

517 Lyons Ave, Irvington, NJ 07111  
 Phone: 973-371-1771  
 Fax: 973-371-4304  
 www.richards-mfg.com

# Installation Instructions

## CS8 Series | Cold Shrink R-800

### Applicable Fastener Type

G Style

### Applicable Housing Sizes

O, P, & Q

### Applicable Catalog Prefix

#### 15kV Class

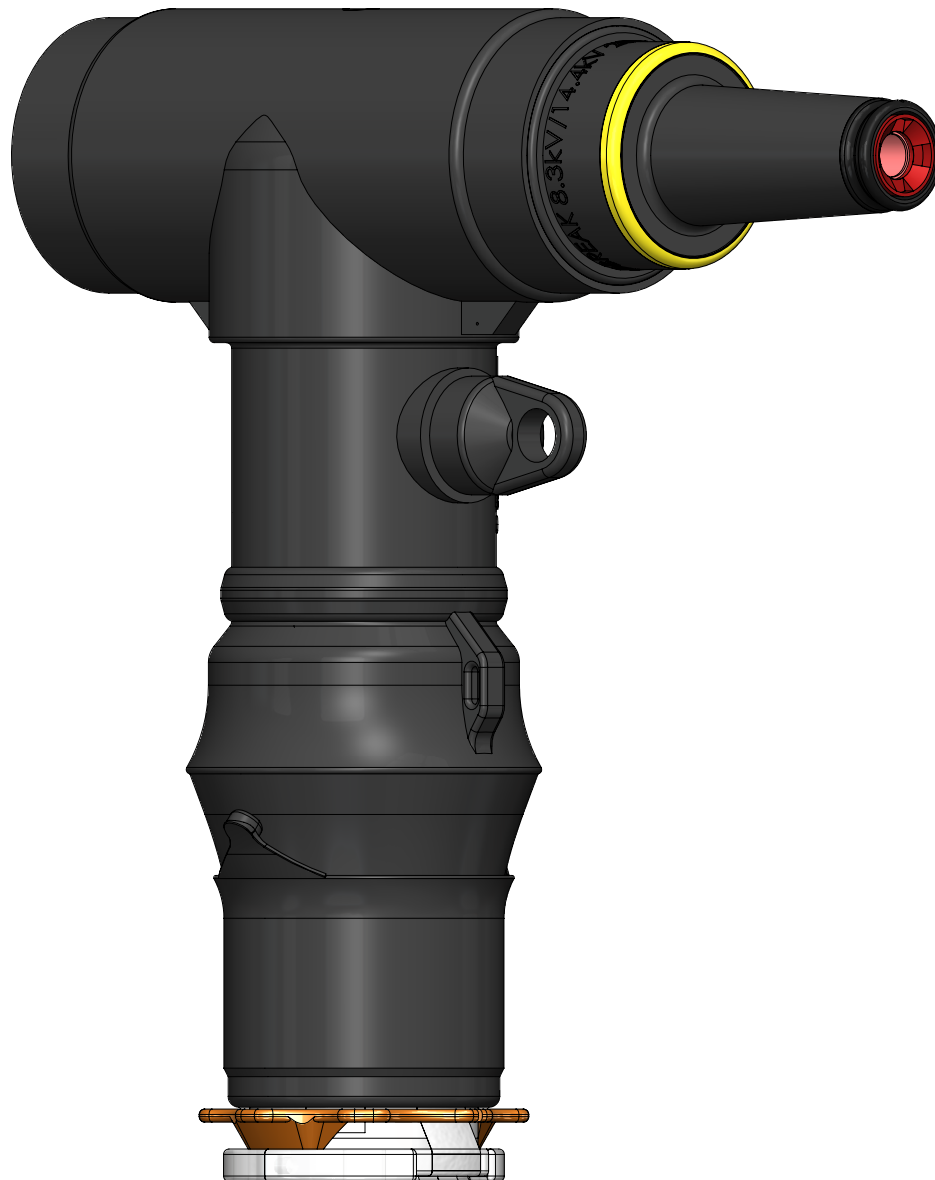
61CS8G  
 71CS8G  
 91CS8G

#### 25kV Class

62CS8G  
 72CS8G  
 92CS8G

### For Use With the Following Cable Types

Jacketed Concentric Neutral (JCN)  
 Longitudinally Corrugated Neutral (LC)  
 Tape Shield Neutral





## WARNING

- System must be de-energized during installation or future operation of this product or its components.
- Do not touch or move energized connectors or components by hand.
- Excess distortion of the assembled connector may result in its failure.
- Failure to follow these instructions will result in damage to the connector and serious or fatal injury.
- This product should only be installed and/or operated by trained personnel in accordance with normal and safe work procedures.
- Variations in equipment or configuration or work procedures may not be covered in these instructions.
- Please contact Richards Manufacturing for any additional questions.

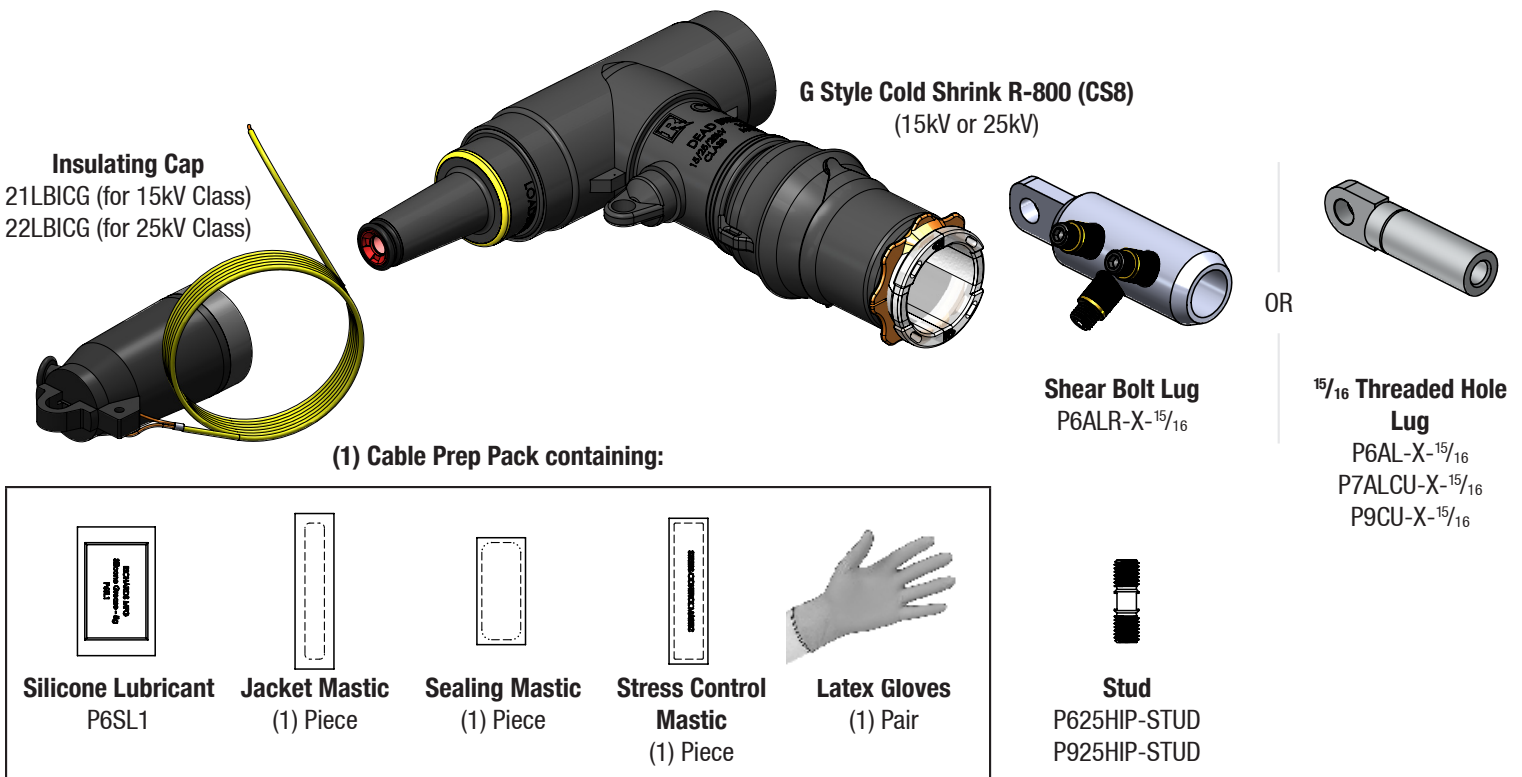


### Guidelines for Installation in Cold Temperatures (<32 degrees F):

- The cold shrink product must be kept and stored in a clean, dry manner. These high voltage cable accessories have internal phase to ground insulating interfaces which must be intact.
- Keep product within a warmer climate controlled environment as long as possible PRIOR to installation. This may be the cab of an operating vehicle if no other facility resources are available.
- If product has been inadvertently exposed and stored in freezing (or below) temperatures for an extended or unknown period of time: Product must be warmed (41F or greater) and inspected prior to installation.
- If installing product in temperatures below freezing, and conducting post installation electrical testing – it may be necessary to warm the cable interface of the accessory. This can increase the contact pressure between the cable accessory and the cable substrate. The heat should be applied primarily around the cable semicon shield cutback area. This can be accomplished via a space heater or hot air gun. The cable accessory should be gently heated so that the product becomes warm to the touch. Heat should not be concentrated but should be applied circumferentially around the product. If using a hot air gun, care must be taken not to apply the heat in a concentrated manner that could damage the cable or accessory. Check that proper ventilation is available if working in a confined space structure.

## KIT CONTENTS

Standard kits may include the following. Custom kits may vary.  
Check package contents to be sure they are complete, undamaged, and properly sized for the application.



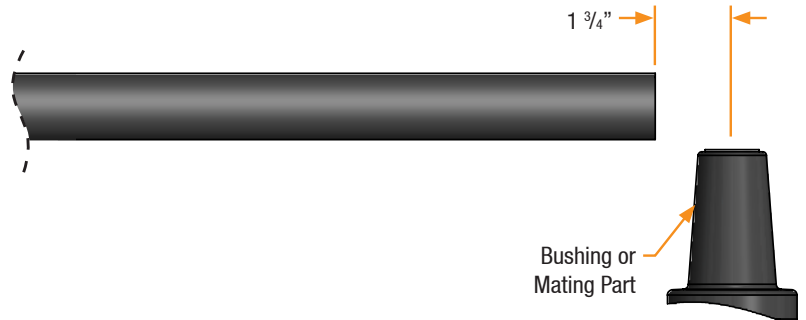
**TIP:** Use To-Scale Cable Cutback Template as aid to prepare cable.

**NOTE:** Certain items used, such as PVC tape, may not be included.

**1**

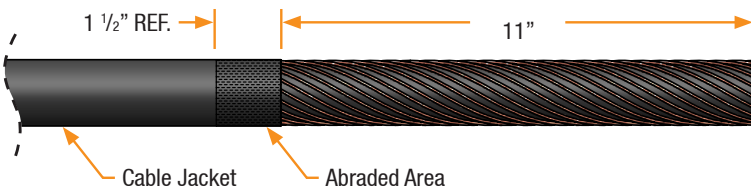
**Positioning Cable & Exposing Metallic Shield**

- A. Straighten and train cable end. Cable should be free to move approximately 2" in either direction.
- B. Cut cable to dimensions shown.
- C. Clean cable jacket approximately 24" from end of cable.



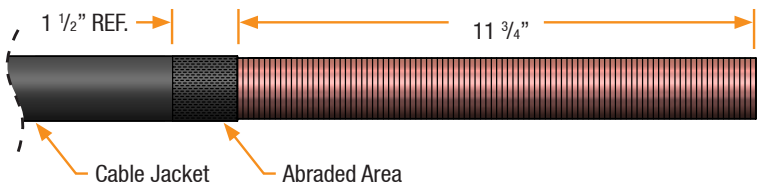
**For Strap/Wire Shielded Cable**

- D. Remove cable jacket to dimensions shown.
- E. Abrade area as shown.



**For Metallic Tape/LC Shielded Cable**

- D. Remove cable jacket to dimensions shown.
- E. Abrade area as shown.

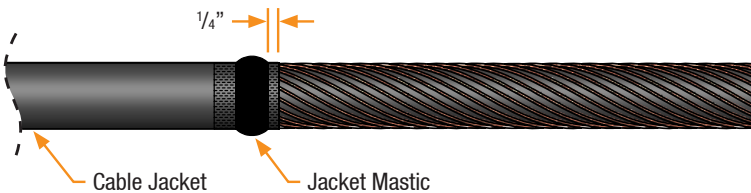


**2**

**Applying Jacket Mastic**

**For Strap/Wire Shielded Cable**

- A. Apply one piece of **jacket mastic** at position shown by stretching and wrapping with light tension fully around outer jacket.



**For Metallic Tape/LC Shielded Cable**

Go to Step 3

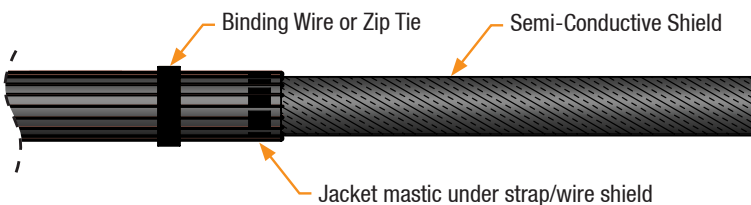
**NOTE:** Jacket mastic will be applied in Step 10.2

**3**

**Exposing Cable Semi-Conductive Shield**

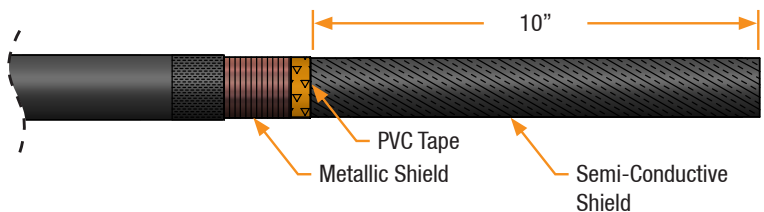
**For Strap/Wire Shielded Cable**

- A. Fold back strap/wire shields and press firmly into jacket mastic.
- B. Secure strap/wire shields 3" back from jacket mastic with binding wire or zip tie as shown.



**For Metallic Tape/LC Shielded Cable**

- A. Wrap 2 layers of PVC tape at dimension shown to secure metallic shield.
- B. Remove metallic shield up to PVC tape as shown.



**4**

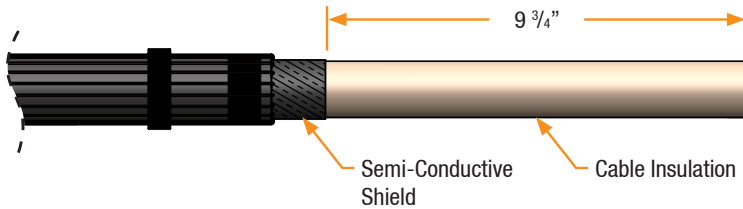
**Exposing Cable Insulation**

**For Strap/Wire Shielded Cable**

A. Remove semi-conductive shield to dimension shown.



**WARNING: Do not nick or cut the cable insulation.**

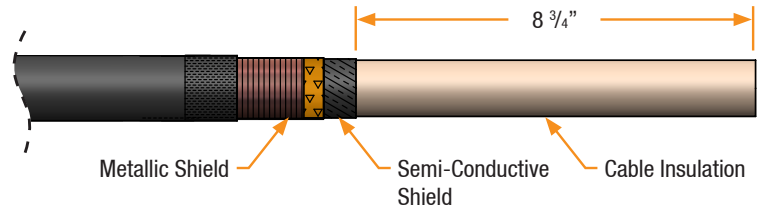


**For Metallic Tape/LC Shielded Cable**

A. Remove semi-conductive shield to dimension shown.



**WARNING: Do not nick or cut the cable insulation.**



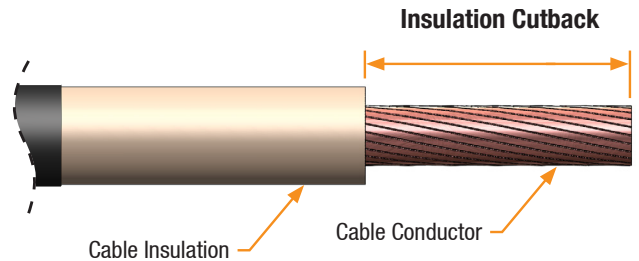
**5**

**Exposing Conductor**

A. Remove cable insulation. Refer to instructions provided with lug for insulation cutback dimension. Cutback dimension should not exceed 4 3/8 inches.



**WARNING: Do not nick or cut the conductor strands.**



**NOTE:** Confirm all dimensions with To-Scale Cable Cutback Template before proceeding.

**6**

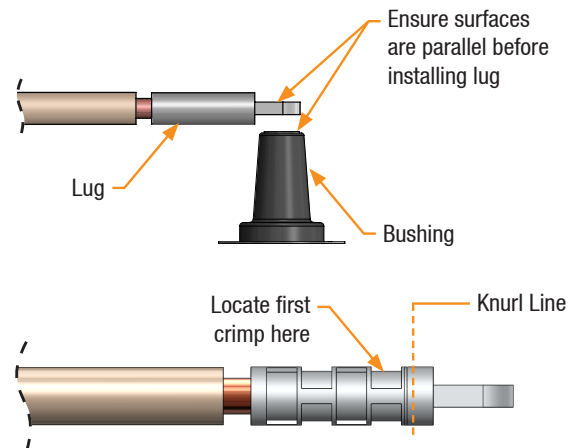
**Installing Lug**



**WARNING: Lug MUST have a 15/16 inch hole. Confirm lug and hole dimension before installing lug.**

- A. Clean conductor of any debris. For aluminum conductor, wire brush and immediately insert lug onto conductor. Slide lug until the conductor is fully seated within the lug barrel.
- B. Rotate lug so that spade is parallel to the contact face of the bushing or mating part as shown.
- C. **For Shear Bolt Connectors:** Install lug using separate instructions provided with lug.

**For Crimp Connectors:** Select correct tool and die using crimp chart supplied with lug. Crimp lug (min. number indicated in crimp chart) starting just below knurl line adjacent to pad as shown. Carefully wipe any excess inhibitor from lug and cable insulation.

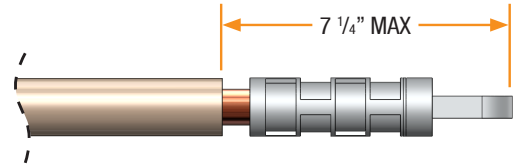


## 7 Checking Lug

- A. After installing lug, confirm distance from lug end to insulation cutback does not exceed dimension shown.



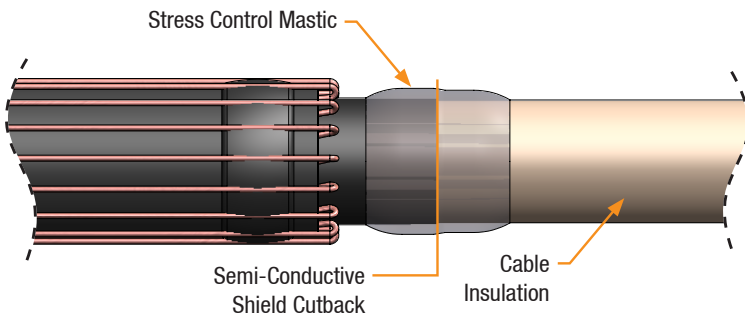
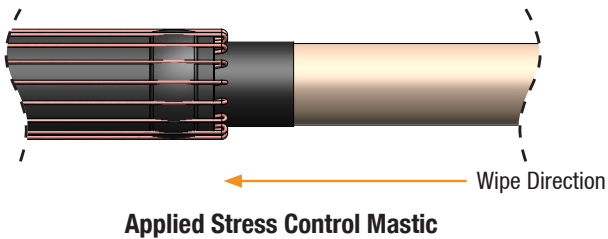
**WARNING: Do not exceed maximum dimension shown.**



## 8 Applying Stress Control Mastic

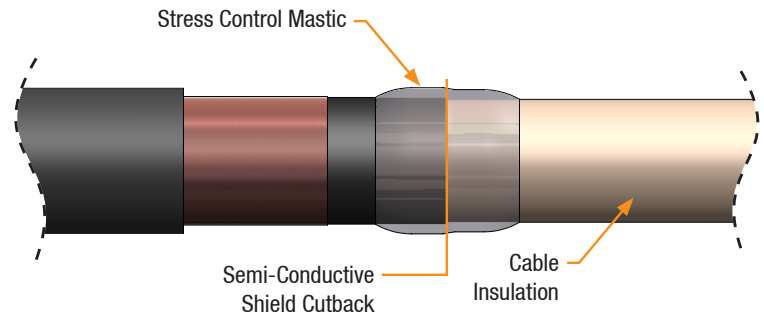
### For Strap/Wire Shielded Cable

- Clean insulation with approved cleaning wipes by wiping from lug to shielding.
- Apply supplied **stress control mastic** centered over edge of semi-conductive shield cutback. Apply the mastic with light tension so it slightly stretches and completely wraps the cable.



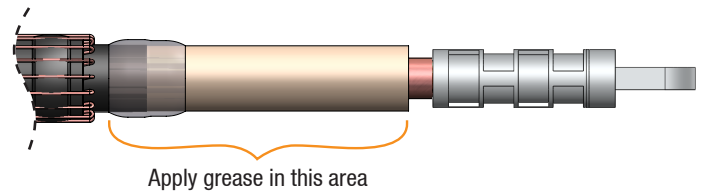
### For Metallic Tape/LC Shielded

- Clean insulation with approved cleaning wipes by wiping from lug to shielding.
- Remove PVC tape from Step 3.
- Apply supplied **stress control mastic** centered over edge of semi-conductive shield cutback. Apply the mastic with light tension so it slightly stretches and completely wraps the cable.



## 9.1 Applying Grease

- A. Apply grease over exposed cable insulation and stress control mastic as shown. Use only supplied or approved silicone grease.



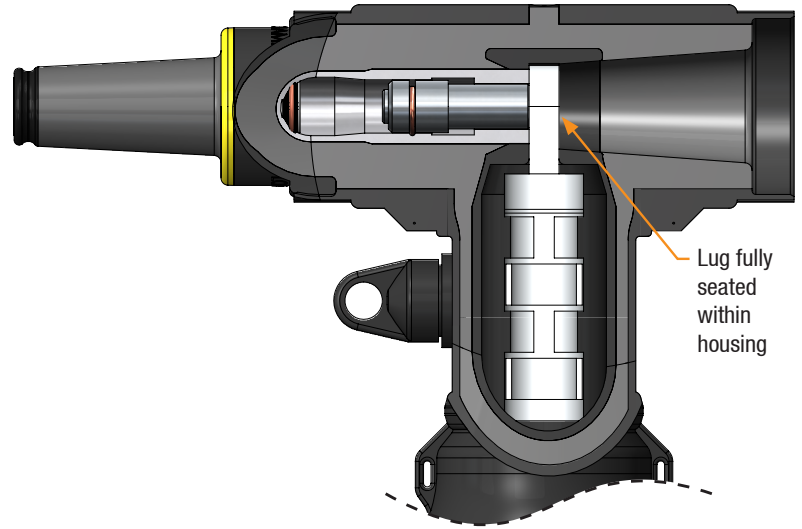
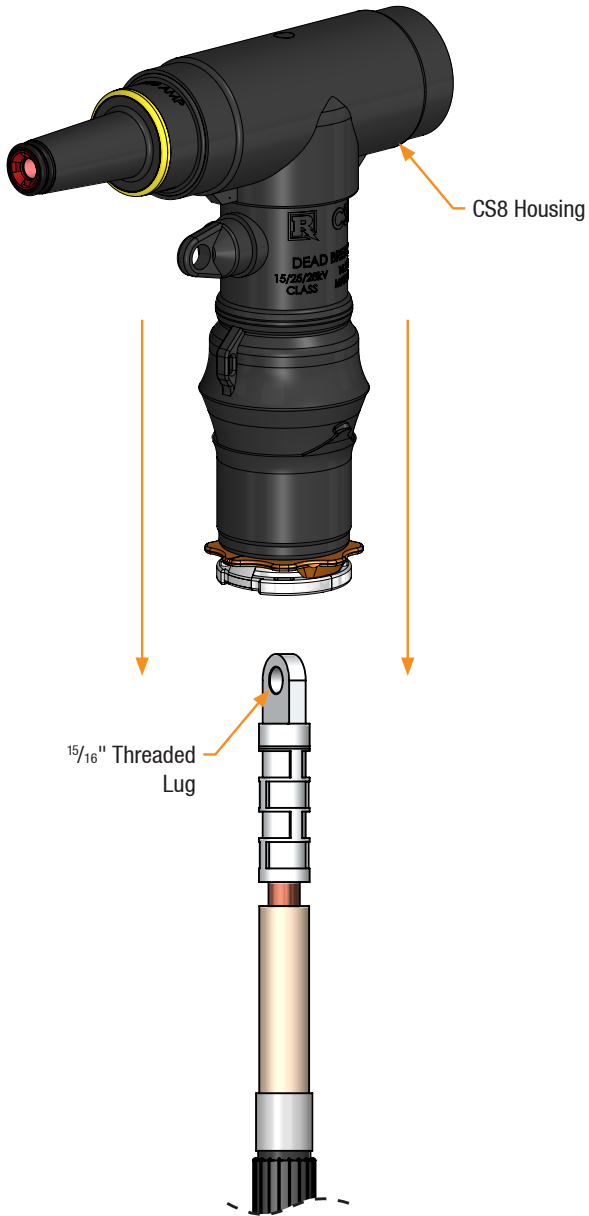
# 9.2

## Installing CS8

A. Install CS8 onto cable until the lug is fully seated inside the housing.



**WARNING:** Confirm the lug has fully seated into housing as shown.



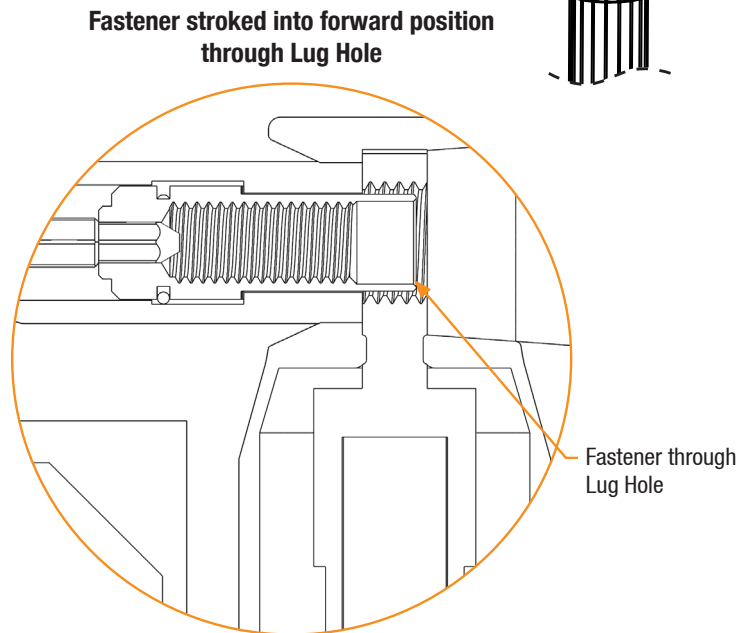
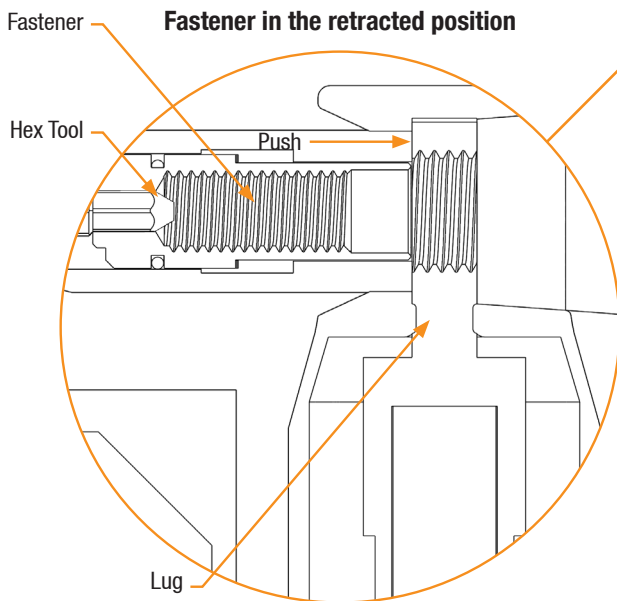
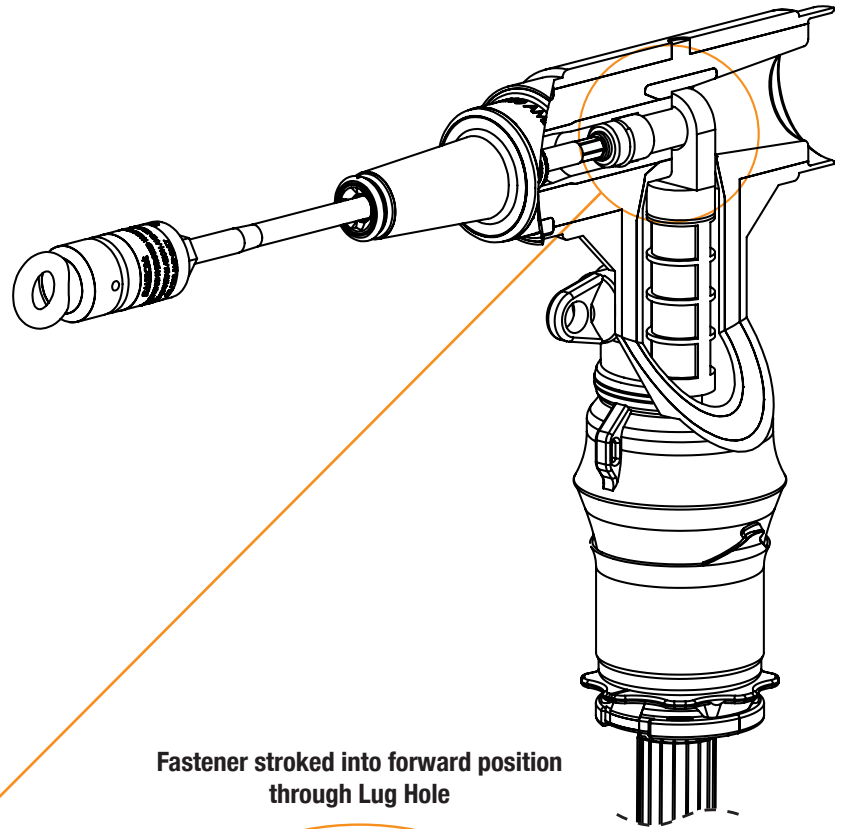
# 9.3

## Inserting Hex Tool

- A. Insert Hex tool (P620AT or equivalent  $\frac{9}{16}$ " hex tool) through loadbreak interface and engage fastener.
- B. Slide fastener into forward position through lug hole (as shown in detail view).

**WARNING:** Fastener is factory-installed in a retracted position. The Fastener must be stroked into forward position. The female threaded end of Fastener will then extend into the  $\frac{15}{16}$ " Threaded hole of the Lug.

**WARNING:** Confirm that fastener goes through lug hole as shown below.

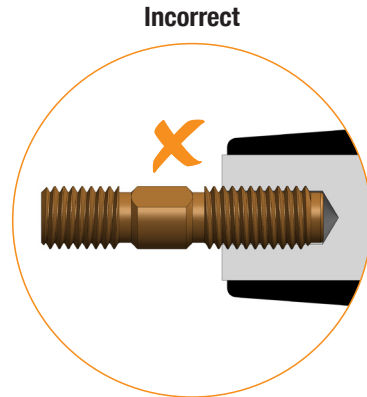
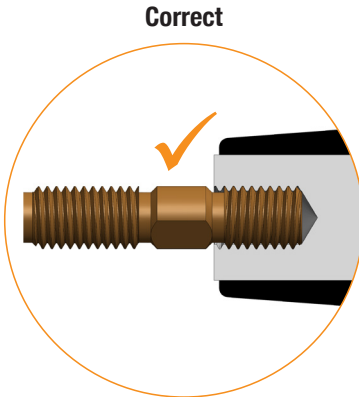


9.4

Mounting CS8

A. Hand-tighten stud into the appropriate mating part or bushing.

**WARNING:** A standard threaded stud is included in the kit. If the use of an asymmetrical threaded stud is approved, it **MUST** be installed with longer threaded side facing **AWAY** from equipment as shown below.

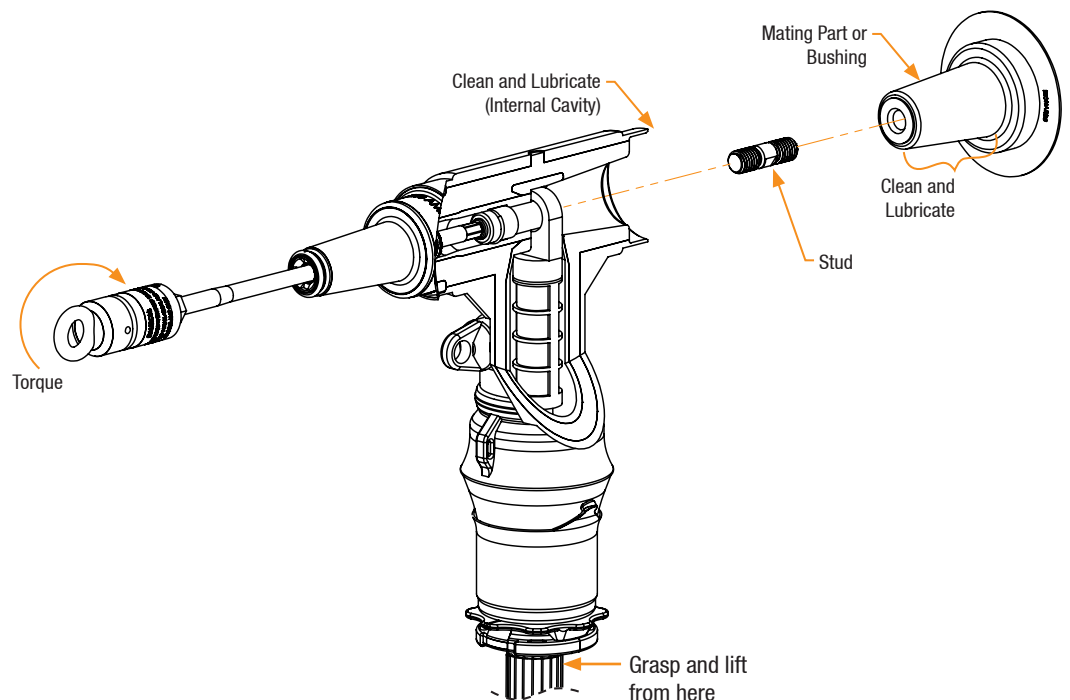


- B. Clean and lubricate (using supplied or approved silicone grease) deadbreak interface of CS8 and interface of mating part or bushing.
- C. Place one hand on the power cable directly below CS8 and one hand on the body of the CS8. Lifting together, push CS8 onto mating part, lining up the hole in the lug with the stud on the mating part.
- D. Insert Hex tool (P620AT or equivalent 5/16" hex tool) into loadbreak interface and engage faster. Rotate tool 2-3 turns to start thread engagement.

**CHECK:** Tug on power cable to confirm stud is through hole in lug. Only a small amount of movement should be possible. If the cable moves more than a small amount repeat steps above.

E. Continue rotating hex tool. Torque fastener to 20ft-lb (P620AT Tool has built in 20ft-lb torque limiter.)

**CHECK:** As a final check, tug on power cable. This should result in no movement at all.



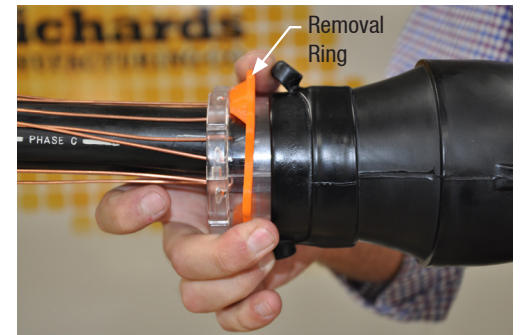


# 10.1

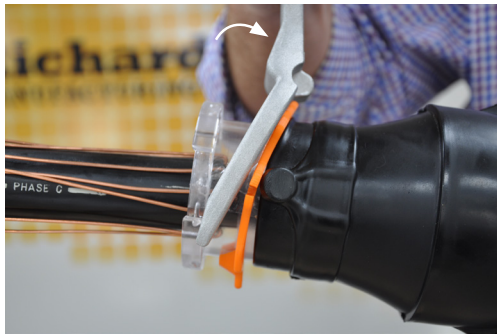
## Removing Core

- A. Grasp removal ring. Push ring against core flange and twist so that cutting teeth breaks tape on both sides. Check that tape is broken.
- B. **To remove core by hand:** Proceed to Step D.  
**To remove core using P6AT-CS2 Tool:** Insert one half of tool between removal ring and core flange. Pry core slightly away from housing.
- C. Insert second half of core removal tool between removal ring and core flange. Press handles inwards to eject core.
- D. Completely remove core from rubber housing by hand. **DO NOT** twist core while removing.
- E. Separate core into two halves and clip any plastic rings that remain on cable.

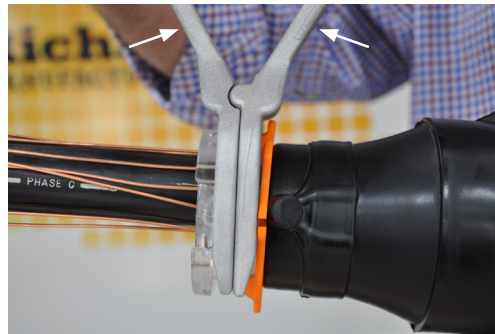
A



B



C



D



# 10.2

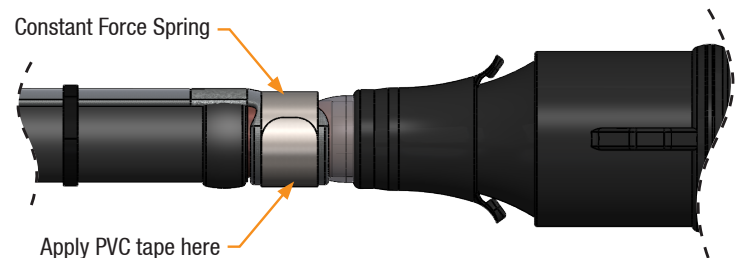
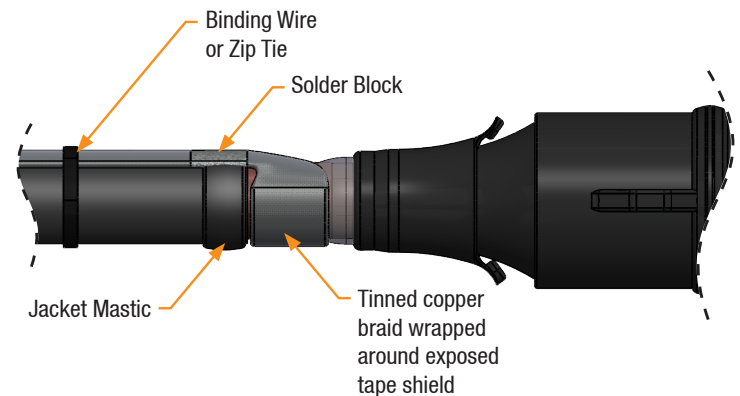
## Preparing Metallic Shield

### For Strap/ Wire Shielded Cable

Go to Step 11

### For Metallic Tape/LC Shielded

- A. Install **jacket mastic** on cable jacket aligned with jacket cutback.
- B. Wrap tinned copper braid around exposed metallic shield.
- C. Align edge of solder block with jacket cutback.
- D. Secure copper braid 3" back from end of jacket mastic with zip tie or binding wire.
- E. Unwind constant force spring over wrapped copper braid as shown.
- F. Tighten constant force spring by hand and wrap two layers of PVC tape (in direction of spring) to secure.
- G. Press solder block into jacket mastic.



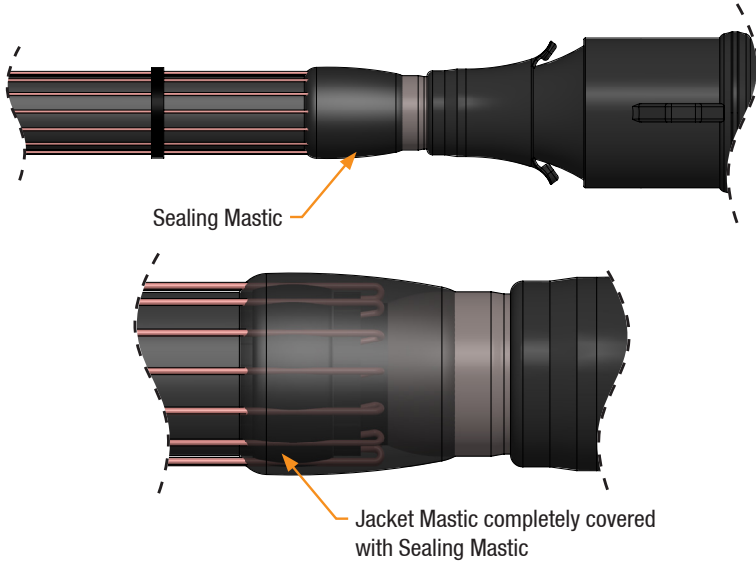
**11**

**Applying Sealing Mastic**

**For Strap/Wire Shielded Cable**

A. Apply **sealing mastic** as close as possible to folded back jacket seal while maintaining complete overlap of previously applied jacket mastic.

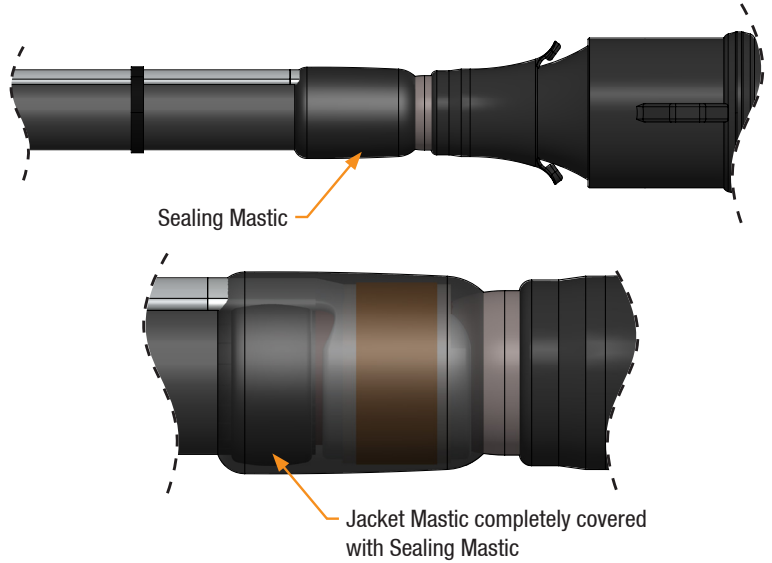
**NOTE:** sealing mastic may or may not overlap stress control mastic.



**For Metallic Tape/LC Shielded**

A. Apply **sealing mastic** as close as possible to folded back jacket seal while maintaining complete overlap of previously applied jacket mastic.

**NOTE:** sealing mastic may or may not overlap stress control mastic.



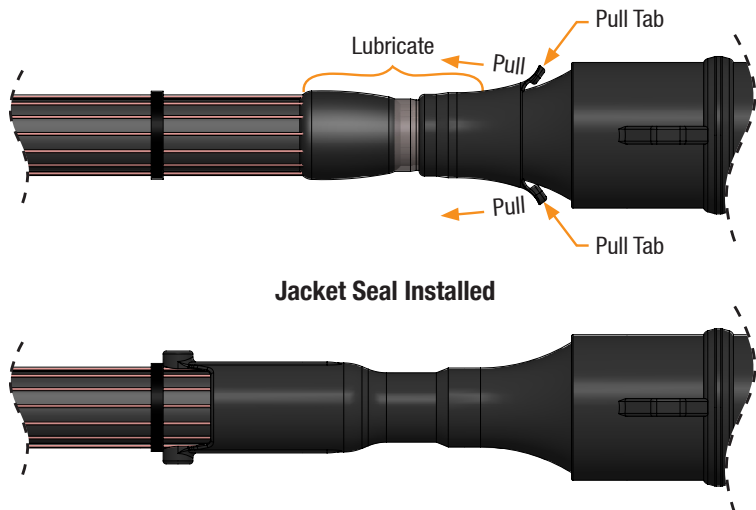
**12**

**Applying Jacket Seal**

**For Strap/Wire Shielded Cable**

A. Apply grease over area as shown. Only use grease supplied with kit or approved silicone grease.

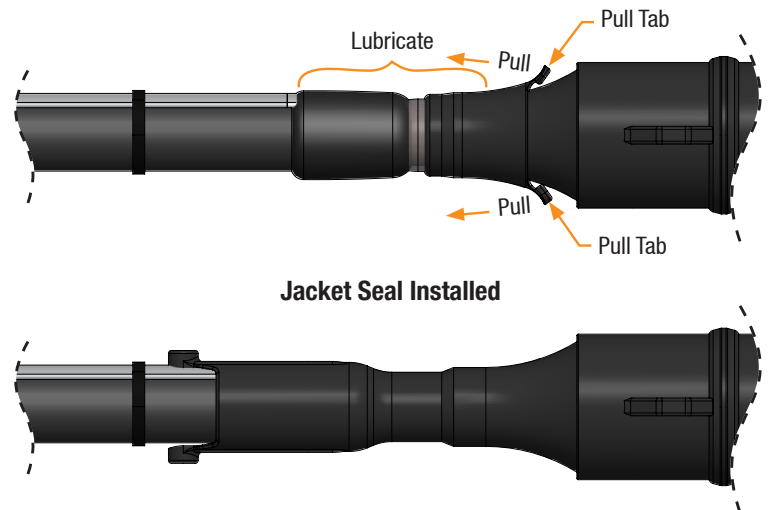
B. Hold both tabs and pull out to completely cover sealing mastics as shown below. Ensure sealing mastic is not dislodged when unfolding seal.



**For Metallic Tape/LC Shielded**

A. Apply grease over area shown below. Only use grease supplied with kit or approved silicone grease.

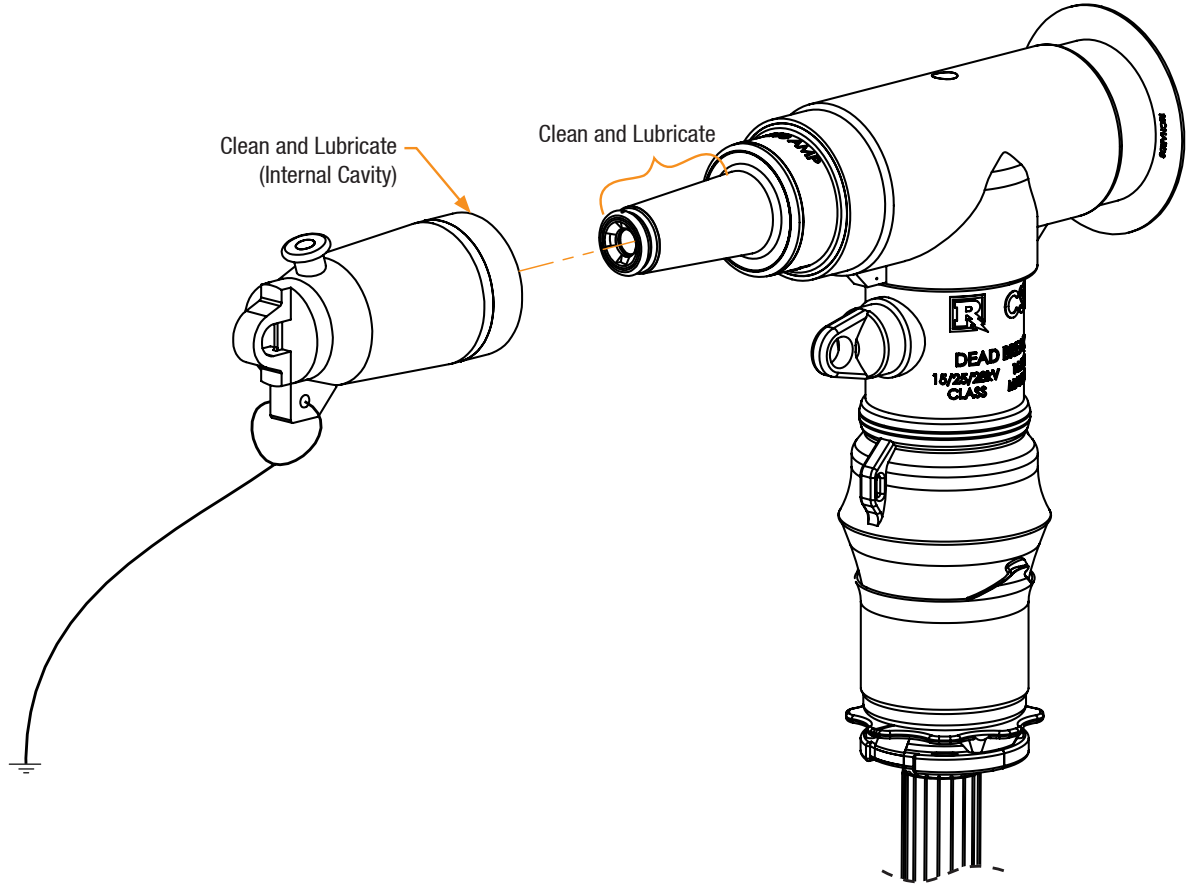
B. Hold both tabs and pull out to completely cover sealing mastics as shown below. Ensure sealing mastic is not dislodged when unfolding seal.



**13**

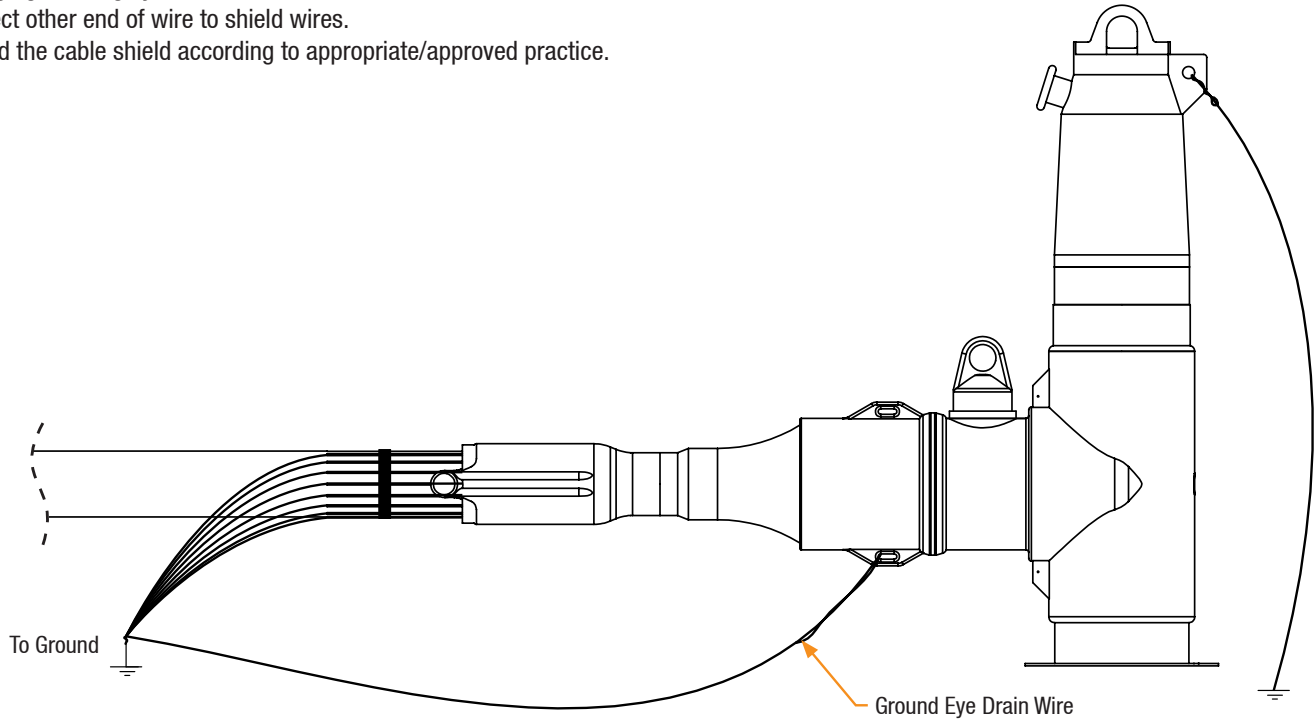
**Installing Mating Component**

- A. Clean and lubricate (using supplied or approved silicone grease) loadbreak interface of CS8 and interface of insulating cap or mating part.
- B. Install mating component per manufacturer instructions. Loadbreak Cap shown as reference.

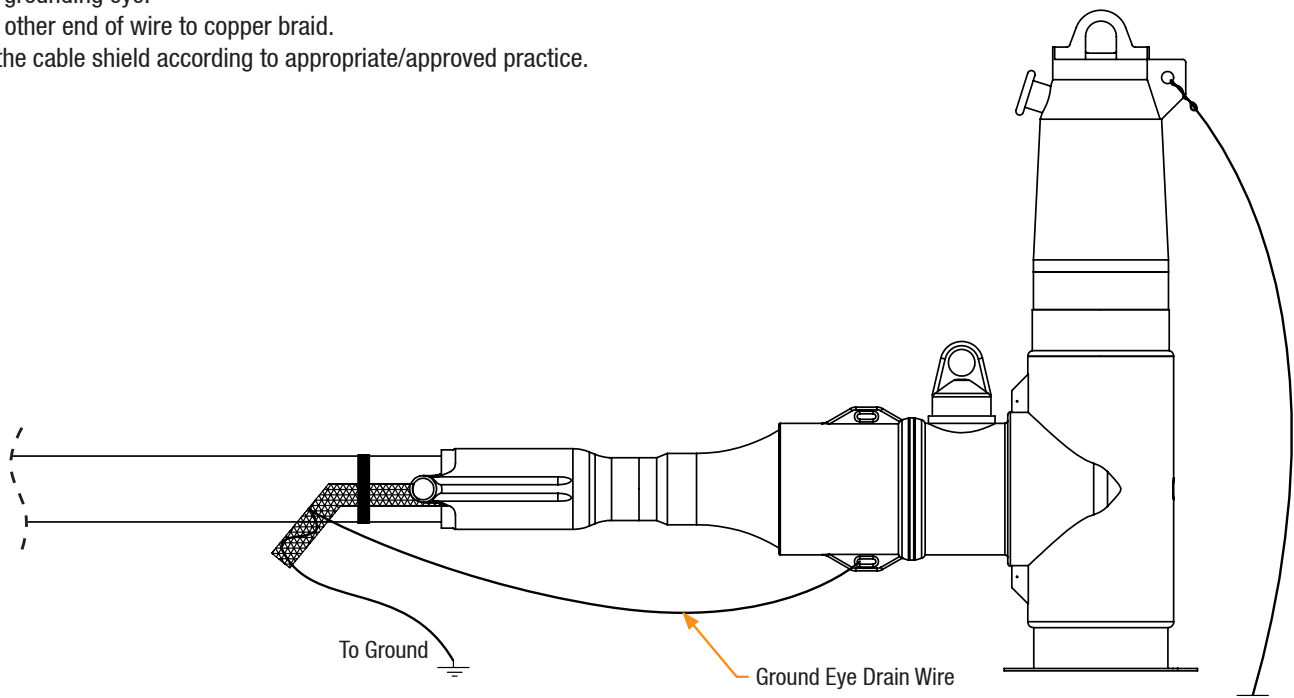


**14****Connecting Drain Wires to CS8****For Strap/Wire Shielded Cable**

- Insert one end of a piece of wire (#14 AWG copper or larger) through one of the available grounding eyes and twist to make a small loop. Be sure not to damage grounding eye.
- Connect other end of wire to shield wires.
- Ground the cable shield according to appropriate/approved practice.

**For Metallic Tape/LC Shielded**

- Insert one end of a piece of wire (#14 AWG copper or larger) through one of the available grounding eyes and twist to make a small loop. Be sure not to damage grounding eye.
- Connect other end of wire to copper braid.
- Ground the cable shield according to appropriate/approved practice.

**Installation Complete**



**SCALE 1:1**

Strap/Wire Shielded Cable

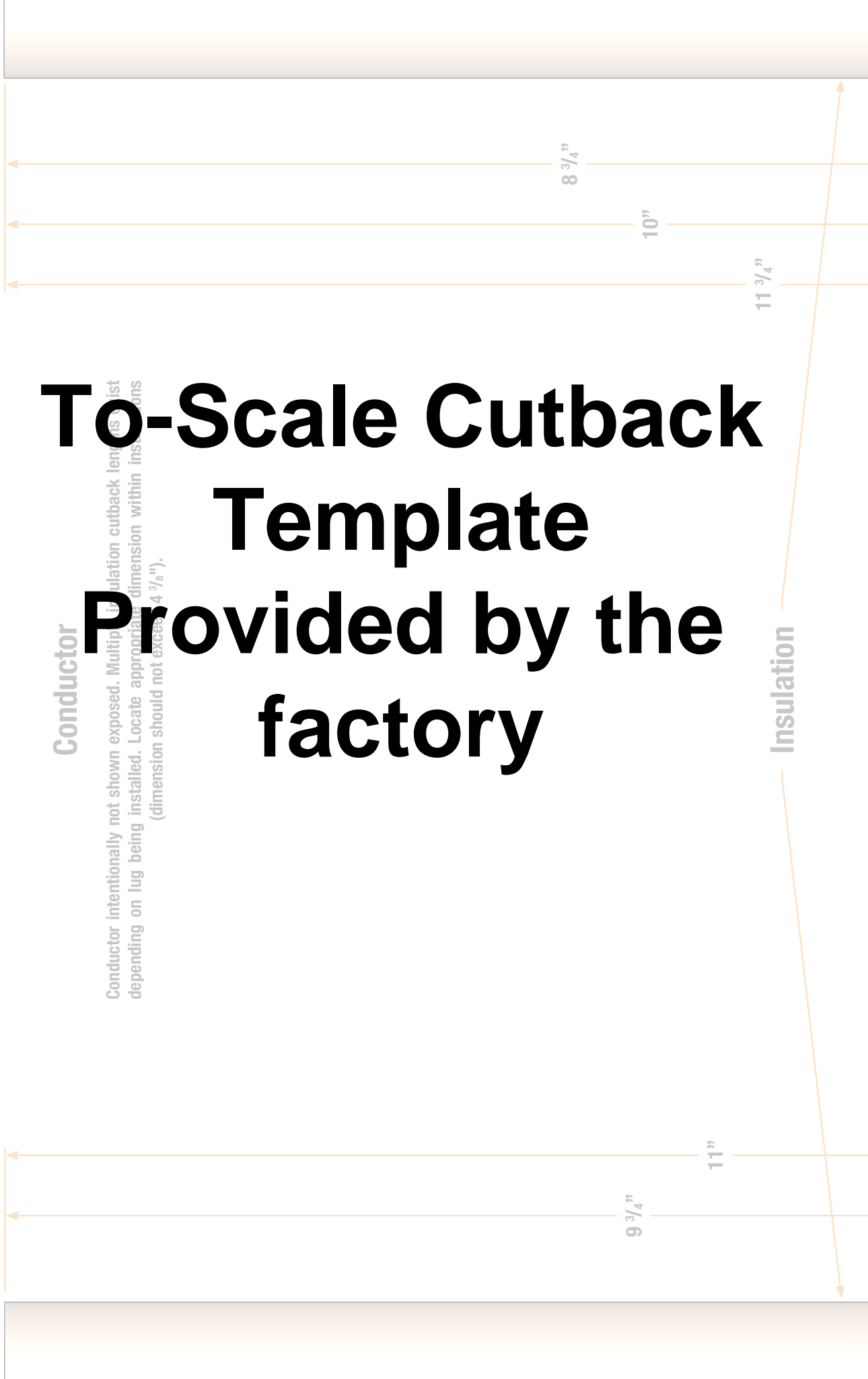
Metallic Tape/LC Shielded

**Conductor**

**Insulation**

# To-Scale Cutback Template Provided by the factory

Conductor intentionally not shown exposed. Multiple insulation cutback lengths exist depending on lug being installed. Locate appropriate dimension within insulation (dimension should not exceed  $4\frac{3}{8}$ ").



# To-Scale Cutback Template Provided by the factory

Semi-Conductive  
Shield

Metallic  
Shield

Jacket

