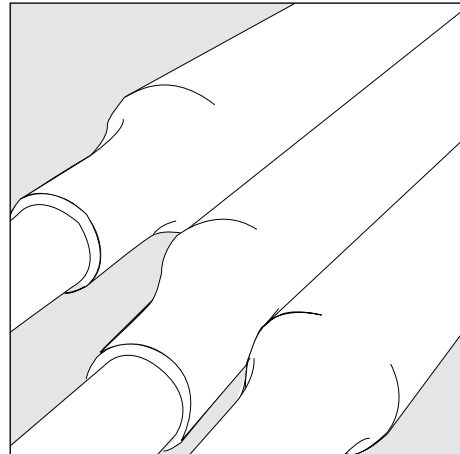


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TE's Raychem Cable Accessories



Installation Instruction EPP-1341-12/17

Raychem
Repair Joint for Single Core
Polymeric Insulated Cables
with Wire Shield or
Tape Shield
12 kV to 24 kV

Type: MXSU-X1XX-L

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To view the TE Connectivity website:



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Before Starting

Check to ensure that the kit you are going to use fits the cable.

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

Components or working steps may have been modified since you last installed this product.

Carefully read and follow the steps in the installation instructions.

General Instructions

Use a propane (preferred) or butane gas torch.

Ensure the torch is always used in a well-ventilated environment.

Adjust the torch to obtain a soft blue flame with a yellow tip.

Pencil-like blue flames should be avoided.

Keep the torch aimed in the shrink direction to preheat the material.

Keep the flame moving continuously to avoid scorching the material.

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

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

Start shrinking the tubing at the position recommended in the instruction.

Ensure that the tubing is shrunk smoothly all around before continuing along the cable.

Tubing should be smooth and wrinkle free with inner components clearly defined.

The Information contained in these installation instructions is for use only by installers trained to make electrical power installations and is intended to describe the correct method of installation for this product. However, TE Connectivity has no control over the field conditions which influence product installation.

It is the user's responsibility to determine the suitability of the installation method in the user's field conditions.

TE Connectivity's only obligations are those in TE Connectivity's standard Conditions of Sale for this product and in no case will TE Connectivity be liable for any other incidental, indirect or consequential damages arising from the use or misuse of the products.

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Application range of the MXSU-L kits:

The kit is based on polymeric insulated cables for **stranded circular conductors** and wire shielding.
Application range for aluminium or copper conductors are mentioned in **table A** below.

Table A:

12 kV		24 kV	
Kit number	Range [mm ²]	Kit number	Range [mm ²]
MXSU-3111-L	25 - 95	MXSU-5111-L	25 - 95
MXSU-3131-L	95 - 240	MXSU-5131-L	95 - 240
MXSU-3132-L	150 - 300	MXSU-5132-L	150 - 300
MXSU-3141-L	240 - 400	MXSU-5141-L	240 - 400
MXSU-3151-L	500	MXSU-5151-L	500
		MXSU-5161-L	630

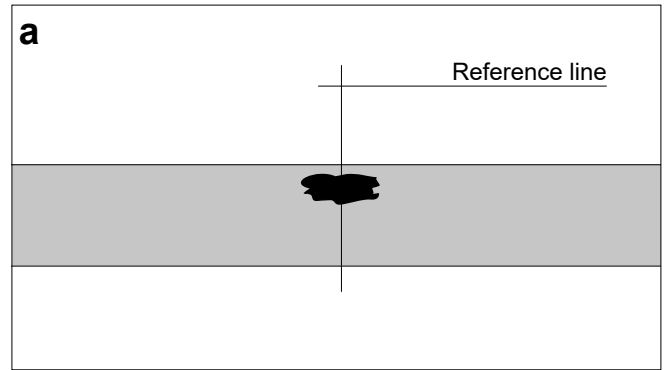
Table B: Admissible cable dimensions for MXSU-L kits

Kit number	Conductor Ø		Core insulation Ø		Outer cable Ø	
	minimum	maximum	minimum	maximum	minimum	maximum
	mm	mm	mm	mm	mm	mm
MXSU-3111-L	5.2	12.0	13.2	21.8	23.0	32.0
MXSU-3131-L	10.3	19.2	17.6	29.4	26.0	41.0
MXSU-3132-L	12.9	21.6	21.6	31.4	29.0	43.0
MXSU-3141-L	17.8	24.6	25.0	34.6	33.0	47.0
MXSU-3151-L	25.5	27.6	33.8	37.2	44.0	50.0
MXSU-5111-L	5.2	12.0	17.6	26.0	24.0	38.0
MXSU-5131-L	10.3	19.2	22.5	33.6	30.0	44.0
MXSU-5132-L	12.9	21.6	25.0	34.6	32.0	46.0
MXSU-5141-L	17.8	24.6	29.4	38.8	38.0	50.0
MXSU-5151-L	25.5	27.6	37.2	41.6	48.0	54.0
MXSU-5161-L	27.9	32.5	39.2	44.7	50.0	58.0

Cable preparation

Damaged Cable:

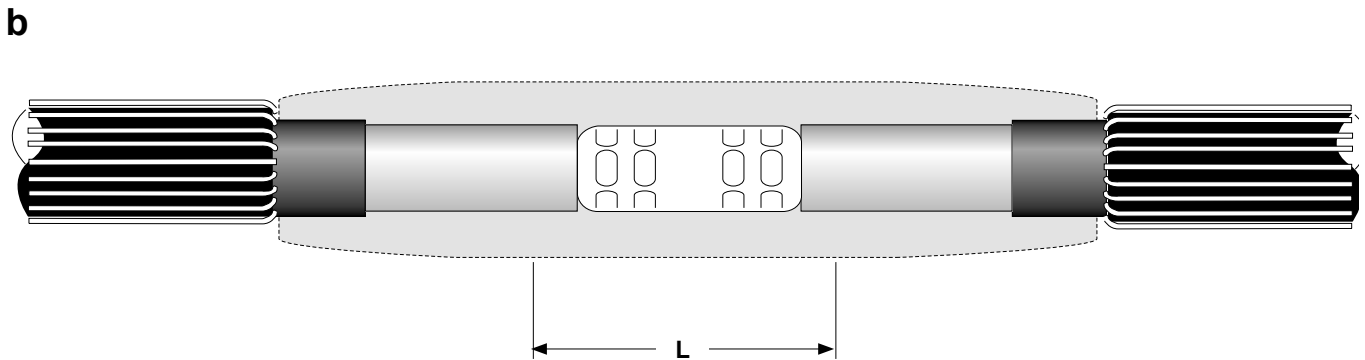
Mark a reference line in the centre of the damaged section. Cut the cores at the reference line.



Cable section with joint:

Carefully remove all parts of the existing splice, so that the **insulation remains undamaged** and the surface is free from all traces of the previous jointing material.

The connector supplied can replace up to the conductor length **L** see drawing **b**.



Cut out the length **L** (see **Table 1**) of the cable including the connector as shown in the drawing **c** using a hacksaw.

Clean the outer jacket on both cable sides for about 1200 mm.

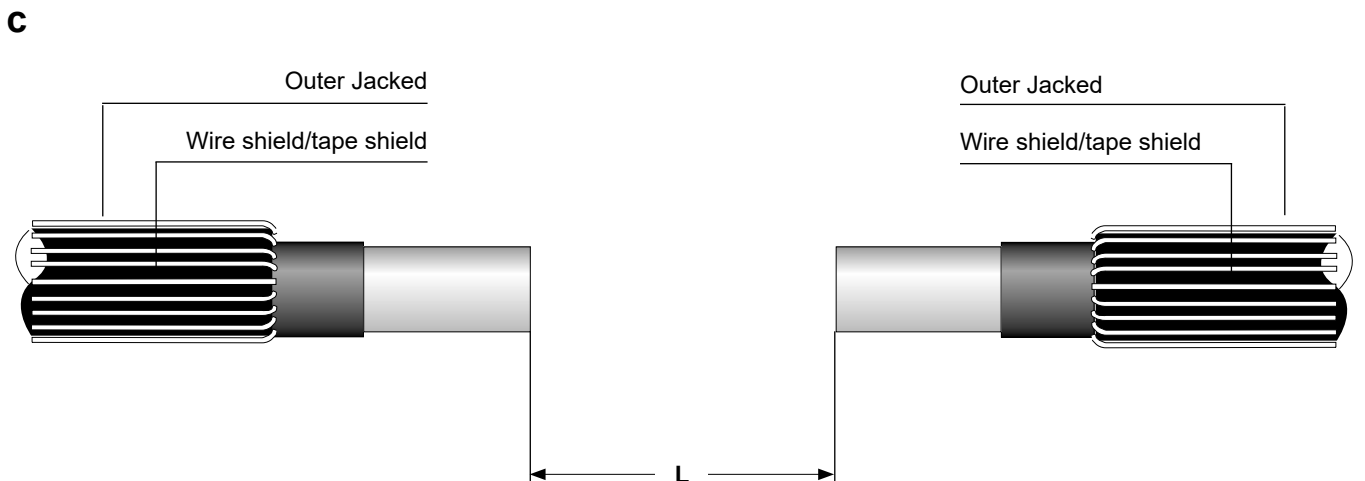


Table 1

12 kV					
Kit number	Kit range [mm ²]	L [mm]	a [mm]	b [mm]	l [mm]
MXSU-3111-L	25 - 95	380	140	170	30
MXSU-3131-L	95 - 240	320	170	200	60
MXSU-3132-L	150 - 300	310	170	200	65
MXSU-3141-L	240 - 400	280	190	220	80
MXSU-3151-L	500	260	190	220	90

24 kV					
Kit number	Kit range [mm ²]	L [mm]	a [mm]	b [mm]	l [mm]
MXSU-5111-L	25 - 95	380	160	190	30
MXSU-5131-L	95 - 240	320	190	220	60
MXSU-5132-L	150 - 300	310	190	220	65
MXSU-5141-L	240 - 400	280	210	240	80
MXSU-5151-L	500	260	210	240	90
MXSU-5161-L	630	300	200	230	70

Core Preparation

A. Cable with wire shield

Remove the outer jacket on both sides according to dimension **a** given in table 1.

Bend back the shield wires onto the outer jacket and secure the ends with adhesive tape.

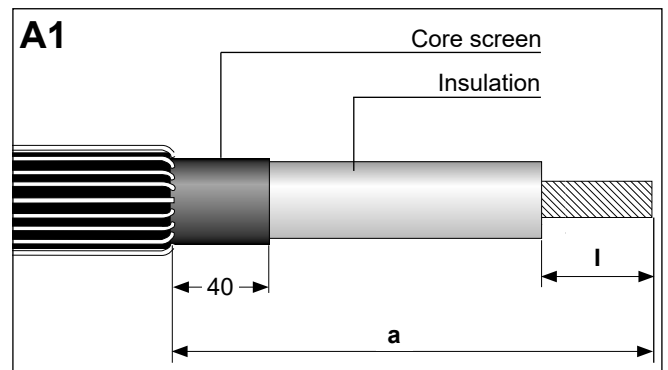
Thoroughly remove the core screen according to the dimension given in the drawing, so that the insulation surface is free from all traces of conductive material.

Do not nick the insulation!

Note: For cables with **graphite core screen** first remove the conductive tapes from the core to a distance of 35 mm from the oversheath cut. Afterwards carefully remove the graphite layer according the dimension in the drawing without leaving residues of conductive material on the insulation.

Remove the insulation according to the dimension **l** given in table 1.

Clean and degrease the insulation.

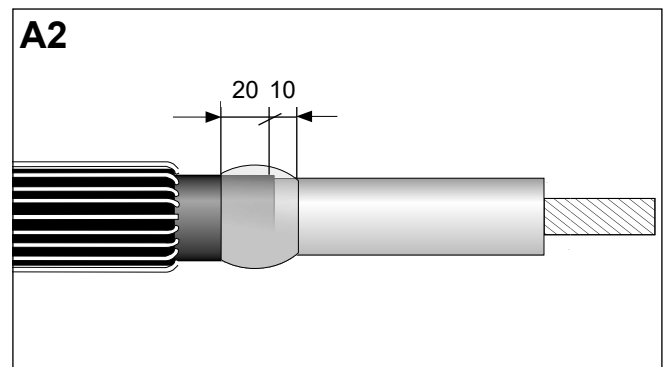


Take the yellow void filling strip from the alu foil pocket.

Remove the release papers from the strip with the pointed ends.

Wrap the void filler around the core screen starting 20 mm from the end of the screen and continue onto the insulation for 10 mm.

Stretch the strip to half of its original width to achieve a fine thin edge.



B. Cable with tape shield

Remove the outer jacket on both sides according to the dimension **b** given in table 1.

Thoroughly remove the core screen and the tape shield to the dimensions given in the drawing, so that the insulation surface is free from all traces of conductive material.

For easy strip screen layers use a round file to cut radially through the core screen. Secure the copper tape shielding. Do not nick the insulation!

Note: For cables with **graphite core screen** first remove the conductive tapes from the core to a distance of 60 mm from the oversheath cut. Afterwards carefully remove the graphite layer according the dimension in the drawing without leaving residues of conductive material on the insulation.

Remove the insulation according to the dimension **l** given in table 1. Clean and degrease the insulation.

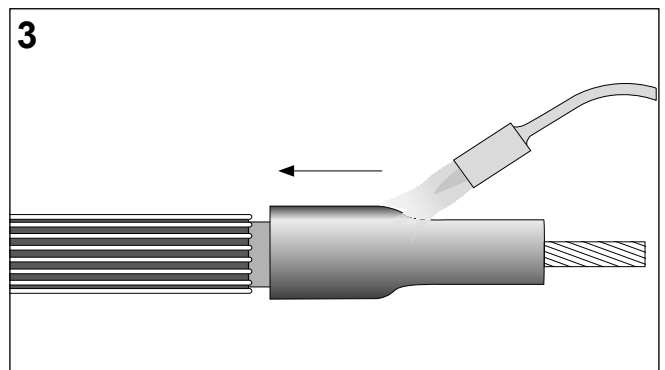
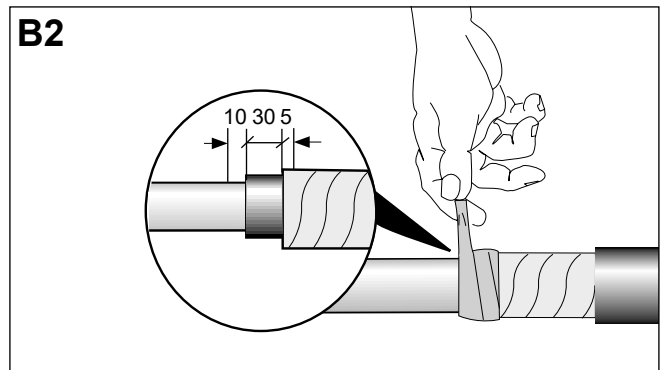
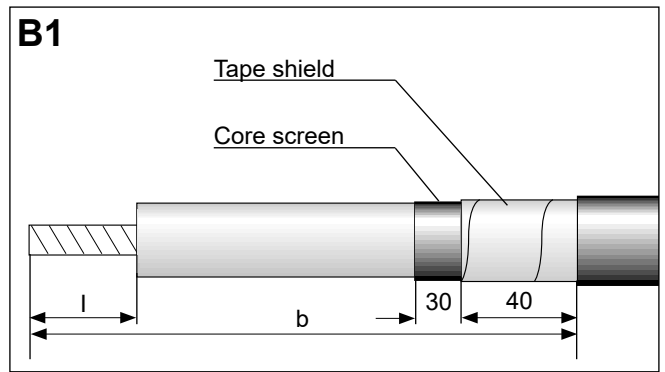
Remove the release papers from the short yellow void filling strip with the pointed end.

Wrap the yellow void filler for 5 mm around the copper tape shield and continue over the core screen covering the insulation for 10 mm.

Stretch the strip to half of its original width to achieve a fine thin edge.

Slide the stress control tubing (black) over the plastic cable core level with the end of the insulation cut back.

Shrink down starting from the insulation cut back towards the oversheath as shown in drawing.



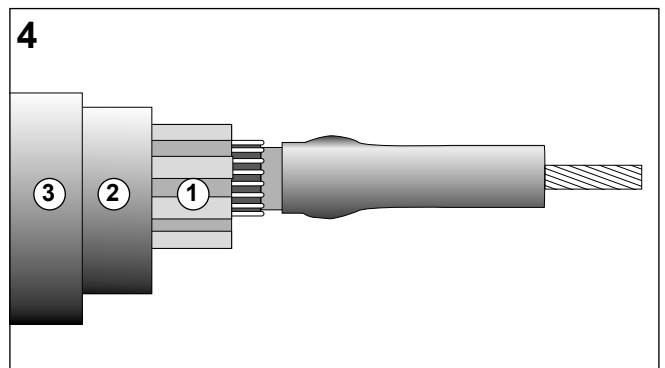
Completion of Joint

Slide a combined tubing set over one plastic cable core.

1 - Screened insulation sleeve (black and red)

2 - Outer sleeve (black)

3 - Outer sleeve (black)

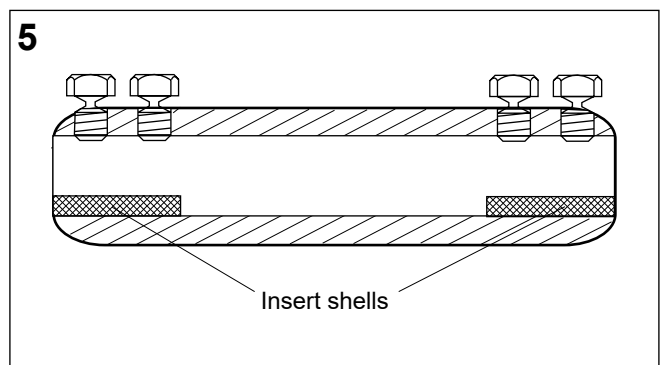


Installation of the mechanical connector

The connector is supplied with insert half shells which have to be used on small cross sections (500, 630 mm² without inserts).

Check before installation if the conductor can be inserted into the connector with the half shells installed.

In case the conductor can not be inserted, remove the inserts from the connector bore.



Clean and abrade the surface of the exposed conductors.

Insert conductors so that the insulation butts up with the end of the connector. Hand tighten the shear bolts so that the connector stays in place.

For connectors using more than one shear bolt per side, tighten the bolts alternately and shear them off starting with the outer bolts (see also sequence shown in the drawing). Avoid core bending.

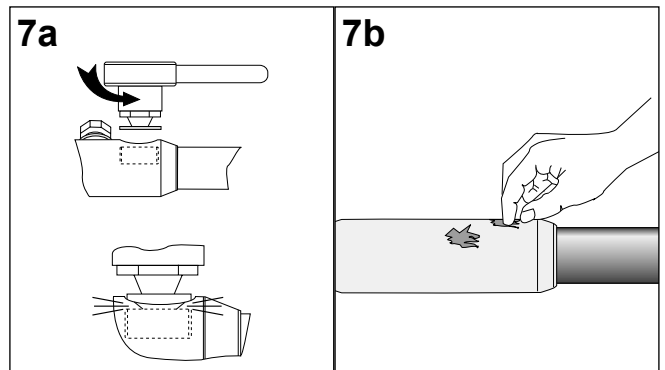
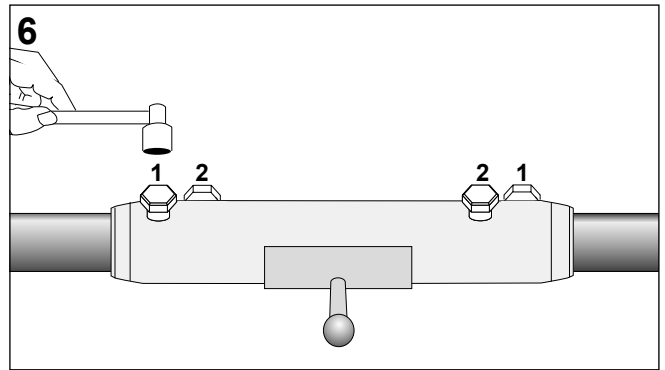
Note:

When a cordless impact wrench is in use, the tightening intervals should be in the range of 2 seconds.

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 (see picture **7a**).

Fill out any indentations left over the shear bolts with the clay provided to obtain a smooth finish (see picture **7b**). Clean and degrease the connector area.



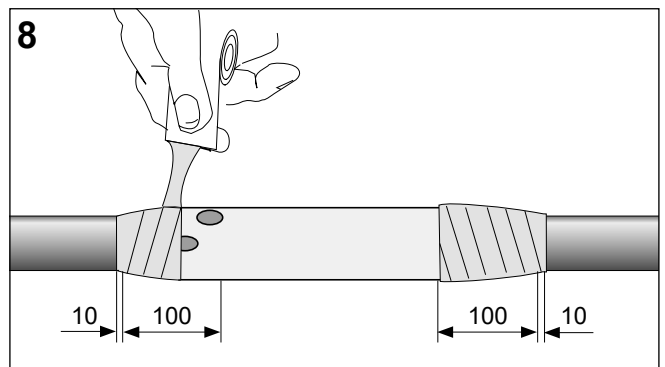
Pre-heat the connector until it is hand-hot.

Remove the release paper from the long length of the yellow void filling strip.

Wrap it around the end of the insulation, starting 10 mm onto the insulation and continue for a distance of 100 mm onto the connector.

It is necessary to cover the sheared off heads of the screw heads and to fill up the steps to achieve a smooth transition from the connector onto the insulation.

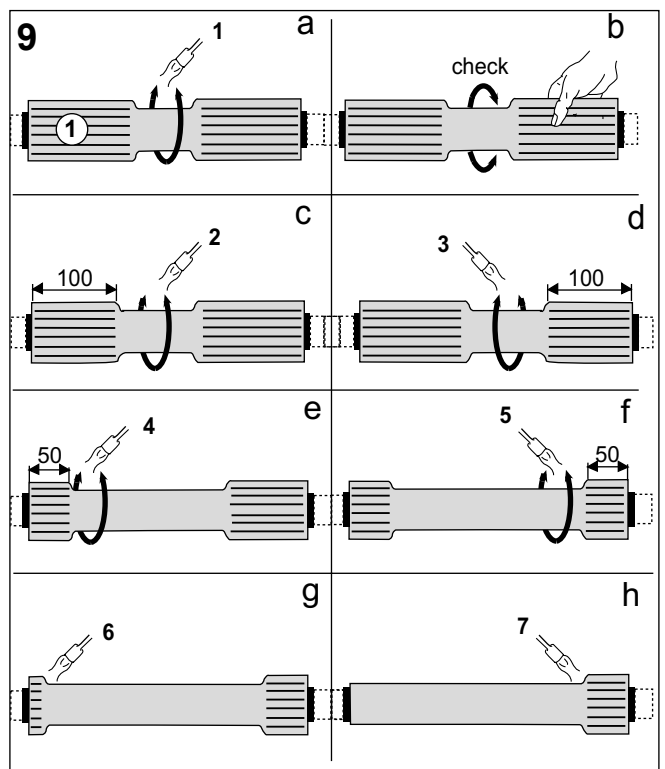
Stretch the strip to half of its original width to achieve fine thin edges, overlap the insulation as shown in the drawing.



Position the screened insulating sleeve (1, black and red) centrally over the connector area.

- a. Start shrinking the sleeve in the centre (1).
- b. Check if fully shrunk by twisting the end. The sleeve should not move from its position.
- c. Continue shrinking by working towards one side (2), stopping 100 mm from the end.
- d. Shrink the other half in the same way (3).
- e. Continue shrinking the other half, stopping 50 mm from the end (4).
- f. Shrink the other half in the same way (5).
- g. Shrink down the first end (6).
- h. Finally shrink down the second end (7).

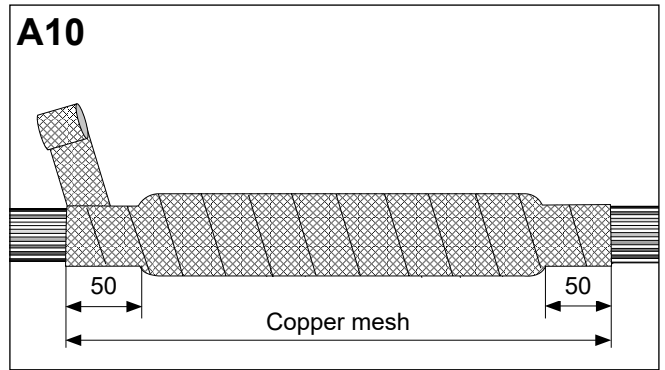
The sleeve should be fully shrunk without leaving ridges.



A. Cable with wire shield

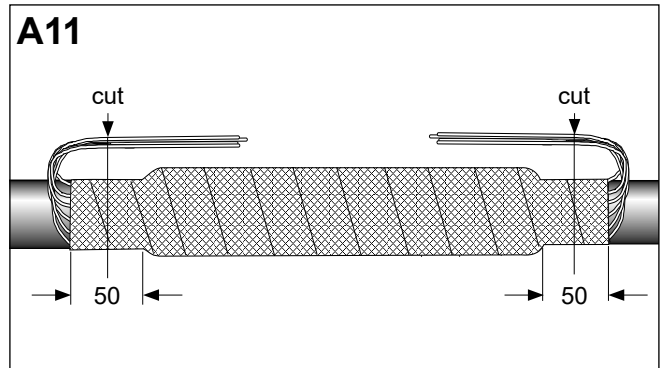
Starting with a 50 mm overlap onto the oversheath on one cable side, wrap one layer of copper mesh round the joint with a 50 % overlap.

Continue the installation also for 50 mm onto the oversheath on the other cable side.



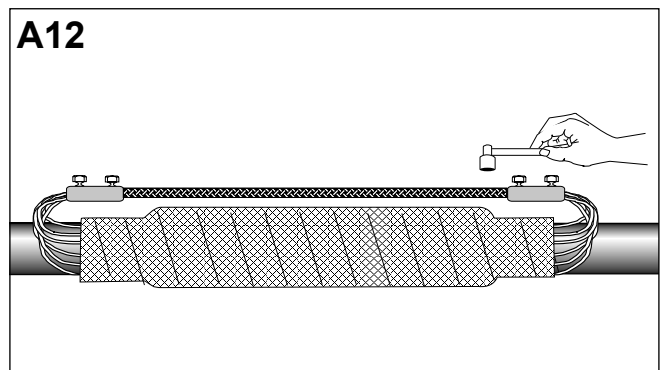
Bend the shield wires back over the joint area close to the copper mesh.

Gather the wires together and cut them centrally above the 50 mm copper mesh overlap on the cable oversheath.

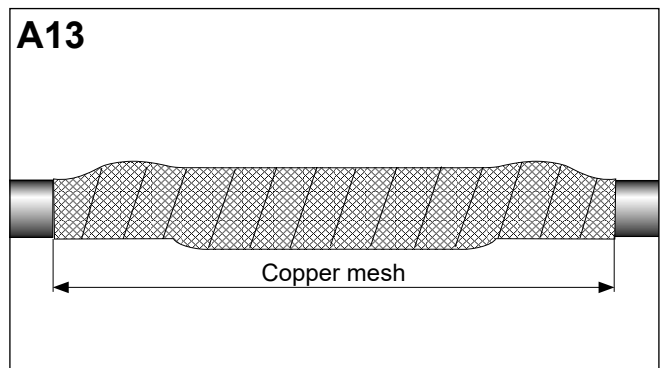


Form earth leads of the shield wires and insert them and the copper earth braid supplied with the kit, into the mechanical shield connectors.

Tighten the bolts until the heads shear off.



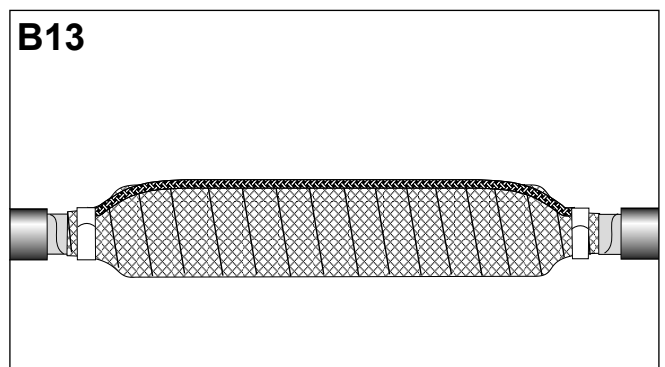
Wrap a second layer of copper mesh round the joint with a 50 % overlap. Cover the complete joint area including the mechanical shield connectors.



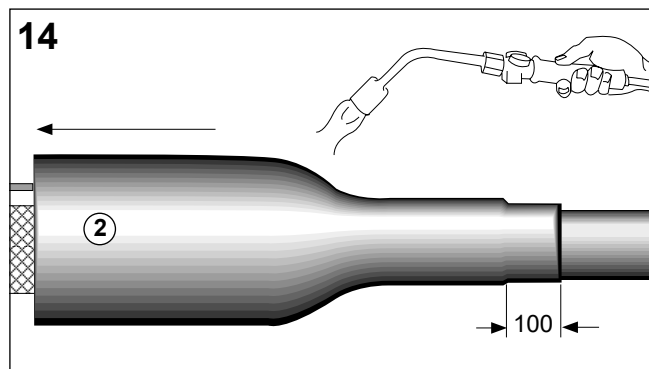
B. Cable with tape shield

Wrap two layers of copper mesh with a 50 % overlap round the joint area, continuing for 20 mm onto the metal tape shield.

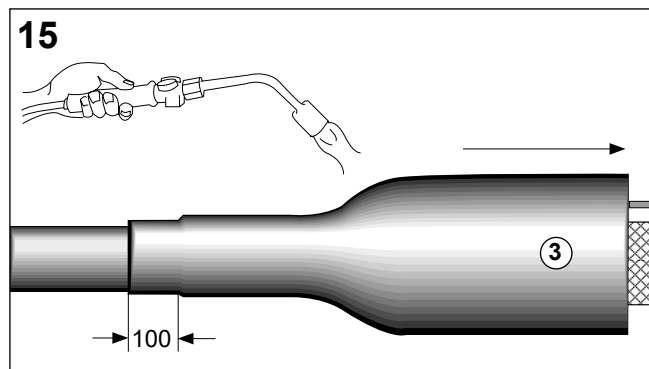
Place the copper earth braid across the copper mesh. Attach the copper mesh and the copper earth braid sides of the connection area by soldering or any other equivalent method (such as Raychem solderless earth connection, see EPP 0184), to maintain shield continuity.



Clean and degrease the end of the oversheath on both cables for a length of about 150 mm.
Position the first outer sleeve (black) on one cable side with 100 mm overlap to the oversheath.
Start shrinking on the cable side, working towards the joint center.

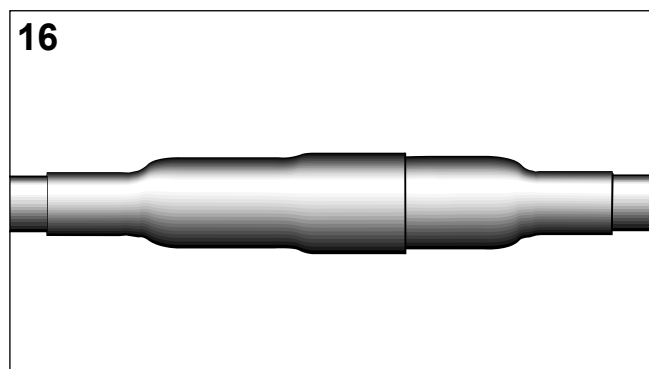


Position the second outer sleeve (black) on the other cable side with 100 mm overlap to the oversheath.
Start shrinking on the cable side, working towards the joint center.



Joint completed.

Allow the joint to **cool before** applying any **mechanical strain**.



Please dispose of all waste according to environmental regulations.



