FILOslim

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LV branch joint type 2
Main cable: PILC 4x35Cu + 4x6Cu
Branch cable: VG-YMvKasmb 0,6/1kV – 4x10Cu + as10

LV cable joint system

INSTALLATION INSTRUCTION

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Filoslim LV-Cable joint system

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Introduction

This document describes the general assembly instructions for safely and correctly installing the FiloSlim cable joint. The assembly of the FiloSlim cable joint generally includes the following steps:

- Cable preparation
- Applying and building the insulation distance with mesh rolls and/or mesh mat
- Placement of the injection valve
- Applying the wrapping tape
- Mixing the two-component resin
- Filling the cable joint with the resin

1.1 Safety

EU regulations: For working with Filoslim P2662 resin, a safety training is mandatory, see www.filoform.nl/training-veilig-werken
For the new Filoslim P3100 resin, safety training is not mandatory; however, this does not change the potential risk that repeated contact with the resin components can lead to an irreversible allergy. Therefore, always wear the prescribed PPE.

Before you start

- Keep your own safety in mind when performing the work.
- For work under voltage, refer to the BEI – Low Voltage work instructions.
- Familiarize yourself in advance with the applicable low-voltage safety work instructions.
- Read the label on the packaging and/or the provided information about resins and hardeners beforehand, including what to do in case of emergencies.

During the work

- Ensure that the cable joint is assembled in a clean and dry environment.
- Provide sufficient ventilation at the workplace.
- Wear the prescribed personal protective equipment: liquid-tight gloves (Category 1), eye protection, and close-fitting work clothing.
- The resin and hardener components in the resin kit are chemical substances before mixing. Mix them according to the instructions.
- Hardened, cured resin should be disposed of as normal industrial waste.
- Dispose of unusable, unmixed resin packages as chemical waste.
- Never eat, drink, or smoke during the work. After working with resins, wash your hands before eating, drinking, or using the restroom.

In case of emergencies

- When resin kits are used as intended and the required PPE is worn, there is no risk of exposure through inhalation or skin contact. This is because the resin is mixed in a sealed package and then injected directly into the joint.
- If your hands come into contact with resin during work, wash them immediately with plenty of water and soap.
- If resin comes into contact with your eyes, rinse immediately with plenty of water. Take the label and/or the provided hazardous substance information directly to an (eye) doctor.

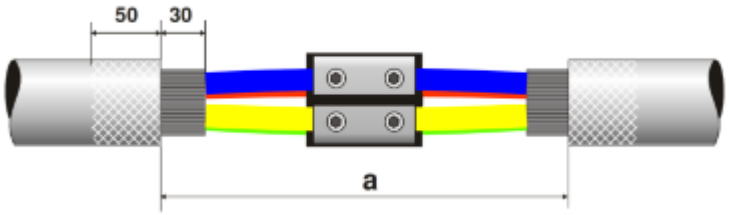
1.2 Cable preparation

In the cutting dimensions and consumption overview (page 11), the cutting dimensions and the articles that can be used for each type of joint are specified. The data, dimensions and quantities, mentioned there should be considered as reference values. In addition, assembly instructions for the most common types of joints are included; other types can be derived from these.

For long-term protection of the cable connection, correct cable preparation is essential. Below, the aspects for each cable type are listed.

Plastic-insulated cables:

- Determine the position of the cable joint and mark the cutting dimensions
- Thoroughly clean the outer sheath so that it is free of dirt and grease.
- Roughen the outer sheath in a transverse direction using coarse emery cloth (P40–P80) or a clean coarse rasp over a length of at least 50 mm next to the cutting mark.
- Cut and remove the outer sheath, expose the earth shield.
- For live cables, insulate the earth shield with wrapping gauze and remove the filler material.
- If the inner sheath is dirty, clean it and roughen it in a transverse direction (see network operator's instructions).
- Remove the inner sheath, leaving 30 mm on each side and sand it.
- Spread the conductors and remove the cable core.



PILC kabels:

- Determine the position of the cable joint and mark the cutting dimensions.
- Clean the outer sheath and removethe jute over a width of 5 cm on both sides of the marked area. Secure the steel tape aroured with binding wire.
- Saw through the steel tape armoured using a cable sheath saw, which is protected against cutting to deep. Remove the steel armour.
- Remove the bitumen filling material and clean the lead sheath.
- Mark the stripping length and roughen the lead sheath over a length of 8cm on both sides.
- For a live cable, an earth connection must now be installed using litz wire and constant force springs. The earth connection must be insulated with wrapping gauze.
- Remove the intermediate section of the lead sheath.
- Leave 3 cm of paper insulation on both sides. Secure the paper insulation with binding yarn.
- Remove the remaining paper insulation layer by layer
- Spread the conducturs and remove the cable core

1.3 Installation of the clamps

This installation guide provides instructions for assembling a Filoslim cable joint. When installing the clamps, always adhere to the manufacturer's specifications. Please note that the clamps and related components shown in the examples may vary depending on regional standards.

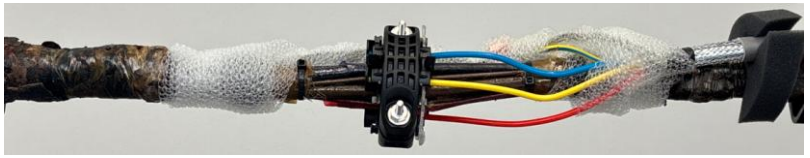
1.4 Installation of the Filoslim cable joint components

The principle of the FiloSlim cable joint is based on creating an insulation gap between the conductive parts, as well as around the connectors and cable cores located inside the joint. It is essential to apply sufficient gauze to ensure, together with the resin, effective electrical insulation, moisture sealing, and mechanical protection. After wrapping the joint, the resin is injected so that it flows into all areas where insulation gaps have been created by the wrapping gauze. The liquid synthetic resin then cures, forming a moisture-proof, electrically insulating, and mechanically protective layer over the underlying cable connection.

Key Points for applying the gauze rolls around earthing:
Gauze rolls: Apply at least one layer of mesh, with a half-overlap. Do not pull the gauze to tightly during wrapping.

- Apply in areas where parts need to be insulated.
  - Around earthing
  - Between crossing conductors and pressure points.
  - Over the sanded cable sheath.

The mesh can be temporarily secured usinh the hooks from the injection valve.



1 wrapping passes with 50% overlap = 2 layers (approx. 4 mm)

Key points for applying the gauze mat:

- In addition to gauze rolls, a gauze mat can also be used.
- The gauze mat has a non-stretchable side along the length of the sleeve and a stretchable side that must be wrapped around the sleeve. Thanks to its elastic and compressive properties, the gauze conforms optimally to the contours of the cable joint.
- Gauze mats are available in standard sizes and suitable for house connection sleeves, network connection and branch sleeves.
- The gauze mat serves only as the outer protective layer. For applying gauze in areas that require insulation, gauze rolls should be used (see above).
- Position the gauze mat over the sanded cable sheath.
- Wrap the gauze mat once around, with an overlap of approximately 30 mm across the entire width and secure it using the hook of the valve.
- Check the overlap during taping and avoid folds or double layers in the gauze.

Key points positioning the injection valve:

- Position the injection valve in a location that ensures optimal resin flow through the cable joint:
  - Offset from the center, approximately one-third of the joint's length.
  - Never on top of the clamp, always beside the (ring) clamp so the resin can flow through it.
  - Never on top of the branch cable—always on the side without the branch cable.

For longer repair joints, multiple injection valves may be installed. Fill resin until it passes the current valve before continuing from the next valve.

Key points for wrapping tape:
- Apply a minimum of two layers of tape with half-overlapping turns, maintaining a slight tension throughout the wrapping process.
- Ensure sufficient layers of tape are applied crosswise around the valve.
- To vent the sleeve and remove any moisture present inside the cable joint, vent holes must be made at the end of the sleeve. On the side where a neck seal has already been installed, no vent hole is required.

Key points for mixing resin:
- Wear the required PPE: gloves, safety goggles, and close-fitting work clothing.
- Mix the resin package thoroughly for at least 2 minutes.
- Ensure that resin and hardener components are completely removed from the corners of the container.
- After mixing, the resin must have a uniform color.

Key points for filling the cable joint:
- Fill the cable joint until resin emerges from the vent holes, then seal the holes with tape.
- Check for air pockets; pierce them using a non-conductive pointed tool and seal with tape.
- Put extra pressure on the cable joint, ensuring the resin flows into the cable.
- Disconnect the resin pack by turning it a quarter turn counterclockwise, then carefully remove it from the valve.

1.5 Final steps

The FiloSlim joint is suitable for live-line installation. If the work was performed de-energized, the joint can be energized immediately after installation.

After installation, the joint can be backfilled with clean soil and the splice pit finished. Ensure that the soil around the cable joint does not contain sharp objects that could cause leakage of the resin before it has fully cured. Once the joint has been buried in this manner, the soil may be compacted using a mechanical tamper without any issues.

Resin packages containing cured remnants can be disposed of as industrial waste.

Filoslim P2662 resin

- 400ml (art.nr. 50200018)
- 1500ml (art.nr. 50204484)

Processing:
- Mix intensivly for 2 minutes

Filoslim 3D gauzeroll

- 10cm x 1,8m (art.nr. 50200223)

Processing:
- 2 wrapping passes with 50% overlap

Wrapping tape

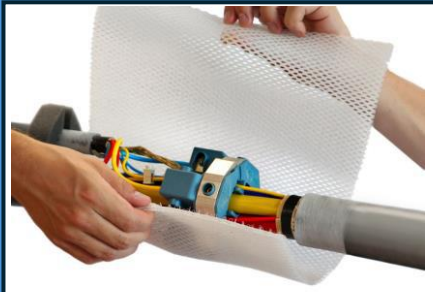
- 38mmx20m (art.nr. 50200222)

Processing:
- Apply two layers of tape with half-overlapping turns, maintaining slight tension throughout the wrapping process.

Filoslim injection valve

- Injection valve (art.nr. 50204650)

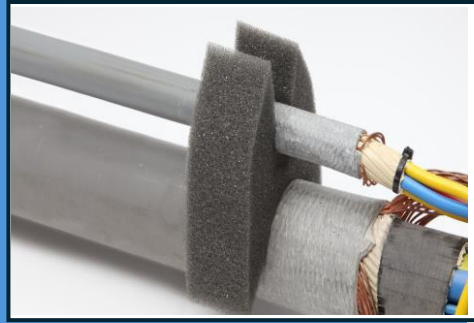
Processing:
- Position the injection valve at one-third of the sleeve length, adjacent to the (ring) clamp on the side opposite the branch cable.



Filoslim 3D gauzemat/core separator

- 530mmx360mm (at.nr. 50210443)

Processing:
- Wrap once around the cable joint with an overlap of approximately 30 mm, covering the full width.



Branch-off seal

- Branch-off seal (art.nr. 50200226)

Processing:
- Position next to the sanded section. Wrap the gauzemat (or gauzeroll) up to the branch-off seal. Do not wrap the gauze over the branch-off seal.

3. LV branch joint type 2

PILC 4x35Cu + 4x6Cu /
VG-YMvKasmb 4x10Cu +as 10 Cu

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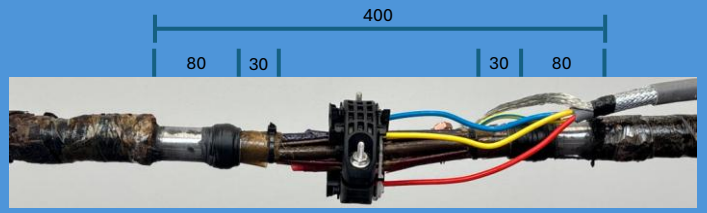
Start	• See the consumption table (page 11) for the required materials.
1	• Cut the main cable and the branch cable according to the regulations (see Figure 1). • Install the branch cable according to the clamp manufacturer's instructions.
2	• Wrap a gauze roll twice around a lead section of the main cable, wrap the earthing with 50% overlap, wrap twice around the other sanded section of the main cable • Place the branch-off seal between the main and branch cable (see figure 2)
3	• Wrap the gauze mat once around, against the neck seal, with approximately 30 mm overlap on top. Secure it with a hook from the valve.
4	• Position the valve at one-third of the sleeve length, angled against the clamp. • Apply tape from the center of the sleeve with two half-overlapping wraps toward the side and back, maintaining light tension throughout. • Carefully tape the gauze mat so that it conforms to the shape of the cable sleeve without creasing. • Pierce a vent hole (arrow) on the upper side, opposite the neck seal.

1



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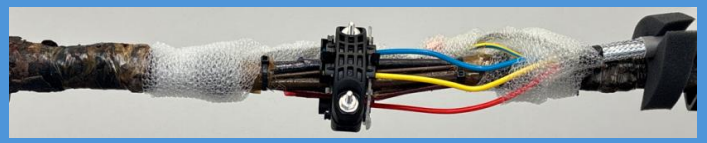

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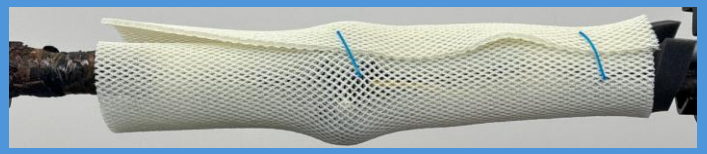

4

4. Mix instruction

Filoslim resin pack

1

- Wear protective work clothing, gloves, and safety goggles while mixing the resin and filling the cable joint.
- Tear open the aluminum outer packaging at the notch.
- Remove the resin pack from the aluminum outer packaging.
- After opening the aluminum outer packaging, process the resin pack immediately.

2

- Remove the separation strip as shown in the illustration

3

- Mix the resin pack thoroughly for 2 minutes.
- Ensure that both the resin and hardener components are completely removed from the corners.
- After mixing, the resin must have a uniform color.

Good to know:

- Store the resin in a frost-free location
- The resin can be processed at temperatures between +5 °C and +40 °C.
- If the resin is colder than +5 °C, warm it to room temperature before use.
- Proper mixing is essential for optimal resin quality.
- Temperature affects the curing speed of the resin.
- During curing, the resin will become up to 30 °C warmer than the ambient temperature.
- In case of skin contact, wash immediately with water and soap.

1

2

3

5. Filling of the cable joint

Filoslim resin packaging

Important

- Pierce a vent hole at the top of each end of the sleeve to expel air and moisture. Use a non-conductive tool for this. This step is not required on the side where a branch-off seal has already been installed.

1

- The packaging is equipped with a fixed filling nozzle featuring a bayonet lock.
- Attach the packaging to the injection valve.

2

- Rotate the resin pack a quarter turn to open it.

3

- Empty the packaging in this position using steady, continuous pressure.
- If air pockets form, puncture them with a non-conductive tool.
- Ensure that the bayonet fitting does not rotate backward during filling, as this may cause the packaging to become partially sealed.

4

- Fill the cable joint until resin emerges from the vent holes, then seal the holes with tape.
- Apply pressure to the resin pack for an additional 10 seconds to pressurize the joint, ensuring the resin flows in the cable.
- Disconnect the resin pack by rotating it a quarter turn backward.
- The resin pack is now sealed and can be carefully removed from the joint.

Good to know

- Resin packages containing cured remnants may be disposed of as industrial waste.
- The hole can be sealed immediately after filling the cable joint.
- The valve is equipped with a check valve to prevent leakage.
- The resin package closes completely after disconnection.
- Any remaining resin can be used for the next cable joint.

6. Filling tool

Filoslim resin pack filling tool

Filling tool

- The filling tool is designed to ensure the resin package can be emptied efficiently.

1

- Slide the mixed resin package into the slot of the filling tool.

2

- Rotate the filling tool into the package. This applies pressure to the bag and forces the resin into the joint.

3

- When the resin package is almost empty, scrape out the remaining contents by holding the filling tool at an angle and scraping downward.

1

2

3

				Cutting dimensions →	Branch joints 400mm Type 2
Component	**UNIT**	**Width(cm)**	**Length (cm)**	**Volume (ml)**	
Resin Packages					
Filoslim P2662 resin 400ml	Bag			400	1
Filoslim P2662 resin 700ml	Bag			700	
Filoslim P2662 resin 1500ml	Bag			1500	1
Gauze roll/mat					
Filoslim gauzeroll 10cmx1,8m	Roll	10	180		1
Filoslim 3D gauze matt 390x300	Piece	39	30		
Filoslim 3D gauze matt 530x360	Piece	36	53		1
Other					
Injection valve 12,2 FS	Piece				1
Winding tape 38mmx20m	Roll	3,8	2000		1
Universal branch seal	Piece				1
Core separator 3D 20x10cm	Piece	20	10		
Filoslim 3D gauze matt 670x360	Piece	67	36		