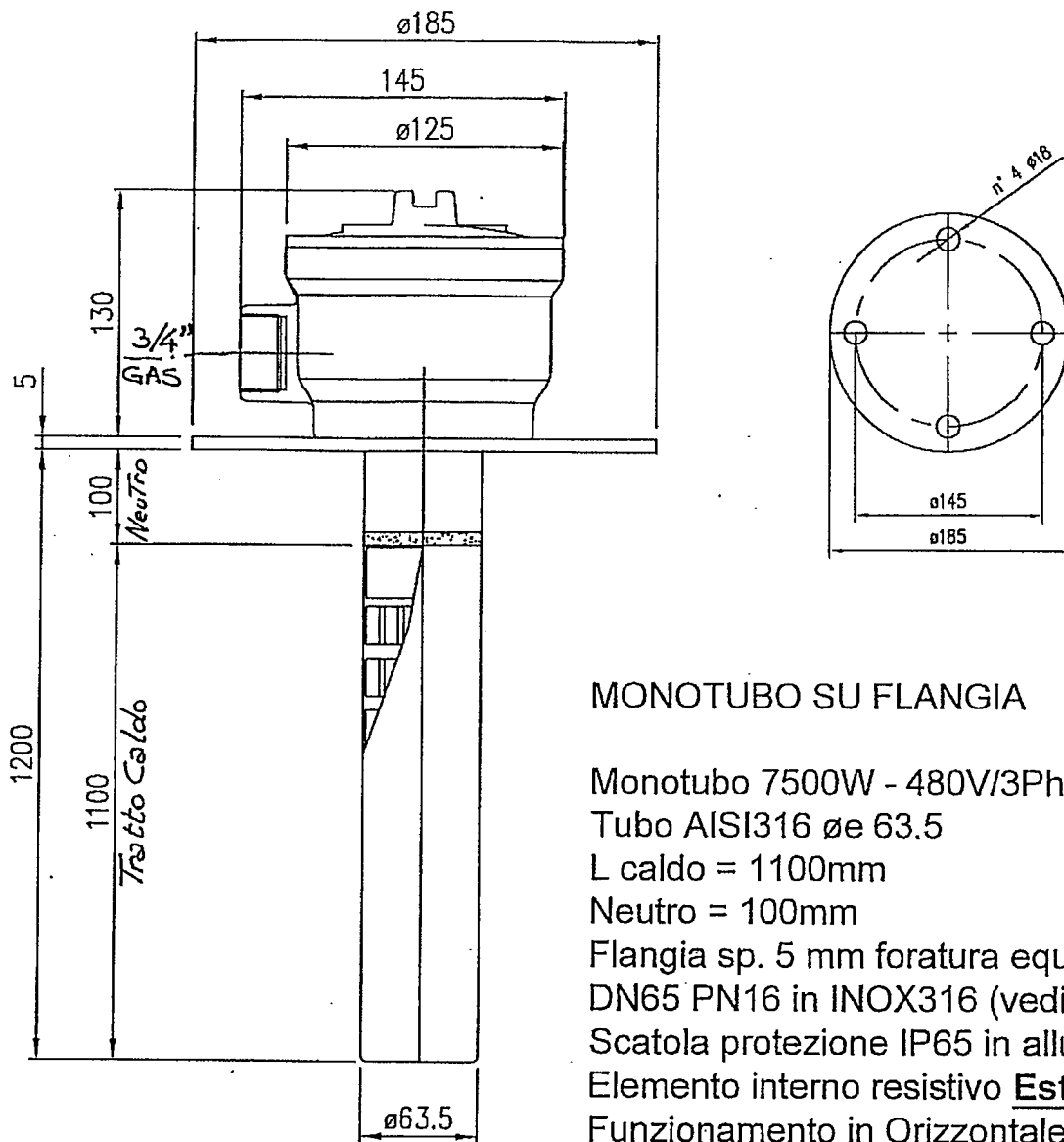


# RISCALDATORE MONOTUBO SALDATO SU FLANGIA



## MONOTUBO SU FLANGIA

Monotubo 7500W - 480V/3Ph

Tubo AISI316  $\phi$ e 63.5

L caldo = 1100mm

Neutro = 100mm

Flangia sp. 5 mm foratura equivalente a  
DN65 PN16 in INOX316 (vedi sopra)

Scatola protezione IP65 in alluminio

Elemento interno resistivo **Estraibile**

Funzionamento in Orizzontale

7,5 kW 3ph 480V  
Tubo  $\phi$ 63.5mm x 1200L  
316L

		DESCRIZIONE/DESCRIPTION	Riferimento	
		Risc. Monotubo su flangia	W/0351	
DISEG. DWN.	B. Cipolla	CODICE/CODE	Cliente	SIRIO WIRE
PROG. DSGN.	V. Bisconti	79637500D000004	SCALE:	% DIS. 14150
APPR.		MATERIALE / MATERIAL	FORMATO SIZE:	A4 TAV SHT: 1/1
DATA DATE	09/03/12	Assieme		

Questo disegno non puo' essere riprodotto, modificato o comunicato a terzi. La MASTERWATT s.r.l. in caso di trasgressione si riserva di agire a termini di legge. Ogni deroga deve essere autorizzata per iscritto.

**MASTERWATT**  
Riscaldatori Elettrici

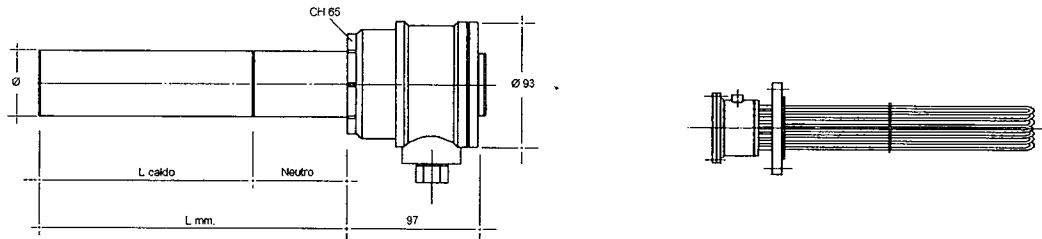
**FLANGE-MOUNTED HEATERS  
WITH INTERCHANGEABLE ELEMENTS**

**INSTRUCTIONS FOR ASSEMBLING,  
ELECTRICAL CONNECTION,  
START UP AND MAINTENANCE**

CE

Document n°: 2.02.99.15073a

Date: 28.11.03



**USE**

The Flange-Mounted Heaters with Interchangeable Elements are electrical resistance heaters designed to tailor the customer's specific needs. Limitations to their use (which are additional to those already specified in the customer order) are detailed by Masterwatt upon delivery. As a general rule, these heaters are designed to be exclusively employed in plants dedicated to direct heating of liquids or gases and under the condition that user prevents any electrolytic effect onto the immersion tubes (e.g. polarization due to currents being present during the electrolysis).

The plant may include, in accordance to the user's needs, other equipment or assemblies, such as those dedicated to the process control or to the electrical power supply.

The Flange-Mounted Armored Heaters shall be exclusively employed under the operational characteristics which have been specified to Masterwatt by its Customer and are recalled in the certificate of conformance. The technical characteristics of the Explosion-Proof Flange-Mounted Armored Heaters (total power, specific power, supply voltage, dimensions, IP protection degree) satisfy these characteristics.

In the cases where Masterwatt has not been responsible of the thermodynamic design of the heater (i.e. Masterwatt responsibility is limited to manufacturing) the user shall insure that the specific power characterizing the heating battery, and its resulting maximum surface temperature, are compatible with the thermal characteristics (e.g. stability) of the heated fluids. In addition, in these cases, the user shall verify that the temperature in the electrical contacts area never exceeds 100 °C.

The degree of protection IP of the electrical connection box, is insured to the extent requested by Masterwatt Customer. Should the user add parts or components or modify in any way the supplied Flange-Mounted Armored Heater, this shall be done in accordance with the same protection standard as the one granted by the Masterwatt construction. **The Heaters cannot be used if modified or altered without following the requirements of the IP protection standard pertaining to its construction.**

The user shall foresee appropriate measures to prevent the dry (i.e. with no sufficient liquid) operation of the heater, either introducing a protection device or controlling the liquid level. Under this respect please consult the safety regulations VDE 0721 parts 2 A 3, parts 1 § 10, safety measures against fires.

Note: with a maximum power density of 4.5 W/cm<sup>2</sup>, an abrupt dry operation of the heater, followed by a sudden switch-off causes a maximum temperature of 50 °C at 10 mm distance from the immersion tube.

After a temporary current shut down, the heaters shall not be removed from the bath before the accumulated heat has been dissipated (this takes about 15 minutes).

In case of mechanical damage (e.g. cracks) the heaters shall be immediately removed from operation.



## **FLANGE-MOUNTED HEATERS WITH INTERCHANGEABLE ELEMENTS**

### **INSTRUCTIONS FOR ASSEMBLING, ELECTRICAL CONNECTION, START UP AND MAINTENANCE**



Document n°: 2.02.99.15073a

Date: 28.11.03

#### **ASSEMBLING**

The Flange-Mounted Armored Heater is best operated in horizontal position. In case of vertical operation in presence of liquids, the user shall insure that the controlled liquid level is not below the heater hot area which is detailed in the data sheet provided by Masterwatt at the delivery of the heater.

The Flange-Mounted Armored Heater shall not be mounted in tubes or narrow areas because this may prevent the build up of a sufficient natural convection flow thus leading to the creation of hot spots with too high temperatures. In addition, the heating surface shall never be in contact (not even for short times) with the mounting devices and with the borders or the walls of the fluid container (minimum clearance > 10 mm).

The user shall foresee, when necessary, a proper seal at the mounting location of the heater. This seal shall be selected on the basis of the maximum working temperature and of the physical and chemical characteristics of the heated fluid. In case of maintenance, the user shall foresee a replacement of the seals in order to keep the hydraulic tightness unchanged. In case of use of the heater in very aggressive chemical fluids the regular replacement of the seals is recommended.

#### **ELECTRICAL CONNECTION**

The heaters shall always be installed by specialized personnel.

The user shall verify that the supply voltage corresponds to the value specified on the Flange-Mounted Heater label and that the safety devices dedicated to the protection of the Flange-Mounted Heater are operational. Should the heaters be directly connected to a fixed electrical apparatus, the user shall foresee a separation of the electrical network on all poles (free space between contact and contact = 3 mm, see VDE 0720 T1/2.72 § 2, 101). For a better electrical safety, the user should provide the heaters with a Differential-Residual (DR) current protection device. Under this respect, the use of differential protection devices, set at a threshold current of 30 mA and compliant to the requirements of the safety regulation DIN VDE 0664, is recommended.

The heaters shall not be branched to the power supply as long as somebody is still in contact with the fluid to be heated

The user shall verify that the cross section, the material and the electrical insulation of the power supply harness is compatible with the current and the thermal environment of the electrical connection box.

Being the electrical connection terminals of screw type, the user shall provide the supply cable with an eyelet. The connection shall be executed using two wrenches, one operating on the nut and the other blocking the lock nut: this will prevent the application of an excessive tightening force.

The thermostats, if provided, have been set before delivery by Masterwatt. The set point has been defined to insure a safe operation of the heater and can be modified by the user only if the user insures that the new set-point value is lower than the one set by Masterwatt before delivery. Masterwatt declines any responsibility in case of damages to persons or goods which is caused by a modification of the thermostat set point which exceeds the value set before delivery by Masterwatt itself.

If the heater is provided with a thermocouple or a thermo-resistance, the user shall provide the thermal regulation system which is required to operate them. In this case, the limit temperature will be defined in advance by Masterwatt. The intervention of the safety system, in this case, shall be foreseen at the temperature indicated by Masterwatt in the documentation provided at the delivery of the heaters.

The intervention of the temperature safety device shall be followed by the transit to a safe mode of the plant.

#### **STORAGE**

The flange-mounted heaters shall be stored in areas which are suitable for the storage of electrical products and shall be protected from humidity. The sealing caps located on the couplings prevent the entrance of humidity and shall be removed only when performing the electrical connection of the heater.



**FLANGE-MOUNTED HEATERS  
WITH INTERCHANGEABLE ELEMENTS**

**INSTRUCTIONS FOR ASSEMBLING,  
ELECTRICAL CONNECTION,  
START UP AND MAINTENANCE**



Document n°: 2.02.99.15073a

Date: 28.11.03

**MAINTENANCE**

Electrical Resistance Control

Remove power supply and disconnect power supply harness. Measure Electrical resistance at room temperature with a Ohm-meter class 0.5, making sure that it has been properly calibrated. Check connection type (star = measure between phase and ground, triangle = measure between phase and phase) and verify: the measured values shall be compared to those shown on the wiring diagrams and/or on the acceptance testing certificates provided by Masterwatt together with the product.

Connections Control

Verify tightness of all electrical connectors, electrical bridges and screws. Verify that power supply harness and its insulation is in perfect conditions, exchanging it in case of questionable adequacy.

Safety Devices verification (if present)

Disconnect electrical connection cables and the thermostat connections from the power relays, verifying the electrical continuity with a tester. Should the thermocouples require substitution, they can be removed extracting them from their seats. In case the thermostat shall be substituted, it can be removed extracting the sensing element from its seat and dismantling the thermostat head from the terminal block.

Heating Elements shell verification

Perform a periodic visual inspection of the heating elements shell and remove timely potential deposits accumulated during the normal operation of the plant. Such deposits, in fact, may alter the heat exchange efficiency and, as a final result, would reduce the operational life of the heater.

The removal shall be executed making use of not-abrasive devices.

**NOTE**

**SHOULD THE INFORMATION REPORTED IN THIS MANUAL PROVE TO BE NOT EXHAUSTIVE THIS SHALL BE NOTIFIED TO MASTERWATT.**