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ULTIMHEAT

HEAT & CONTROLS

IMMERSION HEATERS

• Air heaters:	See catalogue No.24
• Flow through liquid heaters:	See catalogue No.23

Contact us

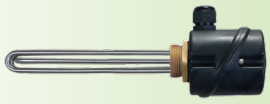
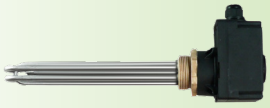
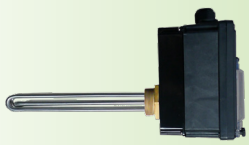
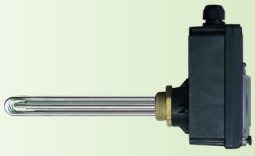
4th Edition 27/10/2023

www.ultimheat.com

Technical catalogue

Summary

Summary

	Immersion heaters with plastic connection box			P1-P20
Section 6		9ST1	Immersion heater with miniature enclosure, 48mm × 48mm × 50mm, 1”BSPP fitting.	P3
		9ST2	Immersion heater with round enclosure, dia. 56 × 66mm. 1”¼, 1”½, M45×2 fittings.	P4-P5
		9ST6	Immersion heater with dia. 100mm × 100mm plastic enclosure. 1”¼ to 2” fittings. With or without thermostat.	P6-P7
		9STC	Immersion heater for storage water heater, with 105mm × 88mm × 58. 5mm plastic enclosure. 1”¼, 1”½, M45×2 fittings. With control thermostat and manual reset limiter.	P8-P9
		9STM	Immersion heater with 130mm × 130mm × 190mm plastic enclosure. Fittings from 1”½ to M77×2. With control thermostat. With or without manual reset thermostat. Power up to 21kW with built-in power relay. Heating elements dia. 10 and 12mm.	P10-P12
		9SWM	Extra short immersion heater with 130mm × 130mm × 190mm plastic enclosure. M77×2 or 2”½ fittings. With control thermostat and with or without manual reset thermostat. Power up to 9 kW with one built-in power relay. Coiled heating elements dia. 8mm.	P13-P15
		9STQ	Immersion heater with 182mm × 130mm × 132mm plastic enclosure. Fittings 1”½ and M45×2. With electronic PID temperature control, with or without thermostat. Built in cooled SSR.	P16-P17
		9STB	Immersion heater with 182mm × 130mm × 120mm plastic enclosure. Fittings 1”½ and M45×2. With mechanical thermostat or electronic temperature control. With or without manual reset thermostat.	P18-P20

Summary

Summary

Update 2025/03/24

Section 2
Sheathed heating elements for liquids heating
Technical introduction

1- Selecting the right sheath material

There are many different sheath materials available for immersion heaters. The most important factor is the material or fluid that will be in direct contact with the heating element. In many situations, different sheath materials could be used. If the specs allows or calls only for stainless steel, make sure which one is compatible. (Example: 304,304L, 316, 316L or 321; see below). In most cases, it will be possible to use stainless steel, now very popular and cheap, in applications where copper or steel were previously used.

Main stainless steels used in immersion heaters

EN	AISI	DIN	Use
EN 1.4301	AISI 304	W. 1.4301	In water or humid environment max. 450°C. Used in food cooking applications. Flanges on immersion heaters are commonly made of 304. It is the less costly of the sheath materials mentioned in this list.
EN 1.4307	AISI 304L	W 1.4307	Same than 304 for humid-corrosive environments. Used for washing machine heating elements. Better corrosion resistance after TIG welding than 304.
EN 1.4541	AISI 321	W. 1.4541	In water or humid environment max. 550°C. Washing and cooking heating elements.
EN 1.4404	AISI 316L	W. 1.4404	Improved resistance to corrosion. For water or corrosive humid environment max. 450°C. For food industry.
EN 1.4435	AISI 316SL	W. 1.4435	Equivalent to 316L, with the difference that the higher content of molybdenum ensures elevated mechanical features and resistance to corrosion. In water or corrosive humid environment max. 500°C. Very little use.
EN 1.4571	AISI 316Ti	W. 1.4571	Equivalent to AISI 321, with the addition of molybdenum besides titanium. For temperatures of 500°C, also in discontinuous service. Very little use.
EN 1.4876	Alloy 800	W. 1.4876	Also Referred to as Incoloy 800. In water and air with max. temperature of 1050°C.
EN 2.4858	Alloy 825	W. 2.4858	Also Referred to as Incoloy 825. In water or highly corrosive environments.
EN 1.4847	Alloy 840	W. 1.4847	Also Referred to as Incoloy 840. In air for max. temperature up to 950°C.
Ti II	UNS R50400	W. 3.7035	This material is used extensively in immersion heating, sea water piping, reactor vessels. Withstands highly corrosive materials. It is the most costly of the sheath materials mentioned in this list.

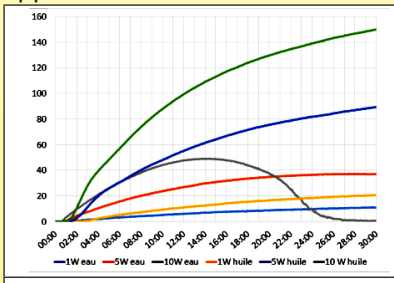
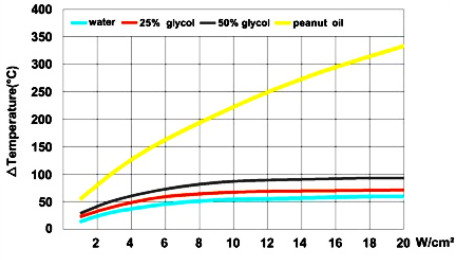
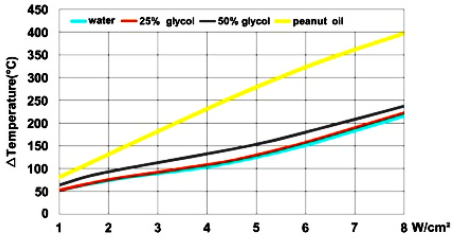
Additional constraints are given by the ability of different materials to be formed and bent, including in their annealed condition, which imposes different minimum bending radii. E.g. formability 304L and 316L is excellent, while that of titanium is very limited.
The above table is provided for general guidance only. The suitability and completeness through which technical and/or informative characteristics have been supplied in this table have to be analysed carefully by the customer. The customer must carry out all in-depth controls and all necessary tests in order to check the suitability of our product in the final application to which it is to be installed.

2-Surface load selection

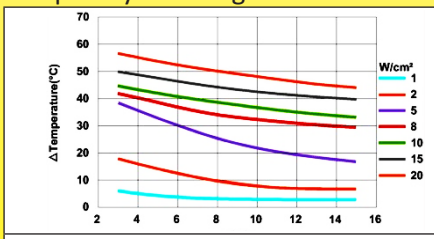
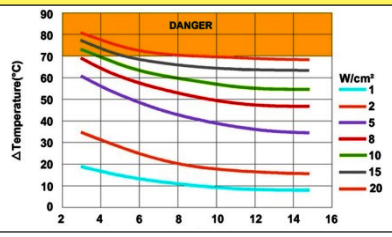
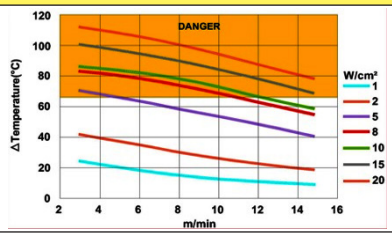
Figures provided in this section are results of tests made in our laboratory. Charts were smoothened by computer, and are given for specified power and for information only.
See also technical section of the catalogue Nr 24 for more information about sheathed element life span.

General rules.
It is recommended to select a surface load which does not produce local boiling of the liquid at the surface of the heating element. This phenomenon, called cavitation, causes rapid wear of the protective sheath of the heating element, decomposition or chemical transformation of the liquid, and the deposit of limestone and contaminants (carbonates, chlorides etc..). In the case of drinking water, these deposition processes are amplified when the water temperature reached 65°C, and for water hardness exceeding 10dH.
The tests below were carried out in usual application configurations, by measuring in several places the surface temperature of the heating elements by miniature thermocouple spot welded to its surface.
It is important to distinguish between static applications where water is not flowing, and where the heat transfer to the liquid is made by heat conduction and natural convection currents, and these where liquid circulates around the heating elements, increasing dramatically the heat exchange.

Immersion heaters used in tanks or containers without permanent water flow
The tests were performed with pure water, 25%, and 50% glycol added water, as they are representative of liquids used in central heating and solar heating circuits, and with peanut oil representative of liquids used in food applications.

		
At no flow condition, values of temperature difference 50mm top and 50mm bottom of heating element. It is possible to see huge temperature differences, mainly in oil. **Note:** On the water test with 10W/cm² load, after 6 minutes, the water around the heating element starts boiling, and the temperature differences decreases progressively, because of the convection provided in the water by ebullition.	At no flow condition, difference between heating element surface temperature and liquid temperature measured 50mm above the heating element, at various surface loads. Heating element is fully immersed. (Measurements made 10 minutes after energization). **Note:** above 8W/cm², there is no increase of temperature difference in water and water + glycol, because liquid in contact with heating element starts to boil and energy is used for vaporization.	At no flow condition, this is a simulation of what happens when the heating element starts to rise from the liquid level. (Half immersed, measurement made after 10 minutes). Heating element surface temperature rises sharply. **Note:** for oil, the flash point (320°C) is reached at 7W/cm² load, and auto-ignition may occur (Fire hazard).

Immersion heaters used in tanks or containers with permanent water flow
In applications with permanent flow, the important parameter is the velocity of the liquid around the heating element. In the graphs below, the speed is given in meters per minute.
The temperature data from these curves is the difference between the surface temperature of the heating element and the fluid temperature, measured 50mm above the heating element. The tests were performed with pure water, and water with glycol addition of 25% and 50%, for the surface load of 1 to 20W/cm². The heating elements are completely submerged.

		
In pure water, in all cases of this test, the boiling temperature is not reached when the water is at less than 40°C when it comes into contact with the heating elements. However, for an inlet temperature of 40°C the temperature of 65°C is reached in all cases with a load of 8W/cm² and more.	In water with 25% glycol, commonly used in heating circuits, the boiling temperature is reached at speeds less than 6m/min from 8W/cm² with a water inlet temperature of 40°C. All loads greater than 8W/cm² reach the boiling point.	In water with 50% glycol, used in heating circuits which have to withstand very low temperature, the boiling temperature is reached for speeds less than 8m/min and loads of 5W/cm² with an inlet temperature water of 40°C. All loads greater than 5W/cm² reach the boiling point.

3-Selecting the fitting or the flange

Fitting material: It is important to consider the immersion heater fitting material, whose corrosion resistance must be compatible with the liquid. Most heaters use a threaded brass fitting, brazed to the heating elements. For applications where the brass is not allowed, a stainless steel fitting, made of 304L or 316L, can be used. It can be brazed with copper alloy or TIG welded for the most difficult cases.
The light flange-mounted immersion heaters, such as that used in washing machines and water heaters, use AISI 304 stamped flanges, cheaper than brass and guaranteeing a better pressure resistance.
Immersion heaters for industrial applications use standard pipe flanges.

Method of attachment of the heating element to the flange or the fitting:
This attachment must meet various requirements, including: provide a good seal, withstand the temperature of the liquid and the surface temperature of the heating element, provides mechanical retention, corrosion resistance**.**

Type	Sealing	Temperature	Mechanical retention	Corrosion resistance
Tin soldering	Good if no mechanical stress or vibrations. Soldering is difficult on stainless steel.	Max 120°C	Poor to average	Poor
Epoxy bonding	Good if no mechanical stress or vibrations.	Max 80°C	Poor	Good
Copper alloy brazing	Good, but risks of leakage eventually undetectable in production.	Max 300°C	Superior	Average
TIG welding	Superior	Max 450°C (304L)	Superior	Superior

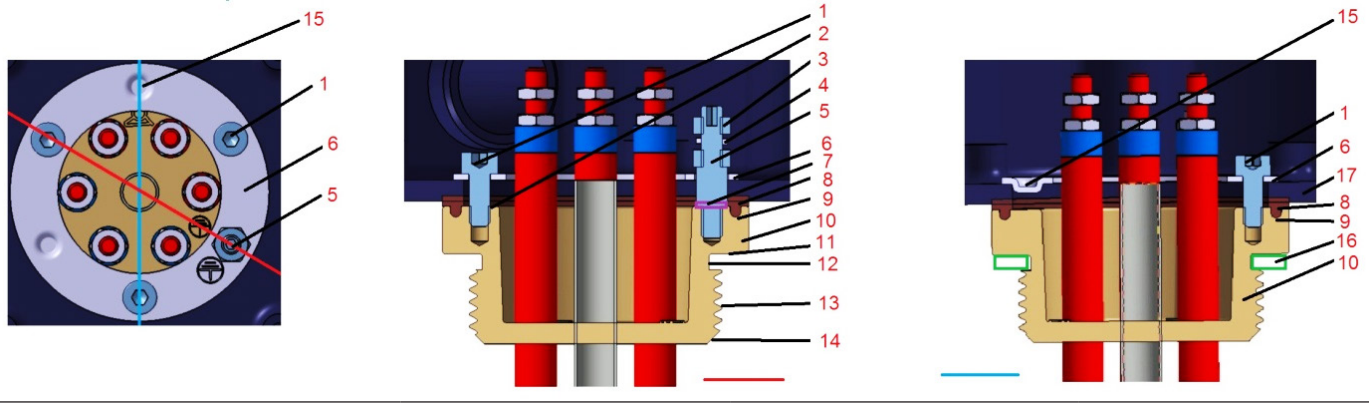
Threads
In Europe there are two common thread types used on immersion heaters fittings.
- Threads according to ISO228-1, also said BSPP or cylindrical gas thread (G),
- 2mm pitch metric thread according ISO965-1, little used, which was the subject of an attempt to standardize in the middle of the 20th century.
The threads are still sometimes described, particularly in France, according to their internal and external diameters.
All these threads are parallel, and therefore requiring a gasket surface to ensure proper sealing. They are mounted on female nozzles, or through wall with a nut.
Selecting a thread diameter is mainly imposed by the minimum possible bending diameter of sheathed elements.
Threads of 1" and below are therefore used on the cartridge heaters.
The main threads are:

Standard size	½" (15-21)	¾" (20-27)	1" (26-34)	1"¼ (33-42)	1"½ (40-49)	M45×200	2" (50-60)	2"½ (66-76)	M77x200
Outside dia	21mm	26.4mm	33.3mm	41.9mm	47.8mm	45mm	59.6mm	75.2mm	77mm

Rotation
Heaters are often screwed on nozzles welded on the wall of a tank or heater. The seal is obtained by tightening a gasket, it is impossible to predict in advance what will be the position of the fitting and its connection box when tightening will be effective.
Therefore we have designed a technical solution to facilitate the enclosure positioning after fitting tightening.

The unique design of immersion heater rotating brass fittings used in the products of this catalogue:
- Fit the full range of immersion heater enclosures, starting from the 1"¼ fitting.
- Compact size and short length result in reduced weight (save ±30% compared to double thread fittings).
- Allows a 360° rotation of enclosure.
- Thread clearance for captive gasket.
- Large chamfer facilitating correct assembly.
- Large machined gasket seat.

Technical introduction



1: Assembly screw, M4 or M5
2: Machined flat surface
3: Grounding nuts
4: Dented washer and saddle
5: Grounding stud M4 or M5
6: Rotation ring
7: Dented washer
8: Silicone waterproof gasket
9: Anti-creep groove
10: Fitting
11: Machined flat surface
12: Unlosable gasket groove
13: Metric or BSPP thread
14: Large chamfer
15: Centering embossing
16: Unlosable gasket
17: Enclosure

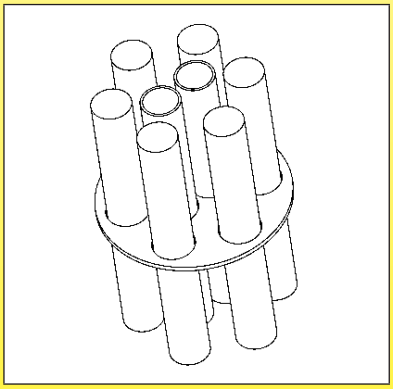
Assembly on enclosures:
- Through a hole in the enclosure. The enclosure is sandwiched between the fitting and a stamped inner ring. Bumps in the ring provide self-centering. This stamped ring costs only 10% of the conventional threaded inner rings.

Gasket between fitting and enclosure
- The 4 × 2mm section, 50 Shore silicone gasket with anti-creep rib, absorbs flatness differences, and remains in place during tightening.
- Guaranteed IP65 ingress protection up to 200°C between fitting and enclosure.

Inner stamped ring
- The clamping with 3 BTR screws at 120° ensures a good pressure distribution and an excellent mechanical strength. These screw positions increase the clearances between the screw heads and live parts of the heating elements
- The recessed hexagonal hole screw heads allow easy and stable entry of hex wrench when adjusting angular position
- Ring made of stainless steel for better durability
- Unalterable stamped earthing logo

Rohs compliance
According to the Directive 2011/65/ dated June 8, 2011 (Rohs), copper alloys are allowed to have a maximum of 4% by weight of lead as an alloying element. (Provisions of Article 4 and paragraph 1 of Annex II, limit value set by 6c of Annex III)

Maintaining the tubes
In products having several heating elements and thermowells, it is necessary, from a certain length (typically all 40cms in dia. 8mm; 50cm in 10mm dia.; 60cm in dia. 12mm), to fasten all the tubes in order to prevent them to collide. This is accomplished by one or more grids.



Non-heating zone, also said cold zone
The non-heating zone is located under the fitting or under the flange. It avoids that the heating elements heat up by thermal conduction the electrical connection ends and the housing. An usual value of this non-heating zone is 50mm (for the immersed portion).

4-Selecting the Enclosure

Plastic or aluminum enclosure?

Traditionally immersion heaters enclosures are made of aluminum, as this was the most suitable material in the middle of the 20th century, when the choice of plastic materials was limited to thermosetting resins, Bakelite type. However, the plastic enclosures offer, in addition to a wide variety of moldable shapes, interesting characteristics of electrical insulation, resistance to chemicals and corrosion. They are also generally cheaper because they do not require painted surface protection.
However, they were often criticized for their low mechanical or thermal resistance. The fault is not to the plastic itself, but to the designers of these enclosures, often from Southern Europe, who have often favored the cheapest plastic and the lowest weight of the material, at the detriment of strength and technical requirements.

Plastic enclosures

A good plastic enclosure must provide a good resistance to corrosion, shock, water ingress, UV, temperature
The choice of the plastic material and thickness will depend on electrical safety, strength, UV resistance for outdoor use, and compliance with European directives Rohs 20220/95/EC and Reach
We have therefore chosen plastics with exceptional environmental resistance characteristics, thermal and electrical.
The thicknesses used are defined to meet the impact resistance requirements.

Comparizon of main plastics used in immersion heaters enclosures

Raw material	Temperature of deformation under load (ISO 75, method A)	Impact resistance on a 3mm thick plate at 25°C (EN50102)	Resistance loss, after UV test 1000h* (ISO4892-1)	Flammability (UL94)	Mechanical breakage ISO 527/ ASTMD638	GWFI Glow wire test (IEC 60695-2-12)	Comments
ABS	92°C	9,4 (IK08)	Bad: 80% mechanical resistance loss after 1000H	UL94-HB	50 Mpa	650°C	The least expensive material. Poor temperature resistance, very poor insulation and mechanical feature. Not allowed for immersion heater enclosures.
PS	75°C	9.8 (IK08)	Medium: 25% mechanical resistance loss after 1000H	UL94-HB to UL94-HB	23 to 32 Mpa	750 to 960°C	Inexpensive material. No temperature resistance, low mechanical strength. Not allowed for immersion heater enclosure.
PA66	100°C	2.9 (IK06)	Medium: 22% mechanical resistance loss after 1000H	U94-VO	80 to 85 Mpa	650 to 750°C	Good mechanical resistance but low temperature and UV resistance. Low electrical insulation.Non recommended for immersion heater enclosure.
PC	135°C	21,2 (IK10)	Good: 11% mechanical resistance loss after 1000H	UL94-5V	70 Mpa	850°C	Avoid if possible for immersion heater enclosures, due to its average resistance to UV and glow wire flammability. Fiberglass reinforced, with black pigment, however, can be used, as this plastic has a good temperature resistance.
PC-ABS	80°C	11,6 (IK09)	Good: 18% mechanical resistance loss after 1000H	UL94-VO	60 MPA	960°C	Generally suitable for indoor use immersion heater enclosure, if there is no possible high temperature
PC-ABS +20%FG	120°C	9,1 (IK08)	Good: 15% mechanical resistance loss after 1000H	UL94-VO	77 MPA	960°C	Suitable for immersion housings for indoor and outdoor. Less expensive than glass fiber reinforced PA66. Has a good surface finish.
PA66, 20%FG	250°C (Peak) 120°C (Permanent)	IK10 (The most stringent)	Excellent: 7% mechanical resistance loss after 1000H	UL94 –VO and UL94-5V (The most stringent)	150 Mpa	960°C	The best technical choice: the highest technical characteristics in temperature, UV, mechanical strength and electrical insulation. However, it is the most expensive material (in the UL94-VO and GWFI 960 types). Used on all connection blocks and on most of the plastic enclosures of this catalogue.

Note on IK Classes: to be IK rated, a material must withstand a shock greater than or equal to the following values: 1 joule = IK06, IK07 = 2 Joules, IK08 = 5 Joules, 10 Joules = IK09, IK10 = 20 Joules. Therefore, an IK10 box is on average 2 times stronger than IK09, 4 times more than IK08, **10** times more than IK07 and **20** times more than IK06.
* UV resistance is improved by the addition of black pigment (black carbon), and it is the main reason for the black color of the boxes intended for outdoor use.

Technical introduction

Aluminum enclosures:
These enclosures provide unmatched mechanical and thermal resistance, while remaining relatively mild. Good thermal conductors, they evacuate smoothly the energy received by heating elements conduction. However, they suffer from the following disadvantages:
They are not electrically insulated, and internal wiring must be protected accordingly, and they need to be grounded.
They are susceptible to galvanic corrosion in wet conditions, and especially when in contact with metals such as zinc or galvanized steel.
If the surface is not protected, they will also be quickly covered by an oxidized layer.
Therefore, good aluminum housings must be grounded and protected against galvanic corrosion and receive an epoxy paint layer when used outdoors.

Our aluminum enclosures were therefore designed to meet these requirements. For this purpose, they have:
- Stainless steel nuts and screws to prevent galvanic corrosion between the screw and nut.
- Crimped nuts with epoxy seal to prevent galvanic corrosion between nut and aluminum.
- Plastic washers under the heads of the cover screws to prevent galvanic corrosion between the head of the nut and cover.
- They are coated with a baked epoxy paint applied on a sandblasted surface (to improve epoxy bonding to surface) thus providing a durable and reliable protection.

In addition, to reflect the wishes of users, they have in addition the following advantages:
- Captive stainless steel lid screws with dual slots Phillips head.
- These screws are mounted in “Nylstop” locknuts, which prevent their loosening by vibration.
- Two internal grounding threads, equipped with M4 stainless steel screws and washers. The larger models are also equipped with two external grounding threads.
- 3mm and sometimes 4mm wall thickness that permits tapping of threads, for cable glands, caps and other immersion heaters fittings.
- Internal studs on the cover that provides the possibility to mount thermostats with sealed wall crossing axis.
- Internal studs on lower part of enclosures for mounting terminal blocks or accessories that are not secured to the cover.
- Recessed places for labels or name plates that can be riveted or glued, to avoid intentional or unintentional removal.
- Silicone foam cover seal: temperature resistance up to 200°C and good compensation of surface irregularities in the sealing surfaces.

Cable and wire outputs on cartridge heaters
The outputs of wires or cable on cartridge heaters can be protected by silicone filler cap, or by an over-molded PA66 boot. This provides an ingress protection degree higher than IP65.

5-Selecting temperature control and safety devices

Selection of types of regulation

Traditionally the immersion heaters, when they are equipped with a temperature control device are using a mechanical thermostat, and its sensor is mounted in a pocket located between the heaters. This is a compact and reliable solution.

It is also possible now, to produce compact immersion heaters with electronic temperature controllers, combined or not with a fail-safe manual reset safety thermostat.

Comparison of mechanical and electronic control systems that can be incorporated in immersion heaters.

Device	Control accuracy and differential	Ambient temperature	Electrical rating	Comments
Single pole bulb and capillary thermostat	Set point accuracy: ±3°C to ±5°C, varies upon temperature ranges. Differential: 2.5 to 4°C, vary upon temperature ranges.	80°C (temperature ranges up to 60°C) 125°C (temperature ranges up to 110°C)	16A 250V (Up to 3 × 32A 400V in products with built-in power relay)	Compact, can be mounted in all enclosures above 9ST3. Usually used up to 3000W single phase
Single pole bulb and capillary thermostat + manual reset single pole safety thermostat	Set point accuracy: ±3°C to ±5°C, varies upon temperature ranges. Differential: 2.5 to 4°C, vary upon temperature ranges.	80°C (temperature ranges up to 60°C) 125°C (temperature ranges up to 110°C)	16A 250V (Up to 3 × 32A 400V in products with built-in power relay)	Usually used up to 3000W single phase. Safer solution than a single thermostat. This combination is possible only in enclosures from 9ST6
3 pole bulb and capillary thermostat	Set point accuracy: ±4°C to ±6°C, varies upon temperature ranges. Differential: 4 to 6°C, vary upon temperature ranges.	80°C (temperature ranges up to 60°C) 125°C (temperature ranges up to 110°C)	3 × 16A 250V 3 × 16A 400V	Allows to control 3 phase loads in a compact form. Can be mounted in any enclosure above 9ST4, excluding 9STC.
3 pole bulb and capillary thermostat + 3 pole manual reset safety thermostat	Set point accuracy: ±4°C to ±6°C, varies upon temperature ranges. Differential: 4 to 6°C, vary upon temperature ranges.	80°C (temperature ranges up to 60°C) 125°C (temperature ranges up to 110°C)	3 × 16A 250V 3 × 16A 400V	Only compatible with 9ST7 boxes
Combined device, 3 pole temperature control and manual reset safety thermostat	Set point accuracy: ±5°C to ±8°C, varies upon temperature ranges. Differential: 8 to 12°C, vary upon temperature ranges.	80°C (temperature ranges up to 60°C) 125°C (temperature ranges up to 110°C)	3 × 20A 250V 3 × 16A 400V	Simple, but huge calibration drift upon ambient temperature. Compatible with 9ST5 enclosure and above (except 9STC)
Electronic temperature controller with digital display	Display 1/10°C under 100°C. °C display up. Accuracy ±1°C. Adjustable differential	60°C	1 × 16A 250V or 3 × 16A 250V Up to 3 × 32A 400V in products with built-in power relay, or up to 25A 250V In products using Solid state relay.	Permanent illuminated digital display of the liquid temperature. For on-OFF or PID temperature control upon models. Compatible with 9ST8, 9STB, 9ST9, 9STA enclosures
Electronic temperature controller with digital display and manual reset bulb and capillary thermostat	Display 1/10°C under 100°C. °C display up. Accuracy ±1°C. Adjustable differential	60°C	Up to 3 × 32A 400V in products with built-in power relay, or up to 25A 250V In products using Solid state relay.	Permanent illuminated digital display of the liquid temperature. For on-OFF or PID temperature control upon models. Compatible with 9ST8, 9STB, 9ST9, 9STA enclosures

Inside or outside setting?
The choice of access to the thermostat setting is dependent on the application.
- An internal access, which requires unscrewing the housing cover screws limits the possibilities of modification by unauthorized persons, and it is possible to seal the cover screws in order to check if someone has accessed this setting
- An access by an external knob is preferred when this adjustment must be changed regularly in the normal working operation of the heater. If needed, accessories like adjustable stops (see last section of this catalog) will allow setting high or low adjustment limits by the user. However, a device with an external knob is more brittle, less protected from impact and has a lower water and dust ingress protection. It is therefore not recommended for outdoor use.
- A Compromise between internal and external access is access under cap. Unscrewing, by means of a screwdriver or of a coin of a M25 cap provides access to a miniature knob on dial. Protection against water or dust ingress, and impact strength are not modified, provided that the cap is correctly reassembled.

Thermowells (also said « pockets »)
Thermowells are used to place temperature measurement sensors in a liquid-tight tube to sense the temperature of the liquid in which the heater is immersed. The location of the thermowell is important because it determines the accuracy of the measured temperature, and the response time required to measure a temperature change.
A thermowell located in the center of the heater, at a distance of 10 to 20mm of the tubular heating elements, provide a good measure of the average fluid temperature, and will therefore be adapted to a control system.
If a safety thermostat is installed, and if it is intended to measure overheating of the liquid, a similar positioning of the thermowell is great. But if it is intended to detect dry running and avoid the destruction of the item or the risk of fire due to dry running, this thermowell, especially the part where is located measuring element or the thermal fuse, should be very close to the heating elements that come out of the liquid when it goes down.
If, in this case, the heating elements have a high surface load, a copper tube thermowell, better heat conductor than stainless steel, is recommended to reduce the response time. Do not hesitate to contact us.

Use and installation of thermal cut out (TCO)
The ultimate security in an immersion heater is to use a thermal fuse. Two solutions exist:
- One is to install the wired TCO in a thermowell close to a heating element so that the TCO is triggered if the heater is used when not submerged. This solution allows the change of the fuse during a maintenance operation. This mounting requests 9mm I.D. thermowell (larger than that usually used for thermostats or temperature sensors).
- The second is to embed the TCO in the cold zone of the heating element, but in this case the temperature response time is slower, and this mounting does not permit the change of the TCO when it has trigged. The entire immersion heater must then be replaced.

Section 3
References list

References list

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5MA3SPF070F18500	8GB-35035AO60001	9BBRA3000ELH259A	9RBU388C15052325	9SFT400152307217	9ST4G5E1015UK130
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9STTADT40252BC2Q
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9STTADU4055VBE5Q
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9STTADU4060VBF0Q
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9STTADU4075VBG0Q
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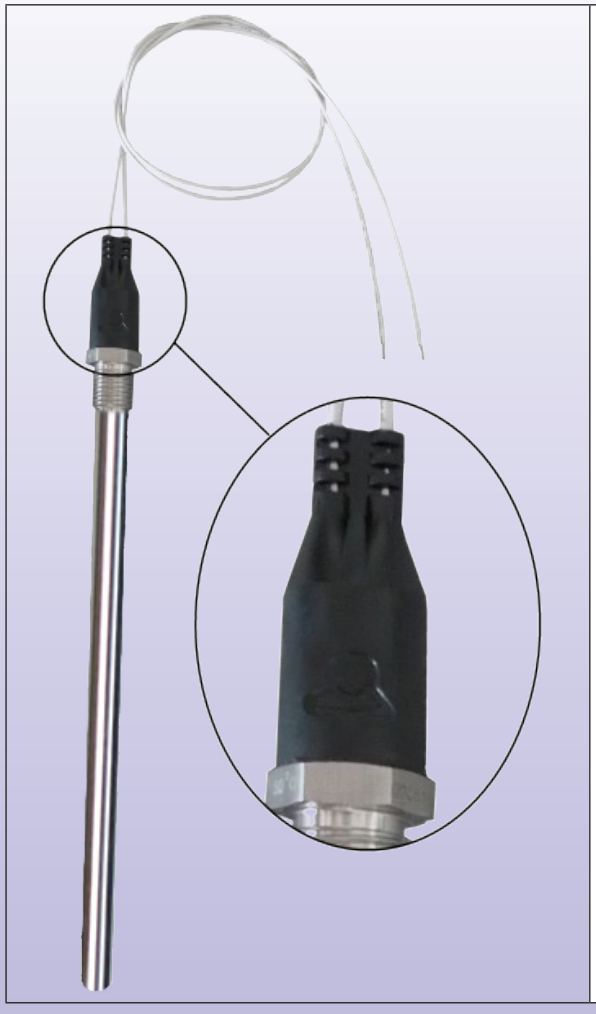
Update 2025/03/24

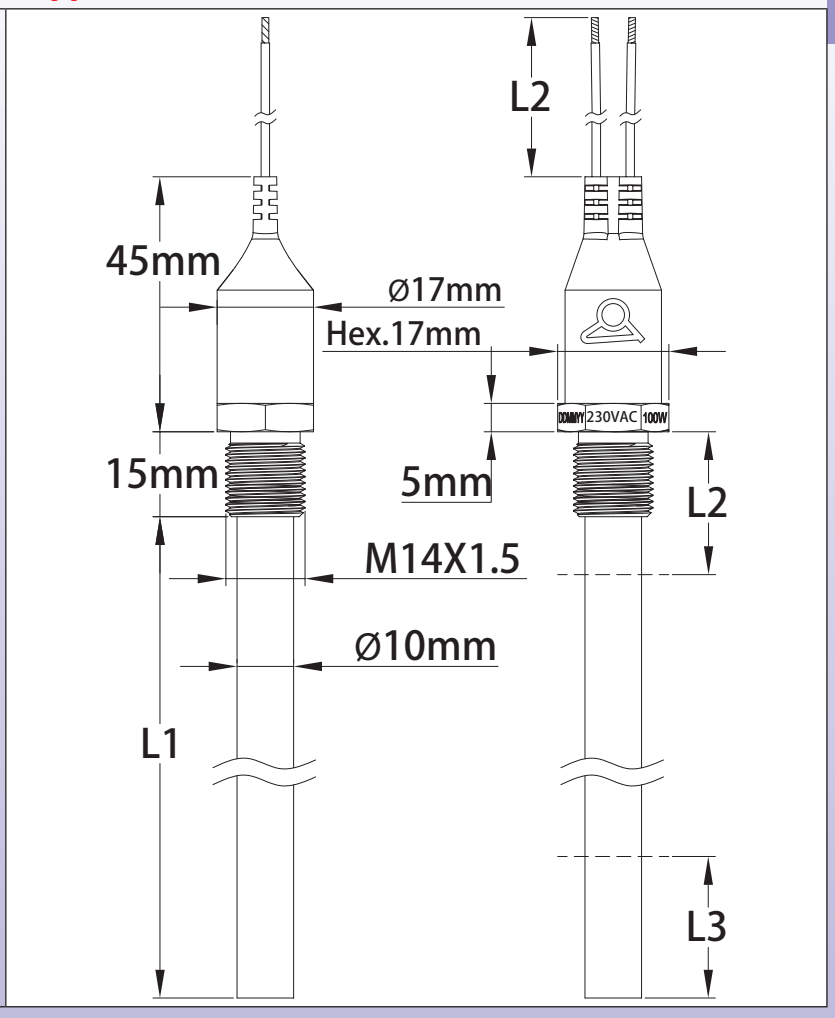
Section 4
Cartridge heaters

Cartridge heaters

Cartridge heaters dia. 10mm, with built-in thermostat, M14 × 1.5 thread

Type 9T10





Main applications: Liquid heating when the space available for the heating element is reduced. E.g. heating oil supply systems, oil filters, sump engines, gearboxes, hydraulic power units. The heater has a built-in thermostat. It is the smaller heating element with built-in thermostat.
- 3 surface load values: 2.5W/cm², 5W/cm², 10W/cm². See technical introduction to optimize the surface load.

Heating tube material: Element diameter 10mm, AISI 304 (AISI 316, AISI 321; Incolloy 800, 825 on request).
Insulation: Magnesia compressed by lamination guaranteeing good heat transfer and allows loads up to 20W/cm²
Fitting Material: TIG welded 304 stainless steel, with gasket seat. Shipped without gasket.
Thread: M14×1.5
Connection: PVC insulated wires, 300V, 300mm length
Ingress Protection: IP65 wires output, carried out by PA66 over-molding.
Standard lengths (L1): 215, 315, 415, 515, 615mm
Not immersed heating zone (L2): 40mm.
Non-heating zone receiving the thermostat (L3): 50mm
Surface load: 2.5W/cm² (main applications for oils), 5W/cm² (water without flow), 10W/cm² (circulating water). Other surface loads on request.
Voltage: 220-240V single phase, and 24VDC
Thermostat calibration temperatures: 50 ±5°C (122±9°F), 70 ±5°C (158±9°F), 90 ±5°C (194±9°F), 100 ±5°C (212±9°F), 110 ±5°C (230±9°F)
Options on request (MOQ may apply):
- Other calibration temperature, from 40°C to 150°C (104 to 302°F).
- Types without built-in thermostat
- Lower tolerances on the calibration temperature
- Different wire lengths
- Over-molded cable output
- Tube length up to 1.8m (Maximum power 1700W in 230V and 360W in 24VDC)
- Other thread
- Other voltage

Cartridge heaters

Main references in 230V, thermostat set at 50°C±5°C (122±9°F)*

	2,5W/cm²		5W/cm²		10W/cm²	
Length L1	Power (W)	Reference	Power (W)	Reference	Power (W)	Reference
215	100	9T10215FF010C5V3	200	9T10215FF020C5V3	400	9T10215FF040C5V3
315	180	9T10315FF018C5V3	360	9T10315FF036C5V3	720	9T10315FF072C5V3
415	260	9T10415FF026C5V3	520	9T10415FF052C5V3	1040	9T10415FF104C5V3
515	340	9T10515FF034C5V3	670	9T10515FF067C5V3	1350	9T10515FF135C5V3
615	420	9T10515FF042C5V3	820	9T10515FF082C5V3	1650	9T10515FF165C5V3

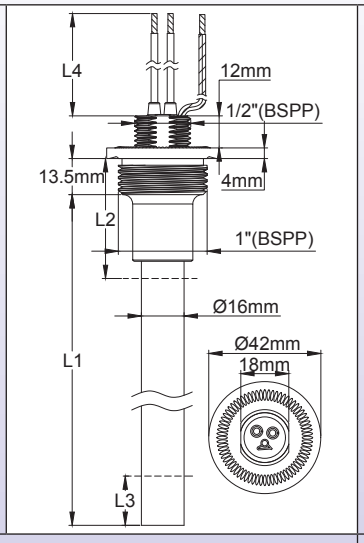
Main references in 24VDC, thermostat set at 50°C±5°C (122±9°F)*

	2,5W/cm²		5W/cm²	
Length L1	Power (W)	Reference	Power (W)	Reference
215	100	9T10215FB010C5V3	200	9T10215FB020C5V3
315	180	9T10315FB018C5V3	360	9T10315FB036C5V3
415	260	9T10415FB026C5V3	Higher power not available	

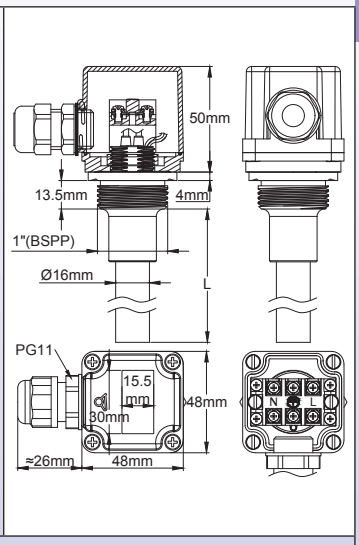
*Thermostat set at 70 ±5°C (158±9°F), replace C5 by C7 in the reference
*Thermostat set at 90 ±5°C (194±9°F), replace C5 by C9 in the reference
*Thermostat set at 100 ±5°C (212±9°F), replace C5 by CA in the reference
*Thermostat set at 110 ±5°C (230±9°F), replace C5 by CB in the reference

Cartridge heaters dia. 16mm, with built-in thermostat, 1"BSPP thread

Type 9T16



Wires output type



Connection box type

Main applications: Heat transfer oil heating on oil filled radiators, and general water or liquids heating when the space available is reduced.
- 3 surface load values: 2.5W/cm², 5W/cm², 10W/cm². See technical introduction to optimize the surface load.

Heating tube material: Element diameter 10mm, AISI 304 (AISI 316, AISI 321; Incolloy 800, 825 on request).
Insulation: Magnesia compressed by lamination guaranteeing good heat transfer and allows loads up to 20W/cm²
Fitting Material: Crimped 304 stainless steel, with gasket seat.
Thread: 1" BSPP. This thread allows mounting on standardized central heating radiators. Other side of this fitting is a ½" BSPP for enclosure mounting.
Connection (2 options):
- 1mm², Silicone insulated wires, 300V, 300mm length, waterproof by silicone potting
- 48 × 48 × 50mm plastic enclosure, PA66 black, PG11 cable gland output. Built in 3 × 2.5mm² screws connection block.

Standard lengths (L1): 250, 380, 580, 780, 980mm
Not immersed heating zone (L2): 50mm.
Thermostat non-heating zone (L3): 50mm
Surface load: 2, 5W/cm² (oils), 5W/cm² (heat transfer oils, water without flow), 10W/cm² (circulating water). Other surface loads on request.
Voltage: 220-240V single phase.
Thermostat calibration temperatures: 50 ±5°C (122±9°F), 70 ±5°C (158±9°F), 90 ±5°C (194±9°F), 100 ±5°C (212±9°F), 110 ±5°C (230±9°F)
Options on request (MOQ may apply):
- Other calibration temperature, from 40°C to 150°C (104 to 302°F).
- Types without built-in thermostat
- Lower tolerances on the calibration temperature
- Different wire lengths
- Tube length up to 1.8m (Maximum power 1700W in 230V for models with built in thermostat)
- Other thread
- Other voltage
- Built-in thermal cut-out, inside the threaded section (usual set point temperature 144°C)

Main references in 230V, thermostat set at 50°C±5°C (122±9°F)*, wires output

	2,5W/cm²		5W/cm²		10W/cm²	
Length L1	Power (W)	Reference	Power (W)	Reference	Power (W)	Reference
250	190	9T16250FF019B5V3	380	9T16250FF038B5V3	750	9T10250FF075B5V3
380	350	9T16380FF035B5V3	700	9T16380FF070B5V3	1400	9T10380FF140B5V3
580	600	9T16580FF060B5V3	1000	9T16600FF100B5V3	Higher power are only available without built-in thermostat	
780	850	9T16780FF085B5V3	1400	9T16850FF140B5V3		
980	1100	9T16980FF110B5V3	1700	9T16980FF170B5V3		

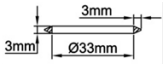
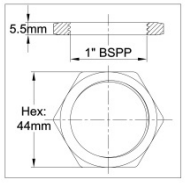
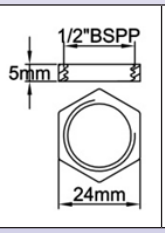
Cartridge heaters

Main references in 230V, thermostat set at 50°C±5°C (122±9°F)*, plastic housing

	2,5W/cm²		5W/cm²		10W/cm²	
Length L1	Power (W)	Reference	Power (W)	Reference	Power (W)	Reference
250	190	9T16250FF019B510	380	9T16250FF038B510	750	9T10250FF075B510
380	350	9T16380FF035B510	700	9T16380FF070B510	1400	9T10380FF140B510
580	600	9T16580FF060B510	1000	9T16580FF100B510	Higher power are only available without built-in thermostat	

*Thermostat set at 70 ±5°C (158±9°F), replace B5 by B7 in the reference
*Thermostat set at 90 ±5°C (194±9°F), replace B5 by B9 in the reference
*Thermostat set at 100 ±5°C (212±9°F), replace B5 by BA in the reference
*Thermostat set at 110 ±5°C (230±9°F), replace B5 by BB in the reference

Accessoires

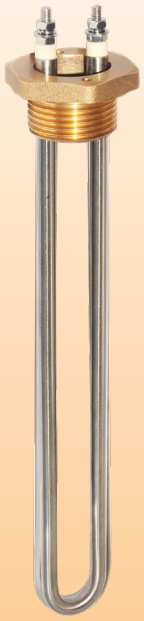
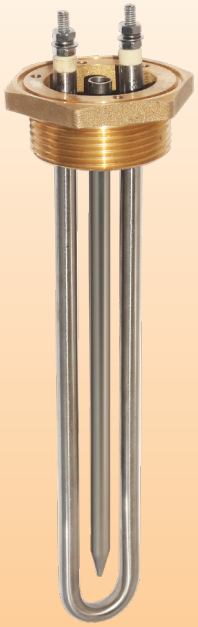
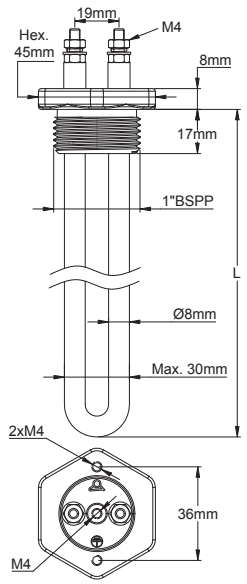
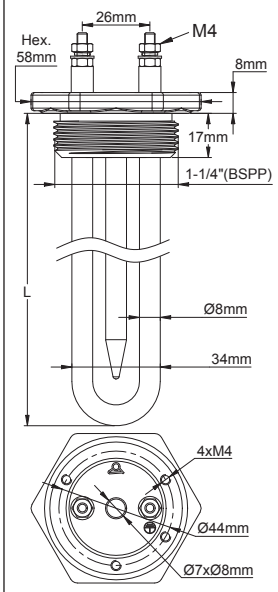
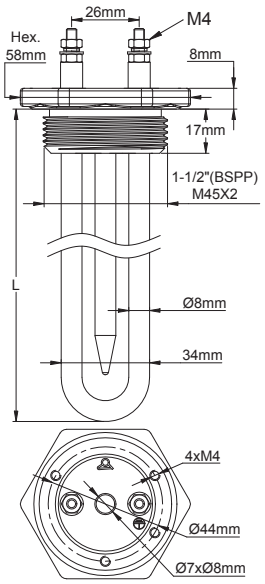
	1" High temperature Viton Gasket Ref 9BBJ03000000005A		1" Brass nut Ref 9BBRA3000ELH047A		½" Brass nut Ref 9BBVE2000004003A

Section 5
Immersion heaters without connection box, stainless steel tubes dia. 8mm

Immersion heaters

Immersion heaters with a single hairpin heating element, brazed brass fitting, with cylindrical thread 1”BSPP; 1”¼ BSPP; 1”½ BSPP; M45x2.

Type 9RBU1

				
With 1”BSPP fitting	With 1”¼ BSPP, 1”½ BSPP and M42x2 fittings	With 1”BSPP fitting	With 1”¼ BSPP fitting	With 1”½ BSPP or M45x2 fitting

Main applications: Heating of liquids, hot water circuits, containers and buffer tanks.
They exist in standard in 2 types of surface load density: 5W/cm² and 10W/cm² (Others available on request). See the technical introduction to select the best surface load.
Many enclosures for these heaters are available in our catalogue N°11.
Heater tube material: 8mm dia. in AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: Brass, brazed on tubes. Supplied without gasket and without nut. See accessories below. These fittings have M4 threaded holes for connection box assembly
Thread: 1” BSPP; 1”¼ BSPP; 1”½ BSPP (ISO 228); M45x2.
Thermowell: Dia. 8x7mm, using the same material than heating elements. (Not available on 1” fittings)
Heating elements connections: Stainless steel M4 screw terminals, nuts and washers
Ground connection: M4 threaded hole
Not heating immersed zone: 50mm including the length inside the fitting.
Surface load: Standard 5 W/cm² or 10 W/cm², others values on request.
Voltage: 230-240V single phase (110-115V and 380-400V on request)

Main references with 1”½ fitting* without pocket **

Surface load	5W/cm²			
Power of heating element	500w	1kW	1.5kW	2kW
Length L (mm)	250	450	650	850
Reference in Aisi 304	9RBU180C05052325	9RBU180C10052345	9RBU180C15052365	9RBU180C20052385
Reference in Incolloy 800	9RBU188C05052325	9RBU188C10052345	9RBU188C15052365	9RBU188C20052385
Surface load	**10W/cm²**			
Power of heating element	1kW	1.5kW	2kW	3kW
Length L (mm)	250	350	450	650
Reference in Aisi 304	9RBU180C100A2325	9RBU180C150A2335	9RBU180C200A2345	9RBU180C300A2365
Reference in Incolloy 800	9RBU188C100A2325	9RBU188C150A2335	9RBU188C200A2345	9RBU188C300A2365

*1" fitting, replace C by A; 1”¼ fitting, replace C by B; M45 fitting, replace C by D.
**With pocket, replace U1 by UA (Not available with 1” fitting).

References of accessories in option (not included in the product, must be ordered separately):

Nuts

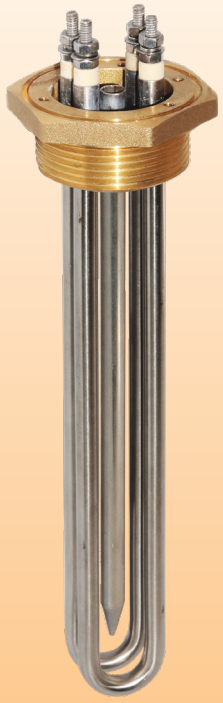
Thread	1”	1”¼	1”½	M45x200
Brass	9BBRA3000ELH047A	9BRRA3000ELH302A	9BRRA3000ELH303A	9BRRA3000ELH305A
AISI304	9BBRA3000ELH257A	9BRRA3000ELH032A	9BRRA3000ELH006A	9BRRA3000ELH049A
AISI316	9BBRA3000ELH258A	9BRRA3000ELH202A	9BRRA3000ELH203A	9BRRA3000ELH205A

Gaskets

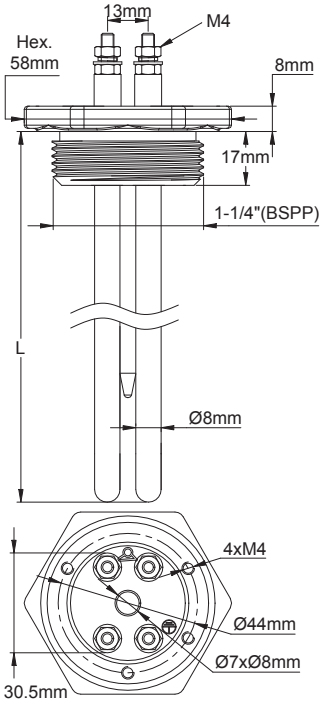
Thread	1”	1”¼	1”½ - M45x200
NBR	9BRJO3000ELH210A	9BRJ03000ELH206A	9BRJ03000ELH205A
Fiber	9BRJO3000ELH209A	9BRJ03000ELH052A	9BRJ03000ELH007A
PTFE	9BBJO3000000005A	9BRJ03000ELH032A	9BRJ03000ELH033A

Other accessories and drawings: see last section of this catalogue

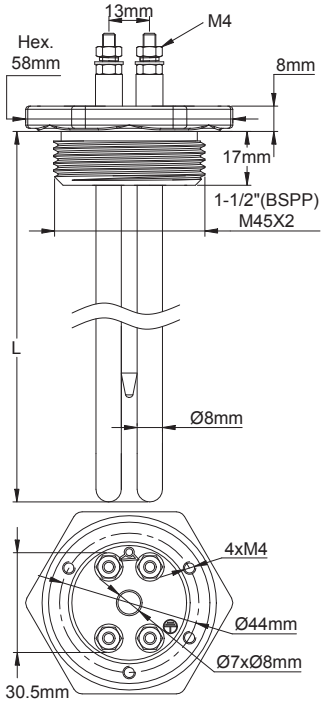
Immersion heaters with two hairpin heating elements, brazed brass fitting, with cylindrical thread 1”¼ BSPP; 1”½ BSPP; M45x2.
Type 9RBU2



With 1”¼ BSPP, 1”½ BSPP and M42x2 fittings



With 1”¼ BSPP fitting



With 1”½ BSPP or M45x2 fitting

Main applications: Heating of liquids, hot water circuits, containers and buffer tanks.
They exist in standard in 2 types of surface load density: 5W/cm² and 10W/cm² (Others available on request). See the technical introduction to select the best surface load.
Many enclosures for these heaters are available in our catalogue N°11.
Heater tube material: 8mm dia. in AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: Brass, brazed on tubes. Supplied without gasket and without nut. See accessories below. These fittings have M4 threaded holes for connection box assembly
Thread: 1”¼ BSPP ; 1”½ BSPP (ISO 228); M45x2.
Thermowell: Dia. 8x7mm, using the same material than heating elements.
Heating elements connections: Stainless steel M4 screw terminals, nuts and washers
Ground connection: M4 threaded hole
Not heating immersed zone: 50mm including the length inside the fitting.
Surface load: Standard 5 W/cm² or 10 W/cm², others values on request.
Voltage: 230-240V single phase (110-115V and 380-400V on request)

Main references with 1”½ fitting* without pocket **

Surface load	5W/cm²			
Total power	1Kw	2kW	3kW	4kW
Length L (mm)	250	450	650	850
Reference in Aisi 304	9RBU280C10052325	9RBU280C20052345	9RBU280C30052365	9RBU280C40052385
Reference in Incolloy 800	9RBU288C10052325	9RBU288C20052345	9RBU288C30052365	9RBU288C40052385

Surface load	10W/cm²			
Total power	2kW	3kW	4kW	6kW
Length L (mm)	250	350	450	650
Reference in Aisi 304	9RBU280C200A2325	9RBU280C300A2335	9RBU280C400A2345	9RBU280C600A2365
Reference in Incolloy 800	9RBU288C200A2325	9RBU288C300A2335	9RBU288C400A2345	9RBU288C600A2365

*1” fitting not available with 2 heating elements; 1”¼ fitting, replace C by B; M45 fitting, replace C by D.
**With pocket, replace U2 by UB.

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	1”¼	1”½	M45x200
Brass	9BRRA3000ELH302A	9BRRA3000ELH303A	9BRRA3000ELH305A
AISI304	9BRRA3000ELH032A	9BRRA3000ELH006A	9BRRA3000ELH049A
AISI316	9BRRA3000ELH202A	9BRRA3000ELH203A	9BRRA3000ELH205A

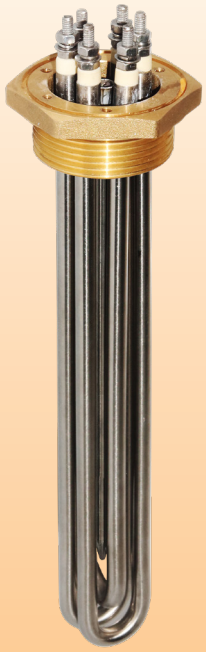
Gaskets

Thread	1”¼	1”½ - M45x200
NBR	9BRJ03000ELH206A	9BRJ03000ELH205A
Fiber	9BRJ03000ELH052A	9BRJ03000ELH007A
PTFE	9BRJ03000ELH032A	9BRJ03000ELH033A

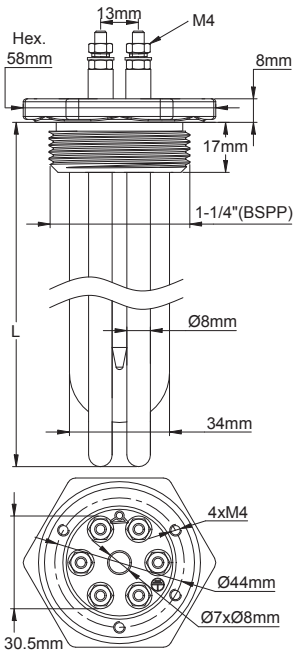
Other accessories and drawings: see last section of this catalogue

Immersion heaters

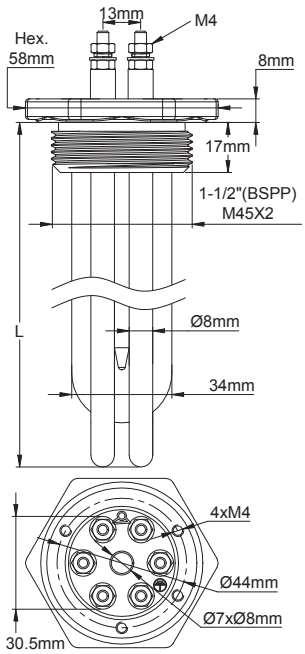
Immersion heaters with 3 hairpin heating elements, brazed brass fitting, with cylindrical thread 1”¼ BSPP; 1”½ BSPP; M45x2. Type 9RBU3



With 1”¼ BSPP, 1”½ BSPP and M42x2 fittings



With 1”¼ BSPP fitting



With 1”½ BSPP or M45x2 fitting

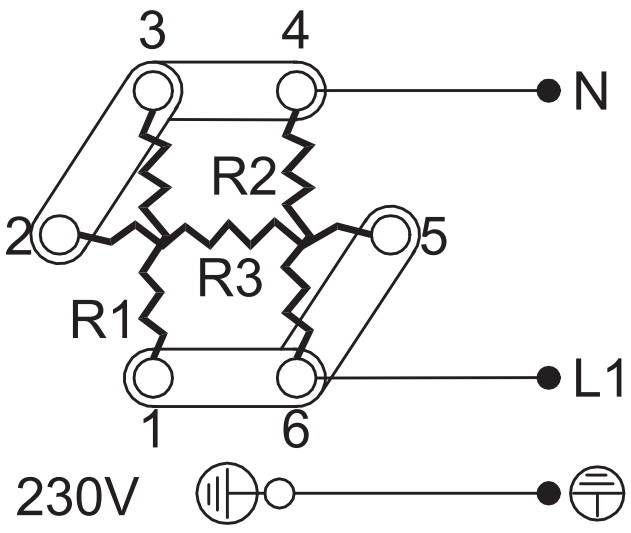
Main applications: Heating of liquids, hot water circuits, containers and buffer tanks.
They exist in standard in 2 types of surface load density: 5W/cm² and 10W/cm² (Others available on request). See the technical introduction to select the best surface load.
Many enclosures for these heaters are available in our catalogue N°11.
Heater tube material: 8mm dia. in AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: Brass, brazed on tubes. Supplied without gasket and without nut. See accessories below. These fittings have M4 threaded holes for connection box assembly
Thread: 1”¼ BSPP ; 1”½ BSPP (ISO 228); M45x2.
Thermowell: Dia. 8x7mm, using the same material than heating elements.
Heating elements connections: Stainless steel M4 screw terminals, nuts and washers
Ground connection: M4 threaded hole
Not heating immersed zone: 50mm including the length inside the fitting.
Surface load: Standard 5 W/cm² or 10 W/cm², others values on request.
Voltage: 230-240V single phase (110-115V and 380-400V on request)
Option: Set of 4 brass jumpers for star-triangle commutation in 3 phases or connection of 3 heating elements in parallel.

Main references with 1”½ fitting* without pocket **

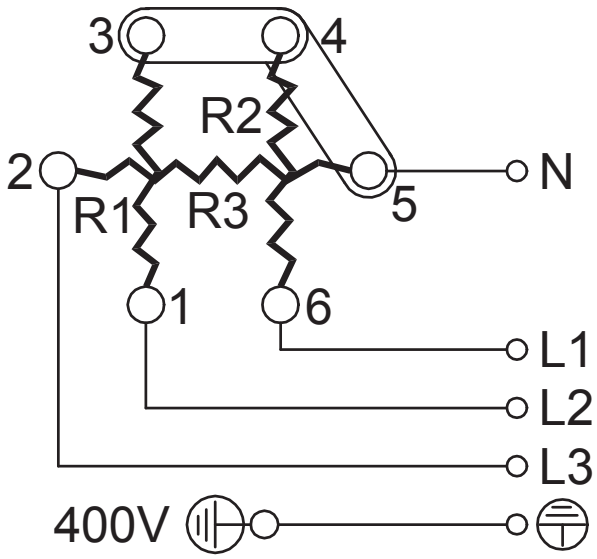
Surface load	5W/cm²			
Total power	1.5Kw	3kW	4.5kW	6kW
Length L (mm)	250	450	650	850
Reference in Aisi 304	9RBU380C15052325	9RBU380C30052345	9RBU380C45052365	9RBU380C60052385
Reference in Incolloy 800	9RBU388C15052325	9RBU388C30052345	9RBU388C45052365	9RBU388C60052385
Surface load	**10W/cm²**			
Total power	3kW	4.5kW	6kW	9kW
Length L (mm)	250	350	450	650
Reference in Aisi 304	9RBU380C300A2325	9RBU380C450A2335	9RBU380C600A2345	9RBU380C900A2365
Reference in Incolloy 800	9RBU388C300A2325	9RBU388C450A2335	9RBU388C600A2345	9RBU388C900A2365

* 1” fitting not available with 3 heating elements; 1”¼ fitting, replace C by B; M45 fitting, replace C by D.
** With pocket, replace U3 by UC.

Electric Wiring in single phase 230V and 3 phases 400V star connection



Jumpers position in 220-240V single phase



Jumpers position in 380-400V 3 phases

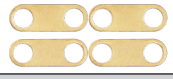
References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	1"¼	1"½	M45x200
Brass	9BRRA3000ELH302A	9BRRA3000ELH303A	9BRRA3000ELH305A
AISI304	9BRRA3000ELH032A	9BRRA3000ELH006A	9BRRA3000ELH049A
AISI316	9BRRA3000ELH202A	9BRRA3000ELH203A	9BRRA3000ELH205A

Gaskets

Thread	1"¼	1"½ - M45x200
NBR	9BRJ03000ELH206A	9BRJ03000ELH205A
Fiber	9BRJ03000ELH052A	9BRJ03000ELH007A
PTFE	9BRJ03000ELH032A	9BRJ03000ELH033A

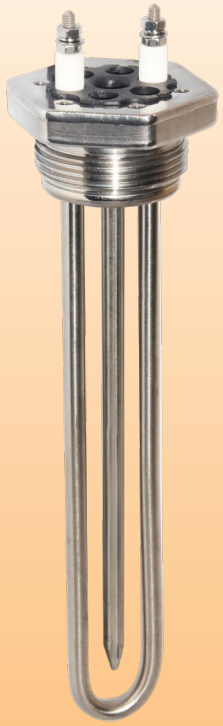
Jumpers

9BRCO1SE4ELH001A

Other accessories and drawings: see last section of this catalogue

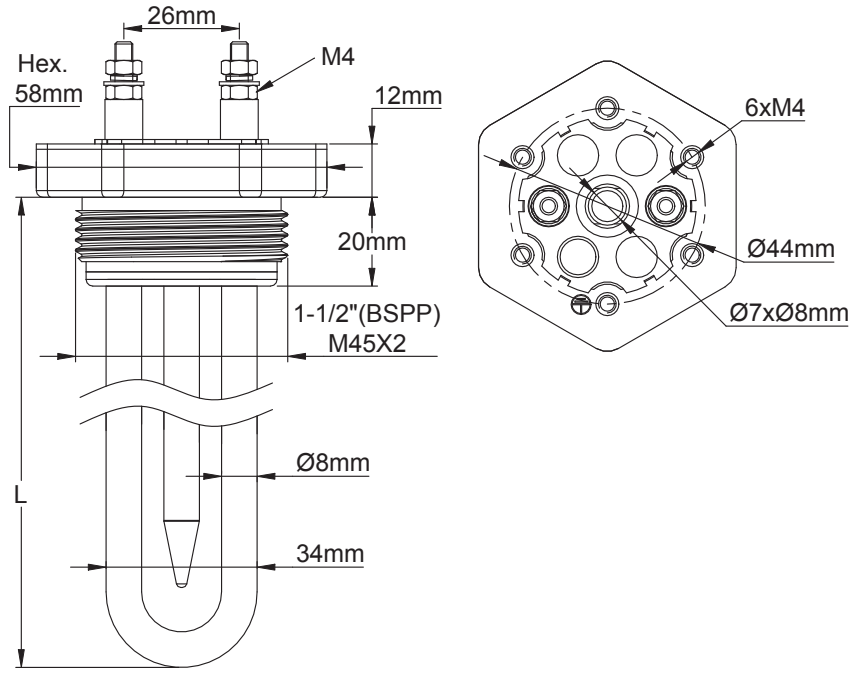
Immersion heaters

Full stainess steel immersion heaters with a single hairpin heating element, TIG welded stainless steel fitting (Without brazing), with cylindrical thread 1"½ BSPP; M45x2.

Type 9RSU1



With 1"½ BSPP and M42x2 fittings



With 1"½ BSPP or M45x2 fitting

Main applications: These immersion heaters with full stainless steel construction are intended for liquid heating applications in scientific, medical, pharmaceutical or food fields, as well as for applications in corrosive environments. All welds are TIG, without any brazing. Liquids are in contact with stainless steel only
They exist in standard in 2 types of surface load density: 5W/cm² and 10W/cm² (Others available on request). See the technical introduction to select the best surface load.
Many enclosures for these heaters are available in our catalogue N°11.
Heater tube material: 8mm dia. in AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: Stainless steel, TIG welded to the heating elements. The heated liquid is in contact only with stainless steel. The fitting material is AISI 304 for models with AISI 304, AISI 321 and Incolloy tubes, and AISI 316 for models with AISI316 tubes. Supplied without gasket and without nut. See accessories below. These fittings have M4 threaded holes for connection box assembly
Thread: 1"½ BSPP (ISO 228); M45x2.
Thermowell: Dia. 8x7mm, using the same material than heating elements.
Heating elements connections: Stainless steel M4 screw terminals, nuts and washers
Ground connection: M4 threaded hole
Not heating immersed zone: 50mm including the length inside the fitting.
Surface load: Standard 5 W/cm² or 10 W/cm², others values on request.
Voltage: 230-240V single phase (110-115V and 380-400V on request)
Option***: On request, the stainless steel fitting can be filled with epoxy resin, which provides incomparable protection against the penetration of moisture into the heating elements, especially when the environment is very humid and the heating elements only operate occasionally and for short periods.

Main references with 1"½ fitting* in Aisi 304, without pocket **

Surface load	5W/cm²			
Power of heating element	500w	1kW	1.5kW	2kW
Length L (mm)	250	450	650	850
Reference in Aisi 304	9RSU180C05052325	9RSU180C10052345	9RSU180C15052365	9RSU180C20052385
Reference in Incolloy 800	9RSU188C05052325	9RSU188C10052345	9RSU188C15052365	9RSU188C20052385

Immersion heaters

Surface load	10W/cm²			
Power of heating element	1kW	1.5kW	2kW	3kW
Length L (mm)	250	350	450	650
Reference in Aisi 304	9RSU180C100A2325	9RSU180C150A2335	9RSU180C200A2345	9RSU180C300A2365
Reference in Incolloy 800	9RSU188C100A2325	9RSU188C150A2335	9RSU188C200A2345	9RSU188C300A2365

*M45 fitting, replace C by D.
**With pocket, replace U1 by UA
*** Aisi 304 fitting with epoxy filling, replace SU by SV

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	1"½	M45x200
Brass	9BRRA3000ELH303A	9BRRA3000ELH305A
AISI304	9BRRA3000ELH006A	9BRRA3000ELH049A
AISI316	9BRRA3000ELH203A	9BRRA3000ELH205A

Gaskets

Thread	1"½ - M45x200
NBR	9BRJ03000ELH205A
Fiber	9BRJ03000ELH007A
PTFE	9BRJ03000ELH033A

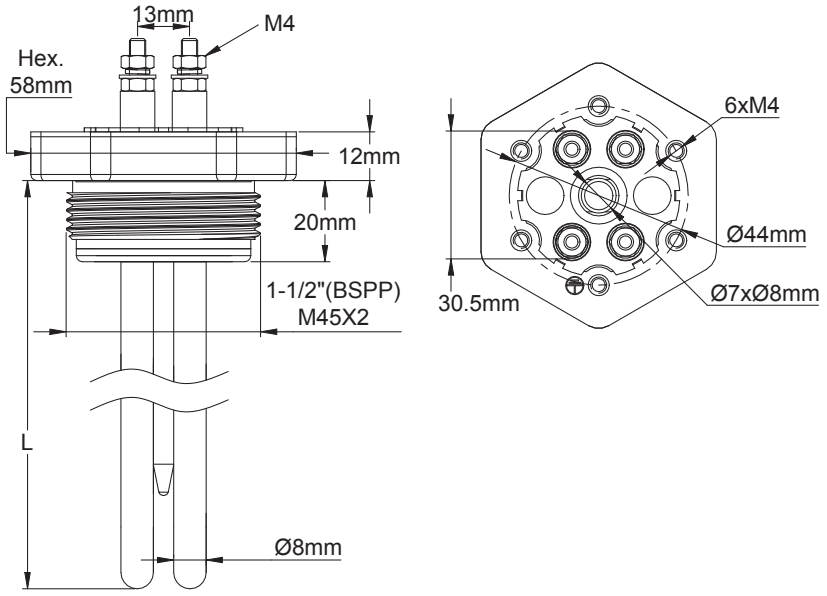
Other accessories and drawings: see last section of this catalogue

Immersion heaters

Full stainess steel immersion heaters with two hairpin heating elements, TIG welded stainless steel fitting (Without brazing), with cylindrical thread 1"½ BSPP; M45x2.

Type 9RSU2

With 1"½ BSPP and M42x2 fittings



With 1"½ BSPP or M45x2 fitting

Main applications: These immersion heaters with full stainless steel construction are intended for liquid heating applications in scientific, medical, pharmaceutical or food fields, as well as for applications in corrosive environments. All welds are TIG, without any brazing. Liquids are in contact with stainless steel only
They exist in standard in 2 types of surface load density: 5W/cm² and 10W/cm² (Others available on request). See the technical introduction to select the best surface load.
Many enclosures for these heaters are available in our catalogue N°11.
Heater tube material: 8mm dia. in AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: Stainless steel, TIG welded to the heating elements. The heated liquid is in contact only with stainless steel. The fitting material is AISI 304 for models with AISI 304, AISI 321 and Incolloy tubes, and AISI 316 for models with AISI316 tubes. Supplied without gasket and without nut. See accessories below. These fittings have M4 threaded holes for connection box assembly
Thread: 1"½ BSPP (ISO 228); M45x2.
Thermowell: Dia. 8x7mm, using the same material than heating elements.
Heating elements connections: Stainless steel M4 screw terminals, nuts and washers
Ground connection: M4 threaded hole
Not heating immersed zone: 50mm including the length inside the fitting..
Surface load: Standard 5 W/cm² or 10 W/cm², others values on request.
Voltage: 230-240V single phase (110-115V and 380-400V on request)
Option***: On request, the stainless steel fitting can be filled with epoxy resin, which provides incomparable protection against the penetration of moisture into the heating elements, especially when the environment is very humid and the heating elements only operate occasionally and for short periods.

Main references with 1"½ fitting* in Aisi 304, without pocket **

Surface load	5W/cm²			
Power of heating element	10kW	2kW	3kW	4kW
Length L (mm)	250	450	650	850
Reference in Aisi 304	9RSU280C10052325	9RSU280C20052345	9RSU280C30052365	9RSU280C40052385
Reference in Incolloy 800	9RSU288C10052325	9RSU288C20052345	9RSU288C30052365	9RSU288C40052385

Immersion heaters

Surface load	10W/cm²			
Power of heating element	2kW	3kW	4kW	6kW
Length L (mm)	250	350	450	650
Reference in Aisi 304	9RSU280C200A2325	9RSU280C300A2335	9RSU280C400A2345	9RSU280C600A2365
Reference in Incolloy 800	9RSU288C200A2325	9RSU288C300A2335	9RSU288C400A2345	9RSU288C600A2365

*M45 fitting, replace C by D.
**With pocket, replace U2 by UB
*** Aisi 304 fitting with epoxy filling, replace SU by SV

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	1"½	M45x200
Brass	9BRRA3000ELH303A	9BRRA3000ELH305A
AISI304	9BRRA3000ELH006A	9BRRA3000ELH049A
AISI316	9BRRA3000ELH203A	9BRRA3000ELH205A

Gaskets

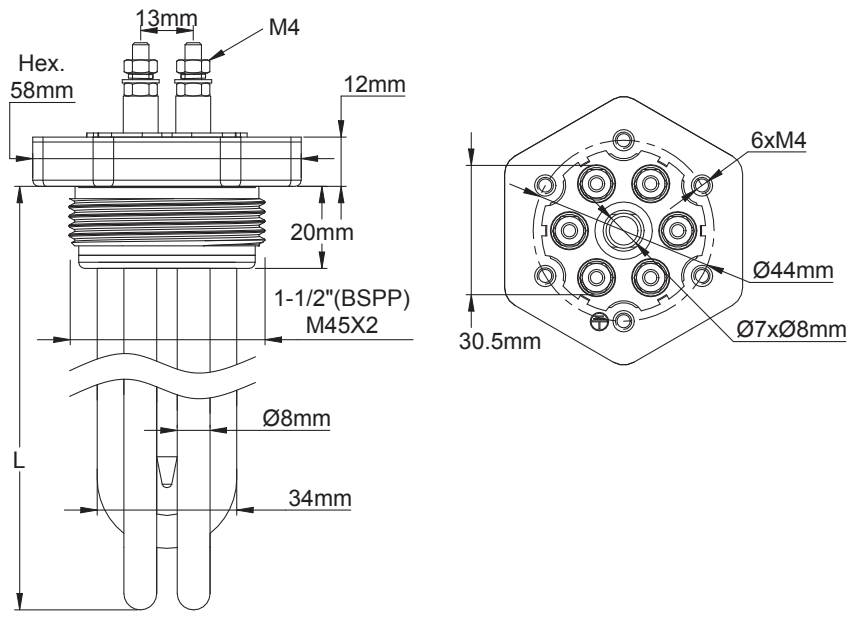
Thread	1"½ - M45x200
NBR	9BRJ03000ELH205A
Fiber	9BRJ03000ELH007A
PTFE	9BRJ03000ELH033A

Other accessories and drawings: see last section of this catalogue

Full stainess steel immersion heaters with 3 hairpin heating elements, TIG welded stainless steel fitting (Without brazing), with cylindrical thread 1"½ BSPP; M45x2.

Type 9RSU3

With 1"½ BSPP and M42x2 fittings



With 1"½ BSPP or M45x2 fitting

Main applications: These immersion heaters with full stainless steel construction are intended for liquid heating applications in scientific, medical, pharmaceutical or food fields, as well as for applications in corrosive environments. All welds are TIG, without any brazing. Liquids are in contact with stainless steel only
They exist in standard in 2 types of surface load density: 5W/cm² and 10W/cm² (Others available on request). See the technical introduction to select the best surface load.
Many enclosures for these heaters are available in our catalogue N°11.
Heater tube material: 8mm dia. in AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: Stainless steel, TIG welded to the heating elements. The heated liquid is in contact only with stainless steel. The fitting material is AISI 304 for models with AISI 304, AISI 321 and Incolloy tubes, and AISI 316 for models with AISI316 tubes. Supplied without gasket and without nut. See accessories below. These fittings have M4 threaded holes for connection box assembly
Thread: 1"½ BSPP (ISO 228); M45x2.
Thermowell: Dia. 8x7mm, using the same material than heating elements.
Heating elements connections: Stainless steel M4 screw terminals, nuts and washers
Ground connection: M4 threaded hole
Not heating immersed zone: 50mm including the length inside the fitting.
Surface load: Standard 5 W/cm² or 10 W/cm², others values on request.
Voltage: 230-240V single phase (110-115V and 380-400V on request)
Option 1: Set of 4 brass jumpers for star-triangle commutation in 3 phases or connection of 3 heating elements in parallel.
Option 2***:** On request, the stainless steel fitting can be filled with epoxy resin, which provides incomparable protection against the penetration of moisture into the heating elements, especially when the environment is very humid and the heating elements only operate occasionally and for short periods.

Main references with 1"½ fitting* in Aisi 304, without pocket **

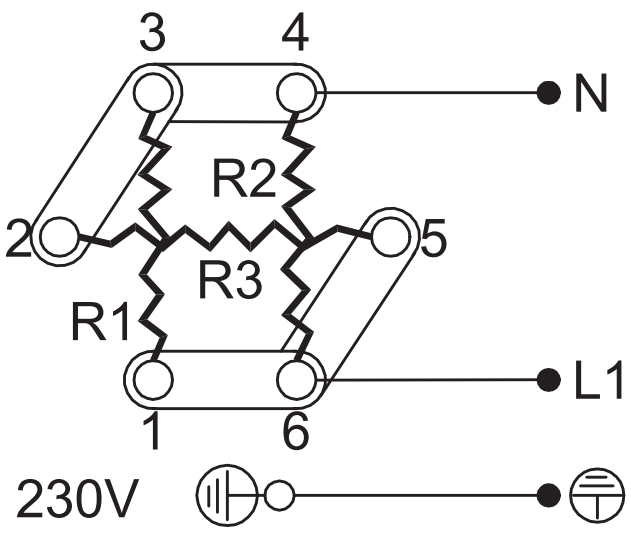
Surface load	5W/cm²			
Power of heating element	10kW	2kW	3kW	4kW
Length L (mm)	250	450	650	850
Reference in Aisi 304	9RSU280C10052325	9RSU280C20052345	9RSU280C30052365	9RSU280C40052385
Reference in Incolloy 800	9RSU288C10052325	9RSU288C20052345	9RSU288C30052365	9RSU288C40052385

Immersion heaters

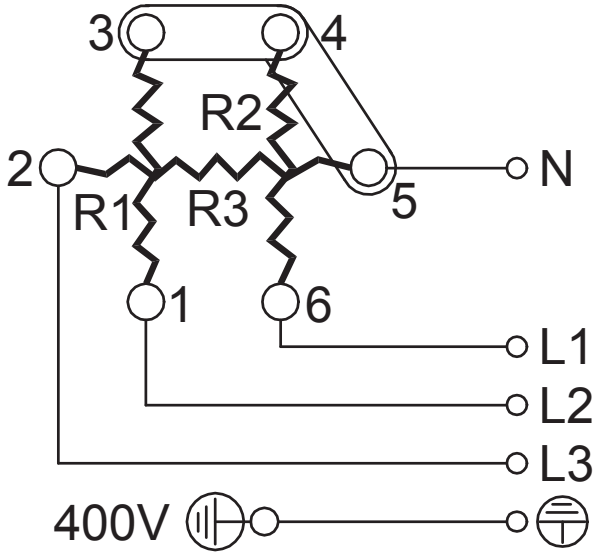
Surface load	10W/cm²			
Power of heating element	2kW	3kW	4kW	6kW
Length L (mm)	250	350	450	650
Reference in Aisi 304	9RSU280C200A2325	9RSU280C300A2335	9RSU280C400A2345	9RSU280C600A2365
Reference in Incolloy 800	9RSU288C200A2325	9RSU288C300A2335	9RSU288C400A2345	9RSU288C600A2365

*M45 fitting, replace C by D.
**With pocket, replace U2 by UB
*** Aisi 304 fitting with epoxy filling, replace SU by SV

Electric Wiring in single phase 230V and 3 phases 400V star connection



Jumpers position in 220-240V single phase



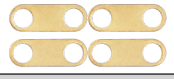
Jumpers position in 380-400V 3 phases

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	1"½	M45x200
Brass	9BRRA3000ELH303A	9BRRA3000ELH305A
AISI304	9BRRA3000ELH006A	9BRRA3000ELH049A
AISI316	9BRRA3000ELH203A	9BRRA3000ELH205A

Gaskets

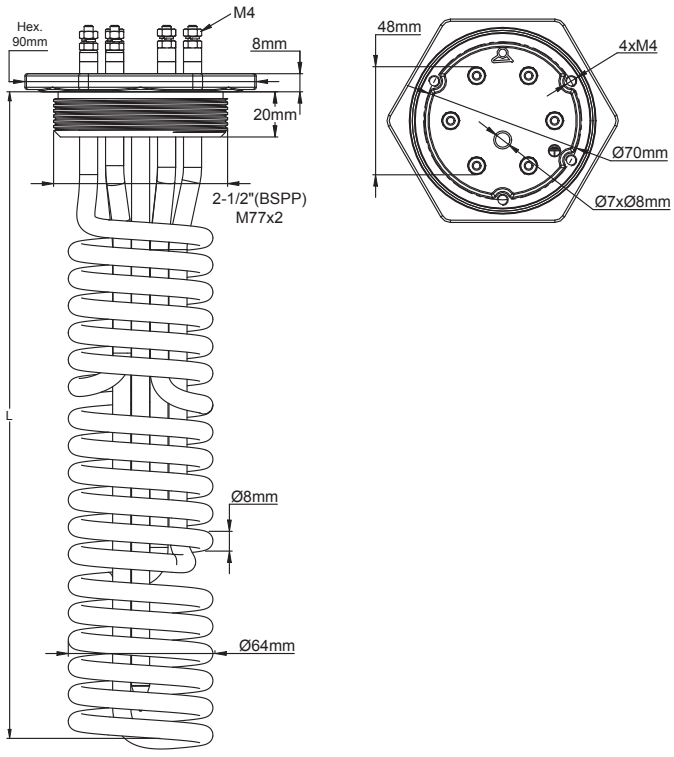
Thread	1"½ - M45x200	Jumpers
NBR	9BRJ03000ELH205A	
Fiber	9BRJ03000ELH007A	
PTFE	9BRJ03000ELH033A	9BRCO1SE4ELH001A

Other accessories and drawings: see last section of this catalogue

Immersion heaters

Ultra-short immersion heaters with 3 helical heating elements, brazed brass fitting, available in 2”½ and M77 x 2
Type 9RBW3

With 2”½ BSPP and M77x2 fittings



With 2”½ BSPP and M77x2 fittings

Main applications: Heating of liquids, hot water circuits, containers and buffer tanks. They provide significant power to heat liquids when the available depth is limited.
They exist in standard in 3 types of surface load density: 2W/cm², 5W/cm² and 10W/cm². The 2W / cm² load is recommended for heating viscous products such as oils and fats. (Others available on request). See the technical introduction to select the best surface load.
Many enclosures for these heaters are available in our catalogue N°11.
Heater tube material: 8mm dia. in AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: Brass, brazed on tubes. Supplied without gasket and without nut. See accessories below. These fittings have M4 threaded holes for connection box assembly
Thread: 2”½ BSPP (ISO 228); M77x2.
Thermowell: Dia. 7x8mm, using the same material than heating elements.
Heating elements connections: Stainless steel M4 screw terminals, nuts and washers
Ground connection: M4 threaded hole
Not heating immersed zone: 60mm including the length inside the fitting.
Surface load: Standard 2W/cm², 5 W/cm² or 10 W/cm², others values on request.
Voltage: 230-240V single phase (110-115V and 380-400V on request)
Option: Set of 4 brass jumpers for star-triangle commutation in 3 phases or connection of 3 heating elements in parallel.

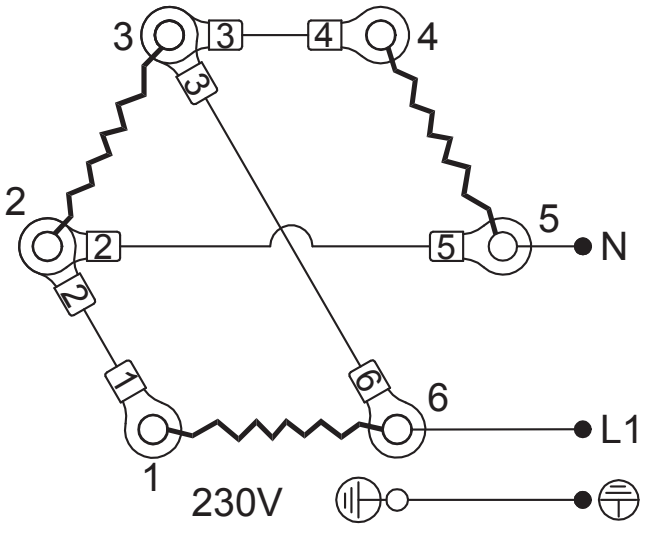
Main references with 2”½ brass fitting* without pocket **

	2W/cm²	5W/cm²	10W/cm²
Total power	**1.8 Kw**	**4.5 Kw**	**9 Kw**
Length L (mm)	290	290	290
Reference in Aisi 304	9RBW380H18022329	9RBW380H45052329	9RBW380H900A2329
Reference in Incolloy 800	9RBW388H18022329	9RBW388H45052329	9RBW388H9005A329

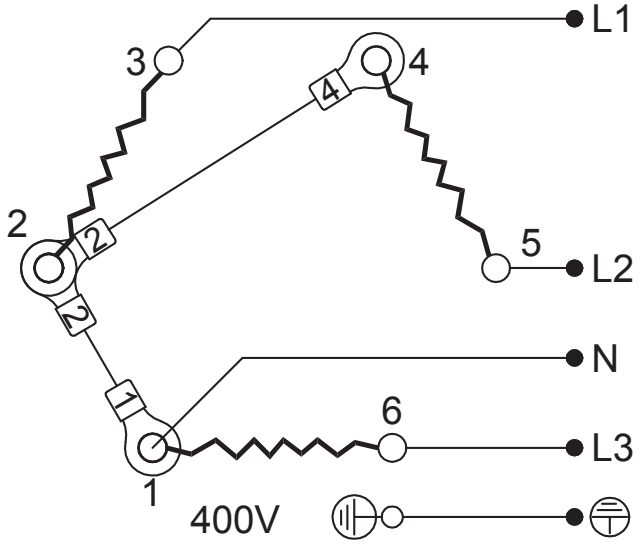
*M77 fitting, replace H by G.
**With pocket, replace W3 by WC.

Immersion heaters

Electric Wiring in single phase 230V and 3 phases 400V star connection



Jumpers position in 220-240V single phase



Jumpers position in 380-400V 3 phases

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	2"½	M77x2
Brass	9BRRA3000ELH314A	9BRRA3000ELH306A
AISI304	9BRRA3000ELH142A	9BRRA3000ELH150A
AISI316	9BRRA3000ELH214A	9BRRA3000ELH206A

Gaskets

Thread	2"½- M77x2
NBR	9BRJ03000ELH201A
Fiber	9BRJ03000ELH030A
PTFE	9BRJ03000ELH036A

2.5mm² Jumpers

9BRDS1SE4ELH001A

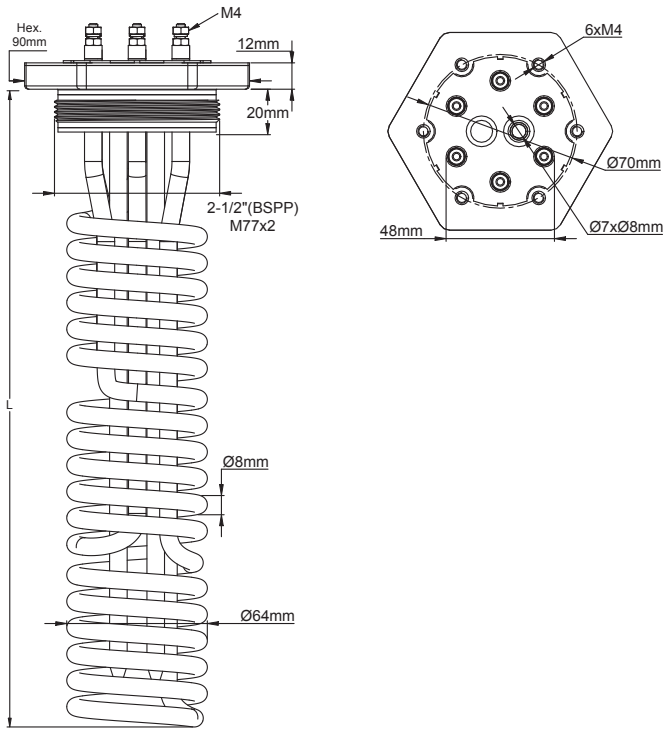
Other accessories and drawings: see last section of this catalogue

Immersion heaters

Full stainess steel ultra-short immersion heaters with 3 helical heating elements, TIG welded stainless steel fitting (Without brazing), with cylindrical thread 2”½ and M77 x 2

Type 9RSW3

With 2”½ BSPP and M77x2 fittings



With 2”½ BSPP and M77x2 fittings

Main applications: Heating of liquids, hot water circuits, containers and buffer tanks. They provide significant power to heat liquids when the available depth is limited.
They exist in standard in 3 types of surface load density: 2W/cm², 5W/cm² and 10W/cm². The 2W/cm² load is recommended for heating viscous products such as oils and fats. (Others available on request). See the technical introduction to select the best surface load.
Many enclosures for these heaters are available in our catalogue N°11.
Heater tube material: 8mm dia. in AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: Brass, brazed on tubes. Supplied without gasket and without nut. See accessories below. These fittings have M4 threaded holes for connection box assembly
Thread: 2”½ BSPP (ISO 228); M77x2.
Thermowell: Dia. 8x7mm, using the same material than heating elements.
Heating elements connections: Stainless steel M4 screw terminals, nuts and washers
Ground connection: M4 threaded hole
Not heating immersed zone: 60mm including the length inside the fitting.
Surface load: Standard 2W/cm², 5 W/cm² or 10 W/cm², others values on request.
Voltage: 230-240V single phase (110-115V and 380-400V on request)
Option: Set of 4 brass jumpers for star-triangle commutation in 3 phases or connection of 3 heating elements in parallel.

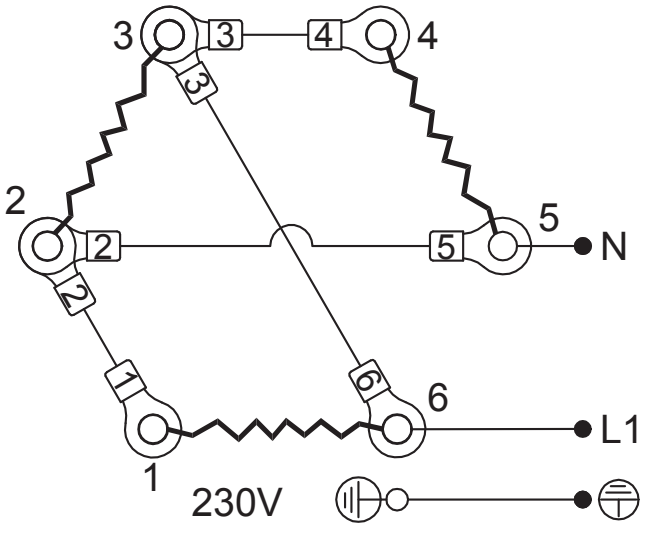
Main references with 2”½ brass fitting* without pocket **

	2W/cm²	5W/cm²	10W/cm²
Total power	**1.8 Kw**	**4.5 Kw**	**9 Kw**
Length L (mm)	290	290	290
Reference in Aisi 304	9RBW380H18022329	9RBW380H45052329	9RBW380H900A2329
Reference in Incolloy 800	9RBW388H18022329	9RBW388H45052329	9RBW388H9005A329

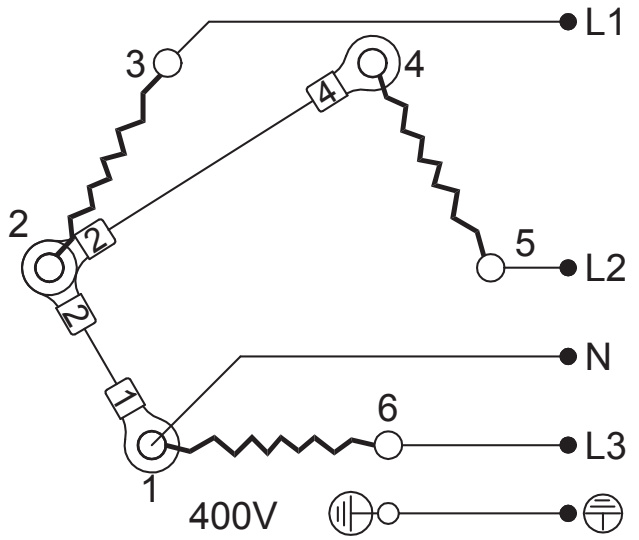
*M77 fitting, replace H by G.
**With pocket, replace W3 by WC.

Immersion heaters

Electric Wiring in single phase 230V and 3 phases 400V star connection



Jumpers position in 220-240V single phase



Jumpers position in 380-400V 3 phases

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	2"½	M77x2
Brass	9BRRA3000ELH314A	9BRRA3000ELH306A
AISI304	9BRRA3000ELH142A	9BRRA3000ELH150A
AISI316	9BRRA3000ELH214A	9BRRA3000ELH206A

Gaskets

Thread	2"½- M77x2
NBR	9BRJ03000ELH201A
Fiber	9BRJ03000ELH030A
PTFE	9BRJ03000ELH036A

2.5mm² Jumpers

9BRDS1SE4ELH001A

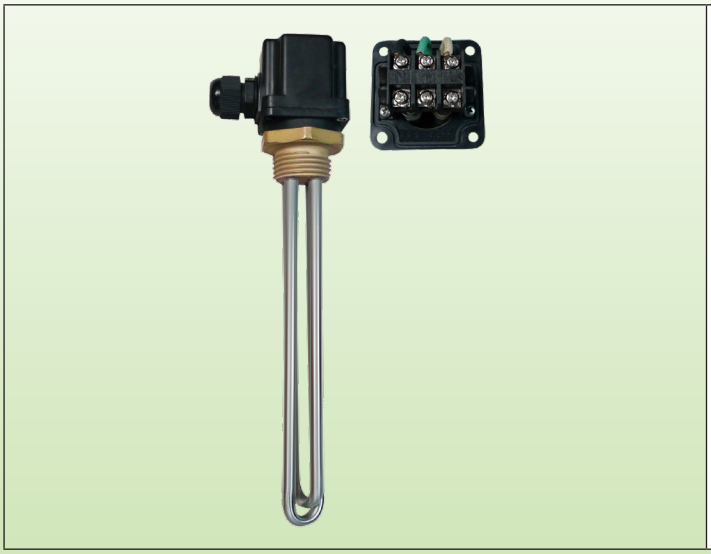
Other accessories and drawings: see last section of this catalogue

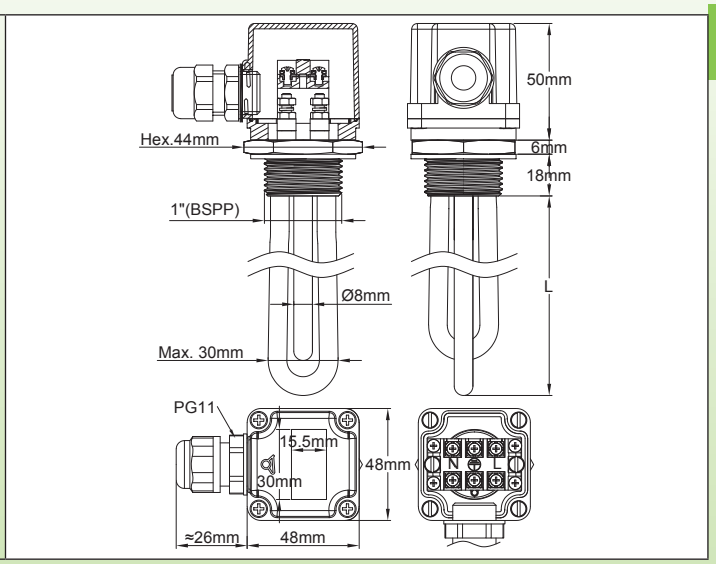
Section 6
Immersion heaters with plastic connection box

Immersion heaters with plastic connection box

Immersion heaters with 48 × 48 × 50mm PA66 connection box and 1"BSPP thread

Type 9ST1





Main applications: liquid heating, hot water circuits, containers and buffer tanks.
It has 2 heating elements dia. 8mm, 230V, connected in parallel. Serial connection of these elements allows using them in 115V.
These immersion heaters are the smallest with a connection box.
They have been designed with a built-in connection block for easier wiring. Their small size does not allow having a thermostat inside.
They exist in:
- 5 standard power levels: 500W; 1kW; 1.5kW; 2kW; 3kW
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.

Heater tube material: 8mm dia. AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: brass, non-swiveling, brazed on tubes. (AISI 304 or AISI 316, TIG welded or brazed models are available on request). Supplied without gasket and without nut. See accessories below.
Thread: 1" BSPP (ISO 228).
Enclosure: 48 × 48 × 50mm, black PA66 fiber glass reinforced.
Ingress protection class: IP54.
Cable gland: PG11, PA66. Nickel-plated brass on request.
Thermowell: not available on these types.
Heating elements connections: Built-in plastic connection block, 3 screw terminals, 2.5mm².
Not heating immersed zone: 50mm.
Surface load: standard 5W/cm² or 10W/cm², others values on request.
Voltage: 220-240V single phase (parallel wiring) or 115V (serial wiring)
Option: Only one heating element.

Main references

	5W/cm²			10W/cm²		
Power	**500w**	**1kW**	**1.5kW**	**1kW**	**2kW**	**3kW**
Length (mm)	135	240	340	135	240	340
AISI 304 Reference	9ST1A310005B8130	9ST1A310010B8240	9ST1A310015B8340	9ST1A310010B8130	9ST1A310020B8240	9ST1A310030B8340
Incolloy 800 reference	9ST1A310005BK130	9ST1A310010BK240	9ST1A310015BK340	9ST1A310010BK130	9ST1A310020BK240	9ST1A310030BK340

References of accessories in option (not included in the product, must be ordered separately):

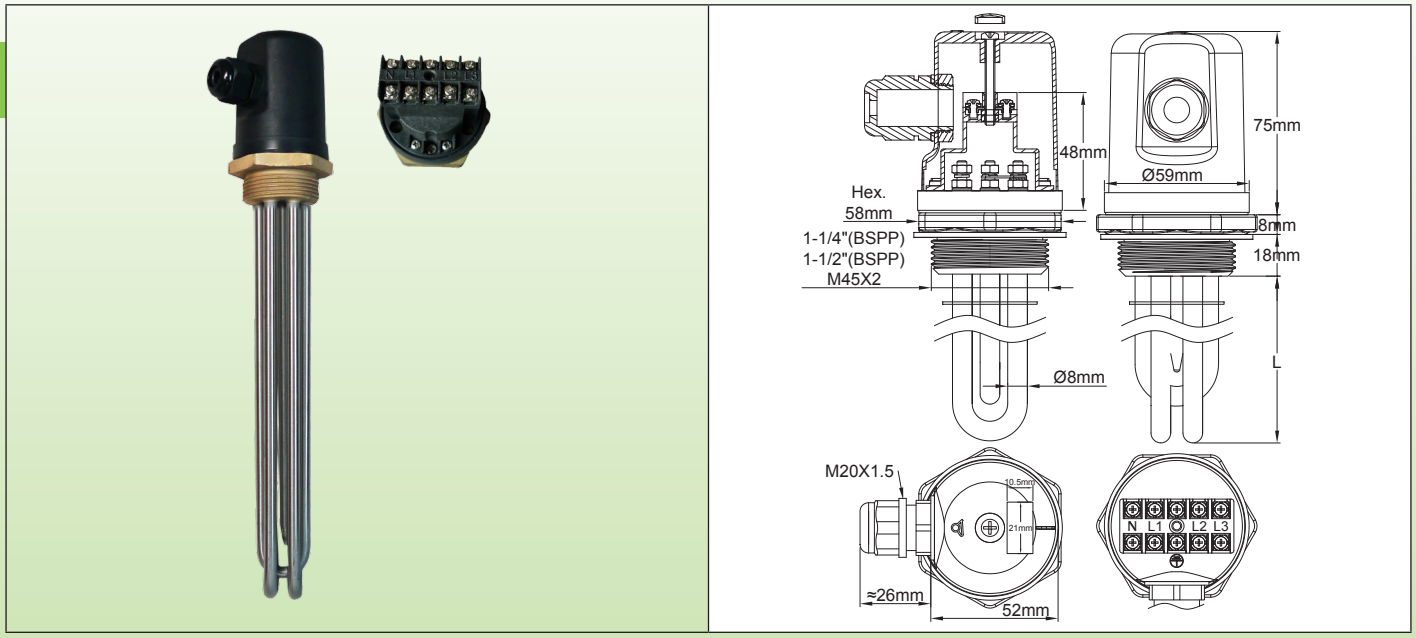
1" Nuts	
Brass	9BBRA3000ELH047A
AISI 304	9BBRA3000ELH257A
AISI 316	9BBRA3000ELH258A

Gaskets	
NBR	9BRJO3000ELH210A
Fiber	9BRJO3000ELH209A
Viton	9BBJO3000000005A

Other accessories and drawings: see last section of this catalogue

Immersion heaters with plastic connection box

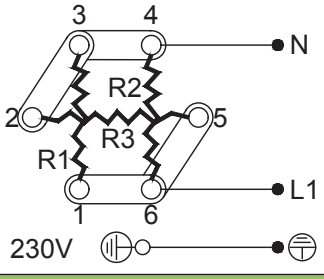
Immersion heater with round enclosure, dia. 58 × 75mm. 1"¼, 1"½, M45x2 fittings. Type 9ST2



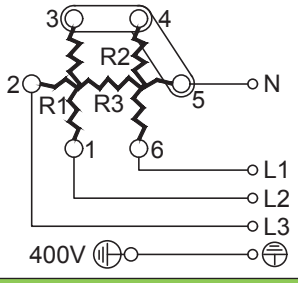
Main applications: liquid heating, hot water circuits, containers and buffer tanks.
These immersion heaters are the smallest with connection box and 3 heating elements. They have been designed with a built-in connection block for easier wiring. Their small size does not allow having a thermostat inside.
They exist in:
- 5 standard power levels: 1kW - 1,5kW - 2kW - 3kW - 4kW.
- 3 types of standard fittings: 1"¼, 1"½ and M45x2.
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.

Heater tube material: 3 heating elements dia. 8mm dia. AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: Brass, not swiveling, brazed on tubes. (AISI 304 or AISI 316, TIG welded, or brazed, models are available on request). Supplied without gasket and without nut. See accessories below.
Thread: 1"¼, 1"½ BSPP (ISO 228) and Metric thread M45x2.
Enclosure: dia. 58mm × 75mm, black PA66 fiber glass reinforced, with gasket. Opening by center M4 screw without access to end user.
Ingress protection class: IP54.
Cable gland: M20, PA66. Nickel-plated brass on request.
Thermowell: On request.
Heating element connections: Terminals with stainless steel screw, nut and stainless steel washer. Switching straps for single phase/ 3 phases.
Heating elements are connected on a built-in 5 ways connection block, for wires up to 2.5mm².
Support grid: 1 grid AISI 304 for lengths from 400 to 600mm, 2 grids above.
Not heating immersed zone: 50mm.
Surface load: standard 5W/cm² or 10W/cm², other values on request.
Voltage: 220-240V single phase or three phases 380-400V (Star connection with neutral)
Variants on request:
- Only one or only 2 heating elements.
- M45x2 brass fitting.

Electric Wiring



Straps position in 220-240V single phase



Straps position in 380-400V 3 phases

Immersion heaters with plastic connection box

Main references

5W/cm², 1"½* brass fitting

Power	1kW	1.5kW	2kW	3kW	4kW
Length (mm)	170	240	300	440	570
Reference in AISI 304	9ST2A5E0010U8170	9ST2A5E0015U8240	9ST2A5E0020U8300	9ST2A5E0030U8440	9ST2A5E0040U8570
Reference in Incolloy 800	9ST2A5E0010UK170	9ST2A5E0015UK240	9ST2A5E0020UK300	9ST2A5E0030UK440	9ST2A5E0040UK570

10W/cm², 1"½* brass fitting

Power	1kW**	1.5kW	2kW	3kW	4kW
Length (mm)	135	135	170	240	300
Reference in AISI 304	9ST2A5E0010BK130	9ST2A5E0015U8130	9ST2A5E0020U8170	9ST2A5E0030U8240	9ST2A5E0040U8300
Reference in Incolloy 800	9ST2A5E0010UK130	9ST2A5E0015UK130	9ST2A5E0020UK170	9ST2A5E0030UK240	9ST2A5E0040UK300

* 1"¼ brass fitting instead of 1"½, replace A5 by A4 in the reference. M45x2 brass fitting instead of 1"½, replace A5 by A9 in the reference.
** This model has only 2 heating elements.

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	1"¼	1"½	M45x200
Brass	9BRRA3000ELH302A	9BRRA3000ELH303A	9BRRA3000ELH305A
AISI304	9BRRA3000ELH032A	9BRRA3000ELH006A	9BRRA3000ELH049A
AISI316	9BRRA3000ELH202A	9BRRA3000ELH203A	9BRRA3000ELH205A

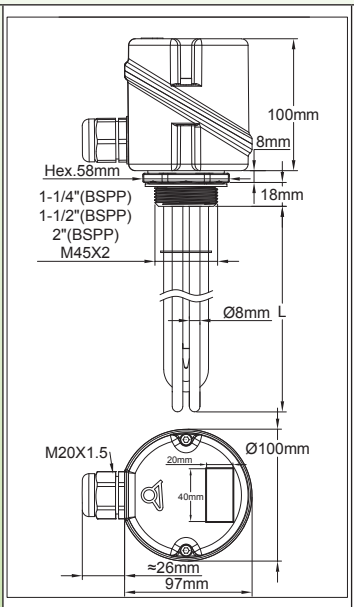
Gaskets

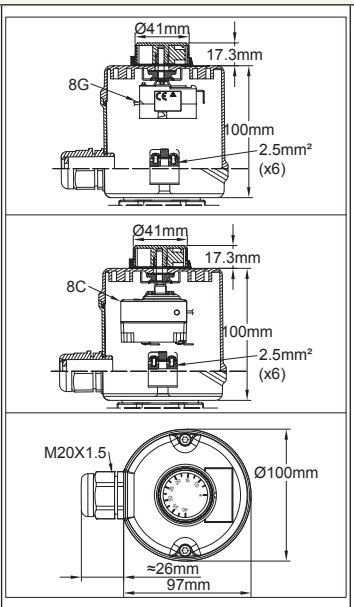
Thread	1"¼	1"½ - M45x200
NBR	9BRJ03000ELH206A	9BRJ03000ELH205A
Fiber	9BRJ03000ELH052A	9BRJ03000ELH007A
PTFE	9BRJ03000ELH032A	9BRJ03000ELH033A

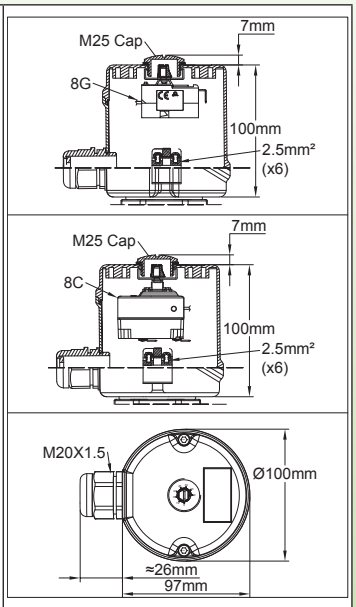
Other accessories and drawings: see last section of this catalogue

Immersion heaters with plastic connection box

Immersion heater with dia. 100mm × 100mm plastic enclosure. 1"¼ to 2" fittings. With or without thermostat. Type 9ST6







Without thermostat	Single pole and 3 pole thermostats with outside knob adjustment (Option)	Single pole and 3 pole thermostats with inside knob adjustment, M25 cap access. (standard)

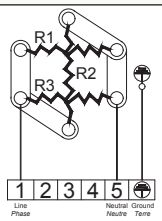
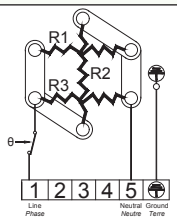
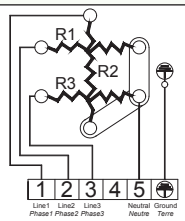
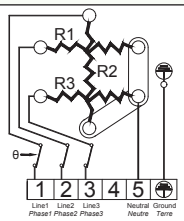
Main applications: liquid heating, hot water circuits, containers and buffer tanks.
These heaters can be fitted with the same equipment than the 9ST5 type, (thermostats, limiters, pilot lights etc..), but their plastic enclosure is more convenient for corrosive surrounding.
They exist in:
- 6 standard power levels: 1kW - 2kW - 3kW - 4kW - 6kW- 8kW.
- 4 types of standard fittings: 1"¼; 1"½; M45x2; 2".
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.

Heater tube material: 8mm dia. AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request). 10mm dia. heating elements on model with 2" fitting.
Fitting material: brass, swiveling on housing, brazed on tubes. (AISI 304 or AISI 316, TIG welded, or brazed, models are available on request). Supplied without gasket and without nut. See accessories below.
Thread: 1"¼ ; 1"½ BSPP (ISO 228); M45x2; 2".
Enclosure: Dia. 100mm × 100mm, black PA66 fiberglass reinforced. Silicone foam gasket. Stainless steel cover screws with locking nuts
Adjustment range: 30-90°C (85-195°F)
Ingress protection class: Water and dust: IP65; shock resistance: IK 8 (with metal cable glands and M25 metal plug).
Cable glands: M20, PA66. Nickel-plated brass on request.
Thermowell: In standard one thermowell in AISI304, dia.8 × 7mm, 135mm length.
Electrical connections: tubular heater terminals with stainless steel screw, nut and stainless steel washer. Switching straps on 3 phases models.
Models with thermostats have a built in connection block, 3 × 2.5mm² for single phase units and 5 × 2.5mm² for 3 phases units. One more M4 grounding terminal available.
Support grid: 1 grid AISI 304 for lengths from 400 to 600mm, 2 grids above.
Not heating immersed zone: 50mm.
Surface load: standard 5W/cm² or 10W/cm², other values on request.
Voltage: 220-240V single phase or three phases 380-400V (Star connection with neutral).
Standard options:
- Thermostat knob accessible under the cover by a M25 removable plug, adjustable from 30°C to 90°C (85-195°F). 230V single phase thermostat for power up to 3kW. 3 phases thermostat for 4kW, 6kW and 8kW models.

Variants on request:
- 4-40°C (40-105°F), 0-60°C (32-140°F), or 30-110°C (86-230°F) thermostat.
- Additional cable gland output for electronic control sensor.
- Thermostat with external knob.
- One or two pilot lights and a power cord.

Immersion heaters with plastic connection box

Electric Wiring

			
220-240V single phase (Without thermostat)	220-240V single phase (With single pole thermostat)	380-400V 3 phases (without thermostat)	380-400V 3 phases (with 3 poles thermostat)

Main references

5W/cm², 1"½* brass fitting, without thermostat.

Heating element dia.	8mm					10mm (2" only)
Power	1kW	2kW	3kW	4kW	6kW	8kW
Length (mm)	170	300	440	570	840	880
AISI 304 Reference	9ST6A5E1010U8170	9ST6A5E1020U8300	9ST6A5E1030U8440	9ST6A5E1040U8570	9ST6A5E1060U8840	9ST6A6E1080U1880
Incolloy 800 reference	9ST6A5E1010UK170	9ST6A5E1020UK300	9ST6A5E1030UK440	9ST6A5E1040UK570	9ST6A5E1060UK840	9ST6A6E1000UL880

10W/cm², 1"½* brass fitting, without thermostat.

Heating element dia.	8mm					10mm (2" only)
Power	1kW**	2kW	3kW	4kW	6kW	8kW
Length (mm)	135	170	240	300	440	450
AISI 304 Reference	9ST6A5E1010B8130	9ST6A5E1020U8170	9ST6A5E1030U8240	9ST6A5E1040U8300	9ST6A5E1060U8440	9ST6A6E1080U1450
Incolloy 800 reference	9ST6A5E1010BK130	9ST6A5E1020UK170	9ST6A5E1030UK240	9ST6A5E1040UK300	9ST6A5E1060UK440	9ST6A6E1000UL450

5W/cm², 1"½* brass fitting, with 30-90°C (85-195°F) thermostat, adjustable under M25 cap (single phase up to 3kW, 3 phases for 4kW, 6kW and 8kW models)

Heating element dia.	8mm					10mm (2" only)
Power	1kW	2kW	3kW	4kW	6kW	8kW
Length (mm)	170	300	440	570	840	880
AISI 304 Reference	9ST6A5ES010V8170	9ST6A5ES020V8300	9ST6A5ES030V8440	9ST6A5ES040U8570	9ST6A5ES060U8840	9ST6A6ES080U1880
Incolloy 800 reference	9ST6A5ES010VK170	9ST6A5ES020VK300	9ST6A5ES030VK440	9ST6A5ES040UK570	9ST6A5ES060UK840	9ST6A6ES000UL880

10W/cm², 1"½* brass fitting, with 30-90°C (85-195°F) thermostat adjustable under M25 cap (single phase up to 3kW, 3 phases for 4kW, 6kW and 8kW models)

Heating element dia.	8mm					10mm (2" only)
Power	1kW**	2kW	3kW	4kW	6kW	8kW
Length (mm)	135	170	240	300	440	450
AISI 304 Reference	9ST6A5ES010B8130	9ST6A5ES020V8170	9ST6A5ES030V8240	9ST6A5ES040U8300	9ST6A5ES060U8440	9ST6A6ES080U1450
Incolloy 800 reference	9ST6A5ES010BK130	9ST6A5ES020VK170	9ST6A5ES030VK240	9ST6A5ES040UK300	9ST6A5ES060UK440	9ST6A6ES000UL450

* 1"¼ brass fitting instead of 1"½, replace A5 by A4 in the reference. M45x2 brass fitting instead of 1"½, replace A5 by A9 in the reference.
** This model has only 2 heating elements.

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	1"¼	1"½	M45x200	2"
Brass	9BRRA3000ELH302A	9BRRA3000ELH303A	9BRRA3000ELH305A	9BRRA3000ELH304A
AISI304	9BRRA3000ELH032A	9BRRA3000ELH006A	9BRRA3000ELH049A	9BRRA3000ELH348A
AISI316	9BRRA3000ELH202A	9BRRA3000ELH203A	9BRRA3000ELH205A	9BRRA3000ELH204A

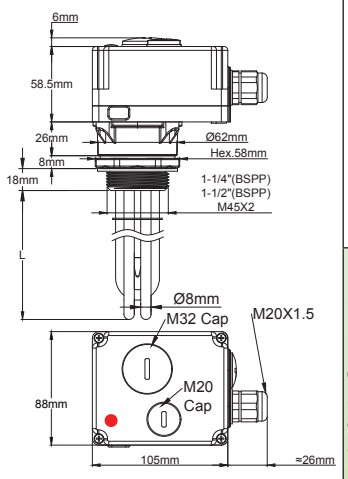
Gaskets

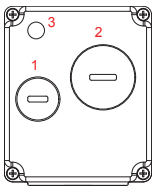
Thread	1"¼	1"½ - M45x200	2"
NBR	9BRJ03000ELH206A	9BRJ03000ELH205A	9BRJ03000ELH203A
Fiber	9BRJ03000ELH052A	9BRJ03000ELH007A	9BRJ03000ELH028A
PTFE	9BRJ03000ELH032A	9BRJ03000ELH033A	9BRJ03000ELH034A

Other accessories and drawings: see last section of this catalogue

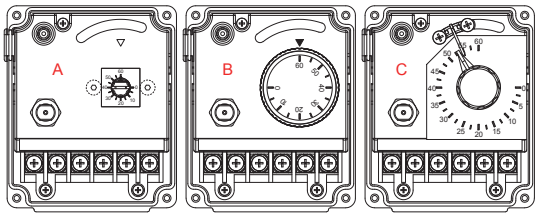
Immersion heaters with plastic connection box

Immersion heater with 105mm × 88mm × 58.5mm plastic enclosure. 1"½, M45x2 fittings. With control thermostat and manual reset thermostat. Type 9STC





1: M20 Manual reset cap.(Standard)
2: M32 Outside adjustment cap (Option)
3: Pilot light (Standard)

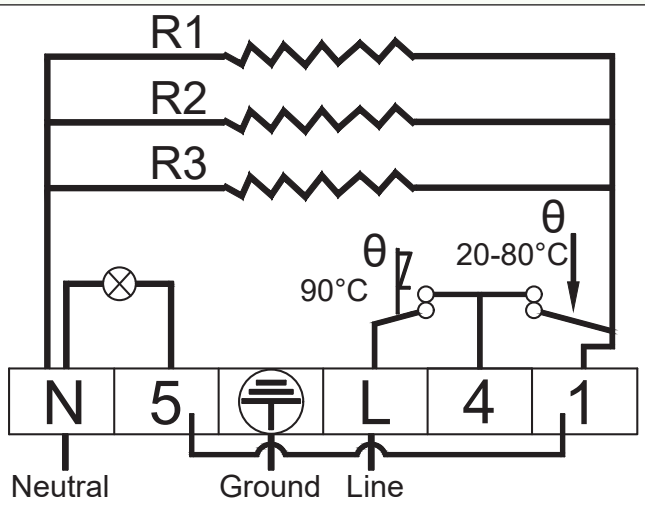


A: Mini dial adjustment (Option, must be selected for outside adjustment with cap 2).
B: Soft-grip knob adjustment, (Standard).
C: Liftable adjustable high limit (Option)

Main applications: liquid heating, hot water circuits, containers and buffer tanks.
These heaters are specifically designed for domestic and commercial hot water tanks, as well as auxiliary heating systems of solar energy buffer tanks, and auxiliary heaters for heat pumps.
The housing is offset by 30mm for tank thermal insulation.
They exist in:
- 5 standard power levels: 1kW – 1.5kW - 2kW - 3kW - 3.5kW
- 2 types of standard fittings: 1"½, M45x2
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.
The 5W/cm² surface load can meet the recommendations of the “NFC Performance" Standard, Class C (LCIE 103-14), for storage water heaters.
Heater tube material: 8mm dia. AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: brass, swiveling on housing, brazed on tubes. Supplied without gasket and without nut. See accessories below.
Thread: 1"½ BSPP (ISO 228), and metric thread M45x2.
Enclosure: IP54, 105 × 88 × 84.5mm, (Cap, accessories and cable gland not included), black PA66, fiber glass reinforced.
Product including an adjustable temperature control thermostat and a fixed setting high limit manual reset thermostat. Manual reset has access from outside, by removing a screwed cap.
Electrical input: One M20 cable gland in PA66. A second hole for M20 cable gland is closed by a cap.
Temperature Adjustment: Inside, with °C printed knob. (°F printed knobs available in option)
Thermowell: One thermowell in AISI304, dia.10mm
Standard set point adjustment ranges:
- 30-90°C (85-195°F) with manual reset at 100°C (212°F)
- 0-60°C (32-140°F with manual reset at 80°C (176°F)
Electrical connections:
- Power supply (Neutral, Line, Ground), on 6mm² screw terminals.
- Immersion heater: 3 wires, FEP 180°C insulated, 2.5mm², equipped with ring terminals, length 50mm on the immersion heater connection side, for direct connection on heating elements M4 terminals.(Neutral wire is blue color)
- Pilot light: can be connected by a strap on power supply, or on control thermostat output, or on safety thermostat output.
Support grid: 1 grid AISI 304 for lengths from 400 to 600mm, 2 grids above.
Not heating immersed zone: 50mm.
Surface load: standard 5W/cm² or 10W/cm², other values on request.
Voltage: 220-240V single phase only.
Standard options:
- Thermostat knob accessible under the cover by a M32 removable cap.
Variants on request:
- 4-40°C (40-105°F), 30-110°C (85-230°F) thermostats.
- Liftable adjustable high end adjustment on control thermostat.
- TIG welded fitting.

Immersion heaters with plastic connection box

Electric Wiring



230V Power Supply

NT3000004061A

Main references

5W/cm², 1"½* brass fitting, with 0-60°C (30-140°F) adjustable thermostat. Manual reset at 80°C(176°F)

Power	1kW	1.5kW	2kW	3kW	3,5kW
Length (mm)	170	240	300	440	500
AISI 304 Reference	9STCA5EN010V817J	9STCA5EN015V824J	9STCA5EN020V830J	9STCA5EN030V844J	9STCA5EN035V850J
Incolloy 800 reference	9STCA5EN010VK17J	9STCA5EN015VK24J	9STCA5EN020VK30J	9STCA5EN030VK44J	9STCA5EN035VK50J

10W/cm², 1"½* brass fitting, with 0-60°C (30-140°F) adjustable thermostat. Manual reset at 80°C (176°F)

Power	1kW**	1.5kW	2kW	3kW	3,5kW
Length (mm)	135	135	170	240	270
AISI 304 Reference	9STCA5EN010B813J	9STCA5EN015V813J	9STCA5EN020V817J	9STCA5EN030V824J	9STCA5EN035V827J
Incolloy 800 reference	9STCA5EN010BK13J	9STCA5EN015VK13J	9STCA5EN020VK17J	9STCA5EN030VK24J	9STCA5EN035VK27J

5W/cm², 1"½* brass fitting, with 30-90°C (85-195°F) adjustable thermostat. Manual reset at 100°C (212°F)

Power	1kW	1.5kW	2kW	3kW	3,5kW
Length (mm)	170	240	300	440	500
AISI 304 Reference	9STCA5ES010V817N	9STCA5ES015V824N	9STCA5ES020V830N	9STCA5ES030V844N	9STCA5ES035V850N
Incolloy 800 reference	9STCA5ES010VK17N	9STCA5ES015VK24N	9STCA5ES020VK30N	9STCA5ES030VK44N	9STCA5ES035VK50N

10W/cm², 1"½* brass fitting, with 30-90°C (85-195°F) adjustable thermostat. Manual reset at 100°C (212°F)

Power	1kW**	1.5kW	2kW	3kW	3,5kW
Length (mm)	135	135	170	240	270
AISI 304 Reference	9STCA5ES010B813N	9STCA5ES015V813N	9STCA5ES020V817N	9STCA5ES030V824N	9STCA5ES035V827N
Incolloy 800 reference	9STCA5ES010BK13N	9STCA5ES015VK13N	9STCA5ES020VK17N	9STCA5ES030VK24N	9STCA5ES035VK27N

* M45x2 brass fitting instead of 1"½, replace A5 by A9 in the reference.
** This model has only 2 heating elements.

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	1"½	M45x200
Brass	9BRRA3000ELH303A	9BRRA3000ELH305A
AISI304	9BRRA3000ELH006A	9BRRA3000ELH049A
AISI316	9BRRA3000ELH203A	9BRRA3000ELH205A

Gaskets

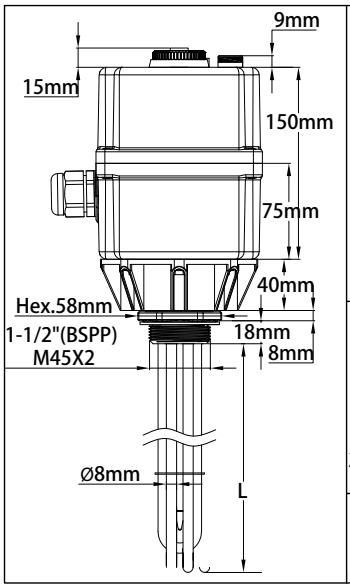
Thread	1"½ - M45x200
NBR	9BRJ03000ELH205A
Fiber	9BRJ03000ELH007A
PTFE	9BRJ03000ELH033A

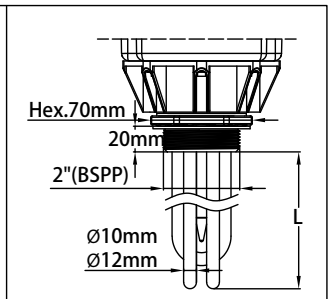
Other accessories and drawings: see last section of this catalogue

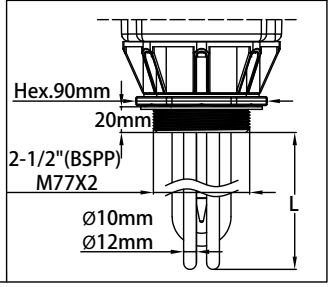
Immersion heaters with plastic connection box

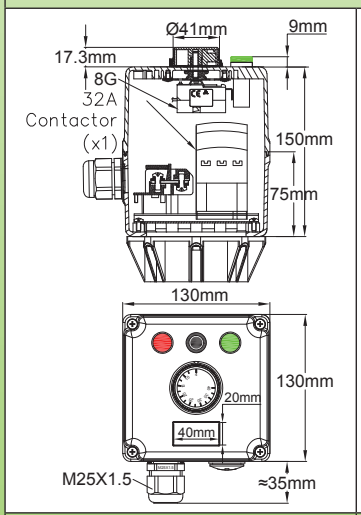
Immersion heater with 130mm × 130mm × 190mm plastic enclosure. Fittings from 1"½ to M77x2. With control thermostat. With or without and manual reset. Power up to 21kW with one built-in power relay. Heating elements dia. 8, 10 and 12mm.

Type 9STM

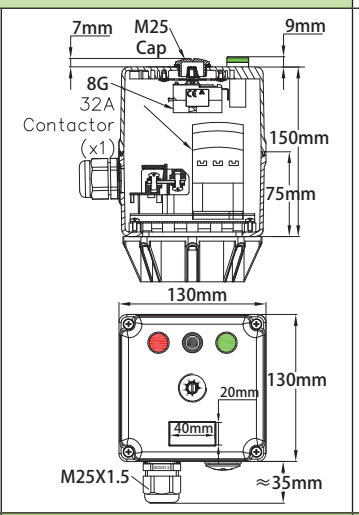




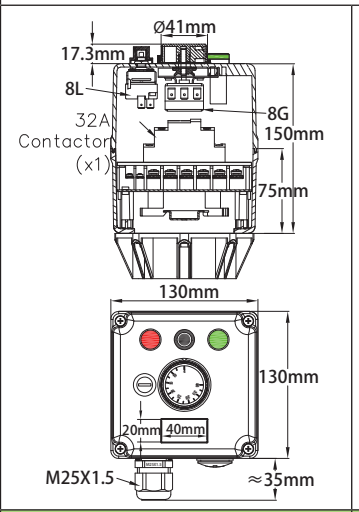




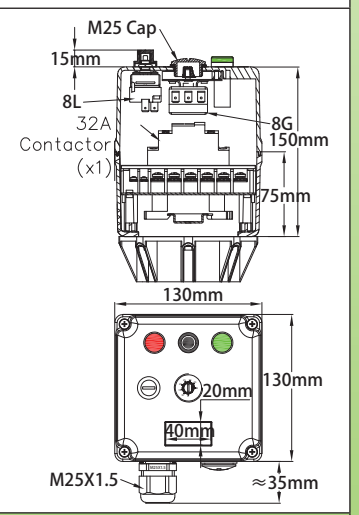
External knob control thermostat (standard), 2 pilot lights, one main switch



Internal knob (option) control thermostat, 2 pilot lights, one main switch



External knob (standard) control thermostat, manual reset thermostat, 2 pilot lights, one main switch



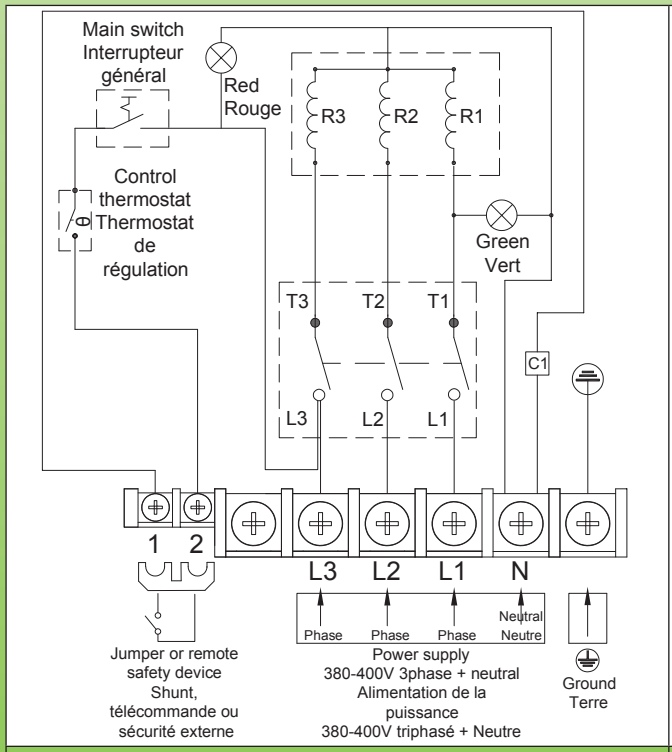
Internal knob (option) control thermostat, manual reset thermostat, 2 pilot lights, one main switch

Main applications: Industrial liquid heating, hot water circuits, containers and buffer tanks.
These immersion heaters are designed for medium power applications, requesting power relays. They are fitted with one relay, 3 pole, 32A res. They have in standard two pilot lights and one main switch.
They are intended for indoor use.
These enclosures have a 40mm offset to go through tank thermal insulation.
They exist in:
- 6 standard power levels: 4kW; 6kW; 8kW; 10kW; 12kW; 14kW.
(on request, it is possible to reach 21kW with dia.12mm heating elements)
- 2 types of standard fittings with dia. 8mm heating elements: 1"½; M45x2.
- 3 types of standard fittings with dia. 10mm heating elements: 2", 2"½; M77x2
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.
Heater tube material: 8mm dia. or 10mm dia. AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: brass, swiveling on housing, brazed on tubes. (AISI 304 or AISI 316, TIG welded, or brazed, models are

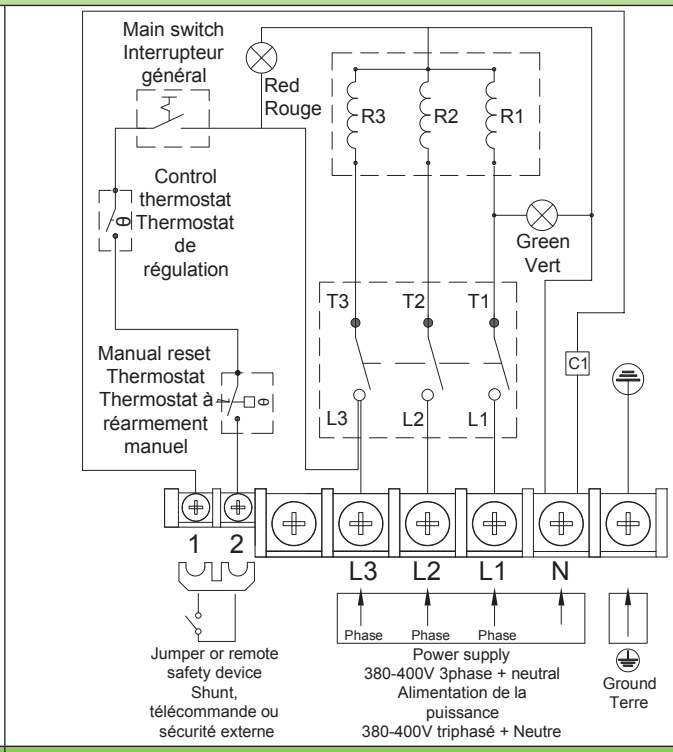
Immersion heaters with plastic connection box

available on request). Supplied without gasket and without nut. See accessories below.
Thread: 1"½ BSPP (ISO 228), and metric thread M45x2 (dia. 8 heating elements), and 2", 2"½, M77x2 (dia. 10mm heating elements).
Enclosure: 130mm × 130mm, 150mm height, black PA66 fiberglass reinforced. Silicone foam gasket. Stainless steel cover screws with locking nuts.
Ingress protection class: Water and dust: IP54; shock resistance: IK 8 (with metal cable glands and M25 metal plug).
Temperature control: by 30-90°C (85-195°F) bulb and capillary thermostat, with outside knob access. Thermostat shaft has a waterproof gasket. Other temperature ranges available. See options hereunder.
Cable gland: M25, PA66. Mounted on a removable board for easier wiring access. A second hole for M25 cable gland is available, closed by a screwed cap.
Thermowell: one thermowell in AISI304, dia.10mm, for M45 and 1"½ fittings, 2 thermowells for larger sizes.
Heating elements connections: terminals with stainless steel screw, nut and stainless steel washer.
Designed for applications in three-phase with neutral, however, these devices are equipped with straps for switching to single-phase supply. This change must be made by the professional technical staff able to calculate and observe the maximum permissible intensities on power relays.
Power supply connection:
- on built in connection block, 6 × 10mm² for power connection and 2 × 2.5mm² for optional external remote control
Support grid: 1 grid AISI 304 for lengths from 400 to 600mm, 2 grids above.
Not heating immersed zone: 50mm.
Surface load: standard 5W/cm² or 10W/cm², others values on request.
Voltage: three phases 380-400V (Star connection with neutral). Single pole 230V is possible.
Standard equipment:
- Manual reset thermostat, reset access by M25 screwed cap, preset at 100°C (212°F).
- Main power switch.
- Large size (dia. 16mm) LED pilot lights. Green illuminated when heating is on. Red illuminated when manual reset is trigged.
Variants on request:
- Thermostat knob accessible under the cover by a M25 removable plug (on request).
- 4-40°C, 0-60°C or 30-110°C thermostats. Higher range on request.
- 4-40°C (40-105°F) temperature range with manual reset at 60°C (140°F).
- 0-60°C (32-140°F) temperature range with manual reset at 80°C (176°F).
- 30-110°C (85-230°F) temperature range with manual reset at 130°C (266°F).
- Thermal cut out located inside immersion heater pocket.
- 400V power supply without neutral: consult us.

Electric Wiring



Temperature control thermostat



Temperature control thermostat and manual reset thermostat

Immersion heaters with plastic connection box

Main references

5W/cm², with 30-90°C (85-195°F) thermostat, external knob, without manual reset.

	1"½* brass fitting, dia. 8mm heating elements			2"½** brass fitting, dia. 10mm heating elements	
Power	**4kW**	**6kW**	**8kW**	**10kW**	**12kW**
Length (mm)	570	840	1100	1100	1300
AISI 304 Reference	9STMA5QT040U8570	9STMA5QT060U8840	9STMA5QT080U8J00	9STMA7QT100U1K00	9STMA7QT120U1M00
Incolloy 800 reference	9STMA5QT040UK570	9STMA5QT060UK840	9STMA5QT080UKJ00	9STMA7QT100ULK00	9STMA7QT120ULM00

10W/cm², with 30-90°C (85-195°F) thermostat, external knob, without manual reset.

	1"½* brass fitting, dia. 8mm heating elements			2"½** brass fitting, dia. 10mm heating elements	
Power	**4kW**	**6kW**	**8kW**	**10kW**	**12kW**
Length (mm)	300	440	570	540	660
AISI 304 Reference	9STMA5QT040U8300	9STMA5QT060U8440	9STMA5QT080U8570	9STMA7QT100U1540	9STMA7QT120U1660
Incolloy 800 reference	9STMA5QT040UK300	9STMA5QT060UK440	9STMA5QT080UK570	9STMA7QT100UL540	9STMA7QT120UL660

5W/cm², with 30-90°C (85-195°F) adjustable thermostat, external knob. Manual reset at 100°C (212°F)

Threads and heating elements diameters	1"½* brass fitting, dia. 8mm heating elements			2"½** brass fitting, dia. 10mm heating elements	
Power	**4kW**	**6kW**	**8kW**	**10kW**	**12kW**
Length (mm)	570	840	1100	1100	1300
AISI 304 Reference	9STMA5QT040U857N	9STMA5QT060U884N	9STMA5QT080U8J0N	9STMA7QT100U1K0N	9STMA7QT120U1M0N
Incolloy 800 reference	9STMA5QT040UK57N	9STMA5QT060UK84N	9STMA5QT080UKJ0N	9STMA7QT100ULK0N	9STMA7QT120ULM0N

10W/cm², with 30-90°C (85-195°F) adjustable thermostat, external knob. Manual reset at 100°C (212°F)

Threads and heating elements diameters	1"½* brass fitting, dia. 8mm heating elements			2"½** brass fitting, dia. 10mm heating elements		
Power	**4kW**	**6kW**	**8kW**	**10kW**	**12kW**	**14kW**
Length (mm)	300	440	570	540	660	770
AISI 304 Reference	9STMA5QT040U830N	9STMA5QT060U844N	9STMA5QT080U857N	9STMA7QT100U154N	9STMA7QT120U166N	9STMA7QT120U177N
Incolloy 800 reference	9STMA5QT040UK30N	9STMA5QT060UK44N	9STMA5QT080UK57N	9STMA7QT100UL54N	9STMA7QT120UL66N	9STMA7QT120UL77N

* In dia. 8mm: M45x2 brass fitting instead of 1"½, replace A5 by A9 in the reference.
** In dia. 10mm: 2" brass fitting instead of 2"½, replace A7 by A6 in the reference. M77x2 brass fitting instead of 2"½, replace A7 by A8 in the reference.

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	**1"½**	**M45x2**	**2"**	**2"½**	**M77x2**
Brass	9BRRA3000ELH303A	9BRRA3000ELH305A	9BRRA3000ELH304A	9BRRA3000ELH314A	9BRRA3000ELH306A
Inox 304	9BRRA3000ELH006A	9BRRA3000ELH049A	9BRRA3000ELH348A	9BRRA3000ELH142A	9BRRA3000ELH150A
Inox 316	9BRRA3000ELH203A	9BRRA3000ELH205A	9BRRA3000ELH204A	9BRRA3000ELH214A	9BRRA3000ELH206A

Gaskets

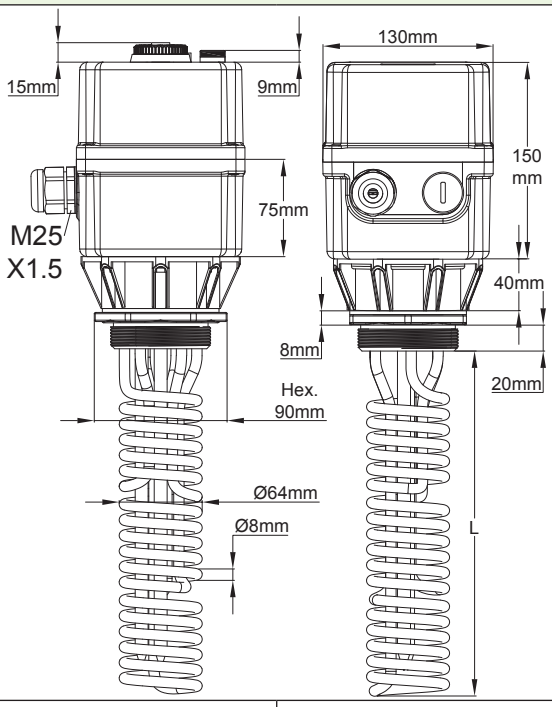
Thread	**1"½ - M45x200**	**2"**	**2"½- M77x2**
NBR	9BRJ03000ELH205A	9BRJ03000ELH203A	9BRJ03000ELH201A
Fiber	9BRJ03000ELH007A	9BRJ03000ELH028A	9BRJ03000ELH030A
PTFE	9BRJ03000ELH033A	9BRJ03000ELH034A	9BRJ03000ELH036A

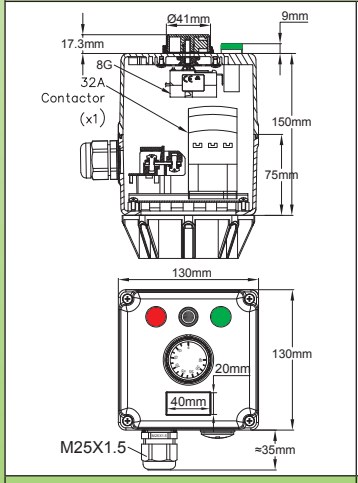
Other accessories and drawings: see last section of this catalogue.

Immersion heaters with plastic connection box

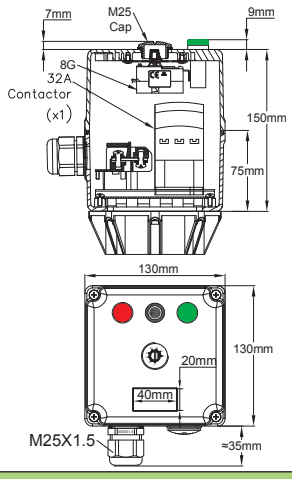
Extra short Immersion heater with 130mm × 130mm × 190mm plastic enclosure. M77x2 or 2"½ fittings. With control thermostat. With or without manual reset thermostat. Power up to 9kW with one built-in power relay. Coiled Heating elements dia. 8mm.

Type 9SWM

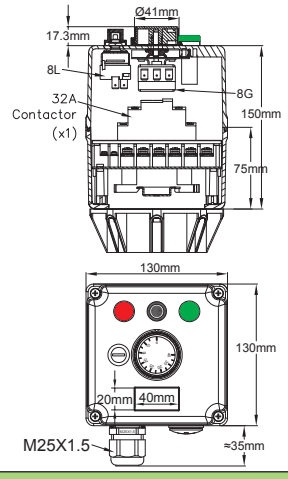




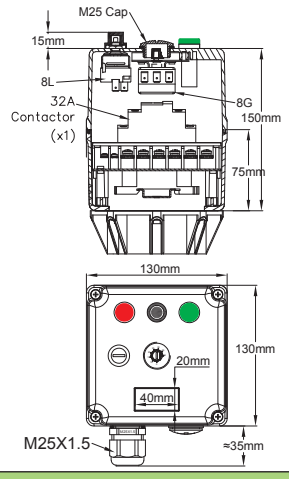
External knob control thermostat (standard), main switch and 2 pilot lights



Internal knob (option) control thermostat, one main switch and 2 pilot lights



External knob (standard) control thermostat, main switch and 2 pilot lights, manual reset thermostat



Internal knob (option) control thermostat, main switch and 2 pilot lights, manual reset thermostat

Main applications: Industrial liquid heating, hot water circuits, containers and buffer tanks, **in applications where the heating elements immersed length must be as short as possible.**

They can be fitted with one or two. They have in standard one 32A res relay, 3 pole, two pilot lights and one main switch. They are intended for indoor use.

These enclosures have a 40mm offset to go through tank thermal insulation.

- 5 standard power levels: 1,5kW; 3kW; 4,5kW; 6kW; 9kW. On request, it is possible to reach 21kW by increasing the L length).
- 2 types of standard fittings: 2"½; M77x2.
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.

Heater tube material: 8mm dia. AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).

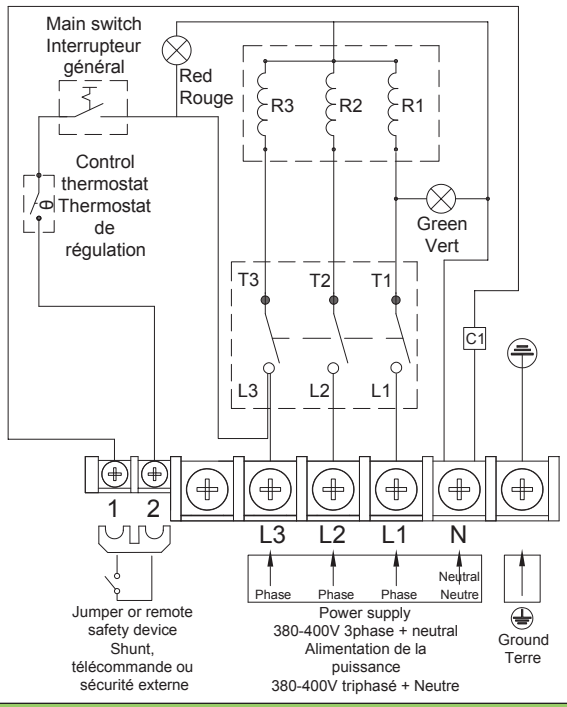
Fitting material: brass, swiveling on housing, brazed on tubes. Supplied without gasket and without nut. See accessories below.

Immersion heaters with plastic connection box

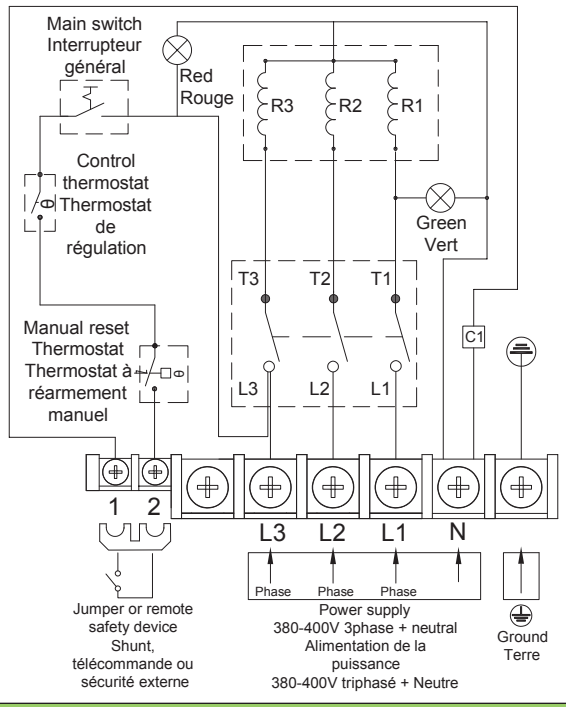
Thread: 2"½, or M77x2
Enclosure: 130mm × 130mm, 150mm height, black PA66 fiberglass reinforced. Silicone foam gasket. Stainless steel cover screws with locking nuts.
Ingress protection class: Water and dust: IP54; shock resistance: IK 8 (with metal cable glands and M25 metal plug).
Temperature control: by 30-90°C (85-195°F) bulb and capillary thermostat, with outside knob access. Thermostat shaft has a waterproof gasket. Other temperature ranges available. See options hereunder.
Cable gland: M25, PA66. Mounted on a removable board for easier wiring access. A second hole for M25 cable gland is available, closed by a screwed cap.
Thermowell: two thermowells in AISI304, dia.10mm × 8.4mm.
Heating elements connections: terminals with stainless steel screw, nut and stainless steel washer.
Three-phase models are equipped with straps for switching to single-phase supply. This change must be made by the professional technical staff able to calculate and observe the maximum permissible rating on power relay.
Power supply connection: on built in connection block, 6 × 10mm² for power connection and 2 × 2.5mm² for remote safety device or remote control.
Not heating immersed zone: 50mm.
Surface load: standard 5W/cm² or 10W/cm², other values on request.
Voltage: Single pole 230V or three phases 380-400V (Star connection with neutral).
Standard equipment:
- Thermostat with outside knob.
- Main power switch.
- Large size (dia. 16mm) green and red LED pilot lights.
- On models with manual reset: reset access by M25 screwed cap, preset at 100°C (212°F).

Variants on request:
- Thermostat adjustment access under the screwed M25 cap.
- Thermostat without limiter, ranges 4-40°C (40-105°F), 0-60°C (30-140°F) or 30-110°C (85-230°F) Higher range on request.
- 4-40°C (40-105°F) temperature range with manual reset at 60°C (140°F)
- 0-60°C (32-140°F) temperature range with manual reset at 80°C (176°F)
- 30-110°C (85-230°F) temperature range with manual reset at 130°C (266°F)
- Thermal cut out (TCO) located inside immersion heater pocket.
- 400V power supply without neutral: consult us.

Electric Wiring



Temperature control thermostat
(Types with one heater: phases L1 and L2 are removed, and power supply is single phase 230V.
Types with two heaters: phase L1 is removed, terminals L2 and L3 are connected together, and power supply is single phase 230V.)



Temperature control thermostat and manual reset thermostat
Types with one heater: phases L1 and L2 are removed, and power supply is single phase 230V.
Types with two heaters: phase L1 is removed, terminals L2 and L3 are connected together, and power supply is single phase 230V.)

Immersion heaters with plastic connection box

Main references

With 30-90°C (85-195°F) thermostat, external knob **, without manual reset. M77x2 fitting*

	5W/cm²			10W/cm²		
	1 heating element	2 heating elements	3 heating elements	1 heating element	2 heating elements	3 heating elements
L (mm)	110	188	265	110	188	265
Power (Watt)	1500	3000	4500	3000	6000	9000
References, AISI 304	9SWMA8QT01525110	9SWMA8QT030B5190	9SWMA8QT045U5270	9SWMA8QT03025110	9SWMA8QT060B5190	9SWMA8QT090U5270
References, Incolloy 800	9SWMA8QT01527110	9SWMA8QT030B7190	9SWMA8QT045U7270	9SWMA8QT03027110	9SWMA8QT060B7190	9SWMA8QT090U7270

With 30-90°C (85-195°F) adjustable thermostat, external knob, M77x2 fitting*, Manual reset at 100°C (212°F)**

	5W/cm²			10W/cm²		
	1 heating element	2 heating elements	3 heating elements	1 heating element	2 heating elements	3 heating elements
L (mm)	110	188	265	110	188	265
Power (Watt)	1500	3000	4500	3000	6000	9000
References, AISI 304	9SWMA8QT0152511N	9SWMA8QT030B519N	9SWMA8QT045U527N	9SWMA8QT0302511N	9SWMA8QT060B519N	9SWMA8QT090U527N
References, Incolloy 800	9SWMA8QT0152711N	9SWMA8QT030B719N	9SWMA8QT045U727N	9SWMA8QT0302711N	9SWMA8QT060B719N	9SWMA8QT090U727N

* 2"½ brass fitting instead of M77x2, replace A8 by A7 in the reference
** Option with thermostat inside set point adjustment, replace QT by QR in the reference

References of accessories in option (Not included in the product, must be ordered separately):

Nuts

Thread	2"½	M77x2
Brass	9BRRA3000ELH314A	9BRRA3000ELH306A
AISI304	9BRRA3000ELH142A	9BRRA3000ELH150A
AISI316	9BRRA3000ELH214A	9BRRA3000ELH206A

Gaskets

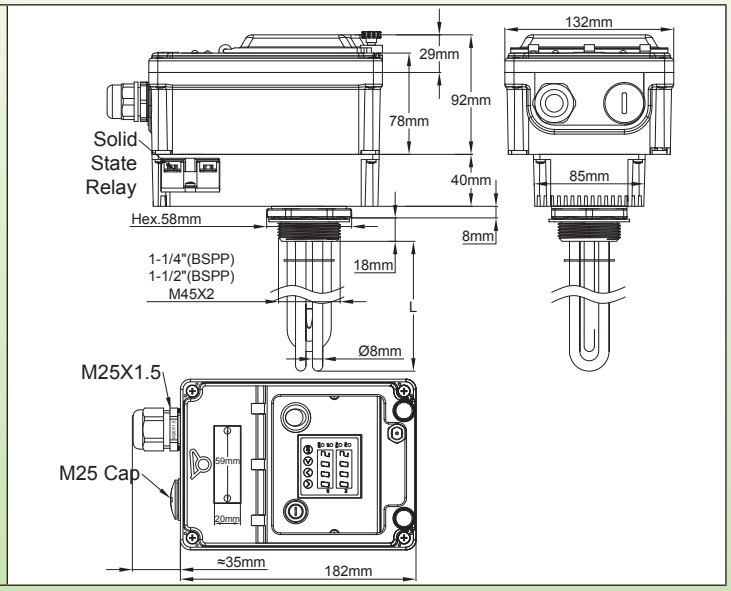
Thread	2"½- M77x2
NBR	9BRJ03000ELH201A
Fiber	9BRJ03000ELH030A
PTFE	9BRJ03000ELH036A

Other accessories and drawings: see last section of this catalogue.

Immersion heaters with plastic connection box

Immersion heaters with 182mm × 130mm × 132mm plastic enclosure. Fittings 1"¼, 1"½, M45x2. With electronic PID temperature control, with or without manual reset thermostat. Built-in cooled SSR.

Type 9STQ



Main applications: Liquid heating, hot water circuits, containers and buffer tanks.
These products have been engineered for precision liquid heating. The initial setting of the PID controller, however, is intended for a professional. The best results are obtained in stirred tanks.
They exist in:
- 5 standard power levels: 1kW; 1,5kW; 2kW; 3kW; 4kW
- 2 types of standard fittings: 1"½ and M45x2
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.

Heater tube material: 8mm dia. AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: Brass, swiveling on housing, brazed on tubes. (AISI 304 or AISI 316, TIG welded, or brazed, models are available on request). Supplied without gasket and without nut. See accessories below.
Thread: 1 "¼ or 1 ½" BSPP (ISO 228). Metric thread M45x2 available on request.
Temperature control:
- Electronic temperature controller with double digital display of temperature set point and measured value. This microprocessor controller uses Fuzzy Logic technology. It reaches a predetermined set point more quickly, with minimal overshoot during the disturbances related to the rise or external load. It regulates with PID action, whose setting is simplified by the auto-tune function that automatically adjusts the parameters P, I and D (A clear User Manual is supplied). If the temperature sensor is broken, the output power is cut off and the error is displayed.
- Temperature display Accuracy: 0.2% of full scale.
- Temperature sensor: Pt100
- Display is configurable in degree or tenth of a degree.
- The two high or low alarm outputs can be set over the entire range of adjustment and have an adjustable differential.

Enclosure: Extremely robust, in thick PA66, designed for outdoor installation, IP65 and IK10. It also includes:
- A fuse to protect internal circuits.
- An illuminated on- off switch
- A polycarbonate transparent window allowing access to the settings. This window can be secured with seals. This case also includes a separate lid, with independent seals, providing access to electrical connections
- On the rear side is located an aluminum housing with cooling fins for a built in 25A SSR.

In models with failsafe manual reset limiter, reset can be accessed after opening the window.
Cable glands: Located on a removable mounting board, providing easier access for connections, fitted with one M25, PA66, and one more hole for M25, closed by a plastic cap.
Thermowell: In standard, one thermowell in AISI304, dia. 10mm, 135mm length.
Electric connections:
- Built-in terminal block, with 5 terminals 6mm² and 5 terminals 2.5mm².

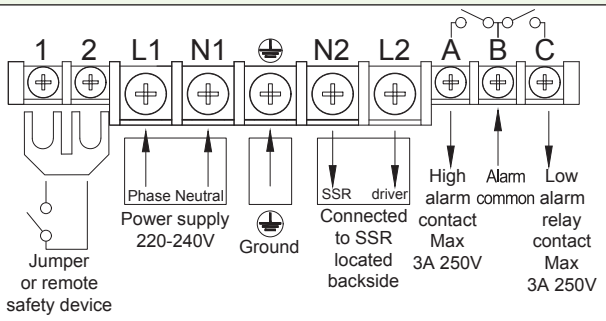
This terminal block is provided with a strap between terminals 1 and 2. By removing this strap, it is possible to connect an additional safety device, a remote control, or a timer.
- Auxiliary high alarm and low alarm contacts (3A 250V max.)

Support grid: 1 grid AISI 304 for lengths from 400 to 600mm, 2 grids above.
Not heating immersed zone: 50mm.

Immersion heaters with plastic connection box

Surface load: standard 5W/cm² or 10W/cm², other values on request.
Voltage: 220-240V single phase only.
Standard options:
Manual reset limiter, preset at: 60°C, 80°C, 100°C, 110°C, 130°C. (140°F, 176°F, 212°F, 230°F, 266°F).

Wiring diagram



Main references

55W/cm²; 1"½ brass fitting, without manual reset thermostat.**

Power	1kW	1.5kW	2kW	3kW	4kW
Length (mm)	170	240	300	440	570
AISI 304 Reference	9STQA5QZ010V8170	9STQA5QZ015V8240	9STQA5QZ020V8300	9STQA5QZ030V8440	9STQA5QZ040V8570
Incolloy 800 reference	9STQA5QZ010VK170	9STQA5QZ015VK240	9STQA5QZ020VK300	9STQA5QZ030VK440	9STQA5QZ040VK570

10W/cm², 1"½* brass fitting, without manual reset thermostat.

Power	1kW**	1.5kW	2kW	3kW	4kW
Length (mm)	135	135	170	240	300
AISI 304 Reference	9STQA5QZ010B8130	9STQA5QZ015V8130	9STQA5QZ020V8170	9STQA5QZ030V8240	9STQA5QZ040V8300
Incolloy 800 reference	9STQA5QZ010BK130	9STQA5QZ015VK130	9STQA5QZ020VK170	9STQA5QZ030VK240	9STQA5QZ040VK300

5W/cm², 1"½* brass fitting, with manual reset thermostat set at 100°C (212°F)**

Power	1kW	1.5kW	2kW	3kW	4kW
Length (mm)	170	240	300	440	570
AISI 304 Reference	9STQA5QZ010V817N	9STQA5QZ015V824N	9STQA5QZ020V830N	9STQA5QZ030V844N	9STQA5QZ040V857N
Incolloy 800 reference	9STQA5QZ010VK17N	9STQA5QZ015VK24N	9STQA5QZ015VK30N	9STQA5QZ030VK44N	9STQA5QZ040VK57N

10W/cm², 1"½* brass fitting, with manual reset thermostat set at 100°C (212°F)**

Power	1kW	1.5kW	2kW	3kW	4kW
Length (mm)	135	135	170	240	300
AISI 304 Reference	9STQA5QZ010B813N	9STQA5QZ015V813N	9STQA5QZ020V817N	9STQA5QZ030V824N	9STQA5QZ040V830N
Incolloy 800 reference	9STQA5QZ010BK13N	9STQA5QZ015VK13N	9STQA5QZ020VK17N	9STQA5QZ030VK24N	9STQA5QZ040VK30N

* M45x2 brass fitting instead of 1"½, replace A5 by A9 in the reference.
** Manual reset thermostat set at 60°C, 80°C, 110°C, 130°C. (140°F, 176°F, 230°F, 266°F), replace the last character N by E, J, Q, U.

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	1"½	M45x200
Brass	9BRRA3000ELH303A	9BRRA3000ELH305A
AISI304	9BRRA3000ELH006A	9BRRA3000ELH049A
AISI316	9BRRA3000ELH203A	9BRRA3000ELH205A

Gaskets

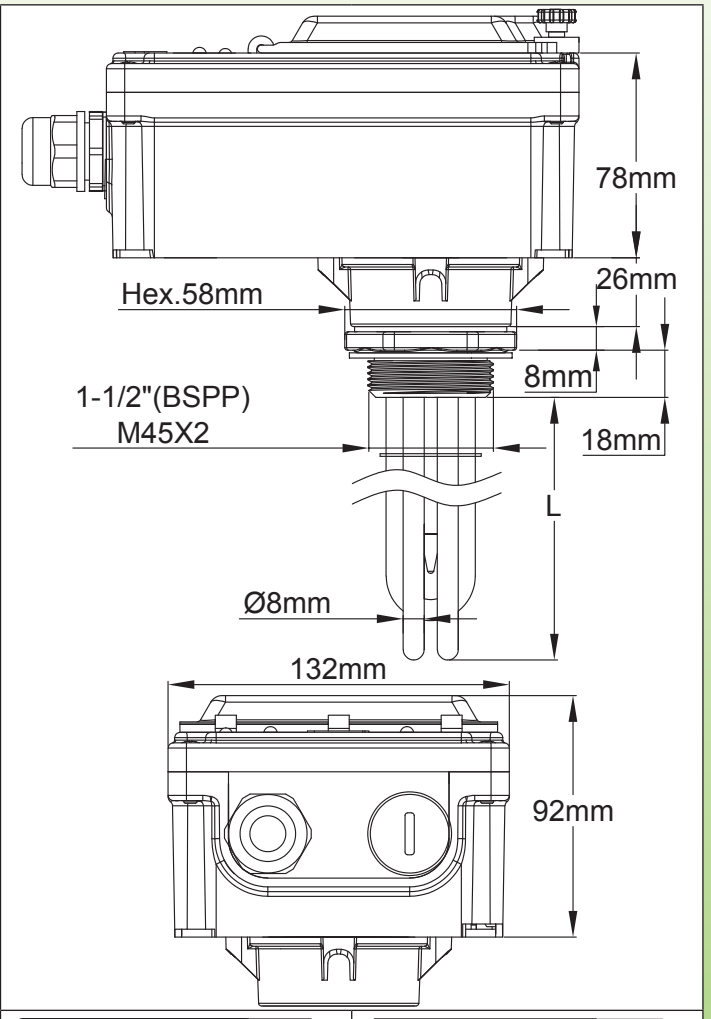
Thread	1"½ - M45x200
NBR	9BRJ03000ELH205A
Fiber	9BRJ03000ELH007A
PTFE	9BRJ03000ELH033A

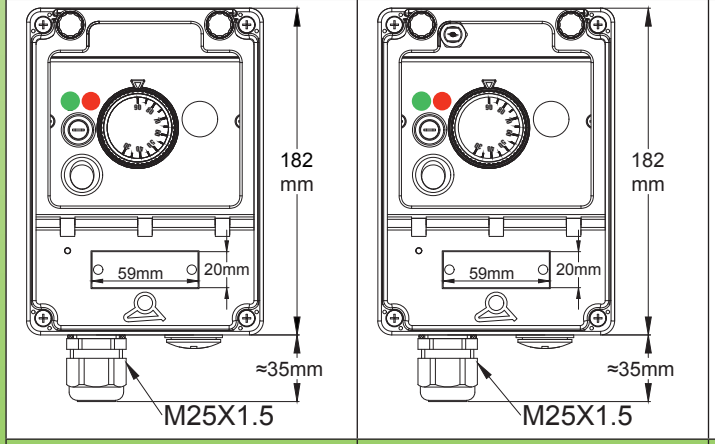
Other accessories and drawings: see last section of this catalogue

Immersion heaters with plastic connection box

Immersion heaters with 182mm × 130mm × 120mm plastic enclosure. Fittings 1"½, M45x2. With mechanical thermostat or electronic temperature control. With or without manual reset thermostat.

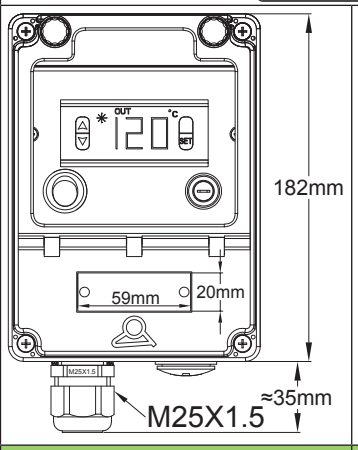
Type 9STB



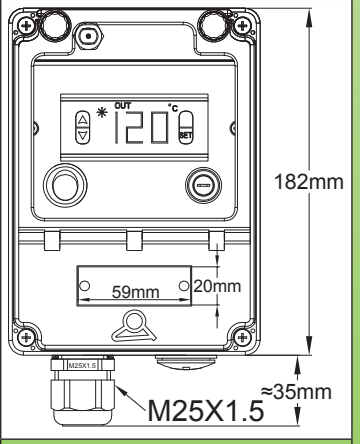


Temperature control thermostat

Temperature control thermostat and manual reset safety thermostat



Electronic temperature control with digital display



Electronic temperature control with digital display and manual reset safety thermostat

Main applications: Liquid heating, hot water circuits, containers and buffer tanks.

This series is intended for high-end low-power devices, single phase. It combines a modern aesthetic, a waterproof plastic housing, shock resistant, and settings viewing through a transparent window in polycarbonate. It is available with thermostat control or with an easy-to-use electronic controller, both of them with or without safety limiter.

Immersion heaters with plastic connection box

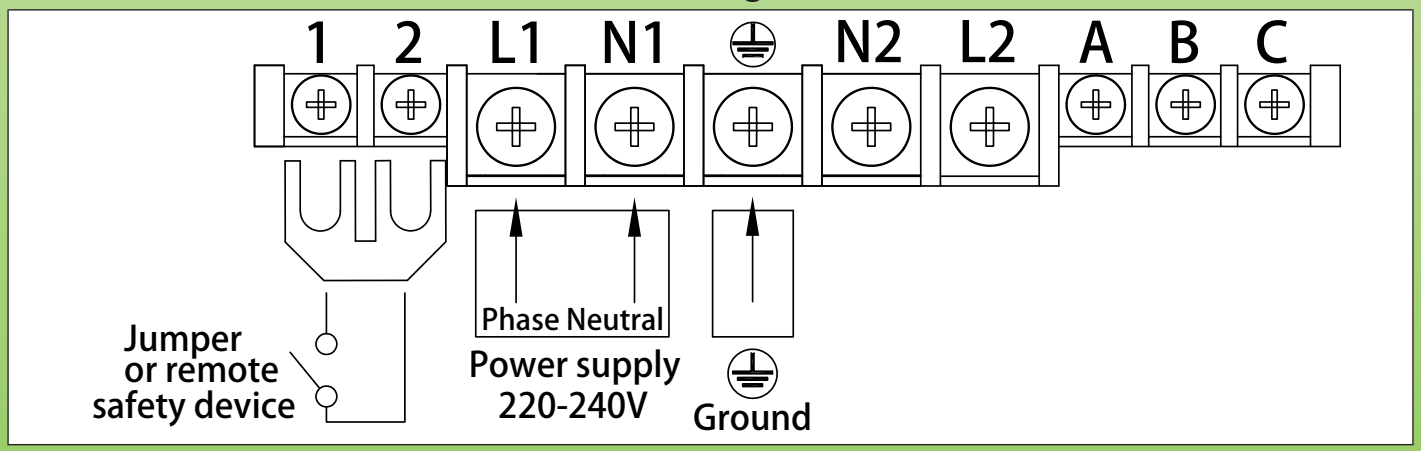
They exist in:
- 4 standard power levels: 1kW; 1,5kW; 2kW; 3kW.
- 2 types of standard fittings: 1"½ and M45x2.
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.

Heater tube material: 8mm dia. AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: brass, swiveling on housing, brazed on tubes. (AISI 304 or AISI 316, TIG welded, or brazed, models are available on request). Supplied without gasket and without nut. See accessories below.
Thread: 1"¼ or 1 ½" BSPP (ISO 228). Metric thread M45x2 available on request.
Temperature control, 2 types available:
1/Electronic temperature controller with permanent digital display of temperature measured value.
- Temperature display Accuracy: ±1°C (±2°F) ± one digit.
- Temperature range 0 to 120°C (-32+250°F).
- Temperature sensor: NTC
- Display is configurable in degree or tenth of a degree.
- On-off temperature control action (relay output).
- Adjustable differential.
- If the temperature sensor is broken, the output power is cut off and the error is displayed.

2/ Mechanical thermostat, temperature range 30-90°C (85-195°F).
Enclosure: extremely robust, in thick PA66, designed for outdoor installation, IP65 and IK10. It also includes:
- A fuse to protect internal circuits (only in electronic version).
- An on- off switch (Built on thermostat shaft on thermostat version).
- A polycarbonate transparent window allowing access to the settings. This window can be secured with seals. This case also includes a separate lid, with independent seals, providing access to electrical connections.

In models with failsafe manual reset limiter, reset can be accessed after opening the window.
Cable glands: Located on a removable mounting board, providing easier access for connections, fitted with one M25, PA66, and one more hole for M25, closed by a plastic cap.
Thermowell: in standard two thermowells in AISI304, dia.8 × 7mm, 135mm length.
Electric connections:
Made on a built-in terminal block, with 5 terminals 6mm² and 5 terminals 2.5mm².
This terminal block is provided with a strap between terminals 1 and 2. By removing this strap, it is possible to connect an additional safety device, a remote control, or a timer.
Support grid: 1 grid AISI 304 for lengths from 400 to 600mm, 2 grids above.
Not heating immersed zone: 50mm.
Surface load: standard 5W/cm² or 10W/cm², other values on request.
Voltage: 220-240V single phase only.
Standard options:
Manual reset limiter, preset at : 60°C, 80°C, 100°C, 110°C, 130°C. (140°F, 176°F, 212°F, 230°F, 266°F).
Variants on request:
- 30-110°C adjustable thermostat (85-230°F).
- Thermal cut out inside a thermowell.

Wiring



Main references with 30-90°C (85-195°F) adjustable thermostat*

5W/cm²; 1"½ brass fitting, without manual reset thermostat.**

Power	1kW	1.5kW	2kW	3kW
Length (mm)	170	240	300	440
AISI 304 Reference	9STBA5HV010V8170	9STBA5HV015V8240	9STBA5HV020V8300	9STBA5HV030V8440
Incolloy 800 reference	9STBA5HV010VK170	9STBA5HV015VK240	9STBA5HV020VK300	9STBA5HV030VK440

Immersion heaters with plastic connection box

10W/cm², 1"½ brass fitting, without manual reset thermostat.**

Power	1kW***	1.5kW	2kW	3kW
Length (mm)	135	135	170	240
AISI 304 Reference	9STBA5HV010B8130	9STBA5HV015V8130	9STBA5HV020V8170	9STBA5HV030V8240
Incolloy 800 reference	9STBA5HV010BK130	9STBA5HV015VK130	9STBA5HV020VK170	9STBA5HV030VK240

5W/cm², 1"½ brass fitting, with manual reset thermostat set at 100°C (212°F)****

Power	1kW	1.5kW	2kW	3kW
Length (mm)	170	240	300	440
AISI 304 Reference	9STBA5HV010V817N	9STBA5HV015V824N	9STBA5HV020V830N	9STBA5HV030V844N
Incolloy 800 reference	9STBA5HV010VK17N	9STBA5HV015VK24N	9STBA5HV015VK30N	9STBA5HV030VK44N

10W/cm², 1"½ brass fitting, with manual reset thermostat set at 100°C (212°F)****

Power	1kW***	1.5kW	2kW	3kW
Length (mm)	135	135	170	240
AISI 304 Reference	9STBA5HV010B813N	9STBA5HV015V813N	9STBA5HV020V817N	9STBA5HV030V824N
Incolloy 800 reference	9STBA5HV010BK13N	9STBA5HV015VK13N	9STBA5HV020VK17N	9STBA5HV030VK24N

*Type with electronic temperature control: replace HV by HY in the reference.
** M45x2 brass fitting instead of 1"½, replace A5 by A9 in the reference.
***: only two heating elements.
**** Manual reset thermostat set at 60°C, 80°C, 110°C, 130°C. (140°F, 176°F, 230°F, 266°F), replace the last character N by E, J, Q, U.

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	1"½	M45x200
Brass	9BRRA3000ELH303A	9BRRA3000ELH305A
AISI304	9BRRA3000ELH006A	9BRRA3000ELH049A
AISI316	9BRRA3000ELH203A	9BRRA3000ELH205A

Gaskets

Thread	1"½ - M45x200
NBR	9BRJ03000ELH205A
Fiber	9BRJ03000ELH007A
PTFE	9BRJ03000ELH033A

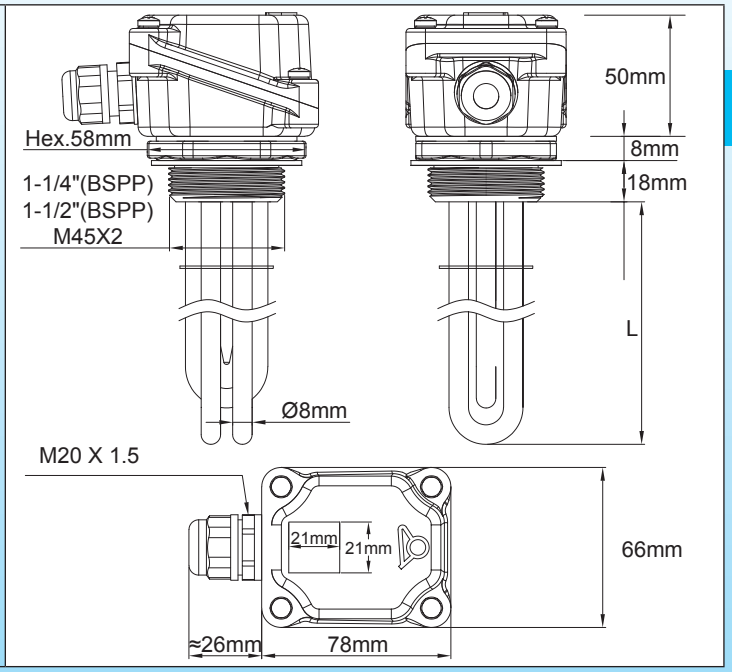
Other accessories and drawings: see last section of this catalogue

Section 7
Immersion heaters with aluminum connection box

Immersion heaters with aluminum connection box

Immersion heater with 78mm × 66mm × 50mm aluminum enclosure. 1"¼, 1"½, M45x2 fittings.

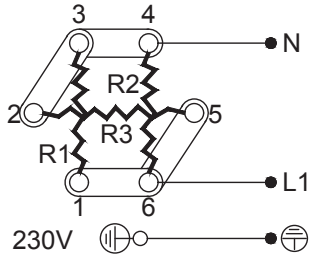
Type 9ST3



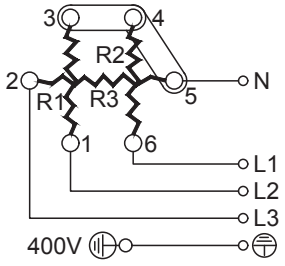
Main applications: liquid heating, hot water circuits, containers and buffer tanks.
These immersions heaters are the smallest with 3 heating elements and aluminum enclosure. There is not enough room inside for thermostat.
They do not have a built-in connection block.
They exist in:
- 6 standard power levels: 1kW – 1.5kW - 2kW - 3kW - 4kW - 6kW.
- 3 types of standard fittings: 1"¼, 1"½ and M45x2
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.

Heater tube material: 8mm dia. AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: brass, swiveling on housing, brazed on tubes. (AISI 304 or AISI 316, TIG welded, or brazed, models are available on request). Supplied without gasket and without nut. See accessories below.
Thread: 1"¼, 1"½ BSPP (ISO 228) and metric thread M45x2.
Enclosure: 78 × 66 × 50mm, die-cast aluminum, 3mm wall thickness. Silicone foam gasket. Stainless steel cover screws with locking nuts, 2 inner earth terminals M4; Gray epoxy paint RAL7035. Protected against galvanic corrosion.
Ingress protection class: Water and dust: IP65; shock resistance: IK 10 (with metal cable gland).
Cable glands: M20, PA66. Nickel-plated brass on request.
Thermowell: On request.
Heating elements connections: terminals with stainless steel screw, nut and stainless steel washer. Switching straps on 3 phases models.
Support grid: 1 grid AISI 304 for lengths from 400 to 600mm, 2 grids above.
Not heating immersed zone: 50mm.
Surface load: standard 5W/cm² or 10W/cm², others values on request.
Voltage: 220-240V single phase or three phases 380-400V (Star connection with neutral).
Variants on request: TCO inside dia. 10mm pocket, at center of heating elements. (MOQ apply).

Electric Wiring



Straps position in 220-240V single phase



Straps position in 380-400V 3 phases

Immersion heaters with aluminum connection box

Main references

5W/cm², 1"½* brass fitting.

Power	1kW	1.5kW	2kW	3kW	4kW	6kW
Length (mm)	170	240	300	440	570	840
AISI 304 Reference	9ST3G5E0010U8170	9ST3G5E0015U8240	9ST3G5E0020U8300	9ST3G5E0030U8440	9ST3G5E0040U8570	9ST3G5E0060U8840
Incolloy 800 reference	9ST3G5E0010UK170	9ST3G5E0015UK240	9ST3G5E0020UK300	9ST3G5E0030UK440	9ST3G5E0040UK570	9ST3G5E0060UK840

10W/cm², 1"½* brass fitting.

Power	1kW**	1.5kW	2kW	3kW	4kW	6kW
Length (mm)	135	135	170	240	300	440
AISI 304 Reference	9ST3G5E0010B8130	9ST3G5E0015U8130	9ST3G5E0020U8170	9ST3G5E0030U8240	9ST3G5E0040U8300	9ST3G5E0060U8440
Incolloy 800 reference	9ST3G5E0010BK130	9ST3G5E0015UK130	9ST3G5E0020UK170	9ST3G5E0030UK240	9ST3G5E0040UK300	9ST3G5E0060UK440

* 1"¼ brass fitting instead of 1"½, replace G5 by G4 in the reference. M45x2 brass fitting instead of 1"½, replace G5 by G9 in the reference.
** This model has only 2 heating elements.

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	1"¼	1"½	M45x200
Brass	9BRRA3000ELH302A	9BRRA3000ELH303A	9BRRA3000ELH305A
AISI304	9BRRA3000ELH032A	9BRRA3000ELH006A	9BRRA3000ELH049A
AISI316	9BRRA3000ELH202A	9BRRA3000ELH203A	9BRRA3000ELH205A

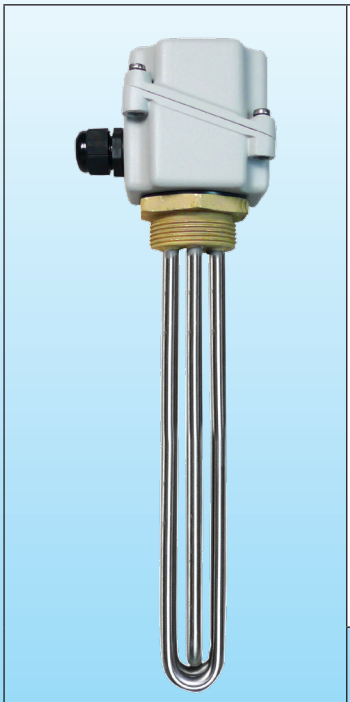
Gaskets

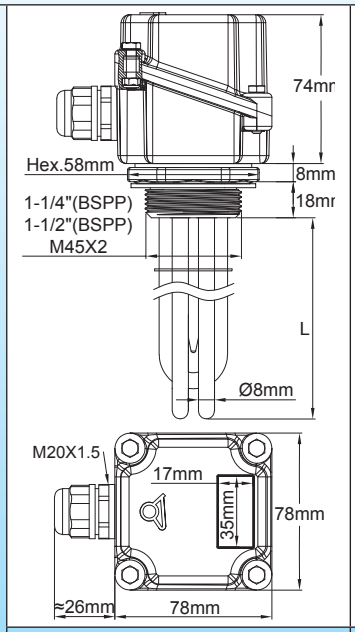
Thread	1"¼	1"½ - M45x200
NBR	9BRJ03000ELH206A	9BRJ03000ELH205A
Fiber	9BRJ03000ELH052A	9BRJ03000ELH007A
PTFE	9BRJ03000ELH032A	9BRJ03000ELH033A

Other accessories and drawings: see last section of this catalogue

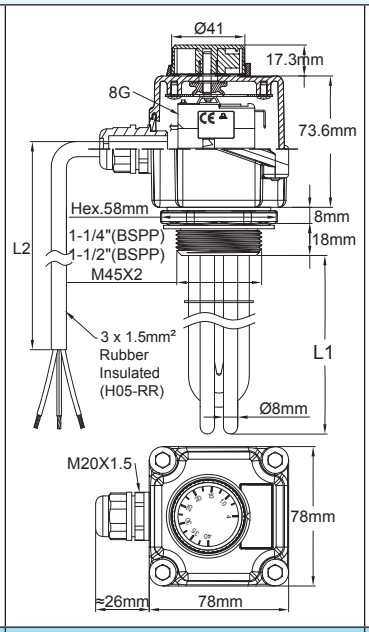
Immersion heaters with aluminum connection box

Immersion heater with 78mm × 78mm × 74mm aluminum enclosure. 1"¼, 1"½, M45x2 fittings. With or without thermostat. Type 9ST4

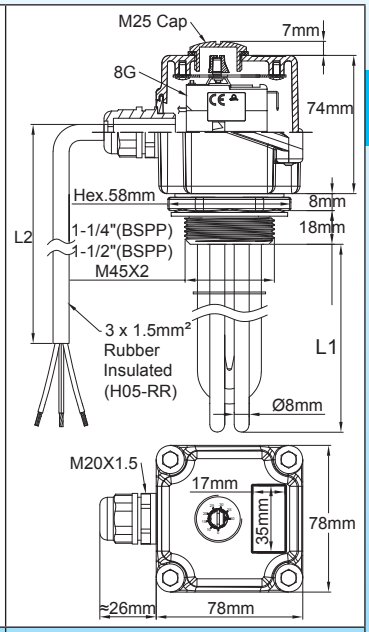




Without thermostat



Outside knob thermostat (option)

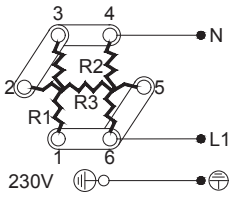
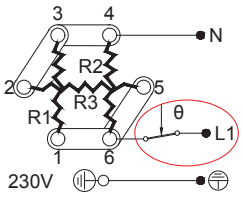
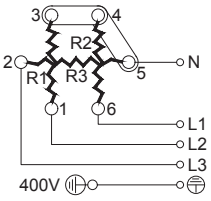


Thermostat adjustable under M25 screwed cap (standard)

Main applications: liquid heating, hot water circuits, containers and buffer tanks.
These heaters are the smallest size with aluminum enclosure that can receive an adjustable thermostat. But there is not enough room inside to add a connection block. Therefore, models with thermostats are supplied wired with a 2 meters long rubber insulated cable, 3 × 1.5mm²).
They exist in:
- 6 standard power levels: 1kW – 1.5kW - 2kW - 3kW - 4kW - 6kW.
(4 and 6kW version does not exist with thermostat).
- 3 types of standard fittings: 1"¼, 1"½ and M45x2.
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.
Heater tube material: 8mm dia. AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: Brass, swiveling on housing, brazed on tubes. (AISI 304 or AISI 316, TIG welded, or brazed, models are available on request). Supplied without gasket and without nut. See accessories below.
Thread: 1"¼, 1"½ BSPP (ISO 228) and metric thread M45x2 available on request.
Enclosure: 78 × 78 × 74mm, die-cast aluminum, 3mm wall thickness. Silicone foam gasket. Stainless steel cover screws with locking nuts, 2 inner earth terminals M4; Gray epoxy paint RAL7035. Protected against galvanic corrosion.
Ingress protection class: Water and dust: IP65; shock resistance: IK 10 (with metal cable glands and M25 metal plug).
Cable glands: M20, PA66. Nickel-plated brass on request.
Thermowell: They are supplied in standard with one thermowell in AISI304, dia.8 × 7mm, 135mm length, also included on heaters. Supplied without thermostat.
Heating element connections: Terminals with stainless steel screw, nut and stainless steel washer. Switching straps on 3 phases models.
Models with thermostats are made with a wired-in power cord, length 2m.
Temperature control: Models with thermostats can be set from 30 to 90°C (85-195°F). Thermostat knob access is under a M25 cap. External knob on request. Other temperature ranges on request. Models with thermostat are made only in single phase and for power up to 3kW only.
Support grid:1 grid AISI 304 for lengths from 400 to 600mm, 2 grids above.
Not heating immersed zone: 50mm.
Surface load: standard 5W/cm² or 10W/cm², other values on request.
Voltage: 220-240V single phase or three phases 380-400V (Star connection with neutral). 3 phases version cannot be made with a thermostat.
Variants on request:
- One or 2 heating elements only.
- 4-40°C (40-105°F), 0-60°C (32-140°F), or 30-110°C (86-230°F) thermostat.
- Manual reset thermostat.
- One or two pilot lights.

Immersion heaters with aluminum connection box

Electric Wiring

		
Straps position in 220-240V single phase (Without thermostat)	Straps position in 220-240V single phase (With single pole thermostat)	Straps position in 380-400V 3 phases (without thermostat)

Main references

5W/cm², 1"½* brass fitting, without thermostat.

Power	1kW	1.5kW	2kW	3kW	4kW	6kW
Length (mm)	170	240	300	440	570	840
AISI 304 Reference	9ST4G5E1010U8170	9ST4G5E1015U8240	9ST4G5E1020U8300	9ST4G5E1030U8440	9ST4G5E1040U8570	9ST4G5E1060U8840
Incolloy 800 reference	9ST4G5E1010UK170	9ST4G5E1015UK240	9ST4G5E1020UK300	9ST4G5E1030UK440	9ST4G5E1040UK570	9ST4G5E1060UK840

10W/cm², 1"½* brass fitting, without thermostat.

Power	1kW***	1.5kW	2kW	3kW	4kW	6kW
Length (mm)	135	135	170	240	300	440
AISI 304 Reference	9ST4G5E1010B8130	9ST4G5E1015U8130	9ST4G5E1020U8170	9ST4G5E1030U8240	9ST4G5E1040U8300	9ST4G5E1060U8440
Incolloy 800 reference	9ST4G5E1010BK130	9ST4G5E1015UK130	9ST4G5E1020UK170	9ST4G5E1030UK240	9ST4G5E1040UK300	9ST4G5E1060UK440

5W/cm², 1"½* brass fitting, with 30-90°C (85-195°F) thermostat, adjustment under M25 cap

Power	1kW	1.5kW	2kW	3kW	4kW	6kW
Length (mm)	170	240	300	440	Not available with thermostat	
AISI 304 Reference	9ST4G5NS010V8170	9ST4G5NS015V8240	9ST4G5NS020V8300	9ST4G5NS030V8440		
Incolloy 800 reference	9ST4G5NS010VK170	9ST4G5NS015VK240	9ST4G5NS020VK300	9ST4G5NS030VK440		

10W/cm², 1"½* brass fitting, with 30-90°C (85-195°F) thermostat, adjustment under M25 cap

Power	1kW**	1.5kW	2kW	3kW	4kW	6kW
Length (mm)	135	135	170	240	Not available with thermostat	
AISI 304 Reference	9ST4G5NS010B8130	9ST4G5NS015V8130	9ST4G5NS020V8170	9ST4G5NS030V8240		
Incolloy 800 reference	9ST4G5NS010BK130	9ST4G5NS015VK130	9ST4G5NS020VK170	9ST4G5NS030VK240		

* 1"¼ brass fitting instead of 1"½, replace G5 by G4 in the reference. M45x2 brass fitting instead of 1"½, replace G5 by G9 in the reference.
** This model has only 2 heating elements.

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	1"¼	1"½	M45x200
Brass	9BRRA3000ELH302A	9BRRA3000ELH303A	9BRRA3000ELH305A
AISI304	9BRRA3000ELH032A	9BRRA3000ELH006A	9BRRA3000ELH049A
AISI316	9BRRA3000ELH202A	9BRRA3000ELH203A	9BRRA3000ELH205A

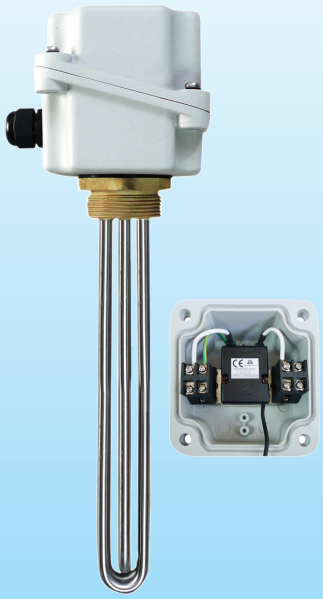
Gaskets

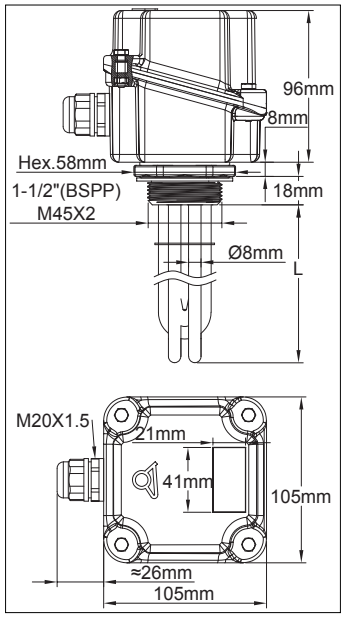
Thread	1"¼	1"½ - M45x200
NBR	9BRJ03000ELH206A	9BRJ03000ELH205A
Fiber	9BRJ03000ELH052A	9BRJ03000ELH007A
PTFE	9BRJ03000ELH032A	9BRJ03000ELH033A

Other accessories and drawings: see last section of this catalogue.

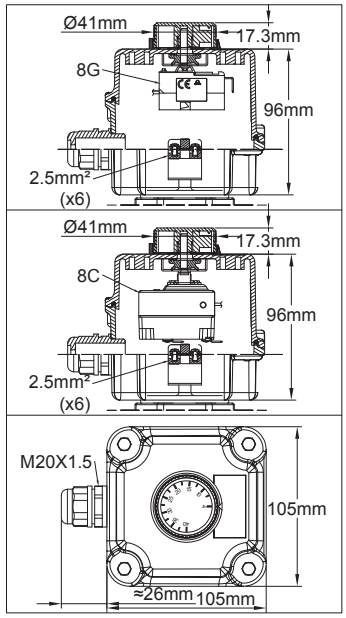
Immersion heaters with aluminum connection box

Standard immersion heater with aluminum enclosure, 105 × 105 × 96mm, with and without thermostat. Type 9ST5

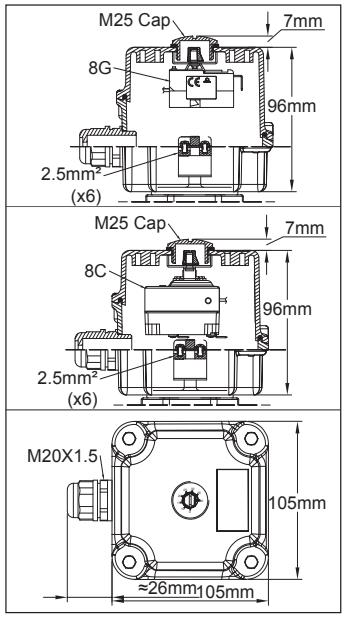




Without thermostat



Single pole and 3 pole thermostats, external knob adjustment (option)



Single pole and 3 pole thermostats, internal knob adjustment, access under M25 cap (Standard)

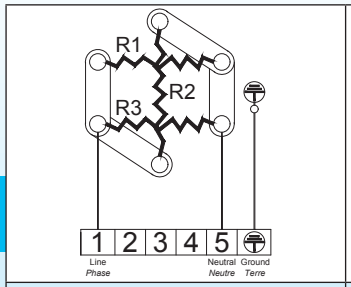
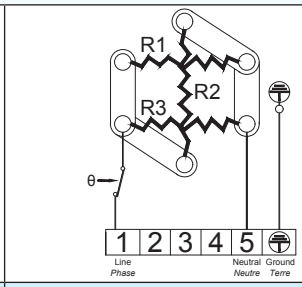
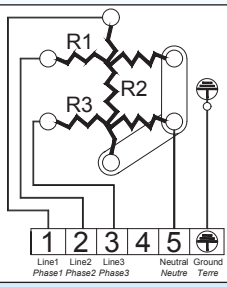
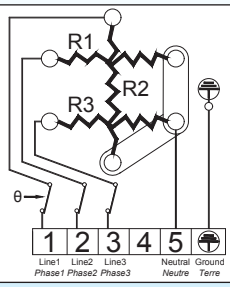
Main applications: liquid heating, hot water circuits, containers and buffer tanks.
These heaters with that box size are the most used because they can receive many accessories such as thermostats, limiters, pilot lights etc.., with a relatively small footprint.
They exist in:
- 6 standard power levels: 1kW – 1.5kW - 2kW - 3kW - 4kW - 6kW.
- 3 types of standard fittings: 1"¼; 1"½; M45x2.
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.

Heater tube material: 8mm dia. AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: brass, swiveling on housing, brazed on tubes. (AISI 304 or AISI 316, TIG welded, or brazed, models are available on request). Supplied without gasket and without nut. See accessories below.
Thread: 1"¼; 1"½BSPP (ISO 228); M45x2.
Temperature control: single pole or 3 pole thermostat, 30-90°C (85-195°F). Other temperature ranges in option.
Enclosure: 105 × 105 × 96mm, die-cast aluminum, 3mm wall thickness. Silicone foam gasket. Stainless steel cover screws with locking nuts, 2 inner earth terminals M4; Gray epoxy paint RAL7035. Protected against galvanic corrosion.
Ingress protection class: Water and dust: IP65; shock resistance: IK 10 (with metal cable glands and M25 metal plug).
Cable glands: M20, PA66. Nickel-plated brass on request.
Thermowell: in standard on thermowell in AISI304, dia.8 × 7mm, also for models supplied without thermostat.
Electrical connections: tubular heater terminals with stainless steel screw, nut and stainless steel washer. Switching straps on 3 phases models.
Models with thermostats have a built-in connection block, 3 × 2.5mm² for single phase units and 5 × 2.5mm² for 3 phases units. One more M4 grounding terminal available.
Support grid: 1 grid AISI 304 for lengths from 400 to 600mm, 2 grids above.
Not heating immersed zone: 50mm.
Surface load: standard 5W/cm² or 10W/cm², other values on request.
Voltage: 220-240V single phase or three phases 380-400V (Star connection with neutral).
Standard options:
- 230V single phase thermostat for power up to 3kW. 3 phases thermostat for 4kW and 6kW models.

Variants on request:
- External thermostat knob, with waterproof shaft gasket.
- 4-40°C (40-105°F), 0-60°C (32-140°F), or 30-110°C (86-230°F) thermostat.
- Additional cable gland output for electronic control sensor.
- It is possible to deliver these devices with one or two pilot lights and a power cord.
- These heaters can be assembled with fittings having threads up to 2"½ or M77x200, and 10mm dia. heating tubes. Contact us for feasibility.

Immersion heaters with aluminum connection box

Electric Wiring

			
220-240V single phase (Without thermostat)	220-240V single phase (With single pole thermostat)	380-400V 3 phases (without thermostat)	380-400V 3 phases (with 3 poles thermostat)

Main references

5W/cm²; 1"½ brass fitting, without thermostat.**

Power	1kW	1.5kW	2kW	3kW	4kW	6kW
Length (mm)	170	240	300	440	570	840
AISI 304 Reference	9ST5G5E1010U8170	9ST5G5E1015U8240	9ST5G5E1020U8300	9ST5G5E1030U8440	9ST5G5E1040U8570	9ST5G5E1060U8840
Incolloy 800 reference	9ST5G5E1010UK170	9ST5G5E1015UK240	9ST5G5E1020UK300	9ST5G5E1030UK440	9ST5G5E1040UK570	9ST5G5E1060UK840

10W/cm², 1"½* brass fitting, without thermostat.

Power	1kW**	1.5kW	2kW	3kW	4kW	6kW
Length (mm)	135	135	170	240	300	440
AISI 304 Reference	9ST5G5E1010B8130	9ST5G5E1015U8130	9ST5G5E1020U8170	9ST5G5E1030U8240	9ST5G5E1040U8300	9ST5G5E1060U8440
Incolloy 800 reference	9ST5G5E1010BK130	9ST5G5E1015UK130	9ST5G5E1020UK170	9ST5G5E1030UK240	9ST5G5E1040UK300	9ST5G5E1060UK440

5W/cm², 1"½* brass fitting, with 30-90°C (86-195°F) thermostat, adjustment under M25 cap (single phase up to 3kW, 3 phases for 4kW and 6kW models)

Power	1kW	1.5kW	2kW	3kW	4kW	6kW
Length (mm)	170	240	300	440	570	840
AISI 304 Reference	9ST5G5ES010V8170	9ST5G5ES015V8240	9ST5G5ES020V8300	9ST5G5ES030V8440	9ST5G5ES040U8570	9ST5G5ES060U8840
Incolloy 800 reference	9ST5G5ES010VK170	9ST5G5ES015VK240	9ST5G5ES015VK300	9ST5G5ES030VK440	9ST5G5ES040UK570	9ST5G5ES060UK840

10W/cm², 1"½* brass fitting, with 30-90°C(86-195°F) thermostat, adjustment under M25 cap (single phase up to 3kW, 3 phases for 4kW and 6kW models)

Power	1kW**	1.5kW	2kW	3kW	4kW	6kW
Length (mm)	135	135	170	240	300	440
AISI 304 Reference	9ST5G5ES010B8130	9ST5G5ES015V8130	9ST5G5ES020V8170	9ST5G5ES030V8240	9ST5G5ES040U8300	9ST5G5ES060U8440
Incolloy 800 reference	9ST5G5ES010BK130	9ST5G5ES015VK130	9ST5G5ES020VK170	9ST5G5ES030VK240	9ST5G5ES040UK300	9ST5G5ES060UK440

* 1"¼ brass fitting instead of 1"½, replace G5 by G4 in the reference. M45x2 brass fitting instead of 1"½, replace G5 by G9 in the reference.
** This model has only 2 heating elements.

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	1"¼	1"½	M45x200
Brass	9BRRA3000ELH302A	9BRRA3000ELH303A	9BRRA3000ELH305A
AISI304	9BRRA3000ELH032A	9BRRA3000ELH006A	9BRRA3000ELH049A
AISI316	9BRRA3000ELH202A	9BRRA3000ELH203A	9BRRA3000ELH205A

Gaskets

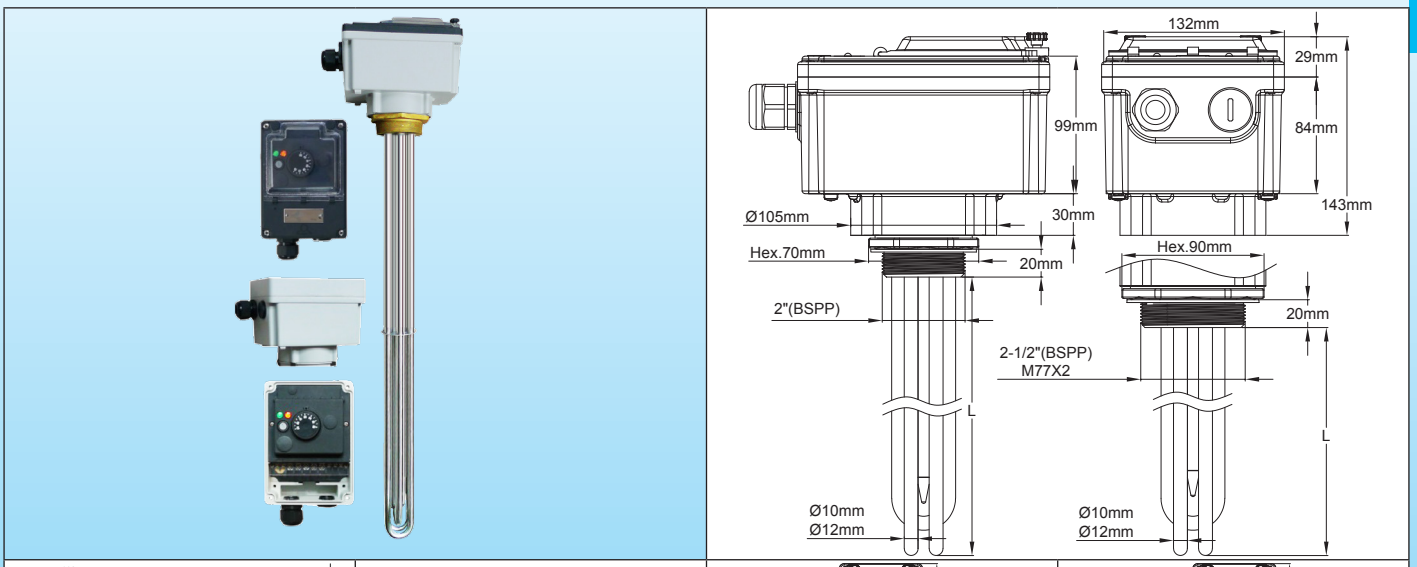
Thread	1"¼	1"½ - M45x200
NBR	9BRJ03000ELH206A	9BRJ03000ELH205A
Fiber	9BRJ03000ELH052A	9BRJ03000ELH007A
PTFE	9BRJ03000ELH032A	9BRJ03000ELH033A

Other accessories and drawings: see last section of this catalogue.

Immersion heaters with aluminum connection box

Immersion heaters with 182mm × 130mm × 144mm aluminum and plastic enclosure. Fittings from 2" to M77x2. With mechanical thermostat. With or without manual reset thermostat. Power up to 21kW with built-in power relay. Heating elements dia. 10 and 12mm.

Type 9STP



Aluminum lid	Transparent polycarbonate lid	Temperature control thermostat	Temperature control thermostat and manual reset safety thermostat

Main applications: Industrial liquid heating, hot water circuits, containers and buffer tanks.
These heaters with aluminum enclosure are designed for industrial applications of medium power in three-phase, which require the use of contactors. They can receive one power relay, 3 poles 32A resistive. They exist only with thermostat temperature control. The enclosure lid may be transparent polycarbonate or aluminum.
They are equipped with a device that allows adjusting the enclosure position after tightening of the fitting.
They can be made in:
- 6 standard power levels: 6kW; 9kW; 12kW; 15kW; 18kW; 21kW.
- 3 types of standard fittings with dia. 10mm heating elements: : 2", 2"½ and M77x2
- 2 types of standard fittings with dia. 12mm heating elements: 2"½; M77x2
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.

Heater tube material: 3 heating elements, dia.10mm or 12mm, AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: brass, swiveling on housing, brazed on tubes. Supplied without gasket and without nut. See accessories below.
Thread:
- Dia. 10mm heating elements: 2", 2"½ and M77x2
- Dia. 12mm heating elements: 2"½; M77x2

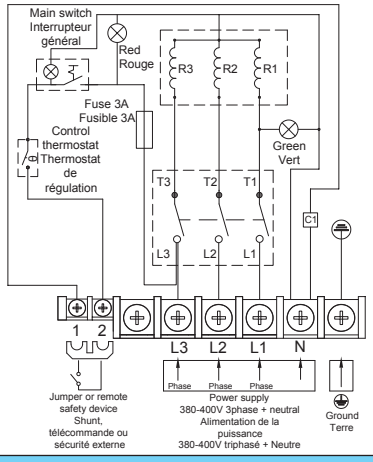
Temperature control:
Mechanical thermostat, temperature range 30-90°C (85-195°F). Other ranges available.
Enclosure: Extremely robust, die-cast aluminum, 3mm wall thickness. Silicone foam gasket. Stainless steel cover screws with locking nuts. Gray epoxy paint RAL7035. Protected against galvanic corrosion. Designed for outdoor installation, IP65 and IK10. It also includes:
- A fuse to protect internal circuits
- An illuminated on- off switch
- A pilot light for power supply and a pilot light for power output.

There are 2 models of covers:
- PA66 lid, with a polycarbonate transparent window allowing access to the settings. This window can be secured with seals. This case also includes a separate lid, with independent seals, providing access to electrical connections. In models with failsafe manual reset limiter, reset can be accessed after opening the window.

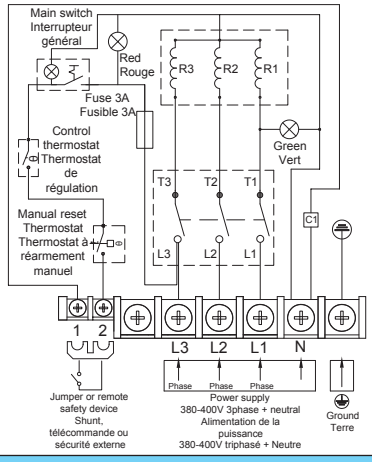
Immersion heaters with aluminum connection box

- Aluminum lid. This model provides access to settings only after removing the cover. It is convenient for industrial applications that do not request frequent changes in settings.
Cable glands: One M25, PA66, and one more hole for M25, closed by a plastic cap.
Thermowell: in standard two thermowells in AISI304, dia.8 × 7mm.
Electric connections:
Made on a built-in terminal block, with 6 terminals 10mm² and 2 terminals 2.5mm².
This terminal block is provided with a strap between terminals 1 and 2. By removing this strap, it is possible to connect an additional safety device, a remote control, or a timer.
Support grid: 1 grid AISI 304 for lengths from 400 to 600mm, 2 grids above.
Not heating immersed zone: 50mm.
Surface load: standard 5W/cm² or 10W/cm², other values on request.
Voltage: 380-400V, three phases with neutral only.
Standard options:
Plastic cover with transparent polycarbonate window.
Aluminum cover.
Variants on request:
- 4-40°C (40-105°F) adjustable thermostat, manual reset at 60°C (140°F).
- 0-60°C (32-140°F), adjustable thermostat, manual reset at 80°C (176°F).
- 30-110°C (85-230°F) adjustable thermostat, manual reset at 130°C (266°F).
- Thermal cut out inside a thermowell.
It is also possible to produce models with digital electronic control. Ask our commercial department.

Wiring diagram



Temperature control thermostat



Temperature control thermostat and manual reset thermostat

Main references with transparent polycarbonate window*

5W/cm², 2"½ brass fitting, without manual reset thermostat.**

Heating element diameter	Dia. 10mm heating elements		Dia. 12mm heating elements	
Power	6kW	9kW	12kW	15kW
Length (mm)	660	980	1100	1350
AISI 304 Reference	9STPD7QV060C1660	9STPD7QV090C1980	9STPD7QV120C2K00	9STPD7QV150C2O50
Incolloy 800 reference	9STPD7QV060CL660	9STPD7QV090CL980	9STPD7QV120CMK00	9STPD7QV150CMO50

10W/cm², 2"½ brass fitting, without manual reset thermostat.**

Heating element diameter	Dia. 10mm heating elements			Dia. 12mm heating elements		
Power	6kW	9kW	12kW	15kW	18kW	21kW
Length (mm)	350	500	650	680	810	950
AISI 304 Reference	9STPD7QV060C1350	9STPD7QV090C1500	9STPD7QV120C1650	9STPD7QV150C2680	9STPD7QV180C2810	9STPD7QV210C2950
Incolloy 800 reference	9STPD7QV060CL350	9STPD7QV090CL500	9STPD7QV120CL650	9STPD7QV150CM680	9STPD7QV180CM810	9STPD7QV210CM950

5W/cm², 2"½* brass fitting, with manual reset thermostat set at 100°C (212°F)**

Heating element diameter	Dia. 10mm heating elements		Dia. 12mm heating elements	
Power	6kW	9kW	12kW	15kW
Length (mm)	660	980	1100	1350
AISI 304 Reference	9STPD7QV060C166N	9STPD7QV090C198N	9STPD7QV120C2K0N	9STPD7QV150C2O5N
Incolloy 800 reference	9STPD7QV060CL66N	9STPD7QV090CL98N	9STPD7QV120CMK00	9STPD7QV150CMO5N

Immersion heaters with aluminum connection box

10W/cm², 2"½* brass fitting, with manual reset thermostat set at 100°C (212°F)**

Heating element diameter	Dia. 10mm heating elements			Dia. 12mm heating elements		
Power	**6kW**	**9kW**	**12kW**	**15kW**	**18kW**	**21kW**
Length (mm)	350	500	650	680	810	950
AISI 304 Reference	9STPD7QV060C135N	9STPD7QV090C150N	9STPD7QV120C165N	9STPD7QV150C268N	9STPD7QV180C281N	9STPD7QV210C295N
Incolloy 800 reference	9STPD7QV060CL35N	9STPD7QV090CL50N	9STPD7QV120CL65N	9STPD7QV150CM68N	9STPD7QV180CM81N	9STPD7QV210CM95N

* For plain aluminum cover, replace TPD by TPG in the reference.
** 2" brass fitting instead of 2"½, replace D7 by D6 in the reference. (Only possible on dia. 10mm heating elements)
M77x2 brass fitting instead of 2"½, replace D7 by D8 in the reference. (Possible on dia. 10mm and dia. 12mm heating elements).
*** Manual reset thermostat set at 60°C, 80°C, 110°C, 130°C. (140°F, 176°F, 230°F, 266°F), replace the last character N by E, J, Q, U.

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	2"	2"½	M77x2
Brass	9BRRA3000ELH304A	9BRRA3000ELH314A	9BRRA3000ELH306A
AISI304	9BRRA3000ELH348A	9BRRA3000ELH142A	9BRRA3000ELH150A
AISI316	9BRRA3000ELH204A	9BRRA3000ELH214A	9BRRA3000ELH206A

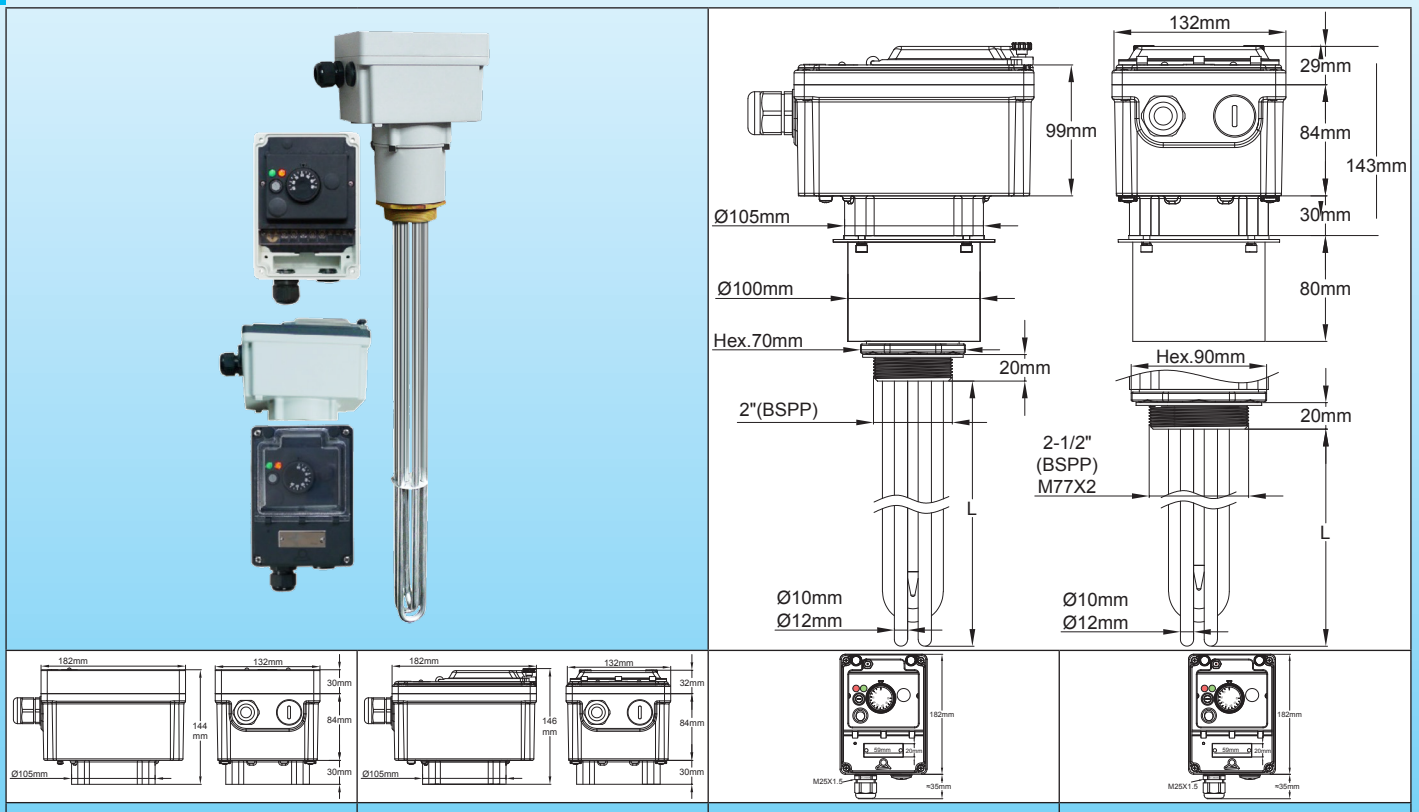
Gaskets

Thread	2"	2"½- M77x2
NBR	9BRJ03000ELH203A	9BRJ03000ELH201A
Fiber	9BRJ03000ELH028A	9BRJ03000ELH030A
PTFE	9BRJ03000ELH034A	9BRJ03000ELH036A

Immersion heaters with aluminum connection box

Immersion heaters with 182mm × 130mm × 224mm aluminum and plastic enclosure, or full aluminum enclosure, with 80mm offset. Fittings from 2" to M77x2. With mechanical thermostat. With or without manual reset thermostat. Power up to 21kW with built-in power relay. Heating elements dia. 10 and 12mm.

Type 9STN



Aluminum lid	Transparent polycarbonate lid	Temperature control thermostat	Temperature control thermostat and manual reset safety thermostat

Main applications: Industrial liquid heating, hot water circuits, containers and buffer tanks.
These heaters with aluminum enclosure are designed for industrial applications of medium power in three-phase, which require the use of contactors. They can receive one power relay, 3 poles 32A resistive. They exist only with thermostat temperature control. The enclosure lid may be transparent polycarbonate or aluminum. They are equipped with a device that allows adjusting the enclosure position after tightening of the fitting.
The enclosure has a 80mm offset to go through thick thermal insulation.
They can be made in:
- 6 standard power levels: 6kW; 9kW; 12kW; 15kW; 18kW; 21kW.
- 3 types of standard fittings with dia. 10mm heating elements: 2", 2"½ and M77x2
- 2 types of standard fittings with dia. 12mm heating elements: 2"½; M77x2
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.

Heater tube material: 3 heating elements, dia.10mm or 12mm, AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: brass, swiveling on housing, brazed on tubes. Supplied without gasket and without nut. See accessories below.
Thread:
- Dia. 10mm heating elements: 2", 2"½ and M77x2
- Dia. 12mm heating elements: 2"½; M77x2

Temperature control:
Mechanical thermostat, temperature range 30-90°C (85-195°F). Other ranges available.
Enclosure: Extremely robust, die-cast aluminum, 3mm wall thickness. Silicone foam gasket. Stainless steel cover screws with locking nuts. Gray epoxy paint RAL7035. Protected against galvanic corrosion. Designed for outdoor installation, IP65 and IK10. It also includes:

Immersion heaters with aluminum connection box

- A fuse to protect internal circuits
- An illuminated on- off switch
- A pilot light for power supply and a pilot light for power output.

There are 2 models of covers:

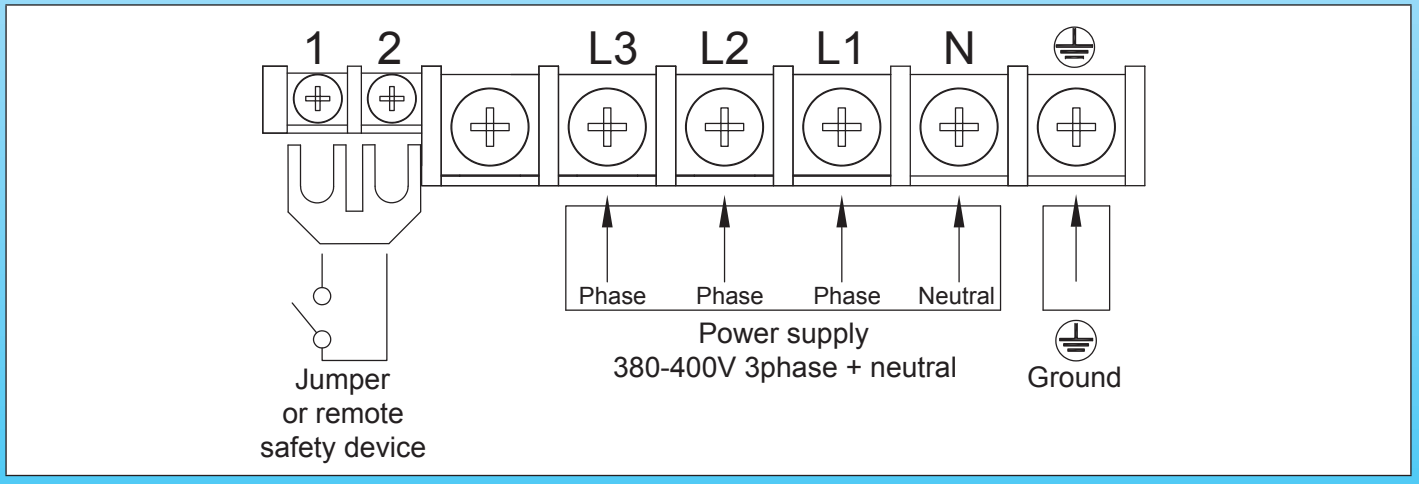
- A PA66 cover with a polycarbonate transparent window allowing access to the settings. This window can be secured with seals. This case also includes a separate lid, with independent seals, providing access to electrical connections. In models with failsafe manual reset limiter, reset can be accessed after opening the window.
- An aluminum cover. This model provides access to settings only after removing the cover. It is convenient for industrial applications that do not request frequent changes in settings.

Cable glands: One M25, PA66, and one more hole for M25, closed by a plastic cap.
Thermowell: in standard two thermowells in AISI304, dia.8 × 7mm.
Electric connections:
Built-in terminal block, with 6 terminals 10mm² and 2 terminals 2.5mm².
This terminal block is provided with a strap between terminals 1 and 2. By removing this strap, it is possible to connect an additional safety device, a remote control, or a timer.
Support grid: 1 grid AISI 304 for lengths from 400 to 600mm, 2 grids above.
Not heating immersed zone: 50mm.
Surface load: Standard 5W/cm² or 10W/cm², other values on request.
Voltage: 380-400V, three phases with neutral only.
Standard options:
Plastic cover with transparent polycarbonate window.
Aluminum cover.
Variants on request:

- 4-40°C (40-105°F) adjustable thermostat, manual reset at 60°C (140°F).
- 0-60°C (32-140°F), adjustable thermostat, manual reset at 80°C (176°F).
- 30-110°C (85-230°F) adjustable thermostat, manual reset at 130°C (266°F).
- Thermal cut out inside a thermowell.

It is also possible to produce models with digital electronic control. Ask our commercial department.

Wiring diagram



Main references with transparent polycarbonate window*

5W/cm²; 2"½ brass fitting, without manual reset thermostat.**

Heating element diameter	Dia. 10mm heating elements		Dia. 12mm heating elements	
Power	6kW	9kW	12kW	15kW
Length (mm)	660	980	1100	1350
AISI 304 Reference	9STND7QV060C1660	9STND7QV090C1980	9STND7QV120C2K00	9STND7QV150C2O50
Incolloy 800 reference	9STND7QV060CL660	9STND7QV090CL980	9STND7QV120CMK00	9STND7QV150CMO50

10W/cm², 2"½ brass fitting, without manual reset thermostat.**

Heating element diameter	Dia. 10mm heating elements			Dia. 12mm heating elements		
Power	6kW	9kW	12kW	15kW	18kW	21kW
Length (mm)	350	500	650	680	810	950
AISI 304 Reference	9STND7QV060C1350	9STND7QV090C1500	9STND7QV120C1650	9STND7QV150C2680	9STND7QV180C2810	9STND7QV210C2950
Incolloy 800 reference	9STND7QV060CL350	9STND7QV090CL500	9STND7QV120CL650	9STND7QV150CM680	9STND7QV180CM810	9STND7QV210CM950

Immersion heaters with aluminum connection box

5W/cm², 2"½* brass fitting, with manual reset thermostat set at 100°C (212°F)**

Heating element diameter	Dia. 10mm heating elements		Dia. 12mm heating elements	
Power	6kW	9kW	12kW	15kW
Length (mm)	660	980	1100	1350
AISI 304 Reference	9STND7QV060C166N	9STND7QV090C198N	9STND7QV120C2K0N	9STND7QV150C2O5N
Incolloy 800 reference	9STND7QV060CL66N	9STND7QV090CL98N	9STND7QV120CMK00	9STND7QV150CMO5N

10W/cm², 2"½* brass fitting, with manual reset thermostat set at 100°C (212°F)**

Heating element diameter	Dia. 10mm heating elements			Dia. 12mm heating elements		
Power	6kW	9kW	12kW	15kW	18kW	21kW
Length (mm)	350	500	650	680	810	950
AISI 304 Reference	9STND7QV060C135N	9STND7QV090C150N	9STND7QV120C165N	9STND7QV150C268N	9STND7QV180C281N	9STND7QV210C295N
Incolloy 800 reference	9STND7QV060CL35N	9STND7QV090CL50N	9STND7QV120CL65N	9STND7QV150CM68N	9STND7QV180CM81N	9STND7QV210CM95N

* For plain aluminum cover, replace TND by TNG in the reference.
** 2" brass fitting instead of 2"½, replace D7 by D6 in the reference. (Only possible on dia. 10mm heating elements)
M77x2 brass fitting instead of 2"½, replace D7 by D8 in the reference. (Possible on dia. 10mm and dia. 12mm heating elements).
*** Manual reset thermostat set at 60°C, 80°C, 110°C, 130°C. (140°F, 176°F, 230°F, 266°F), replace the last character N by E, J, Q, U.

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	2"	2"½	M77x2
Brass	9BRRA3000ELH304A	9BRRA3000ELH314A	9BRRA3000ELH306A
AISI304	9BRRA3000ELH348A	9BRRA3000ELH142A	9BRRA3000ELH150A
AISI316	9BRRA3000ELH204A	9BRRA3000ELH214A	9BRRA3000ELH206A

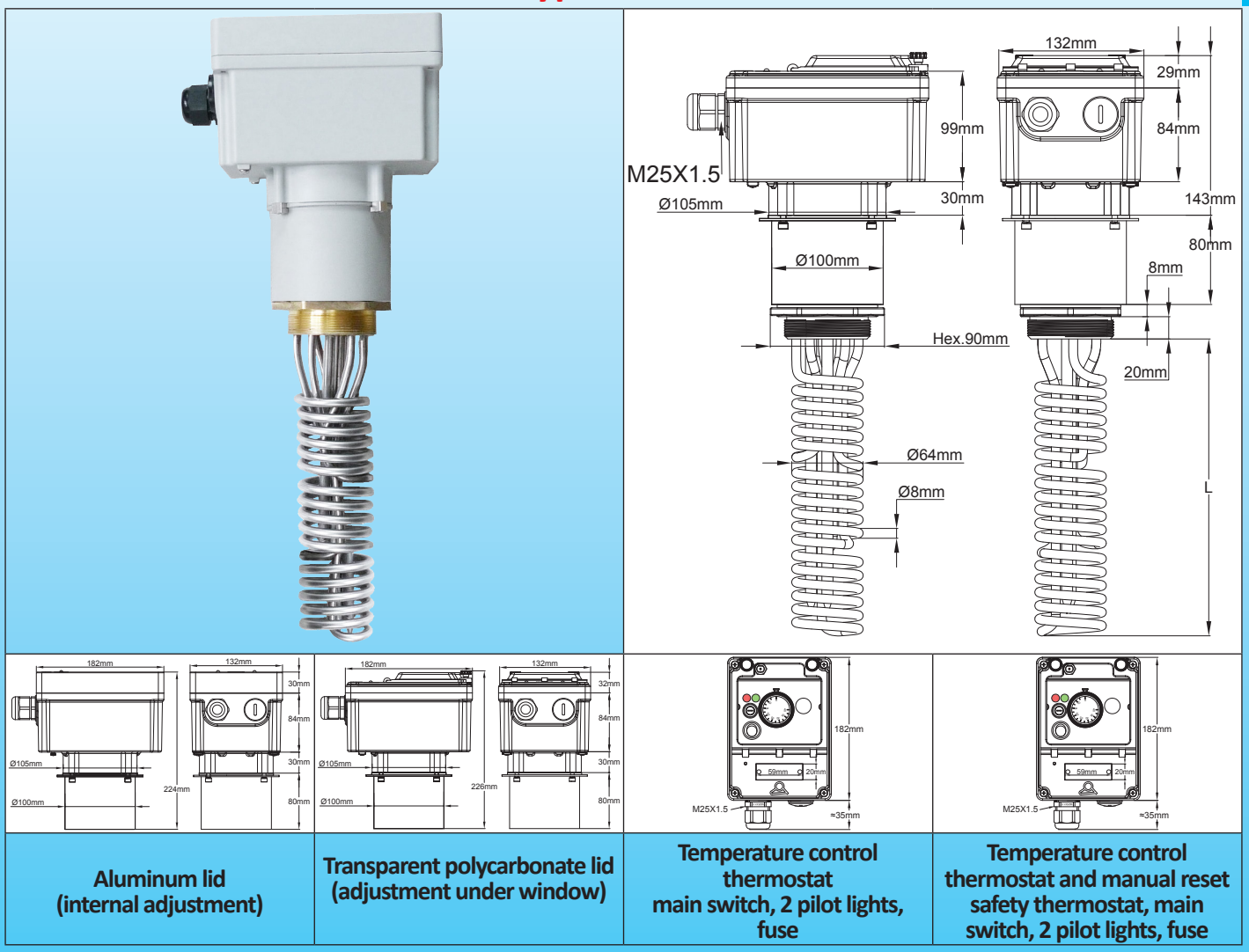
Gaskets

Thread	2"	2"½- M77x2
NBR	9BRJ03000ELH203A	9BRJ03000ELH201A
Fiber	9BRJ03000ELH028A	9BRJ03000ELH030A
PTFE	9BRJ03000ELH034A	9BRJ03000ELH036A

Immersion heaters with aluminum connection box

Extra short immersion heaters with 182mm × 130mm × 224mm aluminum-plastic of full aluminum enclosure, with 80mm offset. 2"½ and M77x2 fittings. With mechanical thermostat. With or without manual reset thermostat. Power up to 9kw with built-in power relay. Coiled heating elements dia. 8mm.

Types 9SWN



Aluminum lid (internal adjustment)	Transparent polycarbonate lid (adjustment under window)	Temperature control thermostat main switch, 2 pilot lights, fuse	Temperature control thermostat and manual reset safety thermostat, main switch, 2 pilot lights, fuse

Main applications: Industrial liquid heating, hot water circuits, containers and buffer tanks, **in applications where the heating elements immersed length must be as short as possible.**

These heaters with aluminum enclosure are designed for industrial applications of medium power in three-phase, which require the use of contactor. They can receive one power relay, 3 poles 32A resistive. They exist only with thermostat temperature control. The enclosure lid may be transparent polycarbonate or aluminum. They are equipped with a device that allows adjusting the enclosure position after tightening of the fitting.

The enclosure has a 80mm offset to go through thick thermal insulation.

- 5 standard power levels: 1.5kW; 3kW; 4.5kW; 6kW; 9kW. On request, it is possible to reach 21kW by increasing the L length)
- 2 types of standard fittings: 2"½; M77x2.
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.

Heater tube material: 3 heating elements, dia.10mm or 12mm, AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).

Fitting material: brass, swiveling on housing, brazed on tubes. Supplied without gasket and without nut. See accessories below.

Thread: 2"½, or M77x2.

Temperature control: Mechanical thermostat, temperature range 30-90°C (85-195°F). Other ranges available.

Enclosure: Extremely robust, die-cast aluminum, 3mm wall thickness. Silicone foam gasket. Stainless steel cover screws with locking nuts. Gray epoxy paint RAL7035. Protected against galvanic corrosion. Designed for outdoor

Immersion heaters with aluminum connection box

installation, IP65 and IK10. It also includes:
- A fuse to protect internal circuits.
- An illuminated on- off switch.
- A pilot light for power supply and a pilot light for power output.

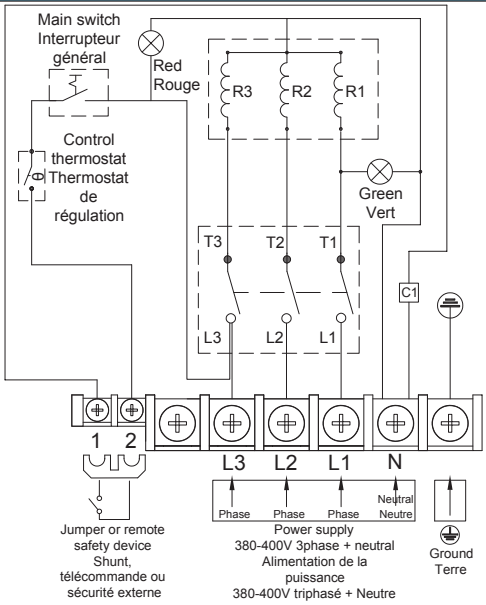
There are 2 models of covers:
- A PA66 cover with a polycarbonate transparent window allowing access to the settings. This window can be secured with seals. This case also includes a separate lid, with independent seals, providing access to electrical connections. In models with failsafe manual reset limiter, reset can be accessed after opening the window.
- An aluminum cover. This model provides access to settings only after removing the cover. It is convenient for industrial applications that do not request frequent changes in settings.

Cable glands: One M25, PA66, and one more hole for M25, closed by a plastic cap.
Thermowell: two thermowells in AISI304, dia.10mm × 8.4mm.
Heating elements connections: terminals with stainless steel screw, nut and stainless steel washer.
Three-phase models are equipped with straps for switching to single-phase supply. This change must be made by the professional technical staff able to calculate and observe the maximum permissible rating on power relay.
Power supply connection: on built-in connection block, 6 × 10mm² for power connection and 2 × 2.5mm² for remote safety device or remote control.
Not heating immersed zone: 50mm.
Surface load: Standard 5W/cm² or 10W/cm², other values on request.
Voltage: Single pole 230V or three phases 380-400V (Star connection with neutral).
Standard equipment:
- Thermostat with knob access under the lid.
- Main power switch, with access under the lid.
- Green and red pilot lights, with access under the lid.
- On models with manual reset: preset at 100°C (212°F). Reset access under the lid.

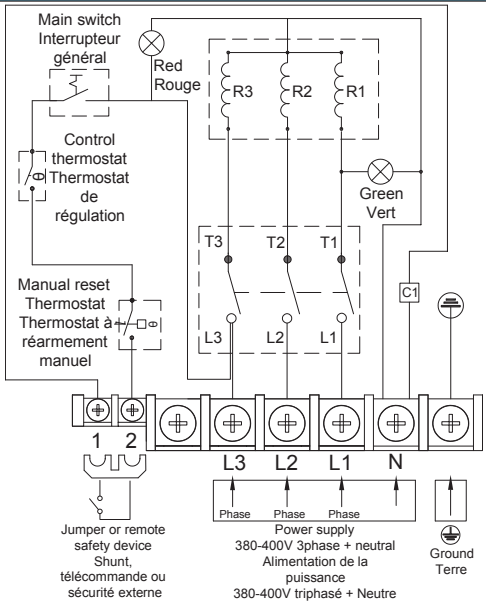
Standard options:
Plastic cover with transparent polycarbonate window.
Aluminum cover.
Variants on request:
- Thermostat without limiter, ranges 4-40°C (40-105°F), 0-60°C (30-140°F) or 30-110°C (85-230°F) Higher range on request.
- 4-40°C (40-105°F) adjustable thermostat, manual reset at 60°C (140°F).
- 0-60°C (32-140°F), adjustable thermostat, manual reset at 80°C (176°F).
- 30-110°C (85-230°F) adjustable thermostat, manual reset at 130°C (266°F).
- Thermal cut out (TCO) inside a thermowell.

It is also possible to produce models with digital electronic control or/and without the 70mm extension. Ask our commercial department.

Wiring diagram



Temperature control thermostat
(Types with one heater: phases L1 and L2 are removed, and power supply is single phase 230V.
Types with two heaters: phase L1 is removed, terminals L2 and L3 are connected together, and power supply is single phase 230V.)



Temperature control thermostat and manual reset thermostat
(Types with one heater: phases L1 and L2 are removed, and power supply is single phase 230V.
Types with two heaters: phase L1 is removed, terminals L2 and L3 are connected together, and power supply is single phase 230V.)

Immersion heaters with aluminum connection box

Main references with transparent polycarbonate window*

With 30-90°C (85-195°F) thermostat, without manual reset. M77x2 fitting**

	5W/cm²			10W/cm²		
	1 heating element	2 heating elements	3 heating elements	1 heating element	2 heating elements	3 heating elements
L (mm)	110	188	265	110	188	265
Power (Watt)	1500	3000	4500	3000	6000	9000
References, AISI 304	9SWND8QR01525110	9SWND8QR030B5190	9SWND8QR045U5270	9SWND8QR03025110	9SWND8QR060B5190	9SWND8QR090U5270
References, Incolloy 800	9SWND8QR01527110	9SWND8QR030B7190	9SWND8QR045U7270	9SWND8QR03027110	9SWND8QR060B7190	9SWND8QR090U7270

With 30-90°C (85-195°F) adjustable thermostat. Manual reset at 100°C (212°F), M77 × 2 fitting.**

	5W/cm²			10W/cm²		
	1 heating element	2 heating elements	3 heating elements	1 heating element	2 heating elements	3 heating elements
L (mm)	110	188	265	110	188	265
Power (Watt)	1500	3000	4500	3000	6000	9000
References, AISI 304	9SWND8QR0152511N	9SWND8QR030B519N	9SWND8QR045U527N	9SWND8QR0302511N	9SWND8QR060B519N	9SWND8QR090U527N
References, Incolloy 800	9SWND8QR0152711N	9SWND8QR030B719N	9SWND8QR045U727N	9SWND8QR0302711N	9SWND8QR060B719N	9SWND8QR090U727N

* For plain aluminum cover, replace 9SWND by 9SWNG in the reference.
** 2"½ brass fitting instead of M77x2, replace D8 by D7 in the reference.

References of accessories in option (Not included in the product, must be ordered separately):

Nuts

Thread	2"½	M77x2
Brass	9BRRA3000ELH314A	9BRRA3000ELH306A
AISI304	9BRRA3000ELH142A	9BRRA3000ELH150A
AISI316	9BRRA3000ELH214A	9BRRA3000ELH206A

Gaskets

Thread	2"½- M77x2
NBR	9BRJ03000ELH201A
Fiber	9BRJ03000ELH030A
PTFE	9BRJ03000ELH036A

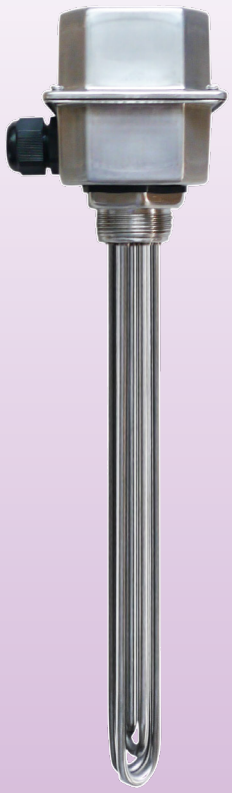
Other accessories and drawings: see last section of this catalogue.

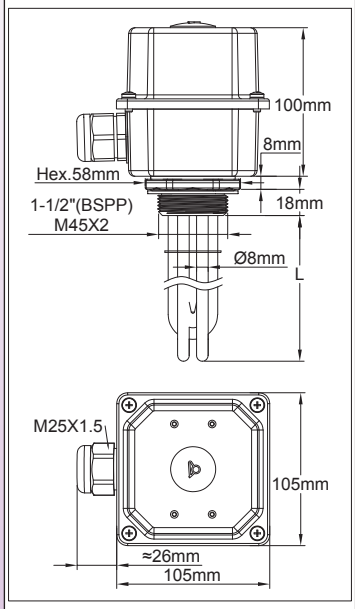
Immersion heaters with aluminum connection box

Section 8
Full stainless steel immersion heaters

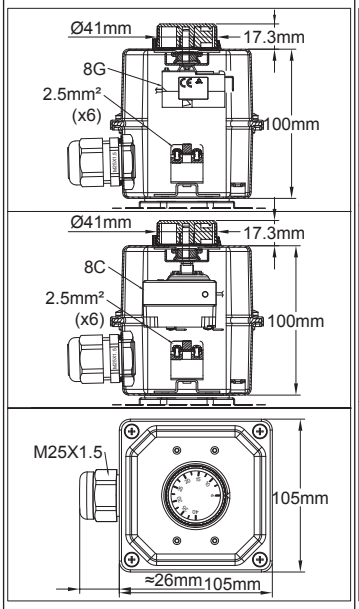
Full stainless steel immersion heaters

Full stainless steel immersion heater, without brazing, 105mm × 105mm × 100mm stainless steel enclosure. Stainless steel 1"½ fitting. With or without thermostat. Type 9STJ

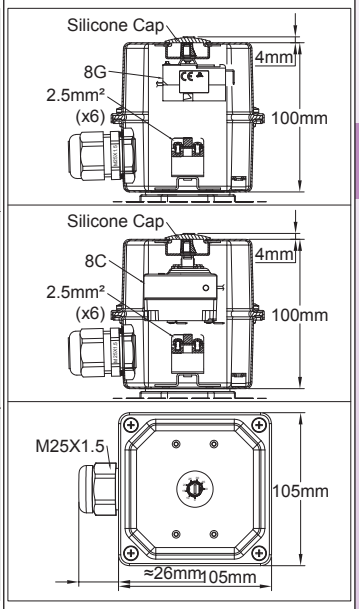




Without thermostat



Single pole and 3 pole thermostats, external knob adjustment (option)



Single pole and 3 pole thermostats, internal knob adjustment, access under silicone cap (Standard)

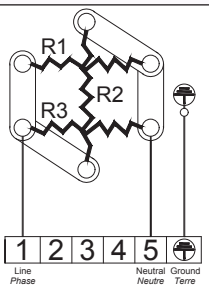
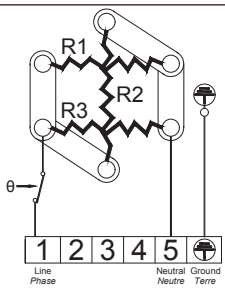
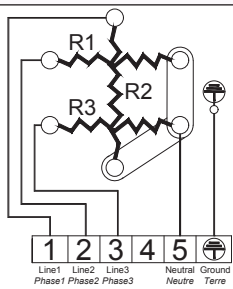
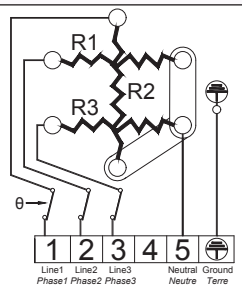
Main applications: liquid heating, hot water circuits, containers and buffer tanks.
These all stainless steel construction immersion heaters, are intended for scientific, medical, or corrosive environments. All welding are TIG, without brazing alloys. They are achievable in 304 or 316 stainless steel.
They exist in:
- 6 standard power levels: 1kW – 1.5kW - 2kW - 3kW - 4kW - 6kW.
- 2 types of fittings: 1"½ or M45x2
- 2 types of surface load density: 5W/cm² and 10W/cm². See technical introduction to optimize the surface load.

Heater tube material: 8mm dia. AISI 304 or Incolloy 800 (AISI 316; AISI 321; Incolloy 825 on request).
Fitting material: AISI 304 or AISI 316, TIG welded, swiveling on housing. Supplied without gasket and without nut. See accessories below.
Thread: 1"½BSPP (ISO 228)
Temperature control: single pole or 3 pole thermostat, 30-90°C (85-195°F). Other temperature ranges in option.
Enclosure:105 × 105 × 100mm, 304 or 316 stainless steel enclosure, 1mm wall thickness. Silicone gasket. Stainless steel cover screws, 2 internal earth terminals M4;
Ingress protection class: Water and dust: IP65; shock resistance: IK 10 (with metal cable glands and M25 metal plug).
Cable glands: M25, PA66. Nickel-plated brass or stainless steel on request.
Thermowell: in standard on thermowell in AISI304, dia.8 × 7mm, also for models supplied without thermostat.
Electrical connections: tubular heater terminals with stainless steel screw, nut and stainless steel washer. Switching straps on 3 phases models.
Models with thermostats have a 6 × 2.5mm² built-in connection block. Two M4 grounding terminals.
Support grid: 1 grid AISI 304 for lengths from 400 to 600mm, 2 grids above.
Not heating immersed zone: 50mm.
Surface load: standard 5W/cm² or 10W/cm², other values on request.
Voltage: 220-240V single phase or three phases 380-400V (Star connection with neutral)
Standard options:
- 230V single phase thermostat for power up to 3kW. 3 phases thermostat for 4kW and 6kW models.

Variants on request:
- External thermostat knob, with waterproof shaft gasket.
- 4-40°C (40-105°F), 0-60°C (32-140°F), or 30-110°C (86-230°F) thermostat.
- It is possible to deliver these devices with one or two pilot lights and a power cord.

Full stainless steel immersion heaters

Electric Wiring

			
220-240V single phase (Without thermostat)	220-240V single phase (With single pole thermostat)	380-400V 3 phases (without thermostat)	380-400V 3 phases (with 3 poles thermostat)

Main references with enclosure and fitting in 304 stainless steel*

5W/cm²; without thermostat.

Power	1kW	1.5kW	2kW	3kW	4kW	6kW
Length (mm)	170	240	300	440	570	840
AISI 304 Reference	9STJG5E1010U8170	9STJG5E1015U8240	9STJG5E1020U8300	9STJG5E1030U8440	9STJG5E1040U8570	9STJG5E1060U8840
Incolloy 800 reference	9STJG5E1010UK170	9STJG5E1015UK240	9STJG5E1020UK300	9STJG5E1030UK440	9STJG5E1040UK570	9STJG5E1060UK840

10W/cm²; without thermostat.

Power	1kW**	1.5kW	2kW	3kW	4kW	6kW
Length (mm)	135	135	170	240	300	440
AISI 304 Reference	9STJG5E1010B8130	9STJG5E1015U8130	9STJG5E1020U8170	9STJG5E1030U8240	9STJG5E1040U8300	9STJG5E1060U8440
Incolloy 800 reference	9STJG5E1010BK130	9STJG5E1015UK130	9STJG5E1020UK170	9STJG5E1030UK240	9STJG5E1040UK300	9STJG5E1060UK440

5W/cm², with 30-90°C (89-195°F) thermostat, adjustment under silicone grommet (single phase up to 3kW, 3 phases for 4kW and 6kW models)

Power	1kW	1.5kW	2kW	3kW	4kW	6kW
Length (mm)	170	240	300	440	570	840
AISI 304 Reference	9STJG5ES010V8170	9STJG5ES015V8240	9STJG5ES020V8300	9STJG5ES030V8440	9STJG5ES040U8570	9STJG5ES060U8840
Incolloy 800 reference	9STJG5ES010VK170	9STJG5ES015VK240	9STJG5ES015VK300	9STJG5ES030VK440	9STJG5ES040UK570	9STJG5ES060UK840

10W/cm²; with 30-90°C (89-195°F) thermostat, adjustment under silicone grommet (single phase up to 3kW, 3 phases for 4kW and 6kW models)

Power	1kW**	1.5kW	2kW	3kW	4kW	6kW
Length (mm)	135	135	170	240	300	440
AISI 304 Reference	9STJG5ES010B8130	9STJG5ES015V8130	9STJG5ES020V8170	9STJG5ES030V8240	9STJG5ES040U8300	9STJG5ES060U8440
Incolloy 800 reference	9STJG5ES010BK130	9STJG5ES015VK130	9STJG5ES020VK170	9STJG5ES030VK240	9STJG5ES040UK300	9STJG5ES060UK440

* References in 316 stainless steel on request
** This model has only 2 heating elements.

References of accessories in option (not included in the product, must be ordered separately):

Nuts

Thread	1"¼	1"½	M45x200
Brass	9BRRA3000ELH302A	9BRRA3000ELH303A	9BRRA3000ELH305A
AISI304	9BRRA3000ELH032A	9BRRA3000ELH006A	9BRRA3000ELH049A
AISI316	9BRRA3000ELH202A	9BRRA3000ELH203A	9BRRA3000ELH205A

Gaskets

Thread	1"¼	1"½ - M45x200
NBR	9BRJ03000ELH206A	9BRJ03000ELH205A
Fiber	9BRJ03000ELH052A	9BRJ03000ELH007A
PTFE	9BRJ03000ELH032A	9BRJ03000ELH033A

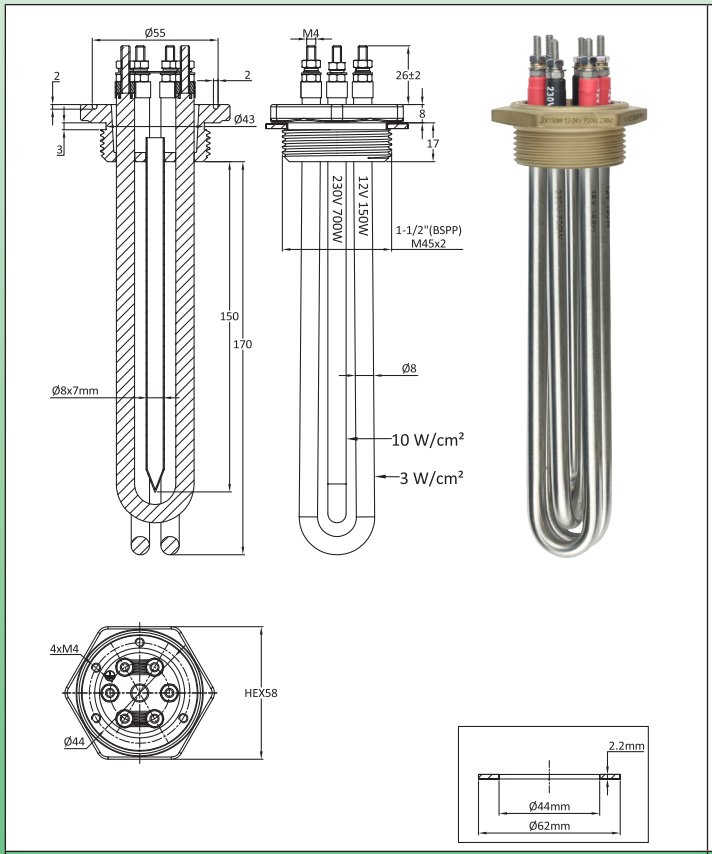
Other accessories and drawings: see last section of this catalogue

Section 9
Low voltage renewable energy immersion heaters

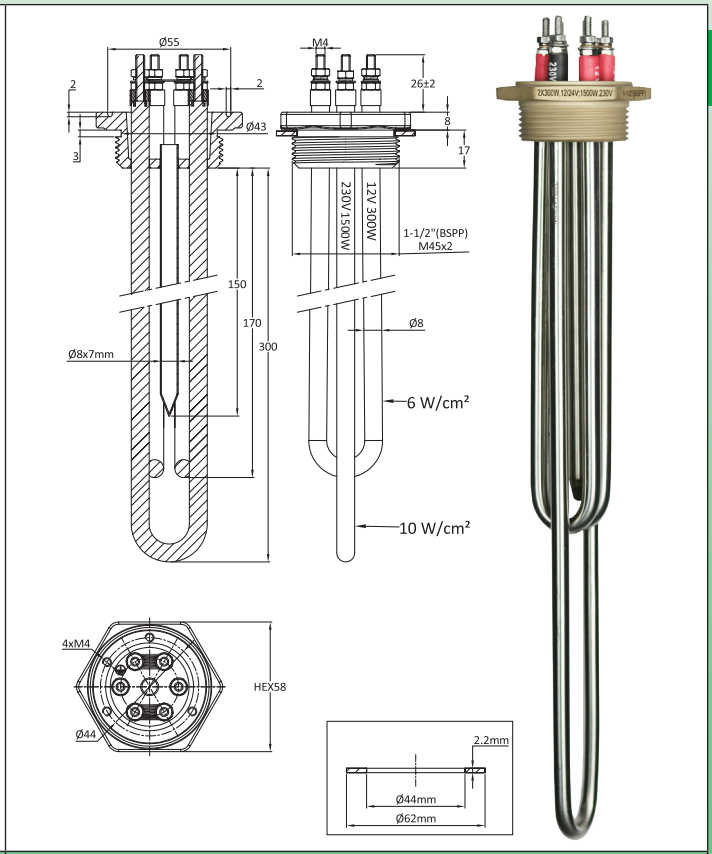
Renewable energy immersion heaters

Renewable energy 1"½ and M45x2 immersion heaters, 12 and 24V power supply with 230V auxiliary heating element, without connection box

Main Voltage	Low voltage Power	Auxiliary voltage	Auxiliary power	Enclosure	Threads	Type
12V, 24V	2 × 150W or 2 × 300W	230V	700W or 1500W	Without	1"½ or M45x2	9SFN200 and 9SFN500



2 × 150W 12V + 1 × 700W 230V



2 × 300W 12V + 1 × 1500W 230V

Main application: direct use of low voltage electricity produced by wind turbines or photovoltaic solar panels, for heating liquids, domestic hot water circuits, hot water tanks. These immersion heaters make it possible to use the surplus energy produced, and not used by domestic lighting needs or small electrical appliances. They can also be used in addition to domestic hot water tanks, limiting the need for electricity from the distribution network.

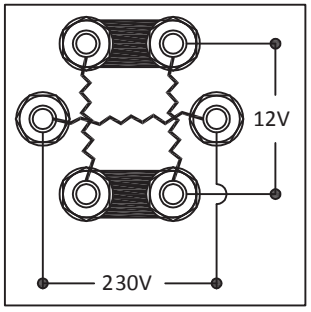
Heater tube material: dia. 8mm heating elements in AISI 304 (AISI 316; AISI 321; Incolloy 800 or Incolloy 840 on request).
Fitting material: Brass, brazed on tubes. Supplied with one fiber gasket but without nut. See accessories below.
Thread: 1"½ BSPP (ISO 228) and metric thread M45x2
Thermowell: Includes one stainless steel thermowell 7mm ID.
Heating elements connections: Terminals with M4 stainless steel screw, nut and stainless steel washer. Supplied with brass straps for switching the two low voltage heaters from 12V to 24V. (Changing their connection from parallel to serial).
Low voltage heating elements are identified by a red sleeve. 230V heating elements are identified by a black sleeve.
Not heating immersed zone: 50mm.
Surface load: see drawings
Voltage: 12 or 24V DC or AC and single phase 230V for models with auxiliary power heater
Attention: Switching by a thermostatic device the heating elements in low voltage must be made by device designed for low voltage use, and withstanding the important intensity of these circuits. Similarly, the section of the power cables must be adapted.

Renewable energy immersion heaters

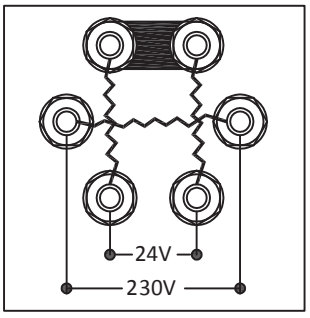
Intensity flowing in low voltage heating circuits

Voltage	Power		
	150W	300W	600W
12V	12.5A	25A	50A
24V	6.2A	12.5A	25A

Electric Wiring



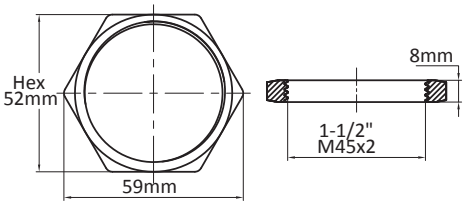
Straps position in 12V



Straps position in 24V

Main references

Fitting thread	1"½ BSPP		M45 × 2	
Power	**2 × 150W 12V + 1 × 700W 230V**	**2 × 300W 12V + 1 × 1500W 230V**	**2 × 150W 12V + 1 × 700W 230V**	**2 × 300W 12V + 1 × 1500W 230V**
Length (mm)	170	300	170	300
Surface load of 12/24V heating elements	3W/cm²	6W/cm²	3W/cm²	6W/cm²
Surface load of the 230V heating element	10W/cm²	10W/cm²	10W/cm²	10W/cm²
Reference in AISI 304	9SFN200152307217	9SFN200302615230	9SFN500152307217	9SFN500302615217
Reference in Incolloy 800	9SFN200152307K17	9SFN200302615K30	9SFN200152307K30	9SFN500302615K30

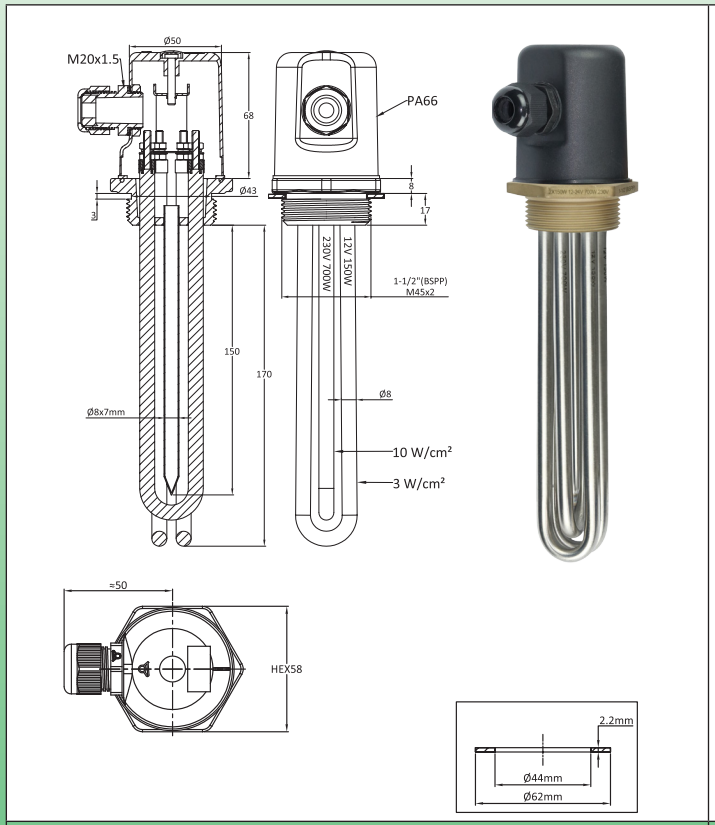


References of Brass Nuts	
1"½	66NLC11280H52
M45 × 2	66NLM45280H52

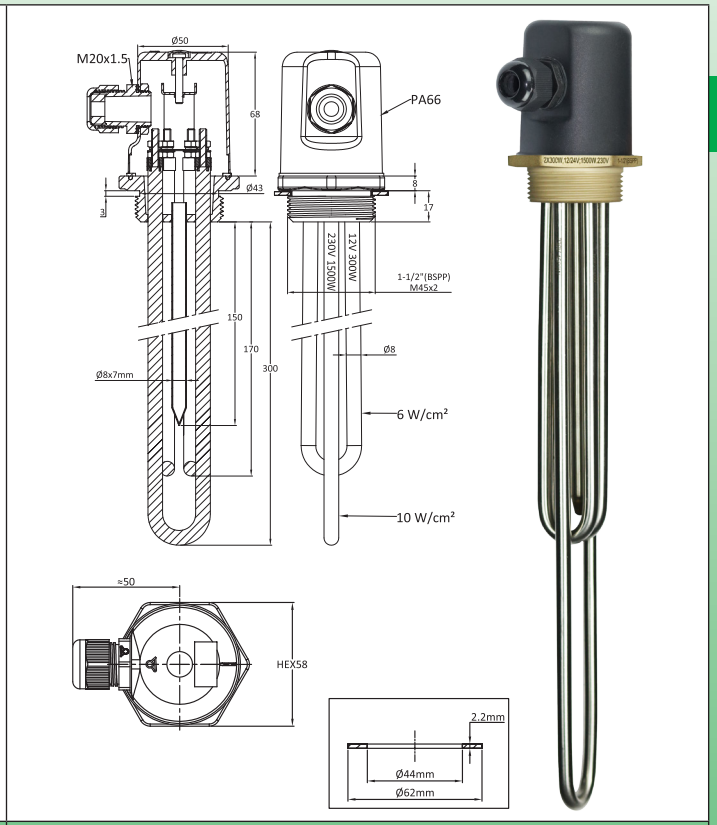
Renewable energy immersion heaters

Renewable energy 1"½ and M45x2 immersion heaters, 12 and 24V power supply with 230V auxiliary heating element, with connection box

Main Voltage	Low voltage Power	Auxiliary voltage	Auxiliary Power	Enclosure	Threads	Type
12V, 24V	2 × 150W or 2 × 300W	230V	700W or 1500W	With	1"½ or M45x2	9SFN202 and 9SFN502



2 × 150W 12V + 1 × 700W 230V



2 × 300W 12V + 1 × 1500W 230V

Main application: direct use of low voltage electricity produced by wind turbines or photovoltaic solar panels, for heating liquids, domestic hot water circuits, hot water tanks. These immersion heaters make it possible to use the surplus energy produced, and not used by domestic lighting needs or small electrical appliances. They can also be used in addition to domestic hot water tanks, limiting the need for electricity from the distribution network.

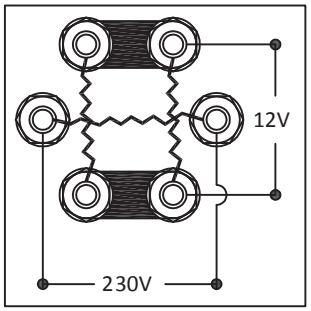
Heater tube material: dia. 8mm heating elements in AISI 304 (AISI 316; AISI 321; Incolloy 800 or Incolloy 840 on request).
Fitting material: Brass, brazed on tubes. Supplied with one fiber gasket but without nut. See accessories below.
Thread: 1"½ BSPP (ISO 228) and metric thread M45x2
Enclosure: dia. 58mm × 75mm, black PA66 fiber glass reinforced, with gasket. Opening by center M4 screw without access to end user. (When the screw cap is pushed in, it is impossible to remove the cover)
Ingress protection class: IP66.
Cable gland: M20, PA66.
Thermowell: Includes one stainless steel thermowell 7mm ID.
Heating elements connections: Terminals with M4 stainless steel screw, nut and stainless steel washer. Supplied with brass straps for switching the two low voltage heaters from 12V to 24V. (Changing their connection from parallel to serial).
Low voltage heating elements are identified by a red sleeve. 230V heating elements are identified by a black sleeve.
Not heating immersed zone: 50mm.
Surface load: see drawings
Voltage: 12 or 24V DC or AC and single phase 230V for models with auxiliary power heater
Attention: Switching by a thermostatic device the heating elements in low voltage must be made by device designed for low voltage use, and withstanding the important intensity of these circuits. Similarly, the section of the power cables must be adapted.

Renewable energy immersion heaters

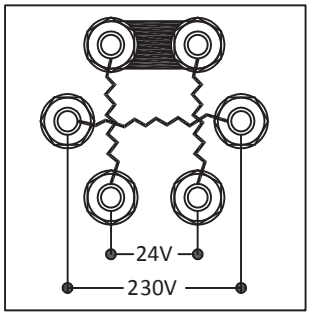
Intensity flowing in low voltage heating circuits

Voltage	Power		
	150W	300W	600W
12V	12.5A	25A	50A
24V	6.2A	12.5A	25A

Electric Wiring



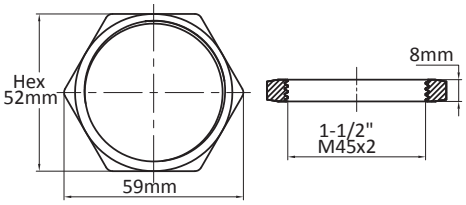
Straps position in 12V



Straps position in 24V

Main references

Fitting thread	1"½ BSPP		M45 × 2	
Power	2 × 150W 12V + 1 × 700W 230V	2 × 300W 12V + 1 × 1500W 230V	2 × 150W 12V + 1 × 700W 230V	2 × 300W 12V + 1 × 1500W 230V
Length (mm)	170	300	170	300
Surface load of 12/24V heating elements	3W/cm²	6W/cm²	3W/cm²	6W/cm²
Surface load of the 230V heating element	10W/cm²	10W/cm²	10W/cm²	10W/cm²
Reference in AISI 304	9SFN202152307217	9SFN202302615230	9SFN502152307217	9SFN502302615217
Reference in Incolloy 800	9SFN202152307K17	9SFN202302615K30	9SFN202152307K30	9SFN502302615K30

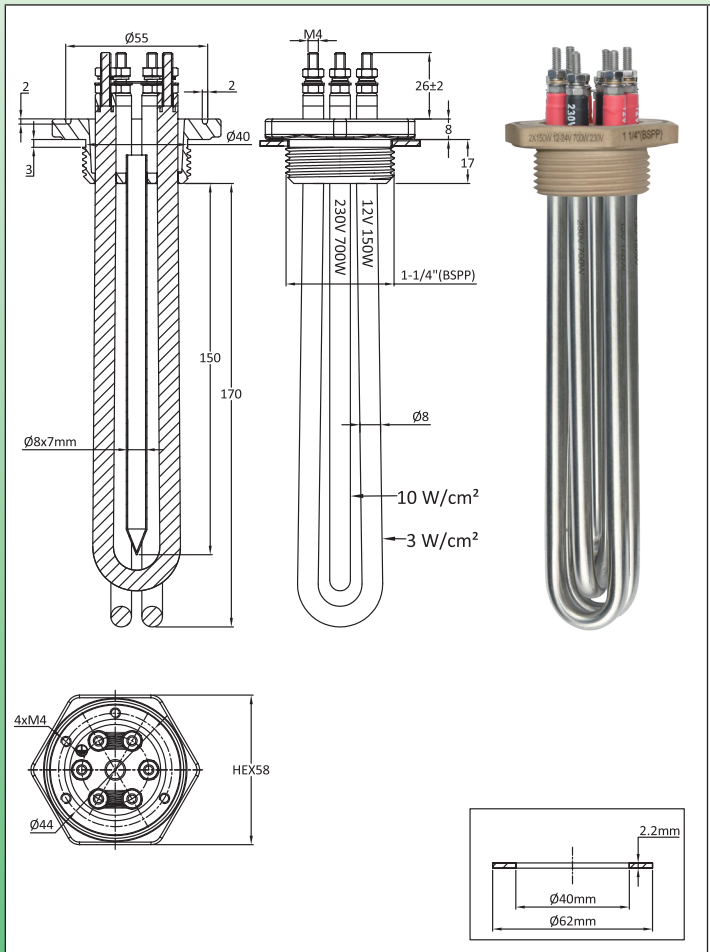


References of Brass Nuts	
1"½	66NLC11280H52
M45 × 2	66NLM45280H52

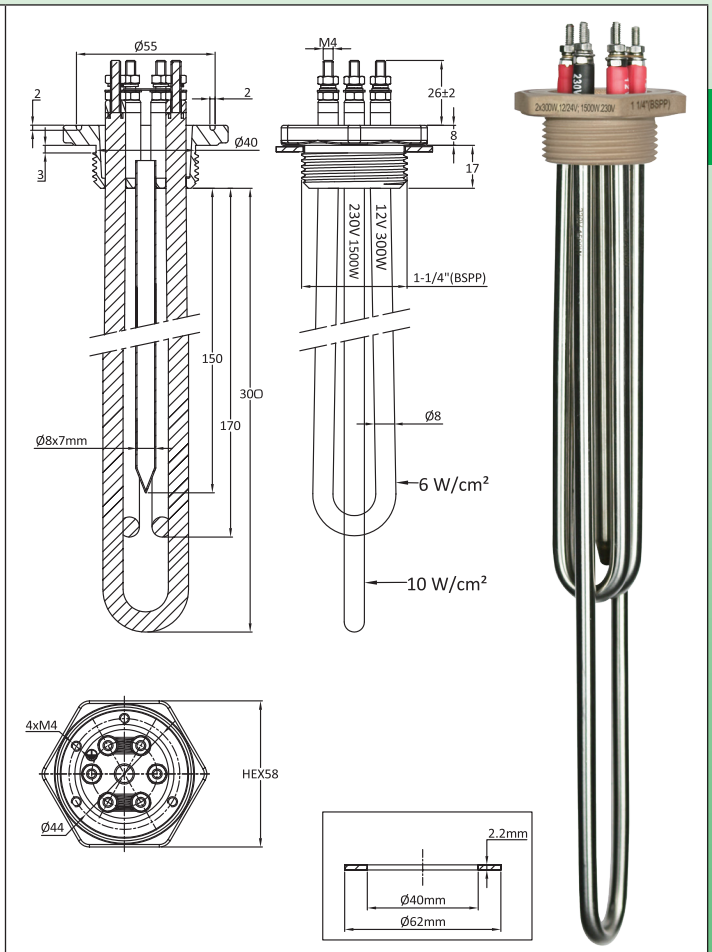
Renewable energy immersion heaters

Renewable energy 1"¼ immersion heaters, 12 and 24V power supply with 230V auxiliary heating element, without connection box

Main Voltage	Low voltage Power	Auxiliary voltage	Auxiliary power	Enclosure	Threads	Type
12V, 24V	2 × 150W or 2 × 300W	230V	700W or 1500W	Without	1"¼	9SFN400



2 × 150W 12V + 1 × 700W 230V



2 × 300W 12V + 1 × 1500W 230V

Main application: direct use of low voltage electricity produced by wind turbines or photovoltaic solar panels, for heating liquids, domestic hot water circuits, hot water tanks. These immersion heaters make it possible to use the surplus energy produced, and not used by domestic lighting needs or small electrical appliances. They can also be used in addition to domestic hot water tanks, limiting the need for electricity from the distribution network.

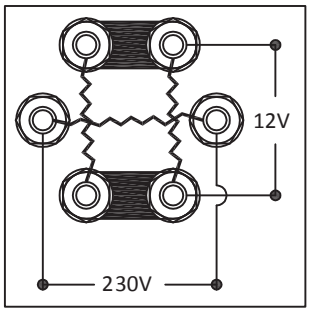
Heater tube material: dia. 8mm heating elements in AISI 304 (AISI 316; AISI 321; Incolloy 800 or Incolloy 840 on request).
Fitting material: Brass, brazed on tubes. Supplied with one fiber gasket but without nut. See accessories below.
Thread: 1"¼ BSPP (ISO 228)
Thermowell: Includes one stainless steel thermowell 7mm ID.
Heating elements connections: Terminals with M4 stainless steel screw, nut and stainless steel washer. Supplied with brass straps for switching the two low voltage heaters from 12V to 24V. (Changing their connection from parallel to serial).
Low voltage heating elements are identified by a red sleeve. 230V heating elements are identified by a black sleeve.
Not heating immersed zone: 50mm.
Surface load: see drawings
Voltage: 12 or 24V DC or AC and single phase 230V for models with auxiliary power heater
Attention: Switching by a thermostatic device the heating elements in low voltage must be made by device designed for low voltage use, and withstanding the important intensity of these circuits. Similarly, the section of the power cables must be adapted.

Renewable energy immersion heaters

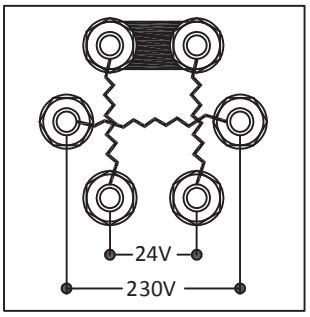
Intensity flowing in low voltage heating circuits

Voltage	Power		
	150W	300W	600W
12V	12.5A	25A	50A
24V	6.2A	12.5A	25A

Electric Wiring



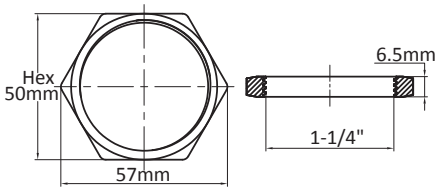
Straps position in 12V



Straps position in 24V

Main references in 1"¼ BSPP

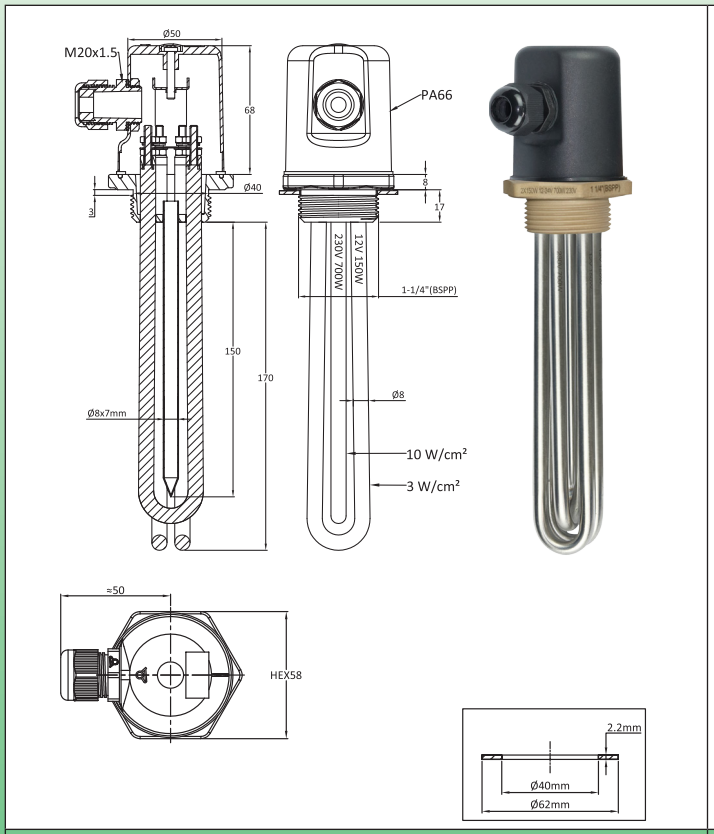
Power	2 × 150W 12V + 1 × 700W 230V	2 × 300W 12V + 1 × 1500W 230V
Length (mm)	170	300
Surface load of 12/24V heating elements	3W/cm²	6W/cm²
Surface load of the 230V heating element	10W/cm²	10W/cm²
Reference in AISI 304	9SFN400152307217	9SFN400302615230
Reference in Incolloy 800	9SFN400152307K17	9SFN400302615K30



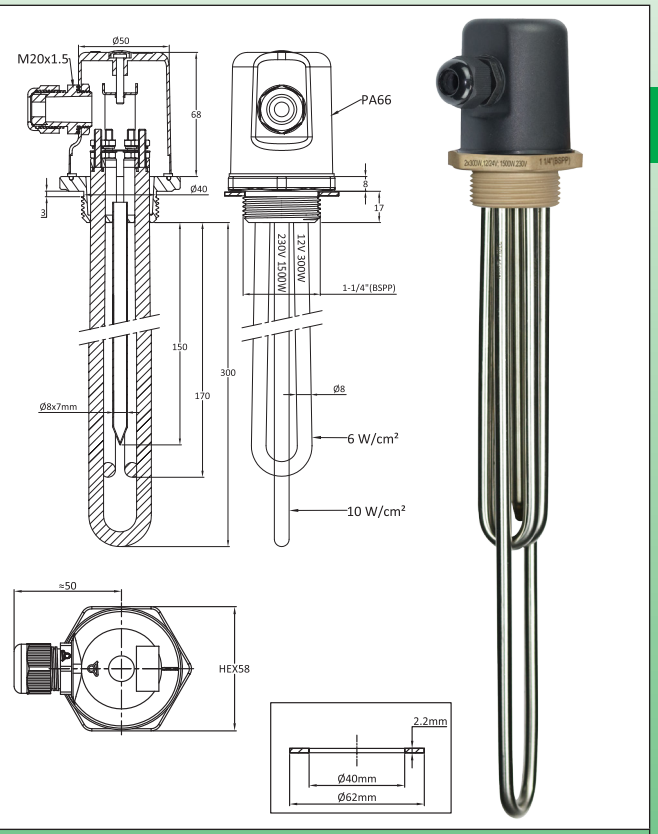
References of Brass Nut	
1"¼	66NLC11465H50

Renewable energy 1"¼ immersion heaters, 12 and 24V power supply with 230V auxiliary heating element, with connection box

Main Voltage	Low voltage Power	Auxiliary voltage	Auxiliary power	Enclosure	Threads	Type
12V, 24V	2 × 150W or 2 × 300W	230V	700W or 1500W	With	1"¼	9SFN402



2 × 150W 12V + 1 × 700W 230V



2 × 300W 12V + 1 × 1500W 230V

Main application: direct use of low voltage electricity produced by wind turbines or photovoltaic solar panels, for heating liquids, domestic hot water circuits, hot water tanks. These immersion heaters make it possible to use the surplus energy produced, and not used by domestic lighting needs or small electrical appliances. They can also be used in addition to domestic hot water tanks, limiting the need for electricity from the distribution network.

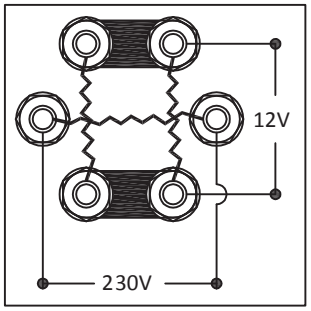
Heater tube material: dia. 8mm heating elements in AISI 304 (AISI 316; AISI 321; Incolloy 800 or Incolloy 840 on request).
Fitting material: Brass, brazed on tubes. Supplied with one fiber gasket but without nut. See accessories below.
Thread: 1"¼ BSPP (ISO 228)
Enclosure: dia. 58mm × 75mm, black PA66 fiber glass reinforced, with gasket. Opening by center M4 screw without access to end user. (When the screw cap is pushed in, it is impossible to remove the cover)
Ingress protection class: IP66.
Cable gland: M20, PA66.
Thermowell: Includes one stainless steel thermowell 7mm ID.
Heating elements connections: Terminals with M4 stainless steel screw, nut and stainless steel washer. Supplied with brass straps for switching the two low voltage heaters from 12V to 24V. (Changing their connection from parallel to serial).
Low voltage heating elements are identified by a red sleeve. 230V heating elements are identified by a black sleeve.
Not heating immersed zone: 50mm.
Surface load: see drawings
Voltage: 12 or 24V DC or AC and single phase 230V for models with auxiliary power heater
Attention: Switching by a thermostatic device the heating elements in low voltage must be made by device designed for low voltage use, and withstanding the important intensity of these circuits. Similarly, the section of the power cables must be adapted.

Renewable energy immersion heaters

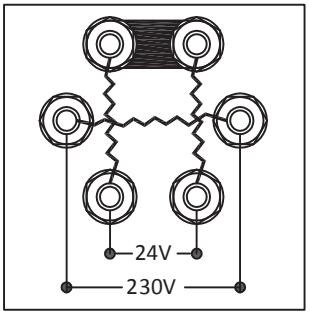
Intensity flowing in low voltage heating circuits

Voltage	Power		
	150W	300W	600W
12V	12.5A	25A	50A
24V	6.2A	12.5A	25A

Electric Wiring



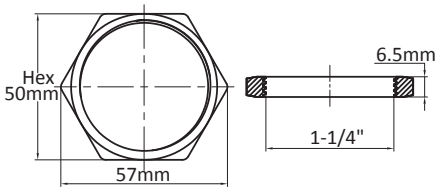
Straps position in 12V



Straps position in 24V

Main references in 1"¼ BSPP

Power	2 × 150W 12V + 1 × 700W 230V	2 × 300W 12V + 1 × 1500W 230V
Length (mm)	170	300
Surface load of 12/24V heating elements	3W/cm²	6W/cm²
Surface load of the 230V heating element	10W/cm²	10W/cm²
Reference in AISI 304	9SFN402152307217	9SFN402302615230
Reference in Incolloy 800	9SFN402152307K17	9SFN402302615K30

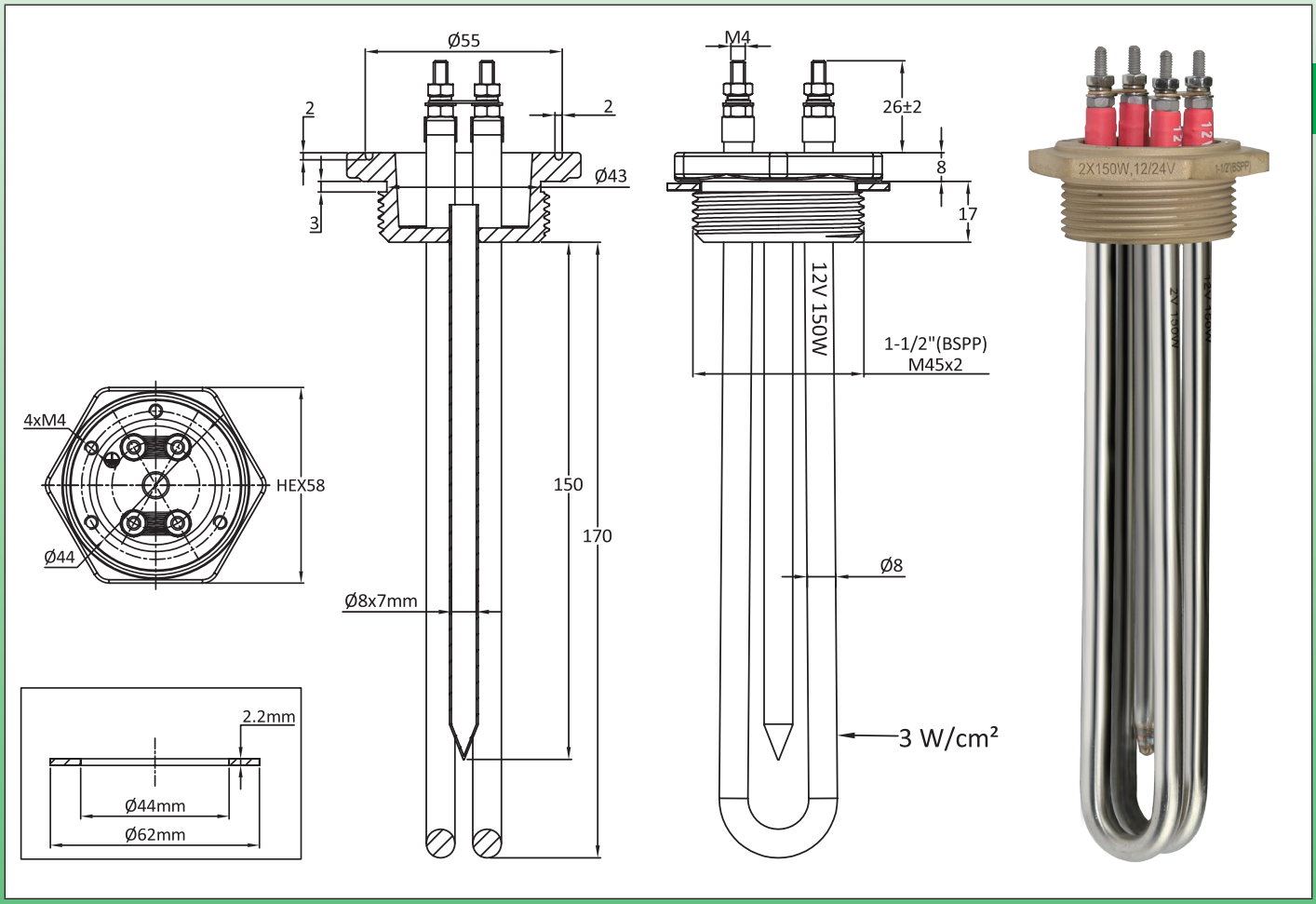


References of Brass Nut	
1"¼	66NLC11465H50

Renewable energy immersion heaters

Renewable energy 1"½ and M45x2 immersion heaters, 12 and 24V power supply, without connection box

Main Voltage	Low voltage Power	Auxiliary voltage	Auxiliary power	Enclosure	Threads	Type
12V, 24V	2 × 150W or 2 × 300W	Without	Without	Without	1"½ or M45x2	9SFT200 and 9SFT500



Main application: direct use of low voltage electricity produced by wind turbines or photovoltaic solar panels, for heating liquids, domestic hot water circuits, hot water tanks. These immersion heaters make it possible to use the surplus energy produced, and not used by domestic lighting needs or small electrical appliances. They can also be used in addition to domestic hot water tanks, limiting the need for electricity from the distribution network.

Heater tube material: dia. 8mm heating elements in AISI 304 (AISI 316; AISI 321; Incolloy 800 or Incolloy 840 on request).
Fitting material: Brass, brazed on tubes. Supplied with one fiber gasket but without nut. See accessories below.
Thread: 1"½ BSPP (ISO 228) and metric thread M45x2
Thermowell: Includes one stainless steel thermowell 7mm ID.
Heating elements connections: Terminals with M4 stainless steel screw, nut and stainless steel washer. Supplied with brass straps for switching the two low voltage heaters from 12V to 24V. (Changing their connection from parallel to serial).
Not heating immersed zone: 50mm.
Surface load: see drawings
Voltage: 12 or 24V DC or AC.

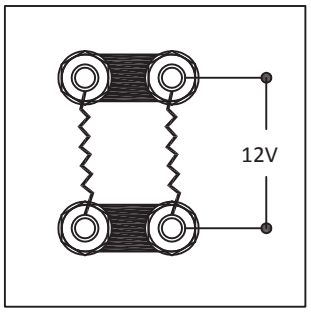
Attention: Switching by a thermostatic device the heating elements in low voltage must be made by device designed for low voltage use, and withstanding the important intensity of these circuits. Similarly, the section of the power cables must be adapted.

Renewable energy immersion heaters

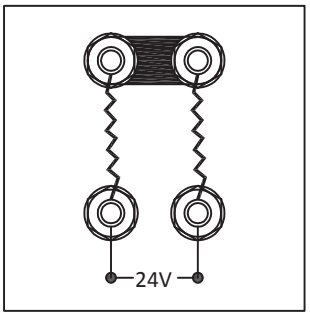
Intensity flowing in low voltage heating circuits

Voltage	Power		
	150W	300W	600W
12V	12.5A	25A	50A
24V	6.2A	12.5A	25A

Electric Wiring



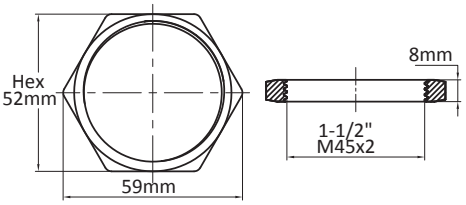
Straps position in 12V



Straps position in 24V

Main references

Fitting thread	1"½ BSPP		M45 × 2	
Power	**2 × 150W 12V**	**2 × 300W 12V**	**2 × 150W 12V**	**2 × 300W 12V**
Length (mm)	170	170	170	170
Surface load of 12/24V heating elements	3W/cm²	6W/cm²	3W/cm²	6W/cm²
Reference in AISI 304	9SFT200152300217	9SFT200302600217	9SFT500152300217	9SFT500302600217
Reference in Incolloy 800	9SFT200152300K17	9SFT200302600K17	9SFT500152300K17	9SFT500302600K17

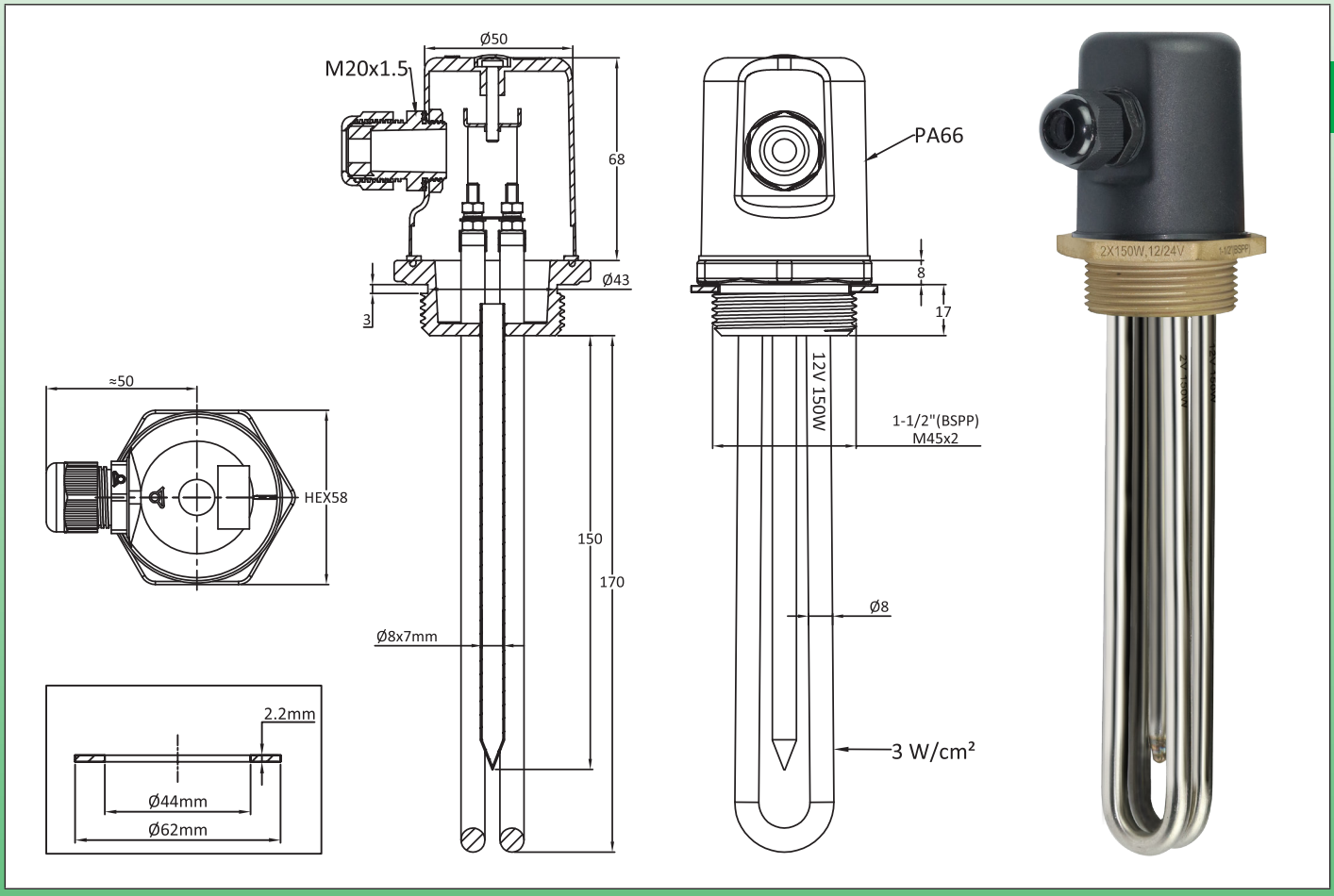


References of Brass Nuts	
1"½	66NLC11280H52
M45 × 2	66NLM45280H52

Renewable energy immersion heaters

Renewable energy 1"½ and M45x2 immersion heaters, 12 and 24V power supply, with connection box

Main Voltage	Low voltage Power	Auxiliary voltage	Auxiliary power	Enclosure	Threads	Type
12V, 24V	2 × 150W or 2 × 300W	Without	Without	With	1"½ or M45x2	9SFT202 and 9SFT502



Main application: direct use of low voltage electricity produced by wind turbines or photovoltaic solar panels, for heating liquids, domestic hot water circuits, hot water tanks. These immersion heaters make it possible to use the surplus energy produced, and not used by domestic lighting needs or small electrical appliances. They can also be used in addition to domestic hot water tanks, limiting the need for electricity from the distribution network.

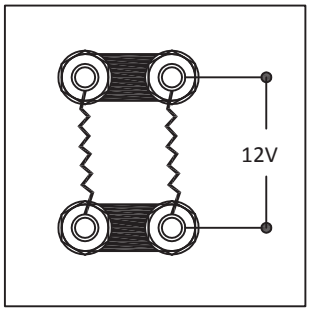
Heater tube material: dia. 8mm heating elements in AISI 304 (AISI 316; AISI 321; Incolloy 800 or Incolloy 840 on request).
Fitting material: Brass, brazed on tubes. Supplied with one fiber gasket but without nut. See accessories below.
Thread: 1"½ BSPP (ISO 228) and metric thread M45x2
Enclosure: dia. 58mm × 75mm, black PA66 fiber glass reinforced, with gasket. Opening by center M4 screw without access to end user. (When the screw cap is pushed in, it is impossible to remove the cover)
Ingress protection class: IP66.
Cable gland: M20, PA66.
Thermowell: Includes one stainless steel thermowell 7mm ID.
Heating elements connections: Terminals with M4 stainless steel screw, nut and stainless steel washer. Supplied with brass straps for switching the two low voltage heaters from 12V to 24V. (Changing their connection from parallel to serial).
Not heating immersed zone: 50mm.
Surface load: see drawings
Voltage: 12 or 24V DC or AC.
Attention: Switching by a thermostatic device the heating elements in low voltage must be made by device designed for low voltage use, and withstanding the important intensity of these circuits. Similarly, the section of the power cables must be adapted.

Renewable energy immersion heaters

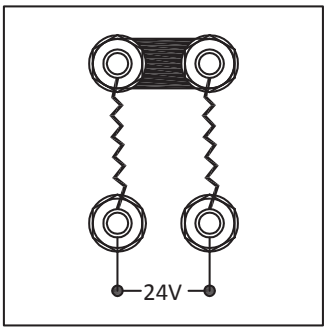
Intensity flowing in low voltage heating circuits

Voltage	Power		
	150W	300W	600W
12V	12.5A	25A	50A
24V	6.2A	12.5A	25A

Electric Wiring



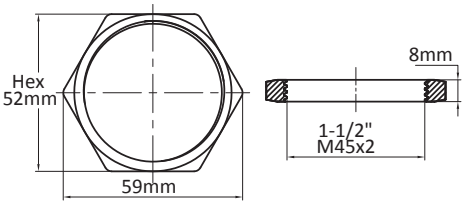
Straps position in 12V



Straps position in 24V

Main references

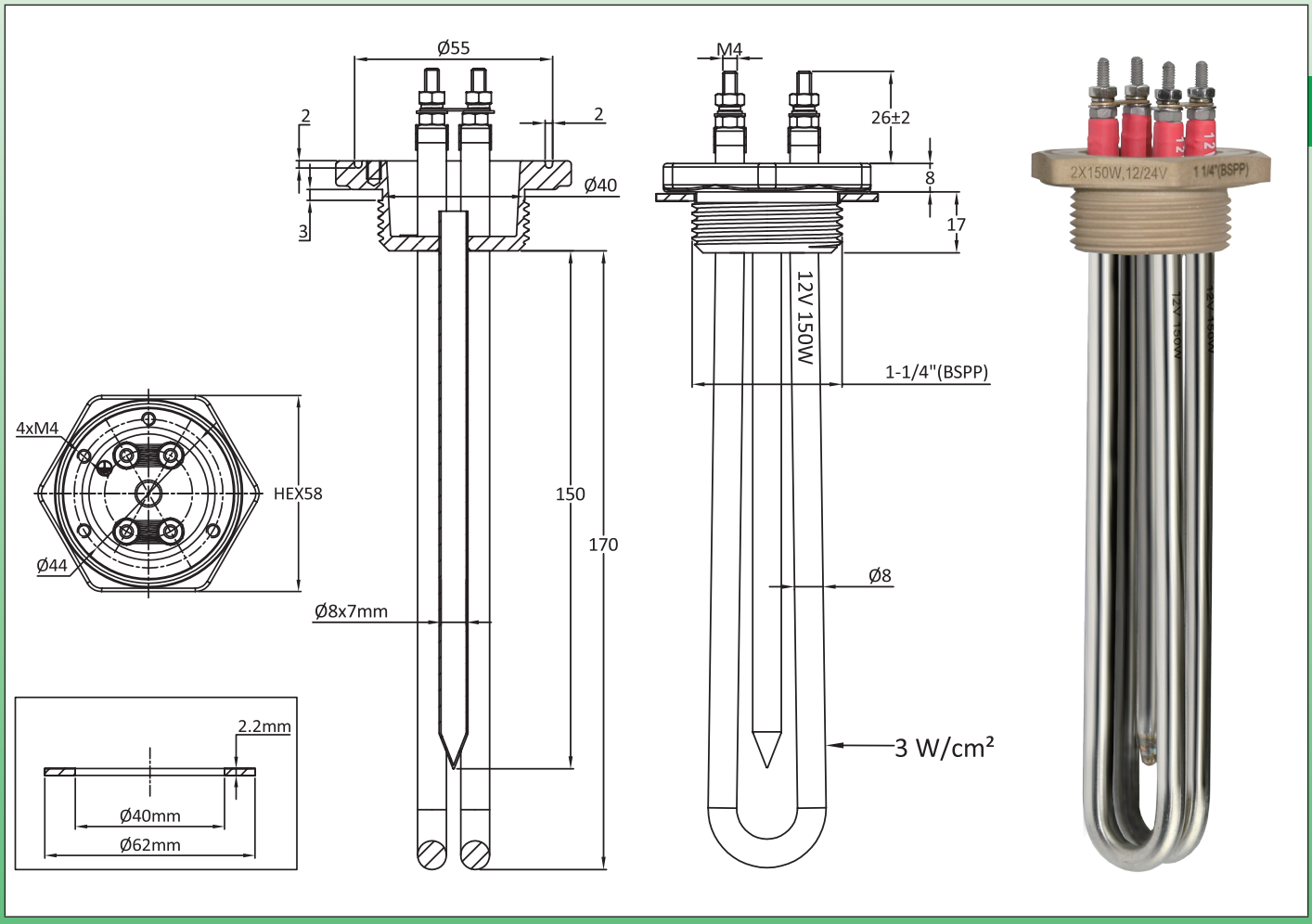
Fitting thread	1"½ BSPP		M45 × 2	
Power	**2 × 150W 12V**	**2 × 300W 12V**	**2 × 150W 12V**	**2 × 300W 12V**
Length (mm)	170	300	170	300
Surface load of 12/24V heating elements	3W/cm²	6W/cm²	3W/cm²	6W/cm²
Reference in AISI 304	9SFT202152300217	9SFT202302600217	9SFT502152300217	9SFT502302600217
Reference in Incolloy 800	9SFT202152300K17	9SFT202302600K17	9SFT502152300K17	9SFT502302600K17



References of Brass Nuts	
1"½	66NLC11280H52
M45 × 2	66NLM45280H52

Renewable energy 1"¼ immersion heaters, 12 and 24V power supply, without connection box

Main Voltage	Low voltage Power	Auxiliary voltage	Auxiliary power	Enclosure	Threads	Type
12V, 24V	2 × 150W or 2 × 300W	Without	Without	Without	1"¼	9SFT400



Main application: direct use of low voltage electricity produced by wind turbines or photovoltaic solar panels, for heating liquids, domestic hot water circuits, hot water tanks. These immersion heaters make it possible to use the surplus energy produced, and not used by domestic lighting needs or small electrical appliances. They can also be used in addition to domestic hot water tanks, limiting the need for electricity from the distribution network.

Heater tube material: dia. 8mm heating elements in AISI 304 (AISI 316; AISI 321; Incolloy 800 or Incolloy 840 on request).
Fitting material: Brass, brazed on tubes. Supplied with one fiber gasket but without nut. See accessories below.
Thread: 1"¼ BSPP (ISO 228)
Thermowell: Includes one stainless steel thermowell 7mm ID.
Heating elements connections: Terminals with M4 stainless steel screw, nut and stainless steel washer. Supplied with brass straps for switching the two low voltage heaters from 12V to 24V. (Changing their connection from parallel to serial).
Not heating immersed zone: 50mm.
Surface load: see drawings
Voltage: 12 or 24V DC or AC.

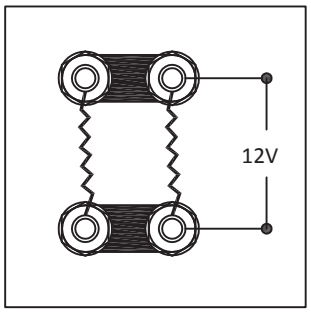
Attention: Switching by a thermostatic device the heating elements in low voltage must be made by device designed for low voltage use, and withstanding the important intensity of these circuits. Similarly, the section of the power cables must be adapted.

Renewable energy immersion heaters

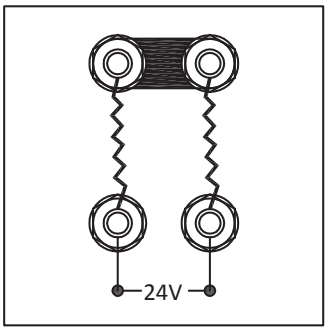
Intensity flowing in low voltage heating circuits

Voltage	Power		
	150W	300W	600W
12V	12.5A	25A	50A
24V	6.2A	12.5A	25A

Electric Wiring



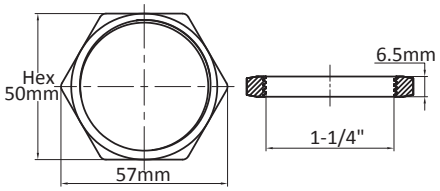
Straps position in 12V



Straps position in 24V

Main references in 1"¼ BSPP

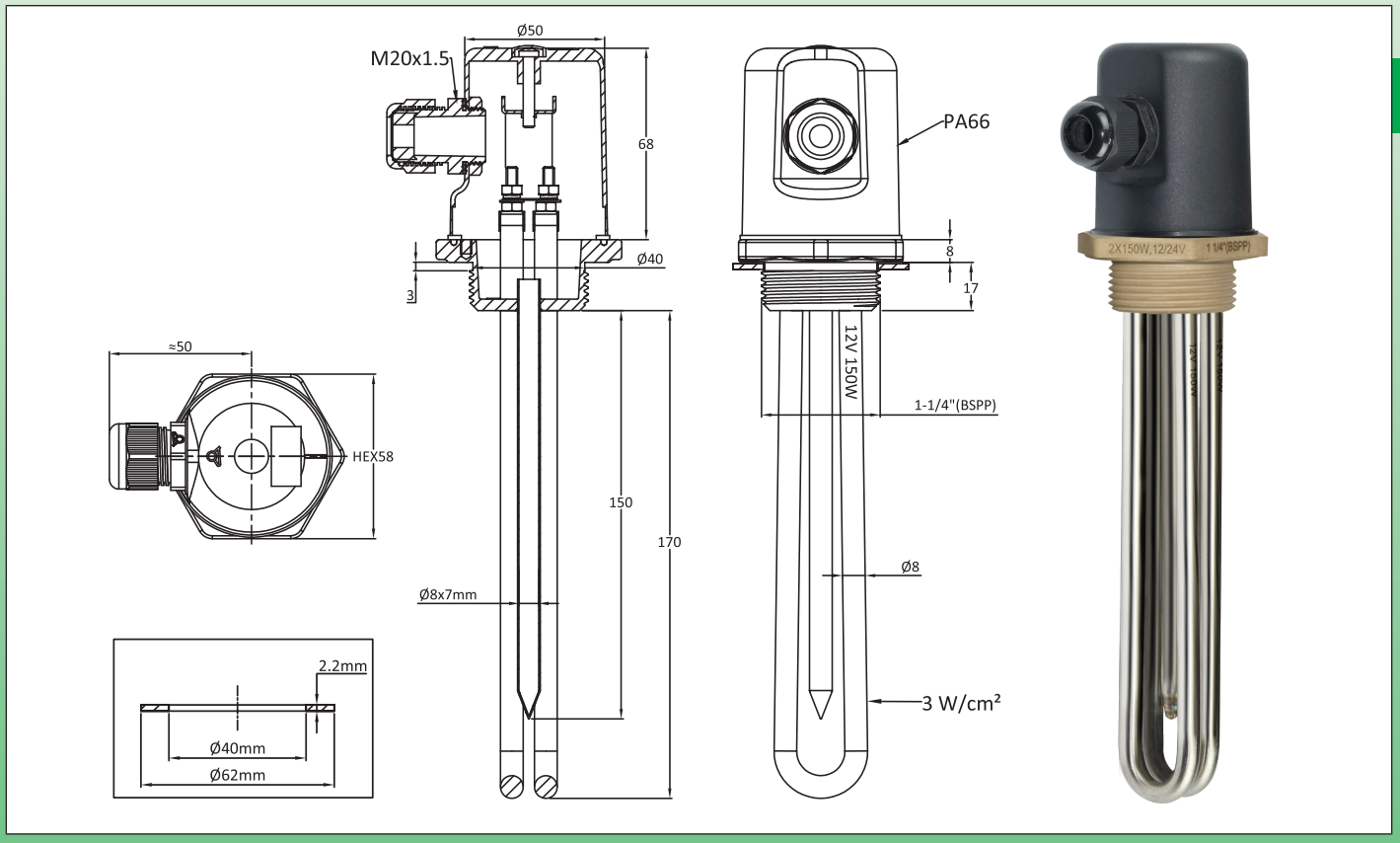
Power	2 × 150W 12V	2 × 300W 12V
Length (mm)	170	170
Surface load of 12/24V heating elements	3W/cm²	6W/cm²
Reference in AISI 304	9SFT400152307217	9SFT400302615217
Reference in Incolloy 800	9SFT400152307K17	9SFT400302615K17



References of Brass Nut	
1"¼	66NLC11465H50

Renewable energy 1"¼ immersion heaters, 12 and 24V power supply, with connection box

Main Voltage	Low voltage Power	Auxiliary voltage	Auxiliary power	Enclosure	Threads	Type
12V, 24V	2 × 150W or 2 × 300W	Without	Without	With	1"¼	9SFT402



Main application: direct use of low voltage electricity produced by wind turbines or photovoltaic solar panels, for heating liquids, domestic hot water circuits, hot water tanks. These immersion heaters make it possible to use the surplus energy produced, and not used by domestic lighting needs or small electrical appliances. They can also be used in addition to domestic hot water tanks, limiting the need for electricity from the distribution network.

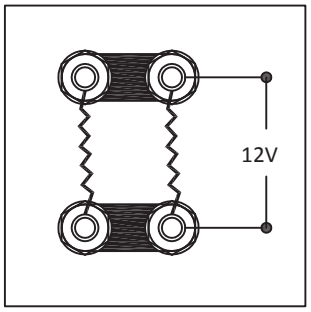
Heater tube material: dia. 8mm heating elements in AISI 304 (AISI 316; AISI 321; Incolloy 800 or Incolloy 840 on request).
Fitting material: Brass, brazed on tubes. Supplied with one fiber gasket but without nut. See accessories below.
Thread: 1"¼ BSPP (ISO 228)
Enclosure: dia. 58mm × 75mm, black PA66 fiber glass reinforced, with gasket. Opening by center M4 screw without access to end user. (When the screw cap is pushed in, it is impossible to remove the cover)
Ingress protection class: IP66.
Cable gland: M20, PA66.
Thermowell: Includes one stainless steel thermowell 7mm ID.
Heating elements connections: Terminals with M4 stainless steel screw, nut and stainless steel washer. Supplied with brass straps for switching the two low voltage heaters from 12V to 24V. (Changing their connection from parallel to serial).
Not heating immersed zone: 50mm.
Surface load: see drawings
Voltage: 12 or 24V DC or AC.
Attention: Switching by a thermostatic device the heating elements in low voltage must be made by device designed for low voltage use, and withstanding the important intensity of these circuits. Similarly, the section of the power cables must be adapted.

Renewable energy immersion heaters

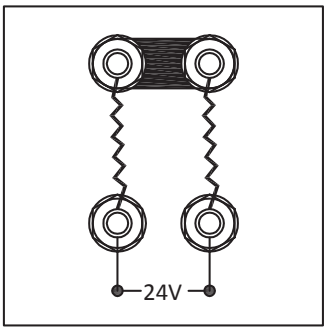
Intensity flowing in low voltage heating circuits

Voltage	Power		
	150W	300W	600W
12V	12.5A	25A	50A
24V	6.2A	12.5A	25A

Electric Wiring



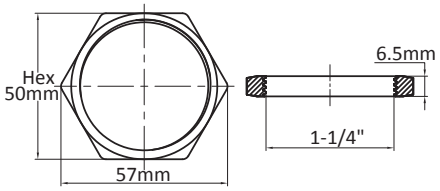
Straps position in 12V



Straps position in 24V

Main references in 1"¼ BSPP

Power	2 × 150W 12V	2 × 300W 12V
Length (mm)	170	170
Surface load of 12/24V heating elements	3W/cm²	6W/cm²
Reference in AISI 304	9SFT402152307217	9SFT402302615217
Reference in Incolloy 800	9SFT402152307K17	9SFT402302615K17

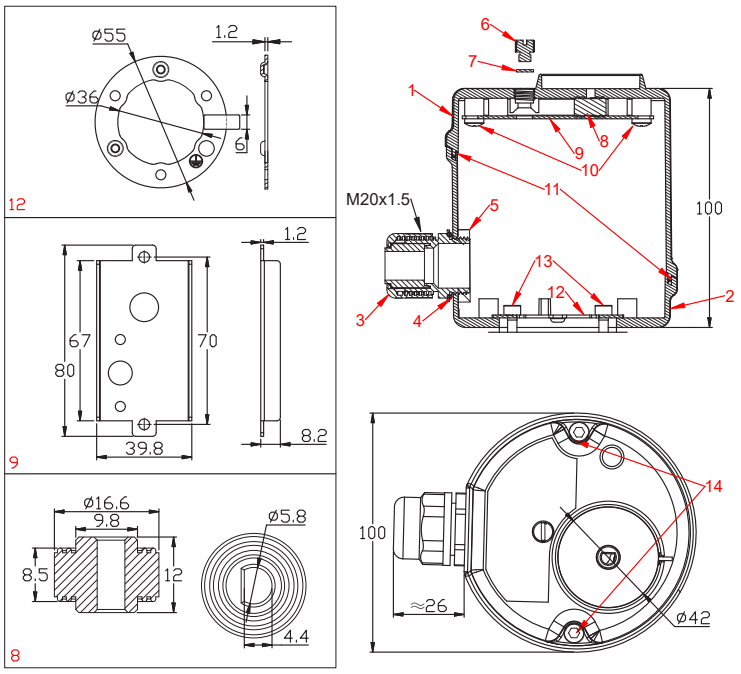


References of Brass Nut	
1"¼	66NLC11465H50

Section 10
Usual immersion heaters connection boxes for thermostats

Standard immersion heater PA66 enclosure for 8I three phases thermostat

Compatible with JPCI three-pole combined temperature control and fail safe manual reset limiters thermostats type 8I and similar models.



1: PA66 upper lid with recess for dia. 41mm standard knob
2: PA66 lower lid
3: M20 Pa66 cable gland
4: Cable gland gasket
5: Cable gland nut
6: Manual reset M9 x 1 protection cap in PA66
7: Manual reset protection cap gasket in silicone
8: Adjustment shaft waterproof gasket in silicone
9: 3 poles combination thermostat (type 8I) mounting board in stainless steel
10: M4 x 5 mounting board screws in stainless steel
11: PA66 enclosure lid gasket
12: Immersion heater 180° rotation ring, in stainless steel
13: M4 x 12 rotation ring screws in stainless steel (hollow hexagonal head)
14: M5 x 30 unlosable lid screws in stainless steel (x2)

Main features

- Heavy-duty fiber glass reinforoed PA66 housing, IK10 impact resistance, IP65 waterproofing, 115°C temperature resistance, excellent UV resistance.
- For indoor or outdoor use.
- Quick thermostat mounting without the need for drilling or adaptation.
- Compatible with immersion heaters designed to receive a rotation ring for easy orientation after screwing onto the tank.
- As an option, can receive a pilot light and a screw terminal block.
- Available off the shelf

Part number:

Y3065001120T0U5E00

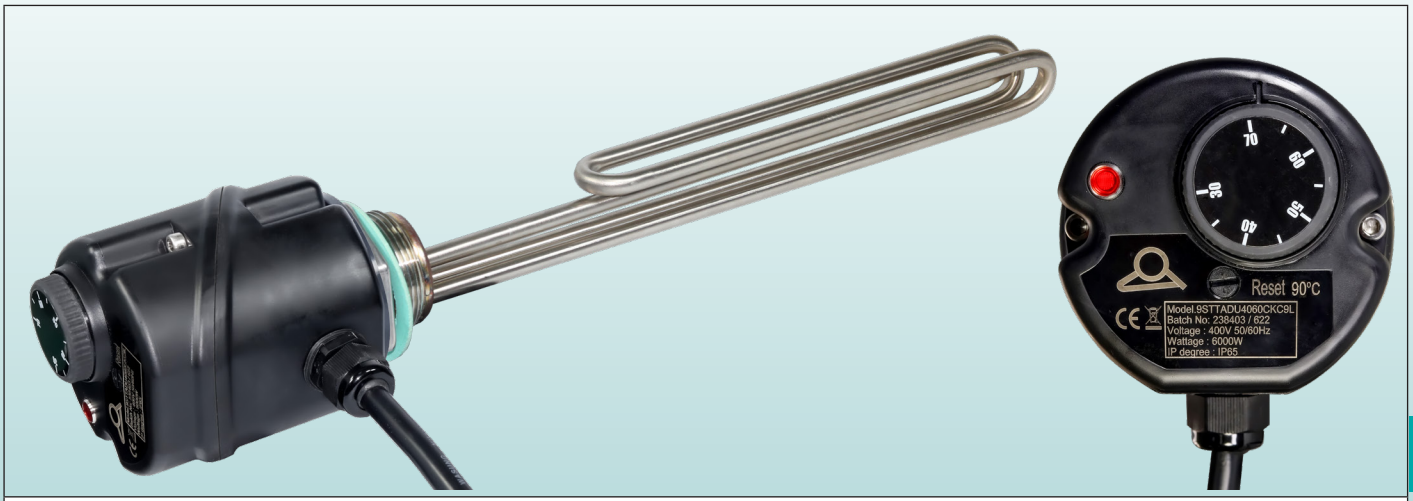
Usual immersion heaters connection boxes for thermostats

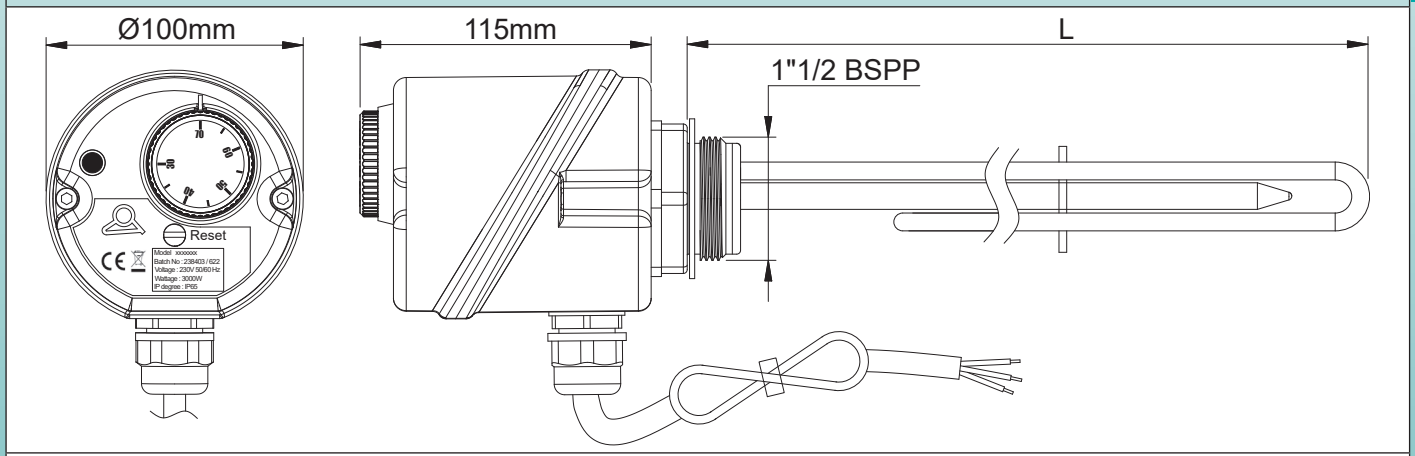
Section 11
Usual single phase or 3 phases immersion heaters

Usual single phase or 3 phases immersion heaters

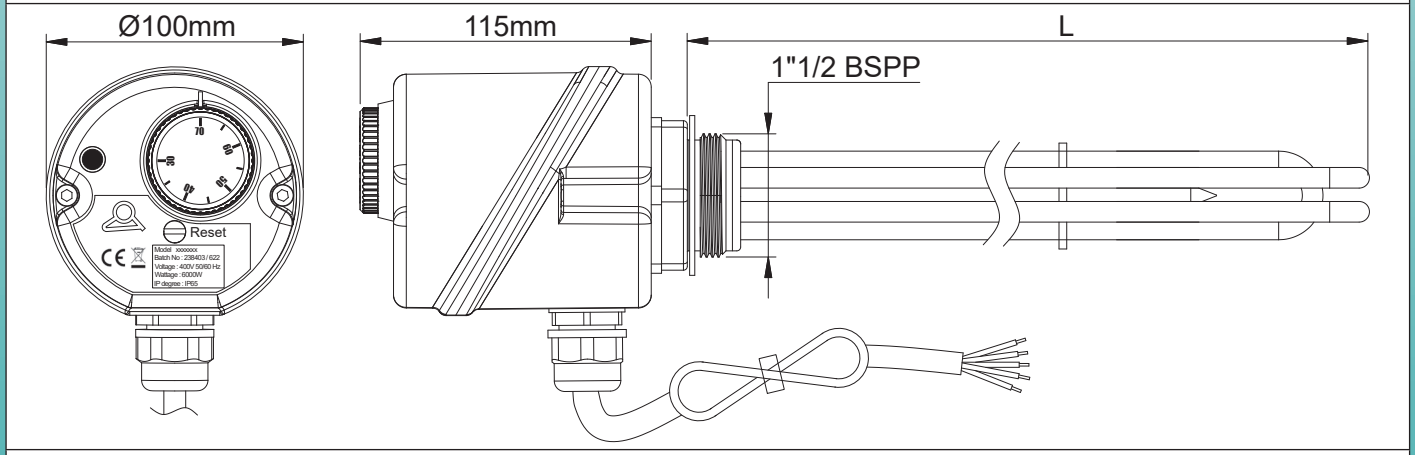
With temperature control with 1”1/2 threaded fitting and thermostats

TYPE 9STTAD





Single pole 230V heater



3 Poles 400V heater

Main technical features

- **Fully integrated manufacturing:** the entire production process is managed in-house, from complete thermostat manufacturing to the production of heating elements and their housing. This includes accessories molding, stamping, TIG and laser welding, laser marking, elastomeric gaskets compression production. Each stage is rigorously inspected to ensure the highest quality standards.
- Built-in thermostat with waterproof external control knob in a modern soft-grip design, made of polycarbonate. Standard print in °C.
- Indoor or outdoor use.

Usual single phase or 3 phases immersion heaters

Thermostat, safety and electric connection features

- Multi-pole thermostat adjustment range: 30-70°C.
- Multi-pole fixed limiter setting with manual reset: 90°C. The reset button is protected by a waterproof screw cap.
- Waterproof red pilot light indicating power on.
- Electrical output via cable gland, and connection via 2.5mm² HO5VVF PVC cord, 2 meters long, with 3, 4, or 5 conductors depending on the model.
- Power supply: 230V ±10% 50/60Hz (single-phase model) or 400V ±10% 50/60Hz (three-phase models)

Mechanical fixing and housing features

- PA66 housing with the highest impact resistance class: IK10 (EN62262); IP65 (IEC 60529) and IP69K sealing (withstands high-pressure washing with water at 80°C according to DIN 40050). Ambient temperature rating of 115°C, excellent UV resistance. These characteristics are confirmed by laboratory tests.
- Captive stainless steel screws
- Features an internal rotation ring for easy rotation up to 180° after screwing onto the tank.

Heating element features

- 304 stainless steel fitting with G 1½" cylindrical thread (ISO 228/1), asbestos-free fiber flat gasket provided for tank mounting.
- The heating elements are TIG-welded to the fitting without filler metal, ensuring genine corrosion resistance.
- UL and VDE-certified 8mm diameter shielded heating elements in 304 or 316 stainless steel, but also, upon request, in Incoloy 800, 825, or titanium (MOQ apply).
- Packaging in individual cartons including a user and installation manual.

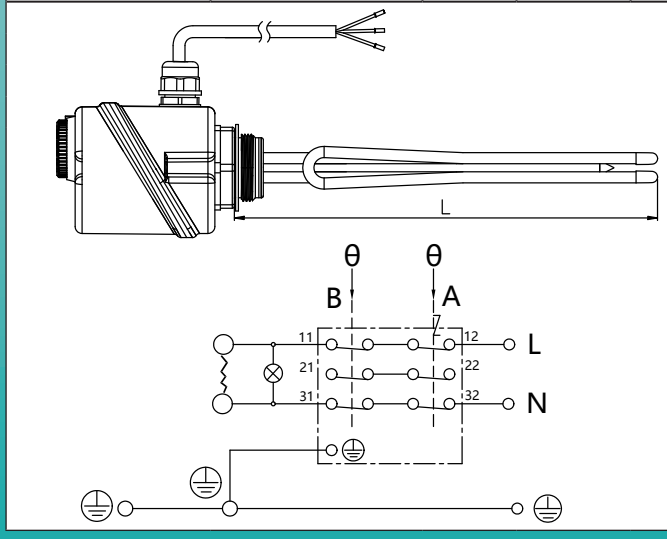
Options:

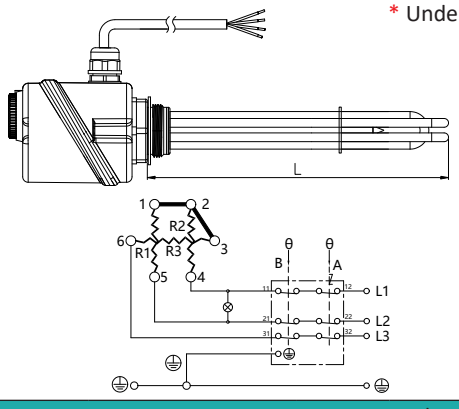
- Logo customization via laser marking (MOQ apply)
- Internal set point adjustment.
- Thermostat temperature ranges and safety limiter temperature
- Delivery without power cord but with internal terminal block or faston 6,3 × 0,8mm
- Knob printed in °F
- Delta star switching connection block by screws.

Part numbers

Single phase with only one 230V heating element					3 phases with 3 heating elements 400V				
INCOLOY 800	AISI-316L	Voltage (V)	Power (W)	L (mm)	INCOLOY 800	AISI-316L	Voltage (V)	Power (W)	L (mm)
9STTADT40152KC2Q	9STTADT40152BC2Q	230	1500	320	9STTADU4030VKC0Q	9STTADU4030VBC0Q	400	3000	300
9STTADT40202KC2Q	9STTADT40202BC2Q	230	2000	320	9STTADU4040VKD0Q	9STTADU4040VBD0Q	400	4000	400
9STTADT40222KC2Q	9STTADT40222BC2Q	230	2200	320	9STTADU4045VKD5Q	9STTADU4045VBD5Q	400	4500	450
9STTADT40252KC2Q	9STTADT40252BC2Q	230	2500	320	9STTADU4050VKE0Q	9STTADU4050VBE0Q	400	5000	500
9STTADT40302KC2Q	9STTADT40302BC2Q	230	3000	320	9STTADU4055VKE5Q	9STTADU4055VBE5Q	400	5500	550
9STTADT40452KD8Q	9STTADT40452BD8Q	230	4500	480	9STTADU4060VKF0Q	9STTADU4060VBF0Q	400	6000	600
					9STTADU4075VKG0Q	9STTADU4075VBG0Q	400	7500	700
					9STTADU4090VKG0Q	9STTADU4090VBG0Q	400	9000	700
					9STTADU4A20VKH5Q	9STTADU4A20VBH5Q	400	12000*	850
					9STTADU4A50VKJ0Q	9STTADU4A50VBJ0Q	400	15000*	1000

* Under conditions



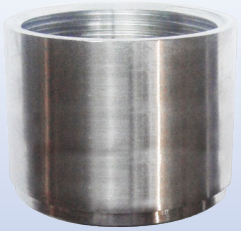


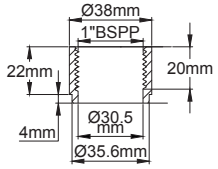
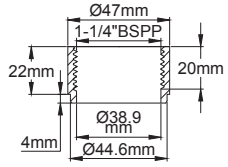
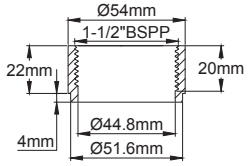
Update 2025/04/07

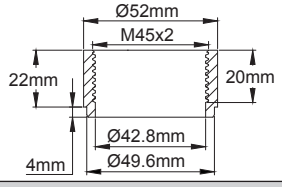
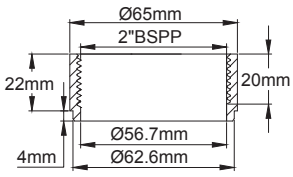
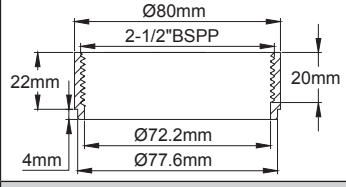
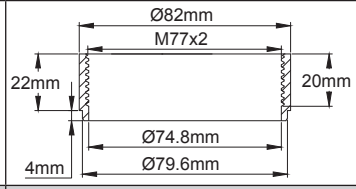
Section 12
Accessories for immersion heaters
Fittings and gaskets, connection blocks
Thermostats
TCO

Accessories for immersion heaters.

304L* fitting for tank. Can be brazed or TIG welded

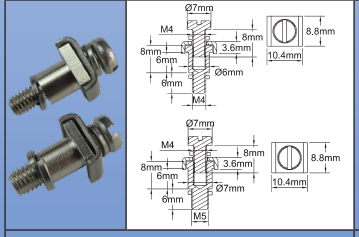
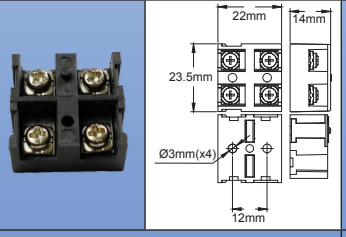
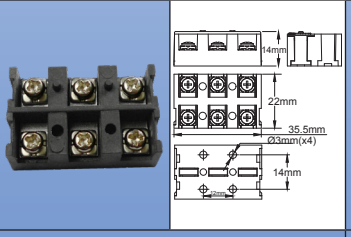
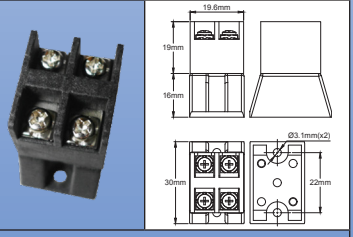


1"	1"¼	1"½
		
9BBRA3000ELH259A	9BBRA3000ELH144A	9BBRA3000ELH140A

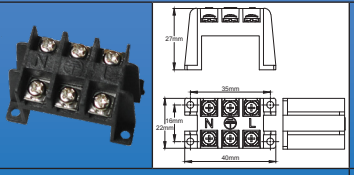
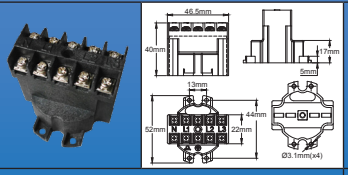
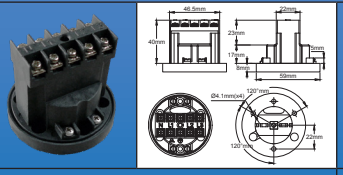
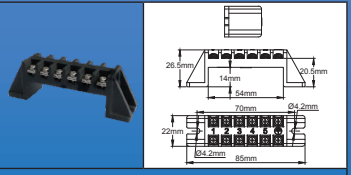
M45x2	2"	2"½	M77x2
			
9BBRA3000ELH145A	9BBRA3000ELH146A	9BBRA3000ELH147A	9BBRA3000ELH148A

* Made on order only. Can also be made in 316L.

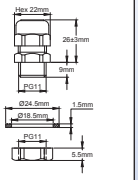
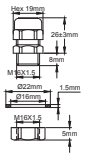
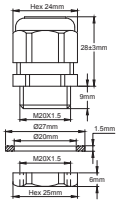
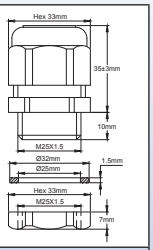
Connectors and terminals blocks for immersion heaters

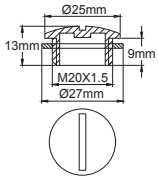
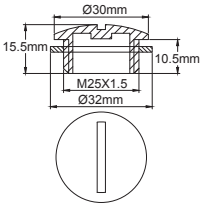
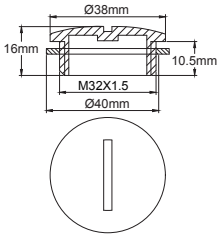
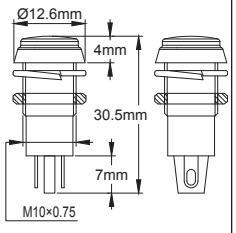
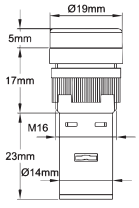
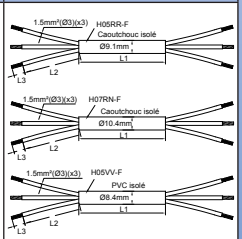
Ground terminals. To screw on M4 or M5 threads on enclosures or fittings.	Small footprint standard connection blocks, PA66, 2.5mm²		
			
M4 terminal. For use with 1"½ and M45 stainless steel fittings and 1"¼, 1"½, M45, 2" brass fittings M5 : For use with 2"½ and M77 brass fitting	Black PA66 connection block, 2 × 2.5mm², backside mounting screws.	Black PA66 connection block, 3 × 2.5mm², backside mounting screws.	Black PA66 connection block, 2 × 2.5mm². 35mm raised bracket mounting.
References	**Reference**	**Reference**	**Reference**
M4 : 9BBSI10COELH010A M5 : 9BBSI10COELH011A	BE2E2000000CP000	BE3E3000000FP000	BE2E2000000HP000

Raised connection terminal blocks, PA66, 2.5mm². Are mounted above the heating element outputs.

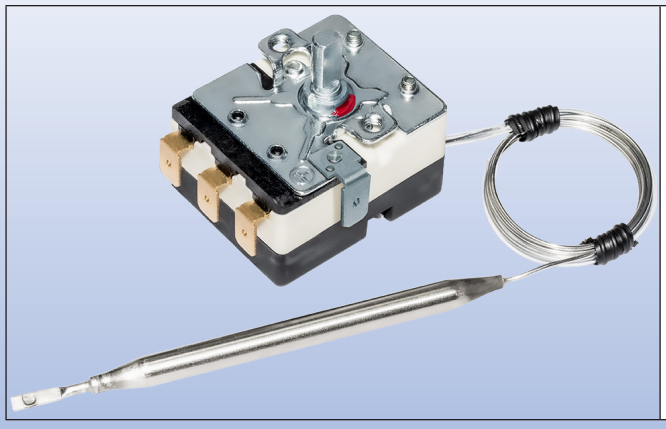
			
Black PA66 connection block, 3 × 2.5mm². 27mm raised bracket mounting, for products with 1" fitting.	Black PA66 connection block, 5 × 2.5mm². 40mm raised bracket mounting. For use on products with 1"¼ ; 1"½ ; M45x2 fittings.	Black PA66 connection block, 5 × 2.5mm². 48mm raised bracket mounting ; with adapter for use on all enclosures, plastic or aluminum, with rotation ring, and 1"¼ ; 1"½ ; M45x2 fittings.	This 6 way elevated terminal block can be positioned above tubular heater terminals, and it fits inside 105 × 105mm square aluminum and stainless steel housing and also inside the 100mm diameter plastic housing.
Reference	**Reference**	**Reference**	**Reference**
BE3E3000000JP000	BE5E5000000KP000	BE5E5000000LP000	BE6E6000000MP000

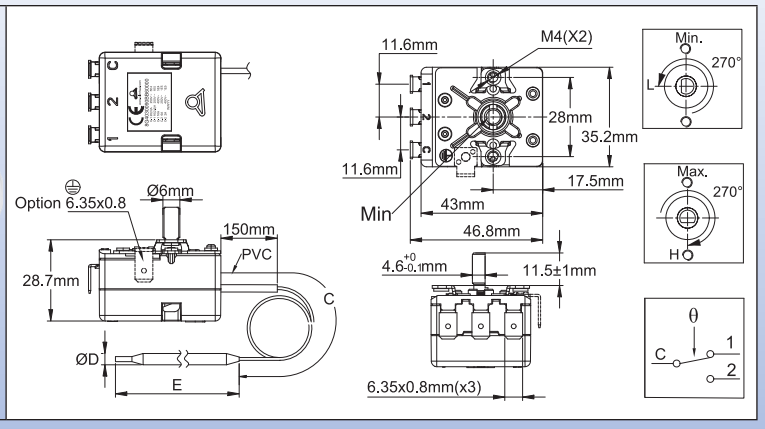
Cable glands. Black PA66 and nickel plated brass. Ingress protection IP66

							
PG11 cable gland, used only on the smallest enclosure of the range. For cables for 5 to 10mm dia. With gasket and nut.		M16 cable gland, for cables from 5 to 10mm dia. With gasket and nut.		M20 cable gland, for cables from 7.5 to 14mm dia. With gasket and nut.		M25 cable gland, for cables from 13 to 18mm dia. With gasket and nut.	
References		**References**		**References**		**References**	
PA66	6YTPEP11C050100	PA66	6YTPEM16C050100	PA66	6YTPEM20C075140	PA66	6YTPEM25C130180
Nickel plated brass	6YTPEP11L050100	Nickel plated brass	6YTPEL16L050100	Nickel plated brass	6YTPEM20L075140	Nickel plated brass	6YTPEM25L130180

Cable gland caps, black PA66 and nickel plated brass						Pilot lights (230V)				Various
										
M20 cap with gasket		M25 cap with gasket		M32 cap with gasket		Dia. 12mm, 10mm drill (Neon)		Dia. 19mm, 16mm drill (LED)		Electrical cords
References		**References**		**References**		**References**		**References**		**References upon request, depends of lengths L1, L2, L3 and insulation style (H05RR-F, H07RN-F, H05VV-F)**
PA66	6YTPEM20B	PA66	6YTPEM25B	PA66	6YTPEM32B	Red	6YL10230RF00	Red	6YL16230RF00	
Nickel plated brass	6YTPEM20PB	Nickel plated brass	6YTPEM25PB	Nickel plated brass	6YTPEM32PB	Green	6YL10230VF00	Green	6YL16230VF00	

Single pole control thermostat
Type 8G





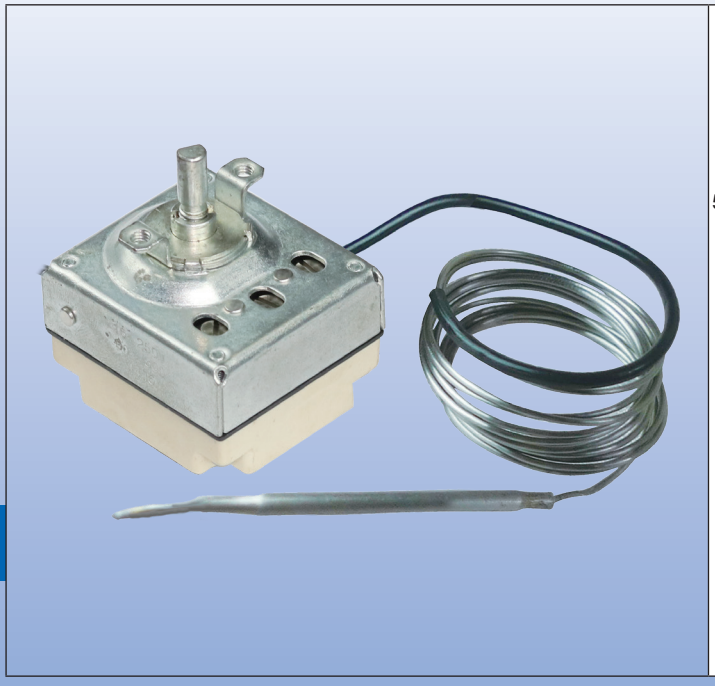
Technical features

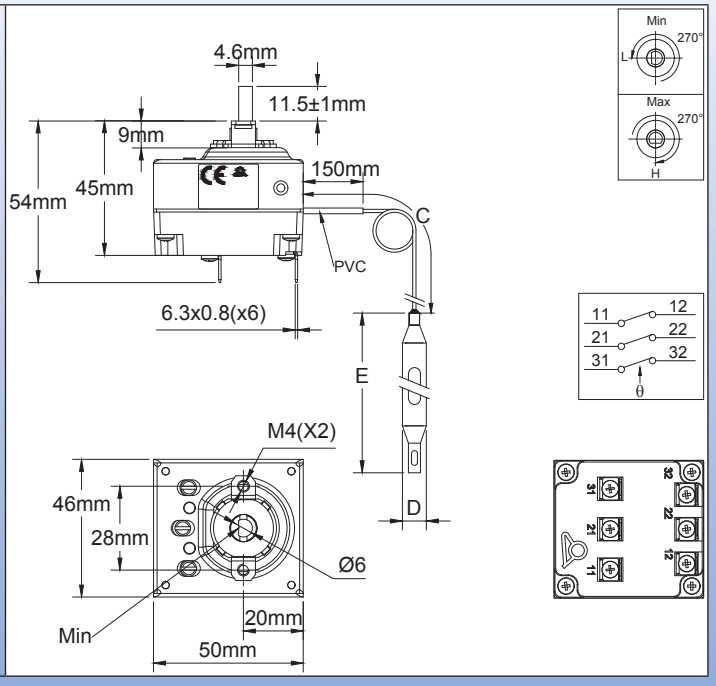
Housing dimensions: 43 × 35 × 29mm (without terminals)
Bulb and capillary: Stainless steel, with 150mm long PVC sleeve on the capillary. Capillary minimum bending radius is 5mm. No capillary sleeve for temperature ranges above 400°C (750°F).
Temperature sensing element: Oil filled bulb and capillary.
Caution: Temperature ranges above 400°C (750°F) are filled with sodium-potassium eutectic. In case of breakage of the bulb or capillary, this liquid may self-ignite at room temperature in the presence of water or moisture.
Terminals: 6.35 × 0.8 quick connect terminals, 90° bended. Straight terminals or terminals with M4 screws also available on request. (MOQ apply). Terminal positions and alignment allow the use of a connector with flat or bended terminals.
Adjustment: Dia. 6mm shaft with 4.6mm flat, length 11.5mm. Other lengths, screw driver adjustment or fixed setting available on request.
Mounting: Front bracket with 2 × M4 threads, 28mm distance.
Grounding: M4 thread on mounting bracket.
Contact: SPDT
Electrical rating, resistive loads:
- Open on temperature rise contact (C-1)
20A 250V 50-60Hz: >50,000 cycles
16A 250V 50-60Hz: ≥100,000 cycles
16A 400V 50-60Hz: ≥50,000 cycles.
- Close on temperature rise contact (C-2): 6A 250V 50-60Hz: >100,000 cycles; 2A 400V 50-60Hz: >100,000 cycles.
Electrical rating, inductive loads: Open on temperature rise contact (C-1):
3A 250V 50-60Hz: >50,000 cycles; 2.6A 250V 50-60Hz: >100,000 cycles.

Main references used in immersion heaters

Reference	Temperature range °C (°F)	Capillary length(C, mm)	Bulb diameter (D, mm)	Bulb length (E, mm)	Differential °C (°F)	Max temperature on bulb °C (°F)
8GB-35035AO60001	-35+35°C (-31+95°F)	1500	6	120±5	1.6±1°C (2.9±1.8°F)	60°C (140°F)
8GB-35035AA60001	-35+35°C (-31+95°F)	250	6	120±5	1.6±1°C (2.9±1.8°F)	60°C (140°F)
8GB-10040AO60001	-10+40°C (14-104°F)	1500	6	107±5	1.5±1°C (2.7±1.8°F)	70°C (158°F)
8GB-10040AA60001	-10+40°C (14-104°F)	250	6	107±5	1.5±1°C (2.7±1.8°F)	70°C (158°F)
8GB004040AQ30001	4-40°C (39.2-104°F)	250	Pig tail style, dia.30mm coil	55±10	1±0.5°C (1.8±0.9°F)	70°C (158°F)
8GB004040AA80001	4-40°C (39.2-104°F)	250	8	85±5	1±0.5°C (1.8±0.9°F)	70°C (158°F)
8GB004040AO60001	4-40°C (39.2-104°F)	1500	6	120±5	1±0.5°C (1.8±0.9°F)	70°C (158°F)
8GB004040AA60001	4-40°C (39.2-104°F)	250	6	120±5	1±0.5°C (1.8±0.9°F)	70°C (158°F)
8GB000060AO60001	0-60°C (32-140°F)	1500	6	86±5	2.5±1°C (4.5±1.8°F)	80°C (176°F)
8GB000060AA80001	0-60°C (32- 140°F)	250	8	63±5	2.5±1°C (4.5±1.8°F)	80°C (176°F)
8GB000090AO60001	0-90°C (32-194°F)	1500	6	98±5	2.5±1°C (4.5±1.8°F)	120°C (248°F)
8GB030090AO60001	30-90°C (86-194°F)	1500	6	98±5	2.5±1°C (4.5±1.8°F)	120°C (248°F)
8GB030090AA80001	30-90°C (86-194°F)	250	8	63±5	2.5±1°C (4.5±1.8°F)	120°C (248°F)
8GB030110AO60001	30-110°C (86-230°F)	1500	6	86±5	2.5±1°C (4.5±1.8°F)	140°C (284°F)
8GB030110AA80001	30-110°C (86-230°F)	250	8	55±5	2.5±1°C (4.5±1.8°F)	140°C (284°F)

3 pole control thermostats
Type 8C





Technical features

Housing dimensions: 46 × 50 × 45mm (without terminals.)
Bulb and capillary: Stainless steel, capillary length 250mm or 1500mm, 150mm long PVC sleeve on capillary. Capillary minimum bending radius 5mm.
Temperature sensing element: Liquid filled bulb and capillary.
Terminals: 6.35 × 0.8 quick connect terminals. M4 screws also available on request.
Adjustment: Dia. 6mm shaft with 4.6mm flat, (other lengths or fixed setting available on request).
Mounting: Front bracket with 2 × M4 threads, 28mm distance.
Rating: 3 × 16A(4) 250VAC, 10A 400VAC
Contacts: 3 × ST with snap action contact, 3PDT available on request.

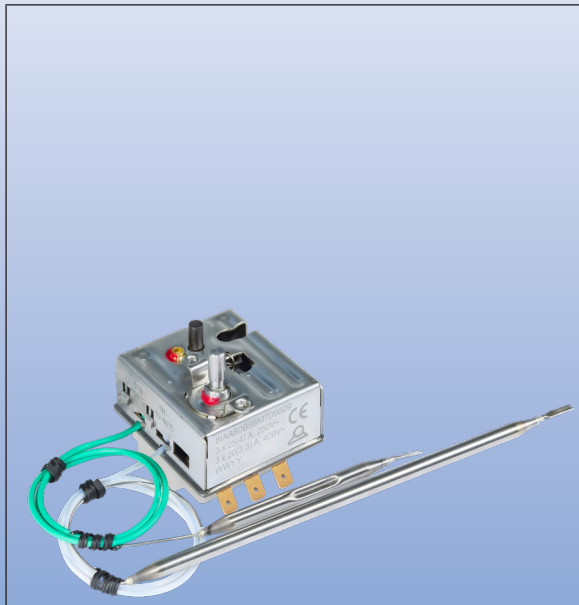
Main references used in immersion heaters

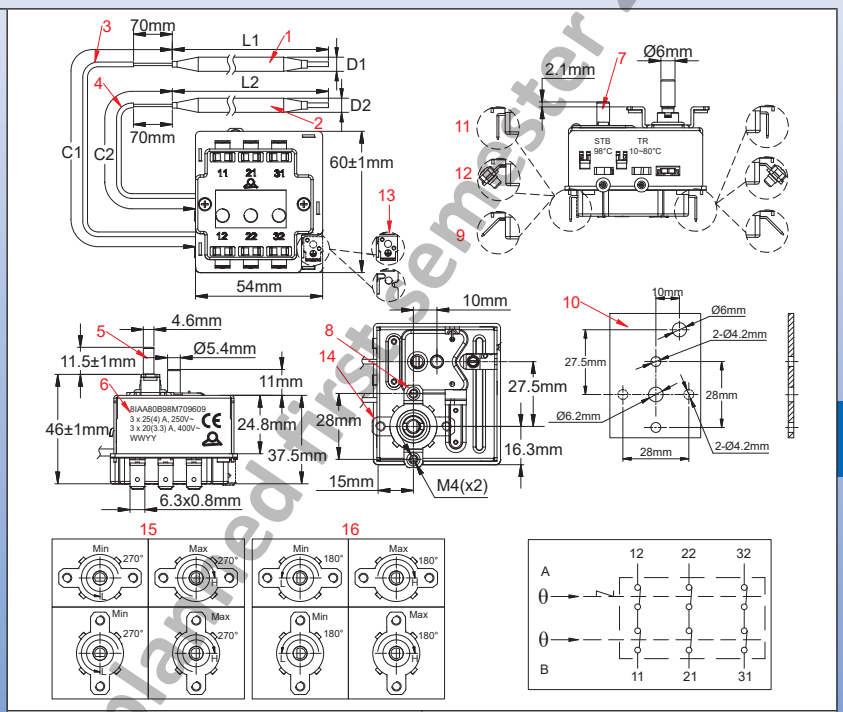
Reference	Temperature range (°C/ °F)	Capillary length (mm)	Bulb diameter (mm)	Bulb length (mm)	Differential (°C/ °F)	Max temperature on bulb (°C/ °F)
8CB-35035AO60001	-35+35°C (-30+95°F)	1500	6	95	4±2°C/ 7±3.6°F	50°C/ 122°F
8CB-35035AA60001	-35+35°C (-30+95°F)	250	6	95	4±2°C/ 7±3.6°F	50°C/ 122°F
8CB004040AO60001	4-40°C (40-105°F)	1500	6	160	4±2°C/ 7±3.6°F	50°C/ 122°F
8CB004040AA60001	4-40°C (40-105°F)	250	6	160	4±2°C/ 7±3.6°F	50°C/ 122°F
8CB030090AO60001	30-90°C (85-195°F)	1500	6	86	6±3°C/ 10.8±5.4°F	110°C/ 230°F
8CB030110AO60001	30-110°C (85-230°F)	1500	6	70	6±3°C/ 10.8±5.4°F	130°C/ 266°F

Three poles combination control thermostats, 25(4)A 250VAC, 20(3.3)A 400VAC with 3 poles fail safe manual reset limiter

Type 8I

Dimensions





1: Manual reset bulb and capillary;
2: Control bulb and capillary;
3: Manual reset capillary sleeve (green);
4: Control capillary sleeve (transparent);
5: Control adjustment shaft;
6: Main body;
7: Manual reset button;
8: Mounting bracket angled 0° (standard);
9: 6.35 × 0.8 terminals angled 45° (standard);
10: Mounting board drilling.

Options
11: 6.35 × 0.8 terminals angled 90°
12: Screw terminals
13: 6.35 × 0.8 ground terminal
14: Mounting bracket angled 90°
15: 270° shaft angulation
16: 180° shaft angulation

Applications

3 pole temperature control and 3 pole cut off on hot water tanks, including flat tanks, electric radiators, electro-thermal heating equipment and immersion heaters.

Main technical features

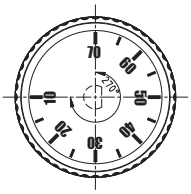
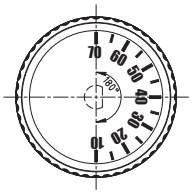
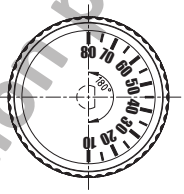
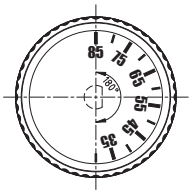
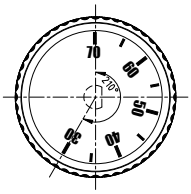
Housing dimensions: 60 × 54 × 46mm (Without adjusting shaft, terminals, bulbs and capillaries).
Bulb and capillary: Stainless steel, capillary length 250, 750, or 870mm, full length PVC sleeve on capillary up to 70mm of the bulb. PVC sleeve is transparent on the temperature control diastat and green on fail-safe safety diastat.
The bulb diameter of the safety diastat is usually 1mm smaller than that of the temperature control diastat to allow them to be mounted one behind the other in the same pocket. For the same reason, the capillary of the safety diastat is shorter than that of the temperature control diastat.
Capillary minimum bending radius: 5mm.
Temperature sensing element: Liquid filled bulbs and capillaries.
Terminals: 6.35 × 0.8 quick connect terminals. M4 screws also available on request.
Adjustment of temperature control set point: Dia. 6mm shaft with 4.6mm flat, shaft length 11.5mm. Other lengths or fixed setting available on request.
The temperature control shaft is available with 180 or 270° mechanical angulation.
Manual reset: Fail-safe, sealed fixed setting, front access reset button. Set point value of manual reset is usually 25°C above the maximum adjustment value of the temperature control set point. Other values are possible, provided that tolerances between both set point don't allow over crossing.
To know more about standard tolerances on manual reset set point, see 85 thermostat catalogue pages.
Mounting: Bracket with 2 M4 holes at 28mm distance, centered around the adjustment shaft. Exists in 2 positions, at 0° and 90°
Rating: 25(4)A 250VAC, 20(3.3)A 400VAC.
Contacts: 3 normally closed contacts, snap action, with simultaneous opening and closing.
Max ambient temperature on body: 80°C (176°F).

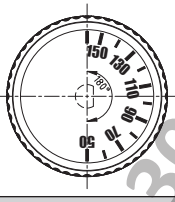
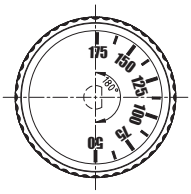
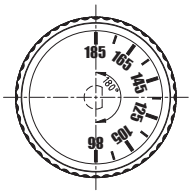
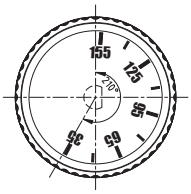
Main references with 45° bended QC terminals, 270° angulation, 11.5mm shaft length, mounting bracket angled at 0° *

References with 6 × 6.35 terminals bended at 45°	References with six M4 screw terminals	Manual reset Calibration temperature (°C/°F)	Control temperature range (°C/°F)	Capillaries length (C1, C2, mm) **	Bulb diameters (D1, D2, mm)	Bulb length (L1, L2, mm)	Max temperature on bulbs L1 and L2 °C (°F)
8IAA70B90M009E04	8IAA70B90M009E0S	90+0/-8°C (194+0/-14.4°F)	10-70°C (50-158°F)	900	Ø5, Ø 6	80, 85	L1: 140°C (284°F) L2: 170°C (338°F)
8IAA70B90M005E04	8IAA70B90M005E0S			500			
8IAA70B90M002E04	8IAA70B90M002E0S			250			
8IAC70B90M009E04	8IAC70B90M009E0S	90+0/-8°C (194+0/-14.4°F)	30-70°C (86-158°F)	900	Ø5, Ø 6	80, 140	L1: 120°C (248°F) L2: 130°C (266°F)
8IAC70B90M005E04	8IAC70B90M005E0S			500			
8IAC70B90M002E04	8IAC70B90M002E0S			250			
8IA075B98M009E04	8IA075B98M009E0S	98+0/-8°C (208+0/-14.4°F)	0-75°C (32-167°F)	900	Ø5, Ø 6	80, 130	L1: 140°C (284°F) L2: 170°C (338°F)
8IA075B98M005E04	8IA075B98M005E0S			500			
8IA075B98M002E04	8IA075B98M002E0S			250			
8IAA80BK0M009E04	8IAA80BK0M009E0S	110+0/-8°C (230+0/-14.4°F)	10-80°C (50-176°F)	900	Ø5, Ø 6	80, 120	L1: 140°C (284°F) L2: 170°C (338°F)
8IAA80BK0M005E04	8IAA80BK0M005E0S			500			
8IAA80BK0M002E04	8IAA80BK0M002E0S			250			
8IAC85BK0M009E04	8IAC85BK0M009E0S	110+0/-10°C (230+0/-18°F)	30-85°C (86-185°F)	900	Ø5, Ø 6	80, 80	L1: 140°C (284°F) L2: 170°C (338°F)
8IAC85BK0M005E04	8IAC85BK0M005E0S			500			
8IAC85BK0M002E04	8IAC85BK0M002E0S			250			

* Ask to get specific data sheet for products with different bending of 6.35 terminals, 180° angulation, a mounting bracket angled at 90° or different length of adjustment shaft.
** In standard, manual reset capillary is shorter than temperature control. Ask specific data sheet if 2 identical lengths are requested.
Other temperature ranges with calibration up to 500°C can be achieved, but without the fail-safe function. Consult us for references.

Standard knobs printing*

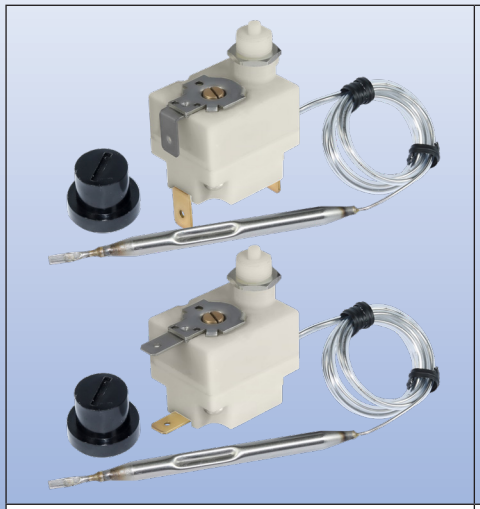
10 - 70°C on 270°	10 - 70°C on 180°	10 - 80°C on 270°	10 - 80°C on 180°	30 - 85°C on 270°	30 - 85°C on 180°	30 - 70°C on 210°
						
66MZ0060100702FB	66MZ006010070AFB	66MZ0060100802FB	66MZ006010080AFB	66MZ0060300852FB	66MZ006030085AFB	66MZ0060300701FW

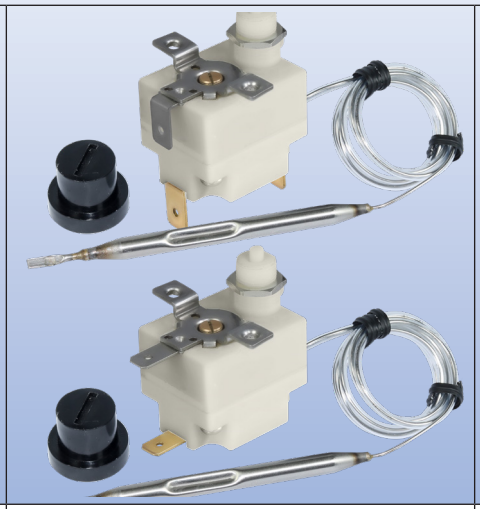
50 - 158°F on 270°	50 - 158°F on 180°	50 - 176°F on 270°	50 - 176°F on 180°	86 - 185°C on 270°	86 - 185°C on 180°	33.8 - 158°F on 210°
						
66MZ0060501582FY	66MZ006050158AFY	66MZ0060501762FY	66MZ006050176AFY	66MZ0060861852FY	66MZ006086185AFY	66MZ0060351551FX

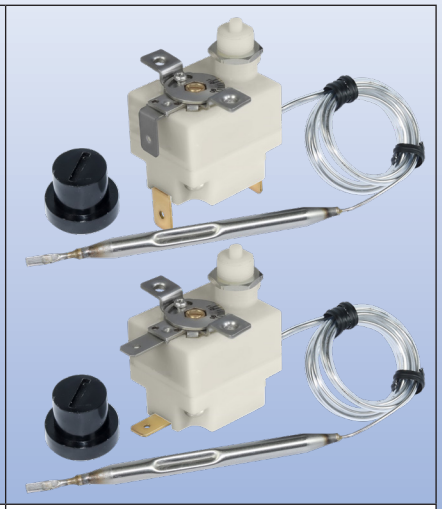
* Be careful in selecting knob model in accessories, the knob diameter and bezel must let free access to the reset button (see the 27.5mm dimension on drawing)

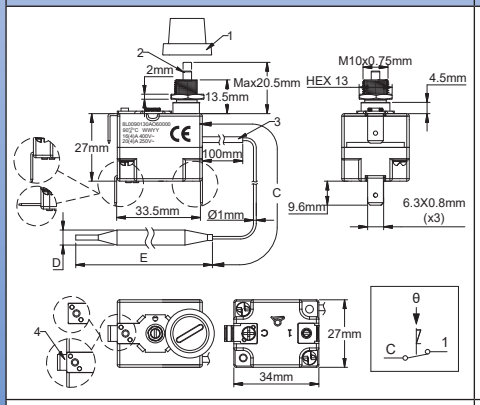
SPNC manual reset high limit, fixed or adjustable set point, fail safe, 20A.
Type 8L

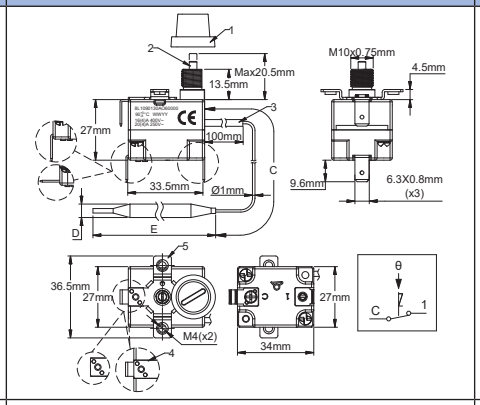
Dimensions

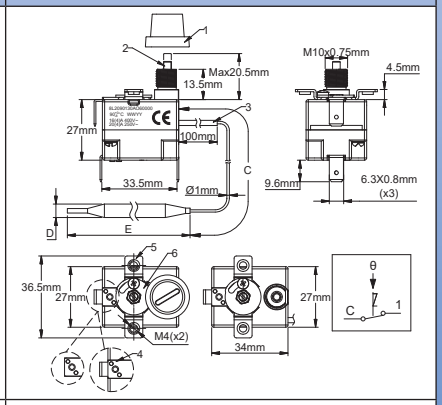












8L0: M10 mounting
1: Reset button cap
2: Reset button
3: Capillary sleeving
4: Ground terminal (option)

8L1: 2 × M4 screws mounting
1: Reset button cap
2: Reset button
3: Capillary sleeving
4: Ground terminal (option)
5: 2xM4 mounting bracket

8L2: 2 xM4 screws mounting and mini adjustment dial
1: Reset button cap
2: Reset button
3: Capillary sleeving
4: Ground terminal (option)
5: 2xM4 mounting bracket
6: Mini adjustment dial

Technical features

Applications: Protection against the overheating of the heaters due to an abnormal rise of the liquid temperature due to a flow failure. The mounting of the bulbs can be made inside standard dia. 8.5mm pockets, or in an additional thermowell added on request.
Through wall fittings on capillary are also available. The thermostat body can be installed in a protective cover of the heating elements outputs, or remotely in a separate control cabinet. They are resettable after tripping, but prior full audit of the circuit is essential to find the cause of overheating and correct it before restarting.

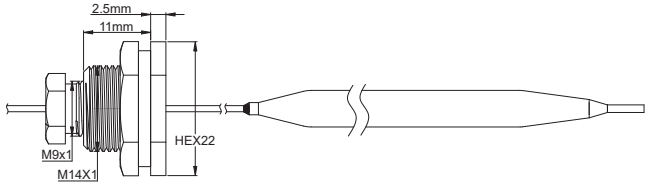
Housing dimensions: 24.7 × 33 × 26mm (without terminals and reset)
Bulb and capillary: Stainless steel, capillary length 250mm to 1500mm, 100mm long PVC sleeve on capillary. Capillary minimum bending radius 5mm.
Temperature sensing element: Liquid filled bulb and capillary.
Terminals: 6.35 × 0.8 quick connect terminals (M4 screws also available on request). Terminals can be vertical, horizontal or bended at 45°
Adjustment: Fixed setting, sealed or adjustable by mini dial
Manual reset: Fail safe, front access reset button
Fail safe contact action by low temperature: Temperatures under -10°C (14°F) will trigger the manual reset.
Mounting: Front bushing with M10 × 0.75 thread
Rating: 20(4)A 250V / 16 (4)A 400VAC
Contacts: SPNC snap action contact
Max ambient temperature on body: 150°C (302°F)

Main references with 750mm capillary *and vertical 6.35mm terminals**

References, M10 mounting	References, 2 × M4 bracket mounting	References, 2 × M4 bracket mounting and mini dial	Calibration temperature (°C/°F)	Bulb diameter (D, mm)	Bulb length (E, mm)	Max temperature on bulb (°C/°F)
8L0070105AG60000	8L1070105AG60000	8L2070105AG60000	70 +0/ -8°C (158 +0/ -14.4°F)	6	77	105°C/239°F
8L0080105AG60000	8L1080105AG60000	8L2080105AG60000	80 +0/ -8°C (176 +0/ -14.4°F)	6	77	105°C/239°F
8L0090115AG60000	8L1090115AG60000	8L2090115AG60000	90 +0/ -8°C (194 +0/ -14.4°F)	6	77	115°C/239°F
8L0100120AG60000	8L1100120AG60000	8L2100120AG60000	100 +0/ -8°C (212 +0/ -14.4°F)	6	77	120°C/248°F
8L0110135AG60000	8L1110135AG60000	8L2110135AG60000	110 +0/ -8°C (230 +0/ -14.4°F)	6	77	135°C/275°F
8L0120145AG60000	8L1120145AG60000	8L2120145AG60000	120 +0/ -8°C (248 +0/ -14.4°F)	6	77	145°C/293°F
8L0130155AG60000	8L1130155AG60000	8L2130155AG60000	130 +0/ -8°C (266 +0/ -14.4°F)	6	74	155°C/311°F
8L0150175AG60000	8L1150175AG60000	8L2150175AG60000	150 +0/ -8°C (302 +0/ -14.4°F)	6	74	175°C/347°F
8L0170195AG50000	8L1170195AG50000	8L2170195AG50000	170 +0/ -10°C (338 +0/ -18°F)	5	70	195°C/383°F
8L0190215AG50000	8L1190215AG50000	8L2190215AG50000	190 +0/ -10°C (374 +0/ -18°F)	5	70	215°C/419°F
8L0210235AG40000	8L1210235AG40000	8L2210235AG40000	210 +0/ -12°C (410 +0/ -22°F)	4	65	235°C/455°F
8L0230255AG40000	8L1230255AG40000	8L2230255AG40000	230 +0/ -12°C (446 +0/ -22°F)	4	65	255°C/490°F

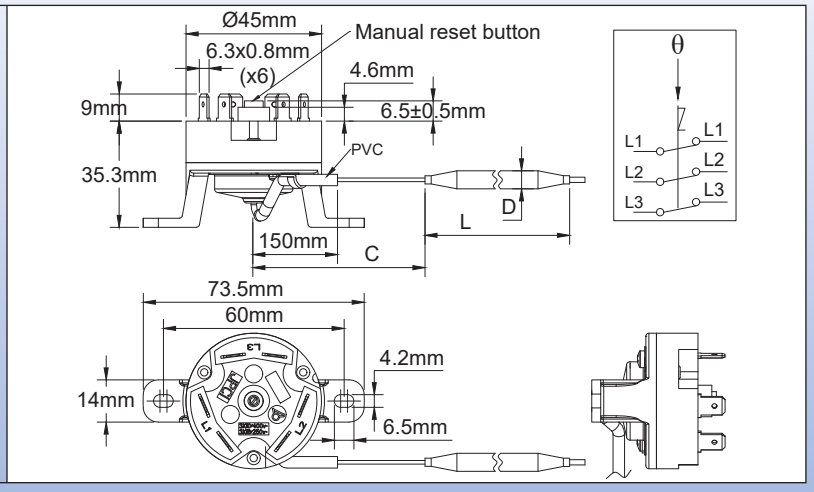
* Capillary 250mm: replace the 11th character G in by A in the reference; Capillary 1m: replace the 11th character G by J in the reference; Capillary 1.5m: replace the 11th character G by O in the reference.
** Horizontal 6.35 terminals, replace 0000 by 2000 in the reference; 45° bended 6.35 terminals, replace 0000 by 1000 in the reference. Screw terminals, ask for data sheet.
*** Ground terminal option: replace 0000 at the end of references by 0G00

Accessories (Must be ordered separately, shipped assembled on capillary)

Nickel plated capillary fitting for use on liquids up to 130°C (Capillary gasket in NBR) *	66RCM2B00010N1C0	
Nickel plated capillary fitting for use on liquids up to 230°C (Capillary gasket in FKM) *	66RCM2F00010N1C0	

* Can be made also in 304 stainless steel, ask for data sheet

3 poles manual reset high limit, fail-safe, 16A, rear mounting
Type 82



Technical features

Applications: Protection against the overheating of the heaters due to an abnormal rise of the liquid temperature due to a flow failure. The mounting of the bulbs can be made inside standard dia. 8.5mm pockets, or in an additional thermowell added on request. The thermostat body can be installed in a protective cover of the heating elements outputs, or remotely in a separate control cabinet. They are resettable after tripping, but prior full audit of the circuit is essential to find the cause of overheating and correct it before restarting.

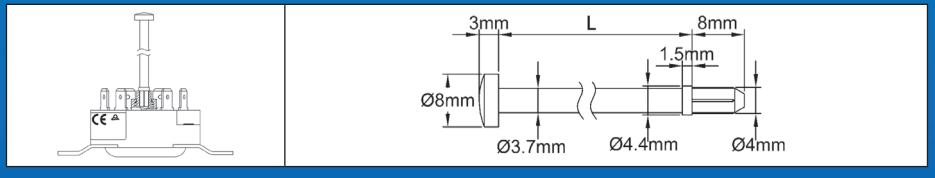
Housing dimensions: Dia 45 × 44.3mm
Capillary: Copper, capillary length 250mm or 900mm, 150mm long PVC sleeve on capillary. Capillary minimum bending radius 5mm.
For technical reasons, we do not recommend to use capillary length longer than 900mm.
Bulb: Copper, dia. 6mm.
Temperature sensing element: Liquid-filled thermostatic assembly whose boiling causes tripping of the contact. Therefore, unlike liquid filled systems, these thermostats are sensitive to atmospheric pressure, and their reaction time is slower.
Terminals: 6.35 × 0.8 quick connect terminals
Adjustment: Fixed setting
Mounting: Backside legs, 2 M4 screws, holes distance 60mm
Manual reset: Fail-safe action, center button
Rating: 3 × 16A 250VAC, 3 × 10A 400VAC, resistive (10000 cycles), 3 × 25A 250VAC, 3 × 16A 400VAC (300 cycles)
Contacts: Three poles, open on temperature rise (snap action contact), double break.
Max ambient temperature on head: 150°C(302°F)

Main references

Reference	Calibration Temperature (°C/ °F)	Minimum resettable temperature (°C/ °F)	Capillary length (C, mm)	Bulb diameter (D, mm)	Bulb length (L, mm)	Max temperature on bulb (°C/ °F)
820060090CI610F1	60±5°C/ 140±9°F	20°C/ 68°F	900	6	50	90°C/ 194°F
820060090CA610F1	60±5°C/ 140±9°F	20°C/ 68°F	250	6	50	90°C/ 194°F
820070100CI610F1	70±5°C/ 158±9°F	30°C/ 86°F	900	6	50	100°C/ 212°F
820080110CI610F1	80±5°C/ 176±9°F	40°C/ 104°F	900	6	50	110°C/ 230°F
820090120CI610F1	90±5°C/ 194±9°F	50°C/ 122°F	900	6	50	120°C/ 248°F
820110140CI610F1	110±5°C/ 230±9°F	70°C/ 158°F	900	6	50	140°C/ 284°F
820130160CI610F1	130±6°C/ 266±10.8°F	90°C/ 194°F	900	6	60*	160°C/ 320°F
820150180CI610F1	150±7°C/ 302±12.6°F	110°C/ 230°F	900	6	60*	180°C/ 356°F
820170200CI610F1	170±7°C/ 338±12.6°F	130°C/ 266°F	900	6	60*	200°C/ 392°F

* Cylinder bulb

Accessories

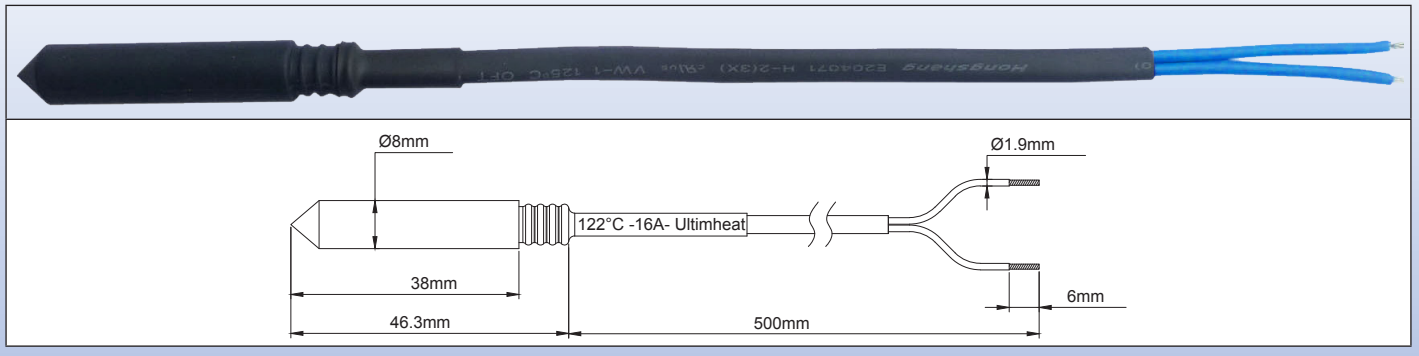


Long distance manual reset rods

L	Reference
114	664CLR114
30	664CLR030

Other lenght on request

Wired thermal fuses, for insertion into 8.5mm I.D. thermowells
Type 5MA 3-F



Applications : protection against overheating of equipment and heating elements.
Fusible pellet : organic compound.
Mechanism : movable pellet actuated of a spring released by the fusion of the pellet.
Protection : by electrical insulation silicone boot, dia. 8mm.
Nominal current rating : 16A 250V.
The nominal current rating is the maximum current the fuse can carry without opening or deteriorate when subjected to a temperature known as the «holding temperature» (Th) for a limited time.
Holding temperature (Th) : the fuse must not open or be destroyed when subjected to a temperature equal to Th-6°C for a period of 168 hours under nominal voltage and current.
Rated functioning temperature (Tf) : It is the opening temperature of the fuse in a calibration oven, when subjected to a current less than 10 mA, when temperature rises at a speed of 0.5 to 1°C/min. The opening temperature must not be lower than Tf-10°C or above Tf under these conditions. This is the operating temperature Tf which is printed on the fuse and the protective sheath external of the leads.
Maximum temperature (Tm) : it is the maximum temperature withstood by the fuse after opening without losing its insulating and mechanical properties.
This feature is critical in immersion heater applications, to determine the right position of the TCO to avoid its destruction and re-energization of the electrical circuit by high temperature overshoot.
Insulation voltage between open contacts : ≥ 500V.
Insulation resistance between open contacts : ≥ 0.2 MΩ @ 500V.
Lead lengths : 500mm.
Leads : FEP 300V primary insulation, 1mm² gauge (AWG18), in a polyolefin sheath.
In red : standard temperatures available from stock.

Main references

Reference	Rated functioning temperature °C/ °F (Tf)	Holding temperature °C/ °F (Th)	Maximum temperature °C/ °F (Tm)
5MA3SPF070F18500	73°C/ 163.4°F	45°C/ 113°F	115°C/ 239°F
5MA3SPF077F18500	79°C/ 174.2°F	52°C/ 125.6°F	125°C/ 257°F
5MA3SPF084F18500	85°C/ 185°F	57°C/ 134.6°F	125°C/ 257°F
5MA3SPF091F18500	94°C/ 201.2°F	66°C/ 150.8°F	140°C/ 284°F
5MA3SPF096F18500	99°C/ 210.2°F	71°C/ 159.8°F	140°C/ 284°F
5MA3SPF106F18500	108°C/ 226.4°F	77°C/ 170.6°F	145°C/ 293°F
5MA3SPF109F18500	113°C/ 235.4°F	84°C/ 183.2°F	150°C/ 302°F
5MA3SPF121F18500	122°C/ 251.6°F	94°C/ 201.2°F	175°C/ 347°F
5MA3SPF129F18500	133°C/ 271.4°F	101°C/ 213.8°F	175°C/ 347°F
5MA3SPF139F18500	142°C/ 287.6°F	114°C/ 237.2°F	185°C/ 365°F
5MA3SPF152F18500	157°C/ 314.6°F	127°C/ 260.6°F	195°C/ 383°F
5MA3SPF165F18500	167°C/ 332.6°F	130°C/ 266°F	205°C/ 401°F
5MA3SPF169F18500	172°C/ 341.6°F	145°C/ 293°F	215°C/ 419°F
5MA3SPF182F18500	184°C/ 363.2°F	156°C/ 312.8°F	225°C/ 437°F
5MA3SPF188F18500	192°C/ 377.6°F	164°C/ 327.2°F	245°C/ 473°F
5MA3SPF216F18500	216°C/ 420.8°F	189°C/ 372.2°F	280°C/ 536°F
5MA3SPF227F18500	227°C/ 440.6°F	190°C/ 374°F	295°C/ 563°F
5MA3SPF240F18500	240°C/ 464°F	190°C/ 374°F	305°C/ 581°F

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