

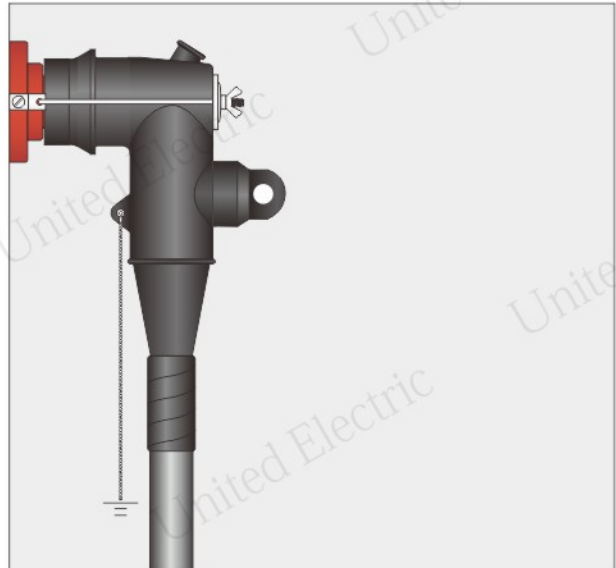
# United Electric

## Installation Instruction

### EELT24-250

250A Screened elbow connector  
for 3-core XLPE cable up to 24kV,  
copper tape or copper wire screened,  
steel tape armored

01-9401-001A-1022



#### Generals

- Check and ensure the cable against any damage, water or moisture corrosion.
- The cable must be fixed right under the bushing without any distortion.
- Carefully read and follow the steps in the installation instruction. We are not responsible for any fault from incorrect installation.
- Do not nick the stress cone during all the procedure of operation.

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The instruction is suitable for the installation of 250A elbow connector over 3-core XLPE insulated cable up to 24kV, copper tape or copper wire screened, steel armored.

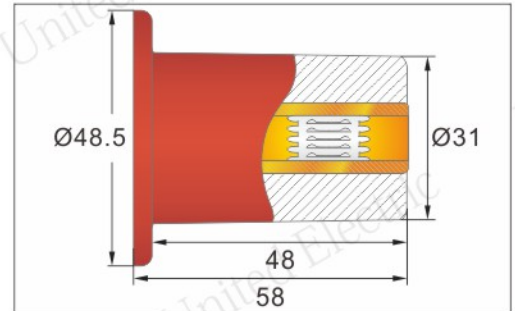
The installation should be made by the person who has been trained and get the qualified certificate. Carefully read and follow the steps in the installation instruction before installing the product.

Take care of the rubber components during the installation, do not nick the components.

Check the kits according to the packing list, make sure the kits comply with the cable at site.

### Bushing profile:

- The connector should only be connected with the bushing with dimensions as shown in right drawing.
- The bushing size meet the requirements of standard EN50181.



### 1. Check the cable and installation site.

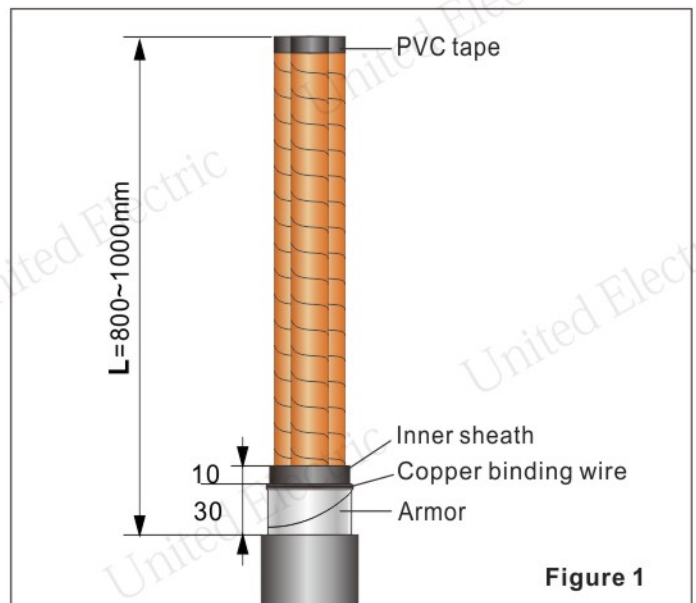
- The installation site should be clean, the relative humidity should not exceed 75%, the ambient temperature should be higher than 5°C.
- Check the outer diameter of cable insulation and inner diameter of stress cone according to table 1.
- Check the cable at site which should be qualified.

Table 1

Size	Suit for outer diameter of cable insulation Ø (mm)	Suit for cable conductor size (sq.mm)
		U <sub>m</sub> =24kV
1 #	16.8~19.2	35
2 #	19.7~22.5	50
3 #	21.5~24.6	70, 95
4 #	23.9~27.3	120

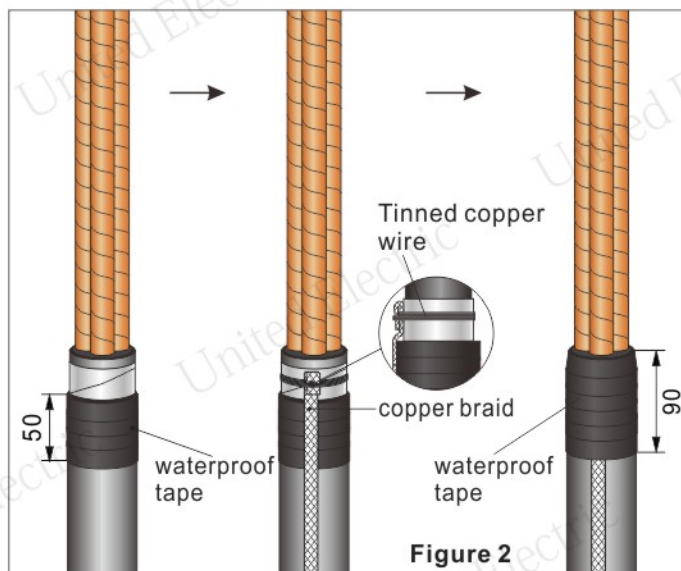
### 2A. Cable preparation for copper tape screen cable

- Remove the cable outer sheath to the required length of **L= 800~1000mm**. Clean and degrease the end of the cable sheath for about 150 mm.
- Fix the steel tape armor by copper binding wire with 30mm to the cut end of cable outer sheath. Remove the steel tape armor to 30mm and polish the surface where to be connected with copper braid by a file.
- Remove the cable inner sheath and fillers to 10mm.
- Fix the end of copper tape screen by PVC tape.



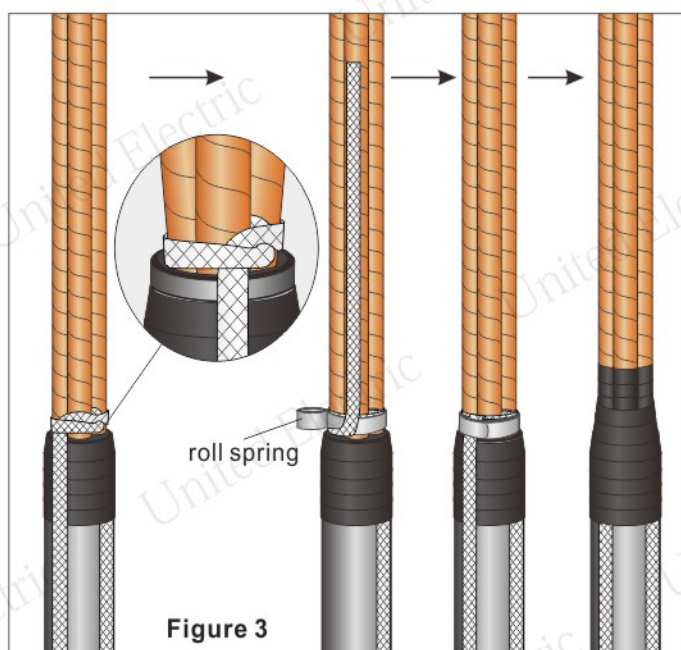
**3A. Connect the shorter copper braid**

- Downward half-lapping wrap one layer of waterproof tape with 150% stretch over the end of cable outer sheath for 50mm.
- Fix the shorter copper braid onto cable armor with tinned copper wire.
- Downward half-lapping wrap one layer of waterproof tape with 150% stretch over cable inner sheath, tape armor and continue over cable outer sheath for 90mm as shown in fig.2.



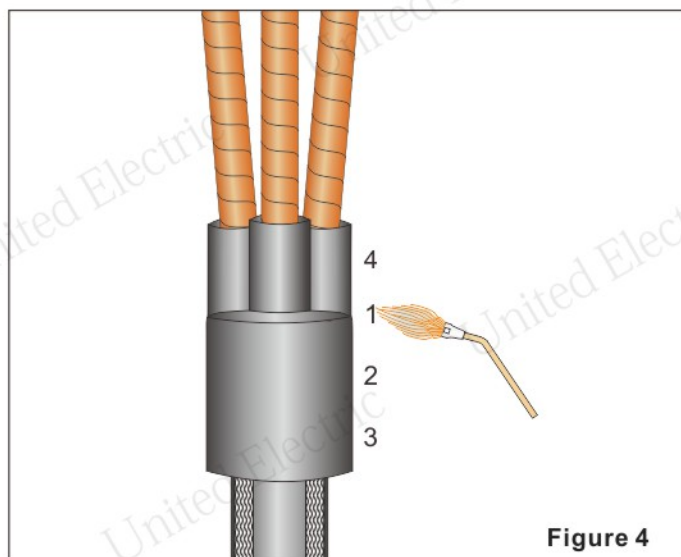
**4A. Connect the longer copper braid**

- Wrap the longer copper braid across the cores bottom, and fix it with roll spring as shown in figure 3.
- Note: The position of this copper braid should be adjusted to the other side of the shorter one.**
- Wrap two layers of waterproof tape from the copper tape screen till the end of previously wrapped waterproof tape, to cover all burrs and sharp edges as shown in figure 3.
- Note: Avoid overlap of the two copper braids.**



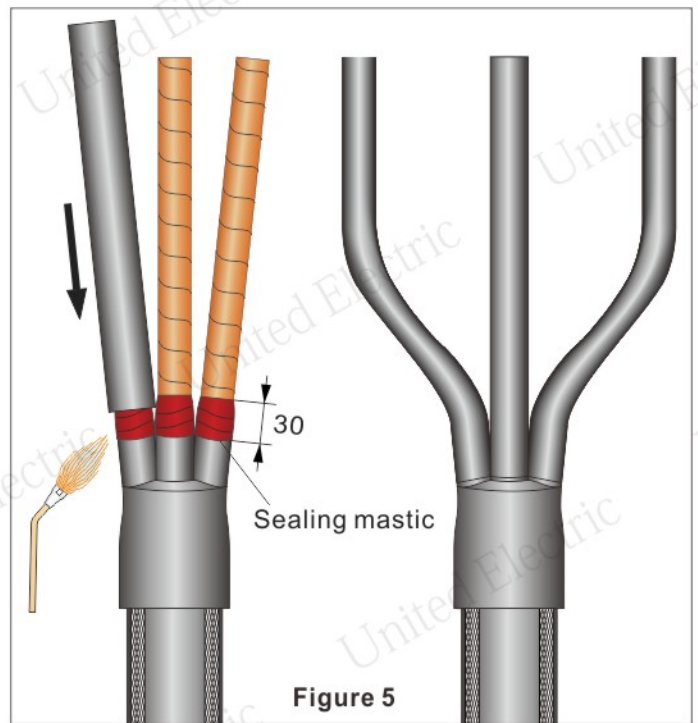
**5A. Install heat shrink breakout**

- Slide the heat shrink breakout over the cores. Pull the breakout as far down the crutch as possible.
- Shrink the breakout into place starting at the center. Work first towards the lower end and then shrink the finger ends onto the cores. The numbers in figure 4 indicate the shrinking sequence.



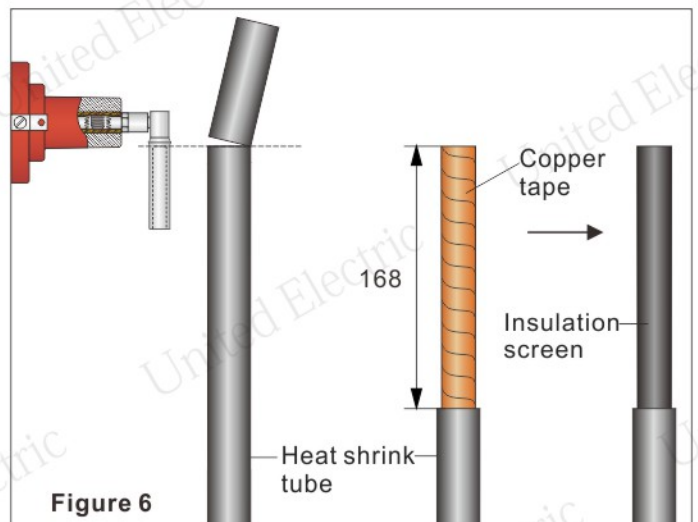
**6A. Install heat shrink tube**

- Wrap sealing mastic tape over the finger end of heat shrink breakout with 20mm overlap and cover the copper tape 10mm.
- Place the tube over the cores and slide the tube over the end of breakout finger as far down as possible and shrink it down starting at the crutch and working upwards.
- Bend and shape the cores into their final position.



**7A. Core preparation**

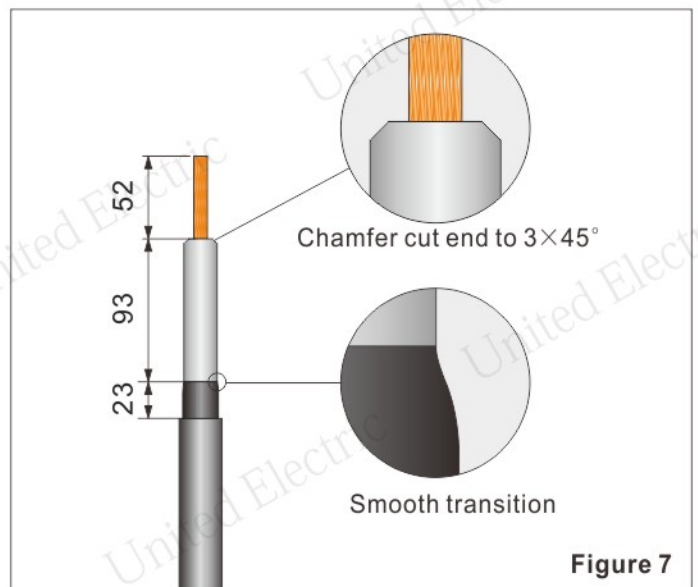
- Insert the contact pin into the connected bushing, screw the cable lug over the back end of contact pin, mark a reference line onto the heat shrink tube which is level with the top end of lug barrel hole.
- Cut the cable cores at the reference line.
- Measure and remove 168mm heat shrink tube from the cut end.
- Remove the copper tape to the cut end of heat shrink tube.



- Remove insulation screen to 23mm, remove the insulation 52mm with measure from the end of conductor. Chamfer the cable insulation cut to 3×45°.

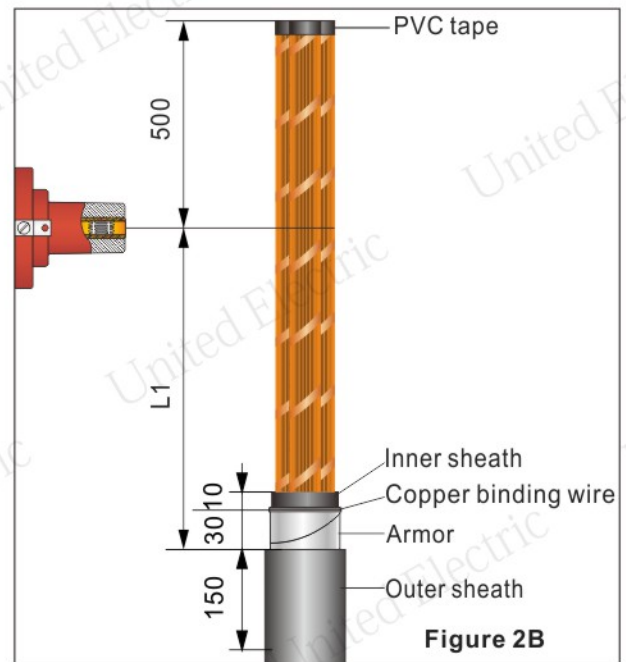
**Note: Do not nick the cable insulation.**

- Clean the cable conductor surface. Wrap the cut end of conductor with PVC tape.
- The end of insulation screen should be smooth transition, without any turnup and sharp-angle.
- The cable insulation surface should be smooth and free from all traces of conductive material. Polish the cable insulation surface by abrasive strap if there are any irregularities or imperfections.



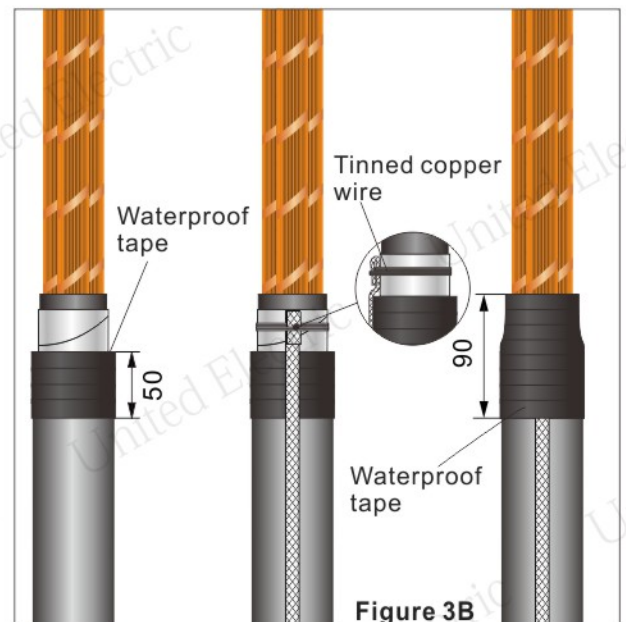
**2B. Cable preparation for copper wire screen cable**

- Cut the cable to required length and remove the cable sheath for **L1+500**mm. **L1** shall be measured based on the longest phase to be connected. (different phases could have different lengths base on their connection positions, however, the maximum length should be 1000mm, which is the standard length of heat shrink core protection tube).
- Remove the filler material from the cores. Cut the cable armor to 30mm and inner sheath to 10mm. Wrap the end of copper wire with PVC tape.
- Clean and degrease the end of the cable sheath for about 150mm as shown in figure 2B.



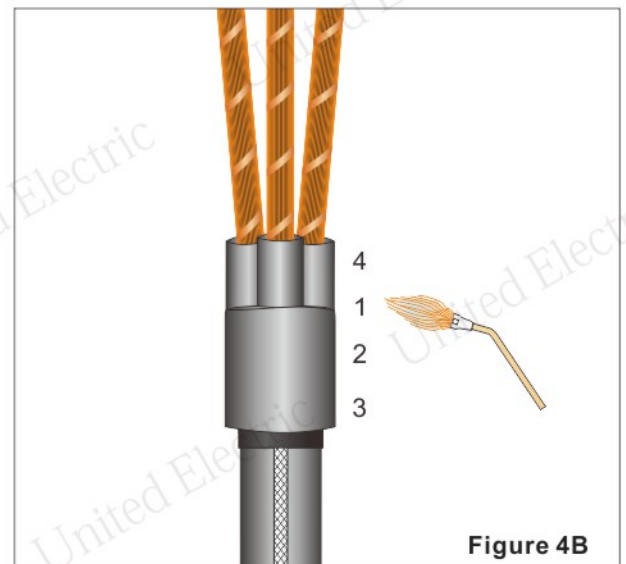
**3B. Connect earth braid over cable armor**

- Downward half-lapping wrap one layer of waterproof tape with 150% stretch over the end of cable outer sheath for 50mm.
- Fix the shorter copper braid onto cable armor with tinned copper wire or roll spring.
- Downward half-lapping wrap one layer of waterproof tape with 150% stretch over cable inner sheath, tape armor and continue over cable outer sheath for 90mm as shown in figure 3B.



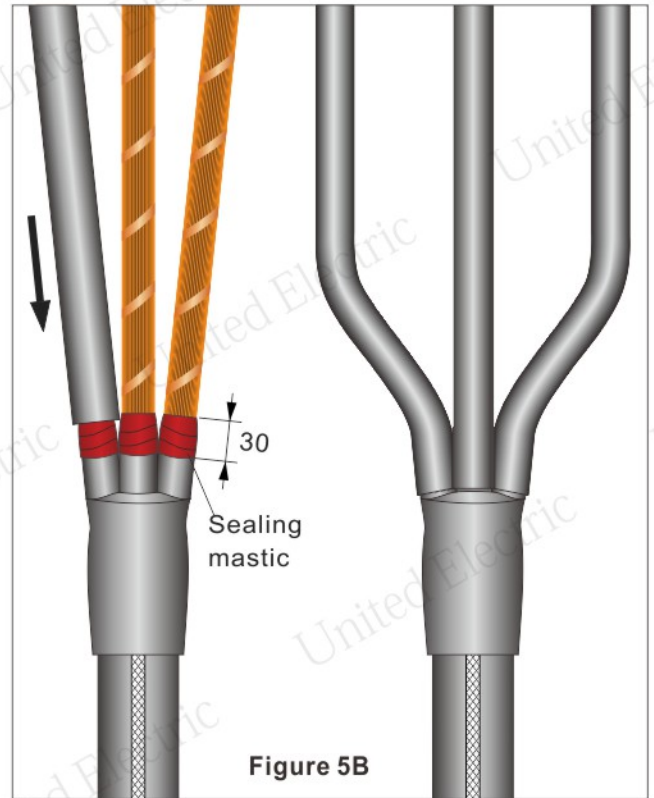
**4B. Heat and shrink 3-core breakout**

- Separate the cores.
- Place the breakout over the cores and pull it as far down the crutch as possible. Shrink the breakout into place starting at the center. Work first towards the lower end and then shrink the turrets onto the cores. The numbers in figure 4B indicate the shrinking sequence.



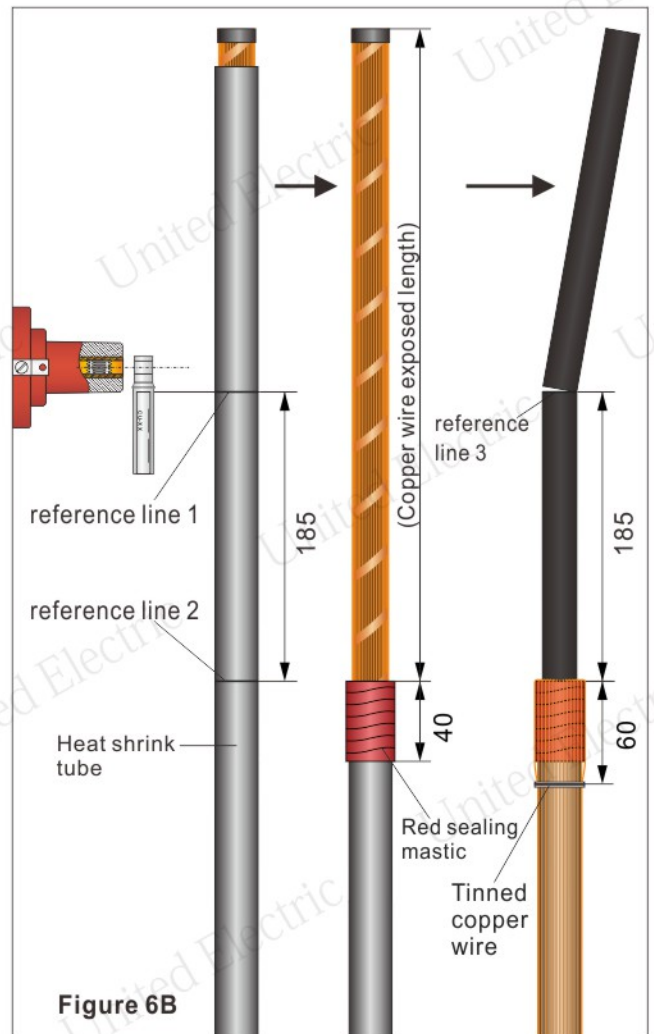
**5B. Install heat shrink tube**

- Wrap sealing mastic tape over the finger end of heat shrink breakout with 20mm overlap and cover the copper wire 10mm.
- Place the tube over the cores and slide it over the end of breakout finger as far down as possible. Shrink the tube down starting at the crutch and working upwards.
- Bend and shape the cores into their final position.

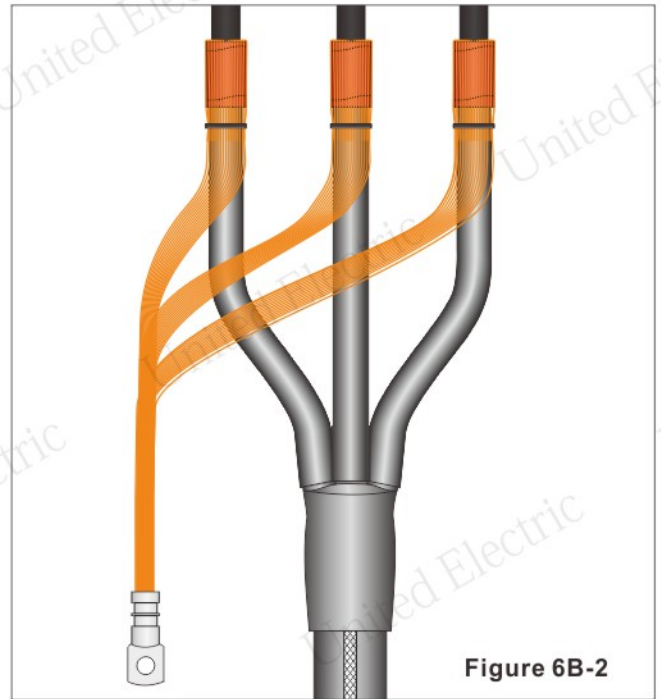


**6B. Cores preparation for copper wire screen cable**

- Center the threaded hole of cable lug with the pin hole of bushing, mark a reference line onto the heat shrink tube which is level with the top end of lug barrel hole.
- Mark another reference line over the heat shrink tube with 185mm of downward measurement.
- Remove the heat shrink tube from the reference line 2 to the top end.
- Half-overlapping wrap one layer of red sealing mastic over the heat shrink tube with starting from the cut end, and continue wrapping downward to 40mm.
- Bend the screen copper wires back one by one and place them neatly side by side on cable outer sheath, inlay the copper wires over the sealing mastic.
- Fix the copper wires over heat shrink tube by tinned copper wire from 60mm to the end.
- Measure 185mm from the edge of bended copper wires and mark another reference line onto the core insulation screen. Cut the core at the reference line 3.



- Bundle the copper wires to form an earth lead. Cut the end of earth lead to get a flat cross-section.
- Compress the earthing lug over the end of the earth lead by compression tool, remove any sharp edges and flashing.

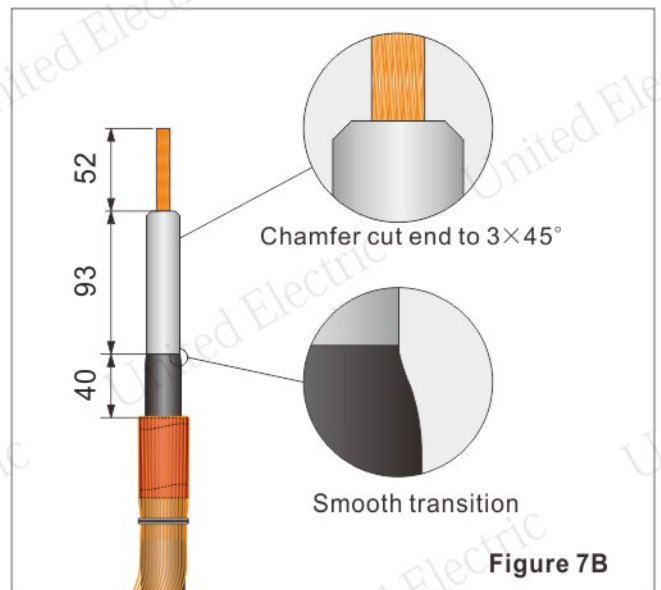


**Figure 6B-2**

- Remove insulation screen to 40mm, remove the insulation 52mm with measure from the end of conductor. Chamfer the cable insulation cut to 3×45°.

**Note: Do not nick the cable insulation.**

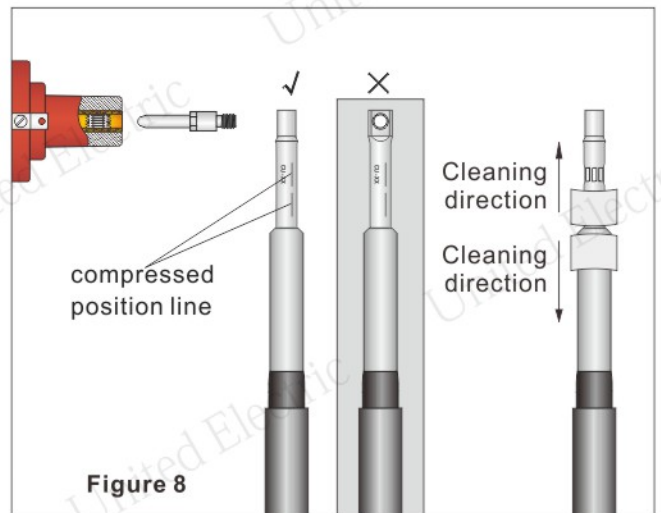
- Clean the cable conductor surface. Wrap the cut end of conductor with PVC tape.
- The end of insulation screen should be smooth transition, without any turnup and sharp-angle.
- The cable insulation surface should be smooth and free from all traces of conductive material. Polish the cable insulation surface by abrasive strap if there are any irregularities or imperfections.



**Figure 7B**

**8. Install cable lug**

- Place cable lug onto cable conductor, align the threaded hole of cable lug with the pin hole of connected bushing, compress the lug according to the compressed position line with compress tool. Remove any sharp edges and flashing.
- Clean the cable insulation from the insulation cut end downwards insulation screen with cleaning tissue, do not reuse the cleaning tissue.
- Clean the compressed lug from the cable insulation to the cable conductor, do not reuse the cleaning tissue.



**Figure 8**

**9. Clean the bottom end of connector**

- Clean inner surface of the elbow connector body with cleaning tissue.

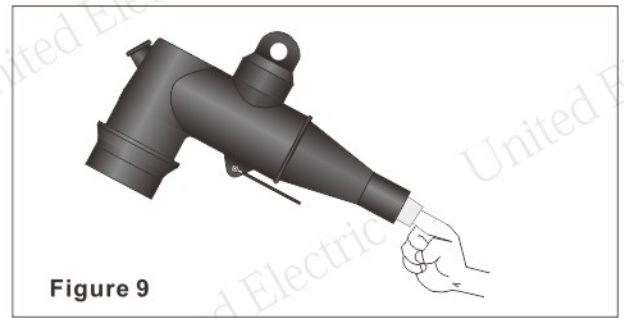


Figure 9

**10. Install connector body**

- Coat silicone grease onto the surface of cable insulation. Avoid to coating onto insulation screen.
- Wrap PVC tape over the end of heat shrink tube to make a position marker for installing the connector body.
- Align the elbow connector body with cable insulation. Push the elbow body over cable insulation, till the bottom end of connector body to the edge of PVC marker, and the threaded hole of cable lug is align with the pin hole of elbow connector body.

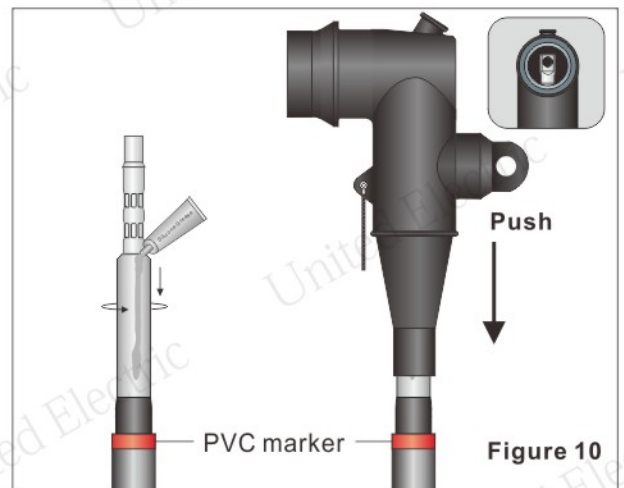


Figure 10

**11. Install contact pin**

- Screw the contact pin over cable lug by socket wrench.

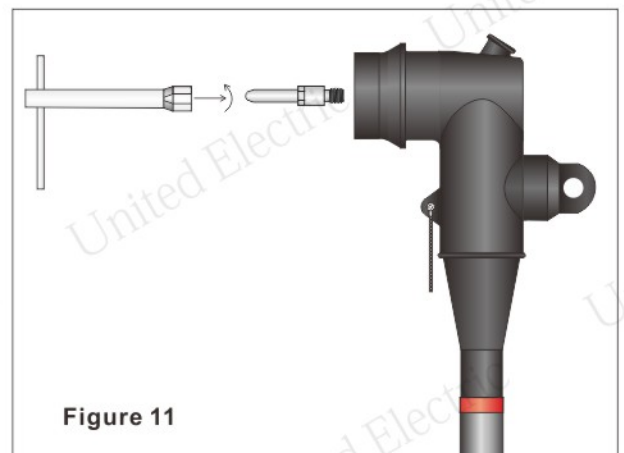


Figure 11

**12. Clean and lubricate bushing and connector**

- Clean inner surface of the front end of the elbow connector body with cleaning tissue.
- Clean outer surface of connecting bushing with cleaning tissue.
- Coat silicone grease onto the inner surface of the front end of elbow connector body.
- Coat silicone grease onto the outer surface of connecting bushing.

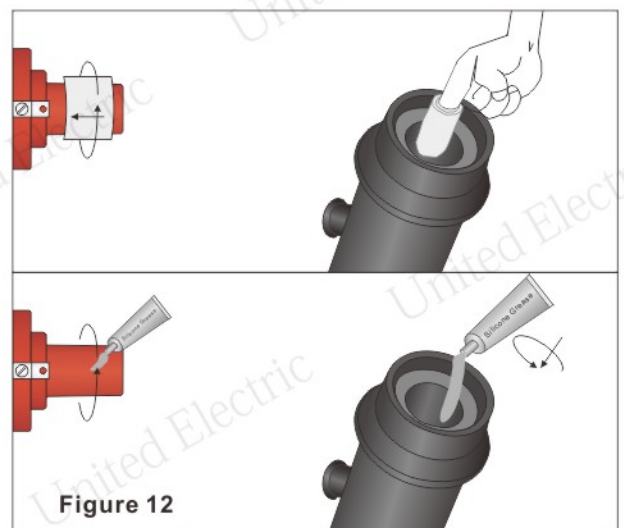
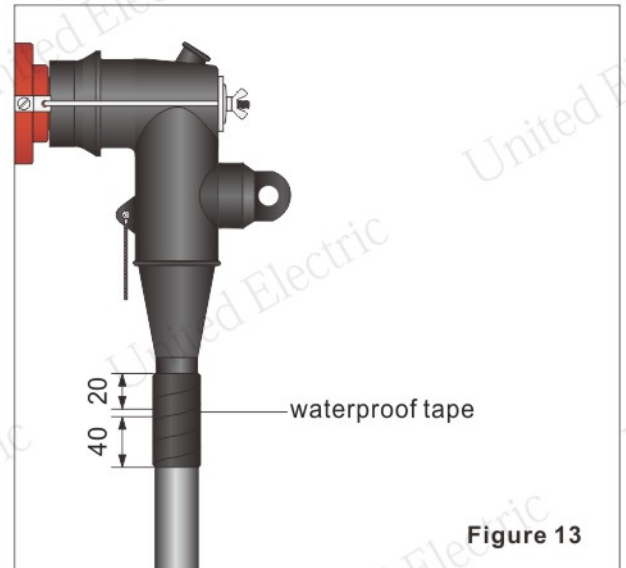


Figure 12



**13. Push connector onto bushing**

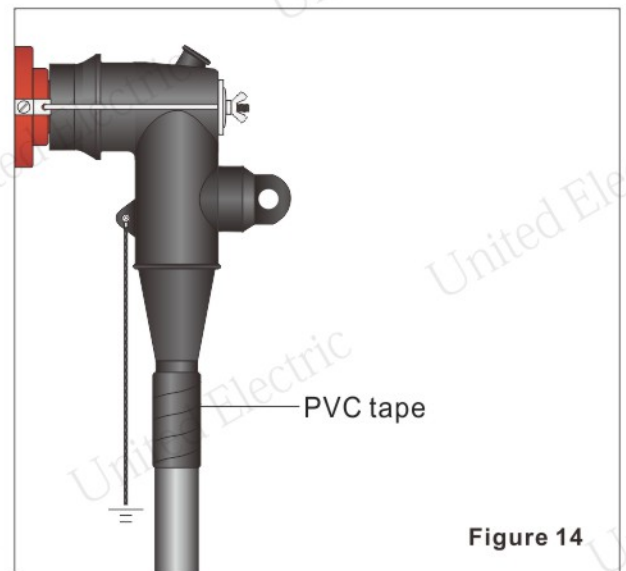
- Align the contact pin with the contact hole of bushing, insert the contact pin into the contact hole of bushing.
- Assemble the holding bails to the bushing and connector body. Make sure that the connector body is installed well onto the bushing.
- Half-overlapping wrap two layers of waterproof tape over the bottom end of connector body for 20mm, and continue wrapping over the end of heat shrink tube for 40mm.



**Figure 13**

**14. Ground the earth lead**

- Cover the waterproof tape by PVC tape.
- Ground all the earth braid to the earth point.



**Figure 14**

# Kit Contents

02-9401-001A-1022

## 250A Elbow Connector kit contents for 3-core cable



① 3×Connector body	⑥ 3×Cable lug	⑪ 3×Abrasive strap	⑯ 3×Bail restraint kit
② 1×Copper braid(L=600)	⑦ 3×Contact pin	⑫ 9×Cleaning tissue	⑰ 1×Socket wrench
③ 1×Copper braid(L=400)	⑧ 1×Heat shrink breakout	⑬ 3×Silicone grease	
④ 1×Roll spring	⑨ 3×Heat shrink tube	⑭ 1×Waterproof tape	
⑤ 2×Tinned copper wire	⑩ 1×Sealing mastic	⑮ 2×PVC tape	