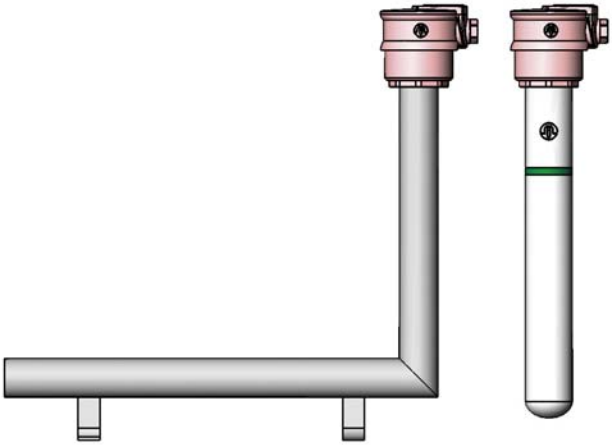
Immersion Heater ROTKAPPE®
Angular Immersion Heater ROTKAPPE®

Installation instructions

E-MA 10/19 04.13/1



Please supplement the following information from the model plate

For the immersion heater ROTKAPPE®

B- ▮▮ ▮▮▮▮/▮▮▮ - ▮▮▮ ▮▮ ▮▮ /▮▮

For the angular immersion heater ROTKAPPE®

B-W ▮▮ ▮▮▮▮ - ▮▮▮▮/▮▮▮ - ▮▮▮ ▮▮ ▮▮ /▮▮

Support feet ▮▮ mm

Contents

1. General information

These installation instructions form an integral part of the device and must be kept available throughout the service life of the device.

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Supporting documents

Document	Content
Information/data sheet Immersion heaters ROTKAPPE®	Product description and technical data
Information/data sheet Angular immersion heaters ROTKAPPE®	Product description and technical data
Resistance list (http://www.rotkappe.de or inquire to the manufacturer)	Recommended uses for materials in process media

1.1 Warnings

Warnings in this document are marked as follows:

 DANGER	Warning of an immediate threat of danger. Failure to observe this direction will lead to death, serious injury or severe material damage.
 WARNING	Warning of potential danger. Failure to observe this direction can lead to death, serious injury or severe material damage.
 CAUTION	Warning of potential danger situation. Injuries or material damage are possible.

1.2 Symbols in the instructions

✓ Requirements that must be satisfied.

⇨ Work to be carried out (one step).

1. The first step in work to be carried out.
   Consecutive steps are numbered in ascending order.

1.3 Warranty and repairs

If you wish to make a claim under the warranty or required repairs, return the cleaned and neutralized immersion heater to the manufacturer postage paid with details of the defect.

2. General safety instructions

2.1 Proper usage

 **DANGER**	**Danger of explosion and fire!** **Do not use the immersion heater in inflammable or explosive fluids.** ⇨ If necessary, ask the manufacturer of the process medium for its specification.

The immersion heater ROTKAPPE® and the angular immersion heater ROTKAPPE® are only designed for directly heating watery liquids. They are only designed for commercial and industrial use. Do not use them in inflammable or explosive fluids.

2.2 Standards and directives

The immersion heater ROTKAPPE® and angular immersion heater ROTKAPPE® comply with the following requirements:

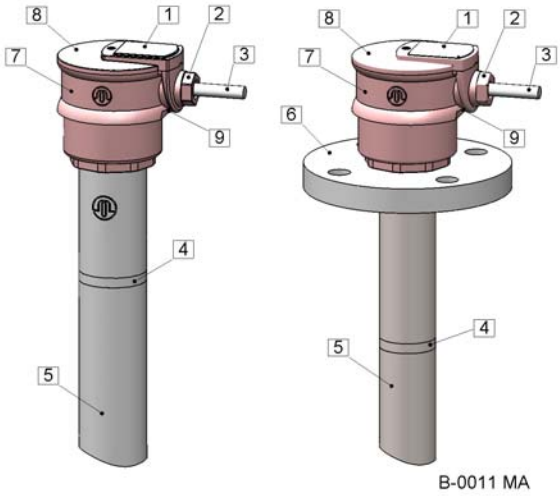
- Low voltage guideline 2006/95/EC
- EMC Directive 2004/108/EC
- EN 60519/1-2 (devices are categorized in protection class 1)
- EN 60529, IP 65 Protection against water jet
- Thermal safety class 1 with the additional installation of safety equipment (for example temperature limiter, temperature guard) in the tank
- DIN EN 50581 (RoHS)

2.3 Safety instructions for the commissioning

- ⇨ Read the installation instructions carefully before the commissioning and follow the instructions contained therein.
- ⇨ Comply with the safety regulations for handling hazardous substances when dealing with such substances (hot, toxic or harmful).
- ⇨ You must comply with the accident prevention regulations, safety and operating regulations.
- ⇨ Comply with the relevant standards and directives.
- ⇨ Comply with the EMC directive for the entire system.
- ⇨ Comply with the threshold values for the intended use of the immersion heater (also compare technical data, item 3.3).
- ⇨ Ensure that the operating personnel, surrounding area and process medium are safe at all times.
- ⇨ Ensure that no one is in direct contact with the heated process fluid.
- ⇨ Ensure that the immersion tube material and process medium are tailored to each other.
- ⇨ Only have the immersion heater connected or repaired by a qualified electrician.
- ⇨ Permanently stabilize the immersion heater against dismantling from the mounting fixture.
- ⇨ Protect the immersion heater with an overtemperature guard and a run-dry protection.
- ⇨ Ensure that the operating personnel receive training and instructions in using the immersion heater.
- ⇨ Document any changes and additions in this manual.
- ⇨ Keep this manual at the place of use of the immersion heater.

3. Product description

3.1 Assembly



1 Model plate with wrench area for mounting wrench SB
2 Compression nut for cable seal
3 Connection cable
4 Marking for minimum immersion depth
5 Immersion tube
6 Version-dependent installation device*
7 Terminal casing
8 Terminal casing cover
9 Opening for cable tie to secure the terminal casing

* Relative to the design, with a threaded nipple, screw flange or weld flange or without a mounting aid.

Depending on the order, the immersion heater has a specific nominal length of the immersion tube and a specific immersion tube material.

The terminal casing is made of polypropylene PP (red) or polyvinylidenefluoride PVDF (white).

The immersion heater consists of the following:

- Immersion tube
- Heating Element
- Terminal casing
- Connection cable

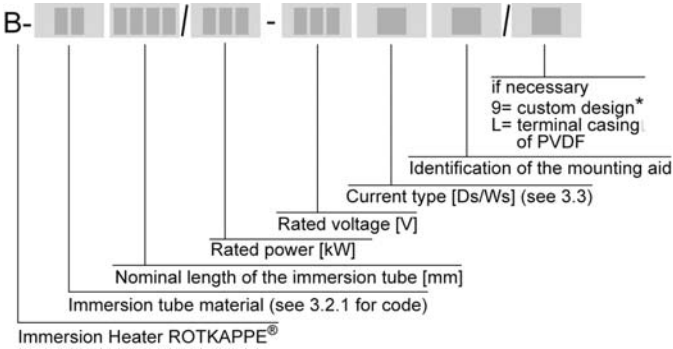
If the heater has an angled immersion tube only the bottom horizontal section will be heated.

The model part numbers and technical data will differ depending on the version (straight / angled / with installation device or without).

3.2 Model plate

The model plate contains all of the main data relating to the immersion heater. The model part number provides information on the specification.

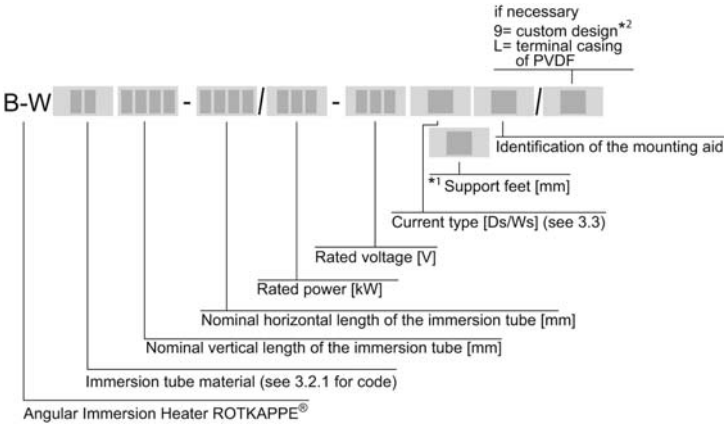
Immersion Heater ROTKAPPE®



* Acc. drawing specifications

Product description

Angular Immersion Heater ROTKAPPE®



*1 with/without support feet [mm]

*2 Acc. drawing specifications

Other information on the model plate:

Rated power **P=**	[W]
Rated voltage **U=**	[V]
Part number	10-figure
Production number	6-figure
Test mark	Symbols
Protection	IP category

3.2.1 Specification of the immersion tube materials

Code Letter	Metallic material	Nominal length [mm]	Tube diameter [mm]
SB	Steel St 34-2 (material no. 1.0037)		
KB	Stainless steel (material no. 1.4571)		
TI	Titanium (material no. 3.7035)	200–6000	45
HC	Hastelloy Alloy C		45
MO	Monel	200–1000	48,3
Code Letter	**Non-metallic material**		
PS	Special rigid porcelain, glazed	315–1250	54
TG	Technical glass (hydrolysis class 1, acid class 1, lye class 2)*	315–1600	50
QS	Quartz glass (hydrolysis class 1, acid class 1, lye class 1)*	500–1250	52
FC	Polytetraflourethylene PTFE compound	315–2500	47-48

* to DIN 12111, 12116, 52322

3.3 Technical data

• **Terminal casing BC**	- Material: PVDF (white), PP (red) - Protection type: Protection against water jet IP65 (EN 60529)
• **Connection cable**	
No plug	100 to 500 V~/ 3~
Standard length / material	1.6 m / harmonized line >HAR<
Material	PVC insulation
• **Earth protection**	
- Metallic immersion tube (SB, KB, TI, HC, MO, FC)	Protective earth terminal
- Non-metallic immersion tube (PS, TG, QS)	Protection coil in heating element with earth terminal
• **Nominal immersion tube length** see model description	Straight version refer to chart 3.2.1
• **Max. thermal load**	Variable, depending on the minimum immersion depth, rated power and immersion tube material (see page 4 Information/data sheet) Max. 4.5 W/cm^2
• **Max. permitted liquid temperature**	watery solutions up to 100 °C
• **Rated power** See model plate figure	P = ... [W]
• **Rated voltage** See model plate figure	U = ... [V] min. 100 V, max. 500 V
• **Type of current** See model plate figure	Ws = 1~; 2~ Ds = 3~

4. Installation

Only have the immersion heater installed by a qualified electrician.

- ✓ The tank/unit is pressureless.
- ✓ Immersion tube material is chemically, mechanically and thermally resistant to the fluid to be heated.
- ✓ Visual inspection of the immersion tubes indicates no signs of cracking or damage.
- ✓ Heated liquid, watery solution max. 100 °C.

The immersion heater can be installed with supports in a bath traverse or with weld flange, screw flange or threaded nipple installation devices.

The angular immersion heater can be fixed to the edge of the tank using support HWB or secured with a suitable device to prevent it from tipping over and removal. It rests on the tank floor on its support feet.

4.1 Installation devices

A range of accessory sleeves and supports are available to install the heater correctly.

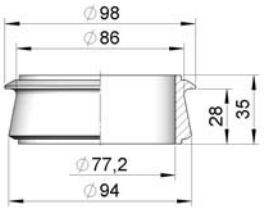
You may derive the dimensions from the related drawing.

Use mounting wrench SB, which is available as an accessory to secure the terminal casing cover and the compression nut for the cable seal.

A method for attachment to the terminal casing prevents the immersion heater from being removed from the tank inadvertently. A cable tie can be used for establishing a connection between the eyelet on the immersion heater terminal casing and the holding fixture.

4.1.1 Installation sleeve EM

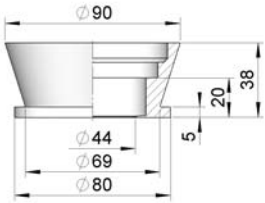
Installation sleeve EM (drilling diameter 87–90 mm) only surrounds the terminal casing and is suitable for temperature ranges up to max. 50 °C.



B-0001 MA

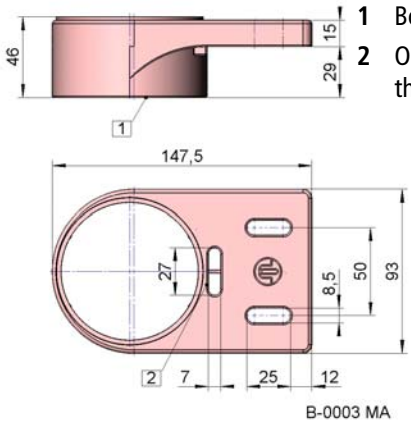
4.1.2 Holding sleeve HM

On holding sleeve HM (drilling diameter 70–76 mm) the immersion tube is also sealed with a sealing lip and can also be used at temperatures >50 °C.



B-0002 MA

4.1.3 Support HB

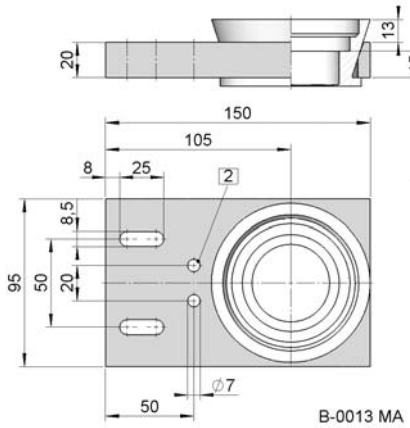


1 Bottom edge of terminal casing

2 Opening for cable tie to secure the terminal casing

Support HB for immersion heaters with a nominal immersion tube length of up to 800 mm.

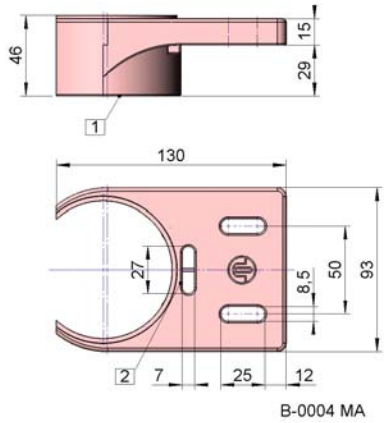
4.1.4 Support SHB/HM



2 Opening for cable tie to secure the terminal casing

Support SHB/HM for immersion heaters with a nominal immersion tube length of over 800 mm.

4.1.5 Support HWB



1 Lower edge of the terminal case

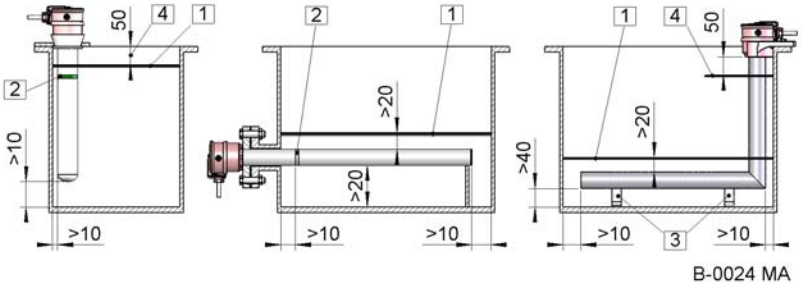
2 Opening for cable tie to secure the terminal casing

Support HWB to secure angular immersion heaters to the edge of the tank (the weight must be borne on the support feet on the tank floor or by suitable mountings).

4.2 To install the immersion heater

 **DANGER**	**Danger of fire!** **Excessive temperatures can develop due to a dry run of the heated immersion tube surface, which result in thermal damages or the ignition of tank/machine parts!** ⇨ Secure the immersion heater against dry runs and excessive temperatures. ⇨ Guarantee a sufficient filling level. **Danger of burns!** **Hot tank parts, the heated immersion tube or escaping process medium may cause serious burns.** ⇨ Install the immersion heater in such a way that the immersion tube is a minimum of 10 mm away from heat-sensitive material and surfaces. ⇨ Install the immersion heater in such a way that it maintains a minimum immersion depth. The minimum immersion depth is shown by a ring-type mark on the immersion tube. ⇨ When horizontally installing the immersion heater, ensure that the surface of the immersion tube is covered by a min. of 20 mm of fluid. **Danger of short circuit!** **Overheating or moisture in the terminal casing may cause a short circuit!** ⇨ Install the immersion heater in such a way that the maximum immersion depth of the immersion tube is not exceeded. The maximum immersion depth is 50 mm between the bottom of the terminal casing and the level of the fluid.

The immersion heater can be installed vertically or horizontally. If it is installed vertically the terminal casing must be at the top.



1 Fluid level
2 Marking for minimum immersion depth (MET)
3 Support feet on the angular immersion heater
4 Max. immersion depth = 50 mm below the terminal casing

4.3 Fastening methods on the tank

4.3.1 Install the immersion heater with support HB or SHB/HM

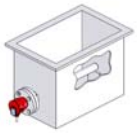
1. Drill the holes for securing it to the edge of the tank as shown in the drawing (see item 4.1.3 and 4.1.4).
2. Secure the support to the edge of the tank.
3. Place the immersion heater in the support.
4. Secure the terminal casing to the support using a cable tie.

4.3.2 To install the immersion heater in the tank traverse

- Without a sleeve
- With an installation sleeve
- With a holding sleeve

1. Depending on your method of installation, drill holes in the traverse (see 4.1.1 or 4.1.2).
2. Insert the immersion heater or sleeve.
3. Place the immersion heater in the tank traverse or sleeve.
4. Secure the terminal casing to the edge of the tank by using a cable tie against removal.

4.3.3 To install the immersion heater with installation aids



Installation aids such as flanges or threaded nipples can be supplied to suit the needs of specific customers. The following installation devices are available:

- Weld flange
- Screw flange
- Threaded nipple

The screw flange for immersion tube material FC, polytetrafluorethylene (PFTE), has a PTFE coating that covers the sealing surface.

The installation device is welded to the immersion tube and available in the following immersion tube materials:

- Steel SB
- Stainless steel KB
- Titanium TI

Notes:

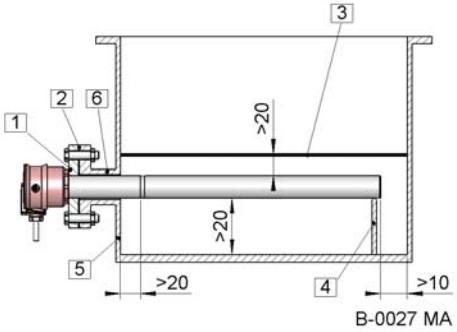
⇨ Attach the terminal casing outside the tank wall.

⇨ If necessary, attach insulation to the tank wall and make sure that the ambient temperature at the terminal casing does not exceed 50 °C.

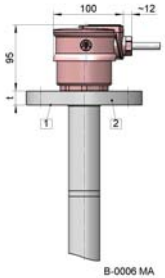
⇨ Make sure that the seal against the sealing surface is resistant to chemicals.

DANGER	**Danger of leakage!** **Incorrect installation or incorrect design may result in the process medium leaking.** ⇨ Have the installation work carried out by a qualified professional. ⇨ Ensure that an operating pressure of > 0.5 bar is not permitted to act on the devices, installation devices or seals. ⇨ Ensure that all the materials that come into contact with the process fluid are chemically and thermally resistant to it. ⇨ Install the immersion heaters in such a way that the heater immersion tube is always fully immersed in the process fluid. ⇨ Ensure that no process fluid is present or can escape during the installation work.

4.3.3.1 To install the immersion heater with a screw flange



1 Screw flange
2 Flat seal
3 Min. fluid level
4 Support for immersion tube
5 Tank wall
6 Port with counter flange



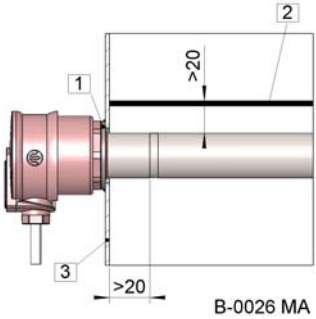
1 Sealing surface
2 Screw flange

✓ Counter flange suitable for the installation with port on the tank.
✓ Thermally and chemically resistant flat seal available to seal the flange.
✓ Immersion heater is off circuit.

Installation

1. Fit the flat seal to the immersion tube.
2. Slide the immersion heater into the tank up to the counter flange and position the flat seal.
3. Align the immersion tube you wish to secure and ensure that the screw flange is precisely positioned.
4. Provide a support point at the end of the immersion tube if the nominal immersion tube length is sufficiently large relative to the tank wall thickness and tank static details (see fig. B-0027 MA). Support the immersion tube if it is expected to sag. Use only materials of the same type. Ensure that the immersion tube can move freely as it expands in the heat and prevent any hindrance to the heat dissipation from the immersion tube casing surface into the fluid.
5. Place the securing screws through the holes in the screw flange and tighten the lock nuts crossways after fitting the washers.
6. Check that the tube is secure and conduct a seal test.
7. Install the connection cable if necessary (see point 5.1.2).

4.3.3.2 To install the immersion heater with a weld flange



1 Weld flange

2 Min. fluid level

3 Tank wall

✓ A hole with a diameter of 52–58 mm must be drilled in the metallic tank wall for horizontal installation.

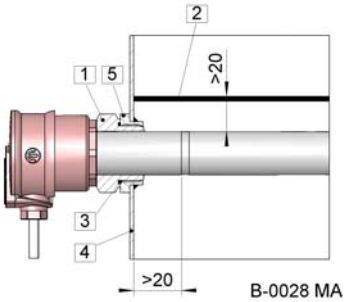
✓ Immersion tube and tank wall material are identical.

✓ Immersion heater is off circuit.

1. Open the terminal casing by turning the terminal casing cover counter-clockwise using the mounting wrench SB.
2. Disconnect the connection and release the strain-relief clamp.
3. Undo the compression nut and pull out the cable.
4. Open the threaded ring using mounting wrench SB.
5. Open the earth nut on the Cu earth lug using a 7 mm socket wrench and remove the serrated lock washer.
6. Pull the heating element out of the terminal casing and the immersion tube.
7. Undo the three slot screws with a screwdriver and remove them.
8. Remove the terminal casing and flange and the O-ring beneath.
9. Push the immersion tube through the tank wall up to the end of the weld flange.
10. Align the immersion tube you wish to weld and ensure that the weld flange is in the centre.

11. Provide a support point at the end of the immersion tube if the nominal immersion tube length is sufficiently large relative to the tank wall thickness and tank static details (see fig. B-0027 MA). Support the immersion tube if it is expected to sag. Use only materials of the same type. Ensure that the immersion tube can move freely as it expands in the heat and prevent any hindrance to the heat dissipation from the immersion tube casing surface into the fluid.
12. Attach welding tacks to secure the weld flange.
13. Make the weld over the entire circumference between the exterior of the tank and the weld flange using a suitable welding method as shown in fig. B-0026 MA.
14. Conduct a seal test after the weld has cooled.
15. Assembly the immersion heater following the above dismantling instructions in reverse (8 to 1).

4.3.3.3 To install the immersion heater with a threaded nipple



1 Threaded nipple
2 Min. fluid level
3 FPM seal
4 Tank wall
5 Threaded port

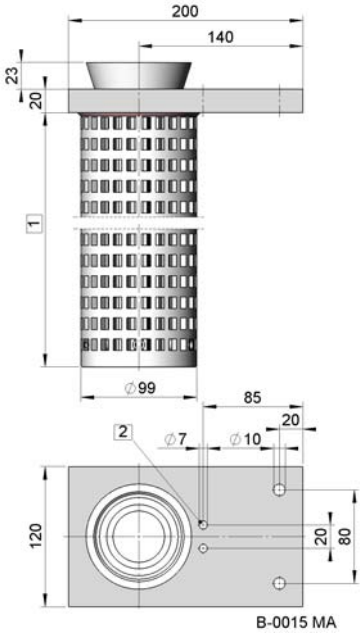
- ✓ Threaded port with sealing surface on the tank suitable for horizontal installation.
- ✓ Immersion tube material and material for the threaded port are identical.
- ✓ Immersion heater is off circuit.

1. Slide the immersion tube through the threaded port into the tank and screw the threaded nipple into the port.
2. Check that the FPM U-shaped ring is positioned precisely between the chamber, threaded nipple and sealing surface on the front of the threaded port.
3. Tighten the threaded nipple using a 70 mm ring wrench.
4. Provide a support point at the end of the immersion tube if the nominal immersion tube length is sufficiently large relative to the tank wall thickness and tank static details (see fig. B-0027 MA). Support the immersion tube if it is expected to sag. Use only materials of the same type. Ensure that the immersion tube can move freely as it expands in the heat and prevent any hindrance to the heat dissipation from the immersion tube casing surface into the fluid.
5. Conduct a seal test.
6. Install the connection cable if necessary (see point 5.1.2).

4.3.4 To install the angular immersion heater

1. Fit support HWB (see fig. B-0004 MA, point 4.1.5) or some other suitable device to prevent the angular immersion heater tipping over on the wall of the tank.
2. Secure the angular immersion heater on the terminal casing by using a cable tie against removal from the mounting fixture.
   A safeguard against removal may also be provided in the area of the support feet.
3. Place the angular immersion heater with the support feet on the tank floor or on some other suitable support point.
4. Do not allow the level to fall below the minimum of 20 mm above the heated immersion tube.

4.3.5 To install the immersion heater with protective tube SRF



1 Protective tube length L

2 Opening for cable tie to secure the terminal casing

The protective tube length L must be tailored to the nominal immersion tube length (protective tube length L = nominal immersion tube length).

5. Electrical connection

Type of current	Number of phases	Connection diagram	Cable colours Connection cable (DIN VDE 0293-308)
Alternating current (Ws)	Single-phase	L1 | N | PE	brown | blue | green/yellow
	Two-phase	L1 | L2 | PE	brown | blue | green/yellow
Three-phase current (Ds)	Three-phase	L1 | L2 | L3 | PE	brown | grey | black | green/yellow

The following connection methods are possible depending on the delivered package:

- Device with mounted connecting cable
- Device without connection cable

5.1 Connecting the device

Check the following points before you start the connection:

- ✓ The rated voltage of the immersion heater is the same as the mains voltage.
- ✓ Immersion tube material is chemically, mechanically and thermally resistant to the fluid to be heated.
- ✓ Fragile immersion tubes (materials PS, TG, QS) must be protected against mechanical damage, for example by a special perforated protective tube SRF (see accessories).
- ✓ Visual inspection of the immersion tube indicates no signs of cracking or damage.
- ✓ Connection cable thermally, chemically and mechanically resistant to environmental influences.
- ✓ Connection cable and terminal casing are protected against direct contact with the liquid or hot vapour.
- ✓ The immersion heater is assembled so that it cannot be removed from the mounting without tools.

 **DANGER**	**Danger of electric shock!** **Damaged cables or incorrect connection may result high voltage in the process fluid.** ⇨ Install the immersion heater in such a way that the immersion tube is a minimum of 10 mm away from heat-sensitive material and surfaces. ⇨ Ensure that the connection cable is not stressed (see also DIN EN 50110-2). ⇨ As protection, use an RCCB with a trip current of 30 mA, EN 61008-1/2-1. **The ingress of moisture into the terminal casing may make the terminal casing or cables live.** ⇨ Protect a terminal casing made of PP (red) from strongly oxidizing fluids (for example chromic acid, HNO_3, H_2O_2) or use immersion heaters with terminal casings made of PVDF (white).

 **DANGER**	**Fire hazard and overheating risk!** **Inadequate heat dissipation or reduced immersion depth of the immersion tube may result in the immersion heater or heat-sensitive tank parts, etc. being damaged.** ⇨ Comply with the minimum and maximum immersion depths of the immersion tube. ⇨ Clean deposits off the immersion tube at regular intervals. ⇨ Install protection devices in process media that tend to form sludge (for example a conductor plate). ⇨ Provide the immersion tube with good heat deflection. ⇨ Secure the heated surface of the immersion tube against dry runs (i.e. install dry run protection device).

5.1.1 To connect the immersion heater with a connection cable

⇨ Separately connect the individual strands according to the connection diagram (see inner surface of the terminal casing cover).

⇨ Provide an all-pole disconnect with an insulating distance of at least 3 mm (full separation).

5.1.2 To connect the immersion heater without a connection cable

1. Open the cover on the terminal casing by turning the terminal casing cover anti-clockwise using the mounting wrench SB.
2. Insert the cable through the compression nut and seal.
3. Connect the various wires in the cable separately as shown in the connection diagram, placing the PE under the clamp and tightening it securely. Provide an all-pole disconnect with an insulating distance of at least 3 mm.
4. Secure the cable with a strain-relief clamp inside the terminal casing.
5. Tighten the compression nut for the cable seal securely using mounting wrench SB.
6. Tighten the terminal casing cover until the cover makes a positive connection with the cable gland.

Note:
In accordance with the EN 60519/1-2 standard, electrical heating appliances must be configured so that the temperature of the electrical heating appliance cannot pose a danger to the operator(s), the surrounding area and the loaded materials even if the appliance is unsupervised and is switched on inadvertently.

5.2 Testing the device

✓ Minimum and maximum immersion depth of the immersion tube satisfied.

✓ No-one is touching the process fluid.

1. Switching heating on
2. Check the heat generation using a thermometer or check the temperature change in the process fluid by some other suitable method.

The immersion heater is working correctly if the process medium starts to warm up.

5.3 Removal

⚠ **DANGER**	**Caution risk of burns!** **Touching the heated immersion heater parts may cause burns.** ⇨ It is essential that you wait approx. 15 minutes to allow the heater to cool. ⇨ Ensure that the parts that you wish to remove from the hot process fluid are cool.

1. Switch the the immersion heater off circuit.
2. Wait for approx. 15 minutes until the stored heat has dissipated from the immersion tube.
3. Release the cable tie between the support and terminal casing if necessary.
4. Take the immersion heater out of the support.

6. Servicing and maintenance

Any deposits must be cleaned off the immersion tube at regular intervals. As a result of the wide variety of process media and ambient conditions at customers' sites it is not possible to provide a general statement about suitable cleaning methods and servicing cycles.

⇨ If you are in any doubt, ask the manufacturer of the process medium.

6.1 Cleaning the device

✓ The immersion heater is off circuit.

✓ The terminal casing has been taken out of the sleeve or support (safe guard of support is removed).

⇨ Ask the manufacturer about suitable cleaning methods if there are deposits on the immersion tube.

6.2 To replace the seals or heating element

Only have the immersion heater repaired by a qualified electrician.

⚠ **DANGER**	**Danger of short circuit!** **The ingress of moisture into the terminal casing may cause a short circuit.** ⇨ Always replace the complete set of seals. ⇨ Verify that the terminal casing cover, the cable connection and the ring nut are securely bolted in the interior of the terminal casing.

Before you start:

The heating element may only be replaced on the immersion heater ROTKAPPE®.

✓ The immersion heater is off circuit.

✓ The terminal casing has been taken out of the sleeve or support (safe guard of support is removed).

✓ The immersion heater is removed from the tank.

Servicing and maintenance

1. Open the cover on the terminal casing by turning the terminal casing cover anti-clockwise using the mounting wrench SB.
2. Disconnect the connection and release the strain-relief clamp.
3. Undo the compression nut and pull out the cable.
4. Remove the sealing insert from the compression nut and insert a new one.
5. Open the threaded ring using mounting wrench SB.
6. Pull out the immersion tube and terminal plate.
7. Remove the O-ring from the terminal casing/immersion tube chamber and insert a new one.
8. Replace the cover seal (O-ring) in the terminal casing.
9. If you also wish to replace the heating element, take the heating element out of the immersion tube. Undo the nut on the earth bolt to do this.
10. Check the inside of the immersion heater for the ingress of moisture. If you see moisture on the interior of the immersion heater, do not use the unit any further.
11. Fit the new heating element (with the same technical data) into the immersion tube and connect it to the earth lug using the earth bolt. Place the serrated lock washer on the earth lug and tighten the nut with a SW 7mm socket wrench.
    Note:
    The metallic protection coil of immersion heaters with a non-metallic immersion tube, such as porcelain PS, technical glass TG and quartz glass QS must be mounted above the heater insert.
12. Place the immersion tube into the terminal casing and tighten the threaded ring using mounting wrench SB. Ensure that the earth bolt points towards the cable inlet.
13. Insert the cable through the compression nut and seal.
14. Separately connect the individual strands of the cable according to the connection diagram (see inner surface of the terminal casing cover). Provide an all-pole disconnect with an insulating distance of at least 3 mm.

15. Secure the cable with a strain-relief clamp inside the terminal casing.
16. Tighten the compression nut for the cable seal securely using mounting wrench SB.
17. Tighten the terminal casing cover until the cover makes a positive connection with the cable gland.
18. Reassemble the immersion heater as described in item 4.2.

7. Transporting/storing the device

 **WARNING**	**Danger of injury!** **Contact with residue from hazardous substances may cause injury.** ⇨ Neutralize and clean the contaminated immersion heater before transport and storage. Refer to the safety directives for handling hazardous substances. ⇨ Comply with local waste disposal regulations.

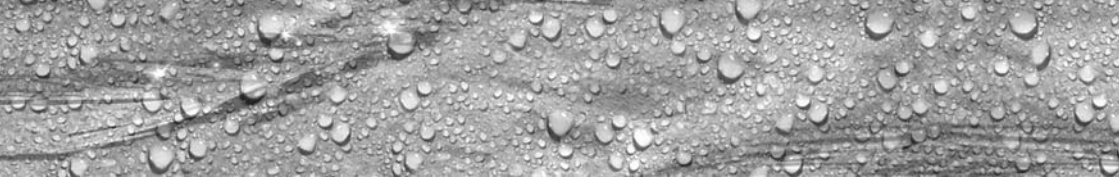
 **CAUTION**	**Danger of breakage!** **The immersion heater will be damaged if the porcelain, glass or quartz glass immersion tube is damaged.** **Danger of injury on sharp pieces!** ⇨ Protect the immersion tube from heavy mechanical stresses. ⇨ Pack the immersion tube with care to protect it. ⇨ A damaged immersion tube must be replaced without delay.

1. Clean any dirt or process medium residue off the immersion heater using a suitable method.
2. Neutralize the residue from any hazardous substances.
3. Pack the device carefully to protect it from damage and return the device to the manufacturer, giving details of the defects.

7.1 Disposing of the device

WARNING	**Danger of injury!** **Contact with residue from hazardous substances may cause injury.** ⇨ Neutralize the immersion tube. Refer to the safety directives for handling hazardous substances. ⇨ Clean any dirt or process medium residue off the immersion heater using a suitable method. ⇨ Comply with local waste disposal regulations.

1. Neutralize and remove any parts of the device that contain residue of hazardous substances.
2. Dispose of the device and residue so that they do not harm the environment and in compliance with local regulations.



MAZURCZAK
ELEKTROWÄRME

Original operating manual
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Subject to change!

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