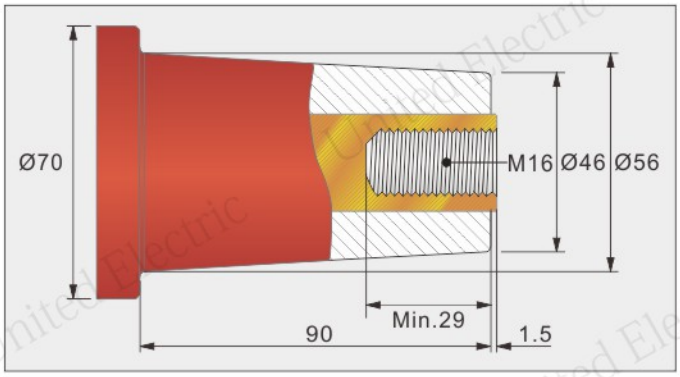
Installation instruction for 24kV 630A T Connector

(3-core XLPE insulated cable)

Bushing profile:

- *The connector should only be used on bushing with dimensions as shown in follow drawing.*
- *The bushing size meet the requirements of standard CENELEC EN50181, EN50180.*



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℃.
- 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

Front Connector	Rear Connector	Diameter over XLPE insulation Ø (mm)	Conductor cross section (sq.mm)	Cable lug material	
				Cu conductor cable	Al conductor cable
CJB20-630, 3×35sq.mm	CJBK20-630, 3×35sq.mm	18-23	35	Cu	Bimetallic
CJB20-630, 3×50sq.mm	CJBK20-630, 3×50sq.mm	18-23	50	Cu	Bimetallic
CJB20-630, 3×70sq.mm	CJBK20-630, 3×70sq.mm	18-23	70	Cu	Bimetallic
CJB20-630, 3×95sq.mm	CJBK20-630, 3×95sq.mm	23-28	95	Cu	Bimetallic
CJB20-630, 3×120sq.mm	CJBK20-630, 3×120sq.mm	23-28	120	Cu	Bimetallic
CJB20-630, 3×150sq.mm	CJBK20-630, 3×150sq.mm	23-28	150	Cu	Bimetallic
CJB20-630, 3×185sq.mm	CJBK20-630, 3×185sq.mm	28-36	185	Cu	Bimetallic
CJB20-630, 3×240sq.mm	CJBK20-630, 3×240sq.mm	28-36	240	Cu	Bimetallic
CJB20-630, 3×300sq.mm	CJBK20-630, 3×300sq.mm	31-37	300	Cu	Bimetallic
CJB20-630, 3×400sq.mm	CJBK20-630, 3×400sq.mm	31-37	400	Cu	Bimetallic

2A. Cable preparation for copper tape screen cable

- Cut the cable to required length and remove the cable sheath for 350-800mm accordingly. Remove the filler material from the cores.
- Cut the cable armor to 30mm and inner sheath to 80mm. Wrap the end of copper tape with PVC tape. Clean and degrease the end of the cable sheath for about 150 mm as shown in figure 1.

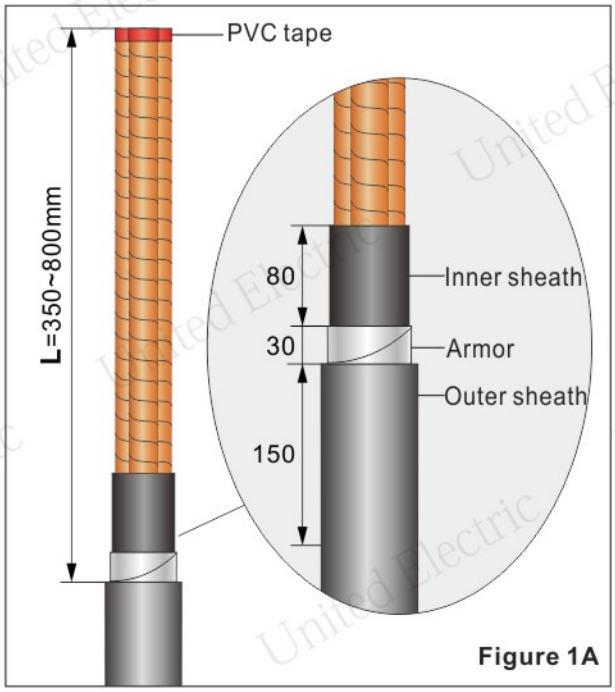


Figure 1A

3A. Connect earth braid over cable armor

- Place copper braid onto the tape armor, wrap roll spring twice over the end of tape armor. Fold the copper braid back to the outer sheath. Wrap the rest of the roll spring over the copper braid. Tighten the roll spring with a twisting action.
- Lift up the copper braid, half-overlapping wrap one layer of red sealing mastic over the outer sheath as a bedding, lay down the copper braid and continue wrapping one layer sealing mastic over the copper braid. Cover the roll spring and the end of cable armor by red sealing mastic.
- Place and shrink heat shrinkable earth tube over inner sheath with start from upside end, which is 50mm away from the end of inner sheath.

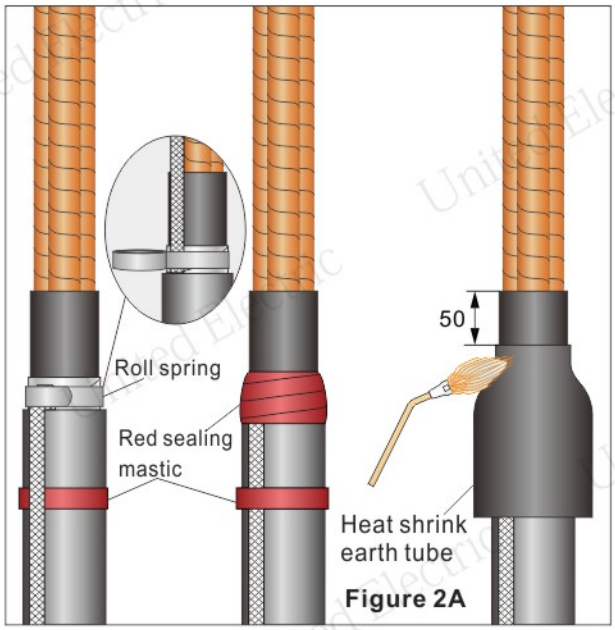


Figure 2A

4A. Connect earth braid over copper tape screen

- Separate the cores. Wrap the other copper braid 2 around each core and fix it to the copper tape by roll spring. Tighten the roll spring with a twisting action.
- Cover the sharp edges of roll spring with PVC tape.
- Lift up the copper braid 2 and half-overlapping wrap one layer of red sealing mastic over the end of heat shrinkable earth tube as a bedding. Lay down the copper braid 2 and keep wrapping one layer of red sealing mastic.

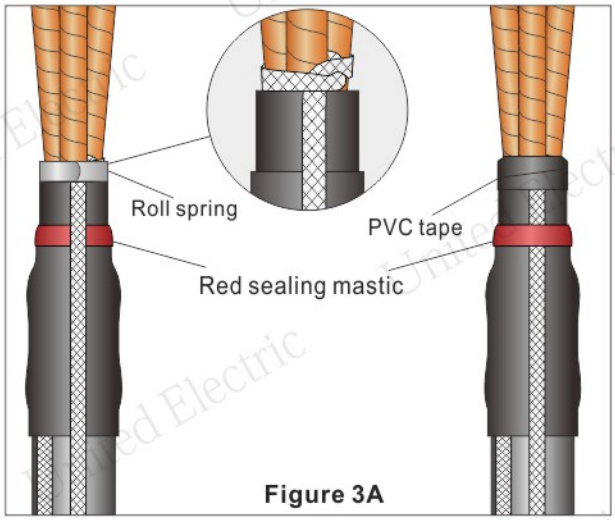


Figure 3A

5A. Install heat shrink breakout and tube

- 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 3 indicate the shrinking sequence.
- 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 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.

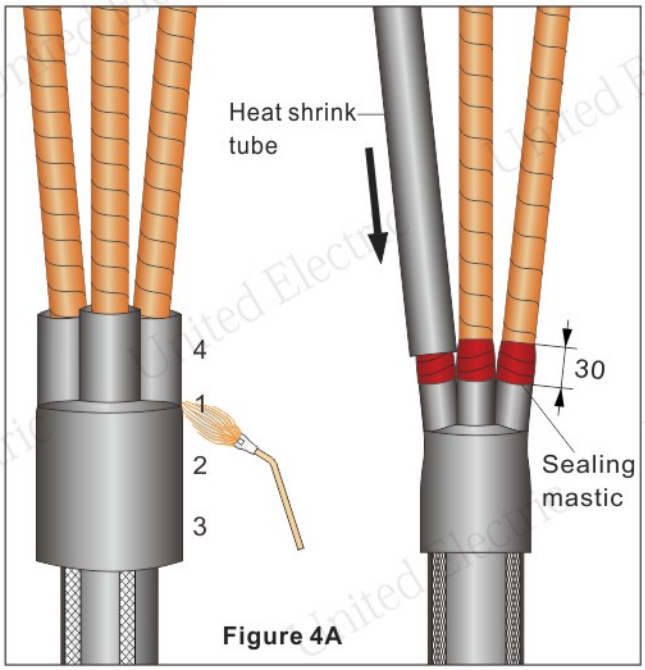


Figure 4A

6A. Cores preparation for copper tape screen cable

- Screw the M16/M12 stud into the connected bushing, hang the cable lug over the stud, 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.

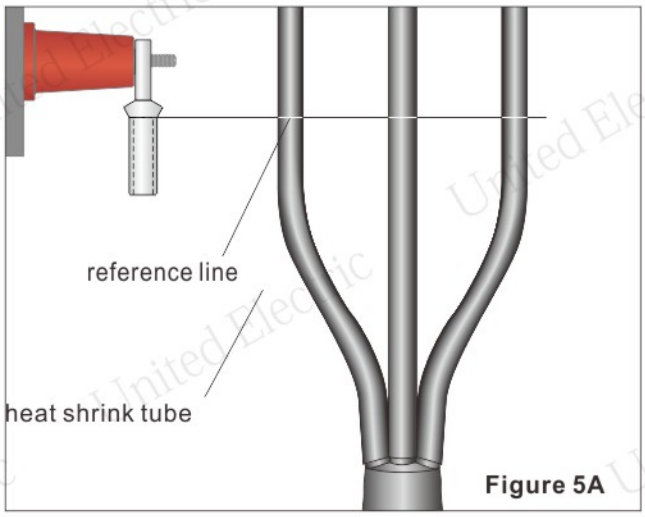


Figure 5A

- Remove the copper tape to 20mm and insulation screen to 20mm, and keep the insulation for 100mm, conductor for 50mm. Chamfer the end of cable insulation to 2×45°.
  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.

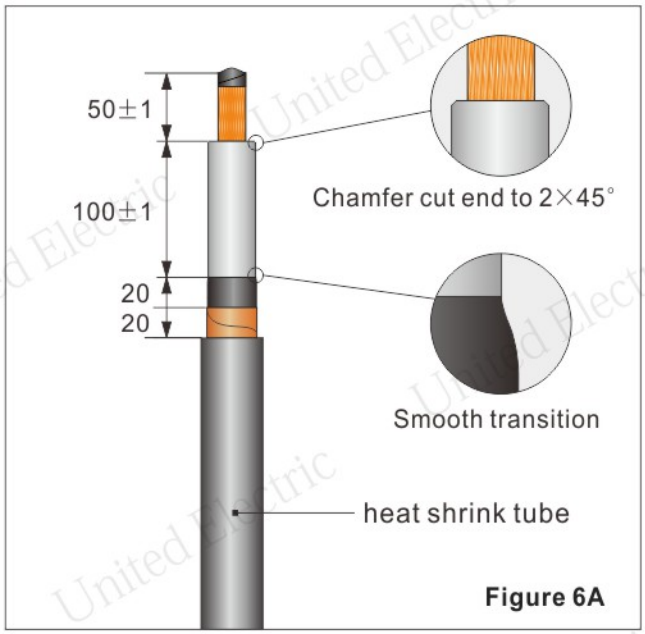


Figure 6A

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 80mm. 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 1B.

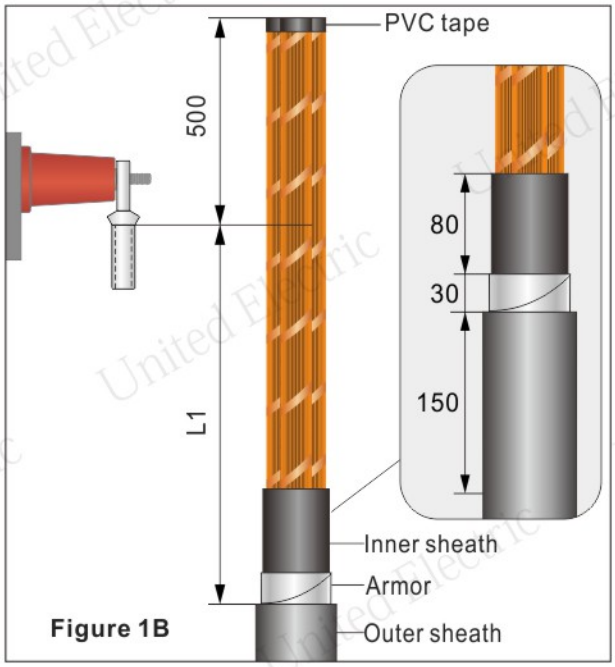


Figure 1B

3B. Connect earth braid over cable armor

- Place copper braid onto the tape armor, wrap roll spring twice over the end of tape armor. Fold the copper braid back to the outer sheath. Wrap the rest of the roll spring over the copper braid. Tighten the roll spring with a twisting action.
- Lift up the copper braid, half-overlapping wrap one layer of red sealing mastic over the outer sheath as a bedding, lay down the copper braid and continue wrapping one layer sealing mastic over the copper braid. Cover the roll spring and the end of cable armor by red sealing mastic.
- Place and shrink heat shrinkable earth tube over inner sheath with start from upside end, which is 50mm away from the end of inner sheath.

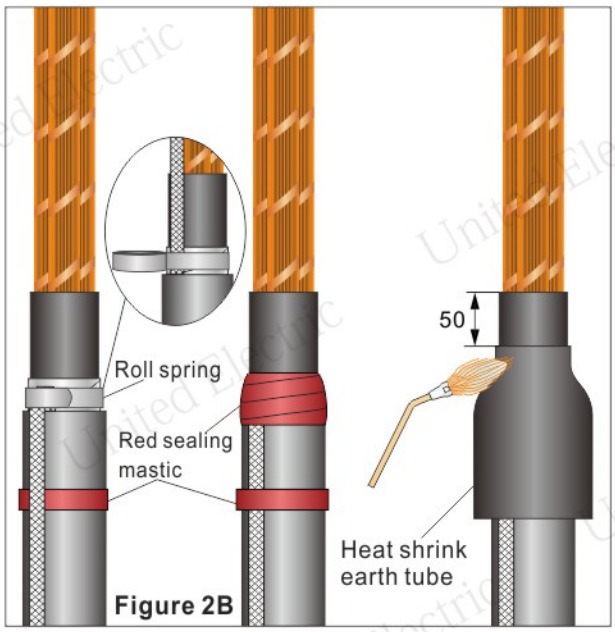


Figure 2B

4B. Heat and shrink 3-core breakout

- Separate the cores. Wrap anther layer of red sealing mastic over the end of heat shrink earth tube.
- Wrap the end of inner sheath with PVC tape to cover sharp edges.
- 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 3 indicate the shrinking sequence.

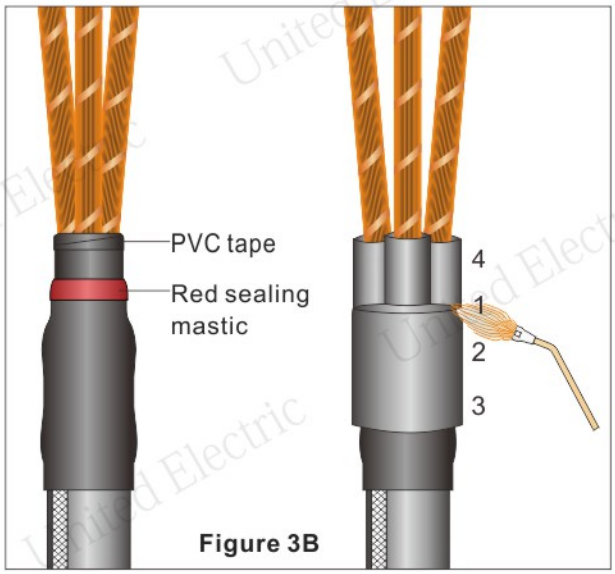


Figure 3B

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.

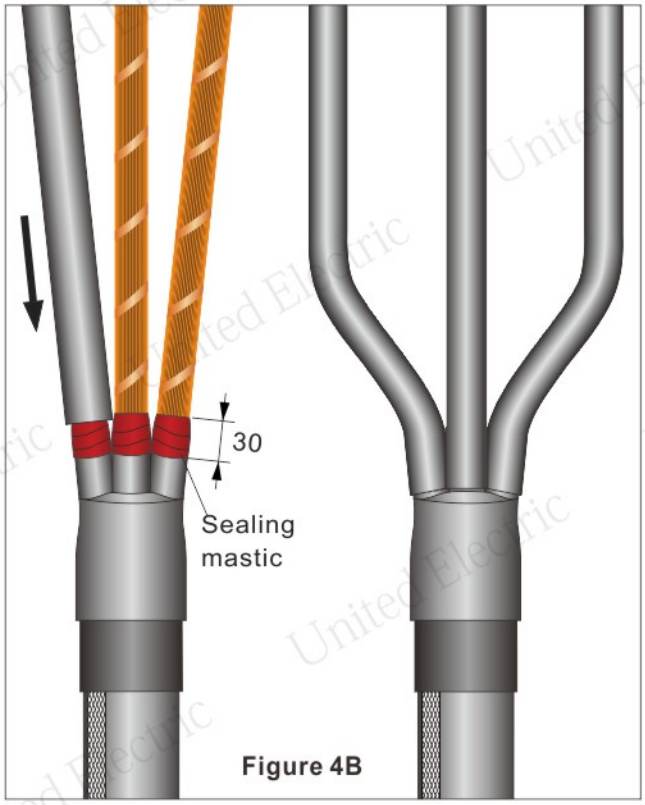


Figure 4B

6B. Cores preparation for copper wire screen cable

- Screw the M16/M12 threaded stud into the connected bushing, hang the cable lug over the stud, 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 225mm 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 rube with 150% stretch of its original length, starting from the cut end and continue wrapping downward to 30mm.
- 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.
- Mark anther reference line onto the core insulation screen which is level with the top end of lug barrel hole. Cut the core at the reference line 3.

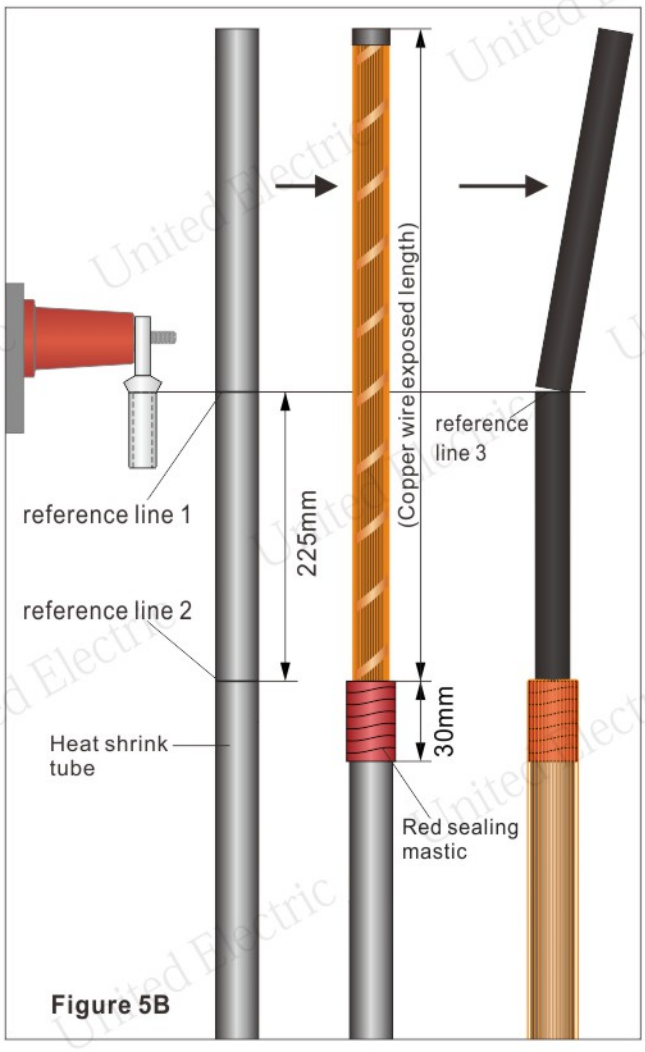


Figure 5B

- Half-overlapping wrap another layer of red sealing mastic (with 200% stretching) over the copper wires for 30mm.
- Cover the red sealing mastic by PVC tape
- Mark a reference line over the core insulation screen layer with 190mm of downward measurement. Place the heat shrink earth tube(large) over cable core and shrink it down with starting from the reference line.

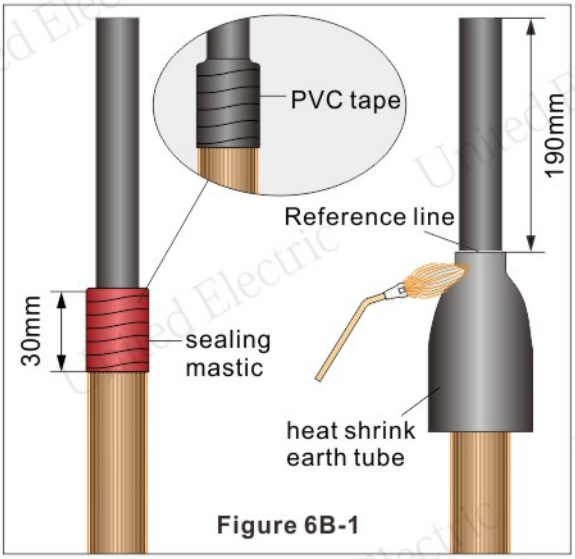


Figure 6B-1

- 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.

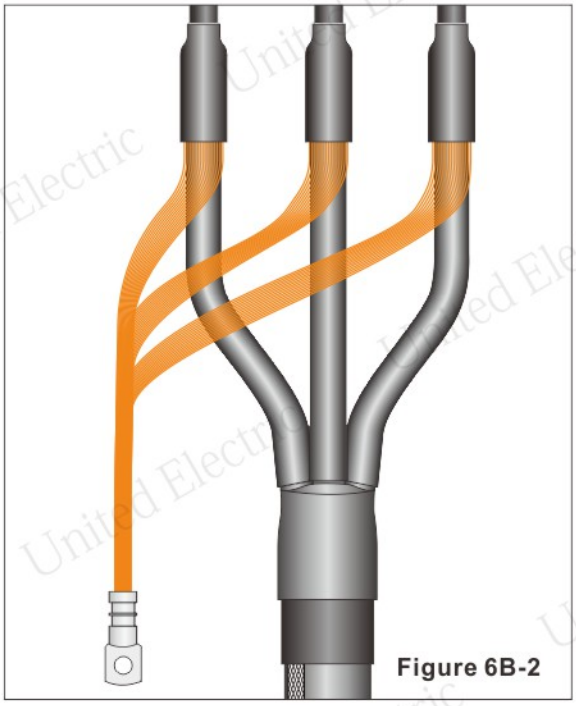


Figure 6B-2

- Remove the insulation screen layer to 40mm and keep the insulation for 100mm, conductor for 50mm. Chamfer the cable insulation cut to 2×45°.
  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 paper if there are any irregularities or imperfections.

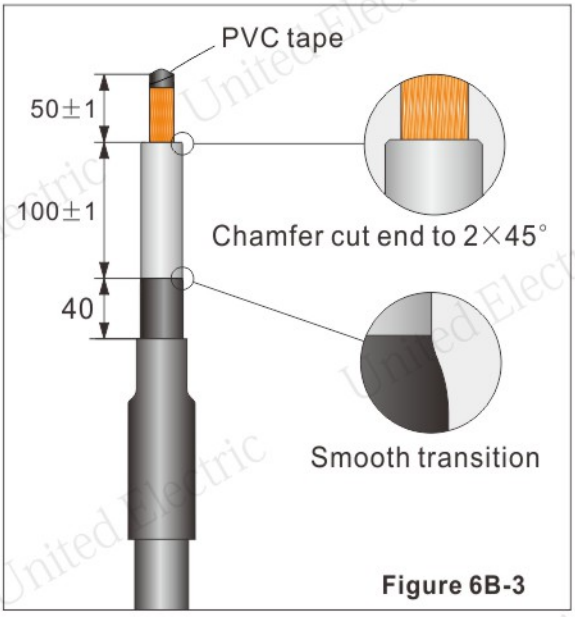


Figure 6B-3

7. Wrap semi-conductive tape

- Measure 18mm form the cut end of insulation screen, half-overlapping wrap the semi-conductive tape around the insulation screen with 150% stretch of its original length, and to make a step with width of 20-25mm and outer diameter ØD= outer diameter of insulation Ød + 8mm.
- Continue wrapping semi-conductive tape down over the heat shrink tube with cover the tube for 15mm.

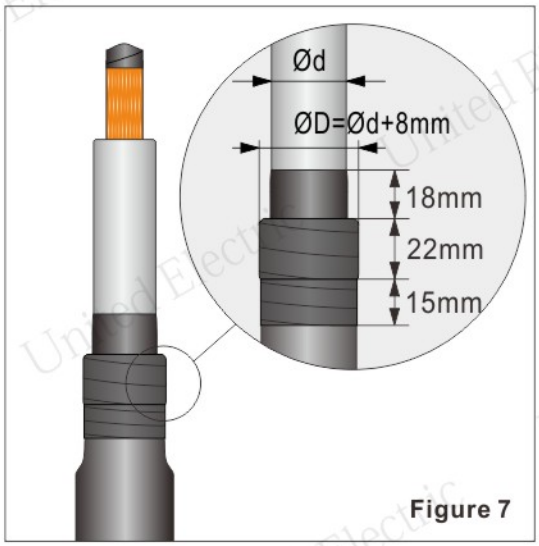


Figure 7

8. Clean and lubricate stress cone and core insulation

- Clean the outer surface of core insulation from the cut end downwards with cleaning tissue, do not reuse the cleaning tissue just applied.
- After the solvent volatilization, coat silicone grease onto the outer surface of core insulation and the inner surface of stress cone.
  Do not coat silicone grease onto the insulation screen.
- Coat silicone grease onto the inner surface of the stress cone where mark with the broken line as shown in fig.8.

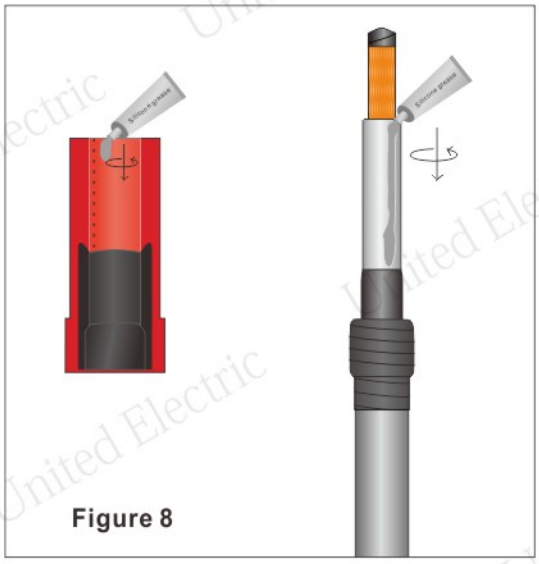


Figure 8

9. Install stress cone

- Push the stress cone onto the cable core with rotation until the flange of stress cone contact firmly with the semi-conductive tape step.
- Wrap several layers of PVC tape next to the underside of the stress cone as a marker for checking the position of the stress cone. The stress cone must stay in place after finish the installation of CJB connector body.

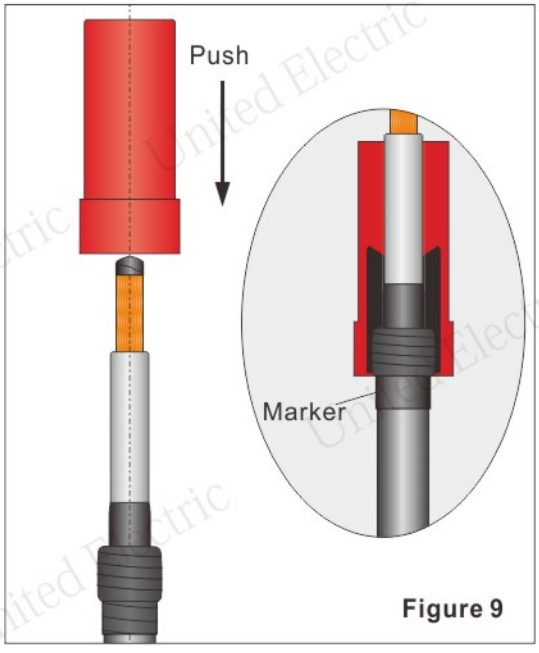


Figure 9

10. Install cable lug

- Remove the previously applied PVC tape from the conductor.
- Put on the proper cable lug over conductor for compressing. When compress the cable lug, please notice the direction of the lug palm, the palm should be parallel with the copper plane in the bushing, which can guarantee good conduction contact.
  Attention: The load current may occurred due to the bad contact between the lug and the copper plane in bushing, it will result in heating and temperature growing up, and damage the cable and equipment.

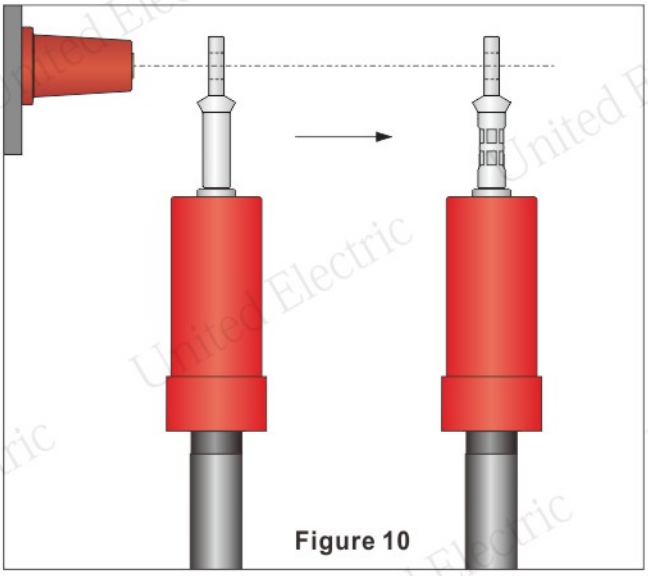


Figure 10

11. Clean and lubricate stress cone and CJB20-630

- Clean the outer surface of stress cone and inner surface of CJB20-630.
- Coat evenly a thin layer of silicone grease onto the upper part of the stress cone and the inner surface of the bottom end of CJB20-630.

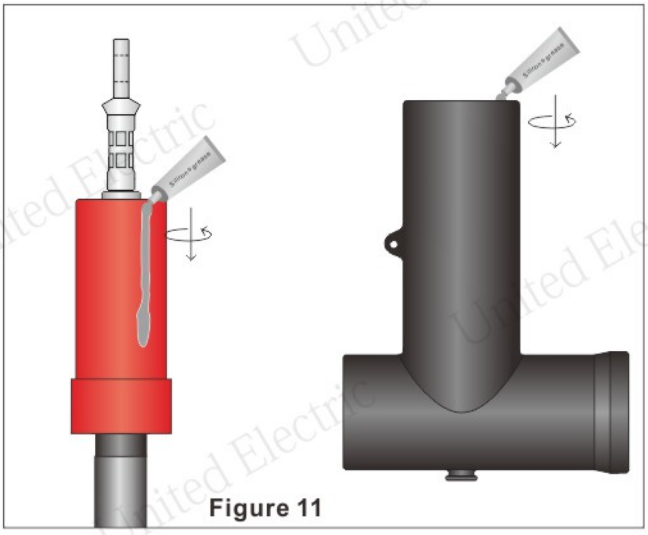


Figure 11

12. Install CJB20-630 onto stress cone

- Align the front connector CJB20-630 with stress cone and cable lug, push the CJB20-630 with no interrupted onto the stress cone.
- Be noticed that the stress cone and PVC marker should not have any moving. The down end of the stress cone will expose for 30-45mm. (Figure 12)

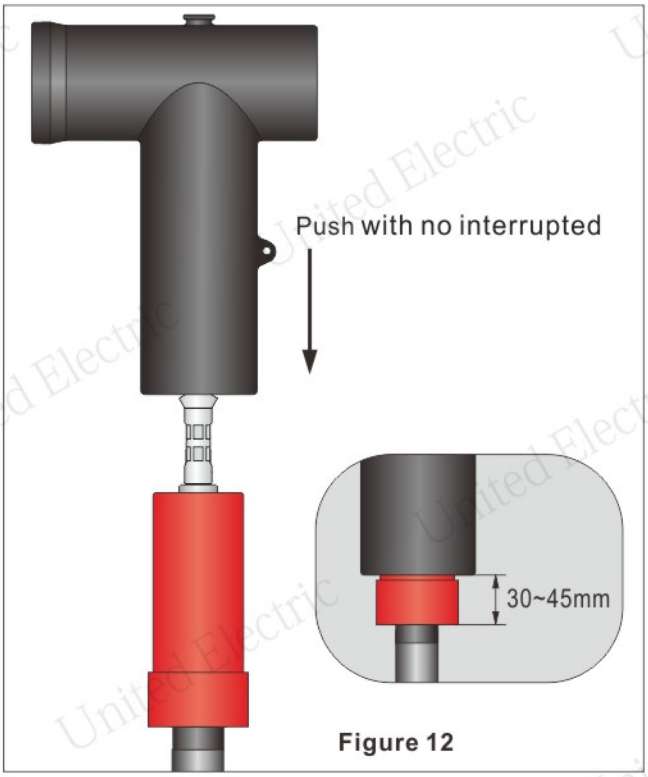


Figure 12

13. Clean and lubricate bushing and CJB20-630

- Clean the outer surface of the connected bushing.
- Coat evenly a thin layer of silicone grease onto the connected bushing, and the inner surface of the front end of CJB20-630. (Figure 13)

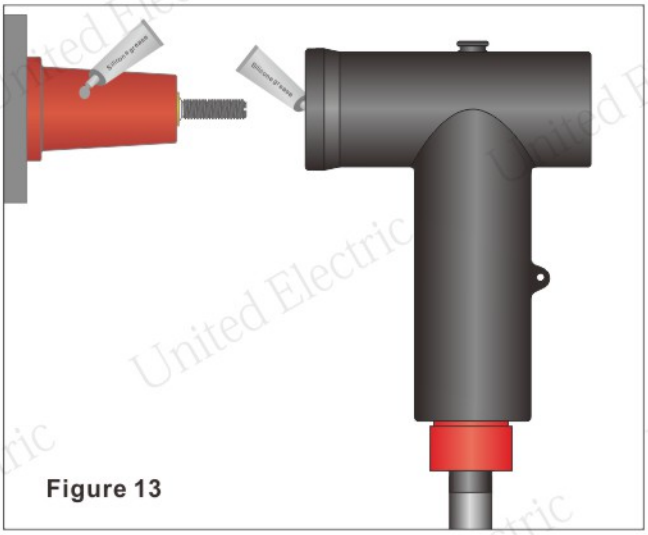


Figure 13

14. Push CJB20-630 onto bushing

- Screw the M16/M12 stud into the bushing.
- Align the eye of the cable lug with the threaded stud and push the screened connector CJB20-630 onto the bushing. (Figure 14)

Note:
If need to install the rear connector CJBK20-630 please follow the steps 16~18, if not , please follow the step 15.

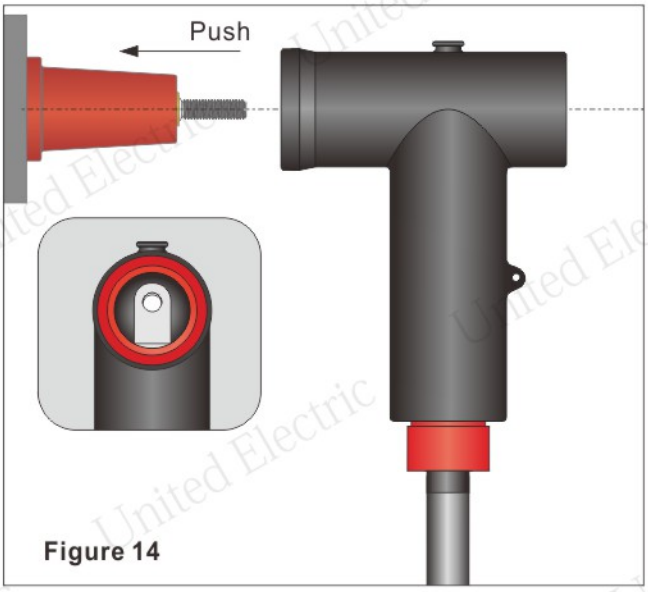


Figure 14

15. Fix CJB20-630 and grounding earth

- Install the flat washer, spring washer and nut in sequence, screw down the nut by socket wrench with the moment of 30-40N.m.
- Clean and coat a thin layer of silicone grease onto the inner surface of back end of CJB20–630 and outer surface of insulation plug.
- Screw the insulation plug into the back end of CJB20-630 by hand first, and then fix it by the hexagon wrench with the torque 30-40Nm.
- Cover the insulation plug with protect cap.
- Connect all the earth braid and earth wires to the earth point, mark the phases. Installation complete.

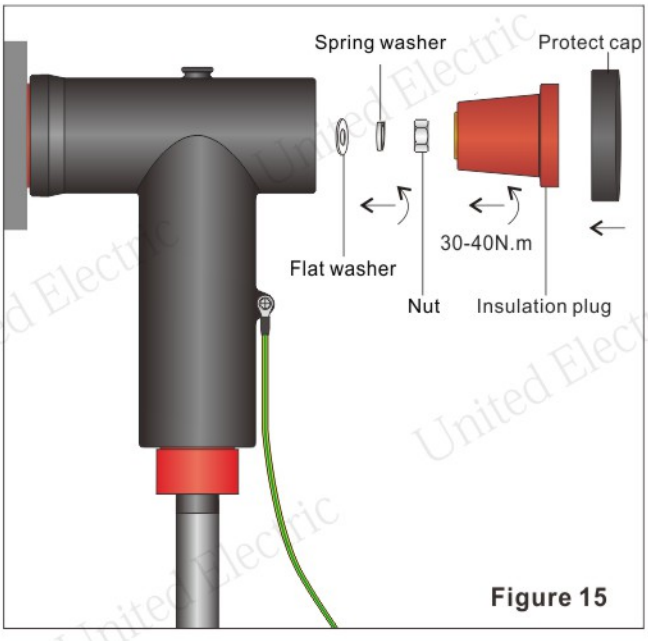


Figure 15

16. Install rear connector CJBK20-630

- The preparation of cable and installation of stress cone, cable lug and CJBK20-630 body please follow the steps 2~12.
- Screw the B type connecting rod into the back end of CJB20-630 and fix it by a spanner.
- Screw the M16/M12 stud into the B type connecting rod.

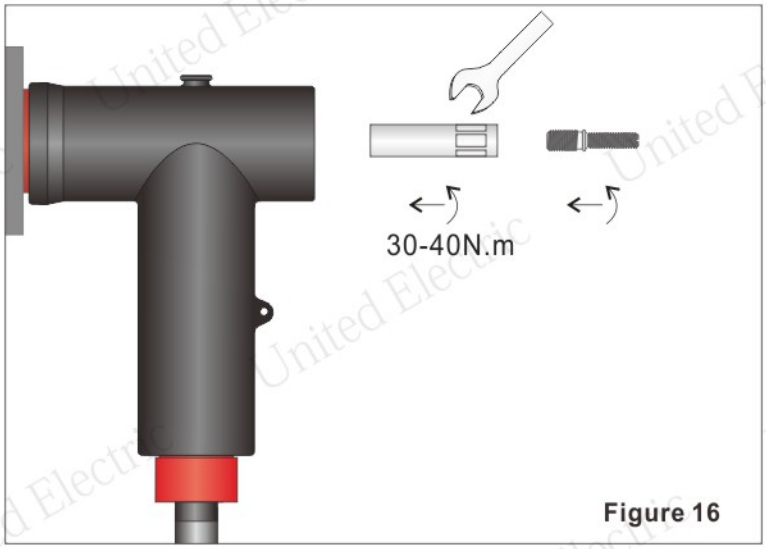


Figure 16

17. Push CJBK20-630 into CJB20-630

- Clean the back end of CJB20-630 and the front end of CJBK20-630, after the solvent volatilization, coated the surface with a thin layer of silicone grease.
- Align the eye of the cable lug with the threaded stud and push the coupling connector CJBK20-630 into CJB20-630.

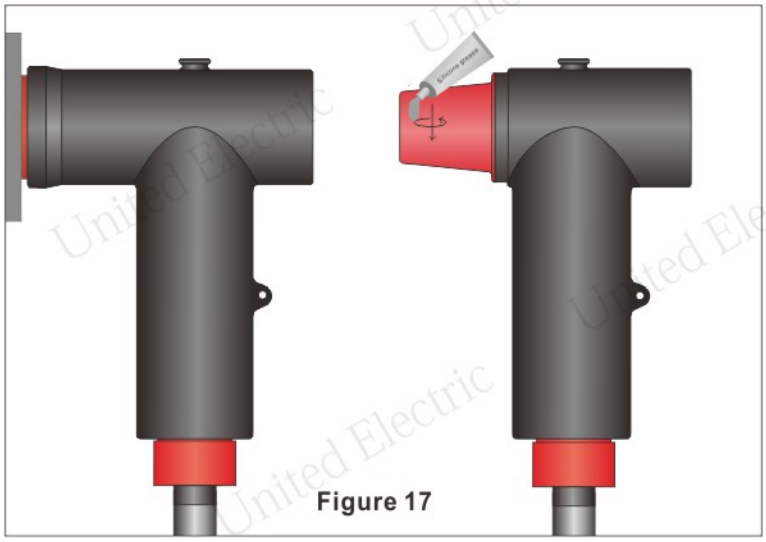


Figure 17

18. Fix CJBK20-630 and grounding earth

- Install the flat washer, spring washer and nut in sequence, screw down the nut by socket wrench with the moment of 30-40N.m.
- Clean and coat a thin layer of silicone grease onto the inner surface of back end of CJBK20–630 and outer surface of insulation plug.
- Screw the insulation plug into the back end of CJBK20-630 by hand first, and then fix it by the hexagon wrench with the torque 30-40N.m. Cover the insulation plug with protect cap.
- Connect all the earth braid and earth wires to the earth point, mark the phases. Installation complete.

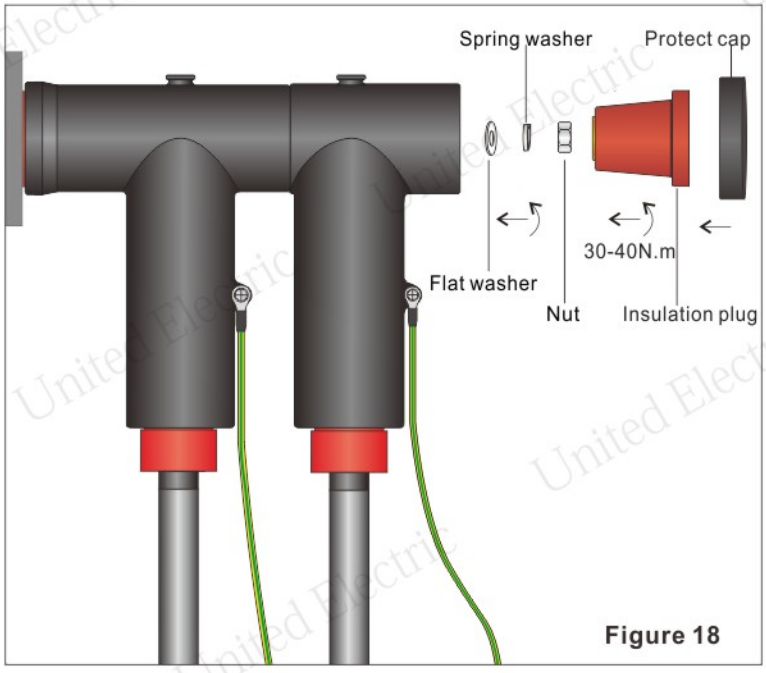


Figure 18

Kit Contents

02-9408-014C-0522

CJB20-630 kit contents for 3-core XLPE insulated, steel tape armored cable

CJBK20-630 kit contents for 3-core XLPE insulated, steel tape armored cable

❶ 3×Connector body	❽ 2×Sealing mastic	⓯ 3×Stud	㉒ 1×Socket wrench
❷ 3×Earthing wire	❾ 1×Tape measure	⓰ 3×Flat washer	㉓ 2×Roll spring
❸ 2×Copper braid	❿ 2×Abrasive strap	⓱ 3×Spring washer	㉔ 1×Semi-conductive tape
❹ 3×Stress cone	⓫ 1×PVC tape kit	⓲ 3×Nut	㉕ 1×Heat shrink earth tube(Large)
❺ 3×Cable lug	⓬ 12×Cleaning tissue	⓳ 3×Insulation back plug	㉖ 3×B type connecting rod
❻ 1×Heat shrink breakout	⓭ 1×Silicone grease	⓴ 3×Protect cap	㉗ 3×Heat shrink earth tube(Short)
❼ 3×Heat shrink tube	⓮ 1×Plastic grove	㉑ 1×Spanner	

Note: Components for copper tape screen cable: including ❶~㉖
Components for copper wire screen cable: including ❶&㉗