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

Product Family
CS8

Installation Instructions

CS8 Series | Cold Shrink R-800

Applicable Fastener Type
F Style

Applicable Voltage Classes
15kV | 25kV

Applicable Catalog Prefix

15kV Class	25kV Class
61CS8F	62CS8F
71CS8F	72CS8F
91CS8F	92CS8F

Applicable Housing Sizes

O	P	Q
Minimum Insulation Diameter = 0.725”	Minimum Insulation Diameter = 0.990”	Minimum Insulation Diameter = 1.268”

For Use With the Following Cable Types
Jacketed Concentric Neutral (JCN)
Longitudinally Corrugated Neutral (LC)
Tape Shield Neutral



Scan QR code to watch installation video

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°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 warmed (41°F 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.



F Style Cold Shrink R-800 (CS8)
(15kV or 25kV)

Insulating Cap
21LBICG (for 15kV Class)
22LBICG (for 25kV Class)

Shear Bolt Lug
P6ALR-X

OR

Compression Lug
P6AL-X
P7ALCU-X
P9CU-X

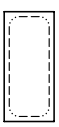
(1) Cable Prep Pack containing:



Silicone Lubricant
P6SL1



Jacket Mastic
(1) Piece



Sealing Mastic
(1) Piece



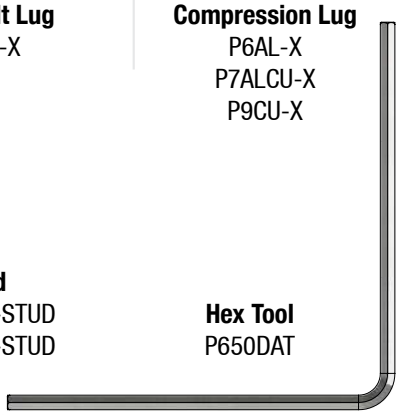
Stress Control Mastic
(1) Piece



Latex Gloves
(1) Pair



Stud
P625HIP-STUD
P925HIP-STUD

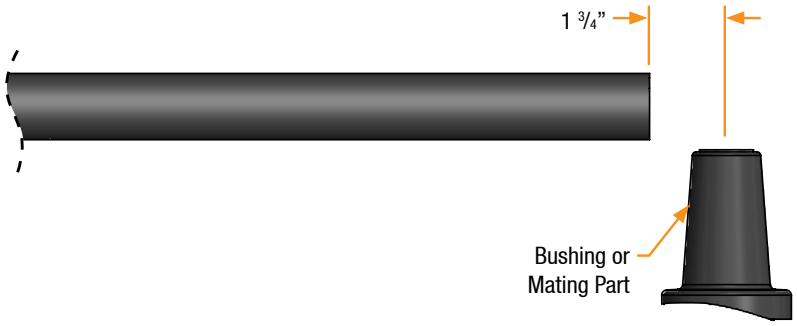


Hex Tool
P650DAT

TIP: Use To-Scale Cable Cutback Template as aid to prepare cable.
NOTE: Certain items used, such as PVC tape, may not be included.

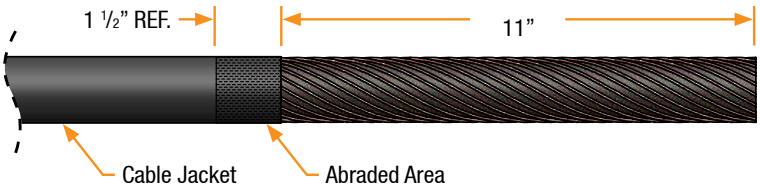
1 Positioning Cable & Exposing Metallic Shield

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.



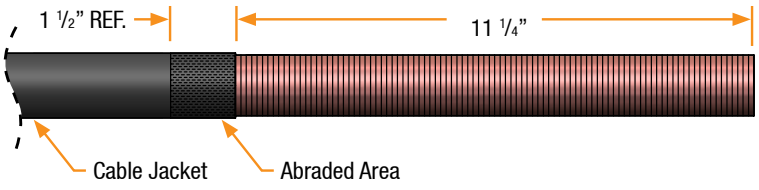
For Strap/Wire Shielded Cable

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



For Metallic Tape/LC Shielded Cable

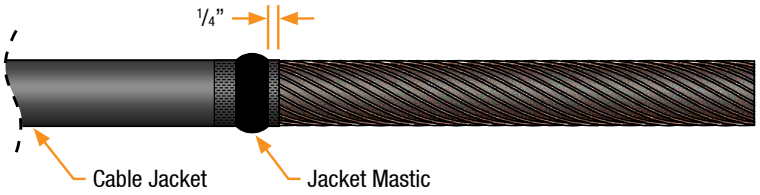
D. Remove cable jacket to dimensions shown.
E. Abrade area as shown.



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

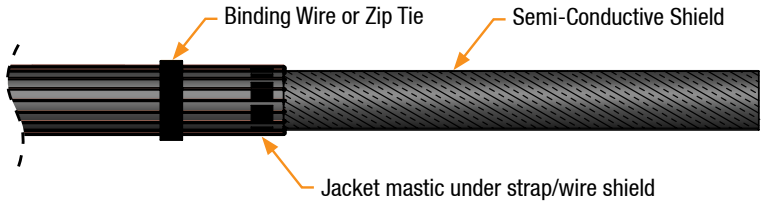
Go to Step 3

NOTE: Jacket mastic will be applied in Step 10.2

3 Exposing Cable Semi-Conductive Shield

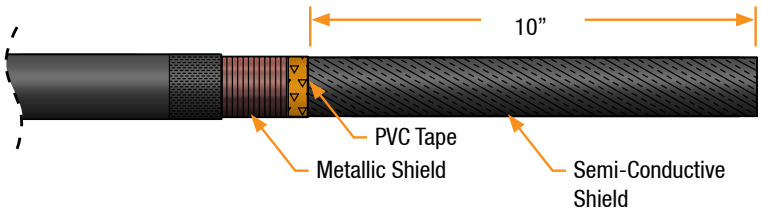
For Strap/Wire Shielded Cable

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.

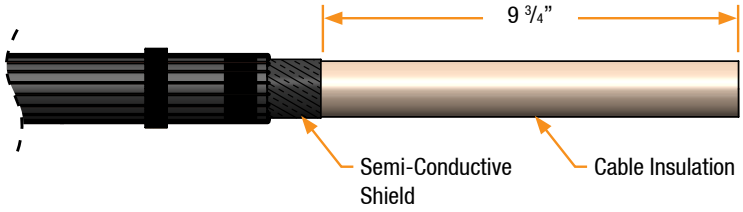


4 Exposing Cable Insulation

For Strap/Wire Shielded Cable

A. Remove semi-conductive shield to dimension shown.

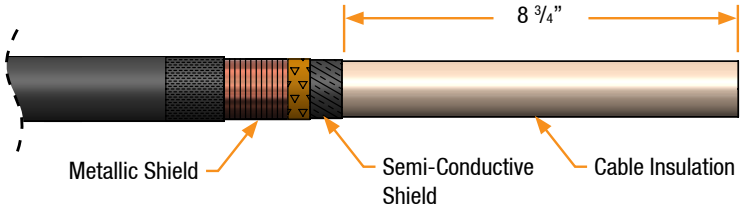
WARNING: Do not nick or cut the cable insulation.



For Metallic Tape/LC Shielded Cable

A. Remove semi-conductive shield to dimension shown.

WARNING: Do not nick or cut the cable insulation.

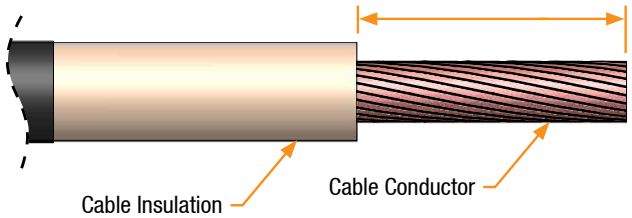


5 Exposing Conductor

A. Remove cable insulation. Refer to instructions provided with lug for insulation cutback dimension. Cutback dimension should not exceed 4 ⅜".

WARNING: Do not nick or cut the conductor strands.

Insulation Cutback

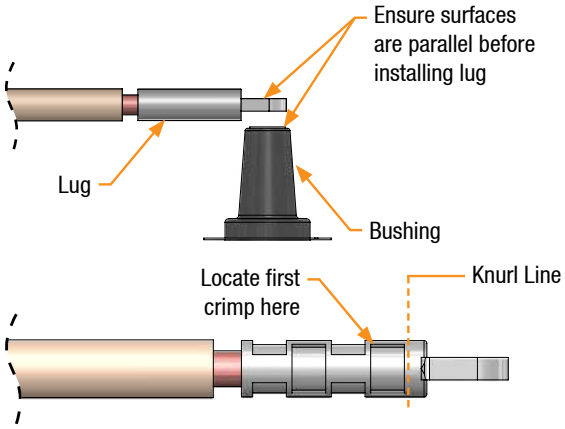


NOTE: Confirm all dimensions with To-Scale Cable Cutback Template before proceeding.

6 Installing Lug

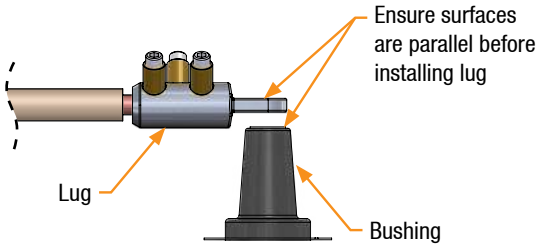
For Crimp Connectors

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. 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. Carefully wipe any excess inhibitor from lug and cable insulation.

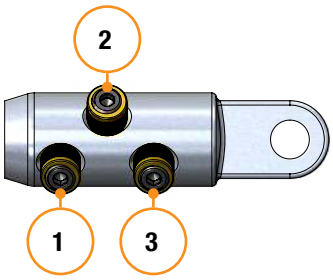


For Range Taking Connectors

A. Refer to lug bag for centering ring selection. Install centering ring into barrel opening. 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. Hand tighten shear bolts in tightening sequence shown.
NOTE: Your lug may have fewer bolts, but sequence is tightening bolts closest to cable entrance and working way towards spade.
C. Fully tighten bolts in tightening sequence shown. The bolt will break free when the required torque value is reached.



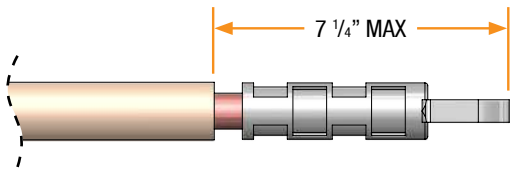
Bolt Tightening Sequence



7 Checking Lug

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

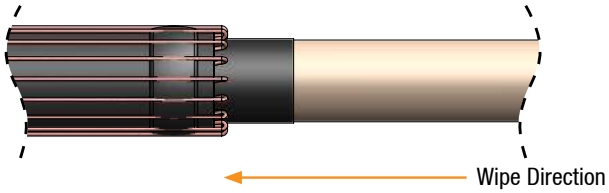
WARNING: Do not exceed maximum dimension shown.



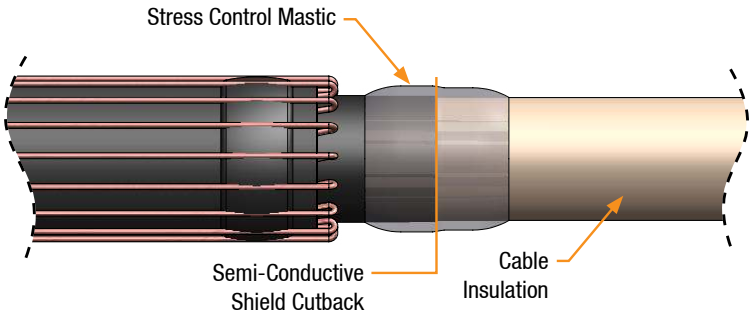
8 Applying Stress Control Mastic

For Strap/Wire Shielded Cable

A. Clean insulation with approved cleaning wipes by wiping from connector to shielding.
B. 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.

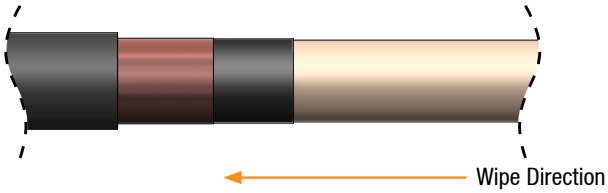


Applied Stress Control Mastic

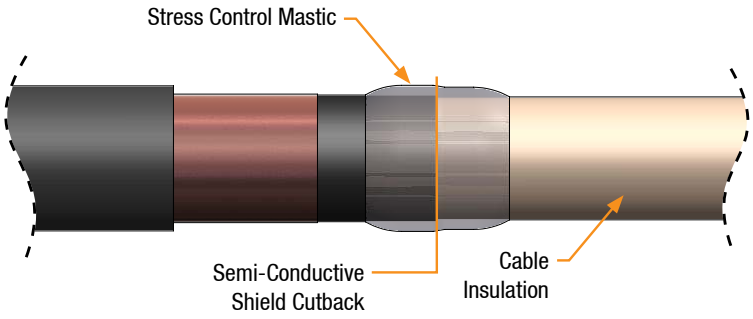


For Metallic Tape/LC Shielded Cable

A. Clean insulation with approved cleaning wipes by wiping from connector to shielding.
B. Remove PVC tape from Step 3.
C. 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.

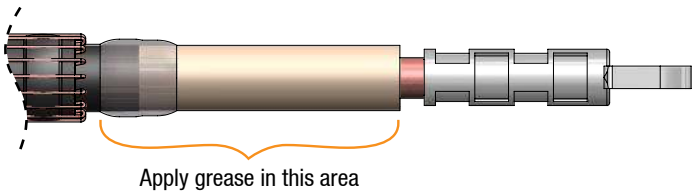


Applied Stress Control Mastic



9.1 Applying Grease

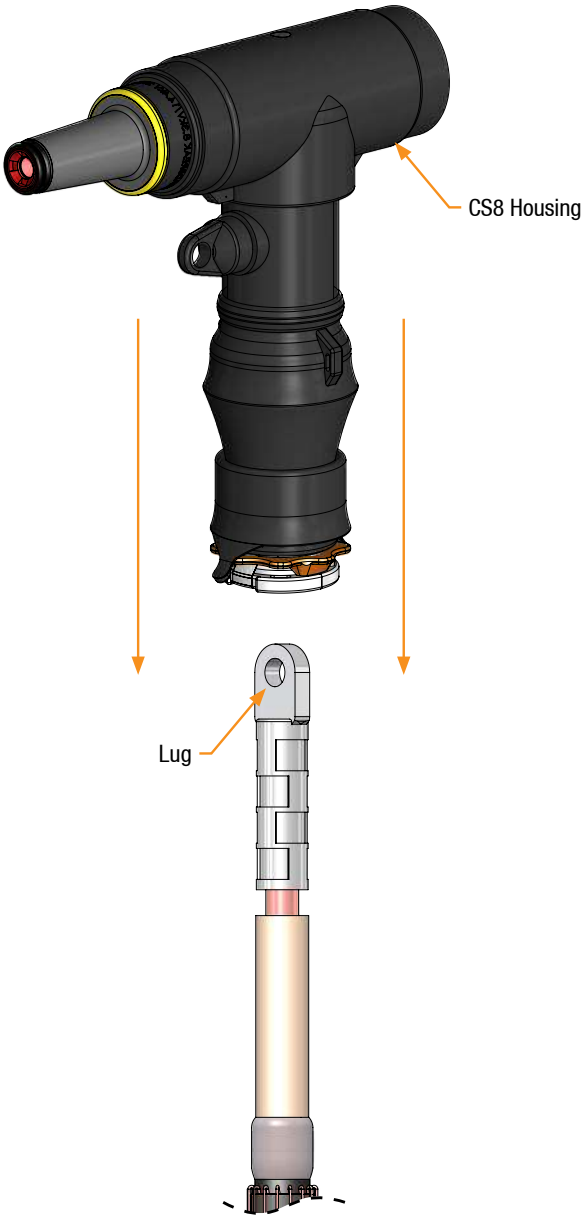
A. Apply grease over exposed cable insulation and stress control mastic as shown. Use only supplied or approved silicone grease.

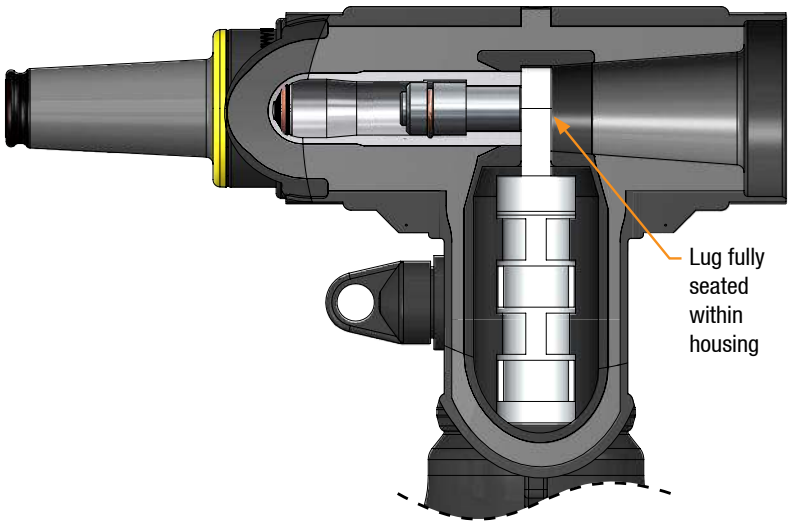


9.2 Installing CS8

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.



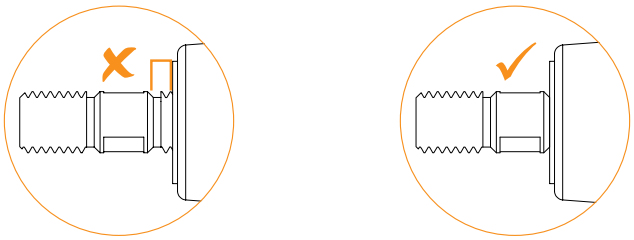


9.3 Mounting CS8

NOTE: For installations where the Elbow is either installed but temporarily kept in an unmounted position; or installations where the Elbow must be removed from the bushing/mating component, refer to TEMPORARY/ ALTERNATIVE INSTALLATION ADDENDUM at the end of these instructions for specific guidance.

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

WARNING: The stud MUST fully thread on. No threads should be visible on the bushing (male) interface. If any threads are visible, confirm correct stud is being used and check for cross-threading/thread damage.



B. Clean and lubricate (using supplied or approved silicone grease) deadbreak interface of CS8 and interface of mating part or bushing.
C. Visually confirm lug spade is completely seated (see. Fig. 1).
D. Measure distance from the edge of the core to the jacket cutback. Note the measured distance, this will confirm correct positioning after mounting.



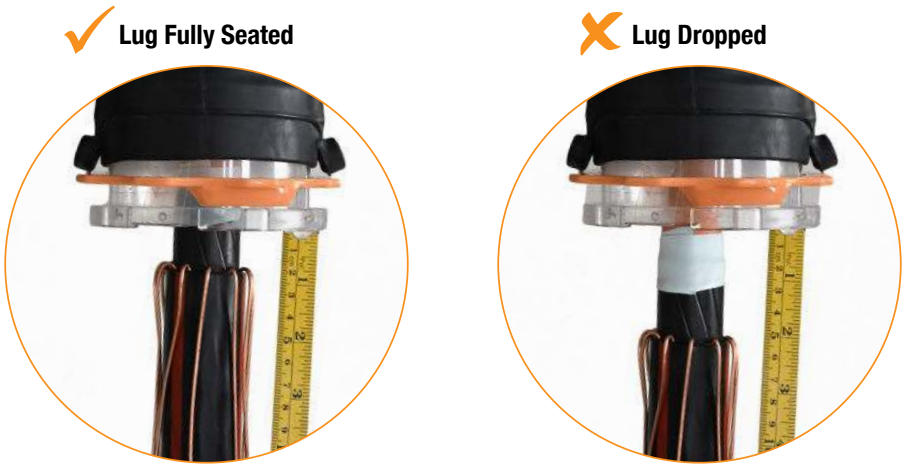
E. Place one hand on the power cable directly below CS8 and one hand on the body of the CS8. Moving together, push CS8 onto mating part, lining up the hole in the lug with the stud on the mating part.

WARNING: Ensure lug spade is completely seated and stud is through hole in lug.

9.3 Mounting CS8 (continued)

F. Insert supplied or approved alternative hex tool into loadbreak interface and engage faster. Rotate tool 2-3 turns to start thread engagement.

CHECK: Confirm that previously measured distance from edge of core to jacket cutback has not changed more than 3/4". If cable has shifted assembly must be re-done.



G. Continue rotating hex tool. Tighten to 50-60 ft. lbs. The supplied hex tool will twist (see Fig. 2) once the required torque has been achieved.

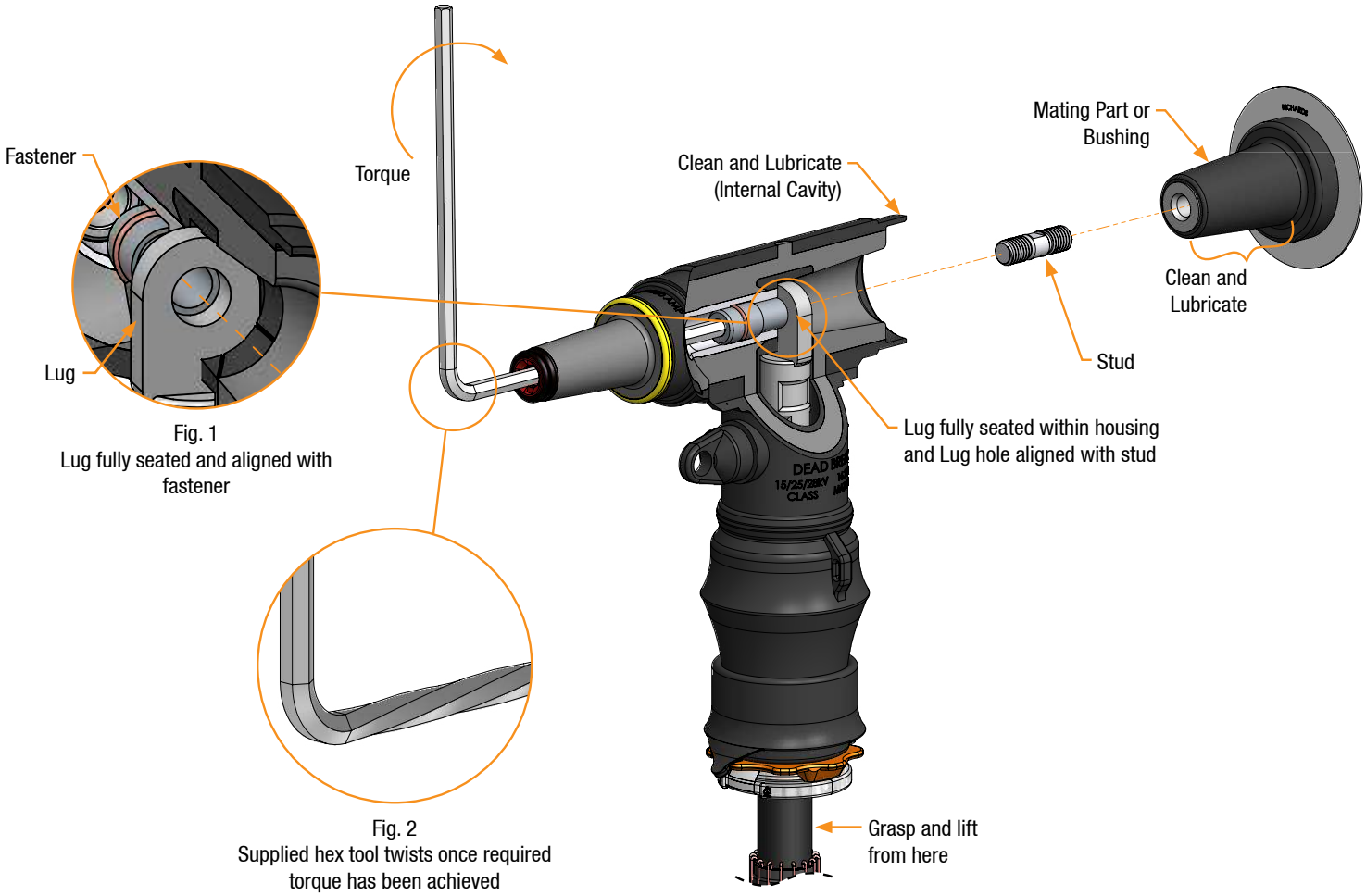


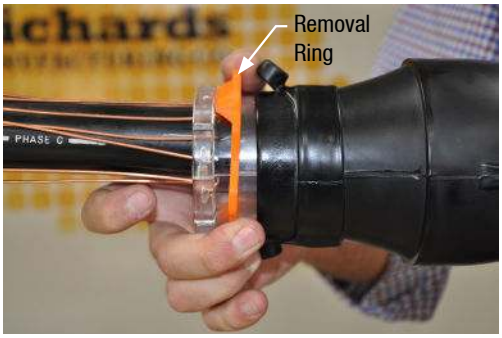
Fig. 1
Lug fully seated and aligned with fastener

Fig. 2
Supplied hex tool twists once required torque has been achieved

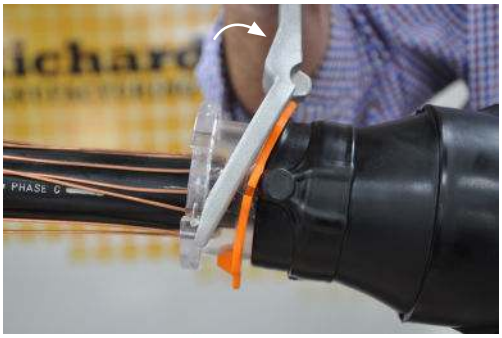
10.1 Removing Core

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.

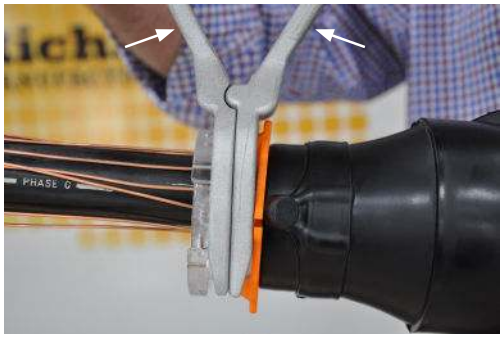
A



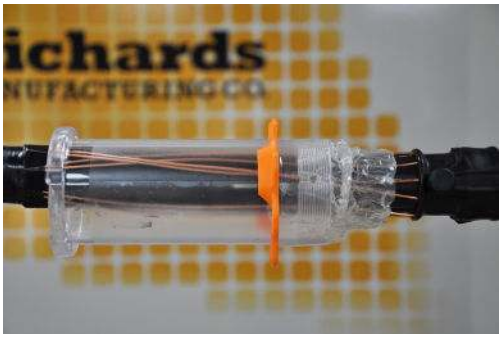
B



C



D



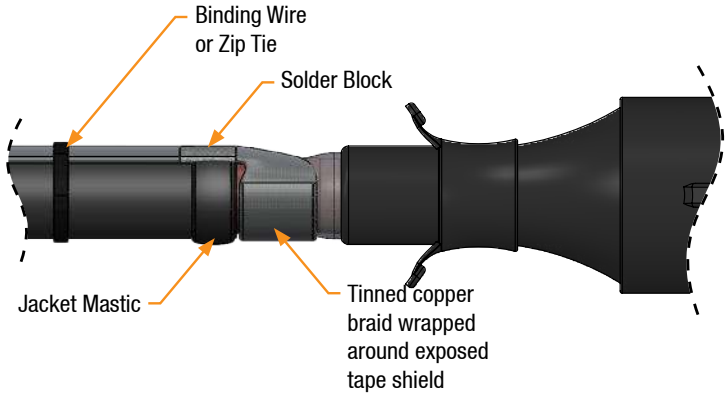
10.2 Preparing Metallic Shield

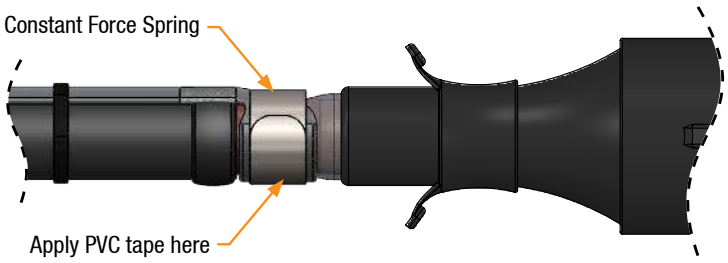
For Strap/ Wire Shielded Cable

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.



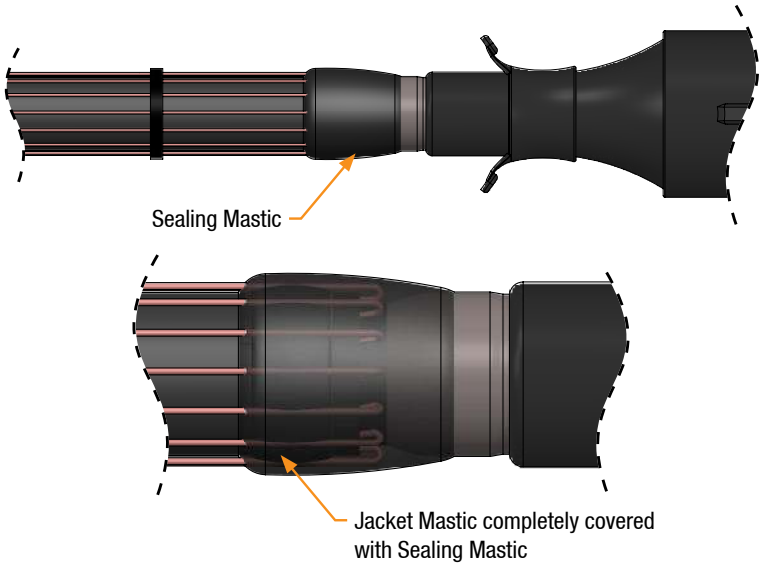


11 Applying Sealing Mastic

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.

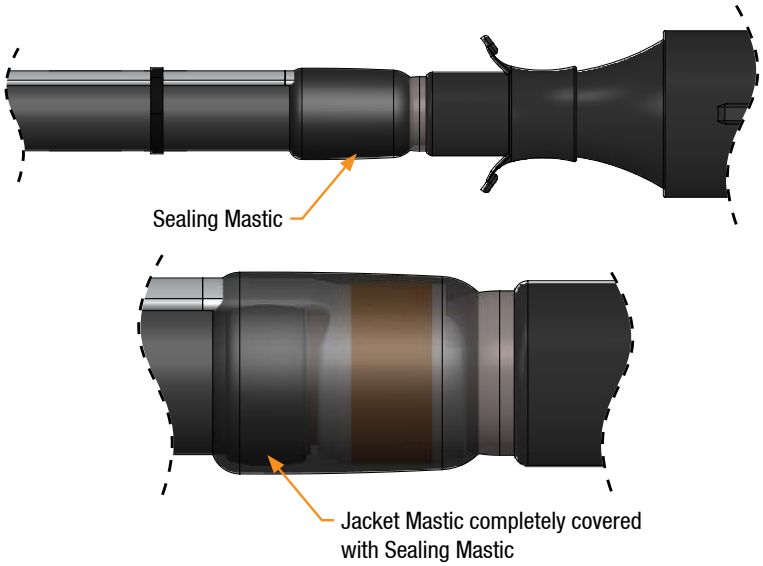
NOTE: sealing mastic may or may not overlap stress control mastic.



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.

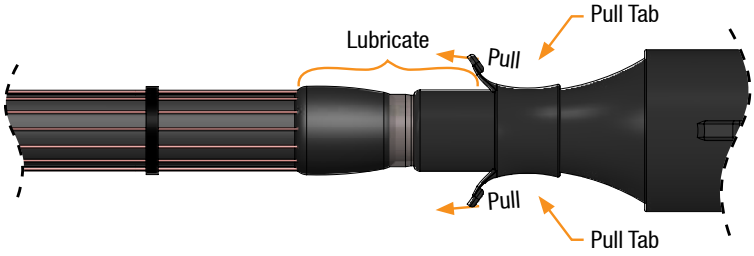


12 Applying Jacket Seal

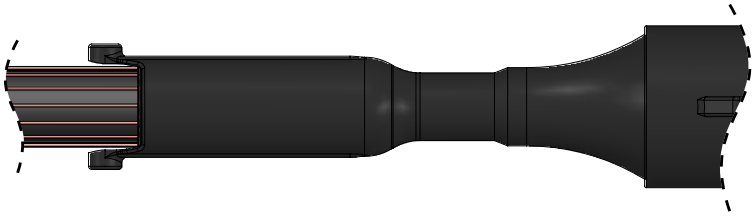
For Strap/Wire Shielded Cable

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.



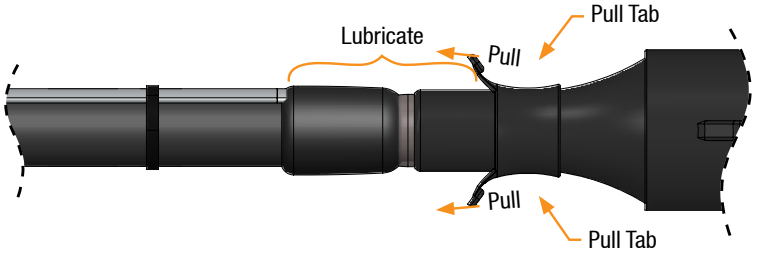
Jacket Seal Installed



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.

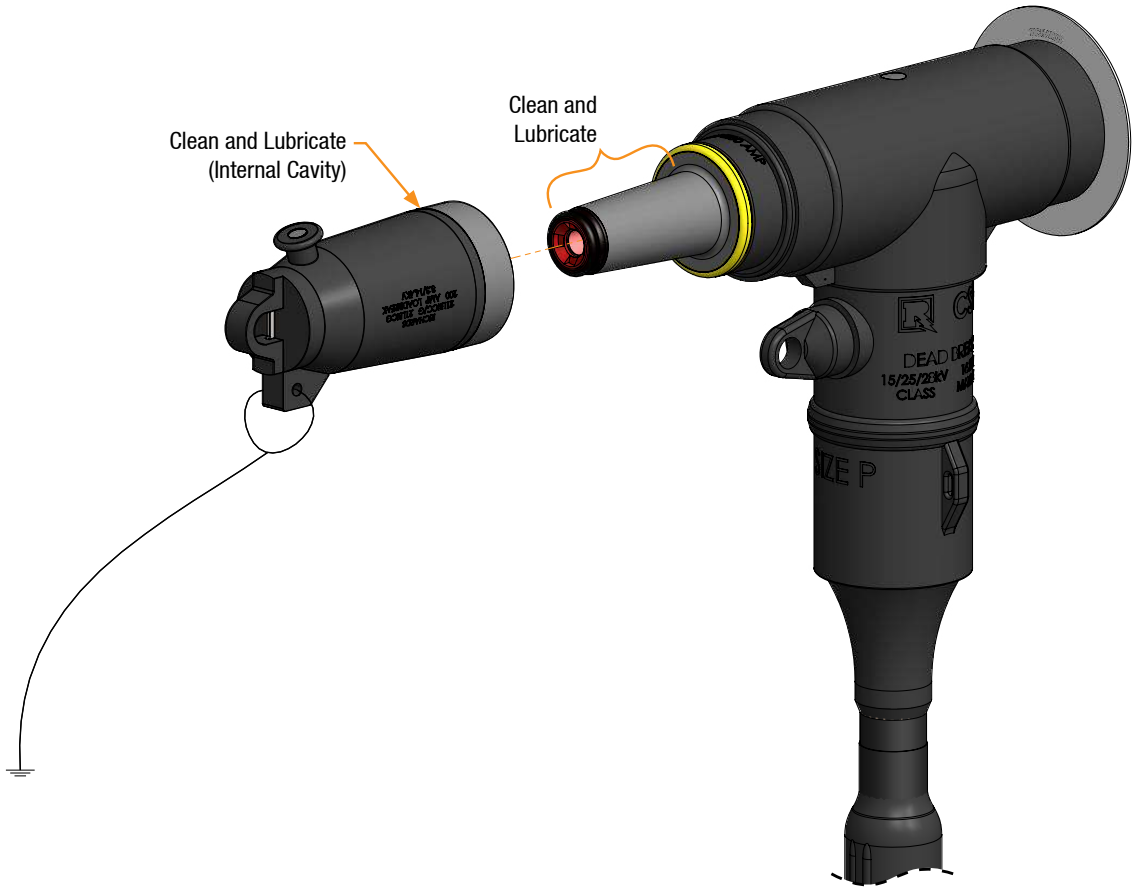


Jacket Seal Installed



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.

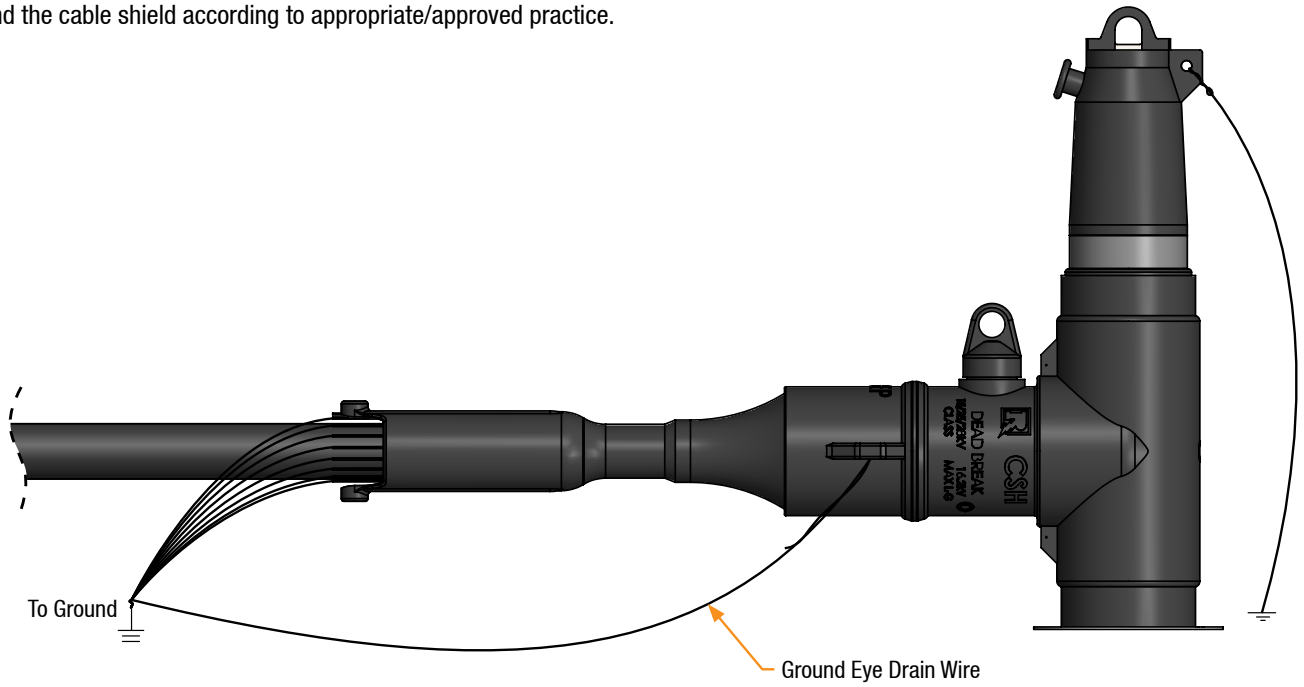


14

Connecting Drain Wires to CS8

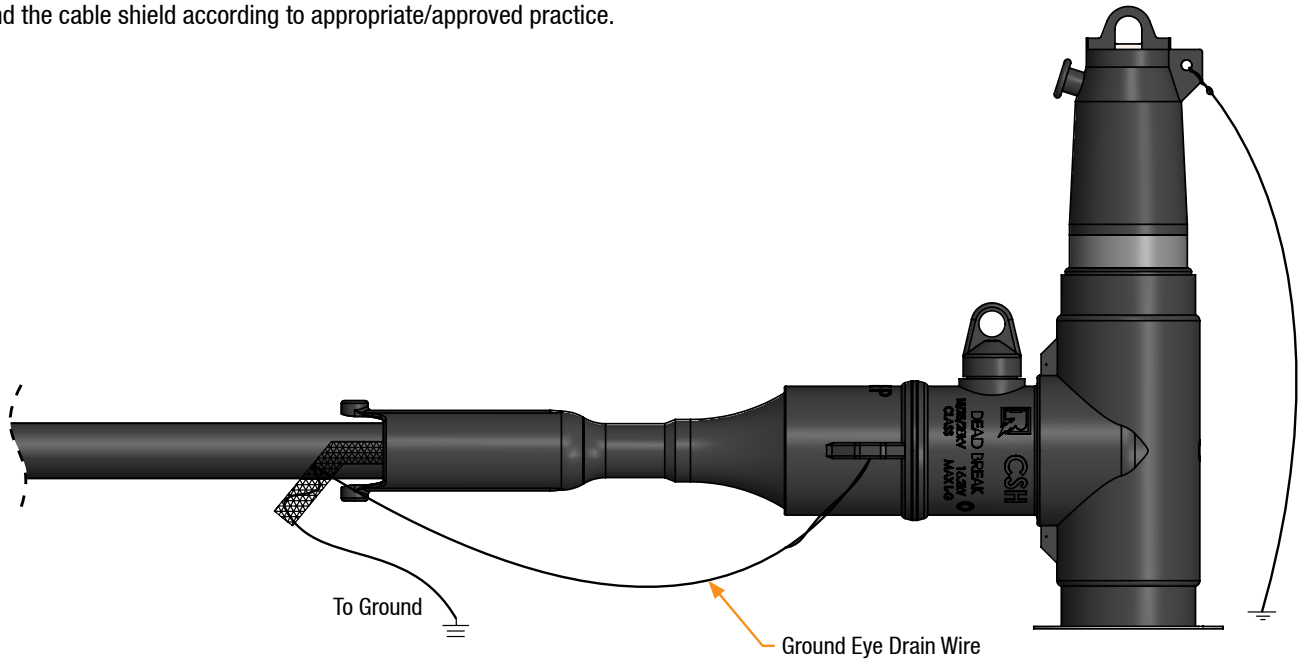
For Strap/Wire Shielded Cable

A. 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.
B. Connect other end of wire to shield wires.
C. Ground the cable shield according to appropriate/approved practice.



For Metallic Tape/LC Shielded

A. 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.
B. Connect other end of wire to copper braid.
C. Ground the cable shield according to appropriate/approved practice.



Installation Complete

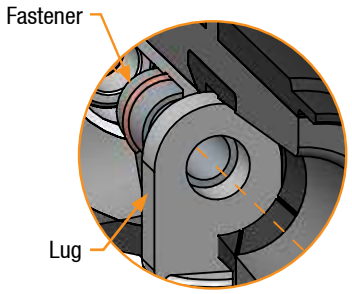
TEMPORARY/ALTERNATIVE INSTALLATION ADDENDUM:

For installations where the Elbow is either installed but temporarily kept in an unmounted position; or installations where the Elbow must be removed from the bushing/mating component (equipment changeout, cable testing, etc), you MUST follow the below guidelines:

A. Move the cable and Elbow together to avoid disrupting proper positioning between the cable, lug and elbow. Even a Cold Shrink product can be dislodged when moving.

B. Install appropriate mating components to keep exposed interfaces clean/dry and to capture and maintain correct lug positioning in this temporary configuration. If no mating component is available, you must bag the Elbow to keep interfaces clean/dry and utilize an approved method for maintaining proper lug positioning.

C. Visually re-confirm alignment and that the lug is fully seated before proceeding with mounting elbow to bushing/mating component.



Lug fully seated and aligned with fastener.

D. After visually confirming alignment, choose a fixed point on the cable (apply a tape marker if necessary) and fixed point on the Elbow (e.g. grounding eyelet) and measure the distance. After performing mounting and starting 2-3 turns of thread engagement, re-measure and confirm distance has not changed more than 3/4". If distance changes by more than 3/4", stop installation and re-align Elbow/lug/cable before proceeding.