

Loadbreak Apparatus Connectors

200 A 15 kV and 25 kV Class Injection Elbow Installation Instructions

S500-11-1

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GENERAL

The Cooper Power Systems Loadbreak Injection Elbow Connector is a fully-shielded and insulated plug-in termination for connecting underground cable to transformers, switching cabinets and junctions equipped with loadbreak bushings. The elbow connector and bushing insert comprise the essential components of all loadbreak connections. The injection elbow has an access port through which CableCure/XL® restoration fluid can be injected into the cable.



WARNING: All associated apparatus must be de-energized during any hands-on installation or maintenance.



WARNING: When the insulated plug or injection plug is not installed in the access port, direct access to the conductor is present. Do not come in direct contact with the access port and do not attempt to insert any object into the access port other than the insulated plug or injection plug.



CAUTION: The 200 A Loadbreak Elbow Connector is designed to be operated in accordance with normal safe operating procedures. These instructions are not intended to supersede or replace existing safety and operating procedures. The elbow connector should be installed and serviced only by personnel familiar with good safety practices and the handling of high-voltage electrical equipment.

INSTALLATION

Cable stripping and scoring tools, available from various tool manufacturers, are recommended for use when installing loadbreak elbows. After preparing the cable, the elbow housing is pushed onto the cable. The loadbreak probe is threaded into the coppertop connector using the supplied installation tool or an approved equivalent. Use a hotstick to perform loadmake and loadbreak operations. (See page 4 for operating instructions.)

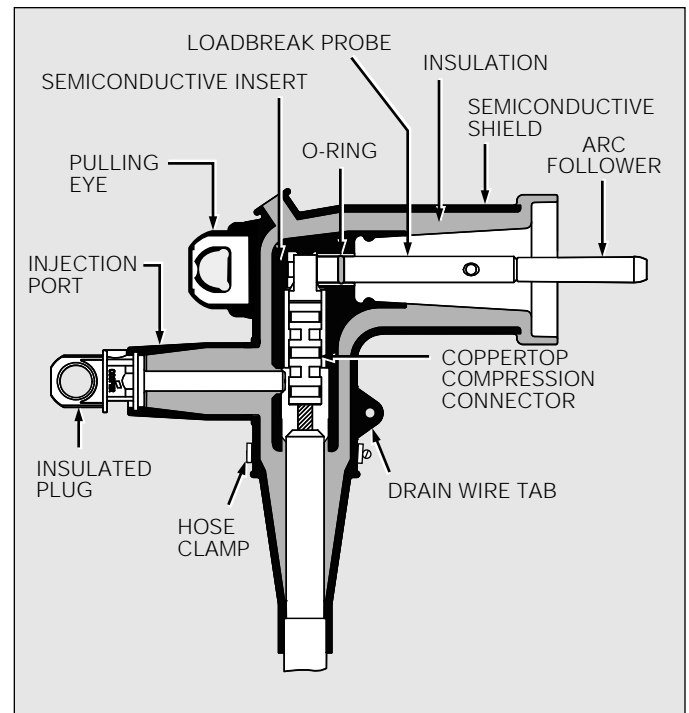


Figure 1.
Line illustration of 200 A 15 kV injection elbow.

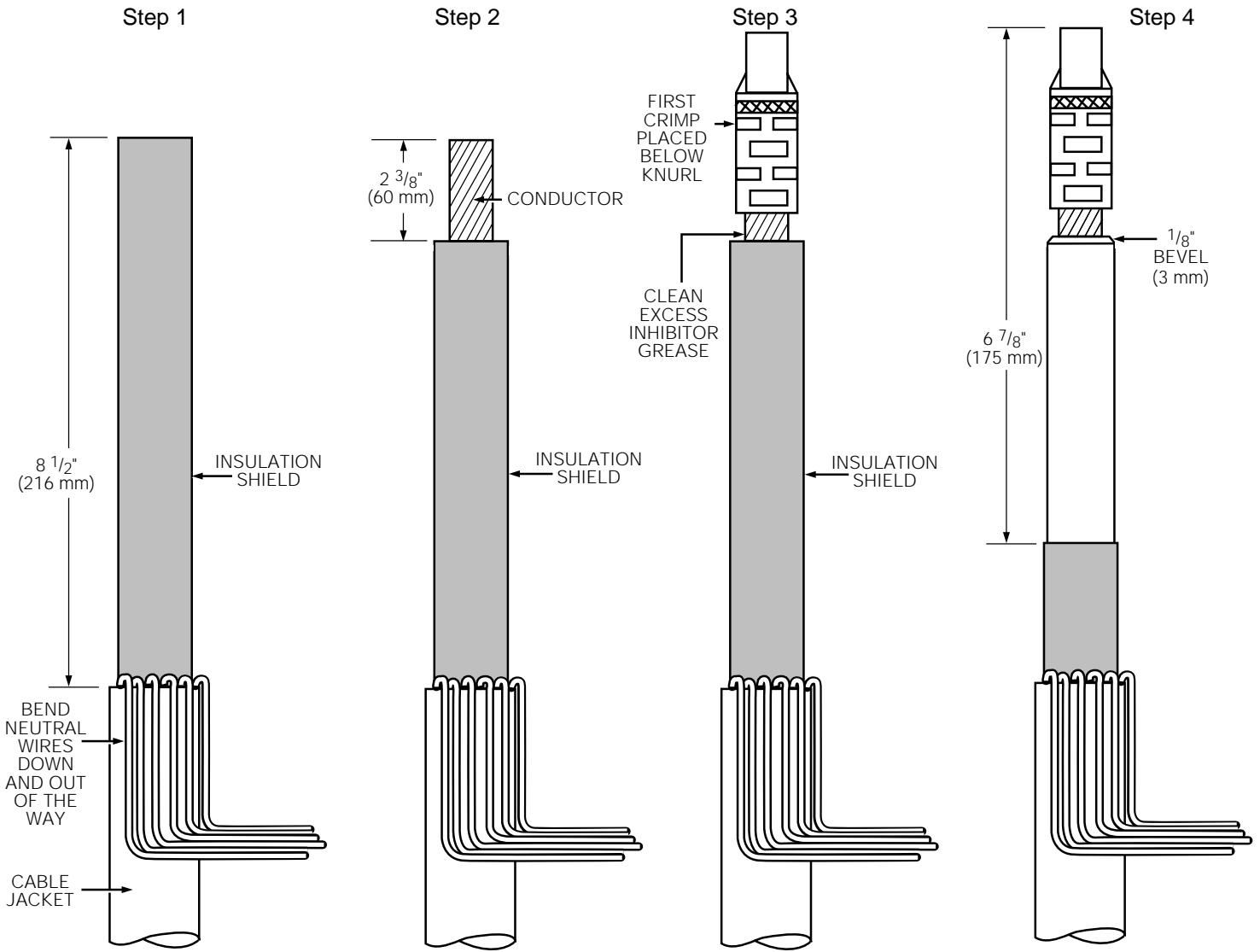
Complete elbow kit includes:

- Elbow Body
- Coppertop Compression Connector
- Loadbreak Probe w/O-ring
- Silicone Lubricant
- Insulated Plug
- Hose Clamp
- Instruction Sheet

Tools/Accessories needed:

- Tape Measure
- Wire Brush
- Knife
- Cable Stripping Tool
- Crimping Tool
- Cable Cleaner
- Cable Cutters
- Emery Cloth
- Hotstick
- Screw Driver
- Personal Protection Equipment
- Probe Torque Wrench

These instructions do not claim to cover all details or variations in the equipment, procedure, or process described, nor to provide directions for meeting every contingency during installation, operation, or maintenance. When additional information is desired to satisfy a problem not covered sufficiently for the user's purpose, please contact your Cooper Power Systems sales engineer.



PREPARATION OF CONCENTRIC NEUTRAL CABLE

NOTE: If concentric neutral cable is not being used, follow cable preparation directions in shield adapter kit.

Step 1

Measure down from top of the cable $8\frac{1}{2}"$.

Remove cable jacket (if jacketed cable is used) to expose neutral wires.

Unwind neutral wires.

Step 2

Measure down from the top of the cable $2\frac{3}{8}"$.

Remove the insulation and conductor shield to expose the bare conductor. Take care not to nick the conductor.

Step 3

Clean the exposed conductor using a wire brush.

Place the coppertop (bimetal) connector on the conductor. Make sure the threaded hole in connector faces the apparatus bushing.

Crimp the connector in place using a tool and die

combination listed in Table 1. Start crimping just below the knurled line and rotate each successive crimp to prevent bowing. Do not overlap crimps. Place as many crimps on the connector as will fit. Smooth any sharp edges on the crimp connector surface.

Clean excess inhibitor grease from coppertop connector by wiping toward threaded eye.

Rotate the compression connector counterclockwise 15° (looking at it from top view), then rotate it 15° clockwise.

Step 4

Measure down from the top of the connector $6\frac{7}{8}"$.

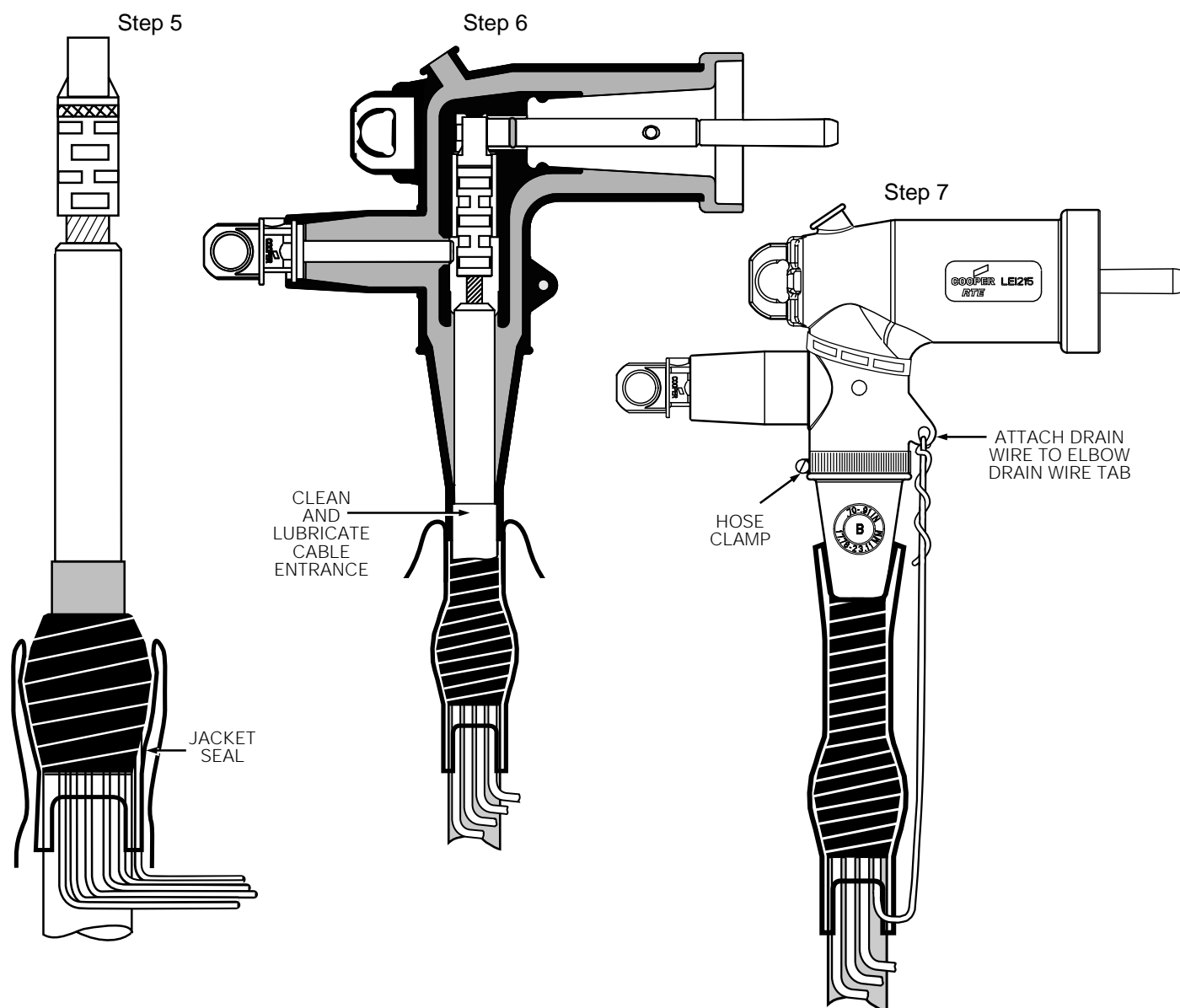
Remove the insulation shield. Take care not to nick or gouge insulation.

Place a $\frac{1}{8}"$ maximum bevel on the insulation to ease elbow installation.

Step 5

Apply a suitable jacket seal over the jacket and exposed neutral wires.

If a Cooper Power Systems jacket seal is used, follow instructions supplied with the jacket seal kit.



ELBOW AND LOADBREAK PROBE INSTALLATION

Step 6

Clean insulation with a lint free cloth saturated with a cleaning solution. Wipe insulation toward insulation shield.

Apply a thin coating of supplied silicone lubricant to the insulation.

Clean and lubricate the cable entrance of the elbow.

Place elbow on cable. With a twisting motion, push elbow onto cable until threaded eye of coppertop connector is aligned with the elbow.

Step 7

Lubricate the o-ring on the probe with a thin even coating of the silicone lubricant provided.

Place probe in probe installation torque wrench. Thread probe into the eye of the coppertop connector. Tighten probe until probe installation tool achieves proper torque.

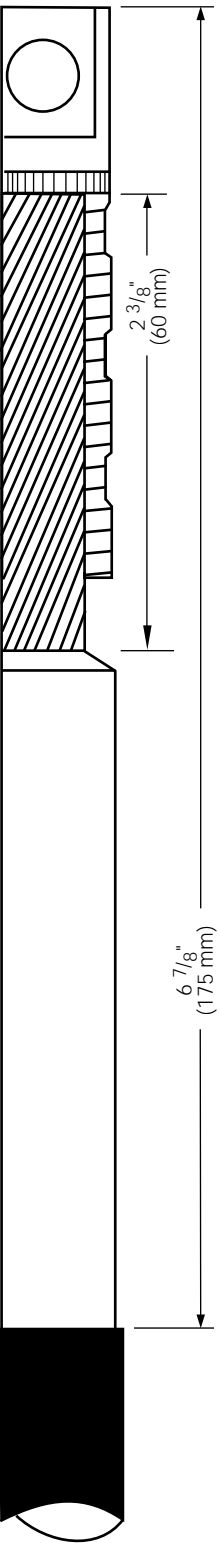
Torque tool should be calibrated to 100 to 120 lbf-in (11.0-13.5 N-m).

Install hose clamp in position shown in step 7.

CAUTION: Hose clamp should be tightened snugly against elbow body. Do not tighten to the point of deforming the rubber.

Clean and lubricate bushing and elbow interface areas with a thin even coating of the silicone lubricant provided.

Attach a drain wire lead to the drain wire eye of the elbow.



**TABLE 1
Crimp Chart**

CONNECTOR		5/8" DIAMETER					3/4" DIAMETER				
CONDUCTOR SIZE		NO. 4 THRU 2/0 STRANDED					3/0 - 4/0 STRANDED				
BURNDY®	TOOL	Y34	Y35 OR Y39		MD6		Y34	Y35 OR Y39		MD6	
	DIE	A243	U243	UBG	W243	WBG	U247	U247	U467	W247	
		A25AR	U25ART	U687	BG NOSE	W687	A27AR	U27ART			
SOMERSET (T AND B)	TOOL	UT-3		UT-5		UT-15		UT-5		UT-15	
	DIE	5/8"		TV		54 H		TV		66	
KEARNEY	TOOL	0			H-1, H-2, H-3			0		H-1, H-2, H-3	
	DIE	5/8" NOSE	620		9/16"			737	747	737	747
ALCOA	TOOL	12A					12A				
	DIE	B24 EA					B39 EA				
ANDERSON TOOL		VC-5, VC-6					VC-5, VC-6				
EEI - REFERENCE		8A					10A				

CAUTION: The operator should always use personal protective equipment (insulated gloves, hotstick and eye protection) whenever operating the elbow. The operator should always be in the best possible operating position, providing firm footing and enabling a secure grasp of the hotstick, while maintaining positive control of the elbow before, during and immediately after operation. If there is any question regarding the operator's operating position, de-energize the elbow before operation. The operator should not be looking directly at the connector during the moment of circuit interruption or connection.

OPERATING INSTRUCTIONS

Do not connect two different phases of a multiple-phase system. Before closing a single-phase loop, make certain both ends of the loop are the same phase.

Loadmake Operation

1. Area must be clear of obstructions or contaminants that would interfere with the operation of the loadbreak elbow.
2. Securely fasten a hotstick to the pulling eye.
3. Place the loadbreak elbow over the bushing, inserting the white arc follower of the probe into the bushing approximately 2 1/2" until a slight resistance is felt.

4. Immediately thrust the elbow onto the bushing with a fast, firm, straight motion, with sufficient force to latch the elbow to the bushing.
5. Push again on the hotstick, then pull gently to make sure it is secure.

Fault Close

1. It is not recommended that operations be made on known faults.
2. If a fault is experienced, both the elbow connector and the bushing must be replaced.

Loadbreak Operation

1. Securely fasten a hotstick to the pulling eye.
2. Without exerting any pulling force, slightly rotate the connector clockwise to break surface friction between the elbow and bushing.
3. Withdraw the connector from the bushing with a fast, firm, straight motion, being careful not to place the connector near a ground plane.
4. Place connector on an appropriate accessory device, following the operating instructions for that accessory.
5. Place an insulated protective cap with drain wire attached to system ground on any exposed energized bushing using a hotstick.

