IMMERIONS HEATERS

WR RANGE

WR RANGE APPLICATION

The WR range of immersion heater is used to heat water in building service applications or heat water and other liquids in industrial, process, pharmaceutical and marine applications. The range is easily adapted to suit OEM equipment. The robust IP65 terminal enclosure makes the WR range an excellent choice for indoor or outdoor use. The heaters can be fitted to calorifiers, flow vessels, hot water cylinders, water heaters, water tanks, buffer vessels, etc.

Immersion heaters are ideal when fitted to calorifiers, buffer vessels or heat stores to be used as a backup or boost for heat pumps or conventional boilers.

Thread sizes are available ranging from 1" to 2½" BSP.

The metal sheathed rod elements are fixed to the threaded connection boss. If an element were to fail, the entire heater requires to be replaced. For heaters with replaceable elements please refer to our GE and RE ranges.

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.

STANDARD RANGE

The standard WR range of immersion heaters is designed to heat water in building service, industrial and process applications.

kW loadings are available in single phase up to 6kW and three phase up to 24kW. Boss sizes are available in 2", 2¼" and 2½" BSP. All 2¼" BSP and a selection of 2" BSP models are kept in stock.

The Nicalloy 825 elements have an average watts density of 9W/cm^2 (60W/in^2), offering improved resistance to hard or aggressive waters. Nicalloy 825 is a "super alloy" which means it is a high nickel content stainless steel.

Where water conditions are particularly hard or corrosive our WR range can be specified with lower watts density elements or titanium elements. Please contact our Technical Department.

SPECIALIST APPLICATIONS

The WR range is extremely flexible and our Technical Department can provide specifications suitable for a wide range of applications as listed below. To obtain a quotation or further information please contact our Technical Department.

- Anti-frost applications.
- Heating oils, caustics (sodium hydroxide), acids and other chemicals.
- Convection and Radiant heating (elements are protected with a shroud).
- Incorporation into propriety equipment, e.g. sterilisers, industrial washing machines, steam raisers, autoclaves, etc.

MOUNTING

Heaters are suitable for horizontal screwed mounting, however vertical mounting heaters 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

Thread sizes available range from 1" to 2½" in BSP or NPT. For details on which size of thread is appropriate please refer to our Technical Data Section.

The heater is supplied with a WRAS approved fibre gasket. Alternative gasket materials are available.

TEMPERATURE CONTROL

Our general recommendation for heaters above 6kW is that temperature control devices should be mounted away from the heater to avoid interference. Further guidance is given in the Technical Section of our website.

Standard models are supplied with a factory fitted control thermostat with a range of 20°C to 70°C rated to 20 Amps incorporating a preset over-temperature cut-out set at 85°C. 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

The WR range has a maximum design temperature of 90°C and maximum operating temperature of 70°C due to the thermostats fitted. The maximum operating pressure is 6 Bar.

Models suitable for higher operating temperatures and pressures are available. Please contact our Technical Department. Alternatively, for higher operating pressures, please refer to our WF range of flanged heater.

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 690V AC or DC. Please contact our Technical Department.

CONSTRUCTION

Immersion heaters are manufactured generally to BS7798.

Elements on standard models are brazed into the threaded boss using silver solder. Individual elements cannot be replaced. Please refer to out GE and RE ranges for elements that can be replaced. Alternatively elements can be fitted using compression glands without silver solder being used.

The boss material on the standard range is brass. Alternative boss materials are available e.g. stainless steel.

The terminal enclosure is painted 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.
- Alternative thermostat ranges including twin thermostat models with separate control and over-temperature cut-out thermostats.
- Alternative element sheath materials such as copper and titanium.
- Boss material in mild steel or stainless steel.
- Higher operating temperatures. The terminal enclosure can be stood off to allow for higher operating temperatures.
- Alternative thermostat ranges or PT100 (RTD) or thermocouple sensors.
- 1" BSP, 1¼" BSP, 1½" BSP and 1¾" BSP threads.
- NPT threads.
- Lower watts density elements for prolonged element life in particularly corrosive or hard waters, or for use with oils, caustics, acids or other chemical solutions.
- Polished elements for catering and food applications
- Nickel plated copper elements.
- Compression fitted elements to avoid the use of silver solder. Compression fittings can be brass, stainless steel 316, etc.
- Longer cold zones.
- Vertical mounting heaters.
- Low water level indication thermostat.
- EPDM 'O' ring gaskets.
- Copper gaskets for improved sealing.

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STANDARD LIST NUMBERS

Fixing Boss Thread Size			kW Load	Phase	Immersed Length mm(in)	Cold Zone mm(in)
2"BSP	2.25"BSP	2.5"BSP				
WR601	WR401	WR201	1	1	280 (11")	25
WR602	WR402	WR202	2	1	280 (11")	25
WR603	WR403	WR203	3	1 or 3	280 (11")	25
WR604	WR404	WR204	3	1	760 (30")	25
WR605	WR405	WR205	4.5	1 or 3	380 (15")	25
WR606	WR406	WR206	6	1 or 3	280 (11")	25
WR607	WR407	WR207	6	1 or 3	480 (19")	25
WR608	WR408	WR208	6	1 or 3	760 (30")	100
WR609	WR409	WR209	7.5	3	610 (24")	100
WR610	WR410	WR210	9	3	530 (21")	25
WR611	WR411	WR211	9	3	690 (27")	25
WR612	WR412	WR212	9	3	915 (36")	100
WR613	WR413	WR213	12	3	610 (24")	100
WR614	WR414	WR214	12	3	915 (36")	100
WR615	WR415	WR215	15	3	685 (27")	100
WR616	WR416	WR216	18	3	685 (27")	25
WR617	WR417	WR217	18	3	915 (36")	100
WR618	WR418	WR218	24	3	915 (36")	25

WR Range General Arrangement