CORNING

Installing OptiTip® Trunks / Pigtails and Mating OptiTip Connectors

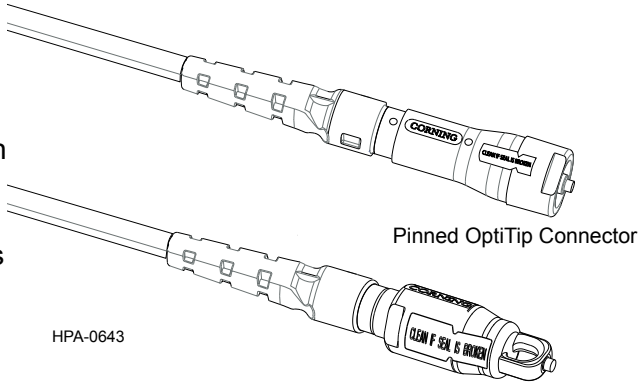
004-170-AEN, Issue 2

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1. General

1.1 This procedure describes methods for properly installing an OptiTip trunk in duct and aerial applications and the correct mating of a pinless OptiTip connector to both a pinned OptiTip connector on a distribution cable tether/direct trunk/harness and the OptiTip adapter. These two connection types drive the functionality and speed of deployment for AnyLAN™ and FlexNAP™ Systems, and it is imperative that the connectors are mated properly.



Pinned OptiTip Connector

Pinless OptiTip Connector

Figure 1

1.2 Pinned OptiTip connectors are found on AnyLAN/FlexNAP Systems distribution cable tethers and AnyLAN Systems direct trunks; pinless OptiTip connectors can be found on the connectorized ends of multiport and MDU terminals and on AnyLAN/FlexNAP Systems direct trunks and harnesses (Figure 1).

1.3 It is very important that the connectors are known to be clean or cleaned prior to connection. A dirty connector will cause attenuation and may damage the connector end-face permanently. Corning Optical Communications factory-assembled OptiTip connectors have tamper-proof factory seals which verify that the connectors have been cleaned and tested prior to shipping (see step 6.1 and Figure 7).

1.4 This Issue 2 has an added a section (Section 8) on removing the pulling grips on assemblies containing single fiber connectors.

2. Precautions

2.1 This section provides safety precautions which should be observed when working with fiber optic products. These practices may change, or may not be suitable in a specific situation, and so are suggested guidelines only. Your company's safety precautions and practices take precedence over any conflicting recommendations given in this document.

2.2 Laser Handling Precautions

	**WARNING: Never look directly into the end of a fiber or connector that may be carrying laser light.** Laser light can be invisible and can damage your eyes. Viewing it directly does not cause pain. The iris of the eye will not close involuntarily as when viewing a bright light. Consequently, serious damage to the retina of the eye is possible. Should accidental eye exposure to laser light be suspected, arrange for an eye examination immediately.

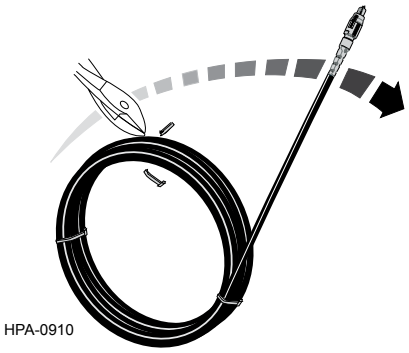
2.3 Safety Glasses

	**CAUTION:** Corning Optical Communications recommends the use of-safety glasses (spectacles) conforming to ANSI Z87 for eye protection from accidental injury when handling chemicals, cables, or working with fiber.

2.4 Cable Handling Precautions

	NOTE : Fiber optic cable is sensitive to excessive pulling, bending, and crushing forces. Do not bend the cable more sharply than its minimum recommended bend radius. Do not apply more pulling force to the cable assembly than specified. Do not crush the cable or allow it to kink. Doing so may cause damage that can alter the transmission characteristics of the cable; the cable assembly may have to be replaced.

	**WARNING:** Unrestrained cable ends may cause injury to your eyes or body and damage the cable, connector, or fibers if suddenly released from a coil. Wear eye protection and use extreme care when handling a coiled cable assembly which uses flat-drop cable - gently release the energy stored in the cable coil to avoid possible personal injury or damage to the cable or connector components.


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3. Tools and Materials

3.1 The following tools and materials may be required to complete the installation sections of this procedure:

- Side cutters (diagonal cutting pliers)
- Scissors
- Pull line
- Fiber optic dead-end clamp (p/n AB910)
- Cable ties
- Pull tape

3.2 The following tools and materials may be required to complete the connector mating sections of this procedure:

- OptiTip® Cleaning Tool (p/n TKT-OTMT-CLN-002)
- Swabs (p/n 2104067, optional)
- Chemtronics® Electro-Wash PX® (p/n 2104006-01)

4. OptiTip® Trunk Installations

4.1 When placing an OptiTip® Trunk in duct or aerial environments, plan the installation to pull from the pinless OptiTip connector's pulling eye (Figure 2).

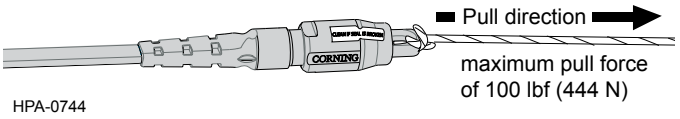


Figure 2

Aerial Trunk Installations

Skip to Step 4.6 if your installation is a duct application.

4.2 Pull the trunk to the final pole, ensuring that you do not exceed 100 lbf (400 N) of force on the cable. If the cable is running multiple pole spans, hang the proper diameter roller at the intermediate poles during placing. Once the full run is placed, start at the head-end and lash the cable or tension up for self-support.

4.3 NESC heavy loading conditions limit cable spans to 150 feet (46 m) when self-supporting. Contact Corning Optical Communications for other applications. It is acceptable to use mid-span clamps on a messenger to support the cable where spans will exceed this length.

4.4 Slack loops may be added as required by local practices. To add slack loops, place one or more 12- inch (30 cm) diameter loops on the slack-end of the cable before routing the cable to the termination hardware. Secure the slack loops with cable ties.

4.5 Use a fiber optic dead-end clamp to secure the cable in self-supporting aerial applications (Figure 3).

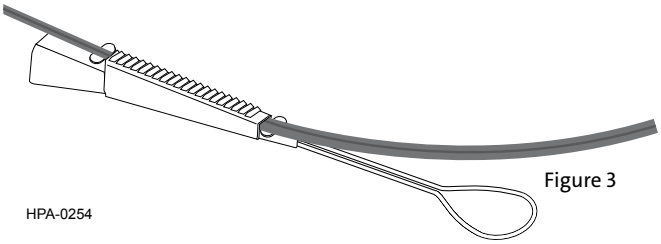


Figure 3

⚠	**CAUTION:** Do not place drip loops in the cable during installation. Forming a drip loop in the cable will most likely exceed the bend radius or break the cable's strength members, causing fiber damage and attenuation.

Duct Trunk Installations

4.6 Pull the trunk through the duct to the final handhole ensuring that you do not exceed 100 lbf (400 N) (Figure 4).

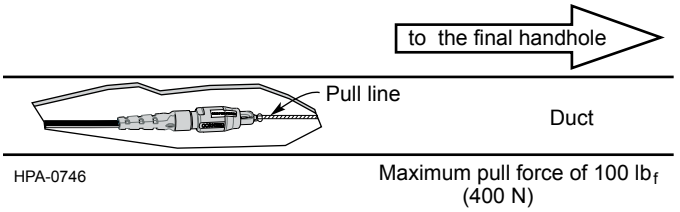


Figure 4

4.7 The terminal or OptiTip® connector in the handhole may be covered with mud or dirt due to normal ground water or flooding. Although these contaminants will not affect the performance of the unit, clean the unit before removing the unit's plugs to prevent contamination of the OptiTip connector end-face:

Step 1: Remove any cable ties or fasteners binding the terminal and its cable stub.

Step 2: For light dirt and dust, soak a clean rag or towel with clean water and gently clean the housing. Wipe dry with a clean, dry rag or towel.

Step 3: For heavy, caked-on mud and dirt, spray the housing with low-pressure water such as a garden sprayer outside of the handhole. A soft-bristle brush may also be used to lightly scrub the housing to loosen the mud and dirt. Remove any remaining dirt with a water-soaked rag or towel and wipe dry with a clean rag or towel.

IMPORTANT: Only use clean water to wash the terminal or connector. Do not use any type of solvent. When handling the terminal/connector, support it and its cable to prevent kinking the cable at the entrance of the terminal/connector.

Step 4: Although the terminal/connector should now be generally clean, there may still be dirt particles around the OptiTip connector/port. Therefore, before removing a dust cap, first turn the terminal/connector so that the dust cap faces downward and then unscrew the selected cap. In this way, any stray dirt particles will fall to the ground instead of into the connector.

4.8 If the trunk has an optional toning wire, un-tape its ends from the side of the cable and ground the wire in accordance with local codes, ordinances, and your company's practices.

5. Pigtail Placement

5.1 For the outdoor duct or aerial stage of placing an OptiTip® pigtail, either the bare cable end of the pigtail can be pulled from the terminal location to the splice point using a pull tape or the OptiTip connector end of the cable assembly can be pulled from the splice point to the terminal location using the methods in Section 4.

5.2 To pull the bare-cable end of the pigtail, tightly wrap the free end of the pull tape around end of the cable and secure the pull tape in place with vinyl tape (Figure 5).

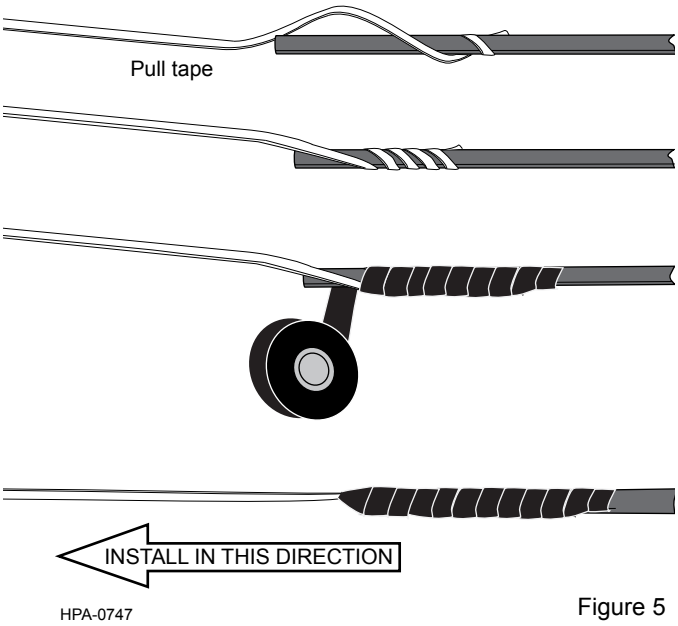


Figure 5

Aerial Pigtail Installations

5.3 Pull the pigtail into place:

- If you are using a pull tape to pull the bare cable-end of the pigtail from the terminal to the splice point, the cable is rated to a tensile strength of 300 lb (1300 N).
- If you are pulling the OptiTip connectorized end of the pigtail from the splice point to the terminal, ensure that you do not exceed 100 lb_f (400 N) of pulling force.

5.4 NESC heavy loading conditions limit cable spans to 150 feet (46 m). Contact Corning Optical Communications for other applications. It is acceptable to use mid-span clamps on a messenger to support the drop cable where spans will exceed 150 feet (46 m).

5.5 Slack loops may be added as required by local practices. To add slack loops, place one or more 12- inch (30 cm) diameter loops on the slack-end of the cable before routing the cable to the termination hardware. Secure the slack loops with cable ties.

5.6 Use a fiber optic dead-end clamp (p/n AB910) to secure the cable in aerial applications (see Figure 3).

⚠	**CAUTION:** Do not place drip loops in the cable during installation. Forming a drip loop in the cable will most likely exceed the bend radius or break the cable's strength members, causing fiber damage and attenuation.

5.7 Coil any required slack of the cable assembly at the terminal or splice point's pole.

5.8 Refer to Sections 6-7 for installation instructions for the OptiTip connector.

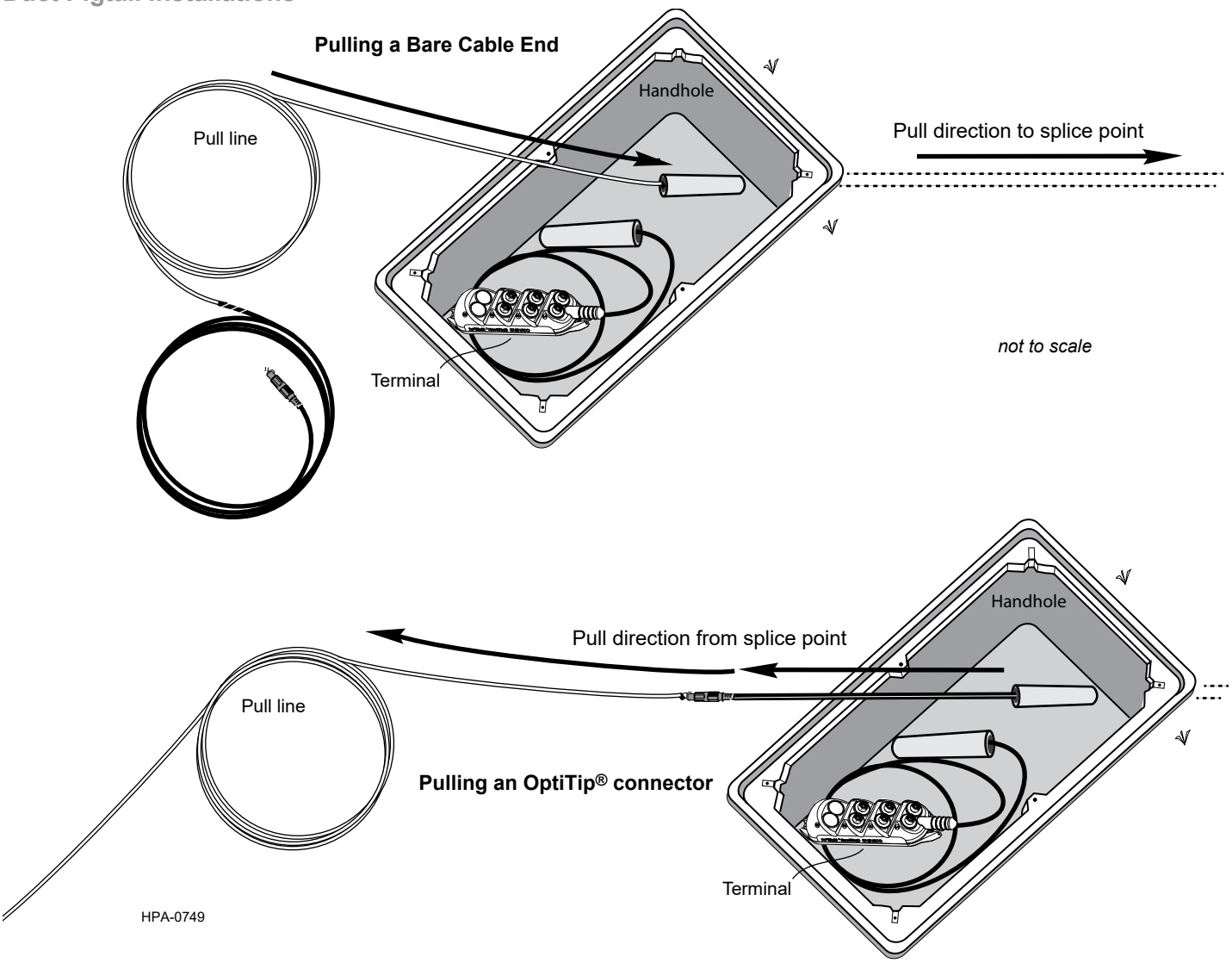


Figure 6

5.9 The pigtail may be pulled through the duct using either the bare cable end or the OptiTip® connector (Figure 6).

NOTES:

• Pulling the bare cable end of the pigtail may be preferable as its tensile pull limits are determined by those of the cable (300 lb/1300 N) and the pull line, rather than the 100 lb_f (400 N) limit of the OptiTip connector components.

• The terminal/connector in the handhole may be covered with mud or dirt due to normal ground water or flooding. Although these contaminants will not affect the performance of the unit, clean the unit as described in Step 4.7 before removing the unit's dust caps to prevent contamination of the OptiTip connector end-face.

5.10 Mate the OptiTip connector with the terminal port of opposite OptiTip as described in Sections 6-7.

5.11 If the pigtail has an optional toning wire, un-tape its end from the side of the cable and ground the handhole end of the wire in accordance with local codes, ordinances, and your company's practices.

6. Mating a Pinless OptiTip® Connector to a Pinned OptiTip Connector

6.1 This section describes how to mate a pinless OptiTip® connector (also known as the “plug” or “female” end) to a pinned OptiTip connector (also known as the “jack” or “male” end).

Step 1: Locate the appropriate tether or other assembly from the FlexNap™system that contains the pinned OptiTip connector. Note: On aerial applications, use scissors to carefully cut the cable ties which secure the tether to the cable.

Note: Corning Optical Communications factory-assembled OptiTip connectors have tamper-proof seals which verify that the connectors have been cleaned and tested prior to shipping. These seals will break during dust cap removal in Steps 2 and 3. if a seal is already broken, clean the end-face with an OptiTip cleaning tool as described in SRP-006-156.

Step 2: Remove the dust cap from the pinned connector by turning the cap counter-clockwise (Figure 7).

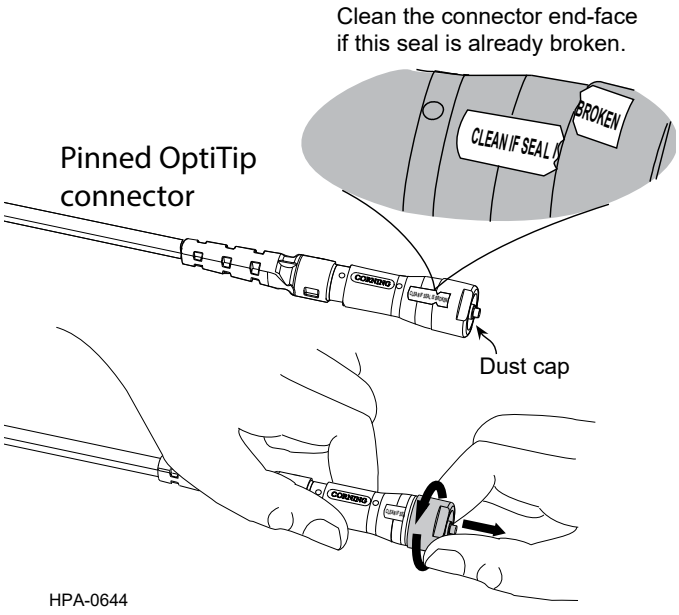


Figure 7

Step 3: To remove the pinless OptiTip® connector’s dust cap, hold the cap steady with one hand and back off the coupling nut as shown in Figure 8.

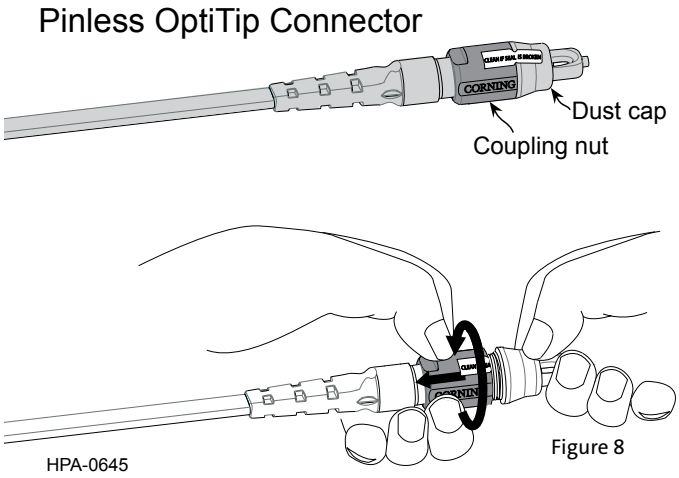


Figure 8

Step 4: Locate the reference features on each assembly (Figure 9).

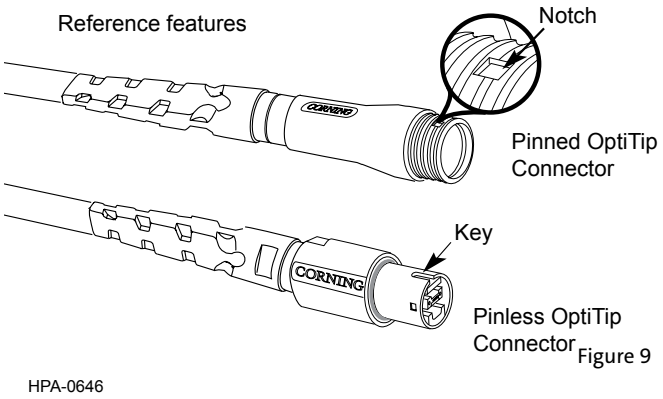


Figure 9

Step 5: Align the reference features (Figure 10 a).
Engage the coupling nut onto the pinned assembly, and hand tighten to complete the seal (Figure 10b).

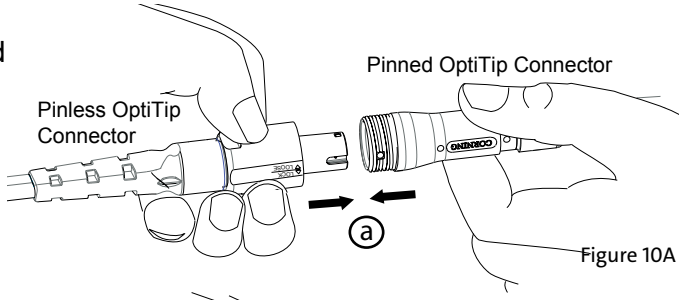


Figure 10A

Step 6: Manage any cable slack per standard local practices.

Step 7: Perform end-to-end attenuation testing on the complete system per your company's/customer's standard procedures. Contact Technical Support if further assistance is needed.

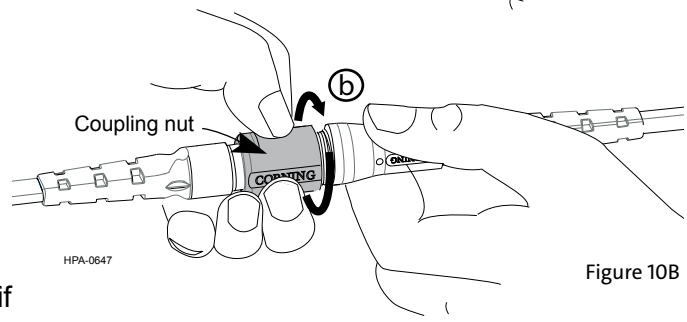


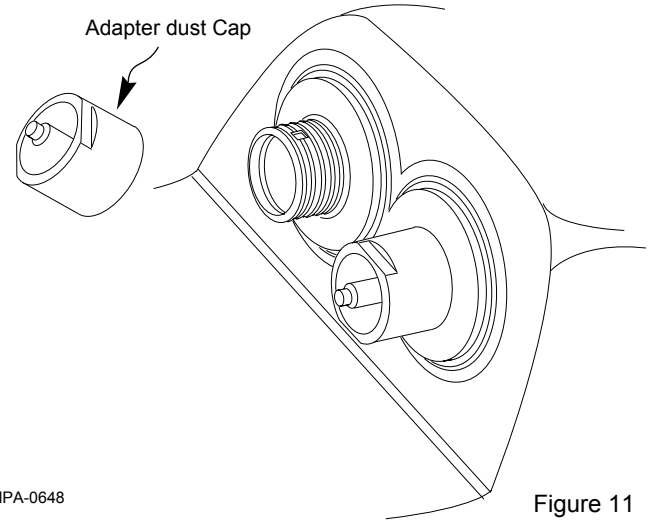
Figure 10B

7. Mating a Pinless OptiTip® Connector to an OptiTip Adapter

This section describes how to mate a pinless OptiTip® connector to an OptiTip/MTP® adapter. The adapter can only be used with a pinned MTP and a pinless OptiTip connector. The adapter is used in the multiport terminals, AnyLAN™ SPH, and the AnyLAN 1U rack-mount housing.

Note: The MTP side of the adapter is typically preconnectorized, so the process to insert an MTP into the adapter will not be covered.

Step 1: Remove the dust cap from the OptiTip/MTP adapter by turning the cap counterclockwise (Figure 11). This dust cap removes similarly to the dust cap on a pinned OptiTip connector.

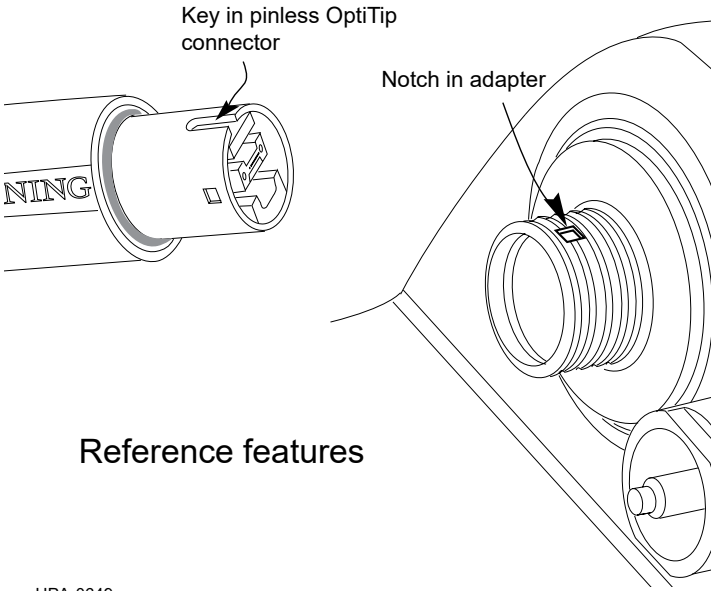


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Figure 11

Step 2: Remove the pinless OptiTip's dust cap by holding the dust cap with one hand and back off the coupling nut as shown in Figure 10B on the previous page.

Step 3: Locate the reference features on the adapter and OptiTip assembly (Figure 12).



Reference features

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Figure 12

Step 4: Align the reference features, engage the coupling nut, and hand tighten to complete the seal (Figure 13).

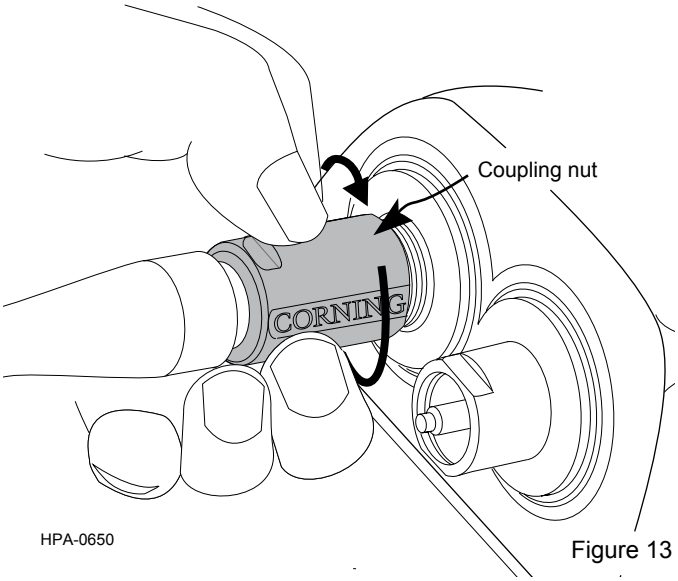


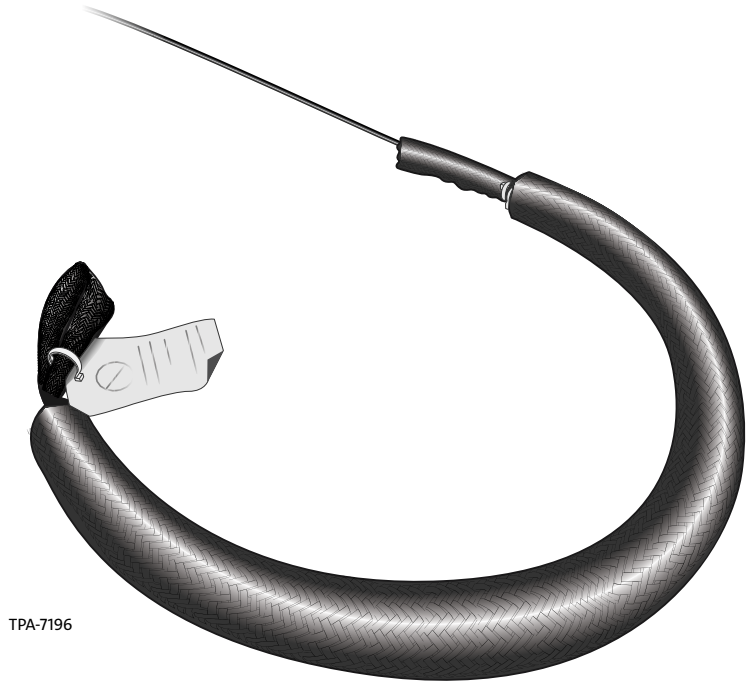
Figure 13

Step 5: Manage any cable slack per standard local practices.

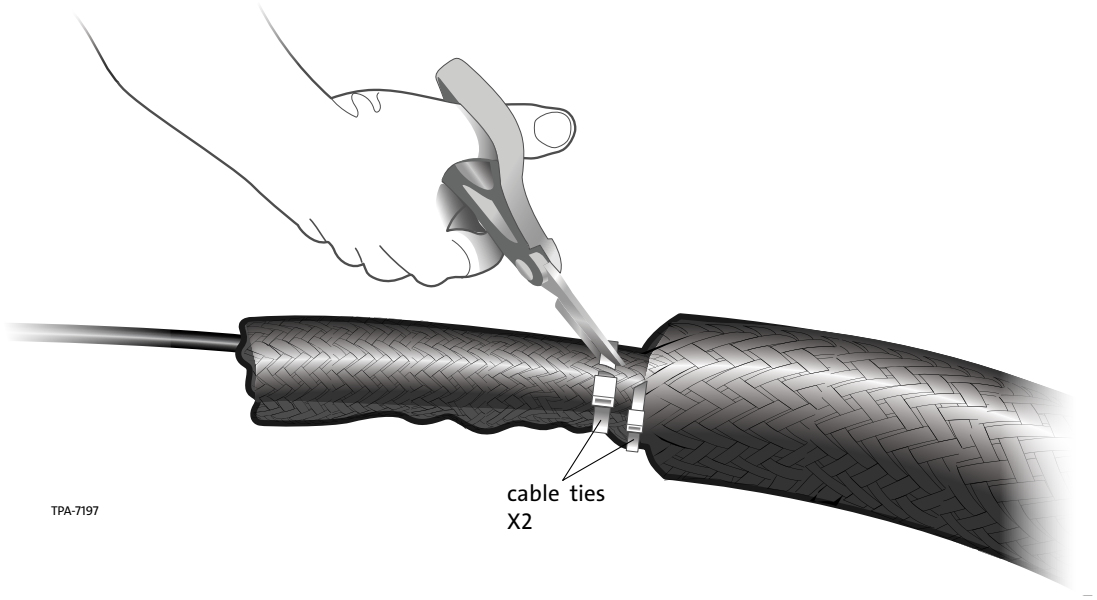
Step 6: Perform end-to-end attenuation testing on the complete system per your company's/customer's standard procedures. Contact Corning Optical Communications Technical Support if further assistance is needed.

8. Removal of Pulling Grip on OptiTip® Assemblies

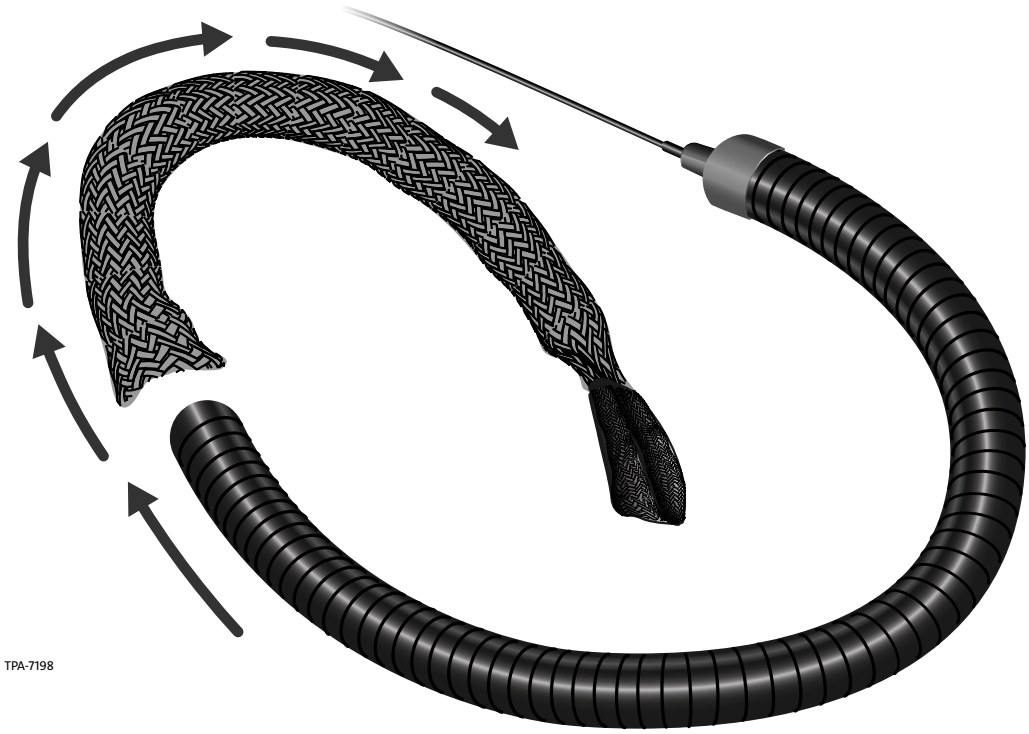
NOTE: *This grip is ~1.5" in diameter and requires use of a 2 inch duct for installation. This grip is rated for 50 lb. max pull tension.*



Step 1: Cut loose the cable ties at the base of the pulling grip.

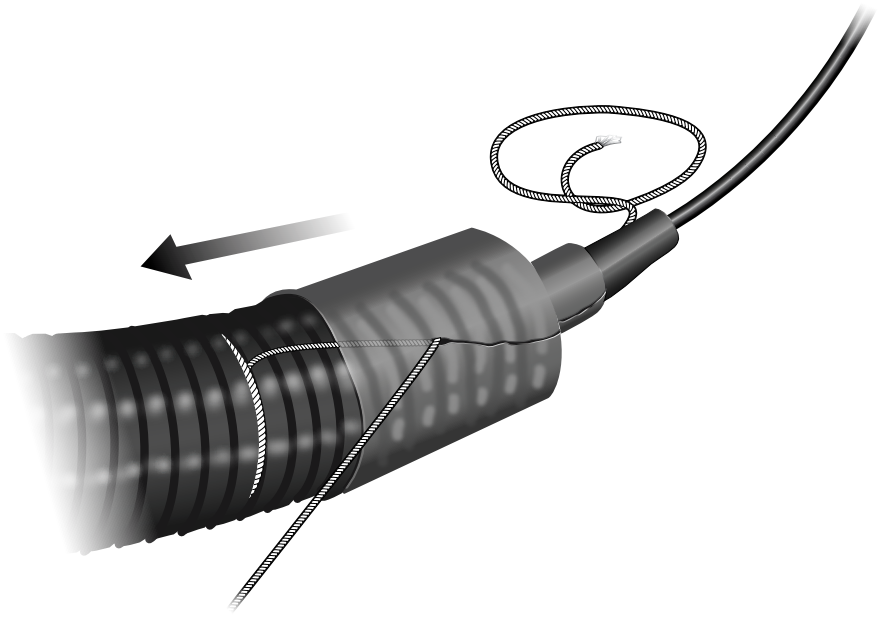


Step 2: Slide the mesh sock off. Start from the bottom and push towards the end.



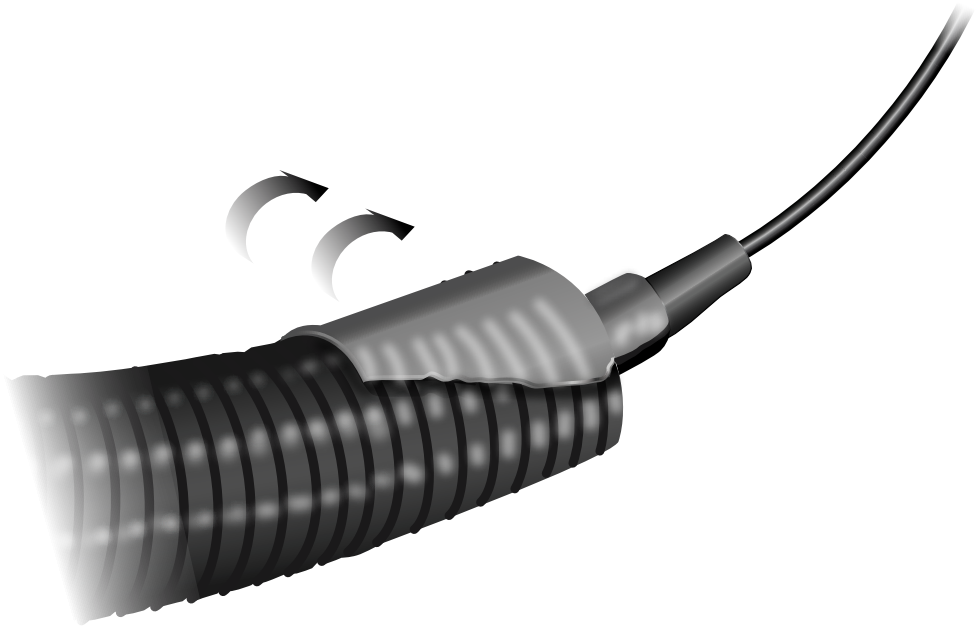
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Step 3: Grab the loops in the ripcords and pull them through the heat shrink on each side. There are slits in the heat shrink that assist in starting the pull.



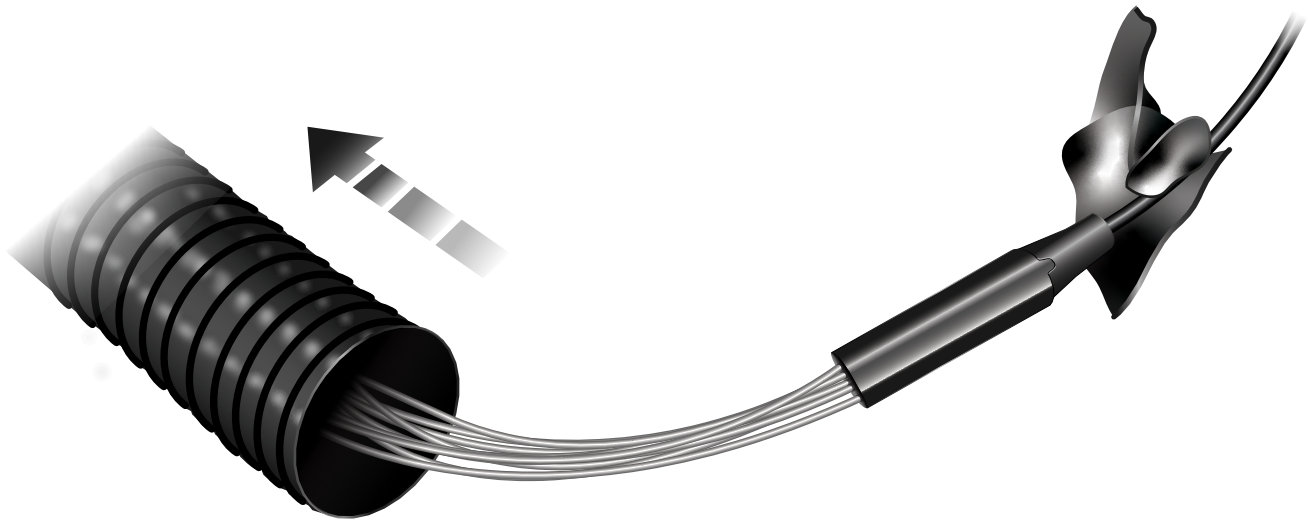
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Step 4: Once both ripcords are pulled through, peel the heat shrink away from the tubing and cable.



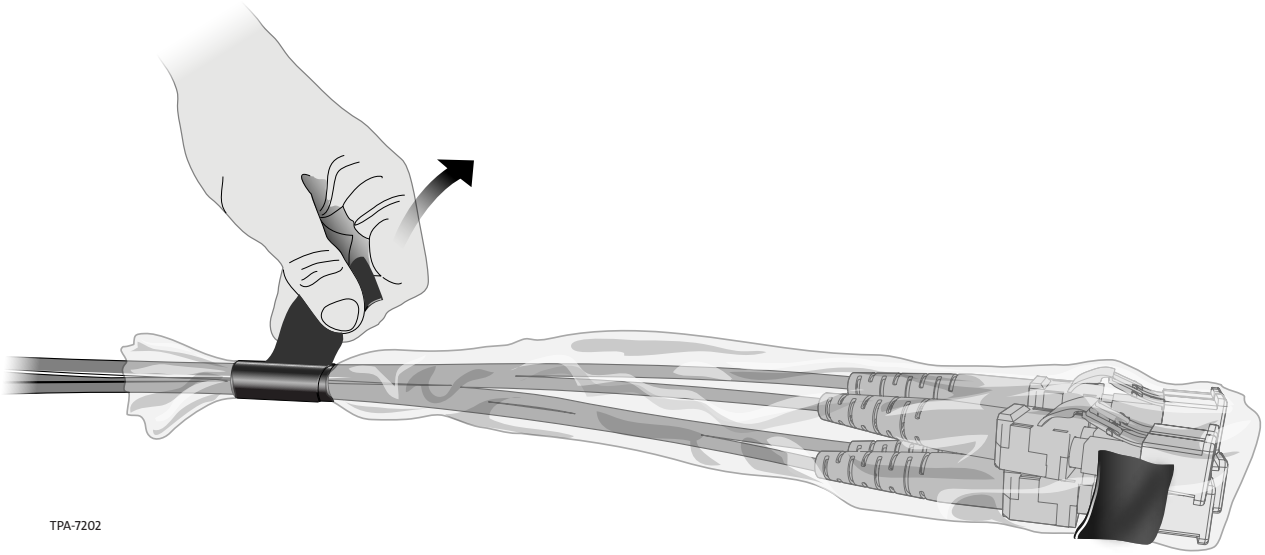
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Step 5: Slide the tubing off the connector legs by pushing it from the bottom towards the top.

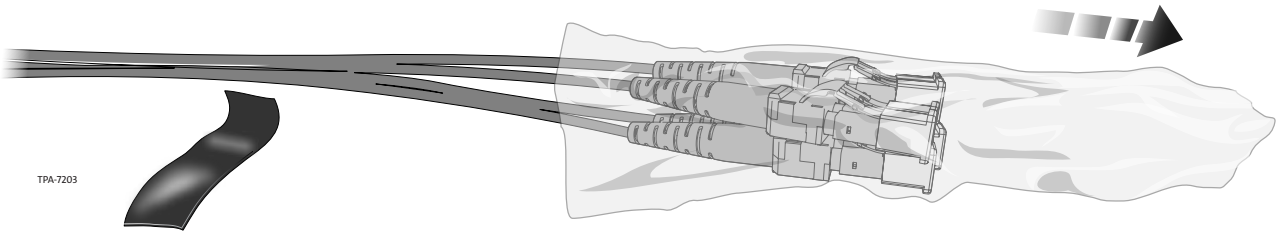


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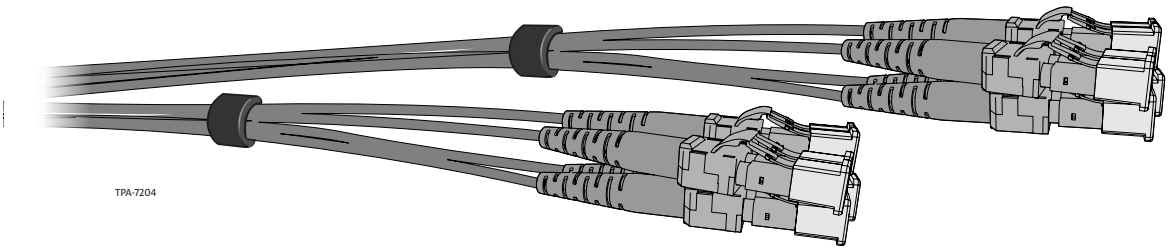
Step 6: Unwrap the tape that is holding the connector protection in place.



Step 7: Slide the plastic sleeves off the connectors.



Step 8: The connectors are ready to route, clean, and terminate.



Corning Optical Communications LLC • 4200 Corning Place • Charlotte, NC 28216 USA
800-743-2675 • FAX: 828-325-5060 • International: +1-828-901-5000 • www.corning.com/opcomm

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