

## **Installation Instruction**

**Cold Applied Joint for**

**Up to 36kV**

**3-core Polymeric Insulated cable**

**with Copper Tape Shield or Copper Wire Shield**

**with Double Steel Tape Armour**

**Raychem**

**ESD:**

## **Before Starting**

Check to ensure that the kit you are going to use is suitable for the size of cables being jointed.

Refer to the kit label and the title of the installation instruction.

Components or work steps may have been improved since you last installed this product.

Carefully read and follow the steps in the installation instruction.

## **General Instructions**

Clean and degrease all parts that will come into contact with adhesive.

If a solvent is used follow the manufacturer's handling instructions.

Check core preparation dimensions before installing the joint body.

Grease the jointing area only with the provided grease.

Check cable ends for ingress of moisture before starting with cable preparation.

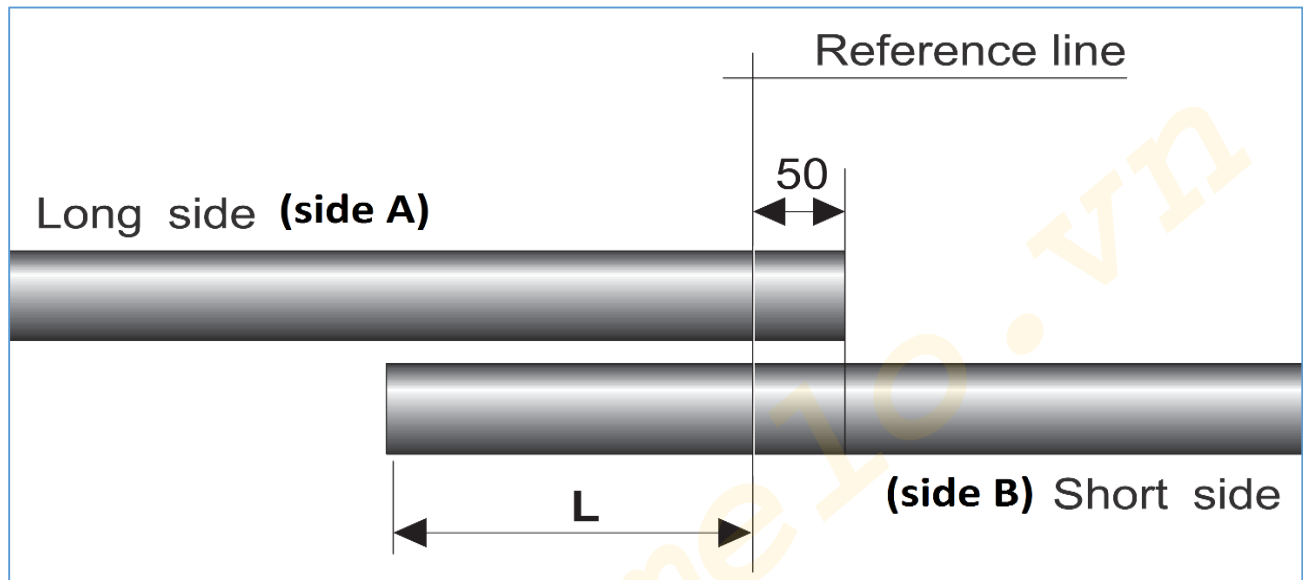
For easy strip screen layers always use a round file to cut radially through the core screen.

Voltage	Application Range (sqmm)	Core Insulation Diameter	
		min. (mm)	max. (mm)
24kV	50-95	18.9	28.4
24kV	120-240	23.0	34.0
24kV	300-400	25.7	38.0
36kV	120-300	33.8	50.0

**Table 1**

### Cable Preparation for;

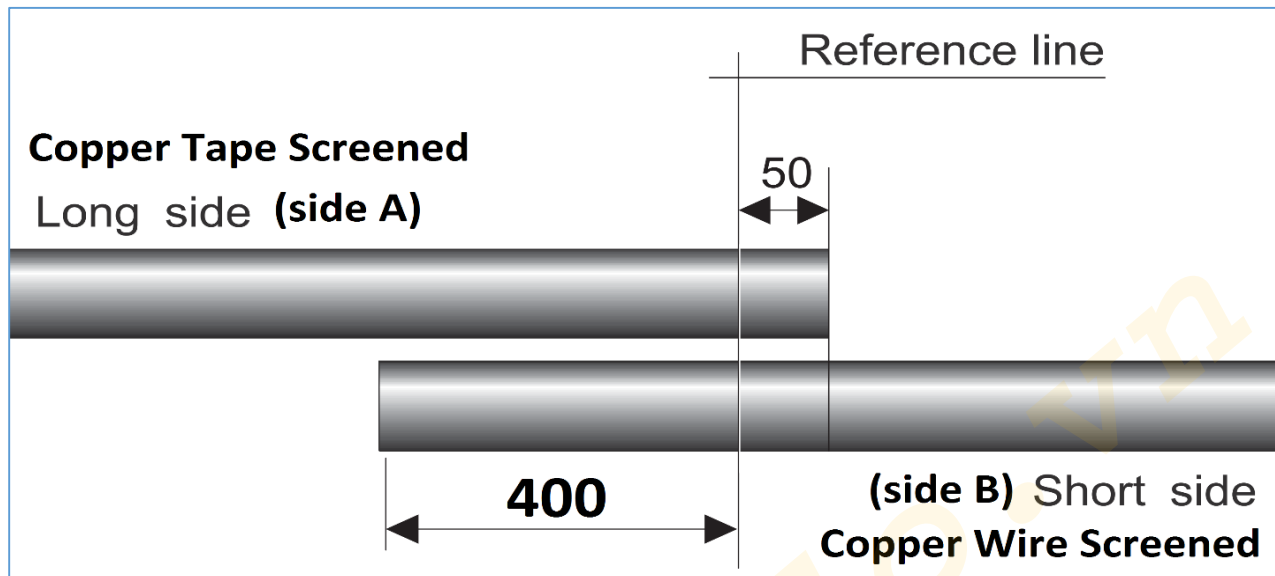
1. Cables with Copper Tape Screen joint with Cables with Copper Tape Screen (CTS-CTS)
2. Cables with Copper Wire Screen joint with Cables with Copper Wire Screen (CWS-CWS)



**Step 1A, Figure 1A**

- Overlap the cables to be joined by about dimension L.
  - **Joint for CTS – CTS, L = 200mm**
  - **Joint for CWS – CWS, L = 400mm**
- Mark the reference line (the middle of the overlap).

**Cable Preparation for Cables with Copper Tape Screen joint with Cables with Copper Wire Screen**



**Step 1B, Figure 1B**

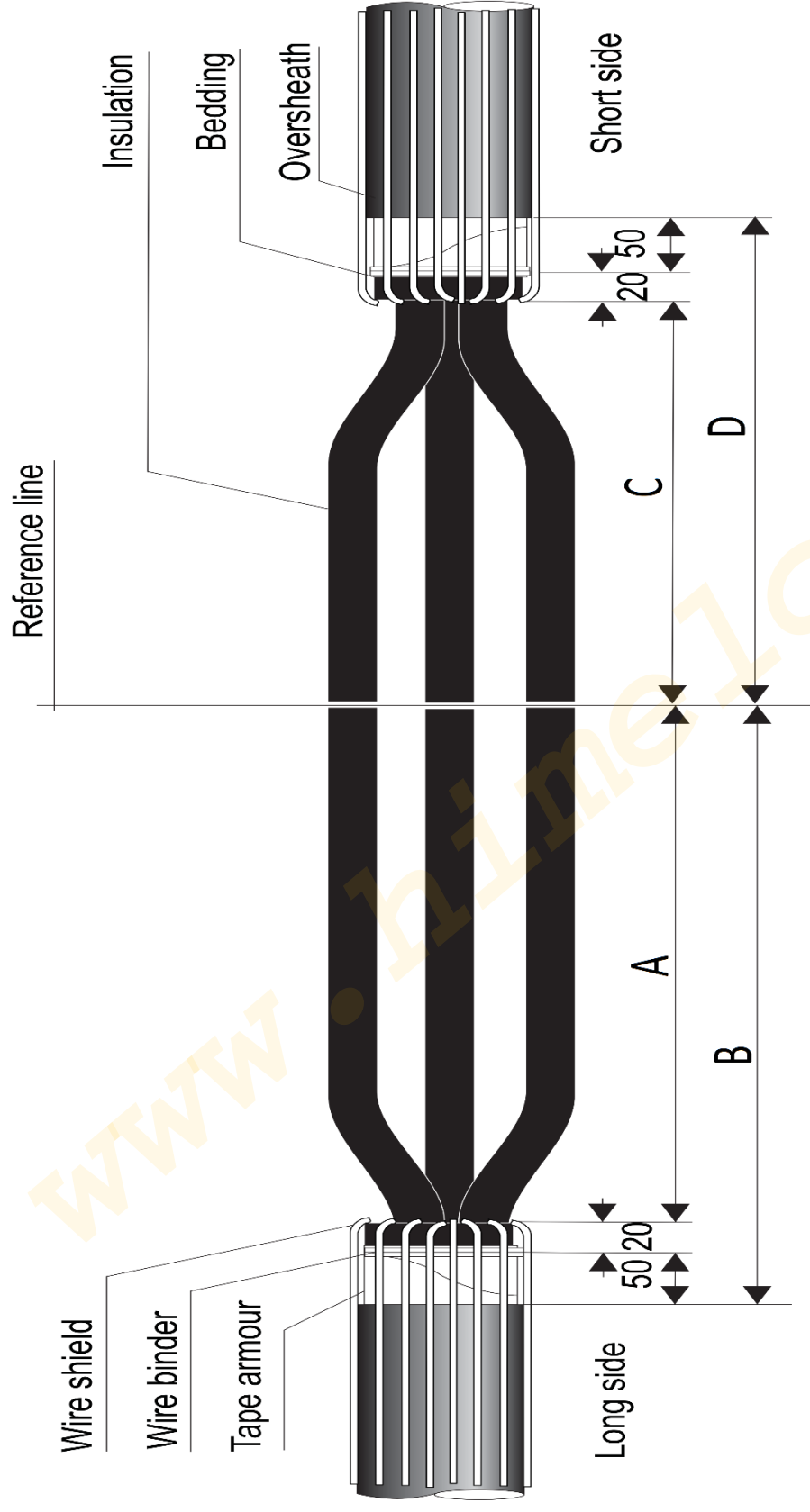
For connection between tape shield cable and wire shield cable, tape shield would be the long side and wire shield would be the short side of the joint.

- Overlap the cables to be joined by 400mm.
- Mark the reference line (the middle of the overlap).

Prepare the cables according to **Figure 2A, Figure 2B or Figure 2C** with respect the dimensions listed in **Table 2**.

Item	24KV, 3C, 50sqmm	24KV, 3C, 240sqmm	24KV, 3C, 400sqmm	36KV, 3C, 240sqmm
A	700mm	750mm	850mm	880mm
B	770mm	820mm	920mm	950mm
C	350mm	350mm	500mm	500mm
D	420mm	420mm	570mm	570mm
E	250mm	250mm	300mm	300mm

**Table 2**



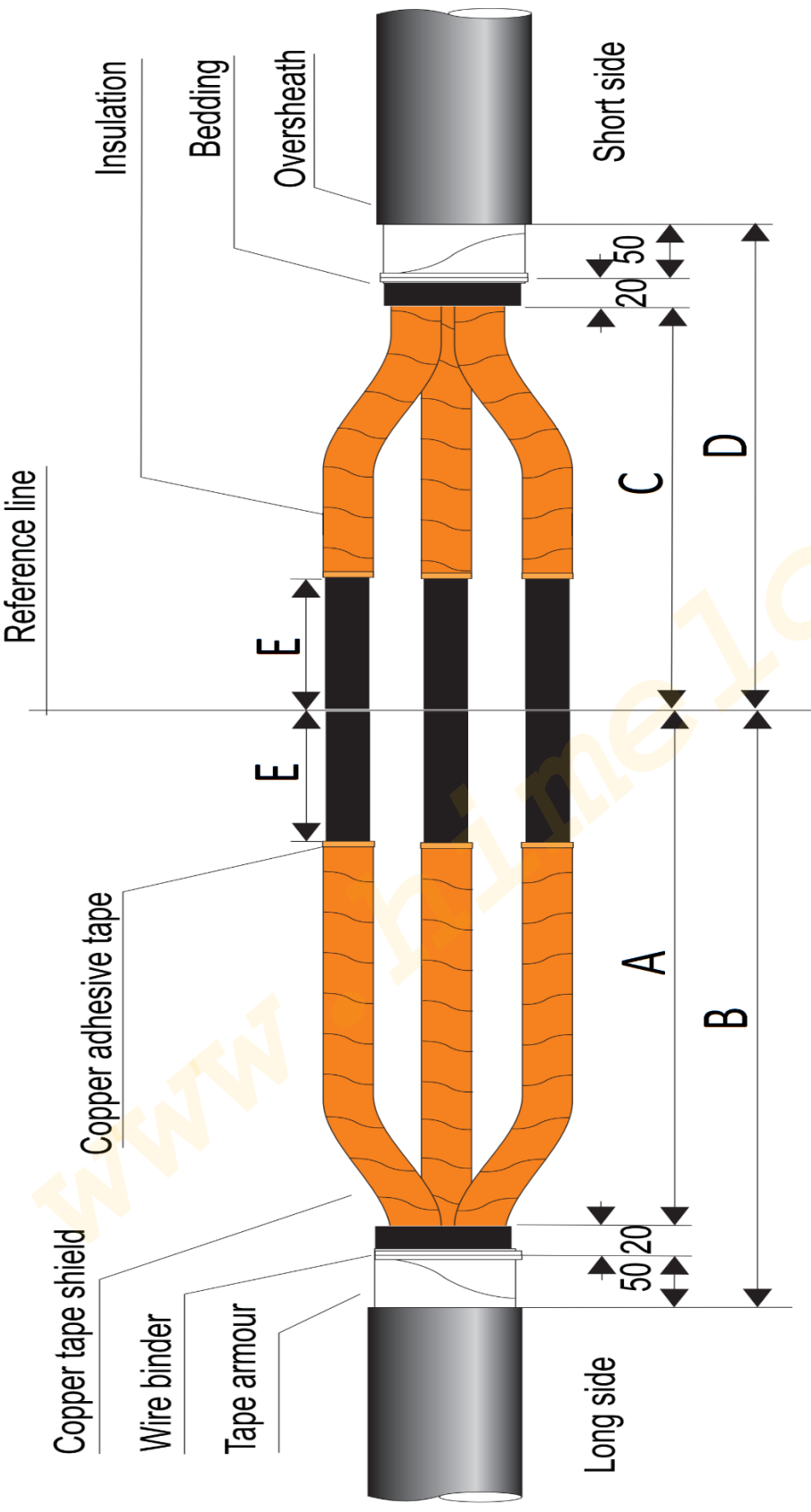
Step 2A, Figure 2A

**A – Joint for Copper Wire Screen to Copper Wire Screen cable connection**

A Prepare the cable as per shown in the picture.

Shape and position the cores as shown in the drawing below.

Cut the cores at the reference line.



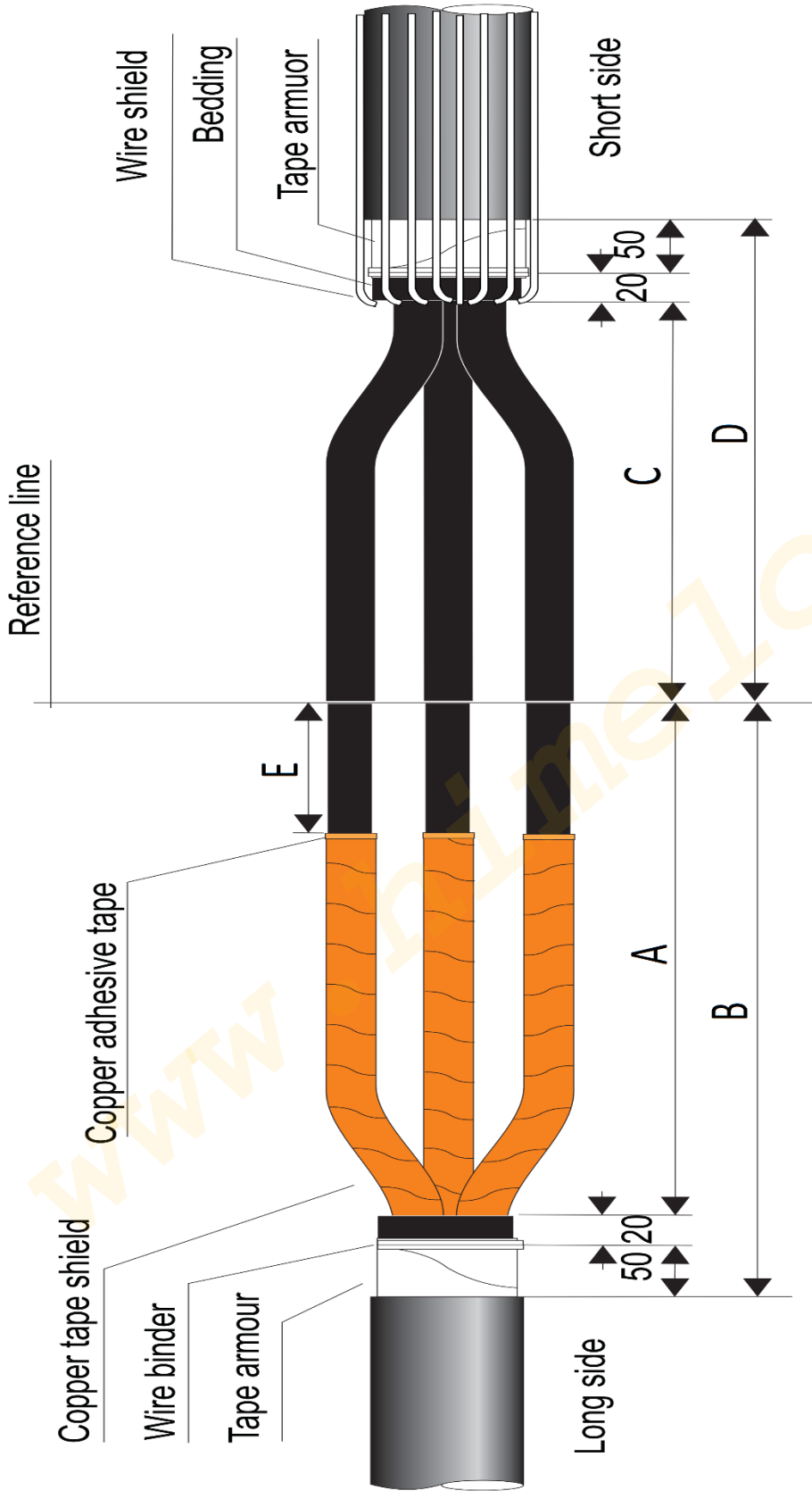
Step 2B, Figure 2B

**B – Joint for Copper Tape Screen to Copper Tape Screen cable connection**

A Prepare the cable as per shown in the picture.

Shape and position the cores as shown in the drawing below.

Cut the cores at the reference line.



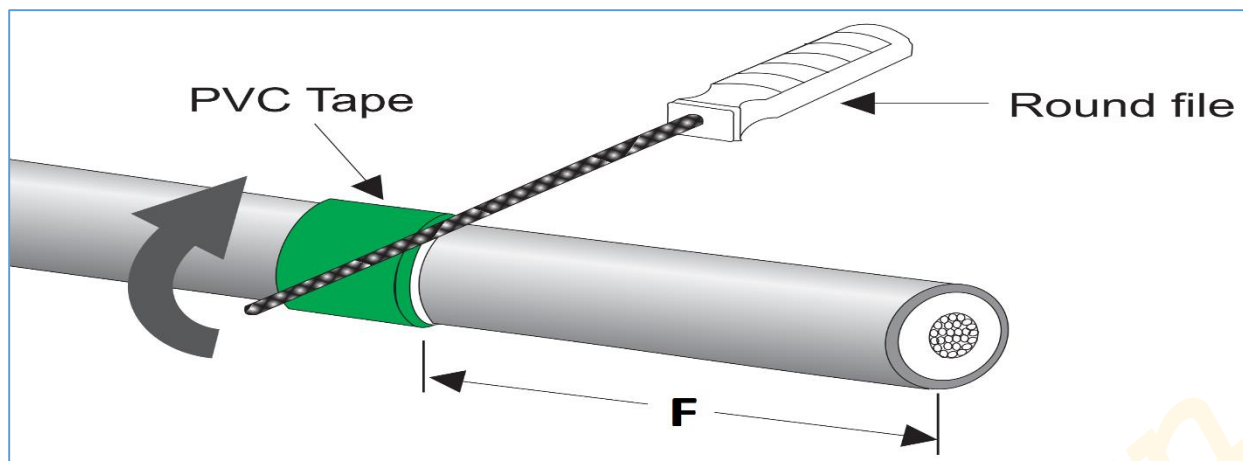
Step 2C, Figure 2C

**C – Joint for Copper Tape Screen cable to Copper Wire Screen cable connection**

Prepare the cable as per shown in the picture.

Shape and position the cores as shown in the drawing below.

Cut the cores at the reference line.



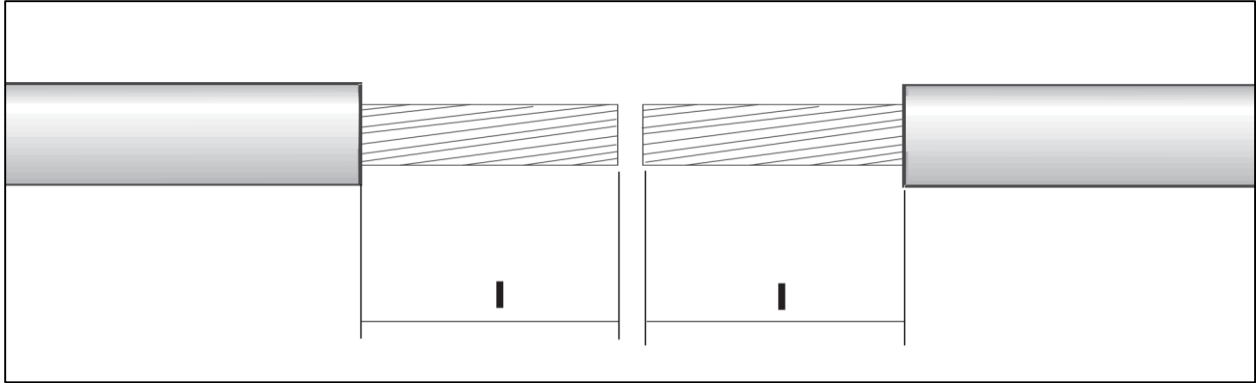
**Step 3, Figure 3**

- On both sides, thoroughly remove the core screen with round file and scoring tools to dimension **F** as shown in **Table 3**.
- Ensure that the insulation surface is free from all traces of conductive material.
- Ensure not to nick the insulation.

Item	24KV, 3C, 50sqmm	24KV, 3C, 240sqmm	24KV, 3C, 400sqmm	36KV, 3C, 240sqmm
F	170mm	170mm	180mm	220mm

**Table 3**





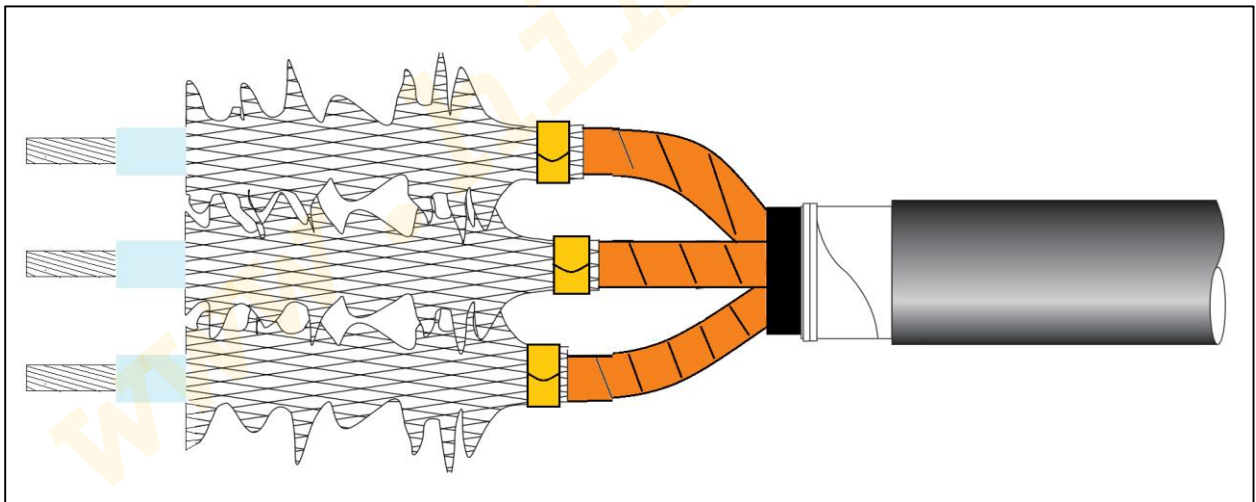
**Step 4, Figure 4**

- Remove the insulation to dimensions as shown in **Table 4**

Item	24KV, 3C, 50sqmm	24KV, 3C, 240sqmm	24KV, 3C, 400sqmm	36KV, 3C, 240sqmm
I	31mm	58mm	81mm	61mm

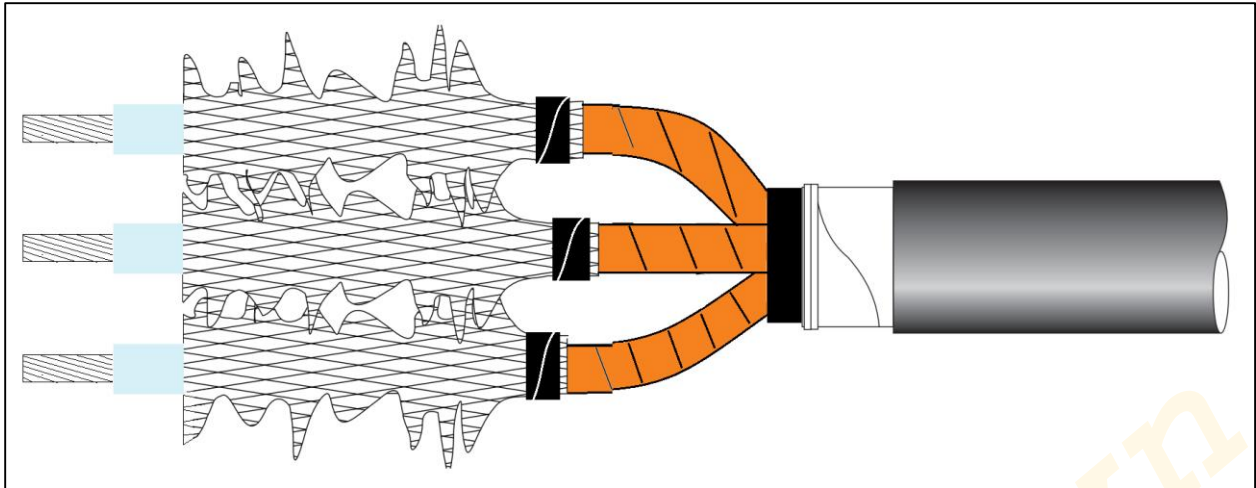
**Table 4**

**Instruction 5 & 6 for if for cable with Copper Tape Screen**



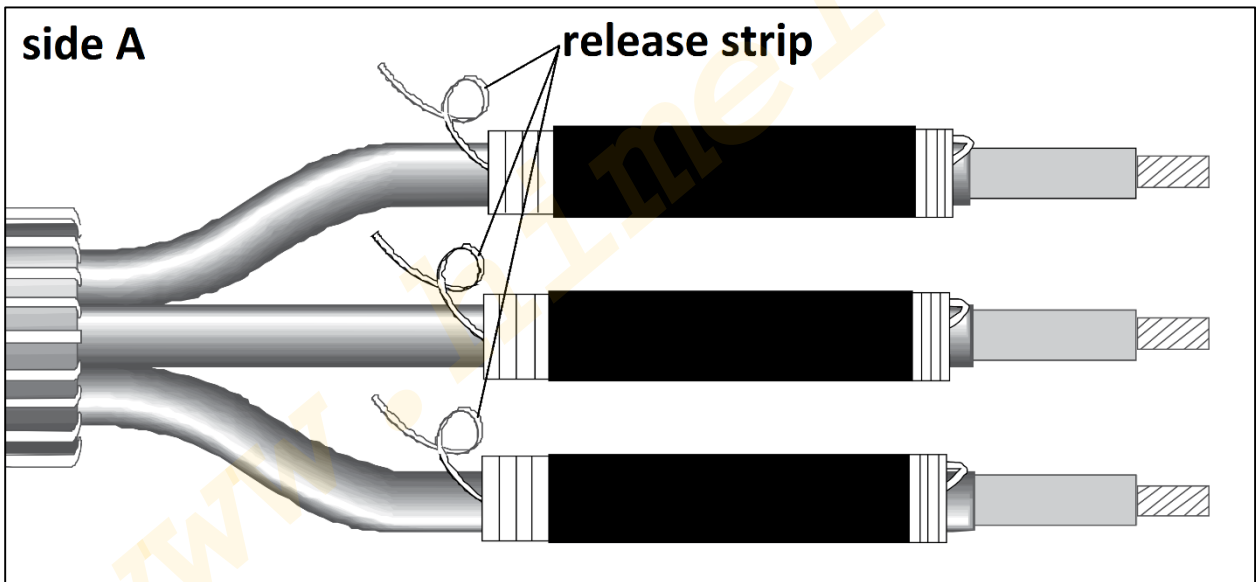
**Step 5, Figure 5**

- Short side of the cable – slide one copper screen sleeve over each core and push it well into the crutch.
- Fix the copper screen sleeve to the metallic screen with roll spring provided.
- Tighten the roll spring with a twisting action.



**Step 6, Figure 6**

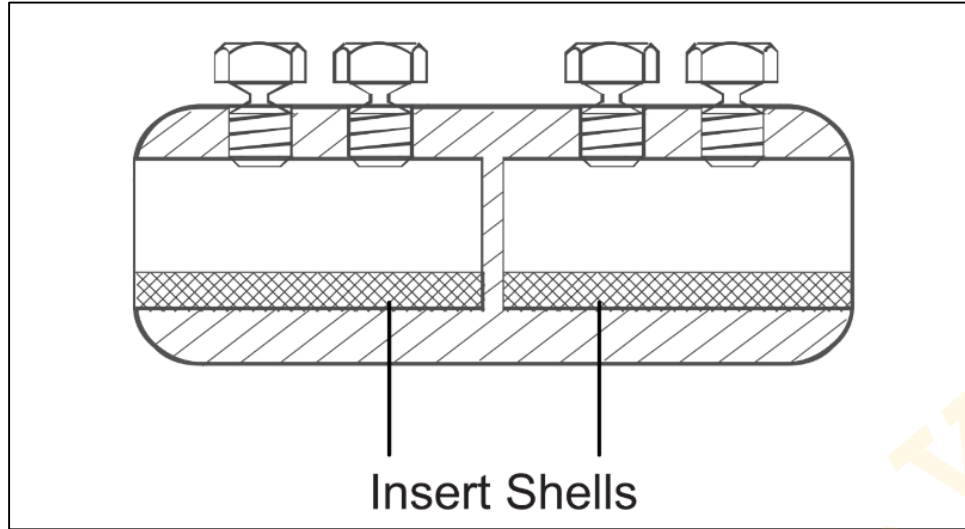
- Cover the roll springs with at least three layers of PVC adhesive tape.



**Step 7, Figure 7**

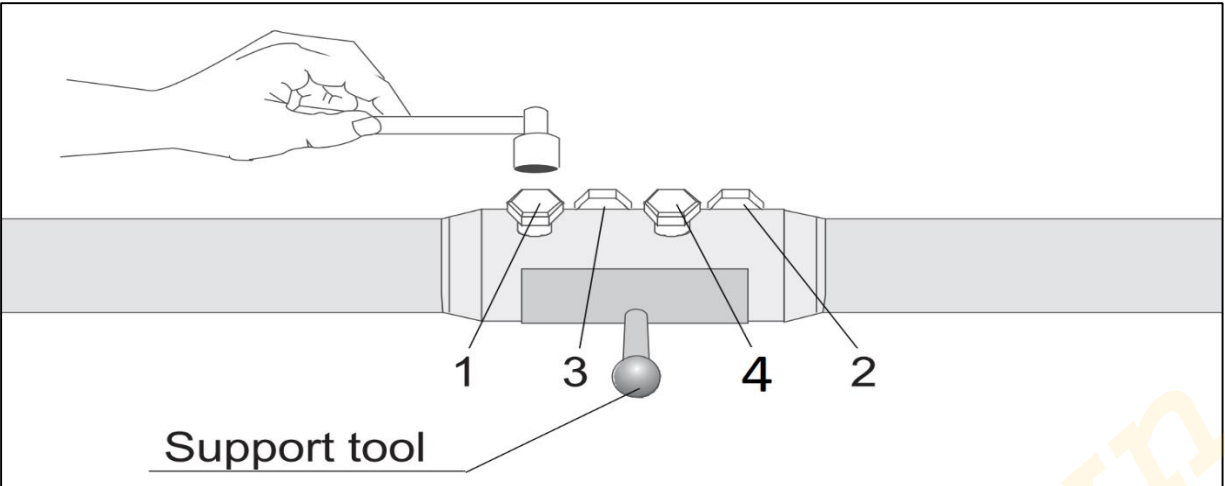
- Slide the joint module over the cable end on the long side.
- Ensure that the release strip of the spiral is positioned towards the cable outer sheath.

## Installation of the mechanical connector



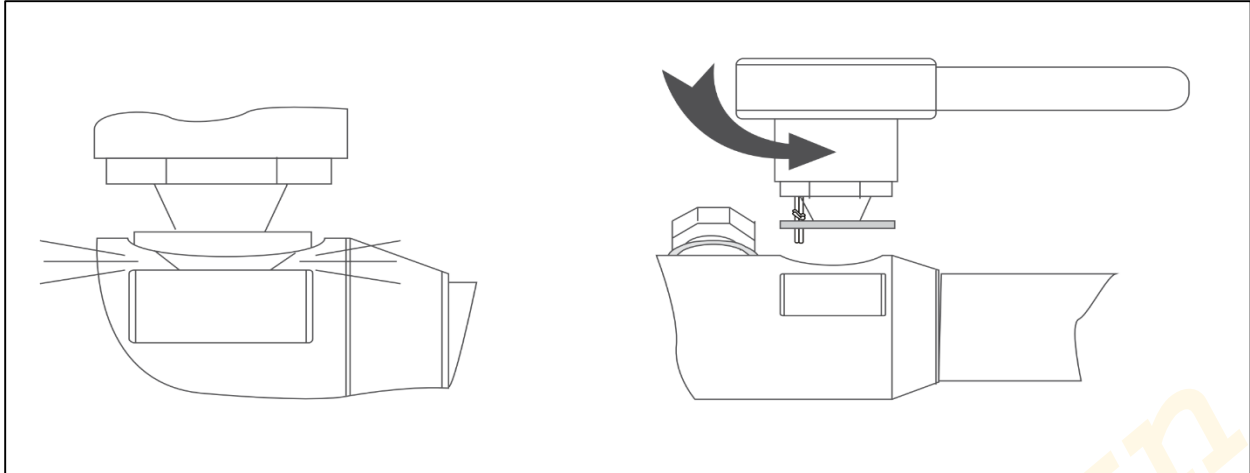
**Step 8, Figure 8**

- The connector is supplied with insert half shells which have to be used on small cross sections.
- Check before installation if the conductor can be inserted into the connector with the half shells installed.
- In case the conductor cannot be inserted, remove the inserts from the connector bore.



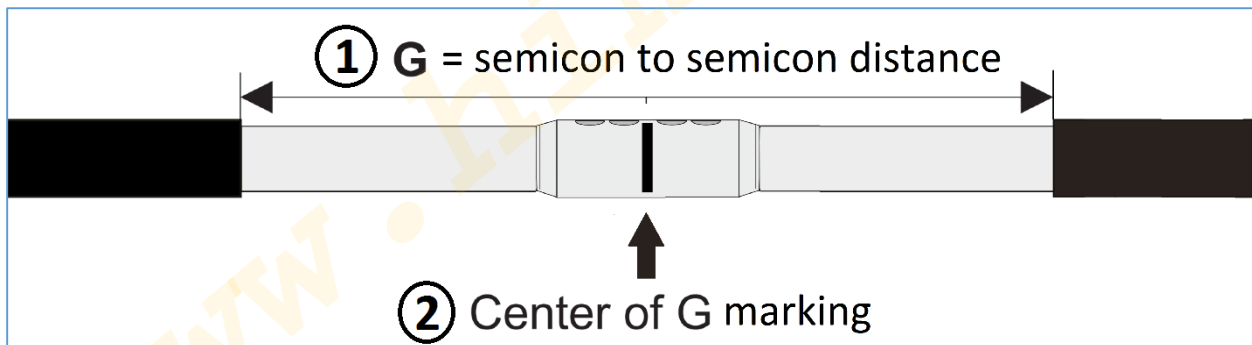
### Step 9, Figure 9

- Clean and abrade the surface of the exposed conductors.
- Insert conductors so that the insulation butts against the end of the connector.
- Hand tighten the shear bolts so that the connector stays in place.
- Tighten the bolts alternately and shear them off starting with the outer bolts – refer sequence shown in Figure 9.
- Avoid core bending on smaller cross sections by using a support tool available such as IT-1000-019 or similar.



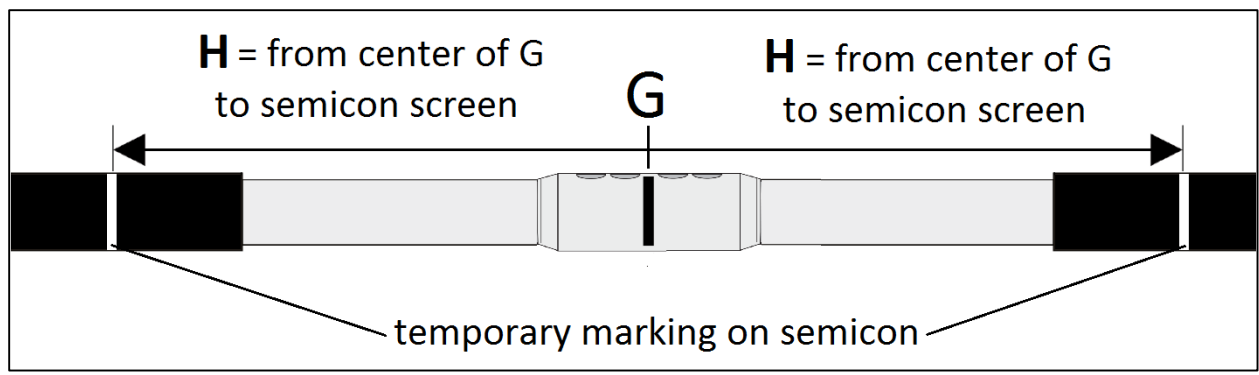
**Step 10, Figure 10**

- Smooth out any sharp edges of protruding bolts where appropriate.
- It could be possible that the bolt shears but the top is retained in the connector body.
- In that case unscrew the head of the bolt until it is removed from the connector.



**Step 11, Figure 11**

- 1, Measure distance between both semicon cutback, as shown in the picture.
- 2, Mark the center between the semicon cutback on the connector.

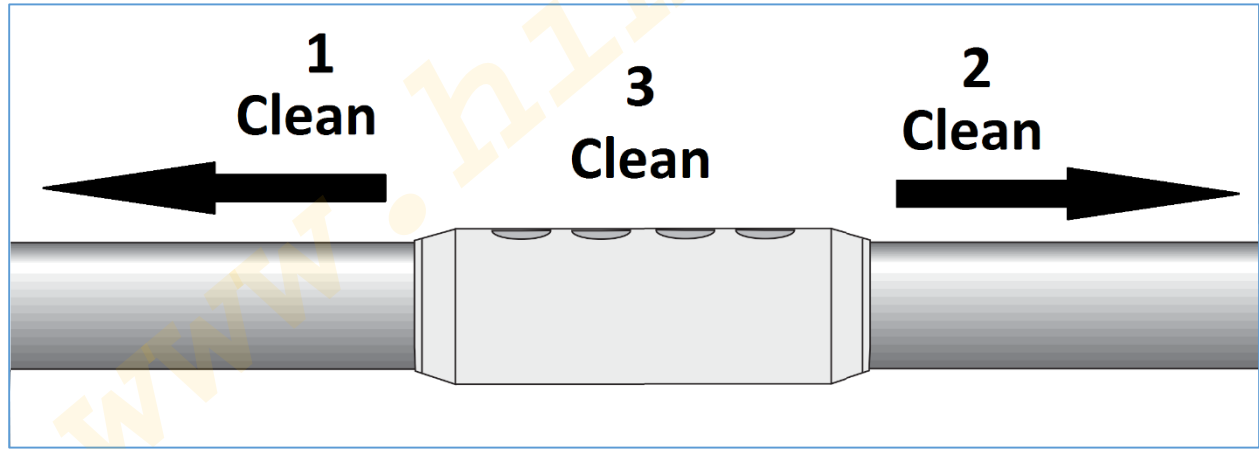


**Step 12, Figure 12**

- From the center marking G made on the connector, measure H according to **Table 5** and make a temporary mark on the semicon layer, as shown in the picture.

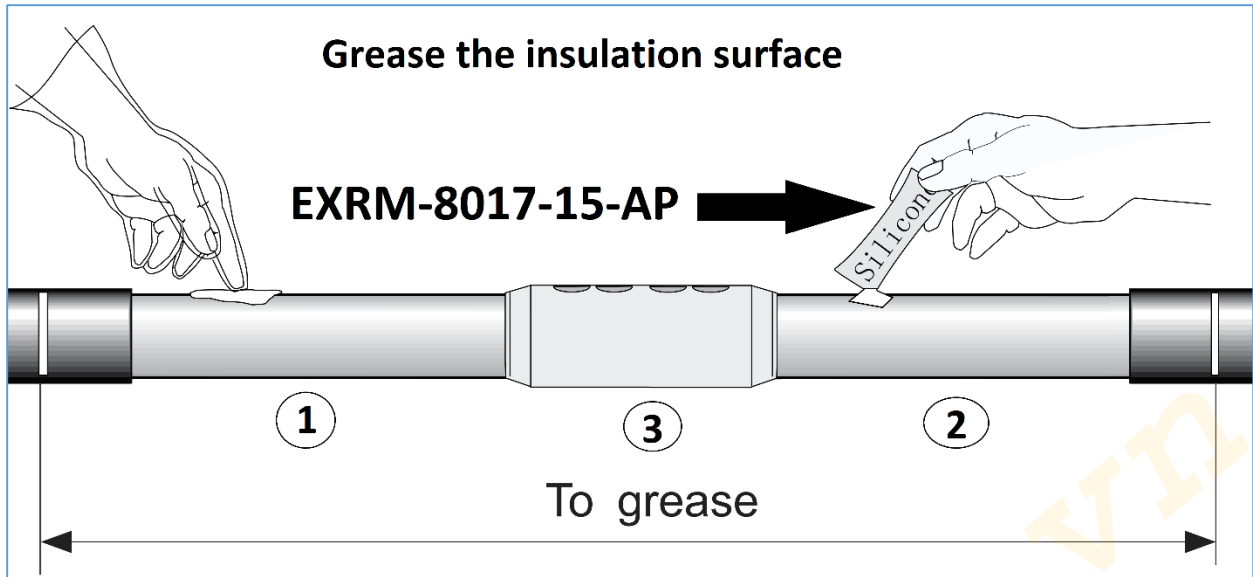
Item	24KV, 3C, 50sqmm	24KV, 3C, 240sqmm	24KV, 3C, 400sqmm	36KV, 3C, 240sqmm
H	210mm	210mm	220mm	260mm

**Table 5**



**Step 13, Figure 13**

- Clean and degrease the cable cores and the connector according to sequence in the picture shown.



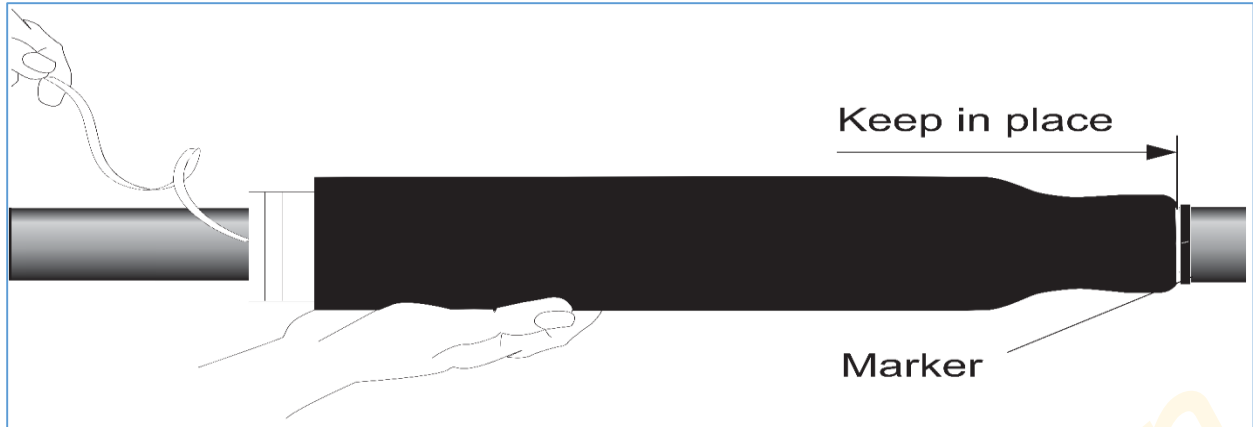
**Step 14, Figure 14**

- Grease the joint area with a thin film of silicone grease, using one silicone-sachet per phase, according to the sequence shown in the picture.



**Step 15, Figure 15**

- Position the joint body level with the temporary PVC marker on the semicon screen made earlier.

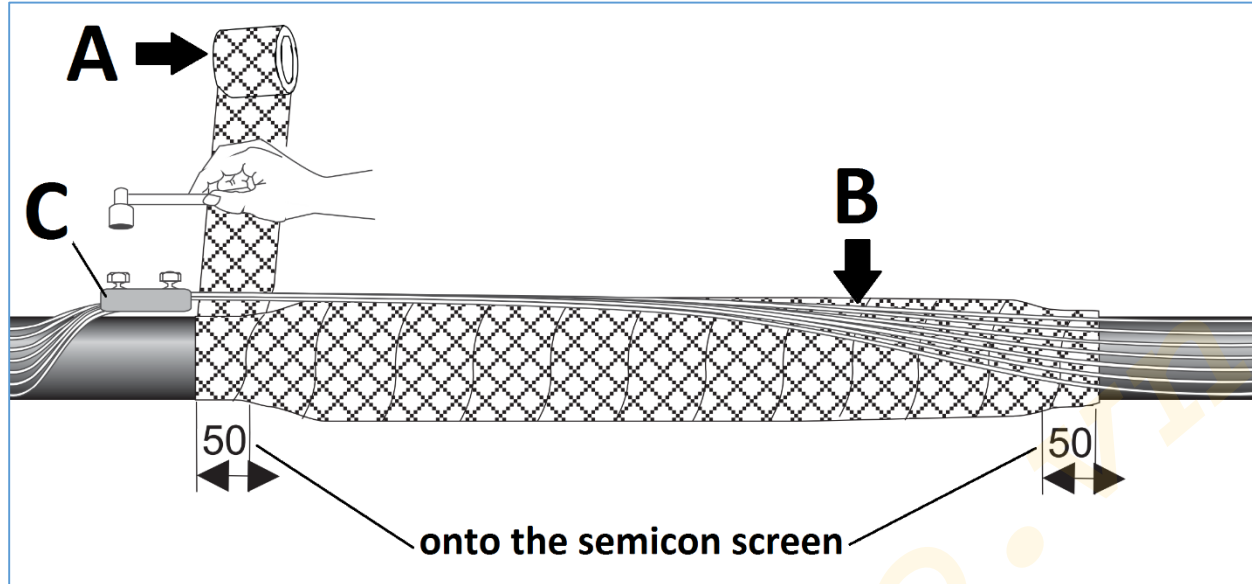


### Step 16, Figure 16

- Release the spiral by pulling counterclockwise.
- Hold the joint body in place during the release action.
- Check the position of the joint body after you have released 5 turns:
- The end of the joint body should be in line with the marking on the core screen.
- In case of misplacement move the joint body to the correct position.
- Take care not to twist the cord of the spiral holdout during the release process.
- The cord of the spiral holdout should always be in line and never be jammed around the cable.
- Remove the temporary marking made earlier.



### **A. Joint for Copper Wire Screen to Copper Wire Screen connection**

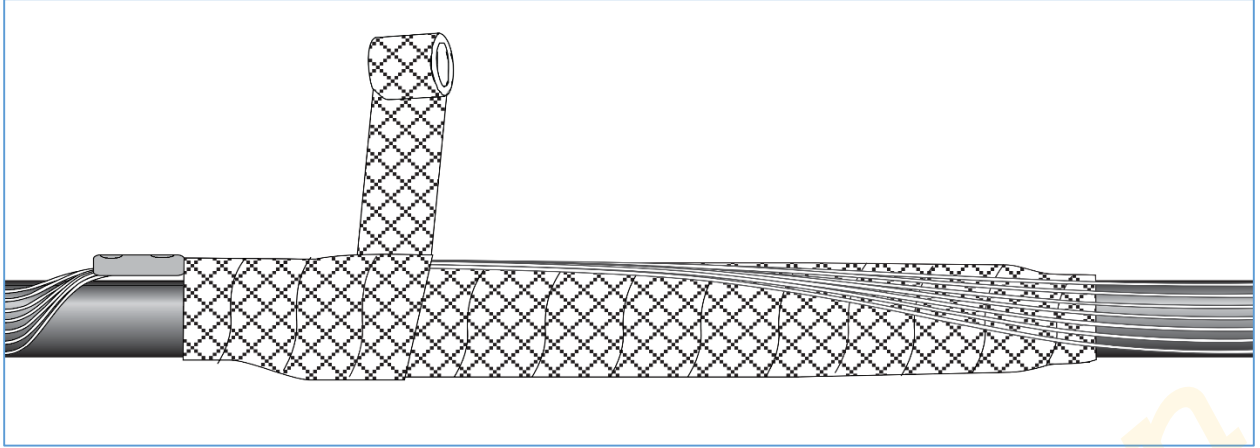


**Step 17, Figure 17**

A – Wrap one layer of copper mesh, with 50% overlap. Start wrapping from 50mm on the semicon screen on one end until 50mm onto the semicon screen of the other end.

B – Bend the copper wire screen over the joint area

C – Connect the copper wire screen with crimping method or with a mechanical connector. Ensure that the connector is not placed on the Joint Body.

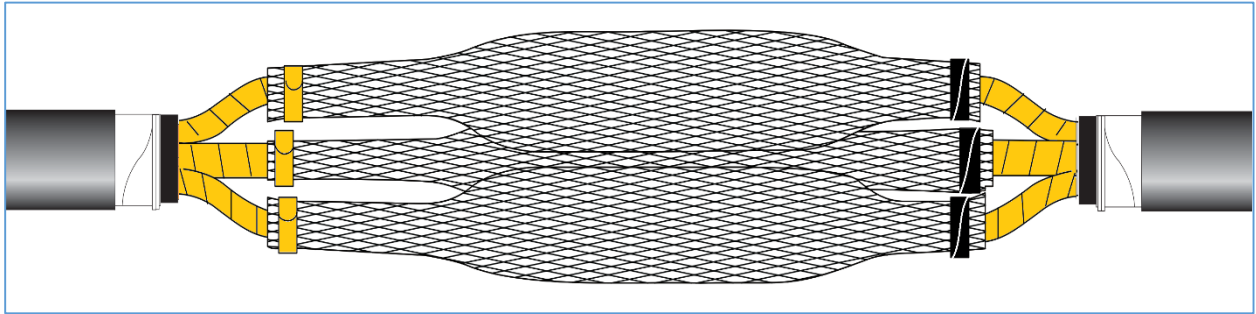


**Step 18, Figure 18**

- Apply second layer of copper mesh over the whole jointing area and ensure complete coverage of the shield connector.

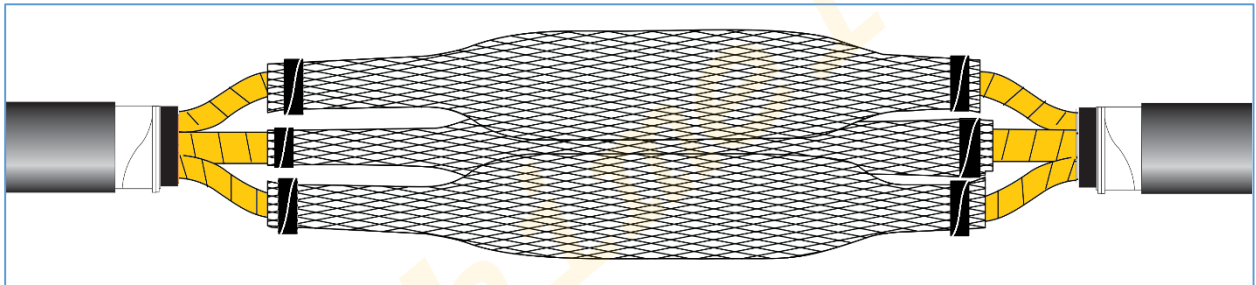
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## **B. Joint for Copper Tape Screen to Copper Tape Screen connection**



**Step 19, Figure 19**

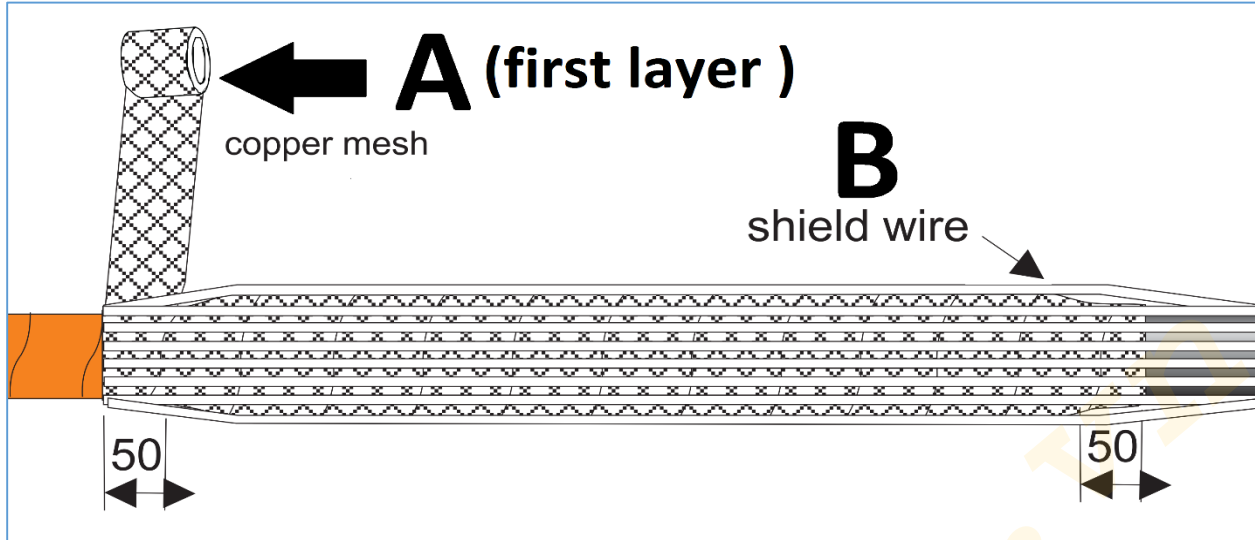
- Slide each copper screen sleeve over the joint as shown and fix it to the Copper Tape Screen with the roll springs provided.
- Tighten the roll spring with a twisting action.



**Step 20, Figure 20**

- Cover the roll springs with at least three layers of PVC adhesive tape.

### C. Joint for tape shield to wire shield connection

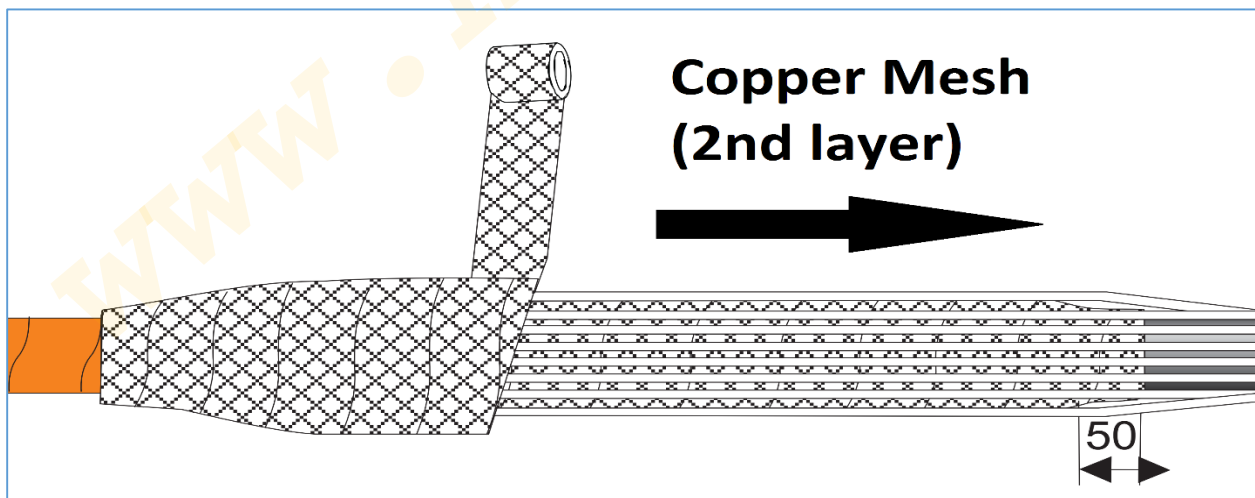


**Step 21, Figure 21**

A – Wrap one layer of copper mesh, with 50% overlap.

– Start wrapping from 50mm on the Semicon Screen on one end until 50mm onto the Copper Tape Screen of the other end.

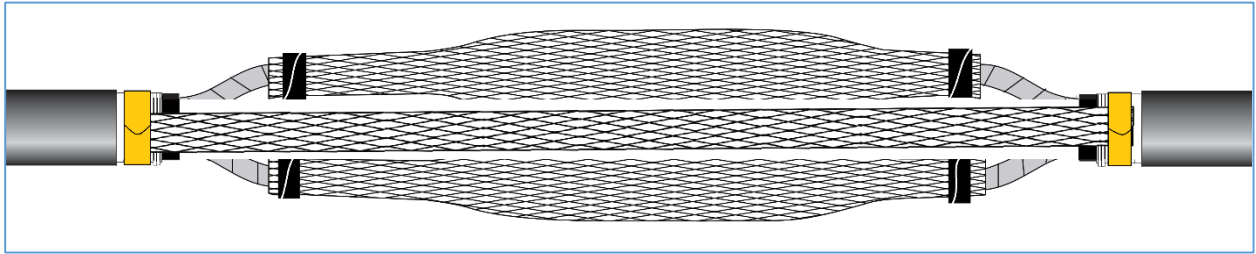
B – Bend the copper wire screen over the joint area



**Step 22, Figure 22**

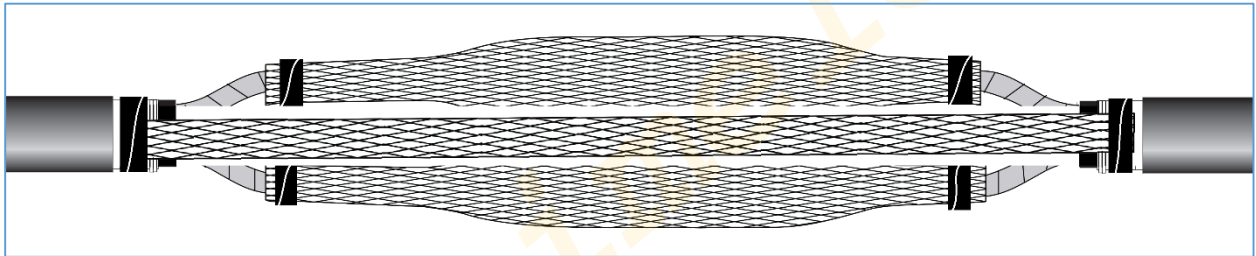
- Wrap second layer of copper mesh as per shown in Figure 20.

**For all 3 type of connection**



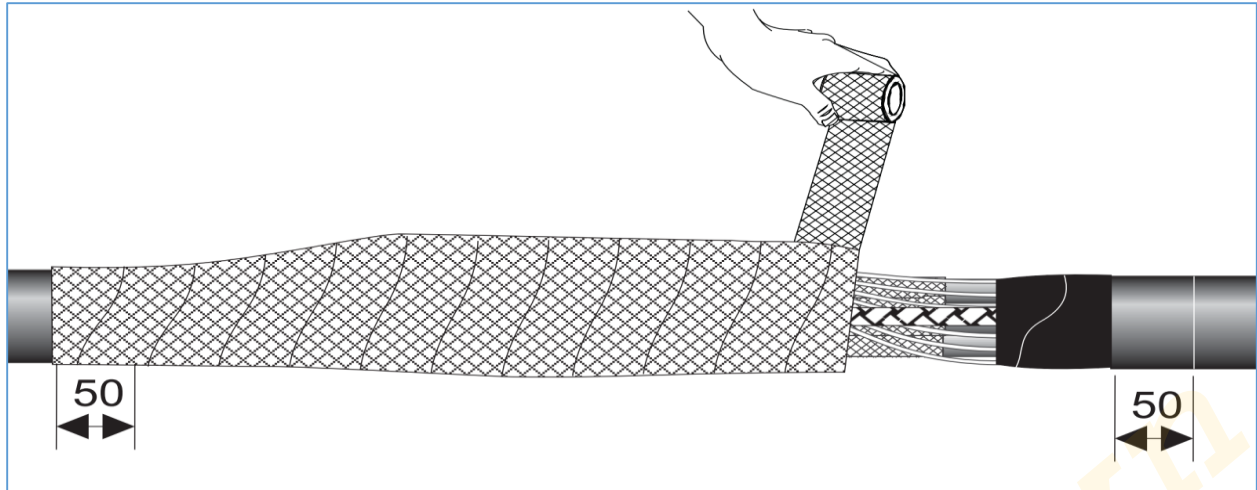
**Step 23, Figure 23**

- For all 3 types of joint, place the earth braid across the joint area and position the ends over the tape armour.
- Fix the earth braid to the armour using the roll spring provided.
- Tighten the roll spring wrap with a twisting action.



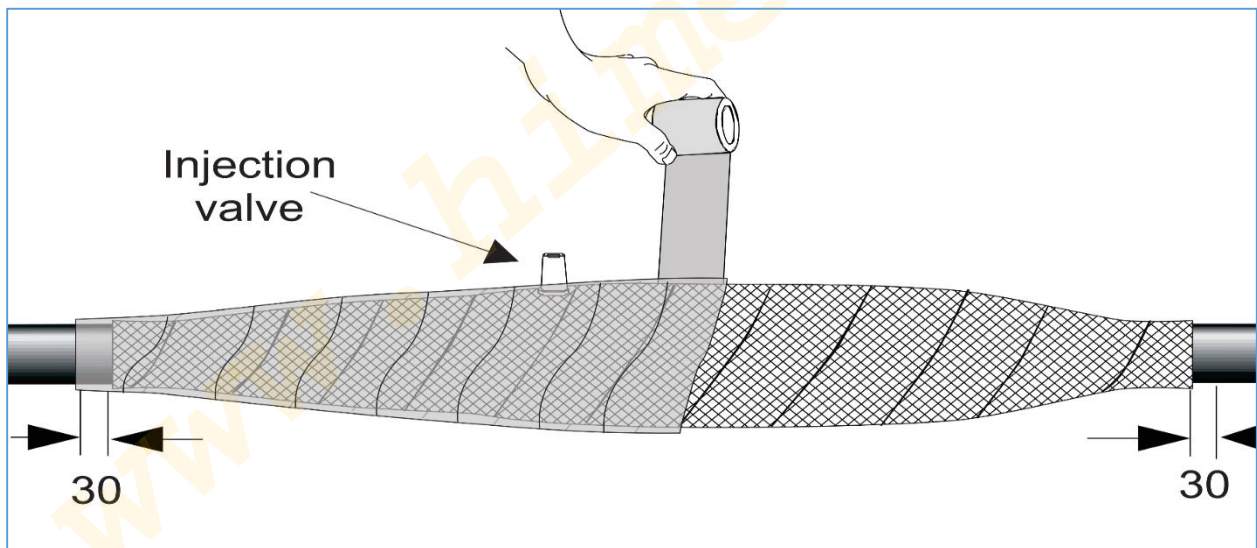
**Step 24, Figure 24**

- Cover the roll springs with at least three layers of PVC adhesive tape.



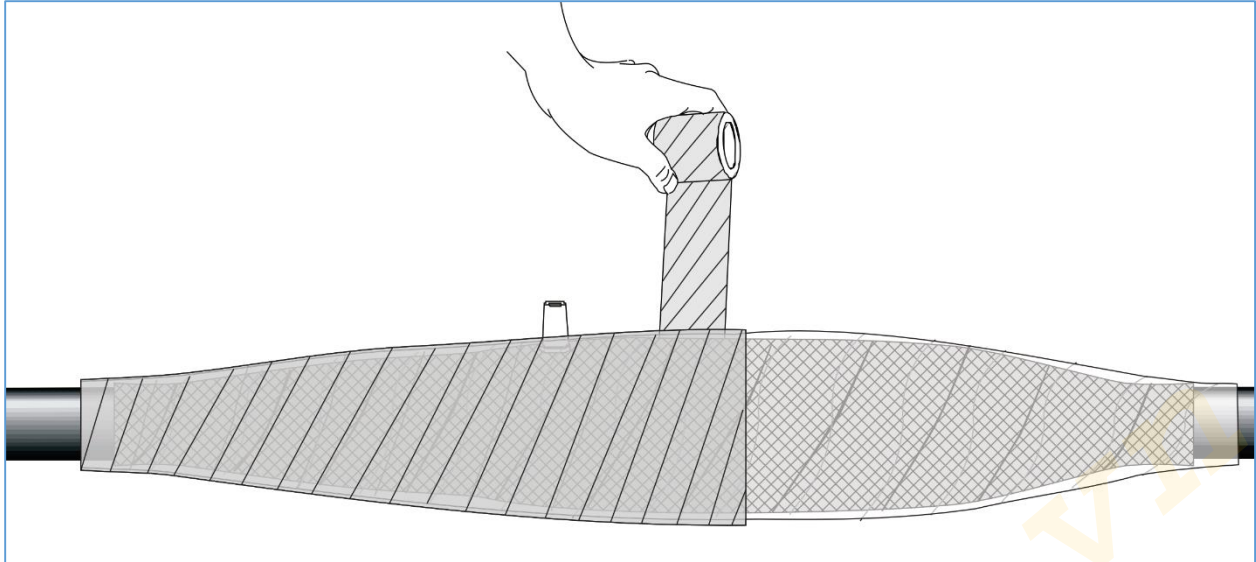
**Step 25, Figure 25**

- Wrap the entire joint with 3 layers of half overlapped spacer tape.
- Start with the first 50 mm of the cable jacket on one side of the joint and continue to the other side including the first 50mm on the other side.



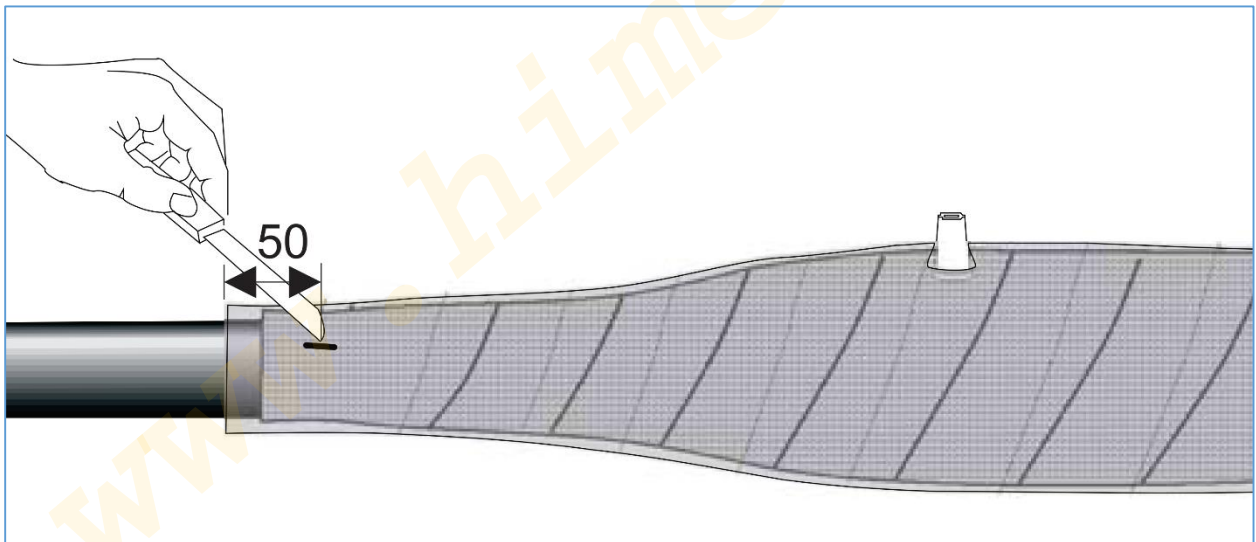
**Step 26, Figure 26**

- Position the injection valve in the middle of joint body between two cores.
- Apply at least 2 layers of half overlapped transparent PVC tape over the whole joint area and continue for 30 mm onto the adjacent cable jacket at each side of the joint.



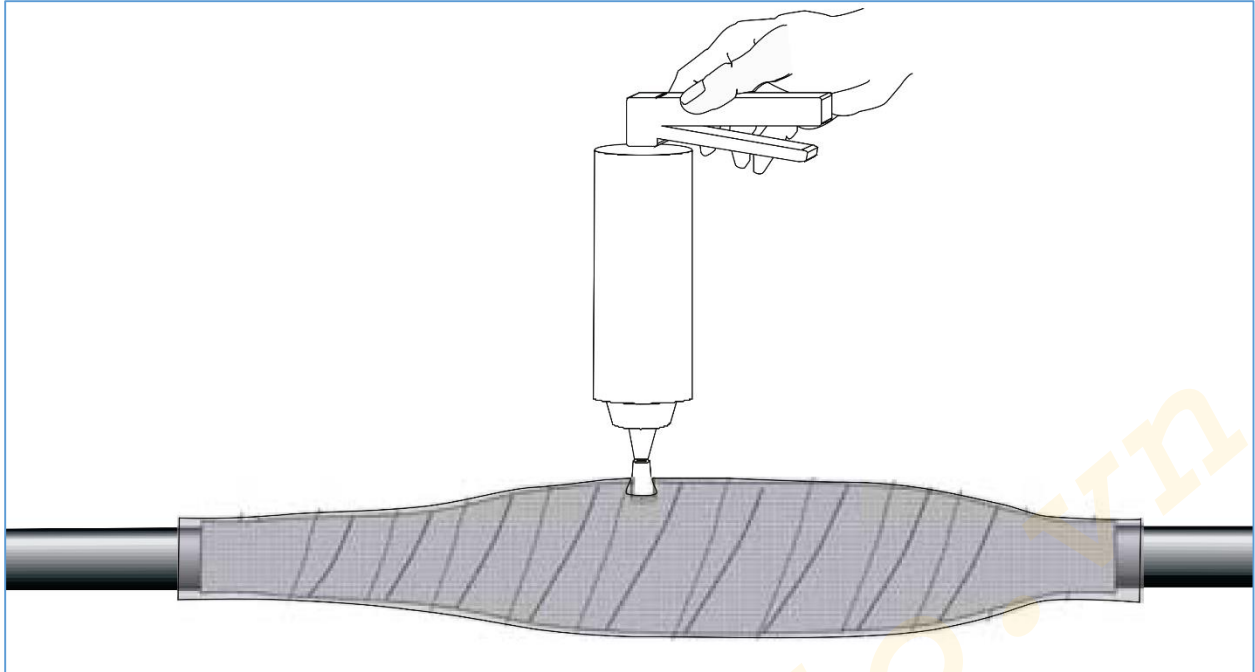
**Step 27, Figure 27**

- Apply one layer of 25% overlapped restriction tape over the transparent PVC tape.



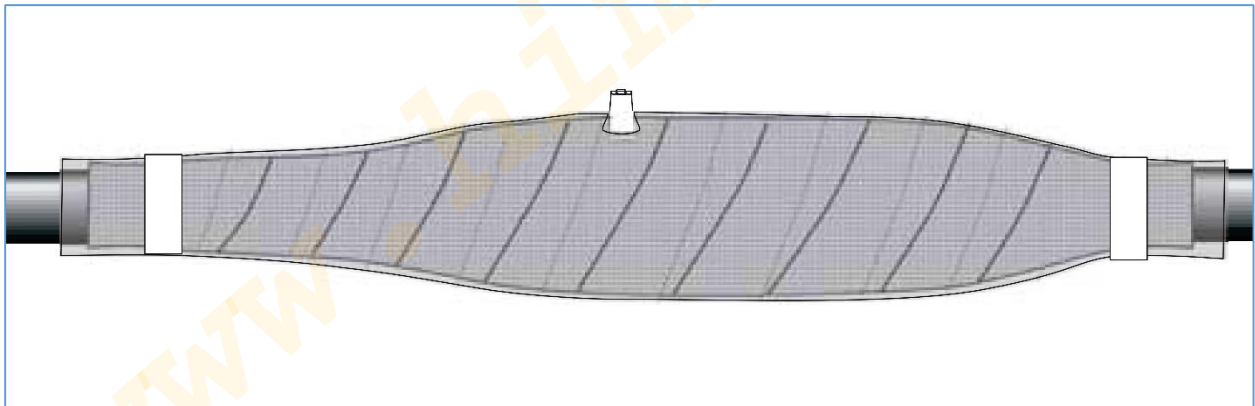
**Step 28, Figure 28**

- Open the vent holes at approximately 50 mm from the end on the top surface of the joint using a sharp knife.



**Step 29, Figure 29**

- Mix the two-component resin packs and inject the mixture into the joint.



**Step 30, Figure 30**

- Inject the resin until resin leak out from the vent holes.
- Seal the vent holes with transparent PVC tape.
- Joint completed.
- Allow the resin compound to cure before applying any mechanical strain.