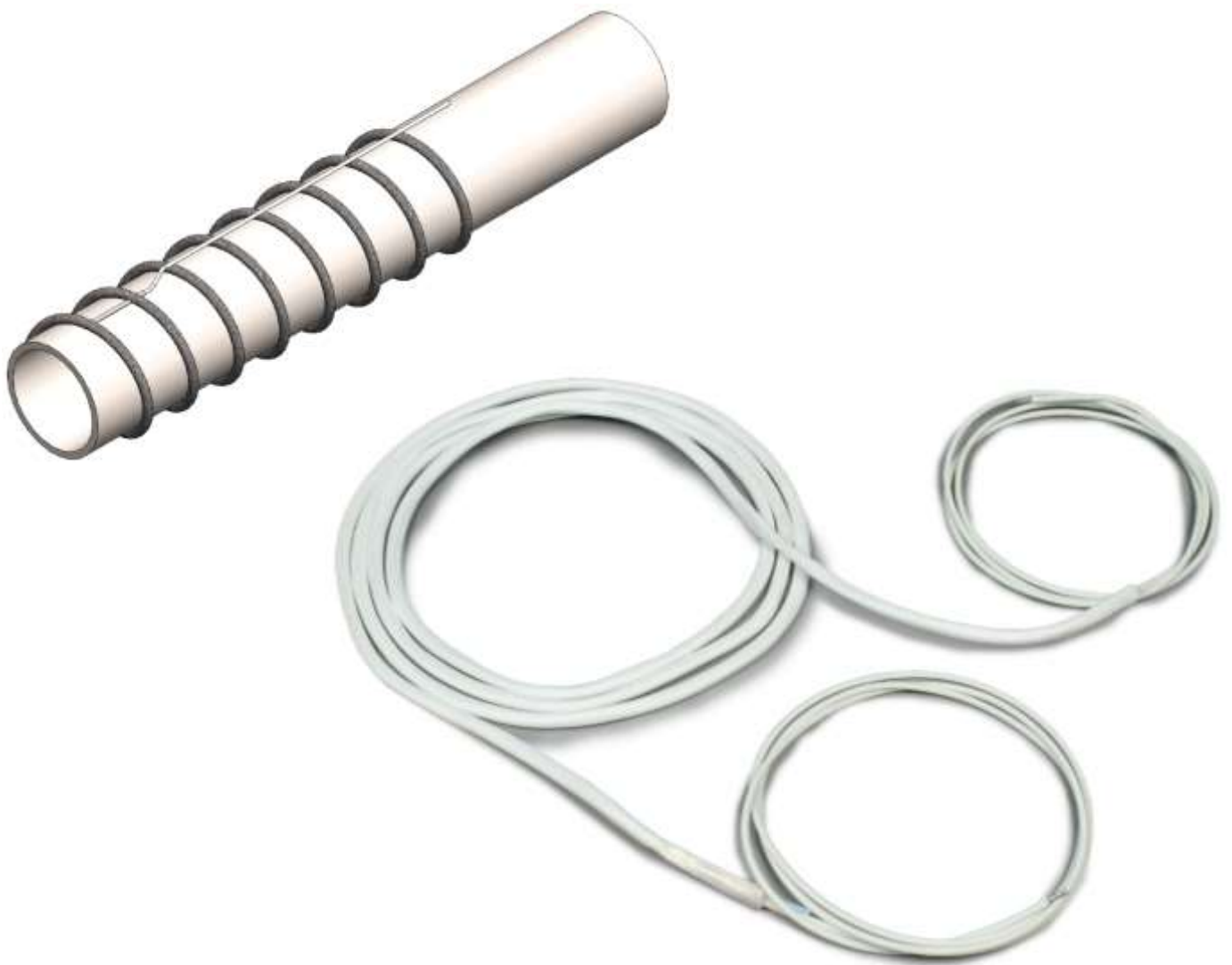




winkler

Instructions for installation and operation

Flexible industrial heating cords series **WKQ...**



**Important safety information for using industrial heating cords**

Please read the assembly instructions/operating instructions very carefully before using the heating cords. Observe the information on the nameplate and any warnings on the product. The assembly instructions/operating instructions are an important part of the product. It must be available to every user during use/operation. Keep the assembly instructions/operating instructions in a safe place for later use of the product. The persons commissioned with the installation and operation must have the appropriate professional competence.

The heating cords are used in an area where special operating regulations apply and requirements must be met. Please take note of this and inform yourself in advance about the provisions and regulations so that you can guarantee perfect, intended operation.

If you have any questions, you can contact us at any time using the contact details (Chapter 9. Contact). We would be happy to advise you and provide assistance for the safe and proper operation of our industrial heating cords.

Heating cords are electrical devices

In order to prevent dangers from the electric current, a regular check or maintenance of the heating cords according to the currently applicable rules of technology (VDE / DGUV V3 / ...) is necessary and to documented.



A residual current circuit breaker of 30 mA must be provided for safe operation. Its function must be checked before commissioning and at regular intervals.

Additional safety information

In the event of obvious damage, the heating cords must be taken out of operation immediately and may no longer be used.

Possible causes:

- Mechanical damage to the outer or inner jacket due to external forces.

Avoid overheating the heating cords. Observe the minimum and maximum operating temperatures and never fall below or exceed them. The resulting overheating can occur in a variety of ways. Please convince yourself in advance of the operating and environmental conditions and monitor the first heating processes.

Monitored operation with suitable temperature controllers and / or temperature limiters (e.g. WRW510SW / WRT560SW / WRT570SW / WRW00220-UNIXW00K / WRWB0220UNIWW00K) is a prerequisite for the correct operation of the heating cords.

Guidelines and regulations

The following guidelines and regulations were taken into account in the design, production and inspection of the heating cords:

Low Voltage Directive 2014/35/EU from 26.02.2014

Electromagnetic Compatibility Directive 2014/30/EU from 26.02.2014

EU Directive 2011/65/EU RoHS Directive

EN 60519-1 / -2 (VDE0721-1) Safety in Electro Heat Installations

EN 60398 (VDE0721-50) Industrial Electro Heat Installations

DIN VDE 0100-600 Testing

DIN VDE 0701-0702 Recurrent Tests

With your WINKLER heater you have purchased a high-quality product that can be used successfully in your application, taking into account relevant standards and regulations. We are constantly optimizing our products so that they work to your satisfaction and meet the desired requirements. In principle, installation and intended operation must be carried out in accordance with the applicable regulations for electrical heating (VDE) and the recognized rules of technology (DIN, accident prevention regulations UVV).



The heating cords may only be installed by instructed persons with the appropriate specialist knowledge and following the installation instructions below and used in accordance with the operating instructions.

Improper operation of the heating cords can cause damage and void the warranty.

If you have any questions, please contact us in good time (chapter 9). We will be pleased to help you.

In the following, the heating cords are simply referred to as heater.

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1 General information / checking the heater

The heater must comply with its intended use. Before installing the heater, check that the information on the type plate matches your order details.

- Are the details on the nameplate identical to your order data (mains voltage, power, type, max. Operating temperature etc.)?
- Is the heater well against the body to be heated?
- Have measures been taken against excessive temperatures?
- Is the temperature sensor placed in the hottest place?
- Has it been ensured that the heater can be quickly disconnected from the mains in the event of danger?

Basically, the heater is suitable for a variety of applications. If the heater is specially designed for a specific application which changes over time, the user must obtain information about the other areas of application and application from the manufacturer. The heater should be protected from chemical, mechanical and aggressive environmental conditions, as this can lead to damage and thus endanger safe and proper operation.



The maximum operating temperatures are specified on the type plate. These must not be exceeded at any point in the heater.

Use suitable temperature controllers (e.g. WRW510SW / WRT560SW / WRT570SW / WRW00220-UNIXW00K / WRWB0220UNIWW00K).

2 Set up of the heater

Heaters in series WKQ... is very flexible as regards their set-up and can be used for high power requirements up to 175 W/m. It is not protected against moisture.

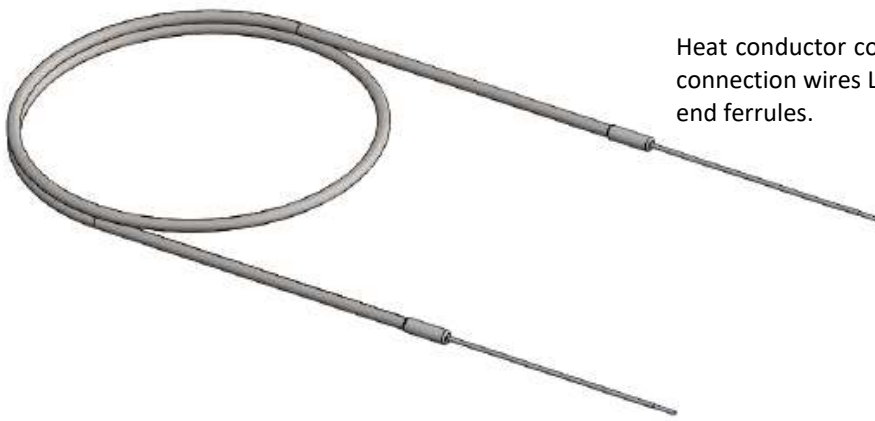


Attention: The heaters may be used only in dry rooms where electrical safety measures have been taken. When it is connected to terminals, the 1000 mm connection cable can be operated without any further installation measures.



Due to the high power output, temperature control is absolutely necessary! Fields of application are in laboratories, pilot plants and industry, if high power concentrations require rapid heating or high temperatures up to max. 900 °C have to be reached.

Series WKQ



Heat conductor covered with 1-fold silicate hose, connection wires LL = 1 m on both sides with wire end ferrules.

3 Area of use / electrical connection

The standard supply voltage is 230 V. Other voltages are available on request. The voltage shown on the type plate is binding and must be observed. According to DIN VDE 0100, electrical safety precautions must be implemented. The standard power cable is 1000 mm long with wire-end sleeves. Power connection cables (supply grid) must be dimensioned according to the size of the fuse and the maximum permissible voltage drop. The cross section of the connection cable must be dimensioned in accordance with the power consumption according to VDE 0100. However, a minimum cross section of 0.75 mm² is required.

This requirement applies to all connection cables of temperature controllers. If the heater has an earth wire, this must be included in the protective measure (earth wire to be placed on PE wire).

Because of the heater design in series WKQ (no earth braiding around the heat conductor), this must be protected against external influences and damage with suitable means (this must also be included in the protective measures).



The electrical connection of the heater must be made via a RCD safety plug (FI) (IF < 30 mA) fused supply line so that no dangerous contact voltage can be applied to the heater in case of a fault.



Different ambient temperatures near the heater cause different inner temperatures. Important for controlling the heater is the ambient temperature where the sensor is located, which must be in the range of the highest ambient temperature to avoid overheating. This must be determined beforehand and be taken into account in the project planning. By default, the cut-out sensor is installed directly on the heater. The sensor location for the operating temperature can be defined specifically for the customer or the application.

4 Installation / start up

The heaters are complete and can be installed with no further preparations. The heater connections must not be bent or be installed around corners where they could kink or be damaged.

The heater length must correspond to the required heating requirements. To do this, heaters may be installed parallel to each other, for example on pipelines, or be wrapped separately around the pipe (minimum gap 1 x cord width). The heat conductors are then held in place with temperature-resistant adhesive tape (WZX00524 / WZX00062). If possible, junction boxes (WZX00182, WZX00187) should be installed near the outlet of the heater outside the insulation. Ensure good heat transfer to the object to be heated.

A heater that does not sit properly on the object or that is embedded in the insulation cannot heat properly. Heaters must not be installed on top of each other or be installed diagonally, as this can cause overheating.

At places where the heat cannot be dissipated, the excess temperature damages the heater. Flexible heaters in series WKQ are mechanically sensitive and must not be wrapped around burrs or sharp edges.

Cavities must be filled with a thermally conductive material (e.g. aluminum foil). Fixing tapes can also cut into the heater and damage it. If metallic parts are heated, they must be included in the protective measures (e.g. protective earthing).

If the heater is used outdoors, additional measures must be taken in accordance with the relevant regulations.

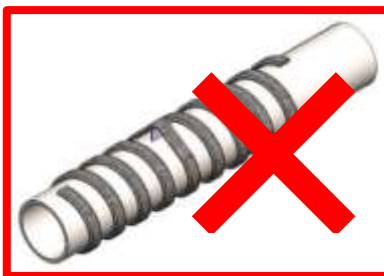
Right installation



Wrong installation



Windings too tight



Windings over edge



Cross windings

The following safety measures are recommended to install the heater:



Protective eyewear



Long-armed work clothing



Leather gloves (EN 388)

5 Operation / dismantling

1. **Always monitor the first heating phases** so that you see any faults in good time and can make any necessary changes.
2. Extreme vibrations or movements should be avoided when the heater is operating (shaking, vibrating, etc.) or suitable measures should be taken so that the heater is not damaged.
3. Make sure that the object to be heated is not hotter than the maximum operating temperature of the heater, otherwise the heater may be damaged.
4. Before you dismantle the heater, allow it to cool and disconnect it from the power supply.
5. Never pull the heaters by the connecting cables, as they are not suitable for this.
6. If damage or irregularities in the function of the heater occur during operation, switch it off as quickly as possible and disconnect it from the power supply. For this purpose, a separation device (main switch) with min. 3 mm contact opening and a 16 A or 20 A fuse suitable for the cable cross-section must be fitted. The exact cause of the fault must be analysed. Our experts can help you in this respect.
7. Check the information on the type plate to make sure that the type, design, mains voltage, power and temperature match your requirements. Check visually that the design is what you ordered. If you have any doubts, check that the documentation is correct.
8. Is the heater suitable for the conditions where it will be used?
9. Suitable temperature controllers must be used. The controller power, sensor type and temperature range must correspond. Is the heater connected to the right controller? If the sensors are confused, the heater can heat until it is destroyed. With the temperature control systems from Winkler, you will have no problems, as they are designed especially for the heaters.
10. Are there special conditions at the installation location, and were they considered during installation (explosion risk area, fire risk area, etc.)?
11. Users must check whether the materials that come into contact with the medium are resistant to the media to be heated (see General technical specifications, Section 8). If you have any questions, contact us directly so that we can advise you (see Contact details, Section 9).
12. Check whether any surrounding objects, system components or other items could damage or have adverse effects on the heating function and remove these.
13. Include conductive parts that can be touched in the potential equalisation.
14. A residual current device (RCD) ($I_F < 30\text{mA}$) must be used.



Please note the following: The heaters are made mainly from silicate (insulation). This hardens (vitrifies) at high temperatures and becomes brittle. If the heater is then moved too much, this can cause insulation defects. Heaters that are subjected to high temperatures for long periods should not be continuously dismantled or removed. After a heater has been dismantled, the insulation resistance as regards the object to be heated must be measured before it is used again.

6 Tests according to DIN VDE 0100-600 / periodic inspections according to DIN VDE 0701-0702

DIN VDE 0100-600 "Low Voltage Electrical Installations – Tests" obliges installers of electrical systems to determine before start-up whether the required protective measures have been used for the individual components in accordance with the intended use and whether the protective measures function perfectly. This test includes a detailed inspection of all the components that are important for the reliability of the protective measures as well as measurements and tests to verify the effectiveness of the protective measures.

DIN VDE 0701-0702 "Inspection After Repair, Modification of Electrical Appliances - Periodic inspection on Electrical Appliances" obligates operators of electrical systems to inspect them regularly and to verify that the electrical system operates properly and safely.

7 Thermal insulation / temperature influence

The heaters do not have thermal insulation. The required thickness of thermal insulation depends on the heater type and the use case and can vary according to the customer's specification. If heaters without insulation are used, the customer must install thermal insulation according to the specification, as otherwise the calculated heating power cannot be transferred to the object.

It must be ensured that burning on the object or other types of damage are avoided. According to DIN VDE 0100-420, suitable measures must be taken, such as mineral rock wool, foam insulation, spacers.

To indicate that components are being heated electrically, stickers (WZX00531-000ENG) with **“ELECTRICAL HEATING”** must be attached to the insulation.

To prevent the heater from overheating and to ensure an exact process temperature, the heater must be operated with a controller and/or limiter. The temperature sensor must be placed at the highest point. (If you use external temperature sensors, observe our “Instructions for installing and using temperature sensors”).

The operating temperatures shown on the type plate are the maximum permitted temperatures on the heat conductor. Users must take suitable measures to ensure that the max. operating temperature is not exceeded at any point.



Attention:

If heaters are operated without a temperature controller, there is a risk that the object to be heated, the medium and the heater will overheat.

However, the max. operating temperature of the heater can also be exceeded through other conditions: Heat accumulation due to heaters not lying properly on the object to be heated.

Changing level of the medium or wrongly placed temperature sensor/s.

Excess temperature due to exothermic chemical processes.

Changing ambient conditions.



Important information:

Electric heaters must be installed and operated so that they cannot cause hazards even if they are not supervised or are switched on accidentally. Suitable safety measures must be taken, such as operation with a controller and/or limiter.

Use of a RCD safety plug (FI) ($I_f < 30 \text{ mA}$) is recommended.

Also remember that heaters continue to heat if wrongly coordinated temperature controllers or sensors are used and this may cause the max. operating temperature to be exceeded.



Note:

Depending on the application, an odour may develop during the first use of the heater (evaporation of the material coating). This is a normal process with the material used and will stop shortly.

8 General technical data

Technische Daten Serie WKQ...	
Operating temperature	max. 900 °C
Power tolerance	+/- 10%
Heating power	max. 175 W/m
Nominal voltage	230 V / 50...60 Hz Other voltages on request
Heating cord length	According to customer specification
Bend radius	> 7 mm
Dimensions	∅ 3,5 mm up to 5 mm (depending on version)
Insulation cover / heat conductor	Silicate fibre single wrapped
Connecting cable	1000 mm (other lengths on request)
Moisture proof	No

9 Kontaktdaten

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10 Quality management certificate according to ISO 9001:2015

ZERTIFIKAT ◆ CERTIFICATE ◆ CERTIFICADO ◆ CERTIFICAT ◆
 認證書 ◆


 Management Service

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

winkler.eu
Winkler AG

Englerstr. 24 • 69126 Heidelberg • Germany
for the scope of application
Development, manufacture and sales
of heat engineering products with
control and monitoring systems

Kleinfeldweg 38 • 69190 Walldorf • Germany
for the scope of application
Manufacture of heat engineering products
with control and monitoring systems

has established and applies
a Quality Management System.
An audit was performed, Order No. 70002379.
Proof has been furnished that the requirements
according to

ISO 9001:2015

are fulfilled.

The certificate is valid from 2021-04-20 until 2024-04-19.
Certificate Registration No.: 12 100 28096 TMS.


 Head of Certification Body
Munich, 2021-04-12




TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstrasse 57 • 80339 München • Germany
www.tuev-sued.de/certificate-validity-check



MUST 4/1/2018

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11 EU Declaration of Conformity (CE Mark)

EU-DECLARATION OF CONFORMITY

winkler.eu



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Product group : Heating cord

Product : **WKQ...**

Directives : **EU Directive 2014/35/EU**
Low Voltage Directive from 26.02.2014
"Electrical equipment for use within certain voltage limits"

EU Directive 2014/30/EU
Electromagnetic compatibility from 26.02.2014

We hereby declare that the basic safety and health requirements of the above-mentioned EU directives and the currently applicable RoHS directive were complied with when planning and manufacturing this product.

Other national standards and technical specifications applied:

EN 60519-1 / -2 (VDE 0721-1)
Safety in electro heat installations

EN 60398 (VDE 0721-50)
Industrial electro heat installations

Any modification to the product without our consent will make this declaration invalid.

Heidelberg, January 14th 2020

Winkler AG

A. Zenner
CEO