*IMMERSION HEATERS*

# RF RANGE

## RF RANGE APPLICATION

The RF range of immersion heater is designed to heat water or various chemical solutions in industrial, pharmaceutical, food processing and anti-frost applications or for domestic hot water heating (DHW) in very hard water areas.

The RF range features a ceramic core heating element which is fitted inside a metal sheathed element tube. The ceramic core heating element can be withdrawn from the heater without removing the heater from the vessel. This is particularly advantageous where it is not practical to drain the vessel in order to inspect or replace the element, minimising down time and maintenance costs.

All models are fitted with a robust, water-tight, cast aluminium enclosure rated to IP66 suitable for indoor or outdoor applications or for use in damp or humid conditions.

Models are available in single and three phase configurations. Higher kW loadings can be supplied. Please contact our Technical Department.

### STANDARD RANGE

The RF range of immersion heater is designed to heat water or chemical solutions in tanks or fitted to large storage vessels for **anti-frost protection**. The elements have a low average Watts Density of 3.1 W/cm$^2$ (20 W/in$^2$) for copper element tubes and 2.5W/cm$^2$ (16 W/in$^2$) for stainless steel element tubes making this design more suitable for hard or aggressive waters and certain chemical solutions.

Models are available with a brass flange and copper element tube or a 316L stainless steel flange and 316L stainless steel element tube. Loadings up to 6kW are available in single and three phase configurations

### RF Range Copper Element Tube and Brass Flange

| LIST No | LIST No | kW LOAD @ 240/415V | No. OF PHASES | IMMERSED LENGTH mm(in) |
|---|---|---|---|---|
| Thermostat Range 3-55°C | Thermostat Range 30-90°C | | | |
| RF106 | RF206 | 1 | 1 | 280 (11") |
| RF111 | RF211 | 1.5 | 1 | 380 (15") |
| RF107 | RF207 | 2 | 1 | 480 (19") |
| RF108 | RF208 | 3 | 1 or 3 | 700 (28") |
| RF109 | RF209 | 4.5 | 1 or 3 | 1000* (39") |
| RF110 | RF210 | 6 | 1 or 3 | 1300* (51") |

### RF Range 316L Stainless Steel Tube and Flange

| LIST No | LIST No | kW LOAD @ 240/415V | No. OF PHASES | IMMERSED LENGTH mm(in) |
|---|---|---|---|---|
| Thermostat Range 3-55°C | Thermostat Range 30-90°C | | | |
| RF306 | RF406 | 1 | 1 | 320 (13") |
| RF311 | RF411 | 1.5 | 1 | 440 (18") |
| RF307 | RF407 | 2 | 1 | 600 (24") |
| RF308 | RF408 | 3 | 1 or 3 | 850 (34") |
| RF309 | RF409 | 4.5 | 1 or 3 | 1200* (47") |
| RF310 | RF410 | 6 | 1 or 3 | 1600* (63") |

* Note: if the heater is over 1m long, it is important to support the element tube inside the vessel.

### SPECIALIST APPLICATIONS

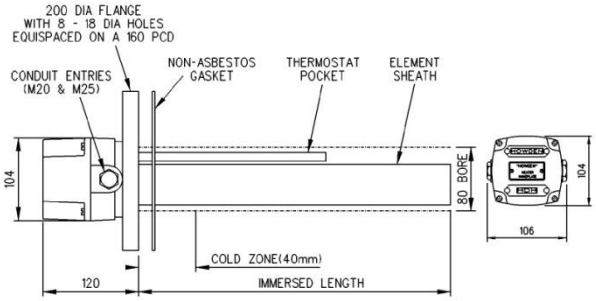
The RF range is primarily used for the applications listed above, however it can be used for other applications or manufactured to a non-standard design. Alternative boss sizes are a popular variation to this range. If a screwed fitting is required please see our CR range. For oil and caustic applications please refer to our HO and HF ranges. For fire water tanks please refer to our FW range. To obtain a quotation or further information please contact our Technical Department.

## MOUNTING

Heaters are suitable for horizontal flanged mounting, however, heaters for vertical mounting can be supplied. Please contact our Technical Department.

To avoid localised boiling or air locks, care should be taken to ensure the cold zone extends beyond any neck piece. Longer cold zones are available. Please contact our Technical Department.

The standard fixing flange is specified to BS EN 1092-1 (replaces BS4504) PN16, 80mm nominal bore, however alternative flanges specifications are available. Please contact our Technical Department. The heater is supplied with a fibre gasket.




## TEMPERATURE CONTROL

Standard models are supplied with a factory fitted control thermostat, with a range of 37-90°C rated to 20 Amps and an over-temperature, manual reset, safety cut-out thermostat, with a range of 45-95°C rated to 16 Amps. Alternative thermostat ranges are available. Please contact our Technical Department.

Where the current consumed exceeds the thermostat rating, the heater must be wired through a contactor switch. A contactor switch must be fitted on all three phase supplies.

Control panels can be supplied incorporating all necessary controls. Please refer to our TC range.

## OPERATING TEMPERATURE & PRESSURE

Standard models have a maximum design temperature of 90°C and a maximum operating temperature of 55°C or 75°C depending on the thermostat fitted. The maximum operating pressure is 16 Bar. Higher operating temperatures and pressures can be supplied. Please contact our Technical Department.

## VOLTAGE

Single phase heaters from our standard range are designed to operate at 230/240V and three phase heaters at 400/415V.

Non-standard models can be supplied designed to suit operating voltages from 110V to 480V AC or DC. Please contact our Technical Department.

## CONSTRUCTION

Immersion heaters are manufactured generally to BS7798.

The element tube is either brazed (brass flange) using silver solder or welded into the flange. The flange material on standard models is either brass or 316L stainless steel, however alternative flange materials are available e.g. mild steel.

The terminal enclosure is cast aluminium, impact-resistant and rated to IP66 with two conduit entries (M20 and M25).

## COMMON VARIATIONS

Please contact our Technical Department for further details.

- Various operating voltages in single or three phase star or delta.
- Higher kW loadings.
- Alternative flange standards, e.g. ANSI, DIN, etc.
- Alternative flange material, e.g. mild steel.
- Alternative element tube materials such as mild steel.
- Longer cold zones.
- Alternative thermostat ranges e.g. 55-120°C.
- Higher operating pressures and temperatures.

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