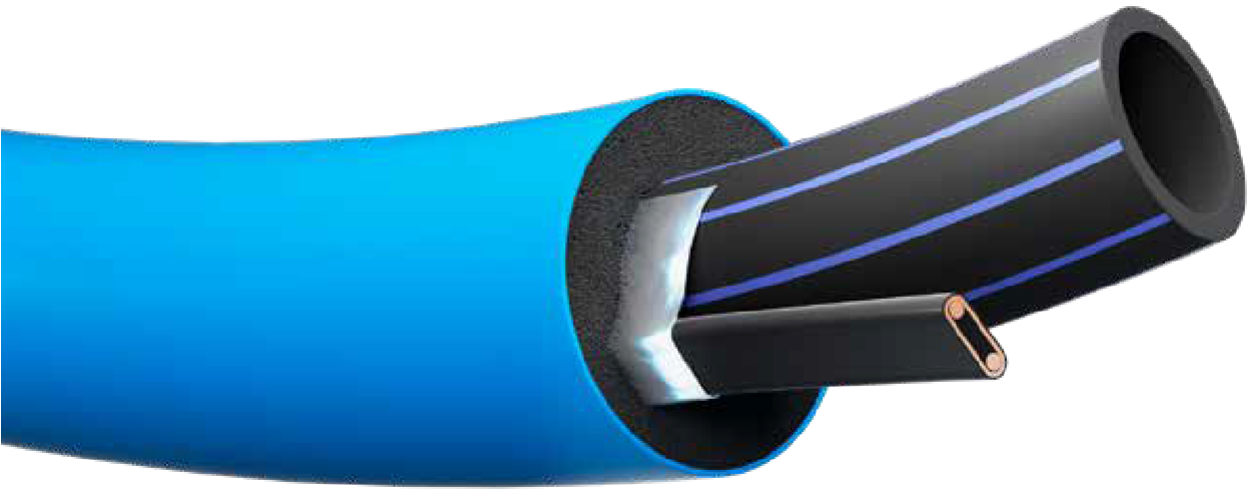
Assembly instructions for

Extena Polarpipe®

General information

Pipe laying instructions

Electrical installation instructions



Version 2021

Contents

General information

Extena Polarpipe® is an insulated water pipe with a heating cable that prevents the water from freezing. This eliminates the need to lay the pipe at a frost-free depth.

Instructions and documentation

The assembly instructions and other attached instructions apply to Extena Polarpipe® with Raychem's self-regulating heating cable system. Read through the instructions before starting the installation. If you have any questions, contact your dealer or Extena (www.extena.com).

Important! For the warranty to be valid, the installation must be carried out according to the instructions provided.

Enclosed instructions

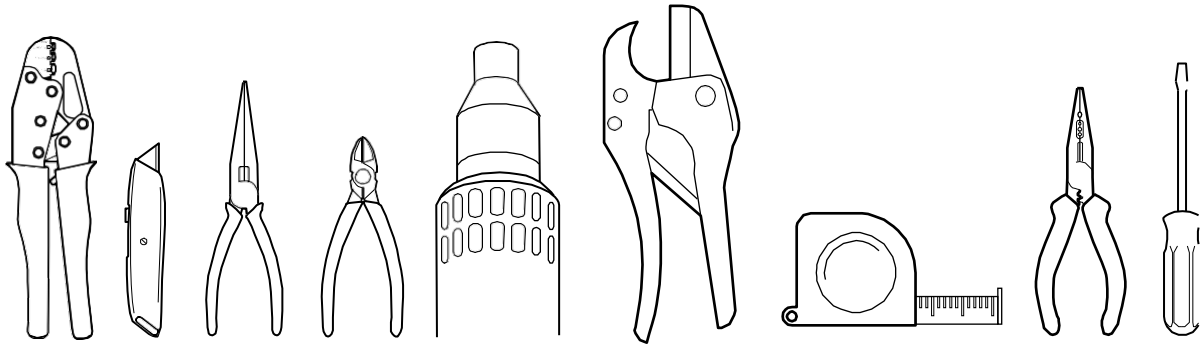
Extena:

- Installation instructions for Polarpipe®
- Instructions for pipelayers
- Instructions for electricians

Raychem:

- Instructions for connecting and terminating heating cables (CCE-03-CR)
- Instructions for jointing heating cables (Raychem S-06)

Recommended tools



Storage

- Store the Polarpipe® and heating cable in a clean and dry place within the temperature range -40°C to +60°C.
- Protect the Polarpipe® and heating cable from mechanical damage

Important! The heating cable is supplied with a transport seal. Before commissioning, the termination must be fitted by an authorized installer.
The end of the heating cable must not be exposed to moisture or damp.

Residual current devices (RCD)

30 mA is recommended for all heating cable installations.

Installation test

Resistance test

After installation and before commissioning the heating cable, measure the resistance between the wires and the screen using Megger 2500 VDC (500 VDC minimum). The minimum test value must be 10 Mohm regardless of the length of the heating cable.

Maintenance

Inspections and tests

Visual inspection:

- Visible heating cable and insulation should be checked at regular intervals for possible damage.
- Function tests for RCDs, thermostats and fuse checks should be performed at regular intervals.

Procedure for repairs

- Disconnect the heating cable circuit and protect it from mechanical damage.
- Check installation of the heating cable after pipe repairs and reset the insulation.
- Check the short circuit protection/RCD.

Procedure for damaged heating cables

- Do not repair a damaged heating cable. Remove the damaged section and replace a damaged heating cable immediately with the Raychem jointing kit.
- Any damage to the cable that allows moisture or contamination to enter can cause an earth fault and present a potential fire hazard.
- A heating cable exposed to fire or flame can present a fire hazard if the power is turned on. Take out of operation and replace the damaged part immediately.

Operation

The exposure temperature of the heating cable must not exceed the values specified in the Raychem product sheet. Exceeding the values can permanently damage the cable by reducing performance and service life. Check that the expected exposure temperature is within the specified range. Note that the pipe insulation must be whole and dry to maintain the correct temperature.

Pipe laying instructions

Installation must be performed by an authorized pipelayer/installer.

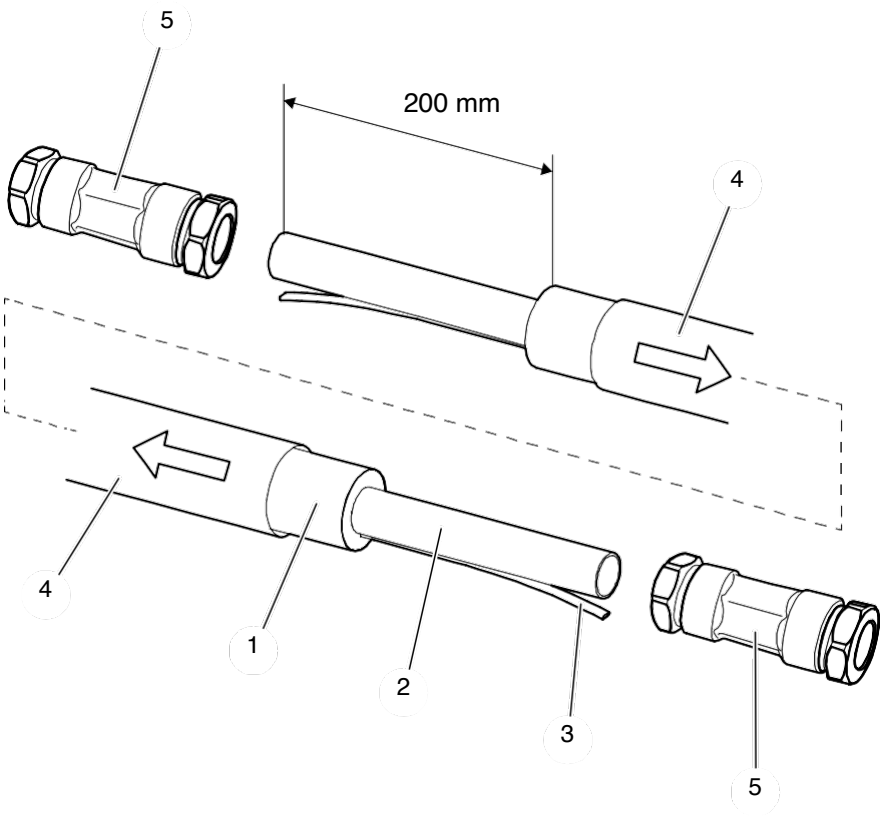
Before installation

Check the heating cable and components for damage arising during storage on site.

Connection and termination

Important! When stripping outer pipes and cutting media pipes, take care not to damage the heating cable.

1. Strip the ends of the outer pipe 200 mm to expose the media pipes and heating cables.
2. Slide the heat shrink sleeves over the outer pipe at both ends.
   NOTE: This must be done before joining the media pipes.
3. Join the media pipes to connecting media pipes with standard PE couplings.

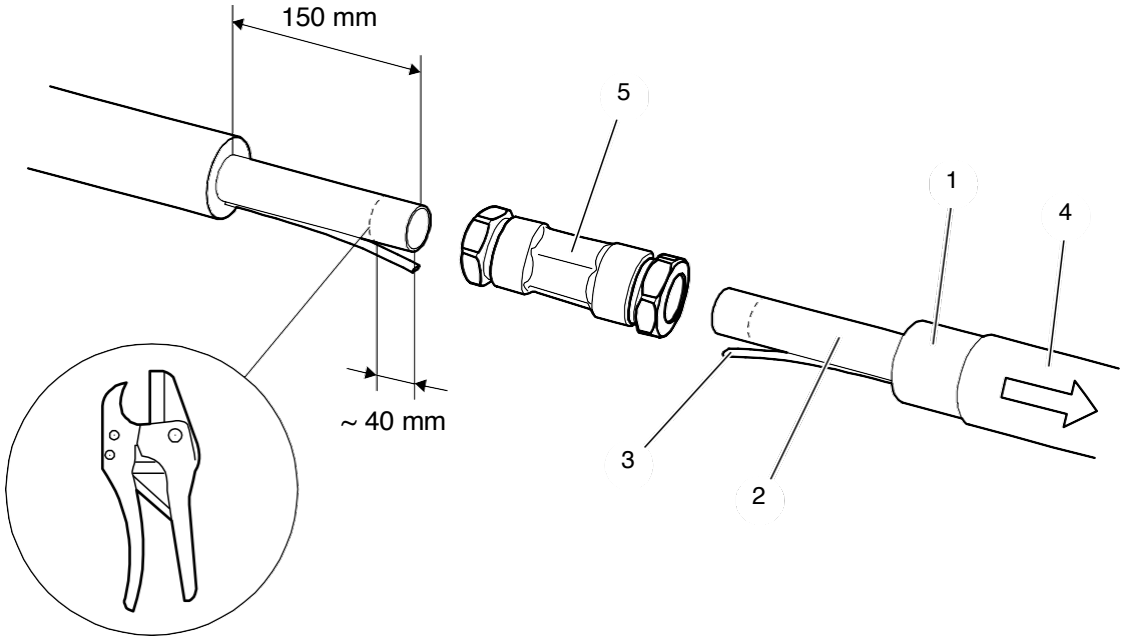


1. Outer pipe/Polarpipe®
2. Media pipe
3. Heating cable
4. Heat shrink sleeve
5. Standard PE coupling

Jointing straight sections

Important! When stripping outer pipes and cutting media pipes, take care not to damage the heating cable.

1. Strip the outer pipes 150 mm to expose the media pipes and heating cables.
2. Slide the heat shrink sleeve over one of the outer pipes.
3. Cut the media pipes at approx. 40 mm. Adjust the cut according to the length of the coupling. Do not cut or damage the heating cable.
4. Join the media pipes with standard straight PE couplings.

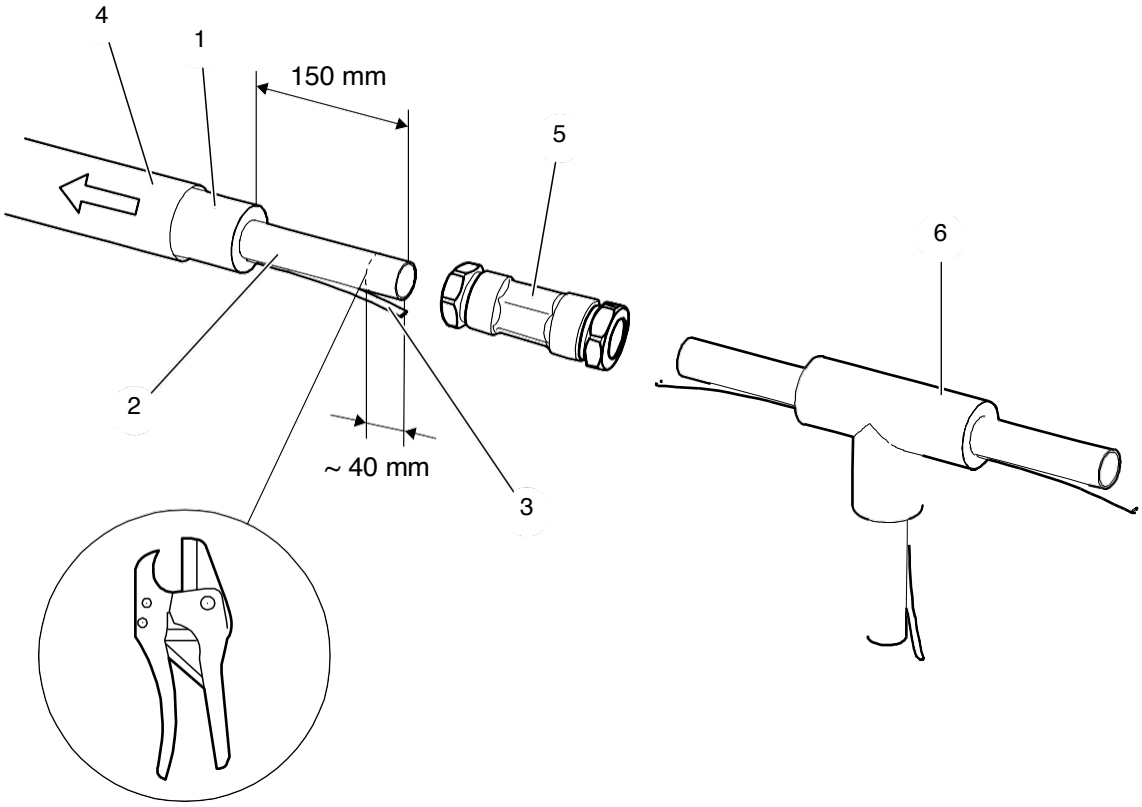


1. Outer pipe/Polarpipe®
2. Media pipe
3. Heating cable
4. Heat shrink sleeve
5. Standard PE coupling

Jointing branch sections

Important! When stripping outer pipes and cutting media pipes, take care not to damage the heating cable.

1. Strip the outer pipes 150 mm to expose the media pipes and heating cables.
2. Slide the heat shrink sleeves over all three outer pipes.
3. Cut the media pipes at approx. 40 mm. Adjust the cut according to the length of the coupling. Do not cut or damage the heating cable.
4. Join the media pipes and branch section with standard straight PE couplings.



1. Outer pipe/Polarpipe®
2. Media pipe
3. Heating cable
4. Heat shrink sleeve
5. Standard PE coupling
6. Branch section

Electrical installation instructions

Installation must be performed by an authorized electrician.

Safety

Electrical installations

- Damaged or improperly installed electrical components and cables can cause electrical arcing, short circuits and fire hazard.
- Do not connect the wires to each other. This will cause a direct short circuit.
- Each unconnected heating cable end must be terminated with Raychem's approved termination kit.

Before installation

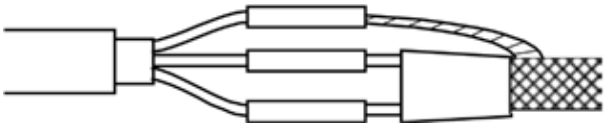
- Check the heating cable and components for damage arising during storage on site.
- Check that the rated voltage of the heating cable matches the mains voltage.

Fuse dimensioning at start-up

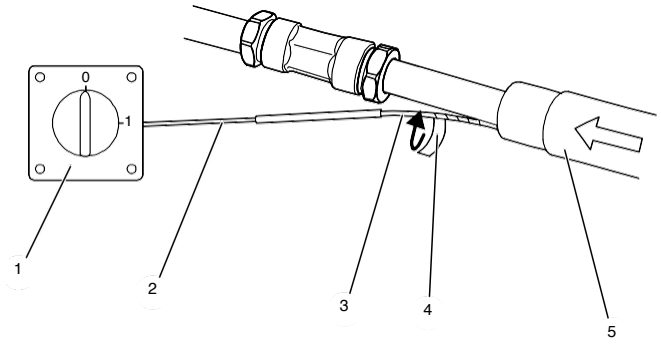
Fuse (AT)	-10°C
6	40 m
10	60 m
16	100 m
20	150 m

Connection to supply cable

1. Connect the heating cable to the supply cable according to the detailed instruction on pages xx-xx. To connect the thermostat, see the manufacturer's instructions (Raychem Thermostat AT-TS-13).

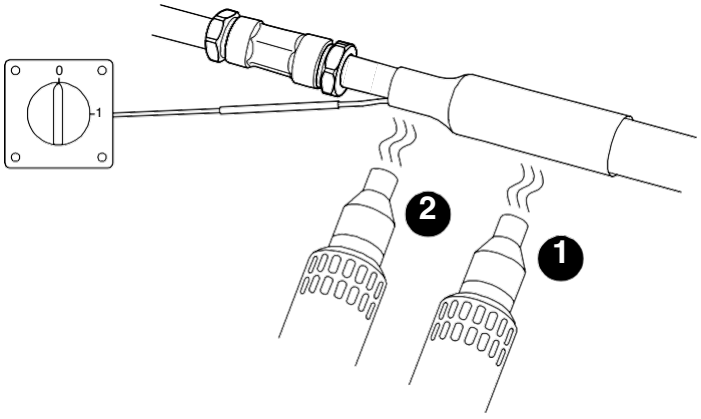


2. Apply mastic around the heating cable.
3. Slide the heat shrink sleeve over the heating cable joint.



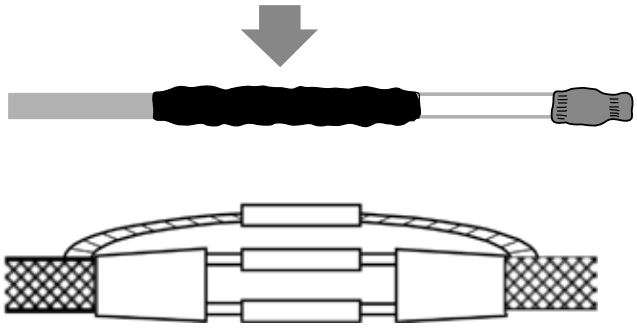
1. Switch
2. Supply cable
3. Heating cable
4. Mastic
5. Heat shrink sleeve

4. Shrink the sleeve at the end that covers the protective pipe. Wait 60 seconds for the heated section to cool then adhere to the sheath of the protective pipe.
5. Shrink the sleeve on the inner pipe and heating cable.

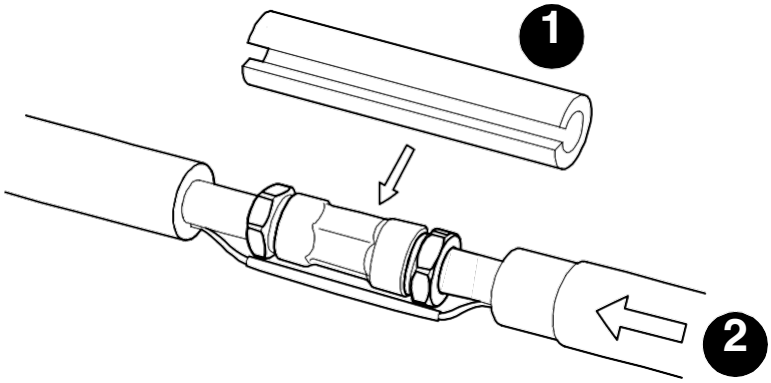


Connecting straight/branch sections

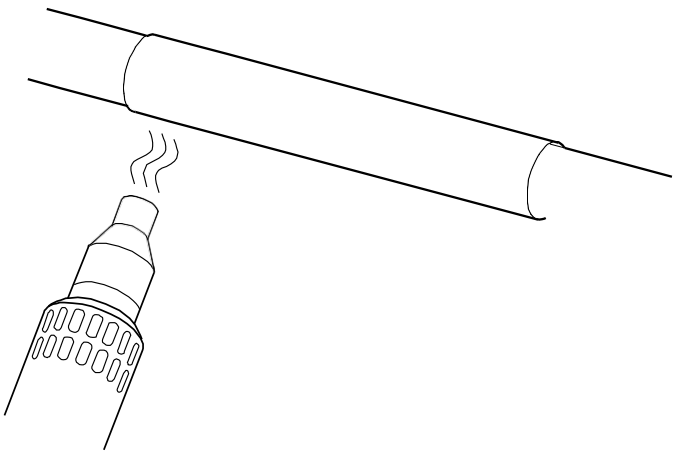
1. Join together the heating cables of the connecting pipes with a standard PE coupling according to the detailed instructions on pages 12-16.



2. Place the insulation over the exposed joint.
3. Slide the heat shrink sleeve over the Polarpipe® joint.

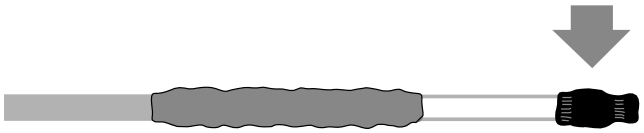


4. Shrink the sleeve at the end that covers the protective pipe. Wait 60 seconds for the heated section to cool then adhere to the sheath of the protective pipe.
5. Shrink the remaining section of the sleeve.

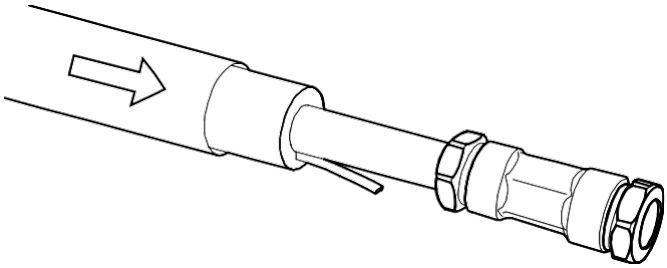


Heater cable termination

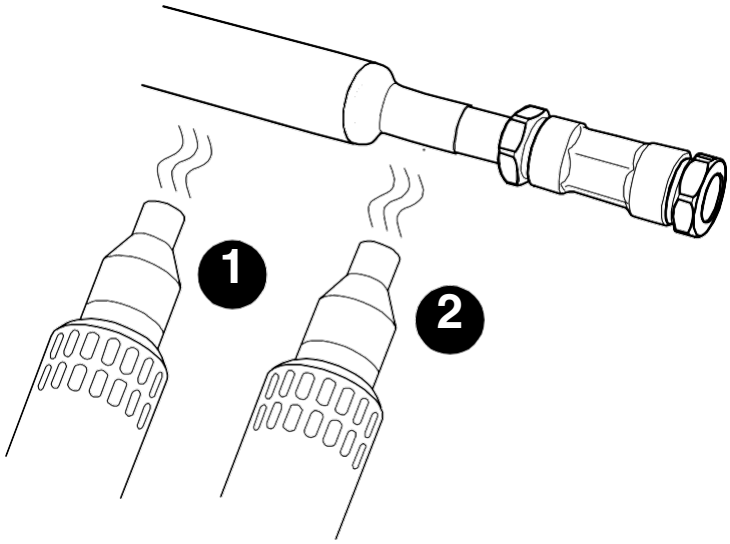
1. Terminate (insulate) the heating cable according to the detailed instructions on pages 17-18.



2. Slide the heat shrink sleeve over the heating cable termination.

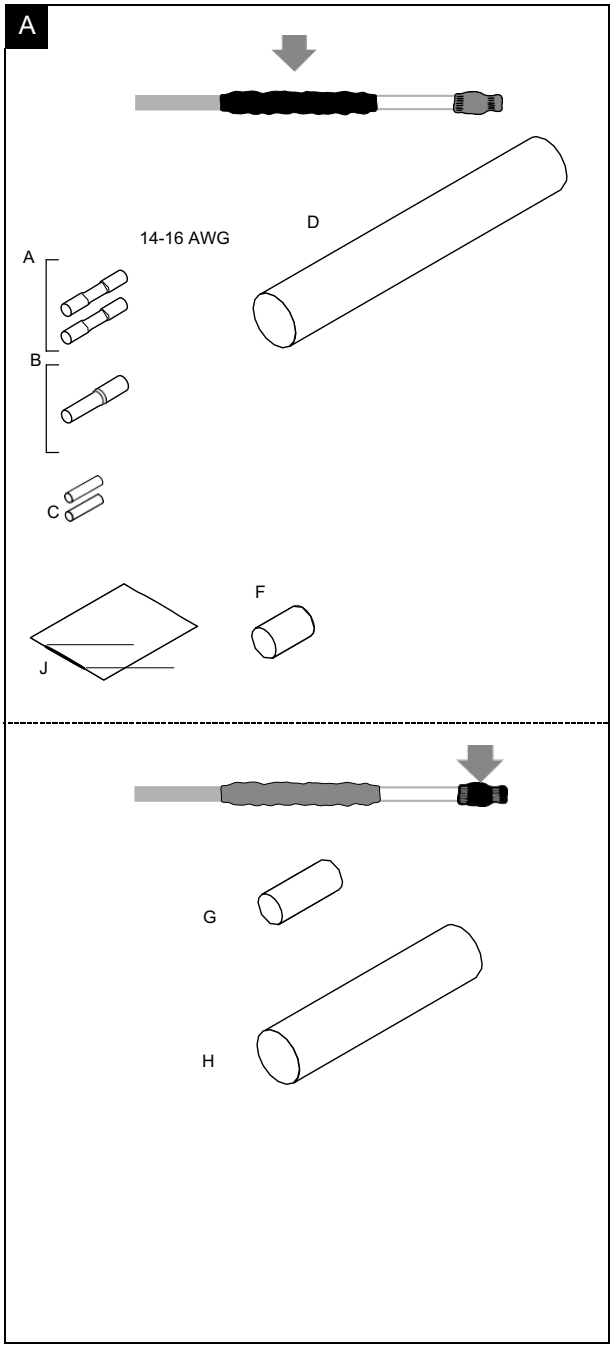


3. Shrink the sleeve at the end that covers the protective pipe. Wait 60 seconds for the heated section to cool then adhere to the sheath of the protective pipe.
4. Shrink the sleeve on the inner pipe and heating cable termination.



Jointing and connecting heating cables

Kit contents



A. Kit contents

A,B	Pressure sleeves
C,D,F	Heat shrink tubing for cold cable
G,H	Heat shrink tubing for end termination
J	Mastic

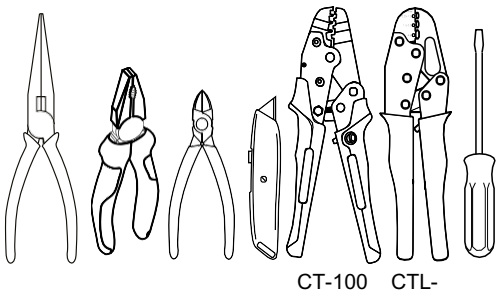
Heating cable:
nVent RAYCHEM CCE-03-CR
Suitable for FroStop

Cold cable:
outer diameter:
6 mm - 11 mm
wire area:
3 x 1.5 mm^2 or 2.5 mm^2

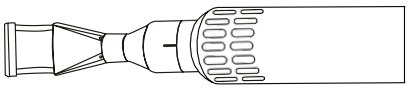
Warning: Make sure that installation takes place under clean, dry conditions and that the heating cable ends are protected against moisture.

Recommended tools

B

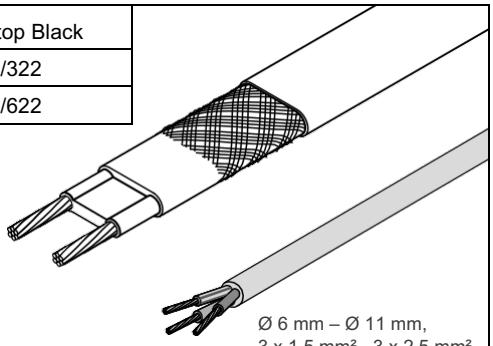


CT-100 CTL-



C

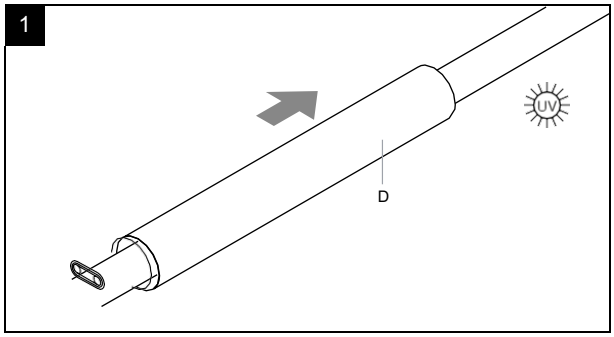
FroStop Black
H312/322
H612/622



Ø 6 mm – Ø 11 mm,
3 x 1.5 mm² - 3 x 2.5 mm²
flame retardant

Jointing heating cables

1



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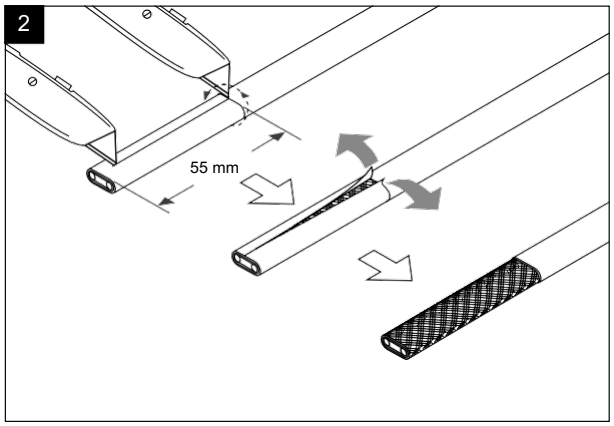

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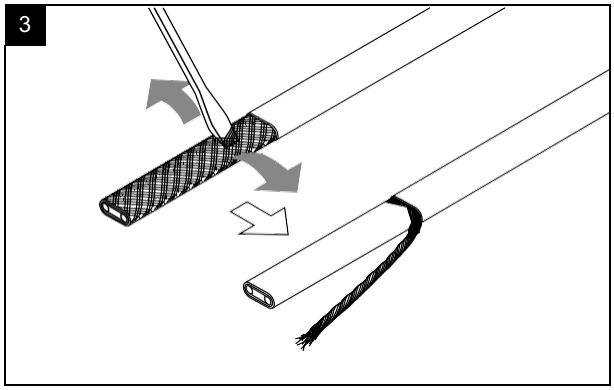

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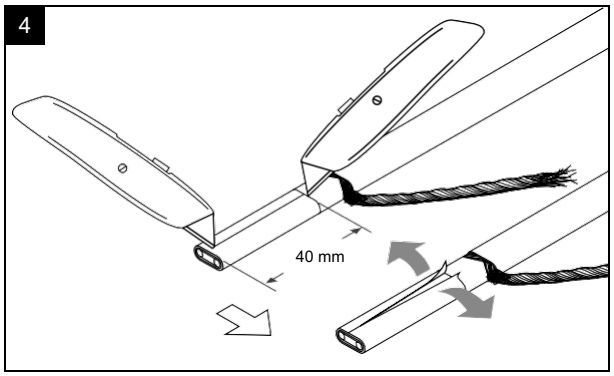

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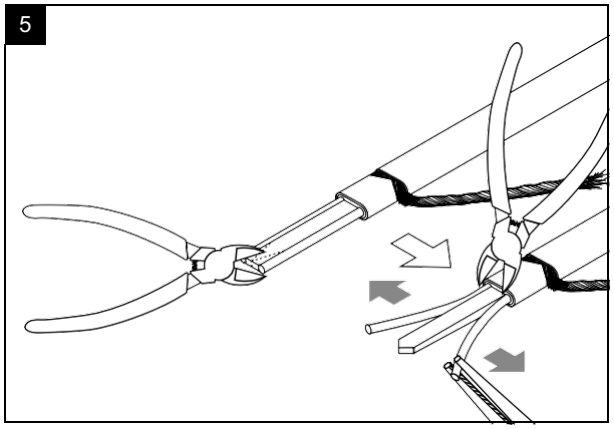

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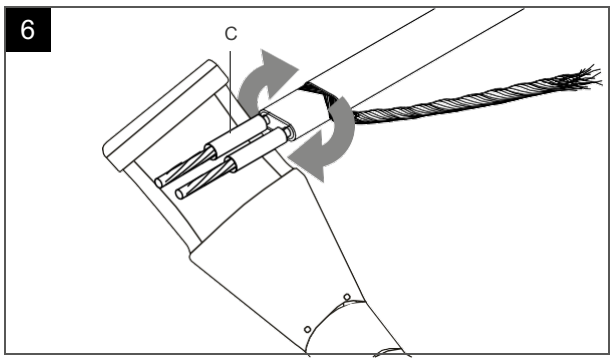

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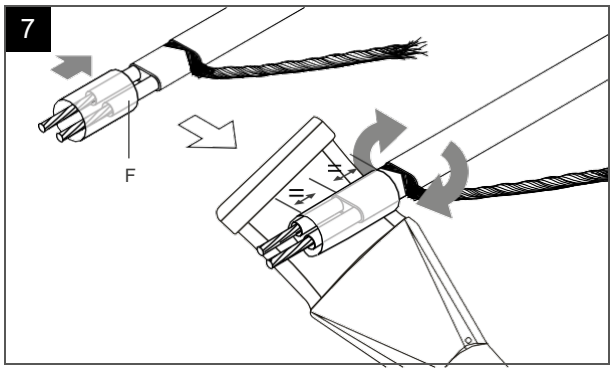

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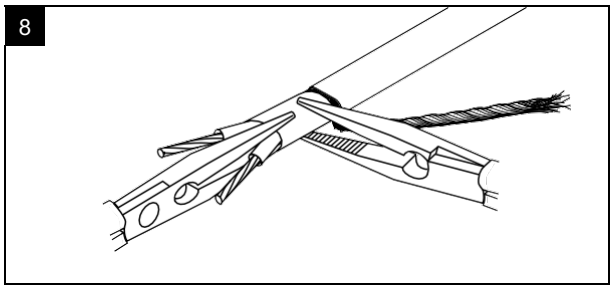

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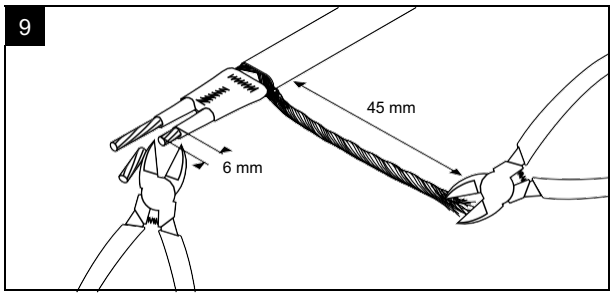

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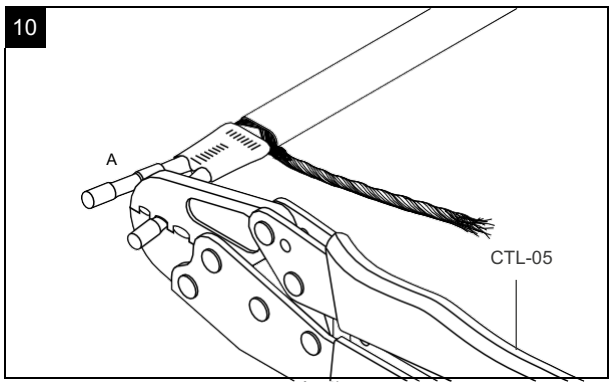

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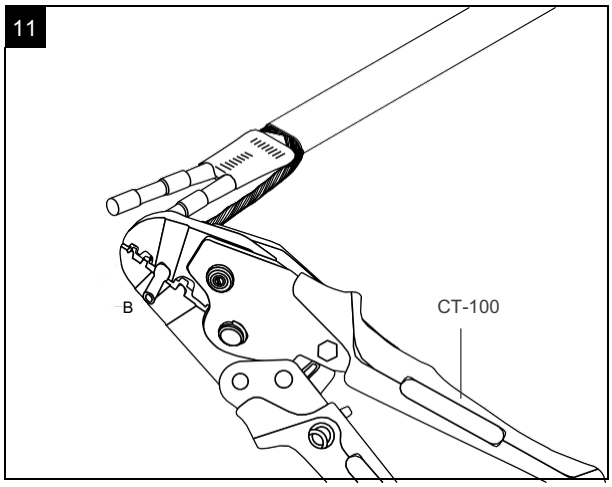

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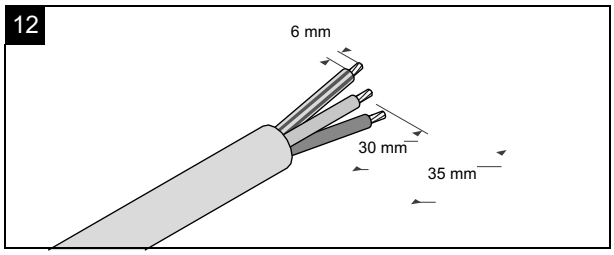

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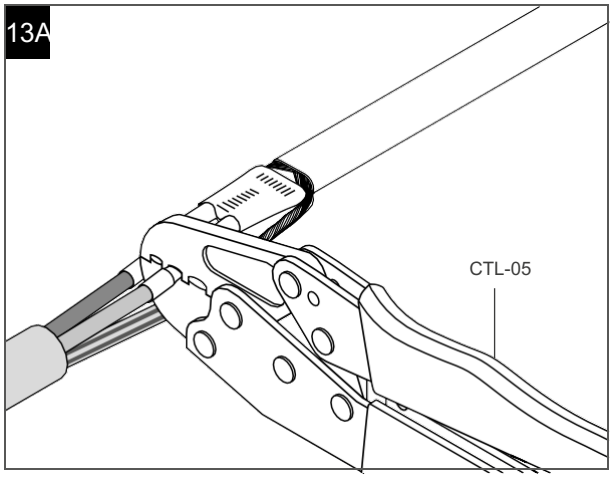

13
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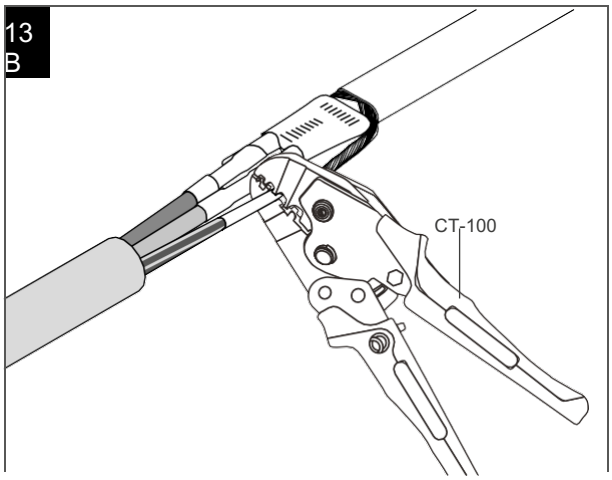

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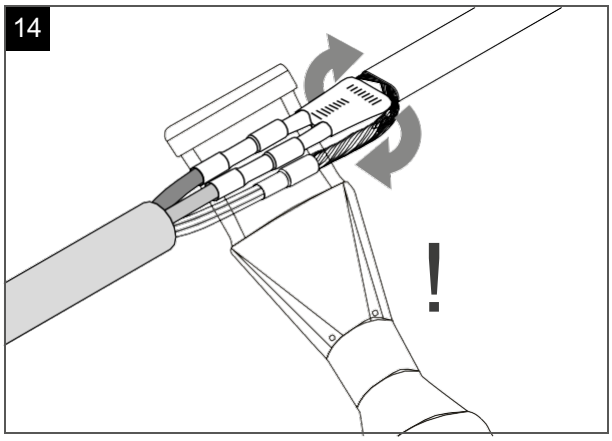

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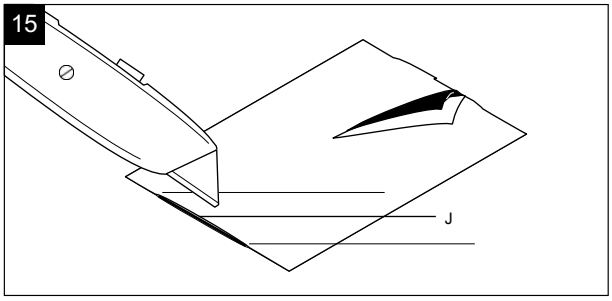

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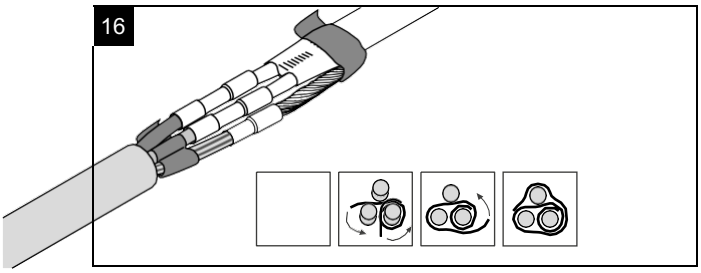

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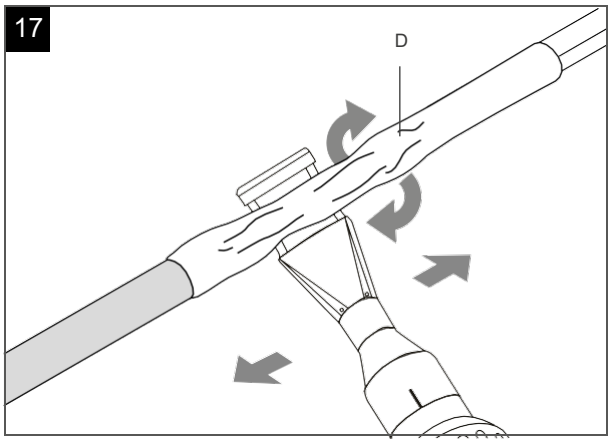

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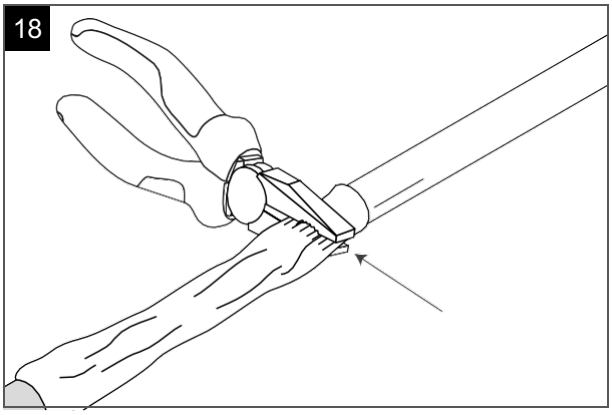
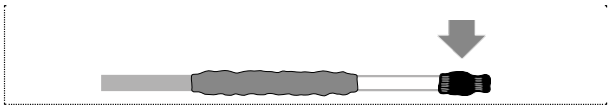


Terminating heating cables



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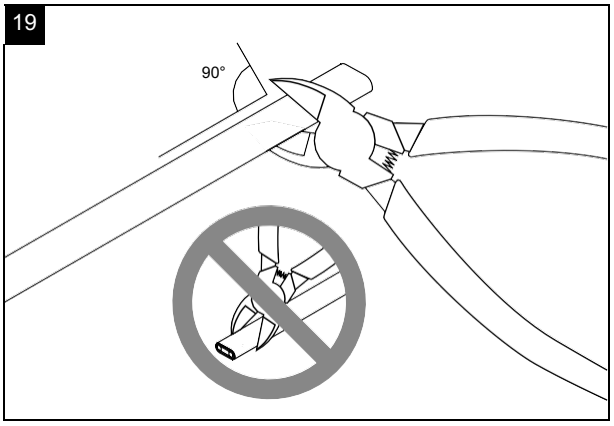

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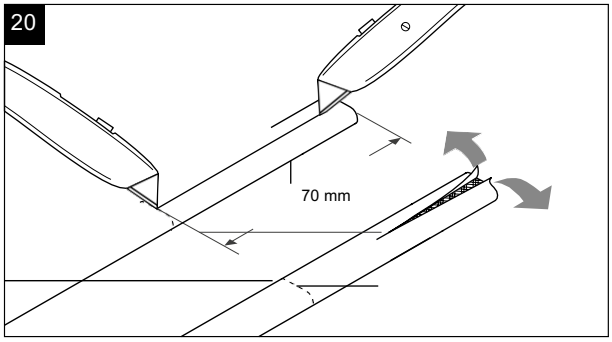

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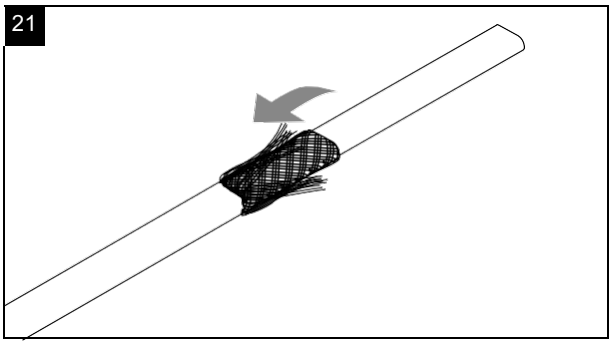

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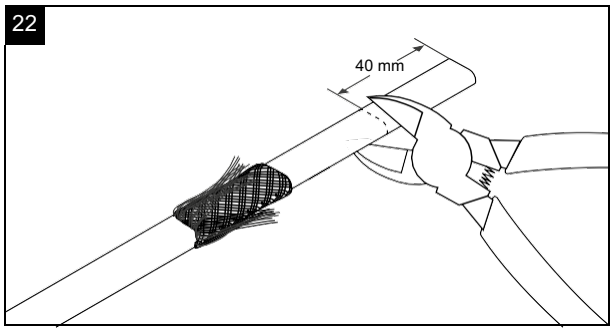

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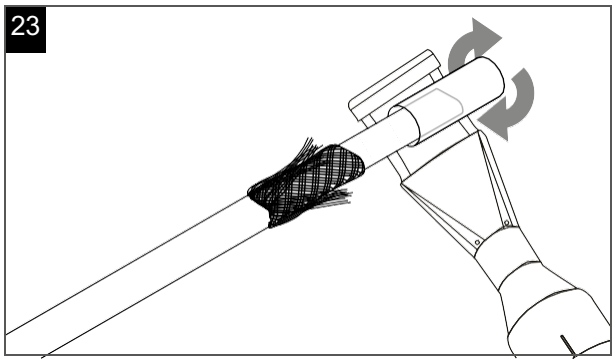

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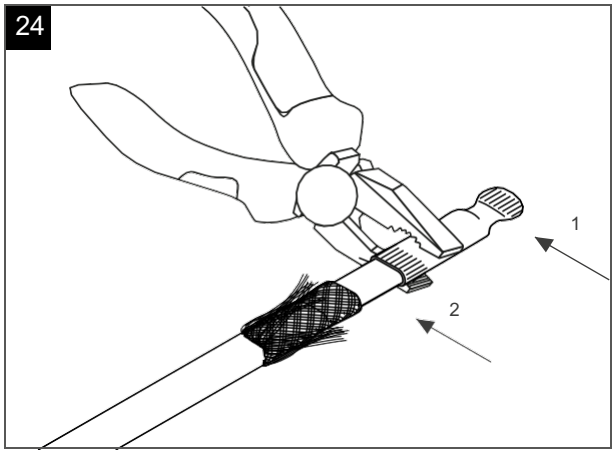

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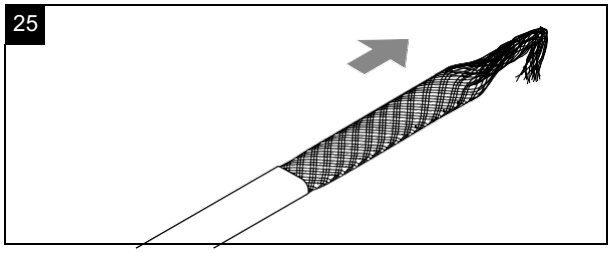

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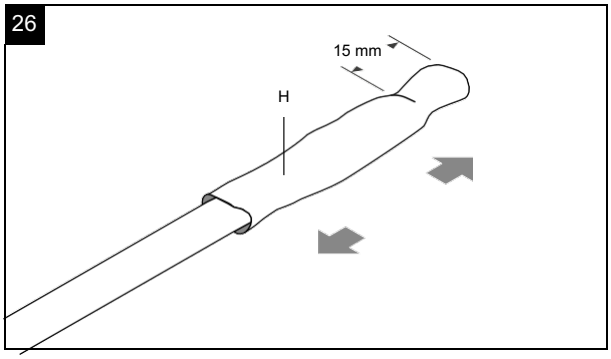

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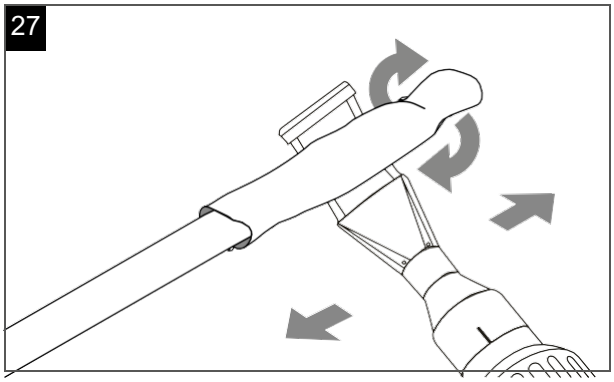

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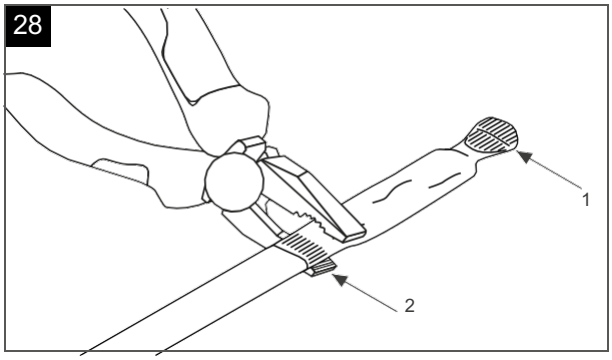
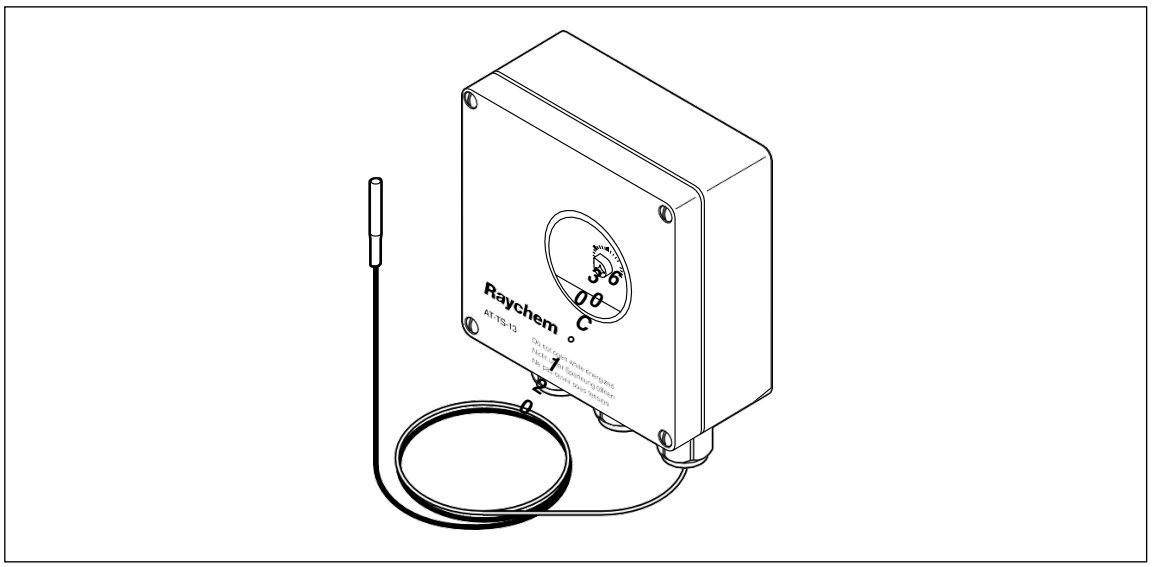


Installation instructions for Thermostat Raychem AT-TS-13 and AT-TS-14

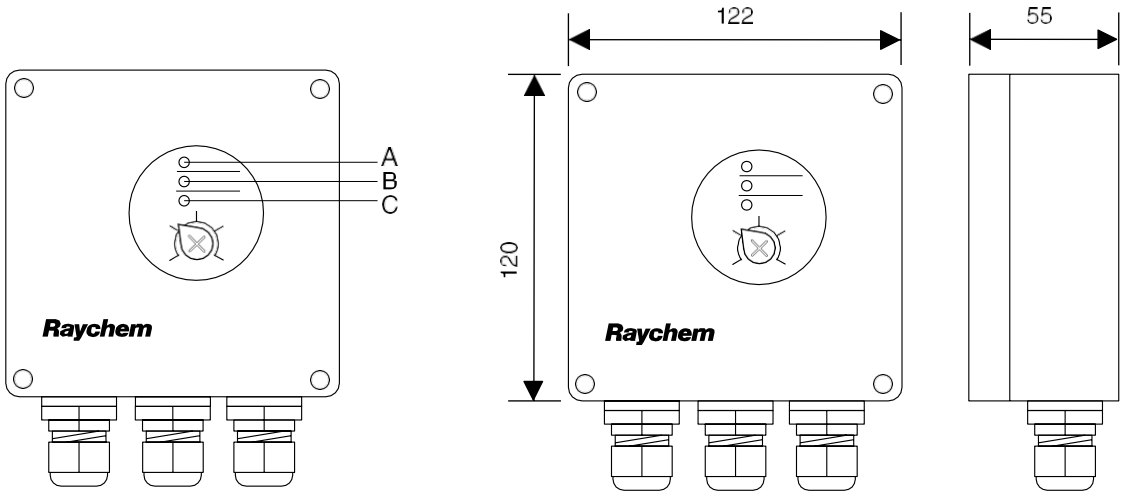
Electronic thermostat with surface sensor

AT-TS thermostats provide temperature control in normal ranges. The target temperature can be checked via a window in the cover.
LEDs indicate when the cables are ON (heating ON) or if the temperature sensor is faulty (open or short circuit). The temperature sensor is 3 metres long and can be shortened for sensing the ambient temperature. The heating cable can be directly connected. Connection kits must be ordered separately. Thermostats are available for 2 temperature ranges.



	AT-TS-13	AT-TS-14
General		
Application range	Ordinary range, outdoors	Ordinary range, outdoors
Supply voltage	230 V +10% –15% 50/60 Hz	230 V +10% –15% 50/60 Hz
Breaking capacity	16 A, 250 VAC	16 A, 250 VAC
Maximum wire area	2.5 mm_2	2.5 mm_2
Switching differential	0.6 K to 1 K	0.6 K to 1 K
Switching accuracy	± 1 K at 5°C (calibration point)	2 K at 60°C (calibration point)
Enclosure	SPST (normally open)	SPST (normally open)
Adjustable temperature range –5°C to +15°C		0°C to +120°C
Enclosure		
Temperature setting	internal	internal
Exposure temperature	–20°C to +50°C	–20°C to +50°C
Enclosure class	IP65 according to EN 60529	IP65 according to EN 60529
Grommets	1 x M20 for supply cable (∅ 8-13 mm) 1 x M25 for heating element (∅ 11-17 mm) 1 x M16 for sensor	1 x M20 for supply cable (∅ 8-13 mm) 1 x M25 for heating element (∅ 11-17 mm) 1 x M16 for sensor
Material	ABS	ABS
Cover locking	nickel-plated quick coupling screws	nickel-plated quick coupling screws
Installation	SB-110 and SB-111 or surface mounting	SB-110 and SB-111 or surface mounting

Dimensions (in mm)

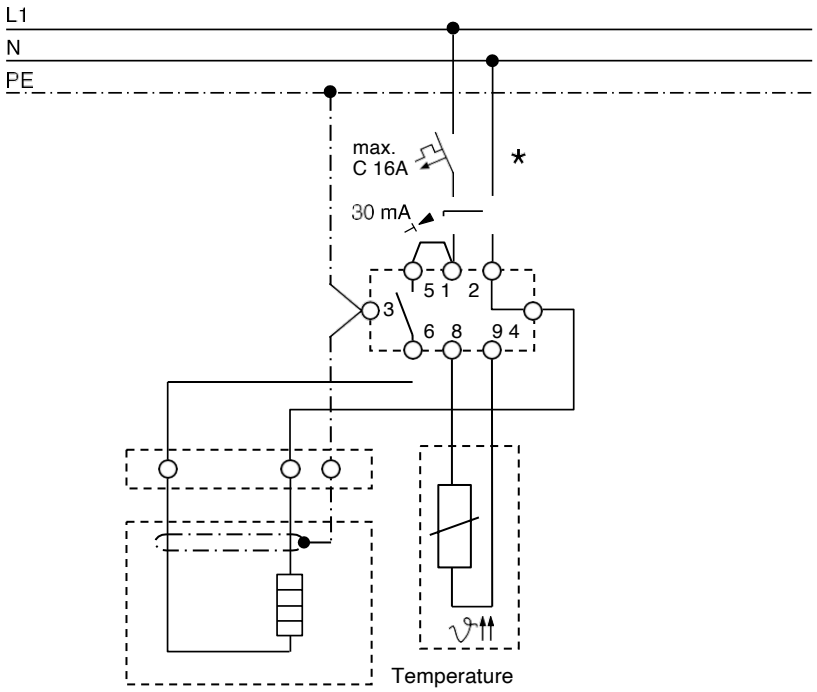


A	Green	LED heating cable ON
B	Red	LED sensor fault
C	Red	LED sensor short circuit

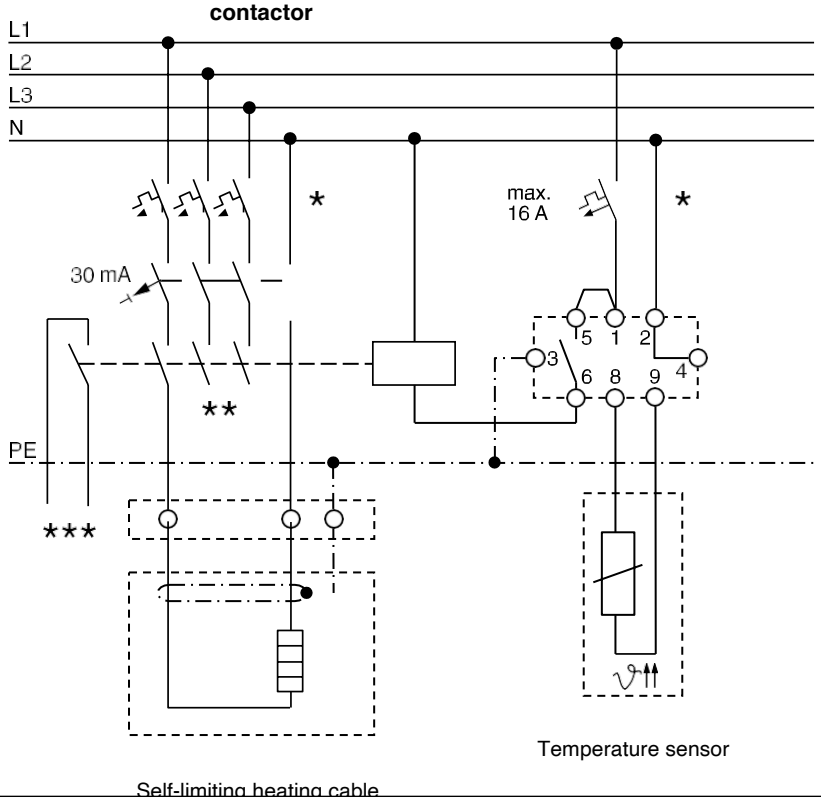
	AT-TS-13	AT-TS-14
Temperature sensor		
Type	PTC KTY 83-110	PTC KTY 83-110
Sensor cable length	3 m	3 m
Sensor cable diameter	5.5 mm	5.5 mm
Sensor head diameter	6.5 mm	6.5 mm
Sensor material	PVC	Silicone
Max. exposure temperature of sensor cable	80°C	160°C
	The sensor cable can be extended to max. 100 m using a 2-wire cable with 1.5 mm_2 cross-sectional area. The sensor cable (HARD-69) must be shielded if it is routed in a cable duct or near high voltage cables. The extension cable shielding must only be earthed at the thermostat end.	
Output parameters		
Alarm on LED	Green LED: Heating cable ON LED: Sensor fault Red LED: Sensor short circuit	Green LED: Heating cable ON Red Red LED: Sensor fault Red LED: Sensor short circuit
ordering details		
Designation	AT-TS-13	AT-TS-14
Order number (and weight)	728129-000 (440 g)	648945-000 (440 g)
Accessories		
PA reduction	Reducer M25 (M) / M20 (F)	Reducer M25 (M) / M20 (F)
Order number	184856-000	184856-000
Extra temperature sensor (AT-TS-13 and AT-TS-14)	HARD-69 (Max. exposure temperature 160°C)	HARD-69
Order number (and weight)	133571-000 (180 g)	133571-000 (180 g)

Wiring diagram for thermostat AT-TS-13 or AT-TS-14

AT-TS-13/14 directly connected heating cable



AT-TS-13/14 heating cable connected via contactor



* 2- or 4-pole fuses may be required, depending on local conditions, standards and regulations.
** Depending on the application, 1- or 3-pole switches or contactors can be used.
*** Option: Potential-free switch for connection to the process or building's overall control system (DVG).

egeplast

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