



# Electrical Immersion Heater



Figure 1 Electrical immersion heater.

## Technical information

- For heating of domestic water (*only insulated version*) in enamelled or coated storage tanks with protective anode. Not suitable for use in stainless steel containers!
- For heating of heating water in buffer tanks
- The sensor of the capillary tube control is located in a protection tube between the heaters and records the temperature of the fluid. Use the control button on the outside to set the setpoint temperature. A control LED shows when the immersion heater is heating. If maximum temperature is exceeded the limiter switches the heater off.
- Integrated functions: Setpoint temperature control (adjustment range: 30-75 °C), excess temperature limitation (94 °C +0K/-9K) and frost protection (8 °C ±6 K)
- In accordance with DIN 44922 the immersion heater contains three u-shaped heating elements, which are mounted insulated and water pressure tight into a brass screw head (*only insulated version*).
- To prevent damage from corrosion, the heating elements are electrically insulated from the enamelled steel container and partially grounded via resistance bridge. This increases the life of the protective magnesium anode as well as of the immersion heater itself (*only insulated version*).
- Unheated Zone: 100 mm
- Connection thread: 1 1/2" M

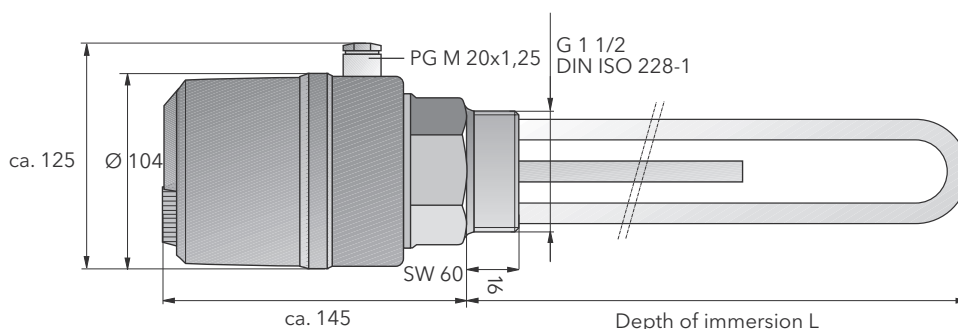


Figure 2 Dimensions in mm.

Tab. 1 part no.	Power (kW) / Application	Voltage (V)	Max. depth of immersion Lmax (mm)	Surface load (W/cm <sup>2</sup> )	Tube material	Number of tube heaters
139 001 46	6.0 / buffer, not sorted	400	480	~ 8.4	1.4571	3
139 001 45	1.5 / enamel and buffer	230	260	~ 8.2	1.4876 (Incoloy 820)	2
139 001 42	3.0 / enamel and buffer	230/400	360	~ 6.5	1.4876 (Incoloy 820)	3
139 001 43	6.0 / enamel and buffer	400	550	~ 7.8	1.4876 (Incoloy 820)	3
139 001 44	9.0 / enamel and buffer	400	600	~ 10.5	1.4876 (Incoloy 820)	3

## Installation

### Connecting of the immersion heater to three-phase current

- Types 3 kW to 9 kW are suitable for operation in three-phase current (400 V).
- Connect the three phases of the cable to terminal L1, L2 and L3 on the control and safety thermostat (see figure 3).
- Connect the blue neutral cable to terminal N.
- The tank itself must be connected via min. 6 mm<sup>2</sup> cable to the potential equalizer track in the cellar. This can be done by fixing a flange cable socket to one of the screws on the cylinder flange.

### Connection of 1.5 and 3 kW immersion heater to 230 V AC.

- The 1.5 kW version must and the 3 kW can be operated on a single phase 230 V connection. Connect the phase of the connecting cable to terminal L1 on the control and safety thermostat (see figure 4).
- Connect the three phases of the 3 kW heater with the enclosed bridges. Please note: Without bridging only one heating tube will heat up!
- Continue as outlined above.



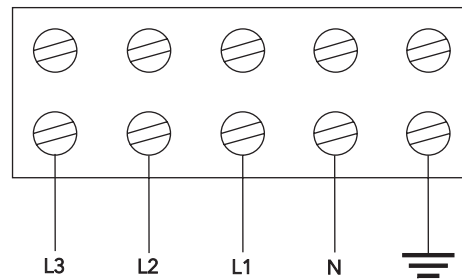
Caution! Do not modify electrical connections on immersion heaters!

### Installation instructions

- Ensure to use a suitable power cable for the electrical connection. Make sure that the protective grounding contacts are good!
- Maximum ambient temperature for the screw head: 80 °C.
- When installing in a container with cathodic corrosion protection, the screw head must have a conductive connection with the tank.
- Use the control button on the outside to pre-set the setpoint temperature (ca. 30-80 °C). The immersion heater is switched off by the thermostat when the setpoint temperature is reached.  
Please note: The switch temperature difference is 13 K ± 6.5 K.
- If the total water hardness exceeds 12°dH / 9.58°e (approx. 0.67 ppm CaCO<sub>3</sub>), we recommend to annually descale the heating elements.  
Please note that the risk of lime scale deposits increases with higher setpoint temperatures. Therefore please avoid temperatures above 60 °C in regions with hard water.
- We recommend adjusting the thermostat to the "ECO" marking at ca. 50 °C. This reduces lime scale deposits, saves energy and increases the solar yield.
- With position "\*" the minimum tank temperature is set to about 7 °C ± 6 K for frost protection.



3 ~ 400 V



1 ~ 230 V

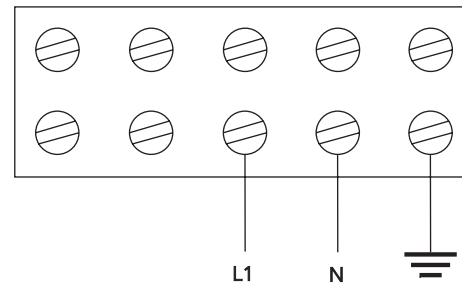


Figure 3 Variations of connection.

### Safety instructions

- All local regulations and technical standards must be complied with. Installation should only be carried out by authorised expert personnel.
- The immersion heater has to be commissioned in a horizontal position when the tank is filled with water.
- The heater has an integrated safety temperature limitation for overload protection and the power is switched off when the water temperature reaches 94 °C +0/-9K).
- If the excess temperature limitation was triggered, eliminate the source of the error and then manually re-set the limiter by pressing the button next to the thermostat button. Therefore please separate the immersion heater from the grid und wait until the storage tank has cooled of. Subsequently unscrew the cover and unbolt the limiter with an auxiliary tool.

Caution! The temperature limitation may be triggered even if the immersion heater is not in operation when the temperature exceeds 85 °C (e.g. in summer, when a solar energy system is connected). To avoid this, set the maximum cylinder temperature to a value below 85 °C, or below 80 °C if the collector cooling function is used.



- Screw head protection type: IP64
- Product complies with EU regulations 73/23/EWG and 89/336/EWG (EU Conformity).

