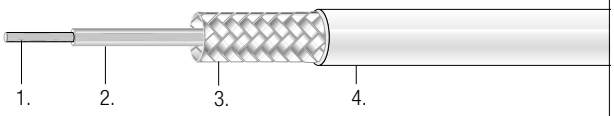
1. Utilisation

The serial heating and cold leads (EKL light) in types 27-582.-5A6A.... form electric resistance trace heating for use for industrial and commercial purposes. They are used for increasing or maintaining temperature or as protection against freezing on pipes, tanks and associated equipment, and they are mounted on these from the outside. These serial heating and cold leads must be used with suitable connection technology.

2. Product description

The serial heating cables are fixed resistance heating cables with the following typical heating cable construction:

1. Resistance heat conductor
2. Insulating jacket
3. Protective braid
4. Outer sheath



The heating cables insulated with synthetic materials are characterised by the fact that their specific heating output depends on the design parameters such as the length of cable laid and the supply voltage.

3. Safety instructions

Marking

Particularly important points in these instructions are marked with a symbol:

DANGER

DANGER draws attention to a danger, which will lead to death or serious injury if it is not avoided.

WARNING

WARNING draws attention to a danger, which can lead to death or serious injury if not avoided.

CAUTION

CAUTION draws attention to a danger, which can lead to an injury if not avoided.

ATTENTION

ATTENTION draws attention to measures to be taken to prevent damage to property.

NOTE

Important instructions and information on effective, economical & environmentally compatible handling.

Safety instructions

- Before commissioning, please check the marking on the heating cable to make sure that it is suitable for the intended application.
- When electric equipment is used, the applicable EC standards and directives, national rules and the respective safety regulations must be observed.
- The installation should be carried out by a qualified electrician who is appropriately trained in handling trace heating.
- All generally applicable statutory rules and other binding directives on workplace safety, accident prevention and environmental protection must be complied with.
- An incorrect installation of the trace heating and the adjoining system parts or damage to the heating cable can cause short-circuiting and the risk of fire during operation.
- CAUTION: Do not use in areas with a high degree of mechanical or impact stress.

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4. Guidelines on handling heating cables

NOTE

Important instructions and information on effective, economical and environmentally compatible handling.

4.1. Storage

- The EKL light must be stored in protected, clean and dry areas.
- It must be ensured that the heating cables are protected from mechanical damage and environmental impacts.
- The storage temperature must be between -60 °C and +60 °C.

4.2. Handling

- The following points must be taken into account when unrolling:
  - Be careful to keep the cable straight when unwinding it from the reel;
  - Avoid excessive pulling;
  - Avoid bending or crushing the cables;
  - Do not tread on the cables or use them as loops for stepping on;
  - To prevent damage to the insulation, particular care must be taken with sharp corners and edges, such as for example on flanges or holding devices.
  - It is not permissible to drive over the cables with vehicles or auxiliary means of transport.
  - To unwind the cable, use a stable device that is suitable for the reel, taking the size and weight of the reel into consideration.
- It is not permissible to have single-core heating cables cross over or be in contact with each other because this can cause the heating cable´s limit temperature and max. permissible operating temperature to be exceeded.
- The minimum bending radius must be observed.

5. Mounting and Installation

NOTE

Important instructions and information on effective, economical and environmentally compatible handling.

5.1. Installation instructions

- The surface of the pipe must be dry and clean.
- Check the intended operating voltage.
- The minimum installation temperature must be observed.
- The leads may not be painted over.
- The minimum bending radius must be observed.
- The minimum installation spacing must be observed.

CAUTION

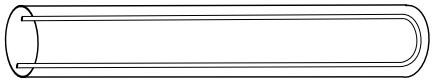
When installing serial resistance heating cables, make sure that they do not cross over or touch each other as they could then overheat or cause fires.

5.2. Inspection before Mounting

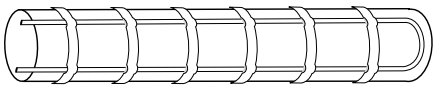
- Before starting to install the heating cable, measure the insulation resistance.
- On the basis of the resistance measurement, check if the supplied heating cable is suitable for the project planning.

5.3. Installing the Heating Cable

Depending on conditions, the heating cable can be placed longitudinally along the object to be heated or wound spirally around it. The heat will be conducted better if the heating cable is laid longitudinally along the pipe.

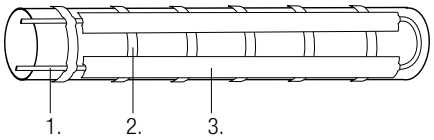


The heating cable must be attached to the pipe with temperature-resistant adhesive tape or plastic cable ties at least every 200 mm.



When selecting the right fastening means, please bear the following in mind:

- It is preferable to use BARTEC self-adhesive tape/cable ties to fasten the heating cables.
- When using adhesive tapes/cable ties, make sure that there is adequate resistance to temperatures and to chemical influences.
- Do not use any metal fastenings that are not suitable for this fastening purpose.
- To improve the transmission and distribution of heat, aluminium adhesive tape or aluminium foil should be provided under and over the heating cable when heating plastic pipes.



1. Heating cable
2. Adhesive tape
3. Aluminium adhesive tape

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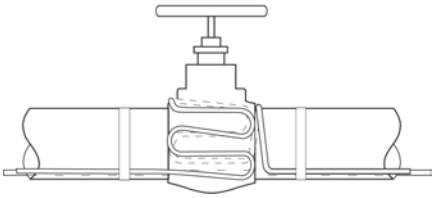
5.4. Installation on fittings, flanges and pumps

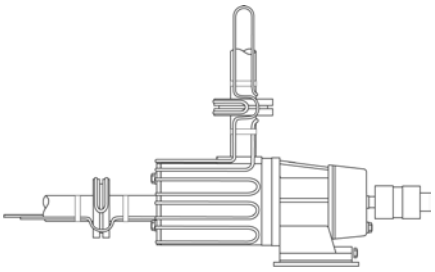
- When installing the heating cables, always make sure the permissible bending radius is observed!
- Always install heating cables at fittings, valves etc. in a way that ensures that they can be easily accessed and replaced during maintenance and repair work and that heating circuits do not need to be cut up. This is best achieved by having a sufficiently large heating cable loop.
- The higher heat losses at fittings, valves etc. increase the length of heating cable required. This additional requirement can be found in the project planning specifications.
- The heating cables should be mounted so that they are in as close contact as possible with the surface that is to be heated. Where such contact is not possible, for example on valves, suitable heat conducting cladding made of temperature-resistant metal foil or other heat conducting materials may be used.
- Typical types of installation can be found in the following illustrations

Installation on valves

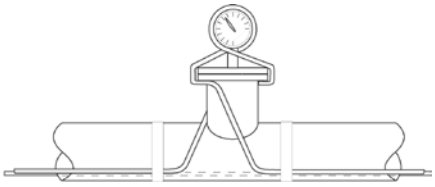


Installation on supports

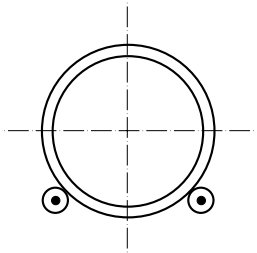
Installation on pumps



Installation on pressure gauges



5.5. Stretched Installation



When laying two cables, lay them at about the “half-past four” and “half-past seven” positions on the pipe (sketch 1).

When installing on horizontal pipes, do not lay the heating cable at the lowest point .

5.6. Installation

⚠ CAUTION

Disconnect all circuits before starting any installation or maintenance work. To switch off, all external conductors, i.e. including the neutral conductor, must be disconnected from the power supply. It is essential to observe the marking on the heating cable.

ⓘ NOTE

- Visually inspect the reels for transport damage and dirt. Make sure that the marking on the cables agrees with the marking on the reel.

  Before and during installation: Keep the heating cable and cold lead ends and also the trace heating connection components dry. Cable ends that are not connected must be closed off in the field using a suitable end termination.
- As a basic rule, the resistance heating cable must be attached to the workpiece to be heated with mechanical and temperature stability in order to ensure a secure thermal coupling. This should be done with the aid of a suitably temperature-resistant adhesive tape (e.g. aluminium adhesive tape) or similar materials.
- The object provided with trace heating (work piece, plant part) must be clearly marked as such once the thermal insulation has been installed by affixing warnings and markings at suitable points and/or at regular intervals along the heating circuit.

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6. Electric protective equipment

⚠ CAUTION

6.1. Overcurrent Protective Device

- For overcurrent protection, please use only automatic circuit breakers which comply with the project planning and the technical documentation from BARTEC. Deviations from this can lead to false trippings of the circuit breakers and impair the effectiveness of the overcurrent protection.
- If fuses other than those specified in the project planning and technical documents from BARTEC are used, please consult your BARTEC technical office.

6.2. Residual-current circuit-breaker

- A residual-current circuit-breaker is required for each circuit.

7. Electrical Connection

⚠ CAUTION

- Observe the nominal voltage in accordance with the marking on the heating cable.
- Operate the respective heating cables exclusively with the nominal voltage intended for it, which was determined by the heating circuit design.
- To connect the cold leads to heating cables or to extend the heating cables, use only the connection technology that is suitable for that purpose.
- The metallic protective braid on the trace heating system must be connected to a suitable earthing connection.
- To connect the cold leads to external circuits, use cable entries, enclosures and connection-parts that are suitable for the respective application and have been installed correctly.

8. Inspection and Commissioning

⚠ CAUTION

After installing the trace heating and also after installing the thermal insulation, the following inspections must be conducted and recorded in a test report. This test data must be submitted whenever a complaint is made.

8.1. Measurement of the insulation resistance

- This test procedure serves to establish if there is any damage to the heating cable and any errors have been made when installing connections or links.
- An insulation tester with a minimum test voltage of DC 1000 V and a maximum test voltage of DC 2500 V is used. The insulation resistance should be at least 20 MΩ (in conformance to EN 62395-1) for each heating circuit, irrespective of length.
- Performing the measurement:
  - The measurements are taken between the heating conductor and the protective braid.
  - Another measurement is taken between the protective braid and the earthed piping.

8.2. Inspection of the electric protective equipment

It is important to make sure that the requirements for protecting external circuits are fulfilled. See the Chapter on “Electric Protective Equipment” in these instructions.

8.3. Checking the design data

After switching on, it is important to check the design data which were specified when the trace heating system was designed, such as applied voltage, the levels of current that arise and the pipe temperature must be checked with the methods and devices appropriate for that purpose.

9. Operation, Maintenance, Upkeep

The operator of an electric system must keep the operating equipment in an orderly condition, operate it correctly, monitor it and do the required maintenance and repairs. Each piece of electric equipment must be selected for its suitability for use in the respective area.

Before starting operation again, check conformance to the applicable laws and directives. The specified safety instructions must be observed before starting maintenance work or fault clearance.

9.1. Fault location

Special fault location procedures are helpful for the detection of faults in electric trace heating systems installed under the thermal insulation. For that purpose, the engineer planning the electric trace heating systems should be consulted. Faults are often caused by mechanical damage, corrosion, overheating or the penetration of moisture. The inspections required before commissioning should be repeated as a basis for fault location.

9.2. Repairs, Servicing

These operating instructions must be observed when conducting repairs on the heating and cold leads. Short cold or heating cables should be replaced completely after evaluation on site. To replace heating cable pieces, suitable connection techniques must be used. The new piece of cable must be of exactly the same type and resistance level as that of the damaged lead.

10.1. Technical Data

Working temperature	-60 °C to +260 °C
min. installation temperature	-60 °C
Nominal voltage	500 V
Mechanical strength	4 joules
min. bending radius	5x outer diameter
min. installation spacing	20 mm

10.2. Marking

The heating cables are marked as follows:

BARTEC BENKE GmbH / 94239 Gotteszell / Germany / Type <<BARTEC Type>> / <<Rated resistance>> Ω/km / 500 V / <<Serial number>> / See instructions / <<length in metres>> /

Example:
BARTEC BENKE GmbH / 94239 Gotteszell / Germany / Type 27-5822-5A6A0100 / 100 Ω / km / 500 V / CL23-3Y2A / See instructions / 00105 m /

The year of manufacturing is a part of the serial number and is printed on the heating cable.
The first two numbers of the serial number mark the year of manufacturing.
Example: "CL23 = year of manufacturing 2023"

11. Applied Standards

Electrical Safety: EN 62395-1:2013

12. Service address

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Germany

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94239 Gotteszell

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EU Konformitätserklärung
EU Declaration of Conformity
Déclaration UE de conformité

BARTEC

№ 21-5820-7C0002-B

Wir	We	Nous
	BARTEC BENKE GmbH Schulstraße 20 94239 Gotteszell Germany	
erklären in alleiniger Verantwortung, dass das Produkt **EKL light** **Polymerisolierte Seriell-Widerstandsheizkabel**	declare under our sole responsibility that the product **EKL light** **Polymer-insulated serial resistance heating cables**	attestons sous notre seule responsabilité que le produit **EKL light** **Câbles chauffants à résistance sérielle isolés au polymère**
	Typ 27-582*-5A6A/**	
auf das sich diese Erklärung bezieht den Anforderungen der folgenden **Richtlinien (RL)** entspricht **NS-Richtlinie 2014/35/EU** **RoHS-Richtlinie 2011/65/EU**	to which this declaration relates is in accordance with the provision of the following **directives (D)** **LV -Directive 2014/35/EU** **RoHS-Directive 2011/65/EU**	se référant à cette attestation correspond aux dispositions des **directives (D)** suivantes **Directive BT 2014/35/UE** **Directive RoHS 2011/65/UE**
und mit folgenden Normen oder normativen Dokumenten übereinstimmt	and is in conformity with the following standards or other normative documents	et est conforme aux normes ou documents normatifs ci-dessous
	EN 62395-1 : 2013	
Verfahren der internen Fertigungskontrolle	**Procedure of internal control of production**	**Procédure de contrôle interne de fabrication**

CE

Bad Mergentheim, 23.07.2026

i.V.
i.V. Michael Wittmann
Head of Product Management
Business Unit EHT

i.V. Jürgen Blau
Certification Manager
Business Unit EHT