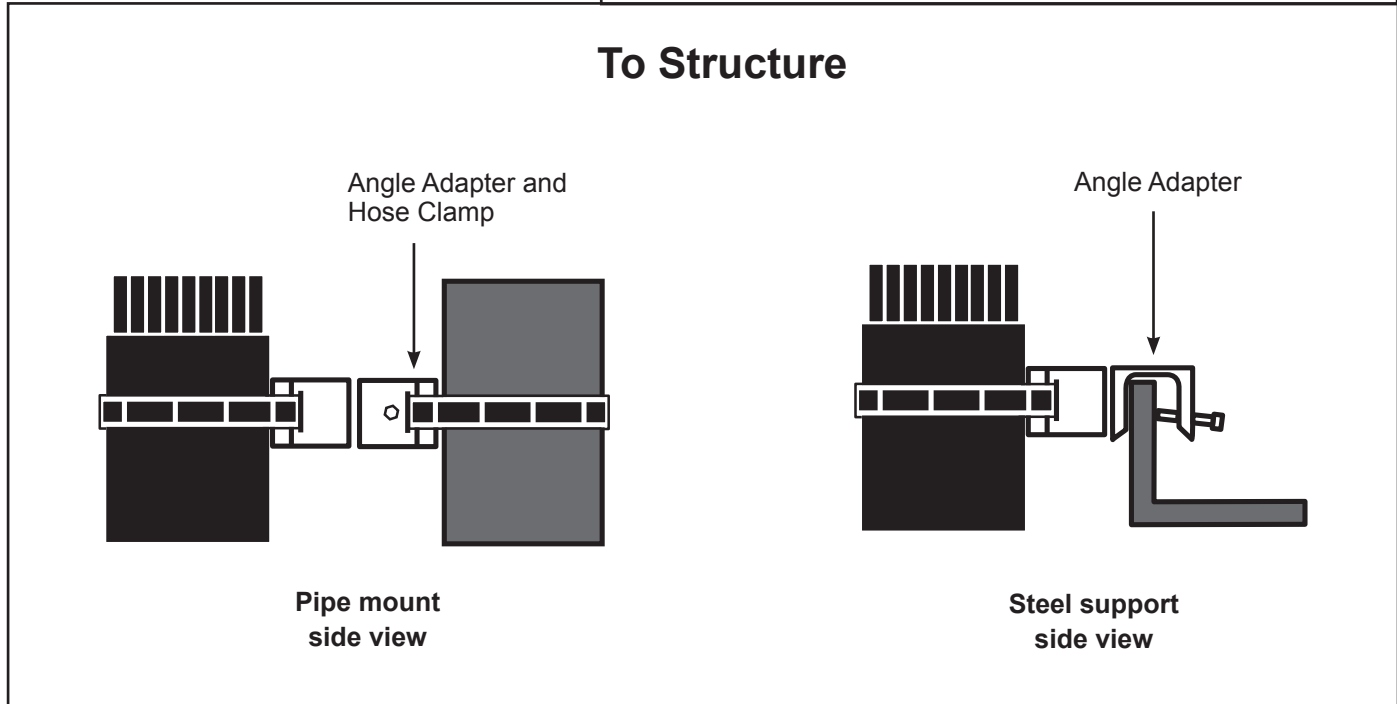
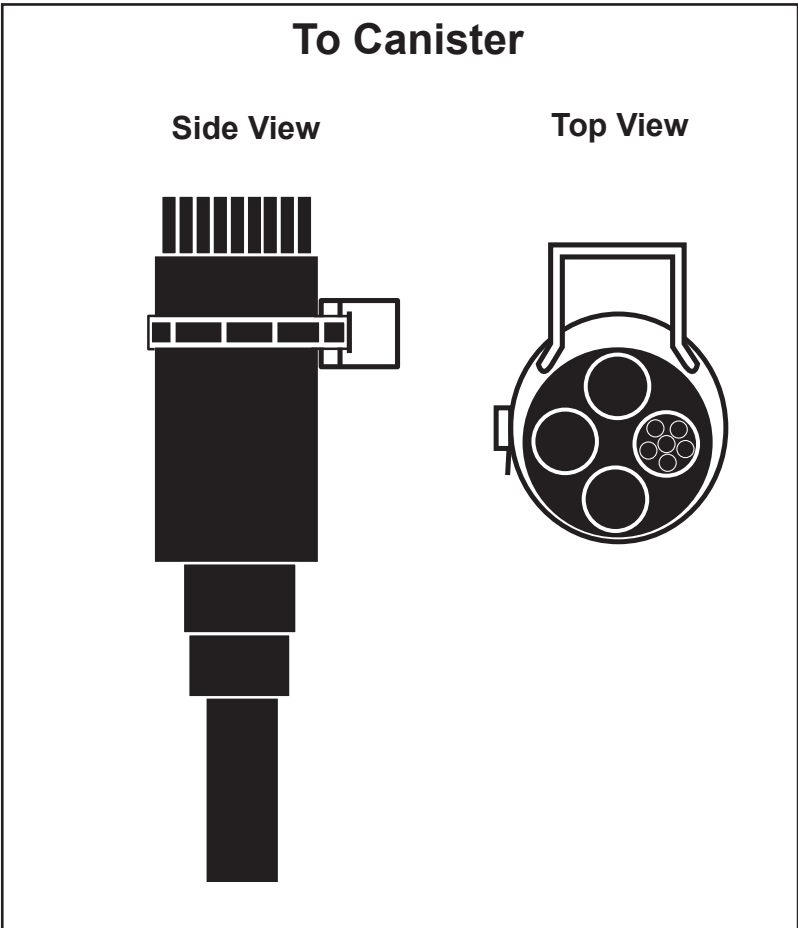
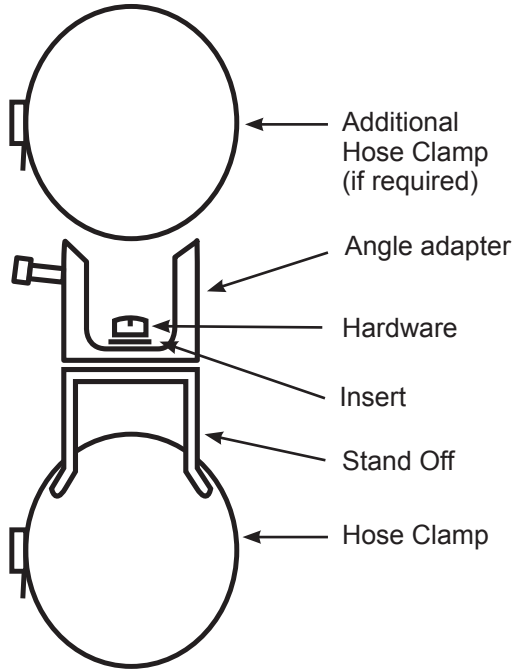
Accessories



WARNING: CommScope Hybrid FiberFeed cables require the use of approved installation accessories.

	Cable Series	Part Number	Description
	FDH610	FA-1923-STH	Standard Hanger
		FA-2021-SIH	Snap-In Hanger
	FDH608	42396A-5	Standard Hanger
		FA-2628-SIH	Snap-In Hanger
	FDH606	42396A-5	Standard Hanger
		252115	Snap-In Hanger
	FDH1210	42396A-9	Standard Hanger
		FA-2628-SIH	Snap-In Hanger
	FDH1208/1206	FA-3236-STH	Standard Hanger
	DFJ	42396A-5	Standard Hanger
		SSH-12	Snap-In Hanger
		HG-5MM-12	Grommet
	All FDH series	243684	Angle Adapter, compact 3/8 in tapped hole
	All FDH series	19256B-C	Hoisting Grip (lace-up)

DCM-U-V2 Mounting



General Specifications

Cable Type	FDH1206-12M50-XXX	FDH1208-12M50-XXX	FDH1210-12M50-XXX
Brand	HELIAX® FiberFeed®	HELIAX® FiberFeed®	HELIAX® FiberFeed®
Center Conductor Gauge	6 AWG	8 AWG	10 AWG
Conductors, quantity	6	6	6
Total Fiber Quantity	12	12	12
Shielding Type	Corrugated aluminum	Corrugated aluminum	Corrugated aluminum
Fiber Type	Multimode fiber	Multimode fiber	Multimode fiber
Construction Type	Direct Breakout	Direct Breakout	Direct Breakout

Dimensions

Cable Weight	2421.0 kg/km 1627.0 lb/kft	1752.0 kg/km 1177.0 lb/kft	1050.0 kg/km 705.5 lb/kft
Diameter Over Jacket	36.20 mm 1.43 in	33.10 mm 1.30 in	25.14 mm 0.99 in
Breakout Length, Fiber, end 1	900 mm, 750 mm, 600 mm 35 in, 29in, 24in	900 mm, 750 mm, 600 mm 35 in, 29in, 24in	900 mm, 750 mm, 600 mm 35 in, 29in, 24in
Breakout Length, Power, end 1	5000 mm 197 in	5000 mm 197 in	5000 mm 197 in
Breakout Length, Fiber, end 2	1200 mm, 1150 mm, 1100 mm 47 in, 45 in, 43 in	1200 mm, 1150 mm, 1100 mm 47 in, 45 in, 43 in	1200 mm, 1150 mm, 1100 mm 47 in, 45 in, 43 in
Breakout Length, Power, end 2	1000 mm 39 in	1000 mm 39 in	1000 mm 39 in

Physical Specifications

Minimum Bend Radius, loaded	723.9 mm 28.5 in	662.9 mm 26.1 in	502.9 mm 19.8 in
Minimum Bend Radius, unloaded	363.2 mm 14.3 in	330.2 mm 13.0 in	251.5 mm 9.9 in
Tensile Load, long term, maximum	2002 N 450 lbf	2002 N 450 lbf	1068 N 240 lbf
Tensile Load, short term, maximum	6672 N 1500 lbf	6672 N 1500 lbf	3559 N 800 lbf

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Cable Type	FDH1206-24M50-XXX	FDH1208-24M50-XXX	FDH1210-24M50-XXX
Brand	HELIAX® FiberFeed®	HELIAX® FiberFeed®	HELIAX® FiberFeed®
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Conductors, quantity	6	6	6
Total Fiber Quantity	24	24	24
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Physical Specifications

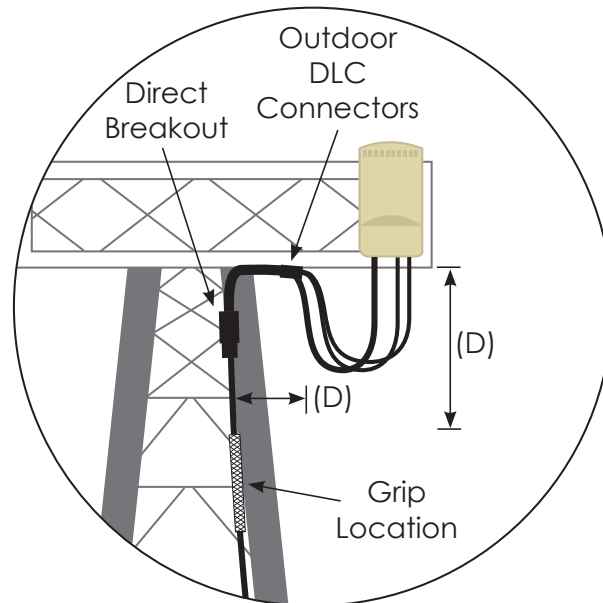
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Tensile Load, long term, maximum	2002 N 450 lbf	2002 N 450 lbf	1068 N 240 lbf
Tensile Load, short term, maximum	6672 N 1500 lbf	6672 N 1500 lbf	3559 N 800 lbf

Hoisting Considerations

- In general this cable will handle similarly to coaxial cable, and similar installation techniques apply. All cables are individually serialized, be sure to write down the cable serial number for future reference.
- Leave the protective sock around the fiber tails and power conductors during hoisting and securing the cable.
- Be sure that the Direct breakout is not damaged by attachment of a hoisting grip or during the hoisting process. Attach a hoisting grip on the jacketed cable no less than .3 m (1 ft) below the fiber breakout point. Prevent the fiber tails and power conductors from undue movement during hoisting by securing the protective sock with tie ropes every 1 m (3 ft) to the hoisting line.
- During hoisting ensure that there is a free path and that the cable, and especially the end of the pulling sock will not be snagged on tower members or other obstacles.
- Installation temperature range is -22 F to +158 F (-30 C to +70 C).
- Minimum cable bend radii can be found on-line in our eCatalog section at www.commscope.com/andrew.
- Maximum cable tensile load can be found on-line in our eCatalog section at www.commscope.com/andrew.
- **CommScope Lace-Up Hoisting Grip 19256B-C required for FDH-series installations.**
- **Hoisting Grip should be anchored to the support structure after the hangers are installed.**
- During final connections to RRU, do not bend the fiber ends tighter than 30 MM (1.2 IN) bend radius or you take the risk of breaking the glass fibers.

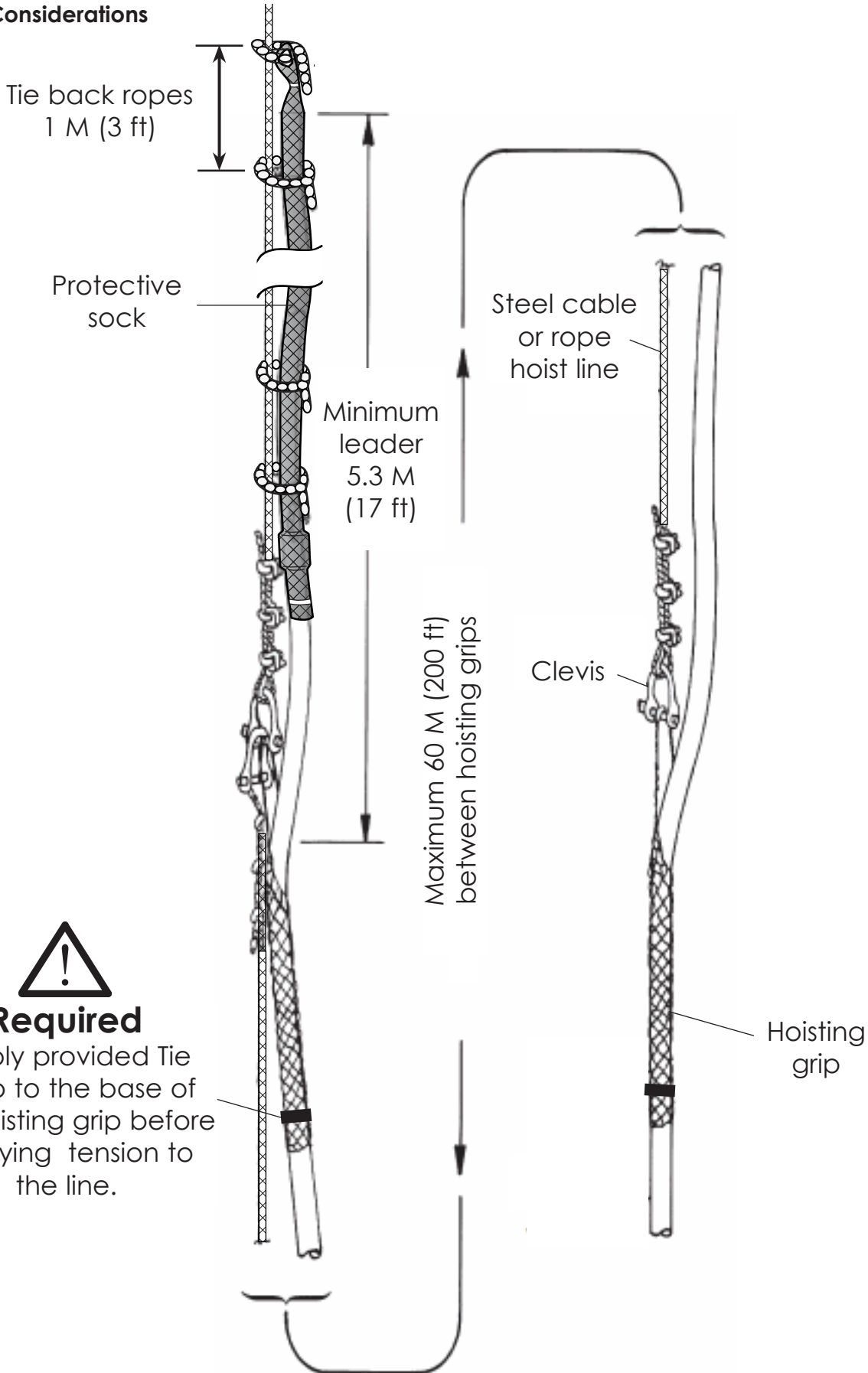
 **Hybrid Fiber Cables weigh more than traditional coaxial cables. Be sure to follow proper hoisting and attachment procedures.**

Hoisting Recommendations



Reminder: Plan grip location by measuring distance (D) from Outdoor DLC connector to tower support member.

Hoisting Considerations



General Specifications Tails

- In general this cable will handle similarly to coaxial cable.
- The terminated fiber ends however are fragile and must be protected during installation. Leave the packaging around the fiber ends in place until ready to make final connection of the jumper at the RRU or BBU.
- DO NOT BEND THE FIBER ENDS TIGHTER THAN 1.2" (30mm) BEND RADIUS ELSE THERE IS A RISK OF BREAKING THE GLASS FIBERS.
- Attach the main cable securely to the structure or equipment using hangers to prevent strain on connections from movement in wind or snow/ice conditions.
- Ensure the DLC fiber connector is seated firmly in RRU.
- DLC outdoor connector is a 1/4 turn and will have an audible click when fully engaged.
- Ensure the weatherproof boots for both fiber and power connections are seated firmly in the RRU.
- Installation temperature range is -22F to 158F (-30C to 70C).
- All tails are individually serialized, for immediate access to test results visit www.commscope.com/webtrak/

General Specifications

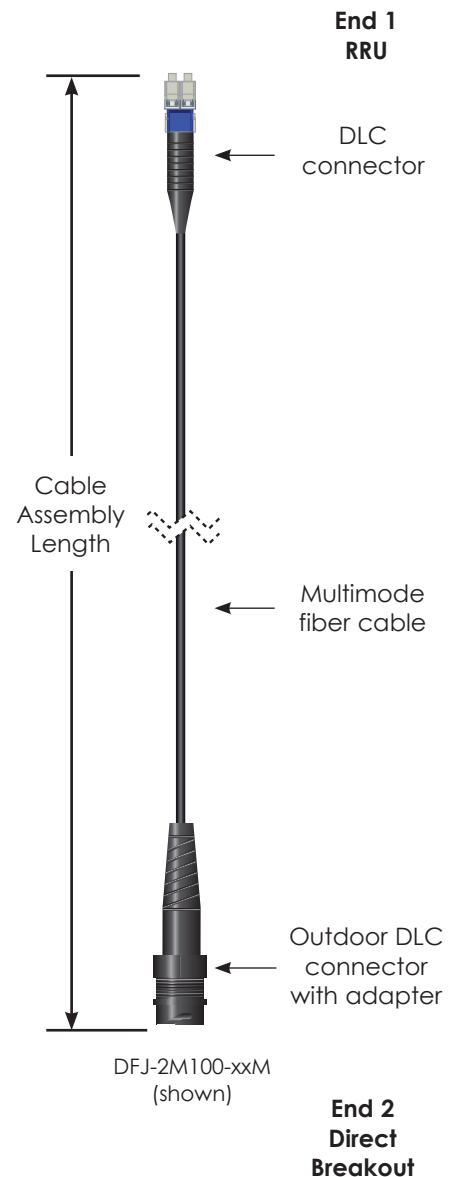
Cable Type	DFJ-2M-10x-xxM
Brand	HELIAX® FiberFeed®
Total Fiber Quantity	2
Fiber Type	Multimode fiber
Jacket Color	Black

Dimensions

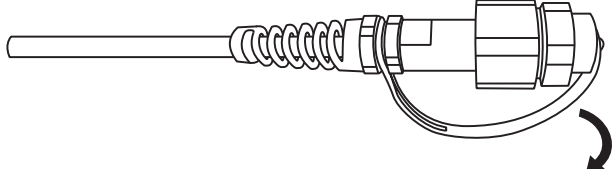
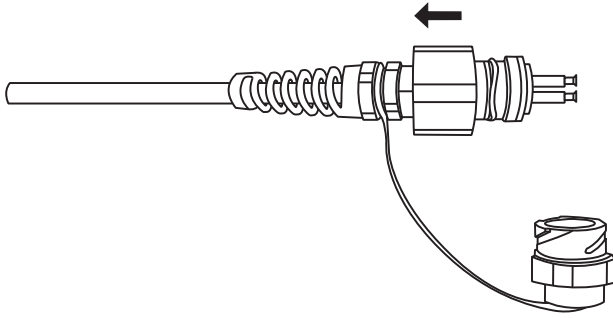
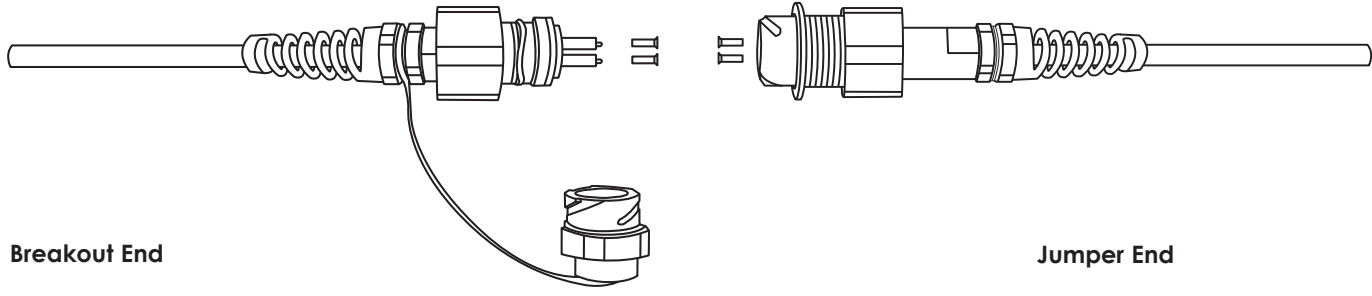
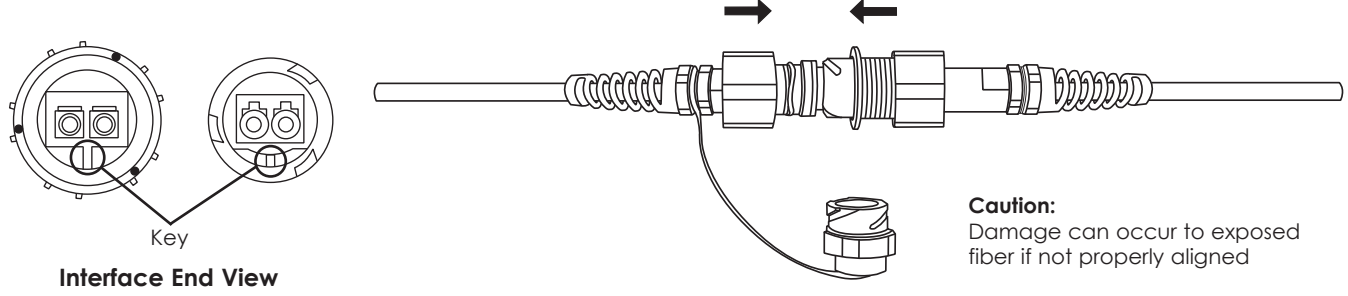
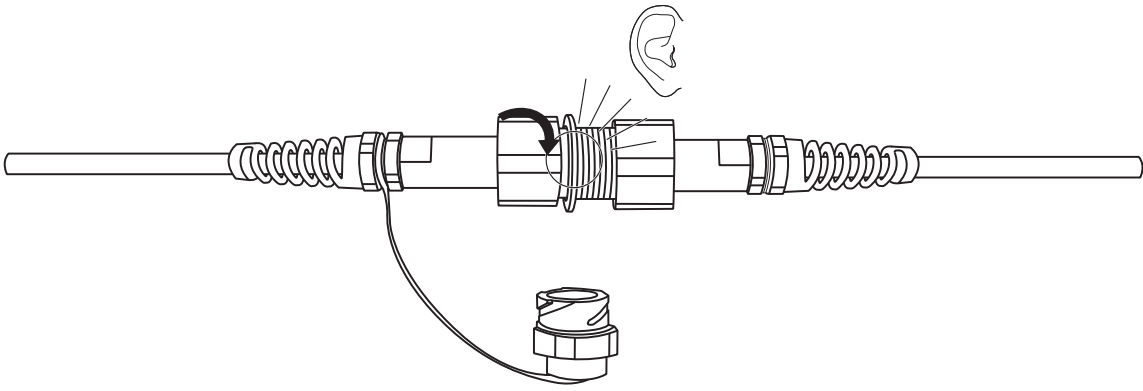
Cable Weight	37.1 kg/km 24.9 lb/kft
Diameter Over Jacket	6 mm .24 in

Physical Specifications

Minimum Bend Radius, loaded	9 cm 3.5 in
Minimum Bend Radius, unloaded	6 cm 2.4 in
Tensile Load, long term, maximum	334 N 75 lbf
Tensile Load, short term, maximum	1110 N 250 lbf

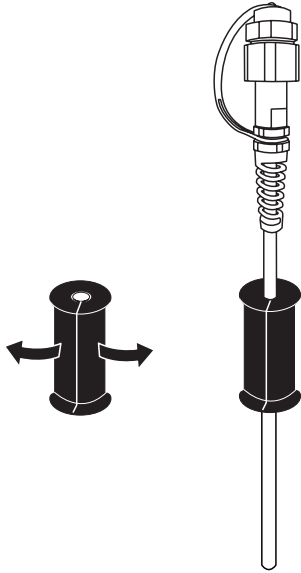


Outdoor DLC connection procedure

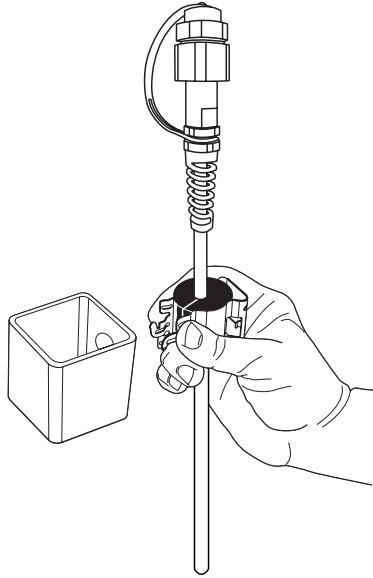
<p>1. Remove end cap</p>  <p>Breakout End</p>	<p>2. Slide back coupling nut</p> 
<p>3. Remove dust caps from both interfaces</p>  <p>Breakout End Jumper End</p>	
<p>4. Line up the interface key then press together</p>  <p>Interface End View</p>	<p>Caution: Damage can occur to exposed fiber if not properly aligned</p>
<p>5. 1/4 turn coupling nut to fully engage</p> 	

Supporting Fiber Tails (Power tails require standard hangers)

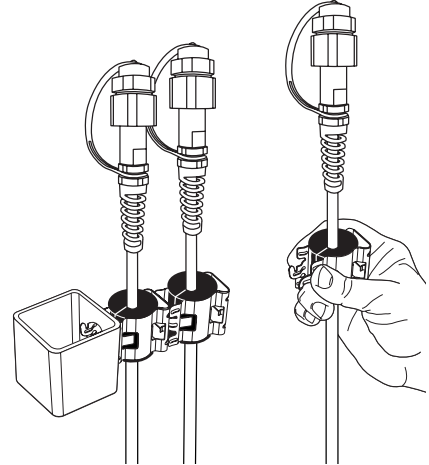
1. Open grommet and place it over the fiber tail.



2. Place the hanger over the grommet and place in support structure.

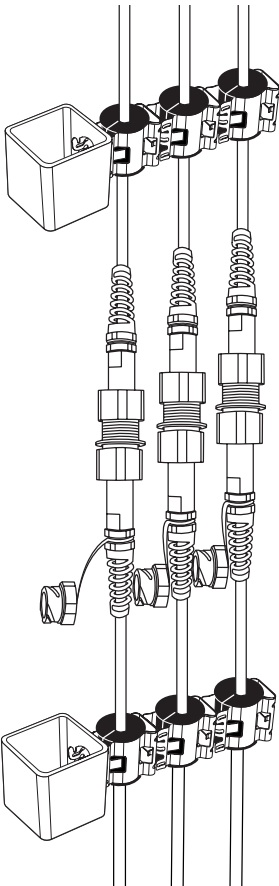


3. Stack hangers as required. Repeat with tails being routed to the RRU and spare fibers.



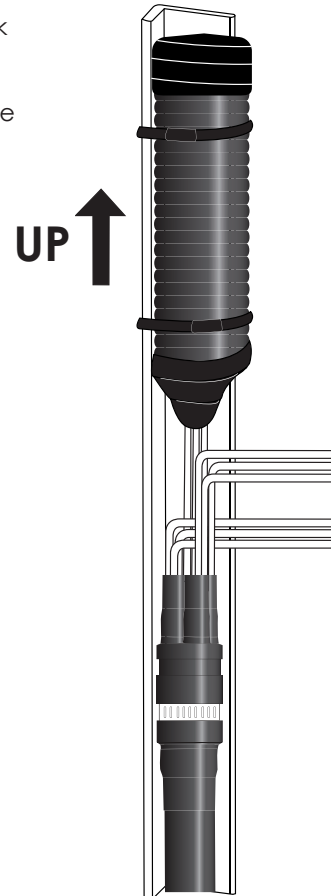
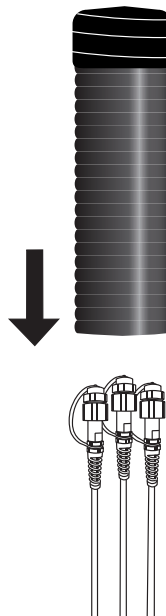
Connectors are fully weather sealed and do not require additional weatherizing. Unused power conductors should be left with the protective cap in place.

4. Maximum hanger spacing of 0.9m (3 ft) - 1.2m (4 ft)



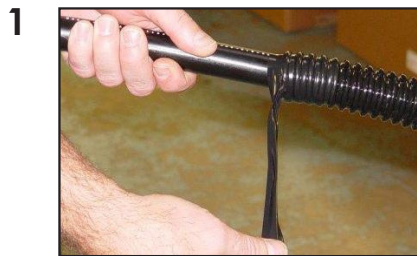
Optional:

1. If additional hangers are not available slide the BBU end protection sleeve back over any spare fibers to protect them.
2. Place tape over fiber tails and protective sleeve end to hold in place. Support protection sleeve using tie wraps.



Breakout Procedure

After the trunk cable has been installed and you are ready to make the final connection to the RRU or BBU follow these steps for the removal of fiber protection tube.



Remove electrical tape from the trunk cable and corrugated protection tube

2



While holding the protection tube straight pull the tube away from cable.

3

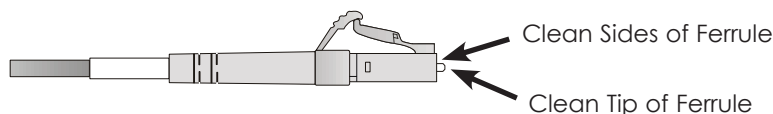


After you have pulled the fiber and power conductors into the OVP box remove electrical tape from the trunk cable and remove clear tube for access to all optical connectors.

DLC Connectors and Adapter cleaning

Clean exposed connector ferrule by lightly moistening lint-free wipe with fiber optic cleaning solution (or >91% isopropyl alcohol), and by applying medium pressure, first wipe against wet area and then onto dry area to clean potential residue from end face. Clean connector ferrule inside adapter by inserting lightly moistened cleaning stick with fiber optic cleaning solution (or >91% isopropyl alcohol) inside the adapter until contact is made with connector on opposite end. Rotate cleaning stick with medium pressure in one circular motion as it is pulled away from the adapter. Repeat process using dry cleaning stick.

Caution: Signal strength will be affected if end and sides of ferrule are not thoroughly cleaned. Discard cleaning sticks after each use. Do not turn cleaning sticks back and forth pressing against connector end face. This may cause scratches if large contamination is present. Always inspect connector end face for contamination after each cleaning.



Clean adapter by inserting adapter cleaning stick (or fiber adapter sleeve brush) moistened with fiber optic cleaning solution (or >91% isopropyl alcohol) inside the adapter and gently pull out with twisting motion. Repeat process with a dry cleaning stick.

Caution: Do not try to clean adapter with a standard pipe cleaner. The sleeve inner diameter of DLC adapters is too small. Do not try to clean the adapter with cleaning stick if a connector is mounted in one side. Discard cleaning sticks after each use.

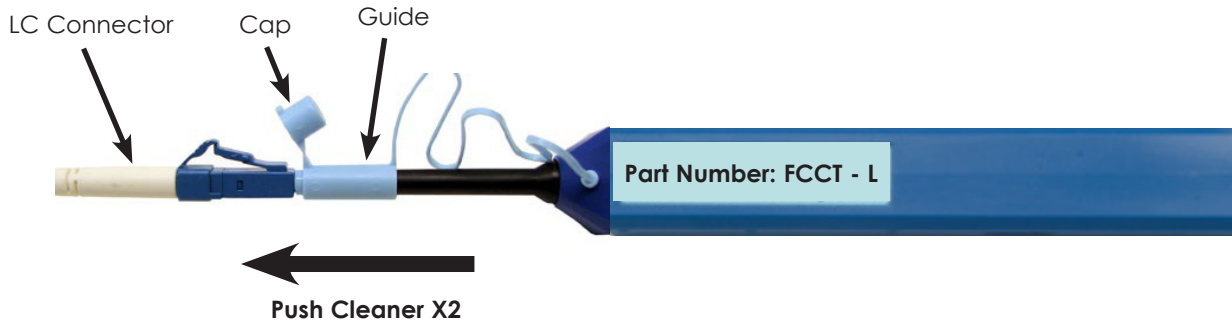


All in one cleaner

Device designed for cleaning the ferrule end faces of LC connectors

Open guide cap, insert LC connector into guide, push the outer shell to start cleaning the LC connector interface, a "click" sound indicates end of a cleaning process, repeat, close cap immediately after use.

Caution: Be careful not to slant LC connector while inserting into the Guide cap. Do not overly exert force during insertion as this may cause damage to both the connector and the cleaner.



Inspecting

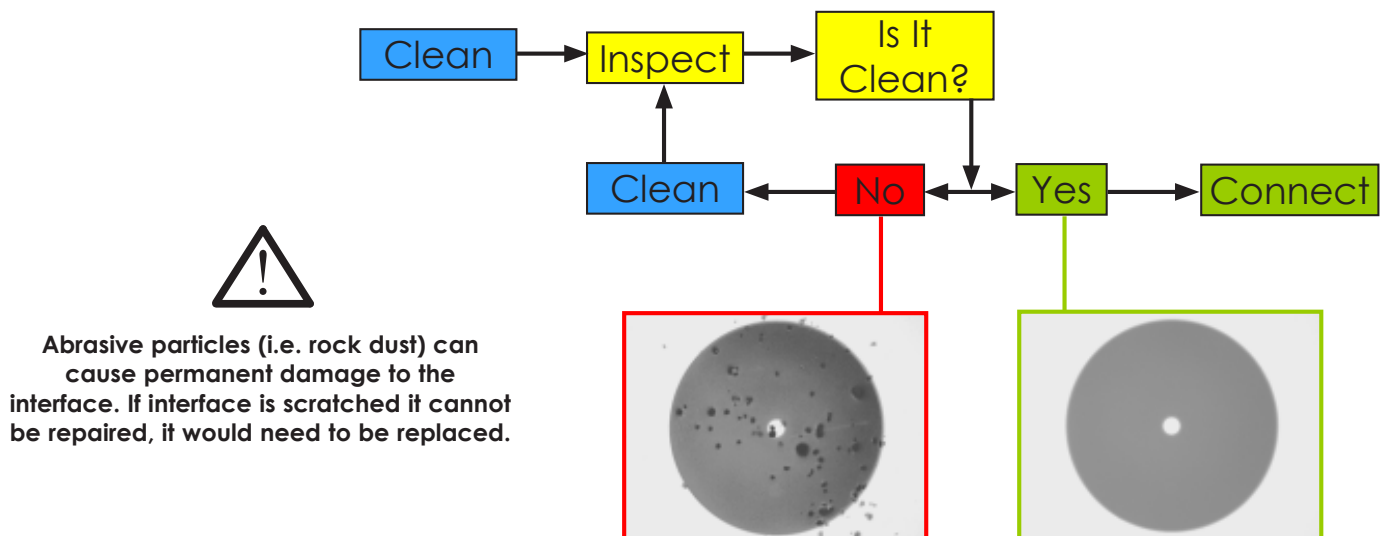
There are 3 basic principles that are critical to achieving an efficient fiber optic connection:

1. Perfect Core Alignment
2. Physical Contact
3. Pristine Connector Interface








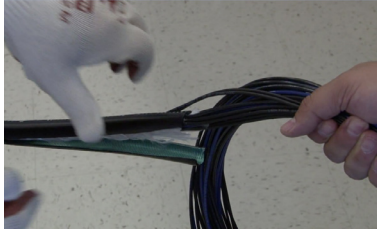




Today's connector design and production techniques have eliminated most of the challenges to achieving core alignment and physical contact. What remains challenging is maintaining a pristine end-face. As a result, CONTAMINATION is the #1 reason for troubleshooting optical networks.

Implementing the process of cleaning and inspecting before mating can reduce the time spent troubleshooting, optimize signal performance and prevent damage.



Excess Cable Management

If length of cable installed needs to be adjusted you can split the cable at the BBU end using the process below and then coiling the excess fiber subunits in a storage box. Patch Panel Kits are available to manage any excess fiber length in the breakouts at the BBU.

<p>1 Mark cutback length</p> 	<p>2 Notch Armor using flush cutter in-line with Kevlar strings</p> 
<p>3 Place Rip Cord in Notches</p> 	<p>4 Pull Rip Cord Parallel to Cable (while supporting breakout)</p> 
<p>5 Stop at Length Marker</p> 	<p>6 Separate Armor</p> 
<p>7 Cut Armor Using Side Cutter</p> 	<p>8 Remove Water Blocking Tape</p> <p>NOTE: Step can be expedited by using a sewing seam ripper that can be purchased at local hobby stores</p> 
<p>9 Remove Excess Rip Cord</p> 	<p>10 Apply Electrical Tape to Protect Breakout</p> <p>NOTE: Remember to slide identifier labels down the power conductors before trimming the cable to its final length</p> 



Excess Fiber storage Box
Part Number:
FE-14126-E



Fiber management tray, Part Number:
FE-14192-IR



Cable Splitter tool
Part Number:
FA-RCRT-PD



Seam Ripper



Scan to view video



Click here to view video

Jacketing Removal Procedure for Grounding Kit Installation

1. Score the jacketing 360°
2. Measure 2" (51 mm) and repeat
3. Identify where the aluminum shielding overlaps, this will feel like a flat spot in the cable
4. With a knife flat on the cable remove a section of jacketing between score marks
5. Lift edge of jacketing with knife tip
6. Grab lifted edge of jacketing with a pair of pliers and roll on the cable
7. Remove excess adhesive with a piece of emery cloth



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Installation Check List

- Tails are properly supported to prevent strain on fiber during severe weather
- Bend radius minimums haven't been exceeded
- CommScope approved installation accessories are used
- Maximum hanger spacing of 0.9m (3 ft) - 1.2m (4 ft) is maintained
- Visually inspected end face for residual dirt and damage
- Avoid migration of contaminations from one connector to another
- Check continuity by using LED or laser light source from one end face and look for light from other end to identify any broken fiber (Do not look directly at cable with laser source)
- Fiber Connections are engaged and the sectors are consistent with requirements
- Cable serial number has been documented in the closeout paperwork and a copy has been left on-site

CommScope

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