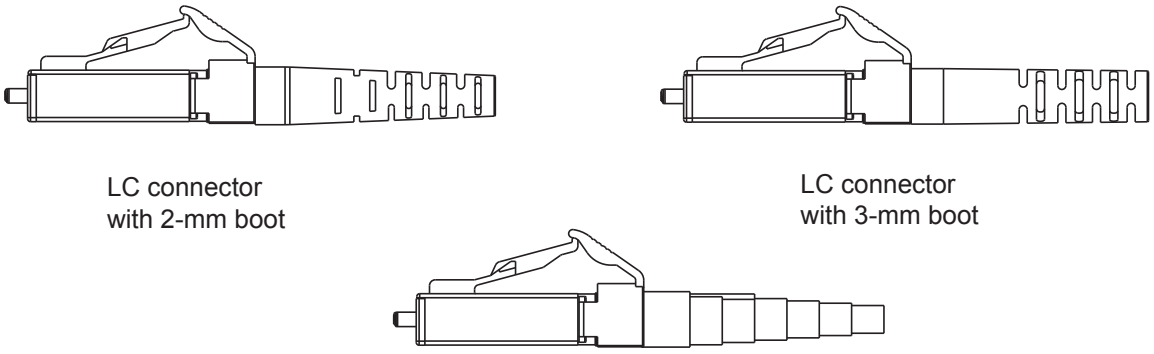
CORNING

# LC and Angled LC Connectors with Preradiused Ceramic Ferrules

006-327, Issue 10

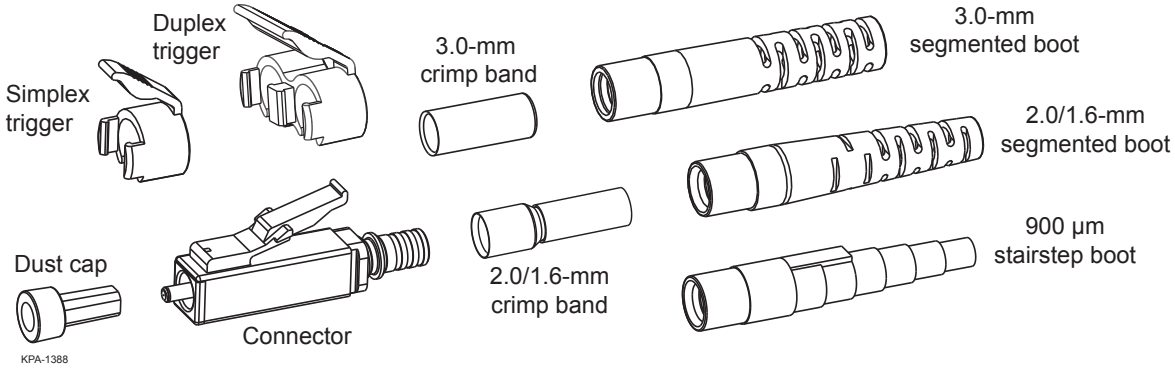
| related literature \| | |
|---|---|
| 006-324 | Instruction, Cable Assembly House Oven |
| 006-371 | Instruction, Polishing Processes for Heat-Cure Fiber Optic Connectors |
| 02-025255 | Universal Strip Length Card for Heat-Cure Connectors |




## 1. General

This procedure describes the installation of the Corning heat-cure LC fiber optic connector with preradiused ceramic ferrule or preground angled ceramic ferrule. This installation requires the proper connector components, consumables, and equipment necessary for fiber installation into the connector.

## 2. Components




## 3. Precautions

### 3.1 Safety Glasses

**CAUTION:** Recommend the use of safety glasses (spectacles) conforming to ANSI Z87 for eye protection from accidental injury when handling chemicals, cables, or working with fiber. Pieces of glass fiber are very sharp and have the potential to damage the eye.

## 3.2 Chemical Precautions

Epoxy Adhesives

| | |
|---|---|
|  | **WARNING:** Uncured epoxy adhesives consisting of resin and hardener components may cause dermatitis, skin sensitization, or other allergic reactions. Prevent all contact with skin or eyes. The use of disposable plastic or rubber gloves is recommended while using the epoxy. If contact occurs, flush immediately with plenty of water. Get medical attention for eyes. Avoid prolonged inhalation of vapors and use adequate ventilation. |

Isopropyl Alcohol

| | |
|---|---|
|  | **WARNING:** Isopropyl alcohol is flammable with a flashpoint at 54ºF. It can cause irritation to eyes on contact. In case of contact, flush eyes with water for at least 15 minutes. Inhalation of vapors irritates the respiratory tract. Exposure to high concentrations has a narcotic effect, producing symptoms of dizziness, drowsiness, headache, staggering, unconsciousness, and possibly death. |

## 3.3 Fiber Precautions

| | |
|---|---|
|  | **CAUTION:** Cleaved or broken glass fibers are very sharp and can pierce the skin easily. Do not let these pieces of fiber stick to your clothing or drop in the work area where they can cause injury later. Use tweezers to pick up cleaved or broken pieces of glass fibers and place them on a loop of tape kept for that purpose alone. **Good housekeeping is very important.** |

## 3.4 Laser Handling Precautions

| | |
|---|---|
|  | **WARNING: Never look directly into the end of a fiber 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. |

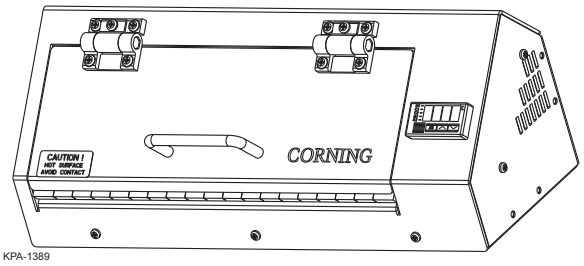
## 3.5 Cable Handling Precautions

| | |
|---|---|
|  | **CAUTION:** Fiber optic cable is sensitive to excessive pulling, bending, and crushing forces. 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. |

# 4. Cable Preparation – 3.0-, 2.0-, or 1.6-mm Cable

**NOTE:** Universal strip card, part #02-025255, is available for quick reference at http://csmedia.corning.com/opcomm/Resource_Documents/SRPs_rl/02-025255.pdf

Before you begin, prepare the oven for use. Do not touch the working surface of the oven. Follow the instructions in SRP 006-324. Use the following settings.



KPA-1389

| Epoxy | Cure Temperature | Cure Time | Fiber Type |
|---|---|---|---|
| F123 | 110°C | 8 minutes | Single-mode |
| F113 (SC) | 80°C | 15 minutes | Multimode |

**Step 1:** Slide the appropriate segmented boot and crimp band onto the cable in the orientation shown.

**Step 2:** Trim the cable end, if necessary, to ensure that the jacket edge, aramid yarn, and ribbon are even.

**Step 3:** Mark the cable jacket at 28.0 ± 1.0 mm from the end of the cable. Remove the marked length of jacket using an appropriate stripping tool to expose the aramid yarn.

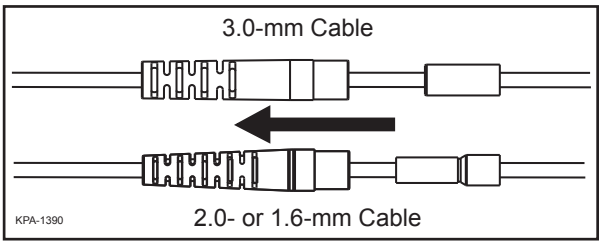
**Step 4:** Cut the exposed aramid yarn even with the end of the cable jacket using appropriate scissors.

**Step 5:** Mark the cable jacket at 7.0 ± 1.0 mm from the end of the jacket.

**Step 6:** Remove the marked length of jacket using an appropriate stripping tool to expose the aramid yarn.

**Step 7:** Fold the aramid yarn back against the cable jacket and retain the yarn as shown using the crimp band or other method.

**Step 8:** Measure and mark the buffer material 20.0 ± 1.0 mm and 3 mm ± 1.0 mm from the end of the cable jacket. Also mark the buffer material at the end of the cable jacket.



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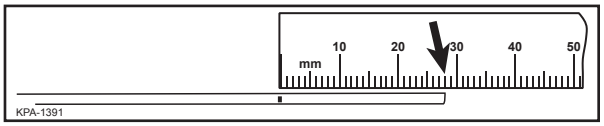

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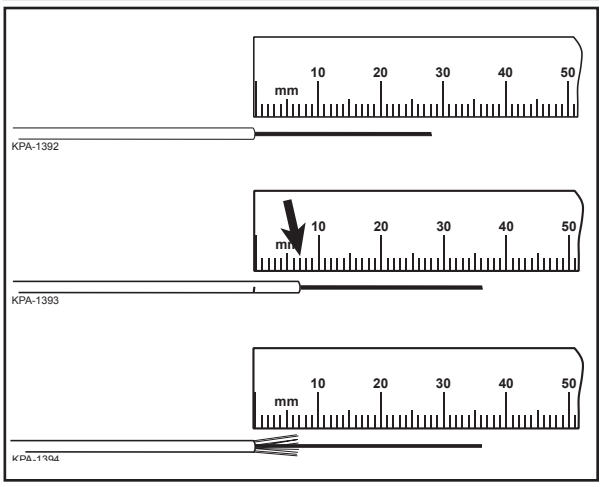

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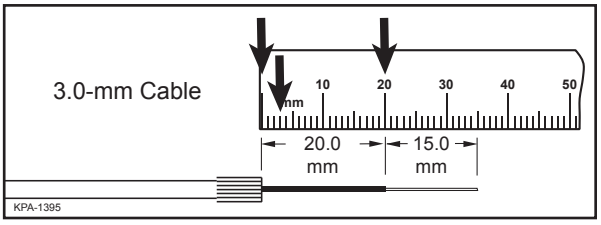

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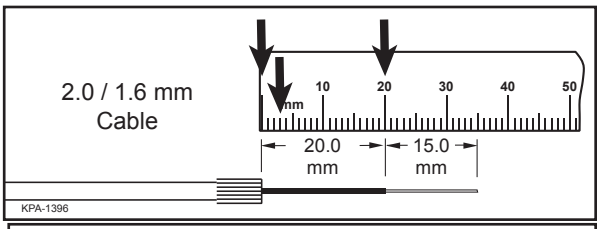
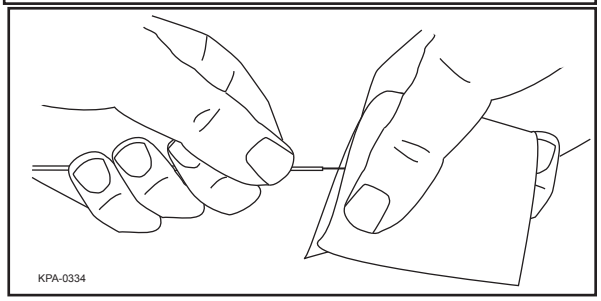
**Step 9:** Remove the excess buffer material up to the 20-mm mark.

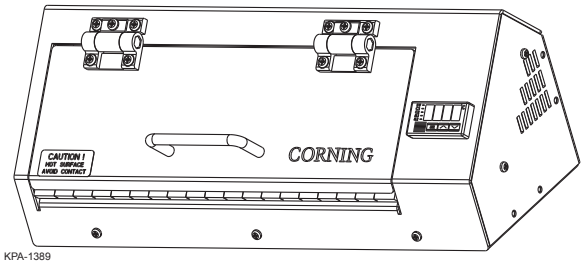



**Step 10:** Clean the stripped fiber using a lint-free wipe moistened in isopropyl alcohol. Fold the wipe over the fiber. Gently squeeze the fiber inside the wipe as you pull the fiber through the wipe.



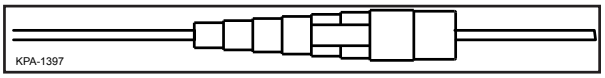

## 5. Cable Preparation – 900-µm Fiber

Before you begin, prepare the oven for use. Do not touch the working surface of the oven. Follow the instructions in SRP 006-324. Use the following settings.

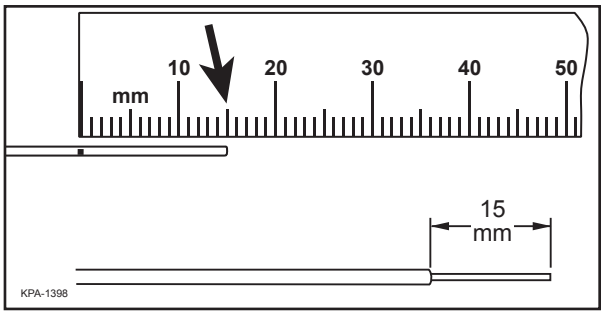



| Epoxy | Cure Temperature | Cure Time | Fiber Type |
|---|---|---|---|
| F123 | 110°C | 8 minutes | single-mode |
| F113 (SC) | 80°C | 15 minutes | multimode |

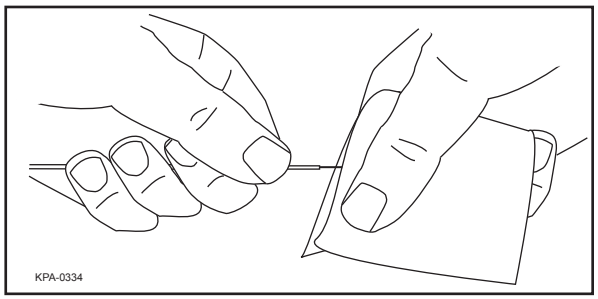
**Step 1:** Slide the 900-µm boot onto the cable in the orientation shown.




**Step 2:** Mark the buffer material 15.0 ± 1.0 mm from the end of the buffer. Remove the buffer material using an appropriate stripping tool.




**Step 3:** Clean the stripped fiber using a lint-free wipe moistened in isopropyl alcohol. Fold the wipe over the fiber. Gently squeeze the fiber inside the wipe as you pull the fiber through the wipe.

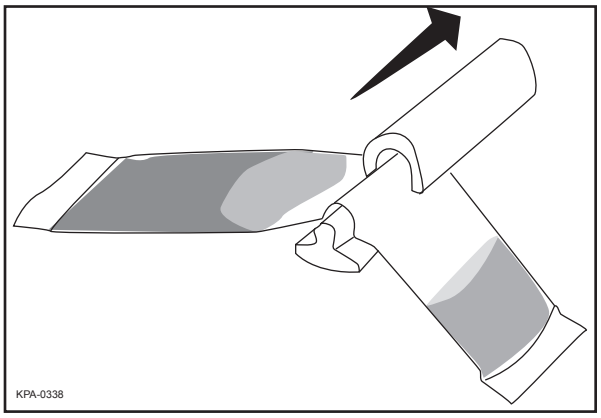



## 6. Connector Installation

## Procedure

**Step 1:** Prepare the F123 or 113 (SC) epoxy adhesive depending on fiber type.

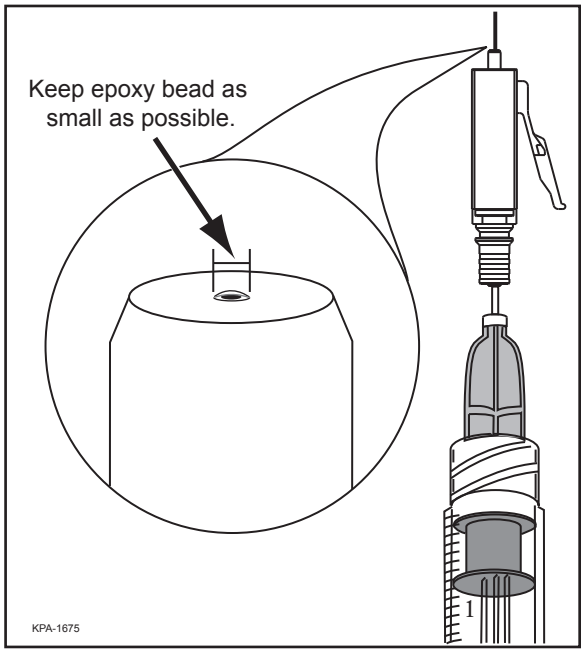
**Step 2:** Remove the divider from the epoxy package and mix the two components by rolling the package over a table or work surface edge. The mixing process is complete when the epoxy has changed to a consistent color throughout.




**Step 3:** Pour the epoxy into a syringe using the following method to minimize entrapping air in the epoxy:

- Place a syringe tip on a syringe.
- Remove the plunger from the syringe.
- Cut one corner of the epoxy package and pour the epoxy into the syringe.
- Reinstall the plunger into the syringe.
- Turn the syringe with tip up and remove the tip to allow the epoxy to flow down to the plunger.
- Then push up on the plunger, forcing the epoxy toward the tip and displacing the trapped air. Reinstall the syringe tip.

**Step 4:** Select the first connector assembly to be installed. Clean the ferrule end face with a lint-free tissue, soaked in alcohol.




**NOTE:** With single-mode connectors a small percentage of fibers will not fit into some ferrules. It is a good idea to dry fit the fiber into the ferrule before injecting the epoxy. Should the fiber not fit, try another part.

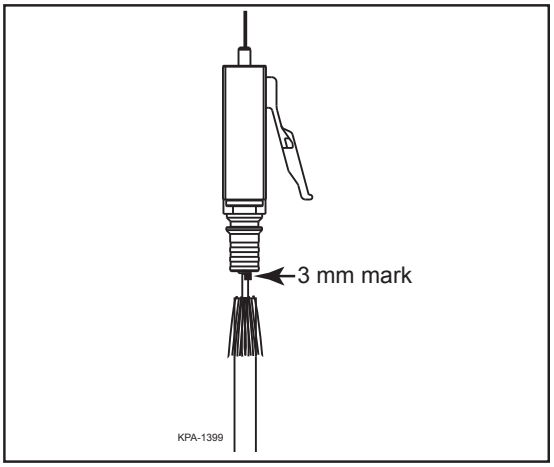
**Step 5:** Insert the syringe tip into the tube at the rear of the connector until it bottoms in the connector. With the syringe pointed up, hold onto the connector and slowly inject epoxy. Once epoxy is visible from the tip of the ferrule, discontinue injecting epoxy.

**IMPORTANT:** Be extremely careful not to get epoxy between the lead-in tube and the crimp body. The presence of epoxy between the lead-in tube and the crimp body of the connector can inhibit ferrule movement.

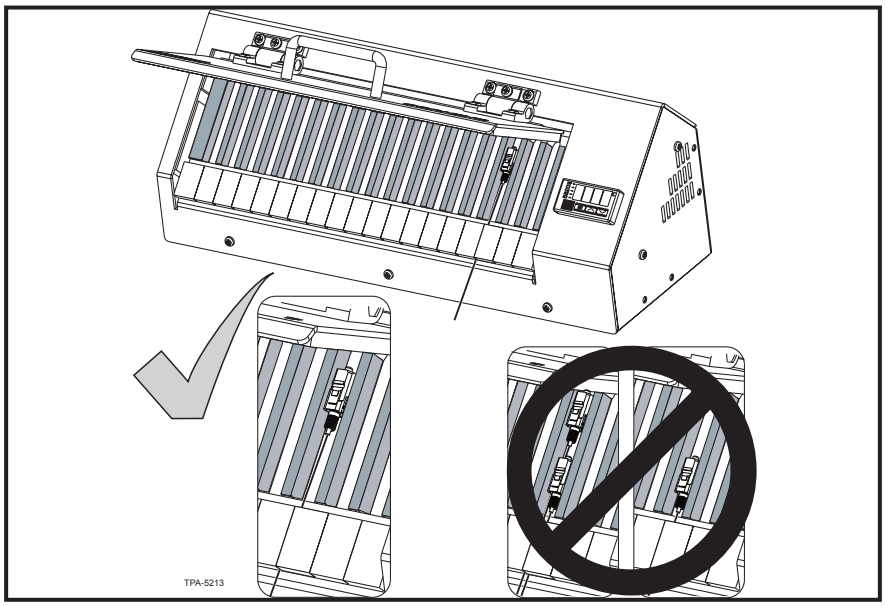
**Step 6:** Wipe excess epoxy bead from end face using a lint-free tissue. Excess epoxy on the ferrule end face may cause the connector to adhere to the oven.

**Step 7:** Clean the syringe tip after each use as excess epoxy on the tip may scrape off when inserted into the lead-in tube, leaving epoxy between the tube and the crimp body of the connector.

**Step 8:** Slide the fiber up into the connector until the buffer seats on the rear of the ferrule. Confirm that the mark made previously on the buffer material is flush or inside the end of the connector. If the buffer has not been fully seated against the ferrule, connector failure can result.

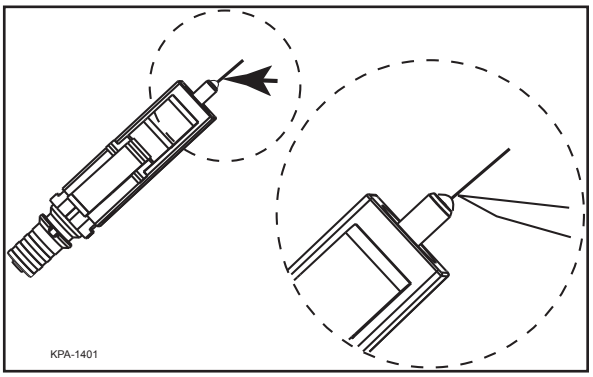



**Step 9:** Place the connector into the groove of the oven, being careful not to unseat the fiber. Position the cable into the slots in the foam block of the oven. Ensure that the connector is in the upper half of the plate for maximum effectiveness in curing the epoxy.



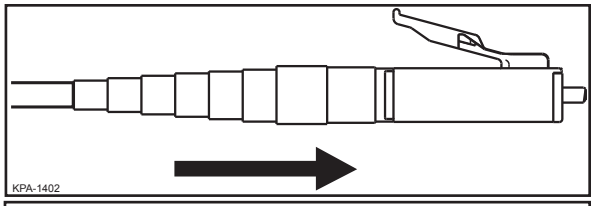

**Step 10:** After the cure time has elapsed, open the oven lid and remove the cured connectors.

**Step 11:** Use a precision scribe to nick the excess fiber at a point 1-2 fiber diameters from where it exits the epoxy bead. Pull the fiber to complete the break. Dispose of the detached fiber on a loop of tape.



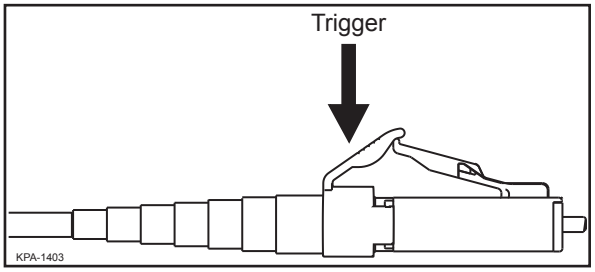
## 6.1 900-µm Cable

**Step 1:** Pull the 900-µm boot onto the back of the connector.




**Step 2:** Install the trigger, either simplex or duplex, by pressing the open end over the boot from above. (If preferred, the duplex trigger may be installed after polishing.)

**Step 3:** The connector is now ready for polishing. Proceed to Section 7.

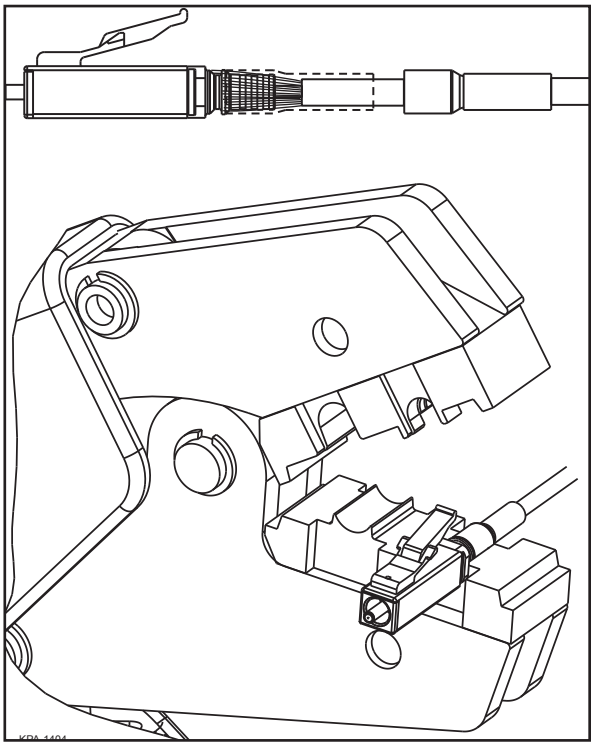



## 6.2 2.0- or 1.6-mm Cable

**Step 1:** Flare the yarn out evenly over the ribbed area on the back end of the connector. Slide the crimp band over the back end of the connector, capturing the aramid yarn.

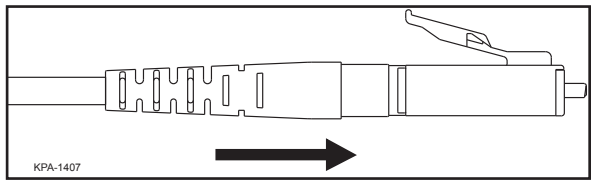
**IMPORTANT:** It is very important that the aramid yarn be distributed evenly around the crimp area to provide proper strain-relief.

**Step 2:** Place the assembly between the jaws of the crimp tool (P/N 3201039-01). Use the appropriate crimp area as shown. Squeeze the handles shut to crimp the band around the connector.



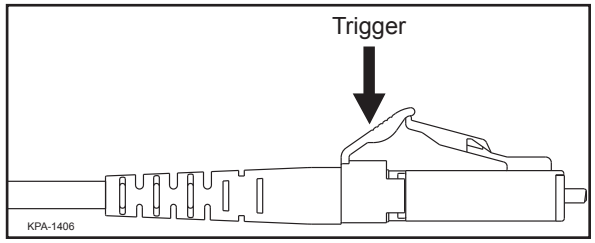
**Step 3:** Carefully heat the jacket retention tube using a heat gun, turning the cable and connector assembly for an even shrink. Heat should only be applied until the jacket retention tube shrinks onto the cable jacket with no gaps or flare. Do not overheat the cable as the jacket material will melt and discolor. Allow the cable and connector to cool before moving to the next step.

**Step 4:** Slide the segmented boot over the crimp band until it snaps into place.




**Step 5:** Install the trigger, either simplex or duplex, by pressing the open end over the boot from above. (If preferred, the duplex trigger may be installed after polishing.)

**Step 6:** Proceed to Section 7.



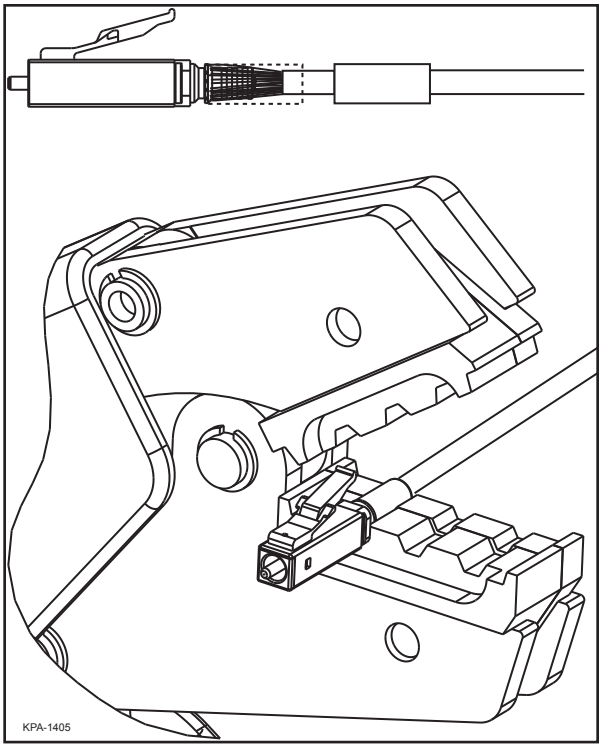
## 6.3 3.0-mm Cable

**Step 1:** Flare the yarn out evenly over the ribbed area on the back end of the connector. Slide the crimp band over the back end of the connector, capturing the aramid yarn.

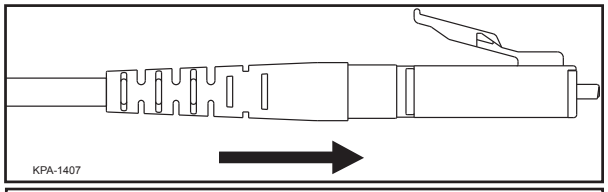
**IMPORTANT:** It is very important that the aramid yarn be distributed evenly around the crimp area to provide proper strain-relief.

**Step 2:** Place the assembly between the jaws of the crimp tool (P/N 3201032-01). Use the crimp area marked "A" for 3-mm cable. Squeeze the handles shut to crimp the band around the connector.

**NOTE:** Do not use areas marked "B" or "C."

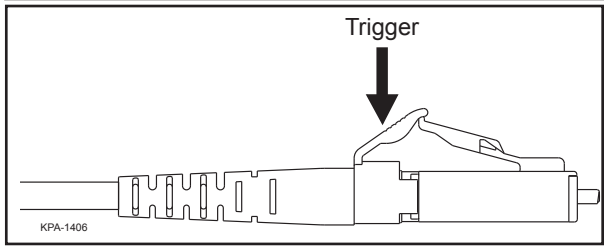



**Step 3:** Slide the segmented boot over the crimp band until it snaps into place.




**Step 4:** Install the trigger, either simplex or duplex, by pressing the open end over the boot from above. (If preferred, the duplex trigger may be installed after polishing.)

**Step 5:** Proceed to Section 7.




# 7. Polishing

Please see Corning SRP 006-371 for the correct polishing process depending on the polishing machine being used and the ferrule type being polished.

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