

Pre-Connectorized (4-24 Fiber) Fiber Optic Cables Equipped with Plug & Play™ Systems Pulling Sleeves and Grips

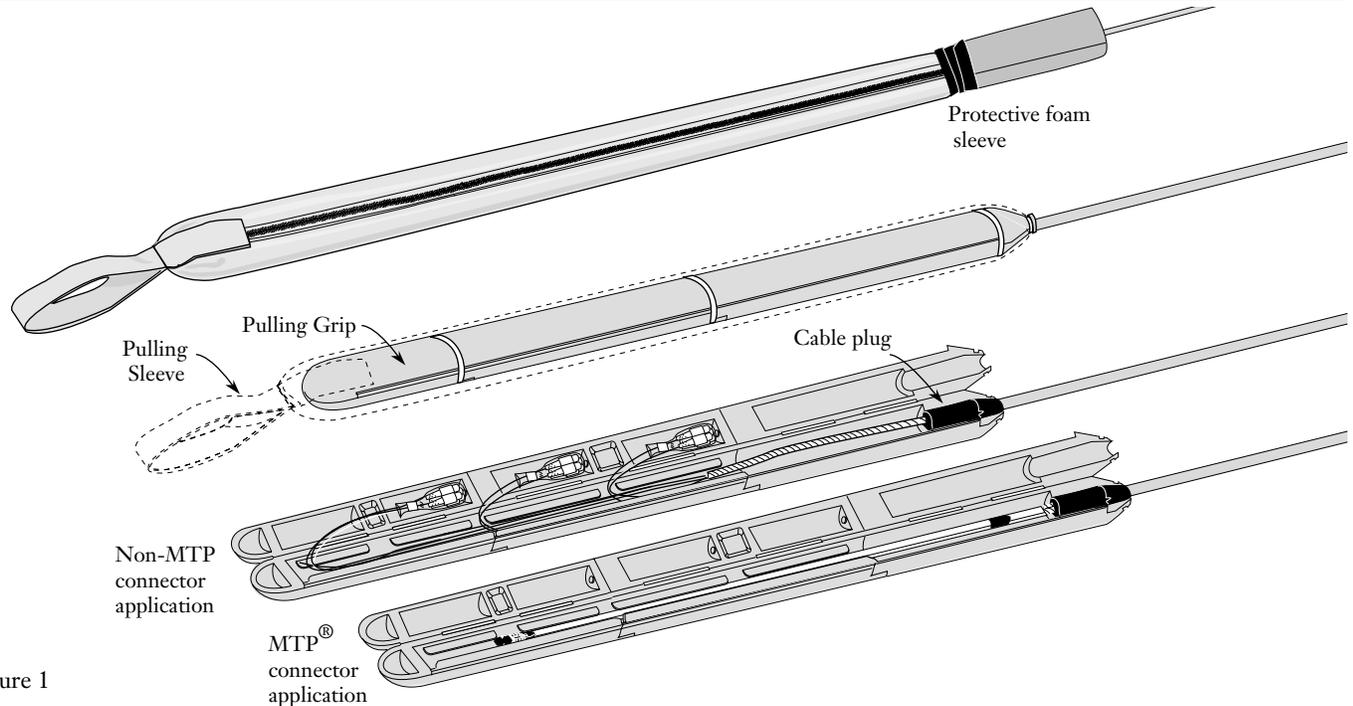


Figure 1

1. General

1.1 This procedure provides instructions for pulling 4-24 fiber preconnectorized cables supplied with factory-installed Plug & Play systems hinged molded protection/pulling grips and sleeves.

1.2 4-24 fiber Plug & Play systems pulling sleeves and grips protect the connectors and their fibers by coupling the pulling load back to the cable (Figure 1). After the preconnectorized cable is pulled into place, the grip and sleeve which encases the connectors and fibers may be saved for future re-use.

1.3 Preconnectorized optical cables are designed to be pulled into place by hand, using conventional cable-pulling methods while observing certain precautions regarding pulling tension and bend radius. These rugged, flexible pulling sleeves and grips can withstand tensions up to 100 pounds (44.5 kg) and flexing in radii greater than 15 inches (38 cm).

1.4 Personnel performing this operation should be experienced with pulling optical cable. The methods and practices provided in this procedure are intended only as guidelines, as each installation will be influenced by local conditions, your company's policies, and user preferences.

1.5 For detailed information on cable placement, and a comprehensive list of applicable safety precautions, refer to SRP-005-014, *Fiber Optic Cable Placing - Intrabuilding*. It is necessary to have radio or other two-way communications between pull points. Should a kink or other pulling problem occur, instant communication is vital to stop the pulling operation to prevent cable and/or connector damage.

1.6 This issue reflects updated corporate information.



CAUTION: *The pulling grips installed on preconnectorized cables contain the connectors and their sub-units. Unlike conventional pulling grips, do not cut off the grip and cable inside it upon the completion of cable installation. Remove the pulling grip from over the connectors and sub-units only as described in this procedure. Failure to do so may result in damage or loss of the connector assemblies.*

Do not attempt to disassemble the pulling grip before the cable is pulled into place. Doing so may cause the pulling grip to fail.

2. Precautions

2.1 Safety Precautions



WARNING: To reduce the chance of accidental injury, observe standard safety precautions. Wear safety headgear, eye protection, gloves, etc., as specified in your company's practices. Your company's safety precautions and practices take precedence over any conflicting recommendations given in this document.

2.2 Pulling Grip Precautions



Hand Pulling Precaution

WARNING: These grips are intended to be placed and pulled by hand. **Do not use any mechanical pulling devices on this series of grip.**



Lubricant Precaution

CAUTION: Do NOT use any type of lubricant when installing this series of pulling grip.



CAUTION: The Pre-Connectorized Plug and Play pulling sleeve and grip has a maximum tensile rating of 100 pounds (44.5 kg). NEVER EXCEED THIS TENSION DURING INSTALLATION.

Pre-Connectorized Plug and Play pulling grips and sleeves have a minimum bend radius of 15 inches (38 cm). When blocks or sheaves are used to control bend radius, a single wheel with a minimum diameter of 30 inches (76.2 cm) is required.

Grip O.D.	Duct Limitations
	Minimum duct inside diameter
1.25 in.	1.75 in. (4.44 cm)

2.3 Cable Handling Precautions



CAUTION: Fiber optic cable is sensitive to excessive pulling, bending and crushing forces. Exercise care to avoid cable and pulling grip damage during handling and placing. To ensure all specifications are met, consult the cable specification sheet for the cable you are installing.

- Do not bend the cable more sharply than the minimum recommended bend radius.
- Do not apply more pulling force to the cable 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 may have to be replaced.
- Prior to cable installation, inspect the entire cable pathway for bends that may violate the pulling grip's minimum bend radius and for other obstructions which may impede passage of the pulling grip or cause damage to the grip or cable.

3. Tools and Materials

3.1 In addition to the normal equipment and tools required for hand pulling cable, the following tools are needed for entry into the pulling grip:

- Scissors or side cutters
- Razor blade

For re-use of a pulling grip and sleeve, the following materials are required :

- Rubber bands*
- Electrical tape
- Connector bags*
- Double-sided tape (optional)
- Masking tape
- 6-inch length of 7/8 x 1/2 in. foam tubing
- 8-inch cable tie

*new or saved from previous installations

4. Use of the Pulling Grip and Sleeve for Cable Installation

Note: This procedure assumes that a pull line has been placed in the duct route and that the equipment necessary to maintain the bend-radius of the pulling grip is in position.

4.1 Remove the protective wrapping from the cable reel or shipping box.

For reeled applications: Place the cable reel on a reel stand so that the pulling grip / cable will pay-off the top of the reel.

For boxed applications: For easier installation, remove the cable assembly from the box prior to pulling. This will keep the assembly from becoming entangled during the pulling process (Figure 2)

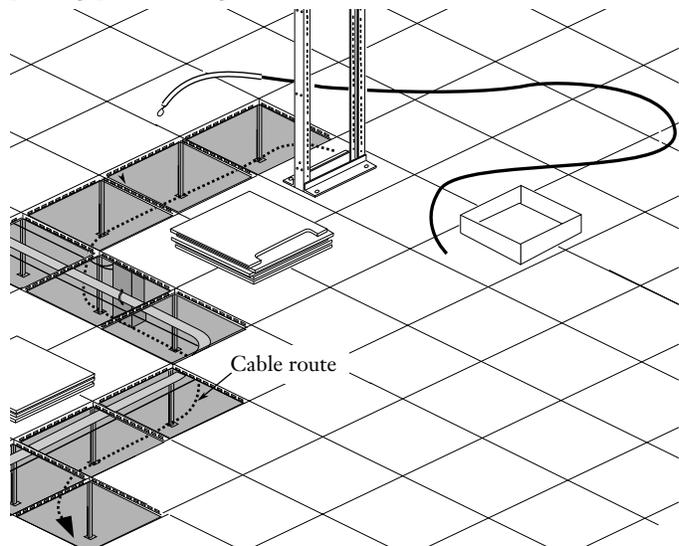


Figure 2

4.2 Attach a pull line to the pulling loop at the end of the grip (Figure 3).

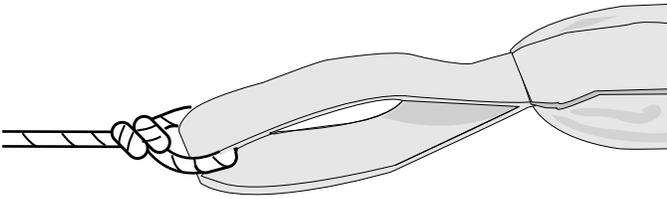


Figure 3

4.3 Place the cable using your company's standard practice, taking care not to exceed either the minimum bend radius or tensile rating of the grip.

4.4 Unlike conventional pulling grips, do not cut off the grip upon the completion of cable installation. Leave the grip in place for later disassembly.

5. Disassembly of the Grip and Cable

5.1 Remove the pull line and clean any dirt or debris from the outer surfaces of the sleeve.

IMPORTANT: *Disassemble the pulling sleeve on a work surface free from dirt, excessive heat, or any solvents.*

5.2 To remove the protective foam sleeve:

- Carefully use a razor blade to cut the wraps of electrical tape which secure the protective foam sleeve to the cable-end of the pulling sleeve (Figure 4). **USE CAUTION TO PREVENT DAMAGE TO THE SLEEVE.**

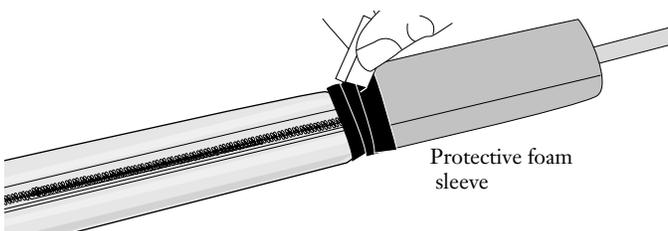


Figure 4

- Remove the foam sleeve from the cable and grip (Figure 5). If necessary use the razor blade to split the foam. **USE CAUTION TO PREVENT DAMAGE TO THE CABLE.**

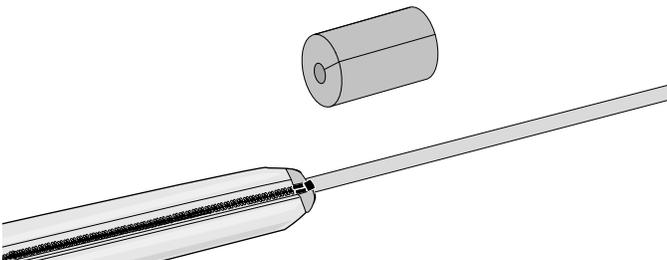


Figure 5

5.3 To remove the pulling sleeve (Figure 6):

- Lift the hook and loop flaps to expose the zipper pull.
- While holding the sleeve's pulling loop with one hand, unzip the sleeve.

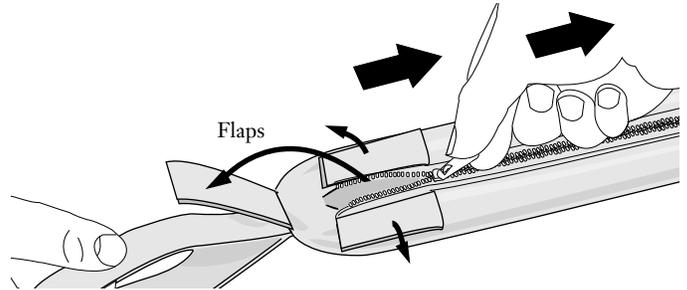


Figure 6

- Remove the sleeve from around the cable end of the grip (Figure 7).

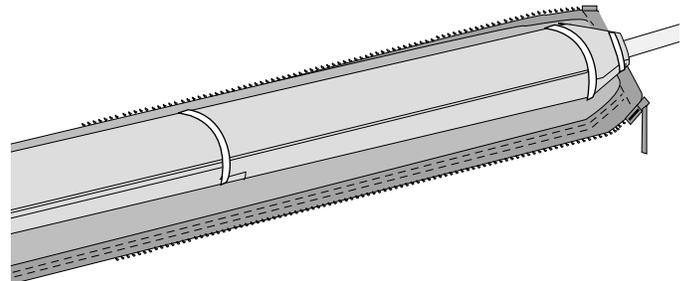


Figure 7

5.4 To unseal the grip (Figure 8):

- Starting at the nose-end of the grip, slide the rubber bands off of the grip.
- Use side cutters or scissors to cut the cable tie from the plug end of the grip.

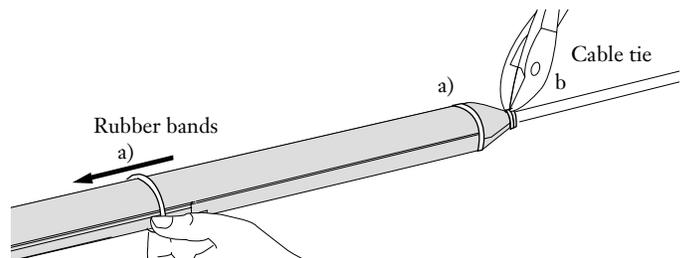


Figure 8

5.5 Carefully open the grip by pressing down on the overlapping closure along the length of the grip (Figure 9)....

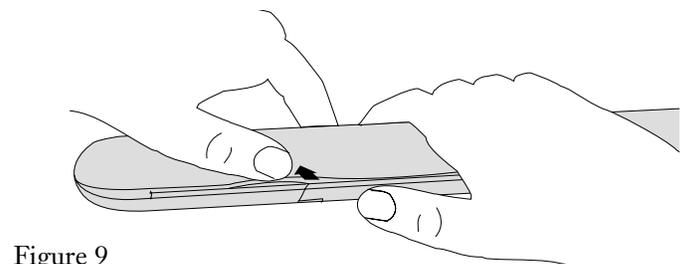


Figure 9

...until the hinged halves of the grip are free to swing open (Figure 10).



Figure 10

5.6 Remove the connectors and their legs according to the appropriate steps below:

MTP® Connector Applications

5.7 Working from the rounded nose back to the cable end of the grip:

a) Carefully remove the connectors and their legs from beneath the routing guides (Figure 11).

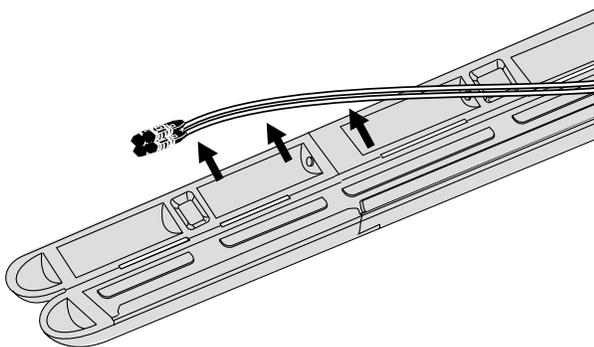


Figure 11

b) Remove the hook and loop straps from the legs.

c) Lift the cable plug from the grip (Figure 12) and install the plug and connectors according to the appropriate hardware instructions.

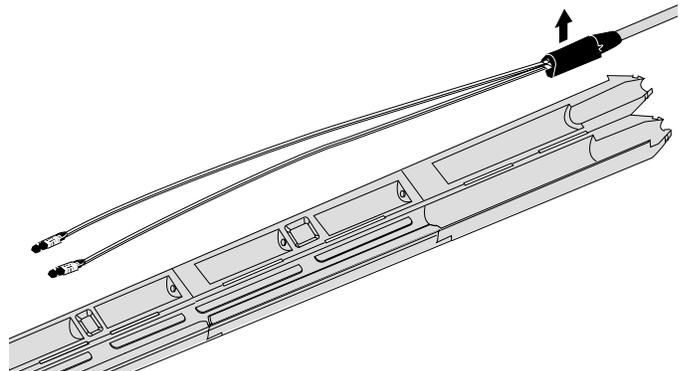


Figure 12

Non-MTP Connector Applications

5.8 Working from the rounded nose back to the cable end of the grip:

a) Carefully remove the bagged connectors from the storage compartments. Carefully unfold the legs for each bag and remove the legs from beneath the routing guides (Figure 13).

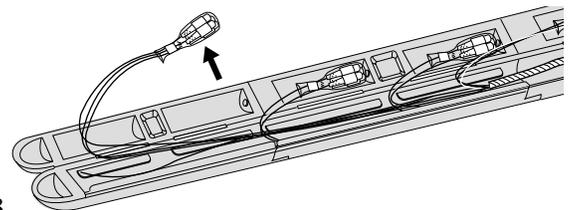


Figure 13

b) Remove the protective bags from the connectors.

c) To prevent tangling and keep the legs organized during installation:

900 µm legs have a 1 in. (2.5 cm) piece of spiral wrap on each group of legs for separation. Move the spiral wrap down the fan-out legs towards the connectors as you unload the grip (Figure 14).

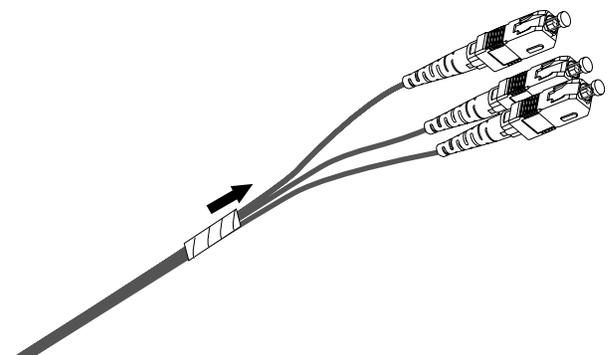


Figure 14

Jacketed legs have a 1 in. (2.5 cm) strap of hook and loop material to separate the groups of fan-out legs. Slide the strap down the legs as you install them into the hardware (Figure 15).

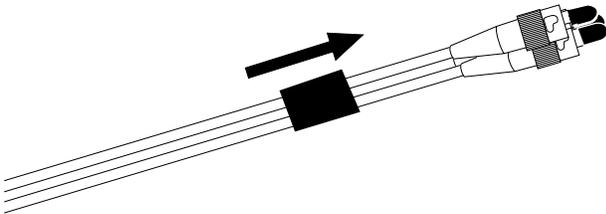


Figure 15

5.9 Lift the cable plug from the grip (Figure 16) and install the plug and connectors according to the appropriate hardware instructions.

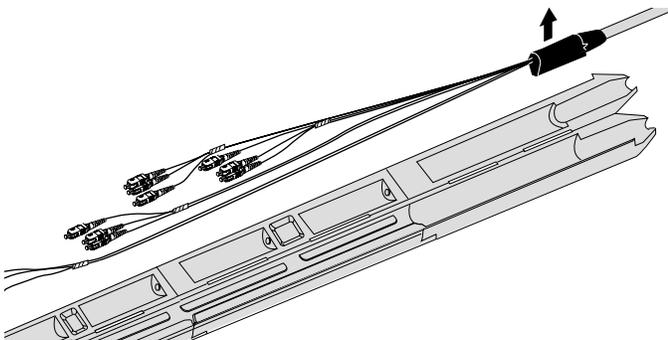


Figure 16

6. Reusing the Pulling Grip and Sleeve

6.1 Before reusing the grip, check to make sure that all section components are securely connected at each junction (Figure 17). *Do not reuse a grip if these hinges are torn.*

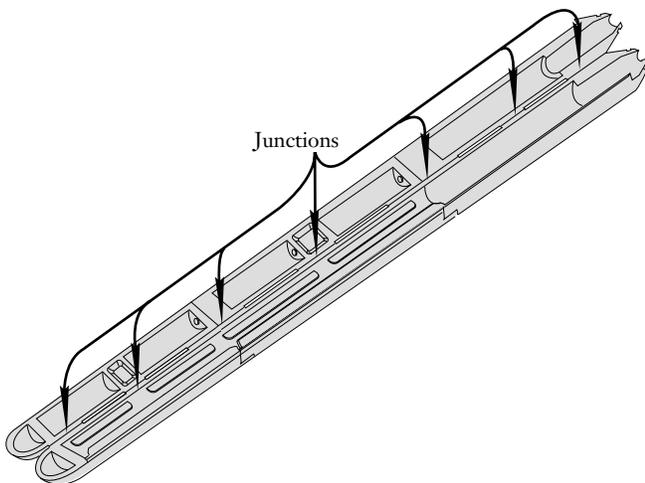


Figure 17

6.2 After unplugging and applying dust caps to all of the connectors, remove any tangles in the fan-out legs.

6.3 Place the cable plug in the side of the grip which has the leg routing guides, with the plug's V-shaped side secured in its slot (Figure 18).

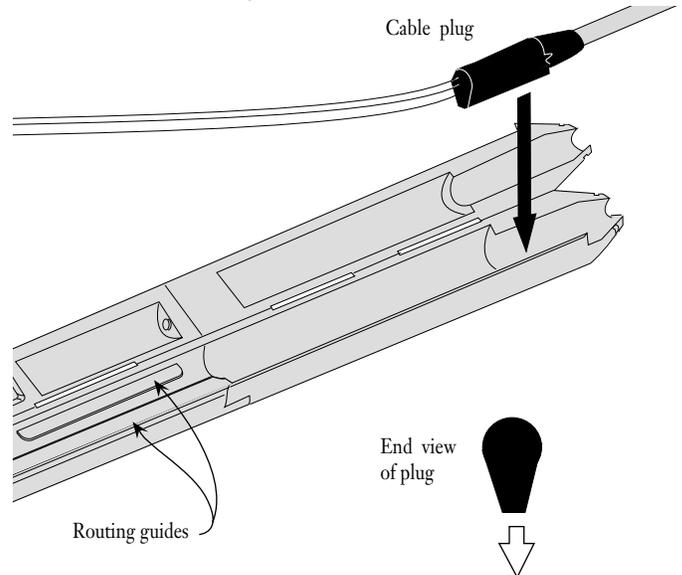


Figure 18

6.4 Complete the installation with the appropriate steps below.

MTP® Connector Applications

6.5 Starting with the leg on the bottom of the plug, gently feed each leg into the routing guides (Figure 19). *Skip to step 6.10 on page 6.*

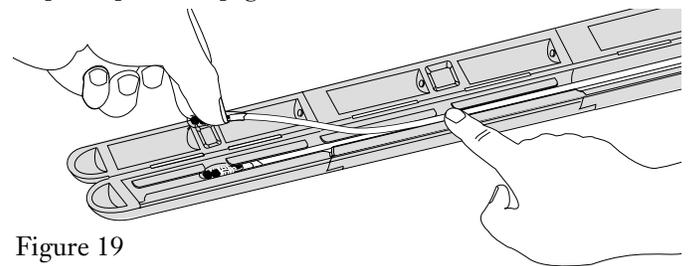


Figure 19

Non-MTP Connector Applications

6.6 Place the connectors in protective bags as follows

- For single-fiber connectors, place 4 connectors in each bag (Figure 20).

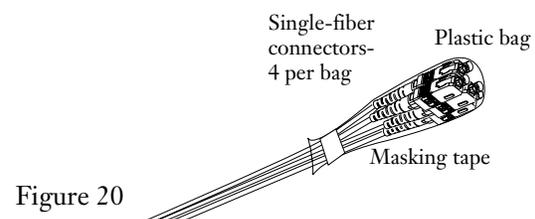


Figure 20

- For duplex connectors, place 2 sets of connectors to a bag (Figure 21).

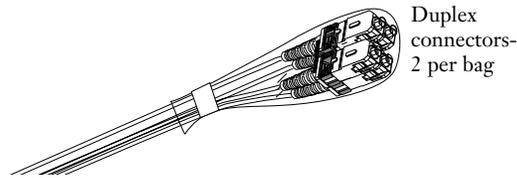


Figure 21

6.7 To bundle the legs, use either:

- a 1-inch piece of hook and loop strap to secure **jacketed fan-out legs**
- or
- a 1-inch piece of spiral wrap for **900 μm assemblies**

6.8 Place a piece of double-sided tape in the bottom of each connector pocket (see Figure 22).

6.9 To load the grip (Figure 22):

- Working from the cable plug of the grip, place each group of connectors into the pockets located in the mid-sections of the grip. Start with the pockets closest to the plug; the #1 leg should always be the last one loaded, with its connectors being in the pocket closest to the nose of the grip.
- Route the legs from each group across the slot in the routing guide and under the routing guide tabs. Loop the legs back toward the nose end of the grip and gently slip them under the guide flaps, keeping the slack out of the legs.

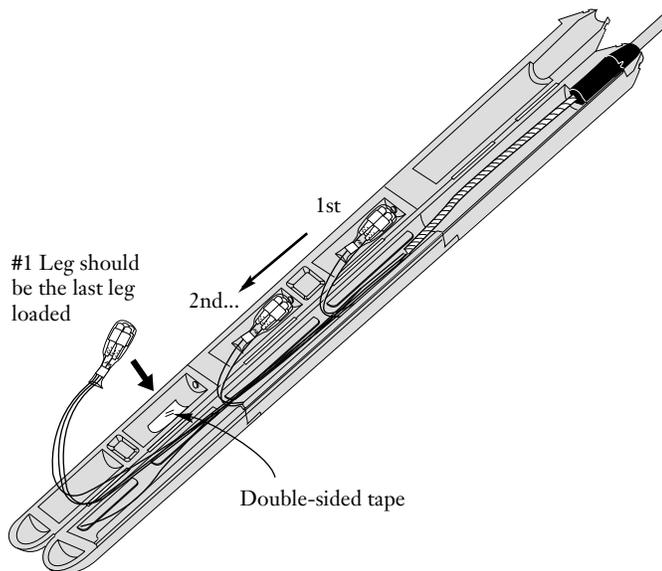


Figure 22

6.10 Carefully close the grip, making sure that none of the bags are pinched by the grip halves. Starting at the cable end of the grip, slide a rubber band over each of the joints between the grip sections (Figure 23).

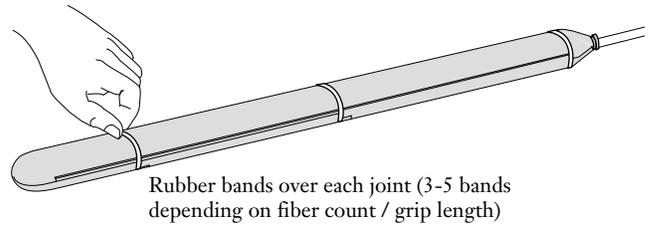


Figure 23

6.11 Apply an 8-inch cable tie around the grip in the groove on the cable-end of the grip and pull it tight. Clip off any excess length extending from the buckle (Figure 24).

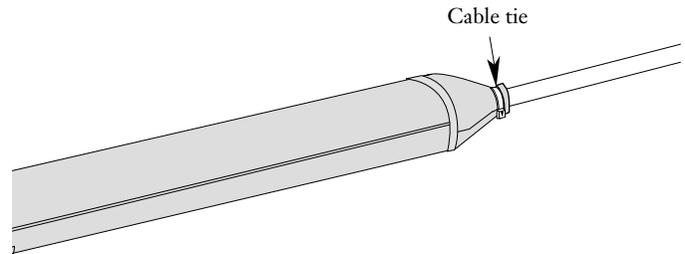


Figure 24

6.12 Slip the zippered sleeve around the grip and zip it shut (Figure 25, top). Close the sleeve's protective flaps over the zipper pull (Figure 25, lower).

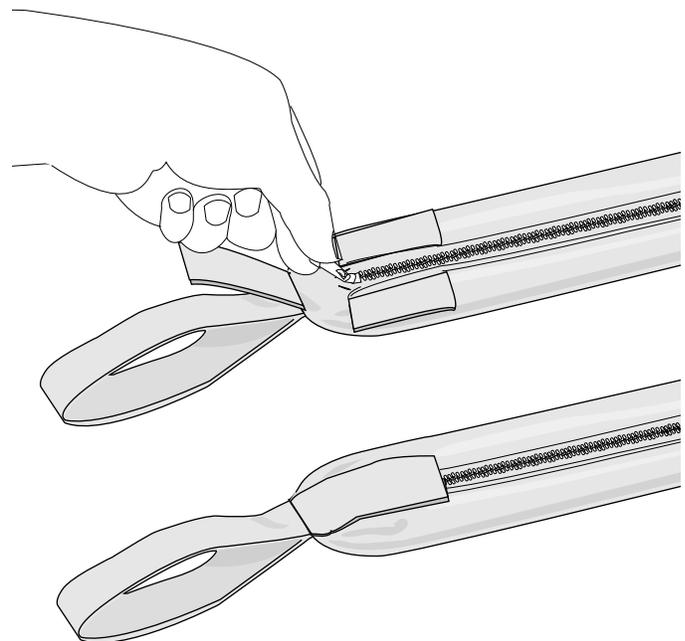


Figure 25

6.13 To apply the protective foam sleeve behind the pulling sleeve:

- a) Make sure that there are no kinks or bends at or near the cable entry point into the sleeve
- b) Apply a 6-inch piece of 7/8 x 1/2-inch foam tubing over the cable. Slide it over the edge of the pulling sleeve until it is flush with the end of the sleeve (Figure 26).

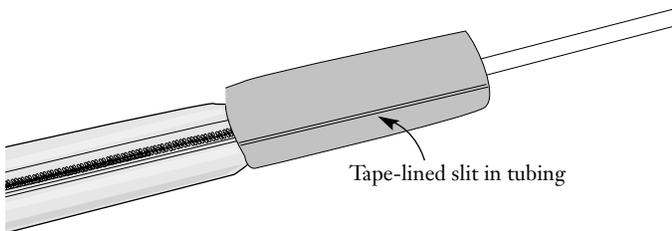


Figure 26

- c) Remove the protective seal from over the tape inside the tubing's slit. Press the tubing halves tightly together.
- d) Use a multiple wrap of electrical tape to secure the foam tubing to the pulling sleeve (Figure 27).

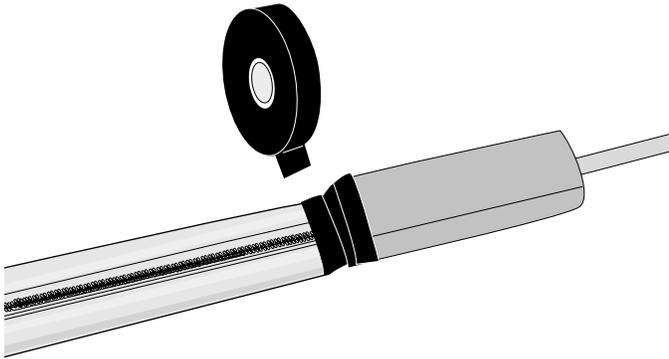


Figure 27

*Special Note:
Fiber Optic
Training
Programs*



Corning Cable Systems offers comprehensive, integrated training programs. Courses are structured for: Telephony, CATV, LAN, Intelligent Transportation Systems and Power Utilities.

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Corning Cable Systems
PO Box 489
Hickory, NC 28603-0489 USA
For US and Canada 1-800-743-2673
International 828-901-5000
FAX: 828-901-5973
http://www.corning.com/cable_systems