

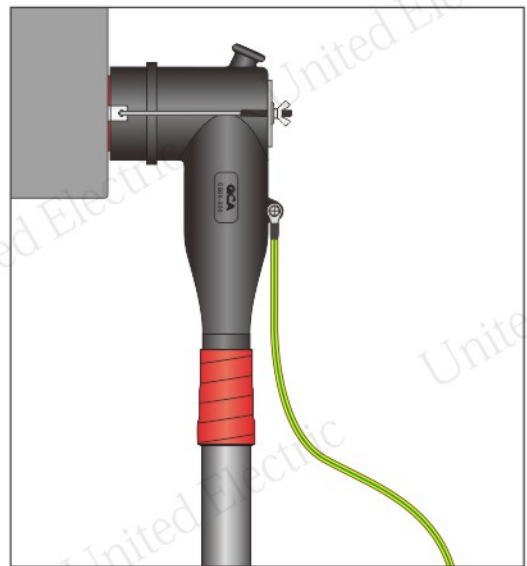
United Electric

Installation Instruction

CB20-250

24kV 250A Screened Elbow Connector
for 8.7/15kV, 3*185 XLPE insulated cable
copper tape screened, steel wire armored

01-9403-001-1222



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 connector body during all the procedure of operation.

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CB20-250 is a 24kV 250A screened elbow connector made of silicone rubber, designed to be connect with the type A bushing in accordance with the standard of EN50180, EN50181. The outer diameter of the contact pin is Ø8mm, suit for cable deadbreak connection.

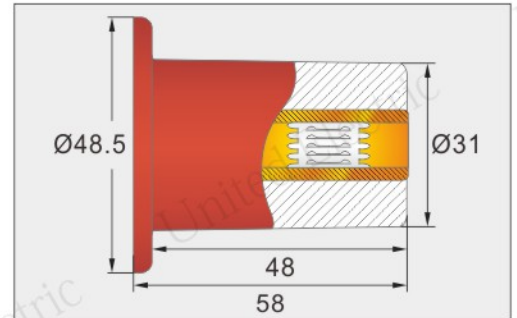
The instruction is suitable for the installation of CB20-250 over 8.7/15kV, 1*185 XLPE insulated cable, copper tape screened, steel wire armored.

The CB20-250 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.

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, without dust and rain. The relative humidity should not exceed 80%, the ambient temperature should be higher than 0°C.
- Check the outer diameter of cable insulation and inner diameter of connector body according to table 1.
- Check the cable at site which should be qualified.

Table 1

Type	Suit for outer diameter of cable insulation (mm)	Suit for cable type
CB20-250, 3*185, Cu/CTS/SWA	22~26	Cu/XLPE/SWA/PVC 3X185 mm ² 15kV CTS

2. Cable preparation

- Cut the cable to required length and remove the cable sheath for 350-800mm accordingly. Remove the filler material from the cores.
- Cut the steel wire armor to 70mm and inner sheath to 80mm. Wrap the end of copper tape with PVC tape.
- Clean the end of the cable sheath for about 100mm as shown in figure 1.

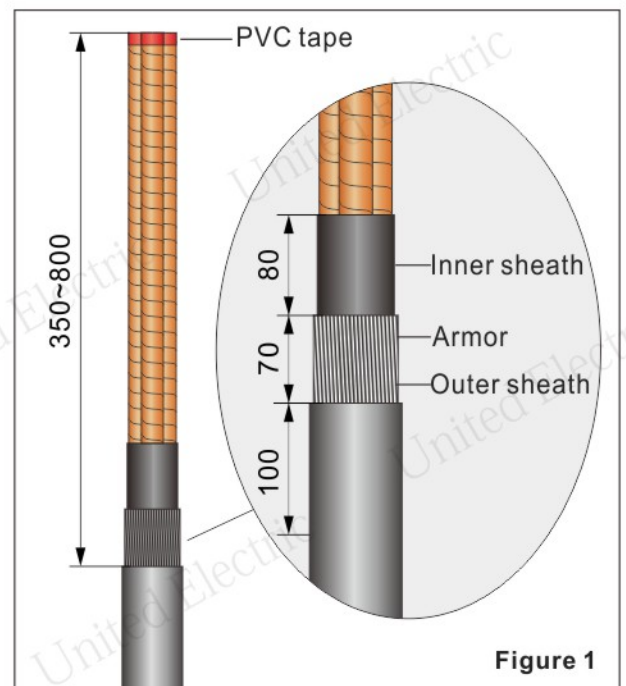
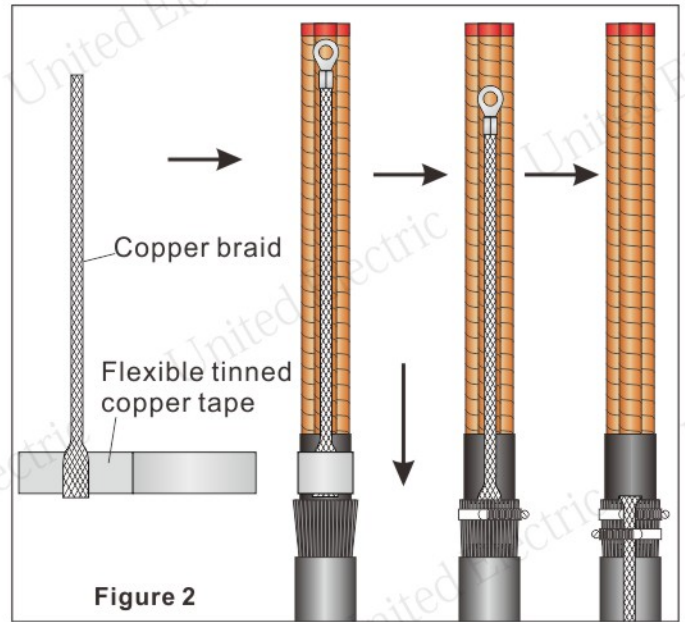
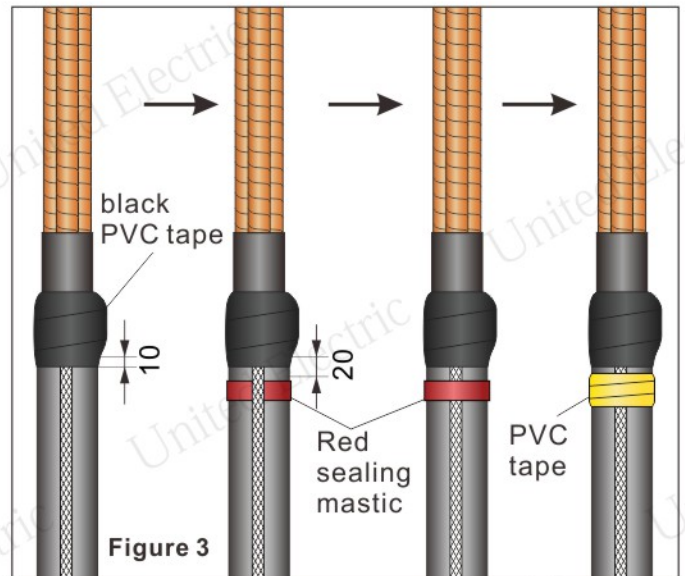


Figure 1

- Loosen and expand the end of copper braid, insert it into the flexible copper tape for not less than 40mm.
- Slip and insert the flexible copper tape and copper braid underneath the steel wire armour, fix them by jubilee clip.
- Bend the copper braid back over the cable outer sheath, fix it over wire armour by another jubilee clip.
Note: the jubilee clip should be fixed around the flexible copper tape.
- **Knock the overlap part between steel wire armour and flexible copper tape while fixing the jubilee clips and ensure that the copper braid is fixed firmly.**

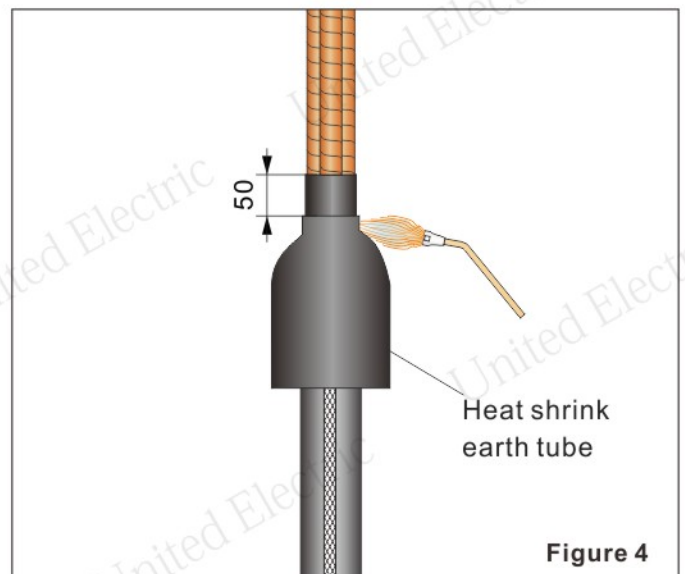


- Cover the sharp edge of jubilee clip and the end of steel wires by the black PVC tape, and cover the end of cable outer sheath for 10mm.
- Lift up the copper braid and half-overlapping wrap one layer of red sealing mastic over the cable outer sheath as a bedding with starting from 20mm to the end.
- Lay down the copper braid and keep wrapping one layer of red sealing mastic as shown in figure 3.
- Cover the red sealing mastic by PVC tape.



3. Install heat shrink earth tube

- Place and shrink the heat shrink earth tube over inner sheath with starting from upside end and at the position of 50mm to the end.

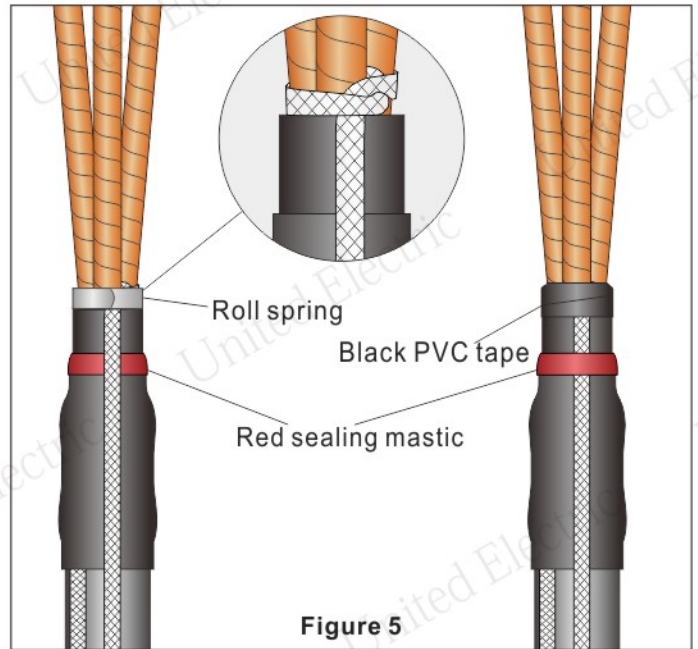


4. Connect copper braid 2 over cable cores

- Separate the cores. Wrap the other copper braid around each core and fix it to the copper tape by roll spring. Tighten the roll spring with a twisting action.

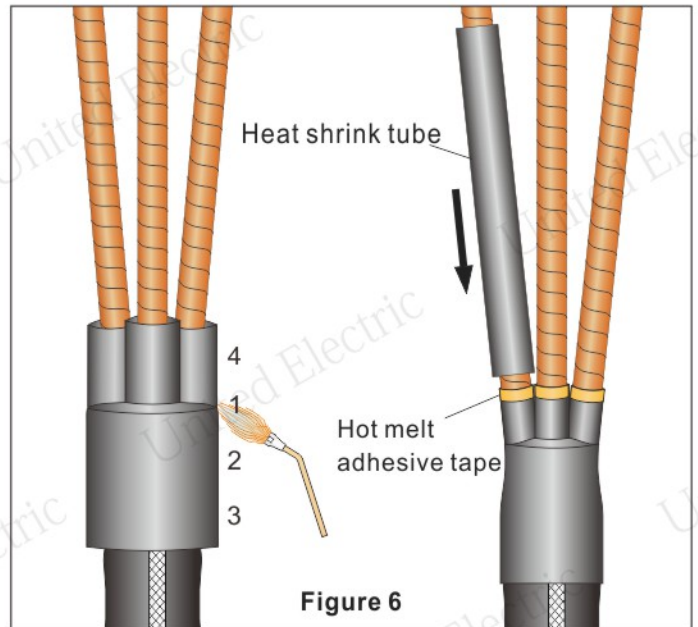
Note: The earth lead (copper braid) for screen copper tape should be separated from the steel wire armour earth lead at a certain angle, do not contact each other.

- 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.
- Cover the sharp edges of roll spring with black PVC tape.



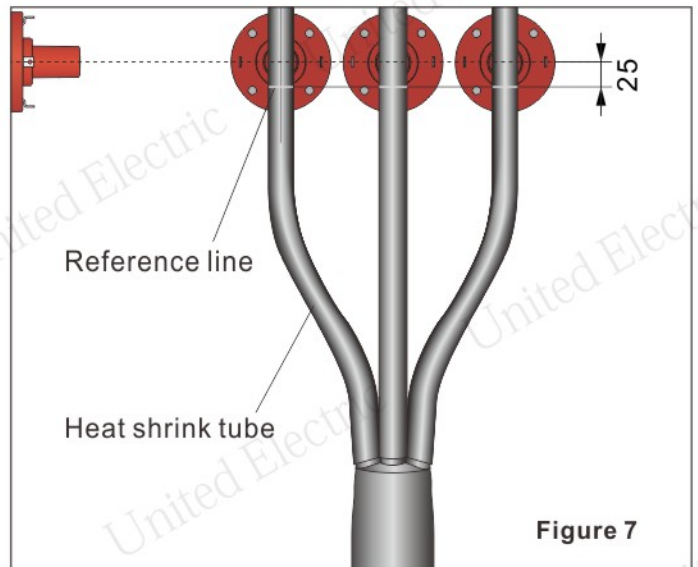
5. Install heat shrink breakout and tube

- 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 6 indicate the shrinking sequence.
- Take out the hot melt adhesive tape from the heat shrink tube package bag, wrap it over the finger end of heat shrink breakout .
- Place the tubes over the cores and slide them over the end of breakout fingers as far down as possible. Shrink the tubes down starting at the crutch and working upwards.
- Bend and shape the cores to proper position.



6. Core preparation

- Measure 25mm downward from the bushing center, mark a reference line over the cable cores.
- Cut the cable cores at the reference line.



- Remove the heat shrink tube for 170mm.
- Remove the copper tape to 20mm and insulation screen to 25mm, and keep the insulation for 90mm, conductor for 35mm. Chamfer the end of cable insulation to $2 \times 45^\circ$.

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.

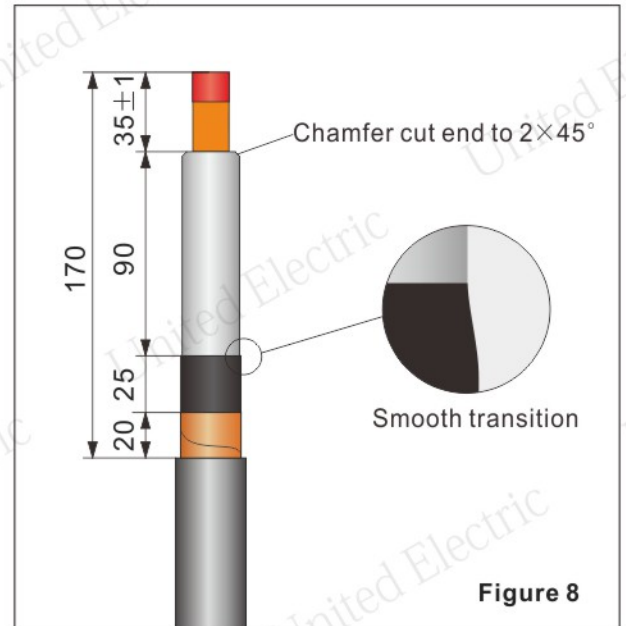


Figure 8

7. Wrap semi-conductive tape

- Measure 22mm from 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 $\text{ØD} = \text{outer diameter of insulation } \text{Ød} + 4\text{mm}$.
- Continue wrapping semi-conductive tape down over the heat shrink tube with cover the tube for 15mm.

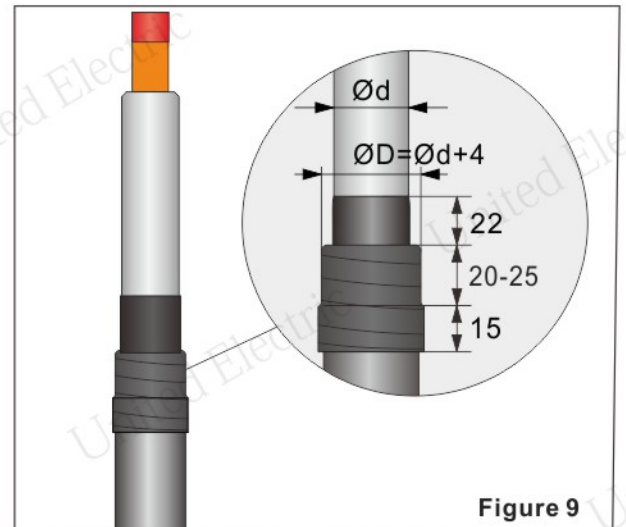


Figure 9

8. Install cable lug

- Remove the previously applied PVC tape from the conductor.
- Place cable lug onto cable conductor, align the threaded hole of cable lug with the pin hole of connected bushing, compress the lug with compress tool.
- **Polish the compressed cable lug, remove any sharp edges and flashing. The surface of compressed cable lug must be processed to achieve smoothness to avoid sharp corners or burrs scratching the elbow connector body.**

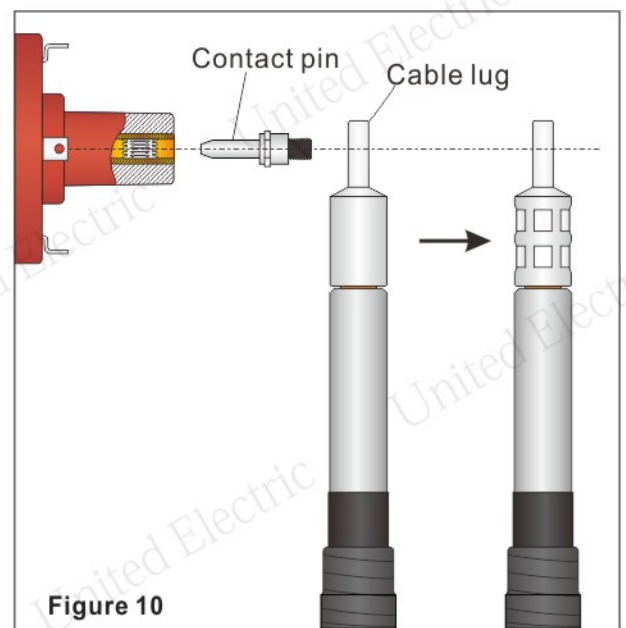
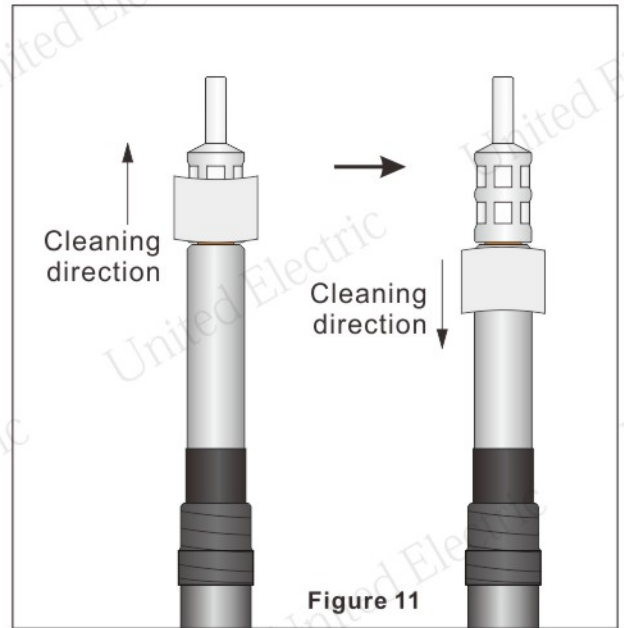


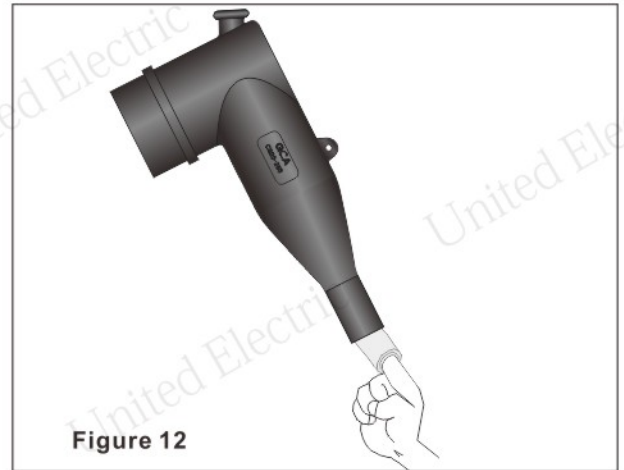
Figure 10

- Clean the compressed lug and cable insulation by different direction and as shown in figure 11, **do not reuse the cleaning tissue.**



9. Install elbow connector body over cable core

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



- Coat silicone grease onto the inner surface of elbow connector body by plastic rod.
 - Coat silicone grease onto the surface of cable insulation and barrel tube of cable lug.
- Note: Do not coat the copper palm area, which will be contact with the contact pin.**
Avoid to coat the grease over insulation screen.



- Align the elbow connector body with cable insulation.
- Push the elbow connector body over cable core, until the tail of elbow connector body cover insulation screen, and the threaded hole of cable lug is align with the pin hole of elbow connector body.

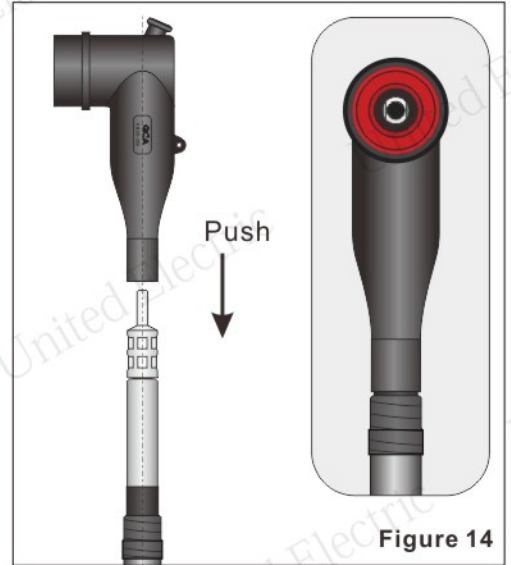


Figure 14

10. Install contact pin

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

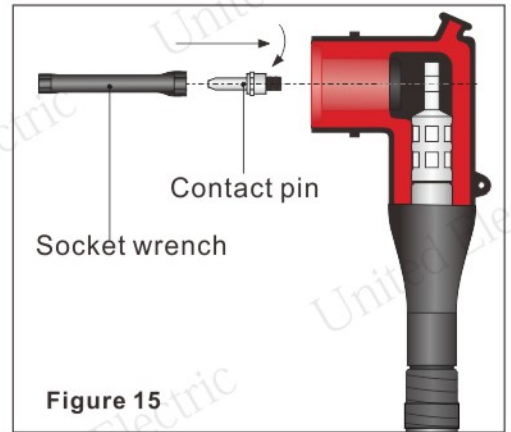


Figure 15

11. Install elbow connector over bushing

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

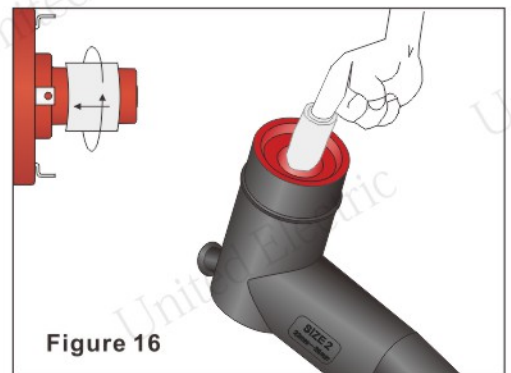


Figure 16

- Coat silicone grease onto the inner surface of elbow connector body.
- Coat silicone grease onto the outer surface of connecting bushing.

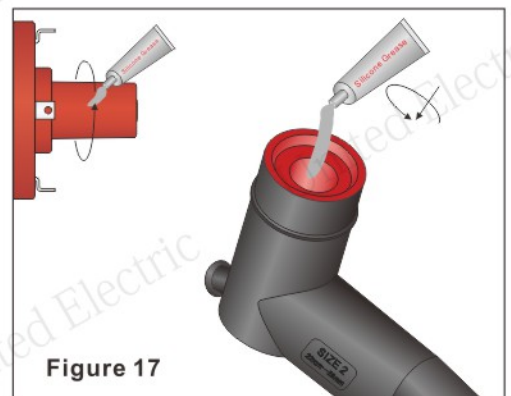


Figure 17

- Place a plastic slice into the entry of elbow connector body, align the contact pin with pin hole bushing, push the elbow connector body onto connecting bushing.
- Pull out the plastic slice while push the connector body onto the bushing, to release air pressure inside the connector body.

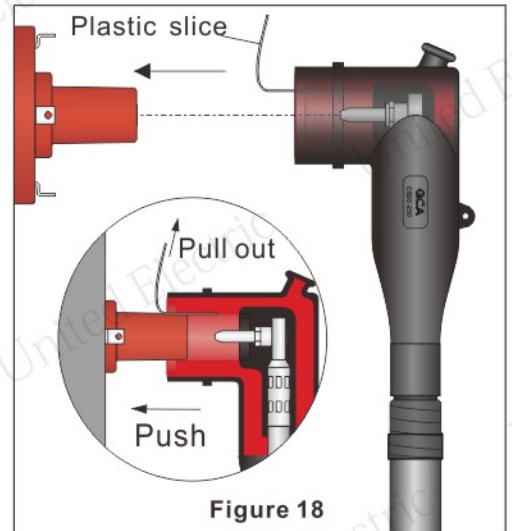


Figure 18

- Assemble the holding bails and fixing hook over the elbow connector body.
- Fix the fixing hook to the bushing. Make sure that the elbow connector body is installed well onto the bushing.
- After fixing the hooks, the elbow connector body should cover the step of the bushing for about 8mm.

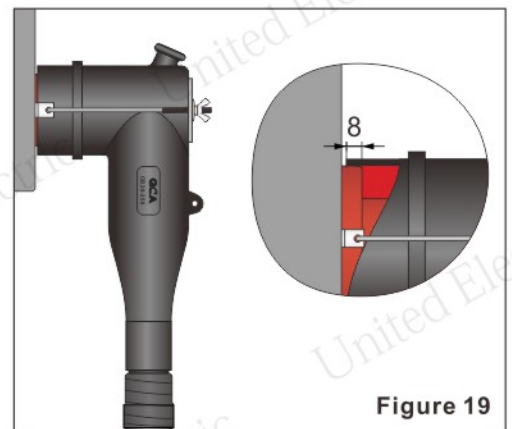


Figure 19

12. Wrap semi-conductive tape

- Half-overlapping wrap semi-conductive tape with half stretching over the tail of elbow connector body, fill the gap between the tail of elbow connector body and core insulation screen, continue wrapping down over the semi-conductive tape step as shown in figure 10.

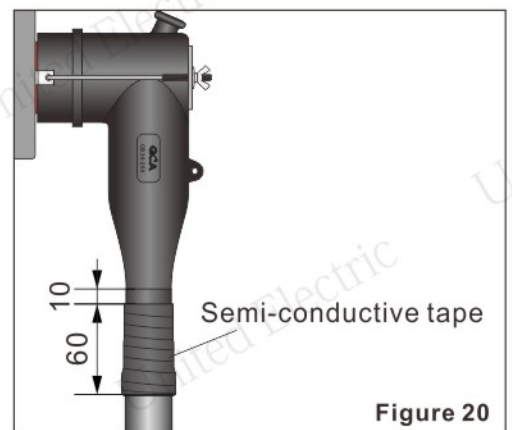


Figure 20

13. Install earthing wire and earthing lead

- Wrap around 3 layers of PVC tape to cover the semi-conductive tape.
Note: Use the red, blue, yellow PVC tape to mark different phases.
- Fix the cable well. Be noticed that the elbow connector shall be avoid from being pulled downward or upward.
- Connect earth lead and earthing wire to the earthing point.
- Installation complete.

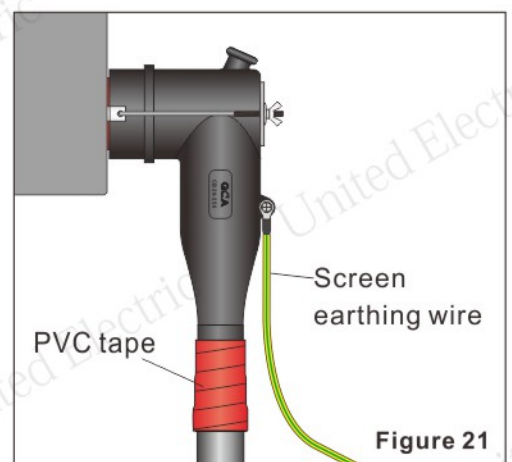


Figure 21