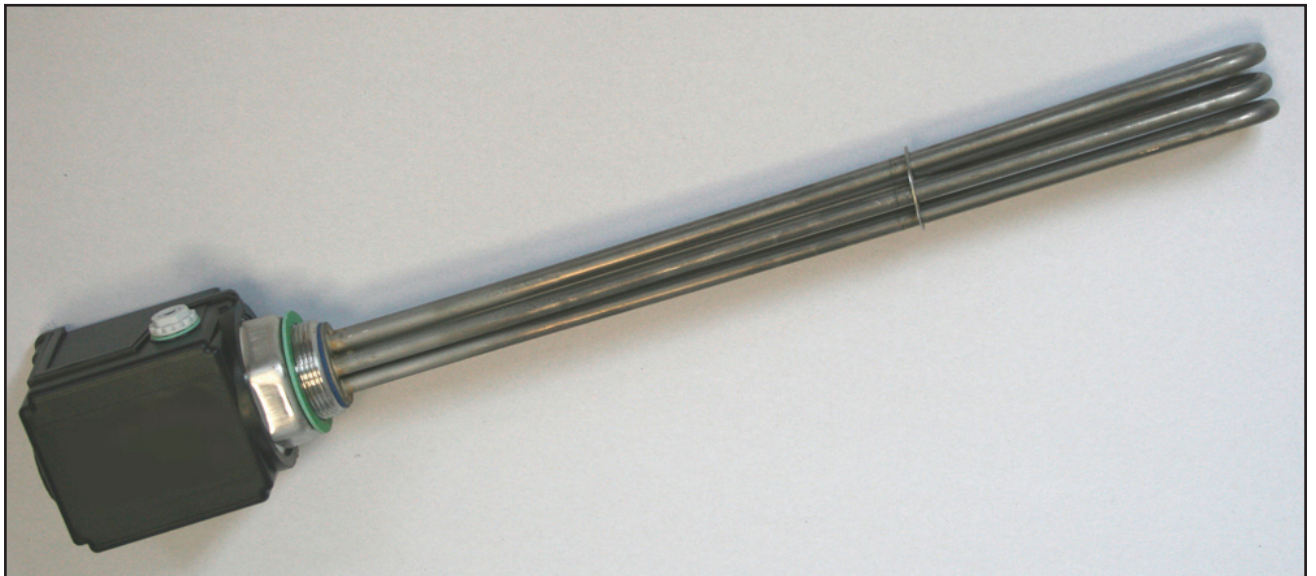


# OPERATING & MAINTENANCE INSTRUCTIONS

## SCREW PLUG IMMERSION HEATER



THIS MANUAL IS AN INTEGRAL PART  
OF THE PRODUCT AND SHOULD ACCOMPANY THE PRODUCT

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## **1. GENERAL**

- The standard Immersion Heaters of Enon are for heating up water in open or closed vessels, housing, etc..
- Before commissioning, the heaters should be fully submerged in the water. The thermal heat exchange may not be interrupted.
- The best position to build in a Immersion Heater is where the possibility of the Immersion Heater standing dry is the lowest.
- The length of the socket where the Immersion Heater is screwed in, should always be shorter as the unheated length of the heater.
- For installation and dissembling they should take into consideration a free space of the immersion length + 150mm.

## **2. TECHNICAL CHARACTERISTICS**

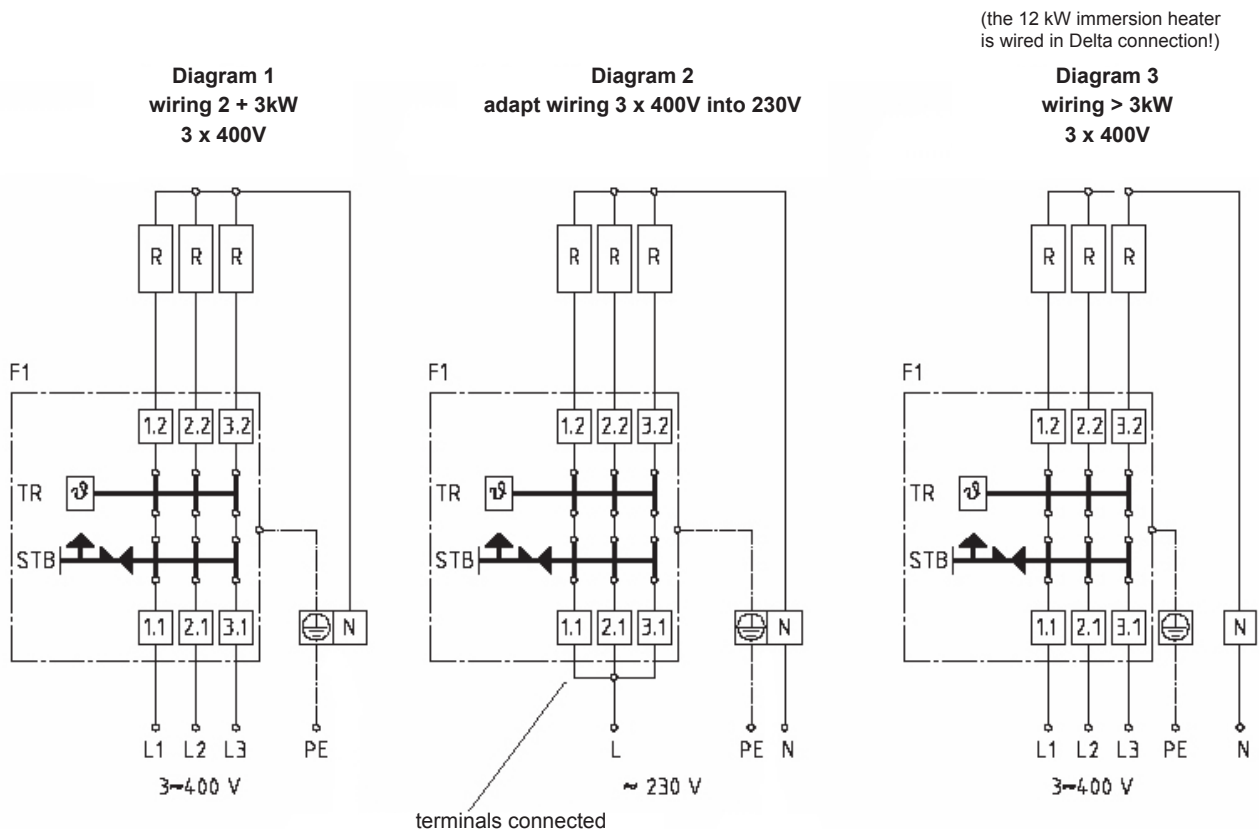
For more details about the scope of the supply and any safety devices refer to our data sheets or commercial specifications.

## **3. ASSEMBLY INSTRUCTIONS**

- Connection according the NEN-1010 and / or Government or local rules. Connection must be performed by a trained technician.
- Screw the immersion heater in the threaded socket fitting on the vessel, this may only be done with a tool SW60 used to be put on the hexagon. To create more space, the terminal housing can be removed before screwing the heater into the vessel. It is also possible to put the heater via a hole in the vessel, and fix it with a lock nut from the inside.
- It is necessary using a suitable gasket for the medium and temperature (a fiber gasket, copper ring or teflon tape with Loctite).
- The length of the screw thread of the socket, has to be smaller than the unheated length of the tubular elements (see specification heater).
- Remove the cover of the terminal housing (4 screws). The terminal housing can be rotated in the desired position.
- The heaters are three-phase connected with a direct switching combination-thermostat. With capacities up to 3kW, the three-phase star connection can be adapted to a 230V parallel connection. Connect the ground wire to the ground terminal.
- The cable must be fed through the cable gland into the terminal housing and the strain relief against pulling and twisting has to be secured. Use at least a three-core cable earthed H05VV-F or equivalent.
- Electrical connection according to the diagrams in § 4.

#### 4. ELECTRICAL WIRING DIAGRAMS

Make the electrical connections in accordance with diagrams below. Note the correct voltage is applied. With 2 and 3kW the circuit can be adapted to a 230VAC power supply (see Diagram 2). The combination thermostat switches the heating elements directly.



#### IMPORTANT

Don't forget to connect the ground wire! Also all the independent steel parts in contact with the liquid should be connected to the earth (ground)! The power supply must be protected with a RCD.

#### 5. COMMISSIONING PROCEDURE

Before the immersion heater is electrically turned on, the vessel should be completely filled with water, so that the heating elements are completely surrounded with water. For systems under pressure or atmospheric pressure, a safety valve or relief valve have to be present. The control thermostat can be tested, setting a low temperature. The temperature limiter switches only at a default maximum temperature (e.g. testing with hot air). For the first commissioning should be checked the following:

- Watertight connection of the threaded immersion heater in the vessel.
- Operation of the temperature limiter. If the limiter has reached it's maximum temperature it can be resetted by removing the black plastic lid of the terminal housing and then push the red-brown button. This may only been done when the power supply is disconnected!
- Any external control system such as temperature-, flow-, pressure control and temperature safety.

## **6. TEMPERATURE CONTROL AND SAFETY**

### **Temperature control**

The desired temperature (30-75°C) can be set with the control thermostat

- Pos. 1,5 : the frost protection mode (left stop does not mean that the heating is off)
- Pos. 4 : approx. +40°C, lukewarm
- Pos. 6 : approx. +60°C, moderately hot water
- Pos. 8 : ca. +75°C, hot water

This is the water temperature near the heating elements.

### **Temperature safety**

The immersion heater is provide with a temperature limiter (STB, 98°C) which will switch at a temperature of 98°C -8K (tolerance). Ensure that during normal operation the temperature limiter never switches. If such is the case the limiter interrupt the supply power circuit. Only manually the limiter can be resetted using the reset button, so the power supply circuit is closed again.

## **7. MAINTENANCE AND MALFUNCTIONS**

- Malfunctions must be corrected by a specialist (electrical engineer) or by Enon.
- The immersion heaters are basically maintenance free. However, when used in hard water, it is recommended to clean the elements periodic. Lime scale shortens life duration of the elements by a negative influence on the heat transfer. Also causes scaling a shift in the switching points of the control and high limit thermostat.
- Heating or cleaning fluids, containing corrosion-promoting chemicals can affect the heating elements. Periodic cleaning of the elements prolongs life span.
- Periodically check the thermostats for proper switching. The thermostat has mechanical contacts, which can malfunction with the passage of time due to possible presence dirt and / or moisture.

## **8. GUARANTEE**

Our warranty is compliant with the inter union agreements of the Electrical Construction industry and the general sales conditions. We guarantee the conformity of the materials, proper workmanship and the surface treatment as defined in our documents. However, we do not undertake a guarantee for damage which arise through:

- Corrosion of the parts which come into contact with the medium
- Calcification of the heating elements
- Improper or alienated purpose
- an electric power supply 10% higher than the nominal supply,
- lack of maintenance, shock, clumsiness or inexperience on the part of the user,
- failure(s) caused by not complying to the conditions laid down in these operating & maintenance instructions manual and the data sheet

**9. NOTES**