

# FieldShield & FieldShield Flexdrop

*Installation Manual*

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# FieldShield & FieldShield Flexdrop Installation Manual

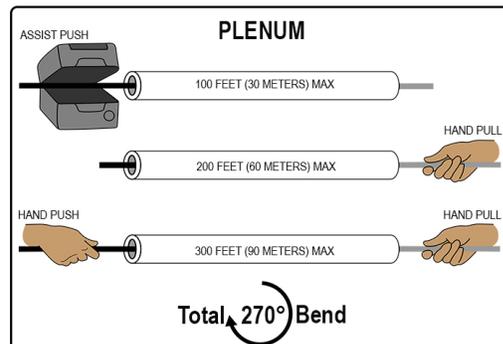
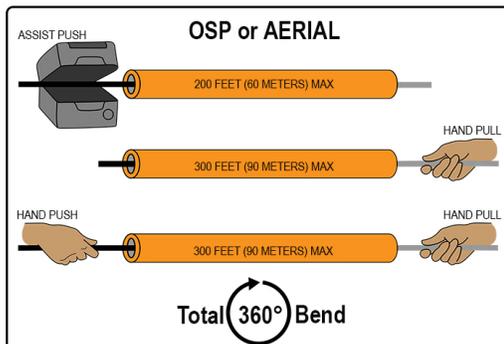
## When to push, pull, or both?

Every situation is different, but as a general rule, it is typically easier to install fiber using a push and pull combination, rather than pushing or pulling by itself. By using a combination push/pull method, installers have access to the fiber from both ends of the microduct when troubleshooting.

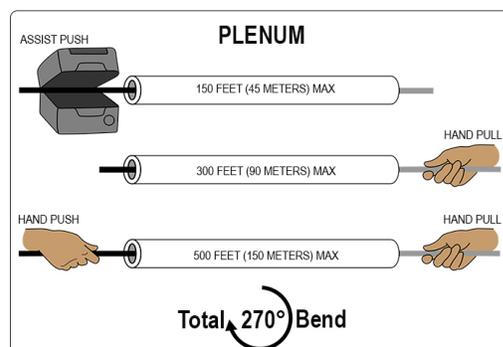
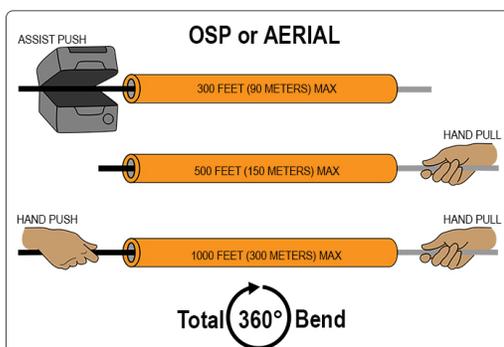
## Recommended Installation Distances



### FieldShield FLEXdrop



### FieldShield Pushable Fiber



**NOTE:** If a fiber gets stuck or snags during installation, the fiber can be pulled back a couple inches from the end being fed into the duct and re-pulled past the bind point. Sometimes the connector needs to be rocked past a snag point by carefully alternating pushing and pulling from both ends.

### Fiber Installation



Whether pre-connectorized or not, here are a couple quick tips to use when installing pushable fiber into the microduct. These techniques have been used to install single fiber, connectorized fiber and multi-fiber assemblies at distances in excess of 500 feet.

- **Never Remove Protective Cover from Pushable Connectors Prior to Installation**

If the protective plastic cover is removed from a pre-connectorized pushable assembly before you place the fiber in the microduct, the connector acts as a sort of “cheese grater” down the length of the microduct. It will shave off the inner liner and then those particles bind around the fiber. In some cases, this causes the fiber to become stuck and usually results in a broken fiber.
- **Pulling is Faster than Pushing**
- **Pull with Constant Pressure and Speed to Overcome Initial Friction**
- **Maintain the Same Feed and Pull Rate on Both Ends**

### Attaching Pull String to Fiber

FieldShield Microduct comes preinstalled with a nylon pull string that can handle pull strengths up to 50 lbs. When attaching the pull string, never tie the pull string directly to the fiber or connector. This will cause damage to or pull the connector off. Also, never use tape over the string because the outside jacket of the fiber is slippery enough that tape usually comes off and clogs the microduct. Depending upon connector type there are two different methods to attach the pull string to the pushable fiber assembly.

#### Pre-Terminated Pushable SC and Blunt Drops

The first method uses a nylon pulling eye that slides over the end of the assembly and works with blunt drops as well as pre-terminated SC pushable assemblies.

**Step 1:** Slide the open end of the pulling eye over the plastic sheath of the SC Pushable Connector or the blunt end of the assembly (**Figure 1**). Make sure to push the assembly all the way to the end of the pulling eye and pull the pulling eye taut (**Figure 2**).



Figure 1



Figure 2

**Step 2:** After the nylon pulling eye has been slid over the end of the cable, simply tie the pull string to the loop of the pulling eye (**Figure 3**).

**Note:** When using SC Pushable Connectors, make sure to cut back the excess string left behind after tying the pull string to the pulling eye. Failure to remove the excess string can cause the connector to bind between the string and the microduct during installation.

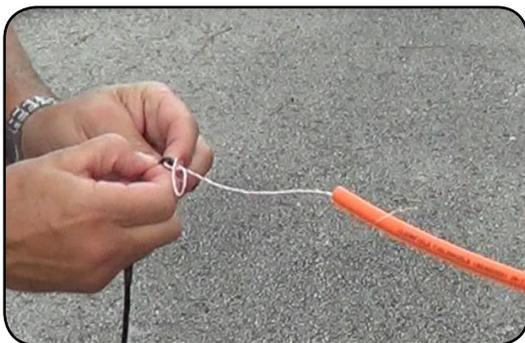


Figure 3

### Pre-Terminated Pushable LC Drops

The second method uses a crimped pulling eye that was attached to the assembly during factory termination.

#### Installation Procedure

**Step 1:** Access the pulling eye by sliding the connector's protective sheath approximately 1" towards the opposite end of the assembly, stopping at the metal crimp ring.

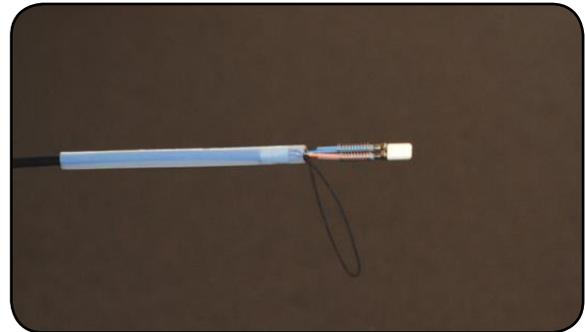


Figure 1

**Step 2:** Tie the pull string to the loop of the pulling eye and cut back the excess string left behind.

**Note:** Do not cut the string directly at the knot. Leave about 2 to 3 mms of excess string next to the knot.

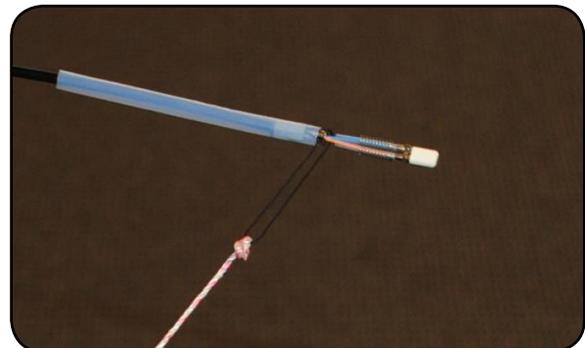


Figure 2

**Step 3:** Make sure that the springs are staggered one on top of each other then, push the protective sheath over the connector and knot from the pull string.

**Note:** Failure to stagger the springs increases the width of the pushable connector, making it too wide to pass tight corners.

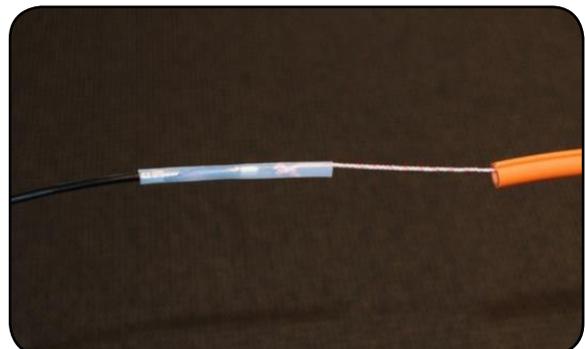


Figure 3

## Connector Cleaning Procedure

Whether factory terminated or field spliced, clean connectors are essential for proper system operation. Even the smallest dust particle can cause transmission problems, so for optimal network performance, inspect and if necessary, clean all connectors and adapters prior to mating.

I.T.C...Inspect Then Connect!

ALWAYS inspect the connector first thing with a clean fiber scope inspect the pair. Three types of contamination require different cleaning techniques. The use of Chemtronics end face and bulkhead cleaning products and techniques ensures a clean end face, no matter the type of contamination.

These are Clearfield recommended products/application. Use the product you feel will complete your cleaning procedures. Create a "best practice" for your company and follow those procedures.

**\*\*NOTE: It is NOT recommended to use IPA to clean the end-face.**

### Cleaning the end-face...but not just the end-face

- Place one wiping paper on QbE-2 FiberSafe™ Cleaning Platen. **Figure 1**
- Apply small amount of precision cleaner (about 1" in diameter) with Electro-Wash MX pen on to one end of the wipe. **Figure 2**
- Hold end face 90 degree. Adjust for APC connection by slightly tilting the container or end face. Angle is correct when no drag is left on the end face. **Figure 3**
- Draw end face from wet to dry part of the wipe 3 times. Use just enough pressure to ensure complete contact between end face and the wipe.

**DO NOT** retrace previous step.



**Figure 1**



**Figure 2**



**Figure 3**

# FieldShield & FieldShield Flexdrop

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- **CLEAN THE FERRULE**...Lightly moisten the fiber optic swab (2.5mm/38542F or 1.25mm/38040) by spotting a small amount (about 1") of Electro-Wash PX or Electro-Wash MX pen onto the QBE-2. Hold the swab, 1 side down to the wetted area and hold for a count of 1-2-3-4-5. **Figure 4**

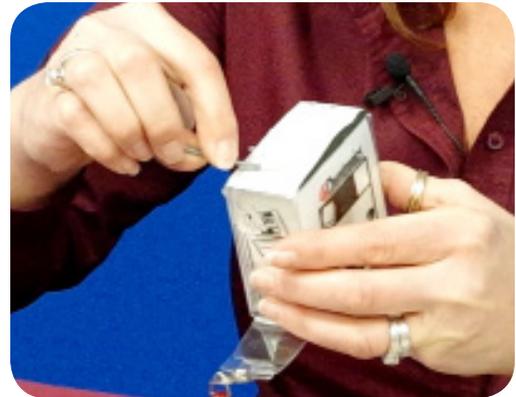


Figure 4

- Insert swab into side of ferrule, wet side to the ceramic ferrule and circle around 2-3 times and remove. Turn swab to dry side and repeat. **Figure 5**

### Cleaning the mate through a bulkhead adapter AND the adapter itself!

- Lightly moisten the fiber optic swab(2.5mm/38542F or 1.25mm/38040) by spotting a small amount (about 1") of Electro-Wash PX or Electro-Wash MX pen onto the QBE-2. Hold the tip of the swab onto the wetted area and hold for a count of 1-2-3-4-5.



Figure 5

- Insert the swab into the adapter to the connector, press lightly against the connector, twist 2-3 times, remove and discard.

- Dry with a second dry swab.

- Inspect (re-clean if necessary) and test for signal strength.

- Use additional swabs to clean inside the actual adapter. Moisten swab, like above, insert through hole and remove while twisting. **Figure 6**

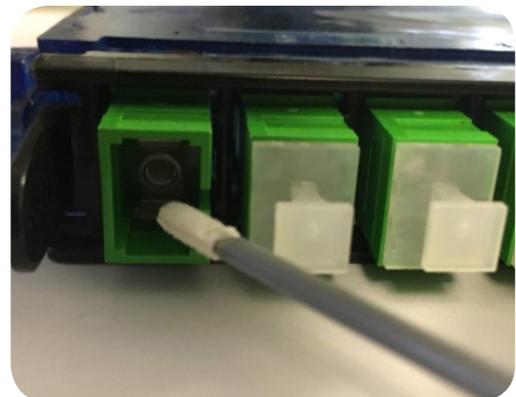


Figure 6

### Cleaning an MPO/MTP Connector

#### Female Connector

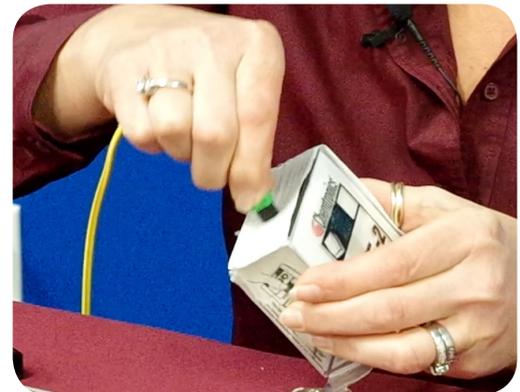
- Place one wiping paper on QbE-2 FiberSafe™ Cleaning Platen and apply small amount of precision cleaner (about 1" in diameter) with Electro-Wash MX pen on to one end of the wipe. **Figure 1**
- Hold end face 90 degree. Adjust for APC connection by slightly tilting the container or end face. Angle is correct when no drag is left on the end face. **Figure 2**



**Figure 1**

#### Male Connector

- Lightly moisten the fiber optic swab (CC505F) like above, moistening 1 side.
- Place swab, wet side down at one end of connector end-face and draw across in a diagonal sweep (ie: from fiber 1 up and across to fiber 12). Turn swab over to dry and draw back from fiber 12 to fiber 1. **Figure 3**



**Figure 2**



**Figure 3**

BEFORE cleaning any connector...be sure you know what type of contaminate you are cleaning...dry? Fluidic?...All the available products are good, it's the process that you need to be aware of. Using a dry cleaning method to clean "dirt" can lead to scratching of the end-face. Learn the process of cleaning properly!

### SC Pushable Connector

#### Housing Assembly

**Step 1:** Remove the white protective dust cap from the unassembled connector (**Figure 1**).

**Note:** The SC Pushable Connector has a keyed locking feature that holds the inner housing to the connector and aligns the ferrule when the two are correctly mated.

To properly mate the connector, the key on the inner housing must bypass the ferrule alignment notch to properly lock into place.



Figure 1

**Step 2:** Align the black mark on the inner housing with the black line on the connector, then rotate the inner housing 45 degrees to offset the lock (**Figure 2**) and slide the inner housing half way over the connector.

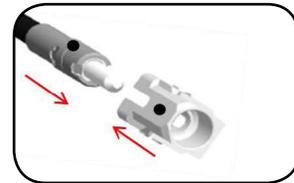


Figure 2

**Step 3:** Rotate counter-clockwise 45 degrees to realign the inner housing and connector and push the inner housing onto the connector until it snaps into place (**Figure 3**).



Figure 3

**Step 4:** Align the key on the outer housing with the black line on the connector, then slide the outer housing over the entire assembly until it snaps into place (**Figure 4**).

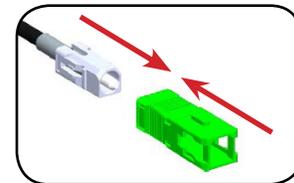


Figure 4

**Step 5:** Re-install the white protective dust cap (**Figure 5**).

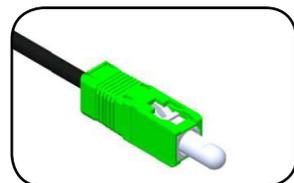


Figure 5

### Simplex LC Pushable Connector

#### Connector Housing Assembly

**Step 1:** Remove protective dust cap and cut the pull string loop close to crimp (**Figure 1**).

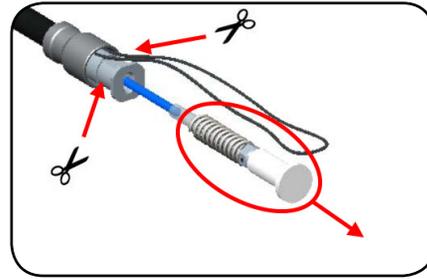


Figure 1

**Step 2:**

A. Slide the inner clip over the fiber (**Figure 2**).

B. Align slot with housing latch and press together.

**Note:** APC connectors will have dots on the ferrule to align with latch on housing.

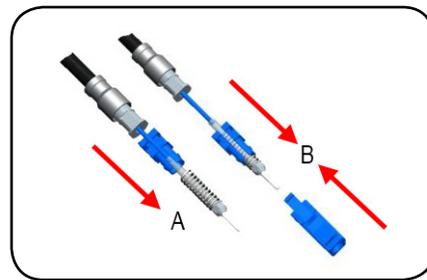


Figure 2

**Step 3:** Insert the cable crimp into the back of the lower body (**Figure 3**). Snap the connector into the front half of the lower body (**Figure 4**).

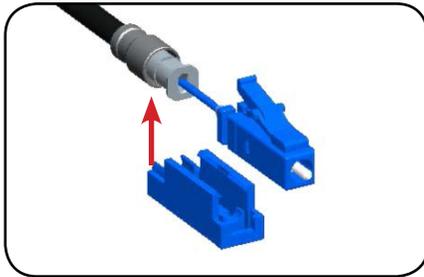


Figure 3

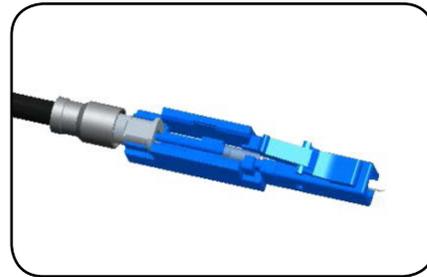


Figure 4

**Step 4:** Snap body cover onto lower half (**Figure 5**). Install the protective dust cap (**Figure 6**).

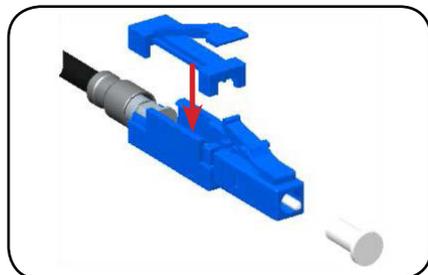


Figure 5



Figure 6

### Duplex LC Pushable Connector

#### Connector Housing Assembly

**Step 1:** Remove protective dust cap and cut the pull string loop close to crimp (**Figure 1**).

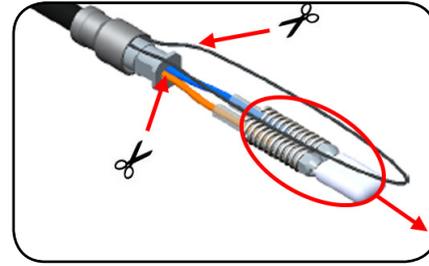


Figure 1

**Step 2:**

A. Slide inner clips on the same colored fiber and over the springs (**Figure 2**).

B. Align slot with housing latch and press together.

**Note:** APC connectors will have dots on the ferrule to align with latch on housing.

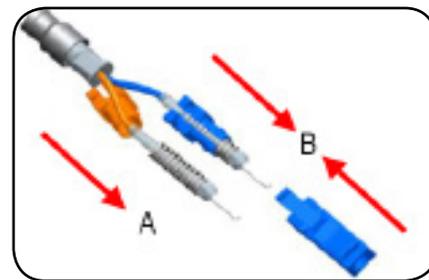


Figure 2

**Step 3:** Insert the cable crimp into the back of the lower body (**Figure 3**). Snap the connector into the front half of the lower body (**Figure 4**).

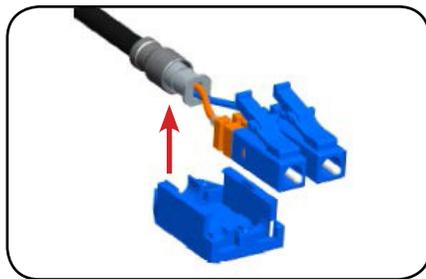


Figure 3

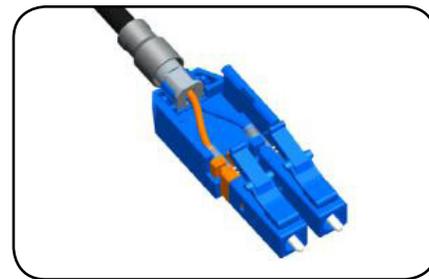


Figure 4

**Step 4:** Snap body cover onto lower half (**Figure 5**). Install the protective dust cap (**Figure 6**).

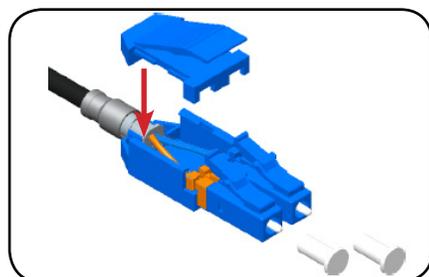


Figure 5

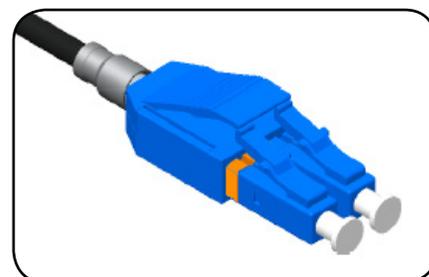


Figure 6

### Fiber Polarity Switch

**Step 1:** Remove the top half of the body by prying the bottom half sides apart (**Figure 1**).

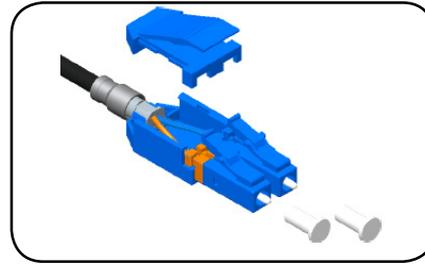


Figure 1

**Step 2:** Remove the lower half of the body (**Figure 2**).

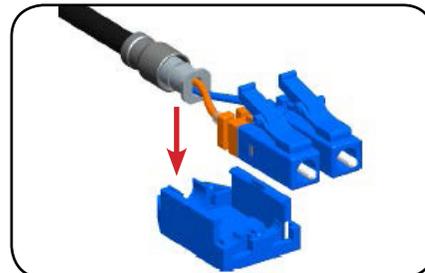


Figure 2

**Step 3:** Choose either a straight through or reversed polarity configuration and assemble the colored fibers as shown.

**Note:** All pre-assembled Clearfield Dual LC connectors are factory configured as straight through.



Straight Through



Reversed

**Step 4:** Snap body cover onto lower half (**Figure 3**).

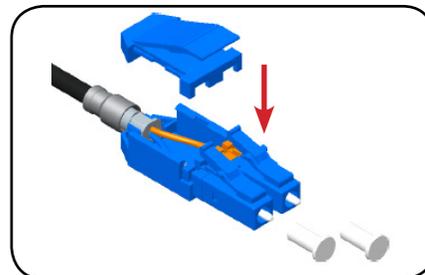


Figure 3

# FieldShield & FieldShield Flexdrop

## Installation Manual



### Preparing FieldShield Pushable Fiber for Splice-On Connectors

#### 1-Fiber 250um FieldShield Cable

##### Recommended Tools / Parts List

- 1/8 Inch Adhesive Lined Heatshrink
- 900um Furcation Tubing
- 3-4mm Rotary Tube Cutter
- Snips/Cutting Utensil
- Isopropyl Alcohol /Cleaning Wipes
- Heat Source (Hot Air Gun/Blow Torch)
- Super Glue
- Ruler

##### Installation Procedure

**Step 1:** Determine the required 900um breakout length needed for your application and mark the FieldShield cable using an appropriate writing utensil (**Figure 1**).

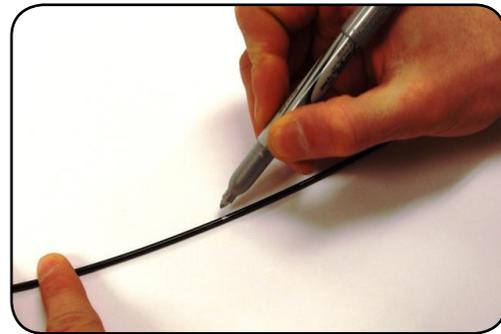


Figure 1

**Step 2:** Ring cut and remove the jacket using a rotary tube cutter available from Clearfield (**Figure 2**).

**Note:** The jacket is removed using a score and snap process. Make sure that the rotary tube cutter blade has been adjusted so that it scores the outside of the jacket, but does not entirely cut through. Do not cut or nick the fiber.

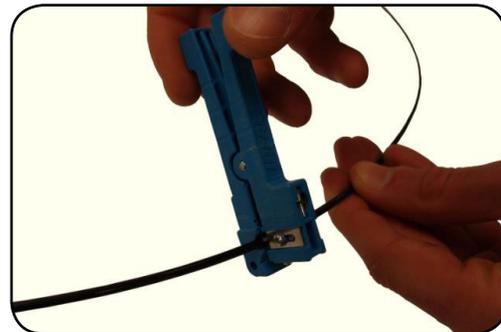


Figure 2

**Step 3:** Pulling from the cable, pull the 3mm jacket off in a straight line (**Figure 3**).

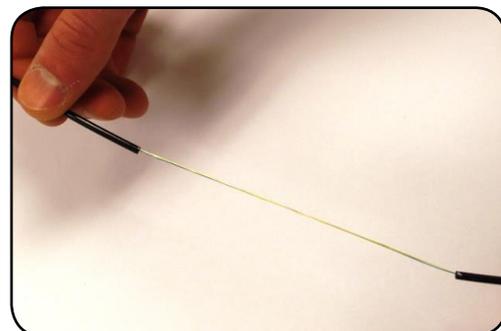


Figure 3

**Step 4:** Using a cleaning wipe and some Isopropyl alcohol, wipe clean the exposed 250um fiber (Figure 4).

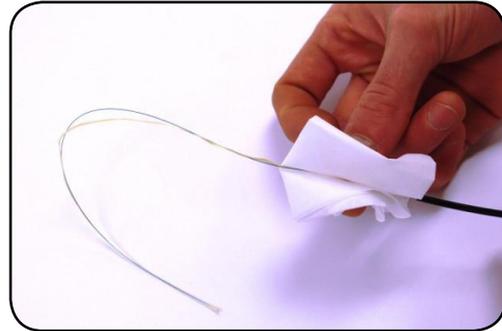


Figure 4

**Step 5:** Cut a piece of 900um furcation tubing 6" longer than the desired breakout. Mark the 900um tubing 6" from the end of the cut (Figure 5). This 6 inch mark will tell you how far to insert the 900um tubing into the 3mm cable.



Figure 5

**Step 6:** Cut a 1" piece of 1/8" adhesive lined heatshrink (available from Clearfield), fold the Kevlar strength members back over the outside of the cable. Slide the heatshrink over the fiber and on to the outside of the 3mm cable holding back the Kevlar (Figure 6).

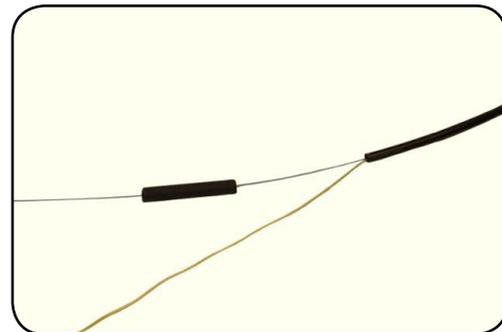


Figure 6

**Step 7:** Place heatshrink flush to the end of the cable and then apply even heat until the tubing is fully shrunk (Figure 7).

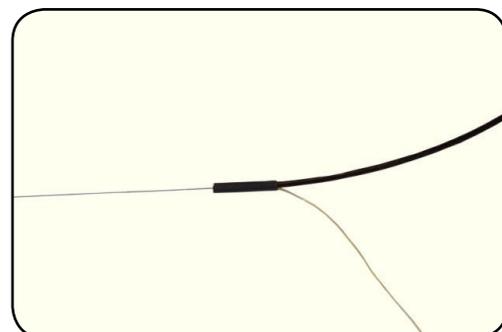


Figure 7

**Step 8:** Slide the 900um tubing over the 250um fiber inserting the 900um tube into the FieldShield 3mm cable (**Figure 8**).

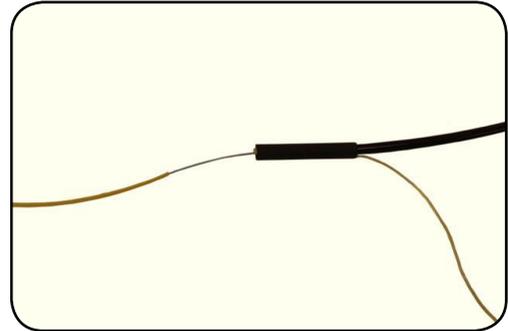


Figure 8

**Step 9:** Stop inserting the 900um tubing keeping the 6 inch mark approximately 1 inch from going into the 3mm cable as seen in (**Figure 9**).



Figure 9

**Step 10:** Now apply a generous amount of super glue to the 900um furcation tubing between the FieldShield cable and the mark and then while rotating, slide the furcation tubing up to the 6 inch mark on the 900um tubing (**Figure 10**).

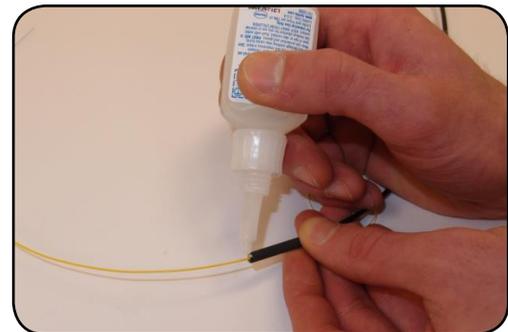


Figure 10

**Step 11:** Allow the glue to dry, and then trim the excess Kevlar strength members behind the heatshrink (**Figure 11**).

**Note:** The CraftSmart Splice-On Connector can now be installed per standard instructions to the 900um furcated fiber.

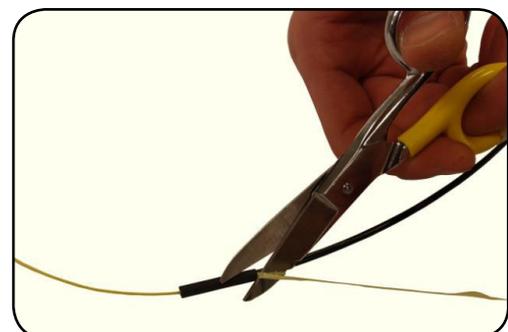


Figure 11



# FieldShield & FieldShield Flexdrop Installation Manual

## 2, 6, and 12-Fiber 250um FieldShield Cable

These instructions detail the installation of 2, 6, and 12 fiber 900um furcation upjacketing kits. Each kit breaks out 250um fibers from a multifiber loose tube into individual 900um buffer tubes. The fiber can then be terminated using the 900um CraftSmart Splice-On Connector installation instructions.

### Recommended Tools / Parts List

- Cover
- Base
- 24" 900um 2, 6, or 12 Fiber Terminal Assembly
- Heatshrink
- Heat Source (Hot Air Gun/Blow Torch)
- Electrical or Masking Tape
- Lint Free Wipes
- Indelible Marker
- Buffer Tube Stripper
- Gel Cleaner
- Needle Nose Pliers

### Installation Procedure

**Step 1:** Locate and setup your work surface as close to the patch panel location as possible. This will minimize the strip length.

**Step 2:** Route the cable through the patch panel to the work surface.

**Step 3:** Measure backwards, from the end of the cable to the point at which it will attach to the patch panel, and add 39 inches (1 meter) to the length. Mark this length with a piece of tape. This is the strip point for the cable being terminated.

**Step 4:** Strip the cable back to the tape mark.

**Step 5:** Secure the cable to the patch panel.

**Step 6:** Clean any dirt and/or gel surrounding the loose tube.

**Step 7:** Select the first buffer tube and measure back 36 inches (90cm) and place a mark.

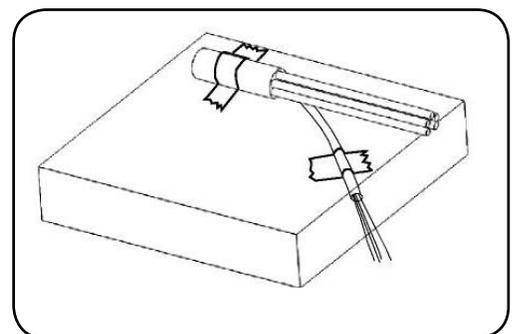
**Step 8:** Score the buffer tube and strip the loose buffer tube at the mark.

**Step 9:** Thread the heatshrink until it is flush with the end of the buffer tube and shrink in place.

**Note:** Be careful not to melt or distort the tube due to excessive heat.

**Step 10:** Tape the buffer tube to the work surface with 2 inches (50mm) overhanging the end of the work surface (**Figure 1**).

**Step 11:** Wipe all the gel from the exposed fibers using a gel cleaner.



**Figure 1**

**Step 12:** Place the buffer tube in the bottom of the furcation kit. Using pliers, press the tabs of the crimping fixture to hold the loose tube.

**Note:** Crimp only enough to start to deform the tube. Twist and pull the terminal body to check if the crimp is secure. The tube should not slip or move in the crimp fixture.

**Step 13:** Tape the terminal assembly in the vertical position 3 inches (75mm) to the side of the loose buffer tube (**Figure 2**).

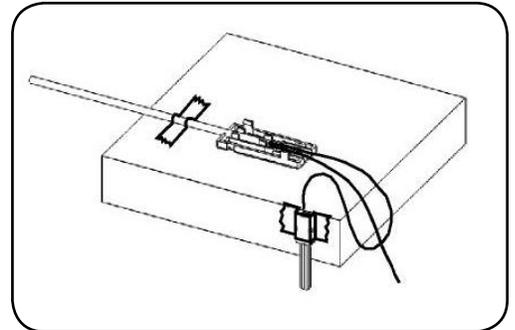


Figure 2

**Step 14:** Untangle the fibers and make sure they are completely free of gel filling compound.

**Step 15:** Talc the fibers to facilitate the threading operation. Cup the talc in the palm of your hand and apply along the whole length of the fibers.

**Step 16:** Select the blue fiber and thread 6 inches (150mm) into the blue tube of the terminal assembly (**Figure 3**).

Repeat this procedure for the remaining fibers, making sure the color coded fibers match the color coded 900um tubing.

**Step 17:** When all fibers have been threaded, push the fibers as a group until the fibers start to protrude from the ends of the buffer tubes.

**Step 18:** Gently pull the fibers from the ends of the buffer tubing.

**Note:** Do not pull the fibers taught. Leave sufficient slack so the fibers are not stressed.

**Step 19:** Untape the buffer tube assembly and slide the assembly toward the loose tube while pulling the fibers from the end of the 900um tubing. If the fibers twist, rotate the terminal assembly in the opposite direction of the twist (**Figure 4**)

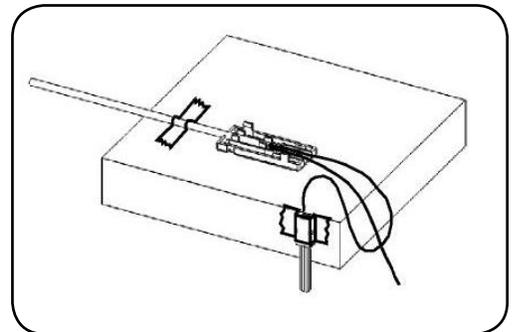


Figure 3

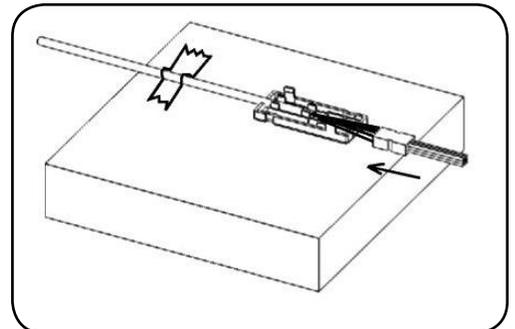
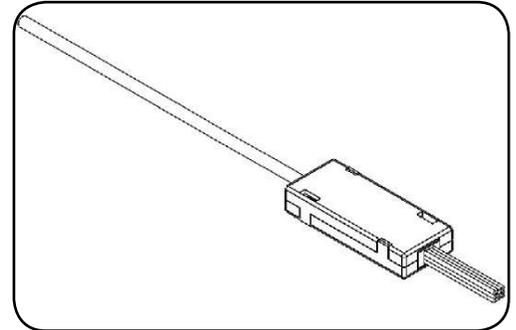


Figure 4

**Step 20:** Place the terminal assembly into the bottom of the terminal body.  
Align the top cover and snap into place (**Figure 5**).



**Figure 5**

**Step 21:** Remove the tape from the loose tube and repeat this procedure for the remaining loose tubes.

**Note:** The CraftSmart Splice-On Connector can now be installed per standard instructions to the 900um furcated fiber.

### CraftSmart Splice-On Connectors

#### Safety Precautions

- Please read and follow all fusion splicer manufacturer recommended procedures concerning splicing operation and precautions.
- Safety glasses should be worn when handling cleaved fibers. Cleaved fibers are sharp and can pierce eyes, skin or clothing.
- Never look into the end of a microscope or optical cable connected to an operating optical output device. Laser radiation is invisible, and direct exposure can severely injure the human eye.

**Note:** Before starting this process, completely read through the entire installation document. If the splice machine you are using has a tensile test option, be sure to shut this option off on your machine.

#### Recommended Tools/Parts List

1. Fusion Splicer
2. Cleaver
3. Jacket Ringer and Stripper
4. Kevlar Shears
5. Fiber Stripper
6. Splice Holders for Splicer
7. Marking Pen



Figure 1

#### Installation Procedure

**Step 1:** Remove the connector and components from the individually packaged tube.

**Step 2:** Separate all the parts and identify the parts you will be using for your application.

- Dust Cap with Handle
- Outer Housing
- Inner Housing Connector Assembly
- Fusion Splice Protection Sleeve
- Strain Relief Boot



Figure 2

**Step 3:** Remove the dust cap from the connector sub-assembly and put aside for later use (**Figure 1**).



Figure 3

**Step 4:** Remove Install the dust cap with the handle on to the ferrule (**Figure 2**).



Figure 2

**Step 5:** Carefully remove the fiber protection cover from the back side of the connector (**Figure 3**). Do not touch the stripped end of the fiber or let anything bump against it.

**Note:** The Fiber is already stripped, cleaned and cleaved to the exact dimension needed.



Figure 3

**Step 6:** Insert the connector sub-assembly into the fusion splice holder, making sure the fiber sits into the center of the fiber groove (**Figure 4**).



Figure 4

**Step 7:** Following the splice machines instructions carefully insert the splice holder with the connector inside of the holder into one side of the machine (**Figure 5**). Using extreme caution, do not touch or bump the stripped fiber against anything.



Figure 5

**Step 8:** Insert the Strain Relief Boots narrow end first on to the 900um fiber that you will be splicing to.

**Step 9:** Insert the Fusion Splice Protection Sleeve on to the 900um fiber after the Strain Relief Boot.

**Step 10:** Following the Fusion Splicer's manufacturers recommendations strip the fiber to length.

**Step 11:** Place the fiber in the splice holder.

**Step 12:** Clean bare fiber with clean wipe and alcohol.

**Step 13:** Cleave the bare fiber to 10mm. If the cleave length is too long it will not be protected in the Splice Protection Sleeve.

**Step 14:** Following the splice machines instructions carefully insert the splice holder with the 900um fiber into the opposite side of the machine. Using extreme caution, do not touch or bump the stripped fiber against anything.

**Step 15:** Following the Fusion Splicer's manufacturers procedure splice the connector to the fiber.

**Step 16:** Once the splicer has completed the process and you are satisfied with the results, carefully slide the protection sleeve up to the fiber holder and remove the fiber and connector from the splicer.

**Step 17:** Slide the protection sleeve toward the connector centering it over the stripped bare fiber splice (**Figure 6**).



**Figure 6**

**Step 18:** Insert the fiber and protection sleeve into the protection sleeve oven with the connector all the way to one side of the oven keeping it out of the oven as the best as you can (**Figure 7**). If you cannot close the ovens cover then you can lay the splice protection holder over the protection sleeve to help keep the heat inside.



**Figure 7**

**Note:** If the splice protection sleeve is not shrunk down all the way then you can run the heat cycle again. You may want to increase the ovens time duration if this continues to happen.

**Step 19:** Slide the Strain Relief Boot up to the back of the connector and snap in place.

**Step 20:** Replace the dust cap with handle back to the original dust cap.



# FieldShield & FieldShield Flexdrop

## Installation Manual

### Drop Cable Options

Product Name	Cable Jacket	UV	Temperature	FieldShield Connector	Jacket Color	Can be stapled	Best Application
FieldShield FLATdrop 	Outdoor	Yes	-40° to 176°F	No	Black	Yes	For use when fast installation and low up-front cost is most desired feature.
FieldShield D-ROP 	Outdoor	Yes	-40° to 176°F	Yes	Black/ Orange	Yes	For use when a single pass and restorable solution at a competitive price is ideal.
FieldShield FLEXdrop 	Indoor (Plenum)/ Outdoor	Yes	-40° to 176°F	Yes	Black/ White	Yes	For use when a premium product that has maximum workability, flexibility and restorability is desired.
FieldShield (Classic) 	Outdoor in Duct	Yes in Duct	-40° to 176°F	Yes	Black	Yes	For use when the distance from the access point to the SFU/MDU is longer than normal and a more rigid solution is required to maintain restorability for drops longer than 300 feet.
FieldShield StrongFiber 	Indoor/ Outdoor in Duct	Yes in Duct	-40° to 176°F	Yes	Black	Yes in Duct	For use when a reusable pathway is needed and maximum slack storage is desirable.

# FieldShield & FieldShield Flexdrop

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### Standard Warranty

Clearfield warrants to the original purchaser of the Product sold hereunder is free from defects in material and workmanship under normal use and service, subject to exceptions stated herein.

### Product Warranty

Products manufactured by Clearfield to customer prints and/or specifications are warranted for one (1) year or in accordance with the Product Warranty Classification section of this document. In all cases, the warranty period commences on the date of shipment to the original purchaser.

### Warranty Claim Procedure

If any Product purchased from Clearfield is found defective under the above warranty, the following basic procedure must be followed:

- a) Customer must contact Clearfield and obtain a Return Materials Authorization.
- b) Following authorization, the Customer ships the product per Clearfield's freight instructions to Clearfield's manufacturing facility.
- c) Clearfield shall repair or replace the defective Product at its sole option and discretion, and return the repaired or replacement Product to Customer's site, freight prepaid.

Note: If the Product is not found to be defective at Clearfield, the product will be returned to the Customer and the customer billed for freight in both directions.

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CORRECTION OF DEFECTS BY REPAIR OR REPLACEMENT, AT THE OPTION OF CLEARFIELD INC, SHALL CONSTITUTE THE EXCLUSIVE SOLE REMEDY FOR A BREACH OF THIS LIMITED WARRANTY. CLEARFIELD SHALL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, PUNITIVE, OR EXEMPLARY DAMAGES ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE PRODUCT OR WITH AGREEMENT TO SELL PRODUCT TO BUYER, INCLUDING, BUT NOT LIMITED TO DAMAGES FOR LOST PROFITS, LOSS OF USE, OR FOR ANY DAMAGES OR SUMS PAID BY BUYER TO THIRD PARTIES. THE FOREGOING LIMITATION OF LIABILITY SHALL APPLY WHETHER THE CLAIM IS BASED UPON PRINCIPLES OF CONTRACT, WARRANTY, NEGLIGENCE OR OTHER TORT, BREACH OF STATUTORY DUTY, PRINCIPLES OF INDEMNITY OR CONTRIBUTION, THE FAILURE OF ANY LIMITED OR EXCLUSIVE REMEDY TO ACHIEVE ITS ESSENTIAL PURPOSE, OR OTHERWISE.

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- 2) Customer re-packaging of Product for shipment to third parties or destinations other than those originally shipped to by Clearfield, or any defects suffered during shipping where the Product has been re-packaged.
- 3) Customer's installation or maintenance, excepting activities described in and performed in accordance with Clearfield documentation.
- 4) Customer's improper or negligent use or application of Product.
- 5) Other causes external to the Product, including but not limited to accidents, catastrophe, acts of God, government action, war, riot, strikes, civil commotion, sovereign conduct, or the acts or conduct of any person or persons not party to or associated with Clearfield.
- 6) Environmental factors and weathering resulting in aging and damage not necessary or applicable to the function of the product.



# FieldShield & FieldShield Flexdrop

## *Installation Manual*

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Clearfield, Inc. can be contacted for any issues that arise with the supplied product.

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