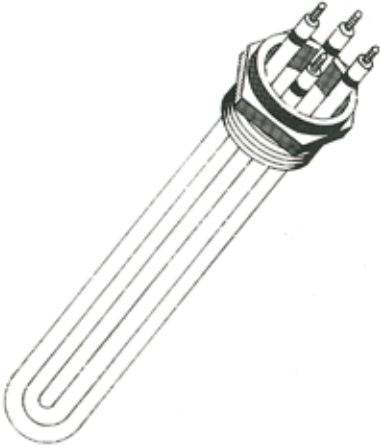


HOTCO IMMERSION HEATERS



Immersion heaters provide a heat source with the highest heating efficiency within the solution. This, combined with easy installation and accurate control, makes electric immersion heaters highly useful in many industrial heating processes. Water Oils, solvents, plating baths, salts, wax, paraffin, asphalts and molasses are some of the many liquids, viscous materials and solids with low melting points commonly heated with electric immersion heaters.

In addition to a wide variety of shapes, sheaths and mounting methods, immersion heaters are manufactured for various heat intensities (watt densities) - e.g. mild heat for thick oils, soft metals, etc; more intense for water, salts and other solutions having higher heat absorption rates.

BASIC TYPES OF MOUNTING

The four basic types of mounting represent the most common methods of applying heat to a vessel's contents without interfering with working space, either inside or outside the containing vessel.

In general:

1. The screw plug types are used in small and medium sized containers.
2. Pipe-flanged types give greater heating capacities into larger vessels. Both types can be selected for high pressures and temperatures.
3. Over the side types with varied heating capacities permit portability, easy removal for cleaning of tanks and wide adaptability to working areas within the tank.
4. Glanded immersion heaters are suitable for mounting through the bottom or sides, usually in small, shallow, confined vessels.

TYPICAL CONSTRUCTION FEATURES

The standard Hotco tubular heater, with copper, steel, stainless, incoloy or other sheath, is formed to suit a particular application in tanks, vats, etc mounted into one of the several types of fixtures available. Wiring connections to the heaters are made inside a protective terminal box (where applicable) with most units designed to accept a thermowell housing a thermostat sensing bulb and/or controller.

Immersion units may be custom made to suit all applications and we recommend that you consult our technicians during initial stages of tank or process design, for load calculations, heater type and material selection.

HEATER SHEATH MATERIALS

Copper, steel, incoloy 800/825, stainless steel 304/316, and titanium (see sheath selection guide page 70).

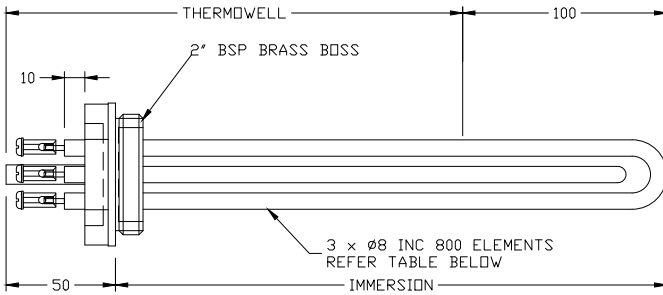
3 phase units (3 heaters per boss) are manufactured on request. All screw-in plug heaters may be fitted with junction boxes. Thermostats may be incorporated within these heaters in three temperature ranges (0-40) (30-110) and (50-300 degree celcius).

BOSS SIZES AND TYPES AVAILABLE

1"	BSP brass	2 1/2"	BSP bronze, steel, brass
1 1/4"	BSP brass, steel, stainless steel	3"	BSP steel
2"	BSP brass, steel, bronze, stainless steel		

Custom bosses in alternative materials and sizes can be manufactured upon request.

GXM RANGE STOCK IMMERSION HEATERS 2" BSP



MODEL	RATING	IMMERSION
GXM30	240V 3KW	270MM
GXM36	240V 3.6KW	280MM
GXM45	240V 4.5KW	305MM
GXM60	240V 6KW	395MM
GXM72	240V 7.2KW	460MM
GXM90	240V 9KW	560MM
GXM108	240V 10.8KW	660MM
GXM144	240V 14.4KW	740MM
GXM180	240V 18KW	1070MM

2" BSP Screw in Element with built in thermowell and screw terminals



Part Number	Watts Density	Wattage	Penetration Length
H03580	120 kW/m ²	1800	190
H03581	120 kW/m ²	2000	210
H03582	120 kW/m ²	2400	255
H03583	120 kW/m ²	3000	305
H03584	120 kW/m ²	3600	345
H03585	120 kW/m ²	4800	460

1 1/4" BSP Screw in Element with built in thermowell and screw terminals



Part Number	Watts Density	Wattage	Penetration Length
H03571	120 kW/m ²	1800	205
H03572	120 kW/m ²	2000	220
H03573	120 kW/m ²	2400	260
H03574	120 kW/m ²	3000	305
H03575	120 kW/m ²	3600	355
H03576	120 kW/m ²	4800	450

STRAIGHT LENGTH BEND IT YOURSELF HEATING ELEMENTS



31 kW / sq. m Elements For Wet & Dry Use

Part Number	Wattage/Voltage	Length
H03716	500W/240V	675mm
H03717	1000W/240V	1295mm
H03718	1250W/240V	1635mm
H03719	1500W/240V	1935mm

46.5 kW / sq. m elements for Water or Air Heating

Part Number	Wattage/Voltage	Length
H03790	500W/240V	484mm
H03791	750W/240V	695mm
H03792	1000W/240V	910mm
H03793	1250W/240V	1120mm
H03794	1500W/240V	1330mm
H03795	1800W/240V	1585mm
H03796	2000W/240V	1755mm
H03797	2400W/240V	2280mm
H03798	3000W/240V	2600mm

120kW / sq. m Elements For Water Heating Only

Part Number	Wattage/Voltage	Length
H03721	1250W/240V	445mm
H03722	1500W/240V	545mm
H03723	1800W/240V	645mm
H03724	2000W/240V	715mm
H03725	2400W/240V	850mm
H03726	3000W/240V	1048mm
H03727	3600W/240V	1250mm
H03728	4800W/240V	1650mm

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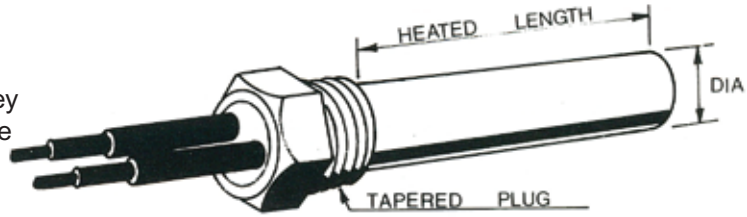
1" BSP Screw in Elements supplied with connected leads and gasket to suit



Part Number	Watts Density	Wattage	Penetration Length
H03560	120	600	145
H03561	120	900	200
H03562	120	1200	245
H03563	120	1500	205
H03564	120	1800	235
H03565	120	2000	255
H03566	120	2400	290
H03567	120	3000	295
H03569	140	3600	300
H03570	140	4800	395

HOTCO IMMERSION HEATERS COMPACT SCREW PLUG TYPE

The Hotco screw-plug immersion heaters consist of a stainless steel cartridge heater silver soldered into a tapered pipe plug. They have proved to be ideal for use where space is limited such as in engine blocks, crankcases, laboratory equipment, etc.



3/8" DIAMETER HEATER X 3/8" BSP PLUG

HEATED LENGTH (mm)	50	100	150	200	250
MAXIMUM WATTAGE	120	300	470	650	825

1/2" DIAMETER HEATER X 1/2" BSP PLUG

HEATED LENGTH (mm)	50	100	150	200	250
MAXIMUM WATTAGE	165	390	630	860	1000

5/8" DIAMETER HEATER X 3/4" BSP PLUG

HEATED LENGTH (mm)	50	100	150	200	250
MAXIMUM WATTAGE	180	480	750	1000	1300

3/4" DIAMETER HEATER X 3/4" BSP PLUG

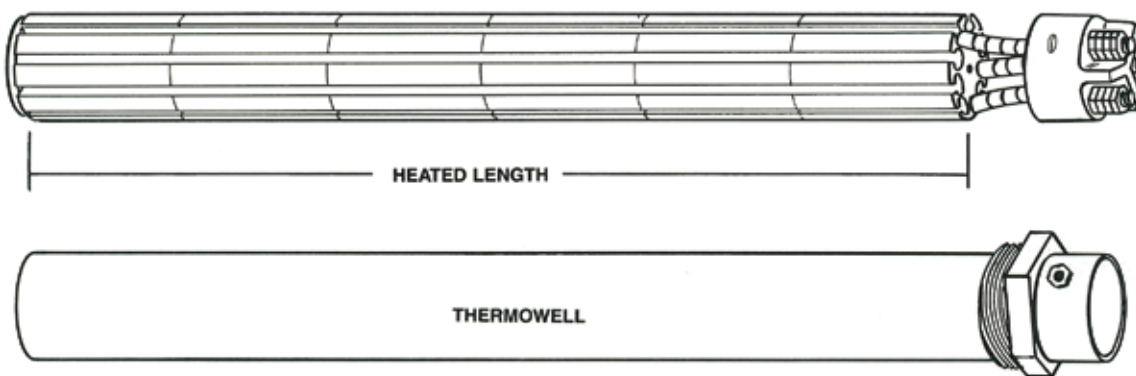
HEATED LENGTH (mm)	50	100	150	200	250
MAXIMUM WATTAGE	350	700	1000	1400	1750

THE TABLES SHOWN ARE AN INDICATION ONLY OF THE MANY COMBINATIONS OF PLUG DIAMETERS AND HEATER LENGTHS AVAILABLE.

CONSULT WITH HOTCO TECHNICIANS FOR YOUR SPECIFIC REQUIREMENT.

CERAMIC BOBBIN HEATERS

Ceramic bobbin heaters when inserted into a thermowell, offer a large heated area to the liquid or semi-solid to be heated. Materials such as oil, wax, fats and bitumen require low heat surface temperature to prevent product degradation; for these applications the ceramic bobbin heater is ideal. The thermowell may be an integral part of the container or alternatively, supplied as a removable sheath as shown below (horizontal mounting recommended). A feature of this type of heater is that it may be removed for repair or replacement without draining the contents of the vessel.



44mm (1 3/4") DIAMETER BOBBIN

WATTS DENSITY		MAXIMUM RECOMMENDED WATTAGE	LENGTH(mm)					
k/Wm2	w/in2		250	500	750	1000	1500	2000
8	5	Asphalt, Tar Heavy Components	300	600	900	1200	1500	1800
16	10	Fuel oil, Preheating	600	1200	1800	2400	3000	3600
24	15	Heat Transfer, Oil	900	1800	2700	3600	4500	5500
30	20	Water	1200	2400	3600	4800	6000	7300

All wattages listed are approximations and depend upon application of the allowable watt density ratings to a given product.

Check product application guide on page 65 or consult Hotco technicians.

RECOMMENDED AT 415V WHEN GREATER THAN 4800W

HOTCO IMMERSION HEATERS

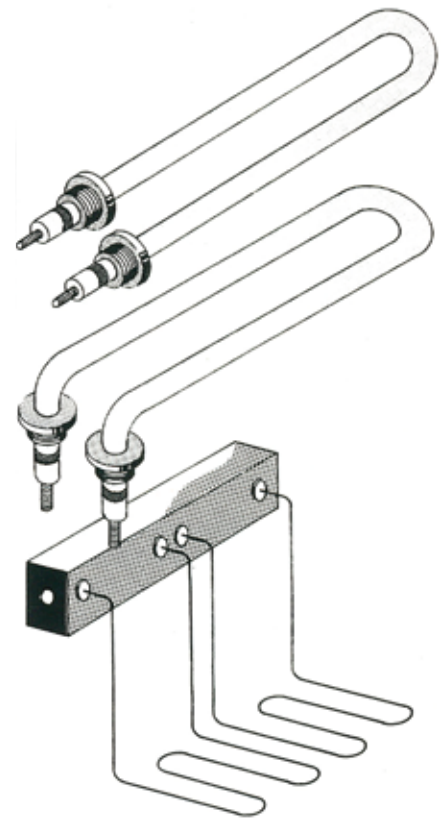
GLANDED TUBULARS

THE HEATERS ARE MOST SUITABLE FOR PERMANENT INSTALLATION INTO SHEET METAL CONTAINERS, TANKS, VATS, ETC.

They can be manufactured in a wide range of sizes, ratings and sheath materials to suit.

The two forms illustrated allow the heater to be glanded through the side or bottom of a tank dependent upon tank restrictions, or variations made to suit all installation problems. Refer to Page 7 for other common forms of tubular layouts to suit many tank installations.

Information required includes dimensions of container, restrictions inside tank if any and particulars of the liquid to be heated.



OVER THE SIDE MULTIPLE TUBULAR

THESE UNITS ARE DESIGNED TO SUIT THE MANY APPLICATIONS WHERE THE TANK SIZE AND QUANTITY OF LIQUID TO BE HEATED IS SUCH THAT ONE LARGE ASSEMBLY OF HEATER IS PREFERABLE TO NUMEROUS SINGLE UNITS.

GENERAL CONSTRUCTION

A number of metal sheathed tubular heaters are fitted, using mounting bushes to a common terminal box. This box can be used to accommodate thermostats, contactors, mains terminals, etc. This makes the unit very compact with power supply the only external requirement.

FORMING

The heaters can be formed to suit any tank dimension or projection to vary heat dissipation over any given area and constructed around agitators or equipment inside the working area.

SHEATH MATERIAL

Available sheath materials are copper, steel, stainless steel 304/316, incoloy 800/825 and titanium. Consult the corrosion guide on Page 70 for suitability of any given sheath to product.

As these units are custom made to suit any special requirements, enquiries should state the dimensions of tank, materials being heated, minimum liquid level, any obstructions and temperature required.

OVER THE SIDE IMMERSION HEATERS

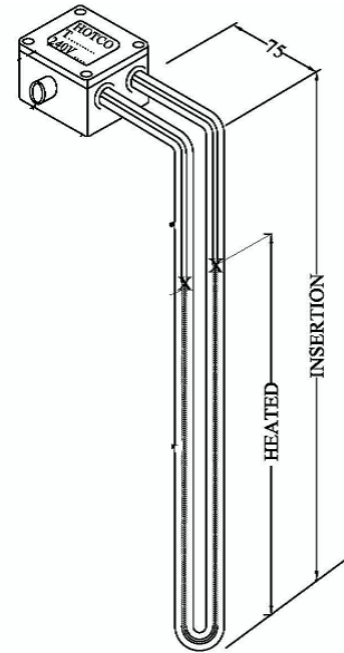
Tubular over the side immersion heaters are designed for use in liquids or solutions where easy removal of heaters for periodic inspection or cleaning is necessary, and where modification to an existing tank is impracticable to suit other forms of heating.

Used mainly in the metal finishing industry where acids and other liquid chemicals are heated. Splashes and spillages are no longer a concern as the electrical termination can totally be encapsulated, thus eliminating the problem of moisture causing a premature electrical failure.

The Hotco range of over the side immersion heaters are among the first in Australia to feature liquid tight electrical termination.

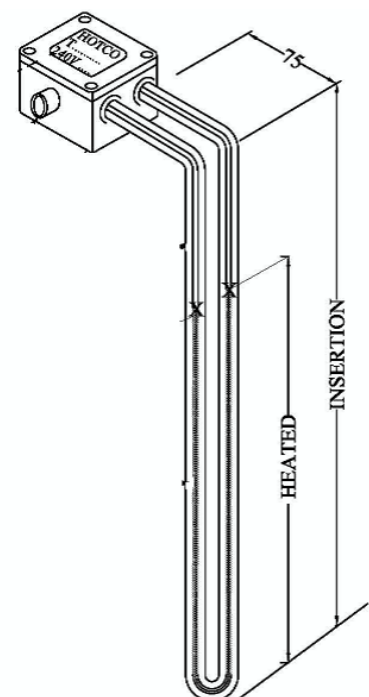
Examples of sheath materials and wattages can be made from the chart below. Our complete range of stock over the side immersion heaters are available by request. Custom made heaters can also be manufactured to suit individual requirements.

Should an initial boost of heat be required, extra heaters are easily removed when the required temperature is reached



.....OVER THE SIDE TYPE

Catalogue Number	Wattage	Application	Sheath Material	Dimensions							
				Immersion A		Heated B		C		D	
				mm	in	mm	in	mm	in	mm	in
TS20	2000	FOR SUITABILITY REFER CORROSION CHART PG 5-4	Steel	710	28	480	19	75	3	100	4
TS30	3000			890	35	660	26	75	3	100	4
TS40	4000			1090	43	860	34	75	3	100	4
TS50	5000			1320	52	1090	43	75	3	100	4
TI20	2000		Incoloy 825	710	28	480	19	75	3	100	4
TI30	3000			890	35	660	26	75	3	100	4
TI40	4000			1090	43	860	34	75	3	100	4
TI50	5000			1320	52	1090	43	75	3	100	4
TAS20	2000		Type 316 Stainless Steel	710	28	480	19	75	3	100	4
TAS30	3000			890	35	660	26	75	3	100	4
TAS40	4000			1090	43	860	34	75	3	100	4
TAS50	5000			1320	52	1090	43	75	3	100	4
TAT20	2000		Titanium	710	28	480	19	75	3	125	5
TAT30	3000			890	35	660	26	75	3	125	5
TAT40	4000			1090	43	860	34	75	3	125	5
TAT50	5000	1320		52	1090	43	75	3	125	5	



OVER THE SIDE TYPE QUARTZ SHEATHED

DESIGNED FOR BETTER PERFORMANCE, LONG LIFE AND EASY MAINTENANCE, HOTCO QUARTZ SHEATHED OVER THE SIDE IMMERSION HEATERS ARE USED FOR HEATING ACID AND IN PICKLING BATHS.

CONSTRUCTION

The pure fused silica sheath is highly resistant to corrosion, thereby eliminating the possibility of upsetting the chemical balance of solutions by metallic contamination. A nickel-chrome alloy resistance wire wound into a high purity ceramic core and centered in this fused quartz tube gives a heater which is totally protected and easily removed for maintenance.

The cable compression gland and 'o' ring sealed junction box prevent solution vapours from entering the heater. Care must be taken that the heated portion of the unit is immersed 50mm below the liquid level. Two metres of flex is supplied as standard.

These units are not suitable for use in solutions containing hydrofluoric or concentrated phosphoric acids.

INSTALLATION

It is recommended that all quartz sheathed immersion heaters be mounted in an appropriate protective cage manufactured from steel and coated in an inert plastic ('Unichrome'). The Hotco range of protective cages offer corrosion resistant protection together with ease of installation.

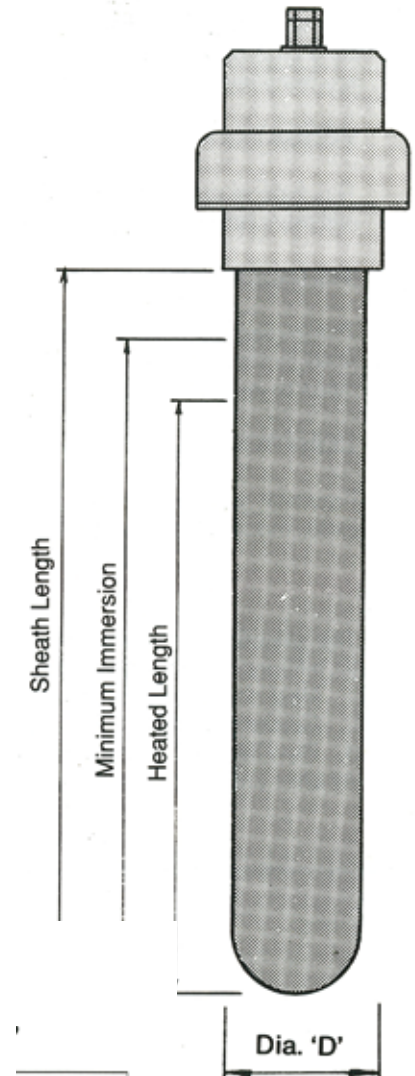
LABORATORY HEATERS

Quartz heaters can be manufactured in smaller sizes than listed below to suit many laboratory uses. Please consult Hotco technicians for further information.

EXAMPLES OF QUARTZ GLASS IMMERSION HEATERS

CATALOGUE	WATTAGE	SHEATH	MIN IMMERSION	HEATED	DIAMETER
HQ05	500	300	250	200	25
HQ1	1000	450	330	280	25
HQ2	2000	570	450	400	60
HQ3	3000	630	520	460	60
HQ4	4000	710	600	540	60
HQ5	5000	790	690	650	60

Custom designed units can be manufactured on request. Installation of earth leakage circuit breakers are recommended with all quartz heaters.

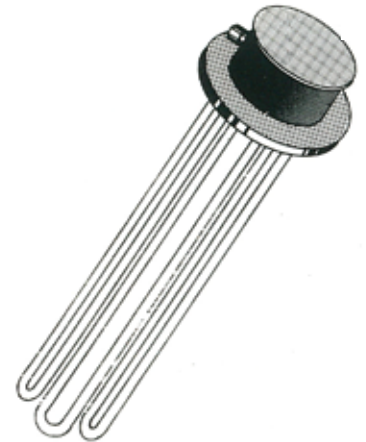


FLANGED IMMERSION HEATERS

Hotco manufacture a varied range of flanged immersion heaters for direct immersion into water, oils, resins, food stuffs and many other liquids and gases.

GENERAL CONSTRUCTION

The standard immersion unit consists of a number of robust, hair pin shaped heaters welded or glanded into a blind pipe flange. All units have heaters in multiples of three for use with single or three phase power supply and are terminated in a protective steel junction box.



VERSATILITY

This type of unit gives simple, low cost installation, 100% heating efficiency generated within the solution and minimum resistance to the circulation of solutions being heated.

INSTALLATION

The immersion units, having standard pipe flanges are easily installed through a matching companion flange fitted to the product tank, making Hotco immersion heaters suitable for a variety of positions in tanks, vats, pipes or irregular shaped vessels.

CONTROL

Provision is made for the installation of control and/or safety thermostats, with sensing probes into protective wells, mounted to the heater bundle flange.

SELECTION OF HEATERS

The selection of the proper flanged immersion heater requires careful technical judgement, with consideration to the following factors:

1. Heat characteristics of the product in solution, it's concentration and temperature
2. Corrosive nature of the product being heated
3. Flow rate and process heat-up time

All units are hydrostatically tested to twice their operating pressure,

IN-LINE CIRCULATION HEATERS

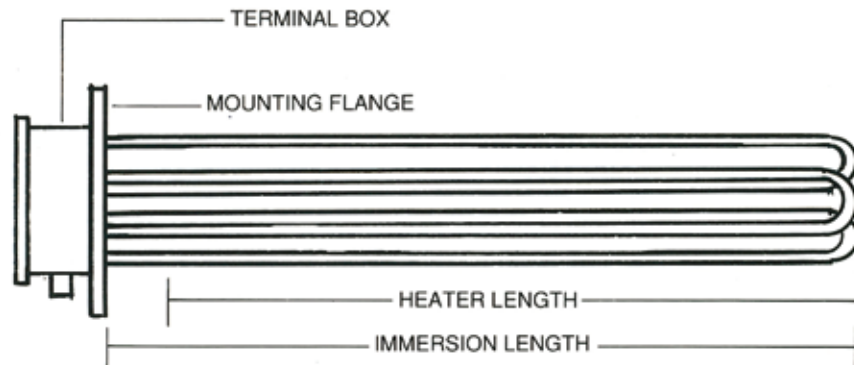
Hotco circulation heaters are designed to heat liquids or gases which flow through pipework on either a recirculating or single pass basis.

Using the appropriate flanged heater as a heat source, and with the addition of baffles and a barrel to create a cross flow effect over the heaters, the Hotco in-line circulation heater is ideal for remotely heating storage vessels and materials as they flow through process pipework.

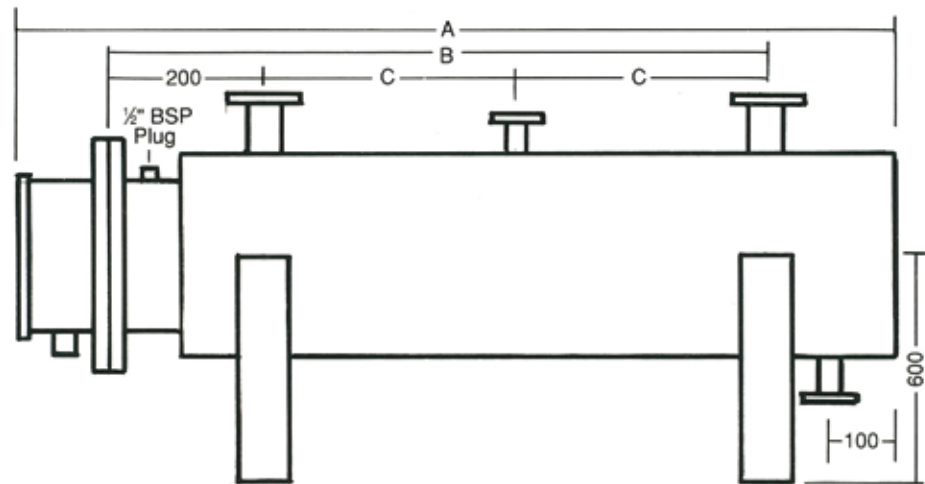
The following pages show examples of common oil and water heaters. Please consult with a Hotco technician for recommendations and further advice.

FLANGED IMMERSION HEATERS - WATER

FLANGED IMMERSION HEATER



IN-LINE CIRCULATION HEATER



EXAMPLES OF TUBULAR HEATERS RATED AT 100 Kw/sqm

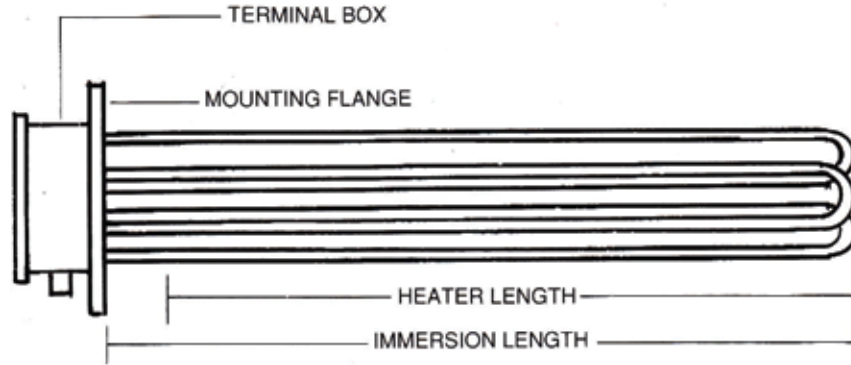
FLANGED IMMERSION HEATER – WATER					
Rating kW	Catalogue Number	Flange Size mm	Immersion length mm	Number of Heaters	Number of Stages
10	FIW10	80	700	3	1
15	FIW15	80	950	3	1
20	FIW20	125	700	6	1
40	FIW40	150	850	9	1
60	FIW60	150	1190	9	2
80	FIW80	150	1500	9	2
100	FIW100	200	1050	18	2
150	FIW150	200	1450	18	2
200	FIW200	250	1300	27	2
250	FIW250	300	1300	36	2
300	FIW300	350	1200	45	3
350	FIW350	350	1400	45	3
400	FIW400	350	1550	45	3

CIRCULATION HEATERS – WATER					
Catalogue Number	Dimensions mm				
	A	B	C	Inlet Outlet	Bleed Drain
CHW10	1025	925	250	25NB	25NB
CHW15	1275	1175	375	25NB	25NB
CHW20	1075	925	250	40NB	25NB
CHW40	1225	1075	325	50NB	25NB
CHW60	1565	1415	495	50NB	25NB
CHW80	1875	1725	650	50NB	25NB
CHW100	1475	1275	425	80NB	25NB
CHW150	1875	1675	625	80NB	25NB
CHW200	1820	1525	550	80NB	25NB
CHW250	1830	1525	550	100NB	25NB
CHW300	1730	1425	500	100NB	25NB
CHW350	1930	1625	600	150NB	25NB
CHW400	2080	1775	675	150NB	25NB

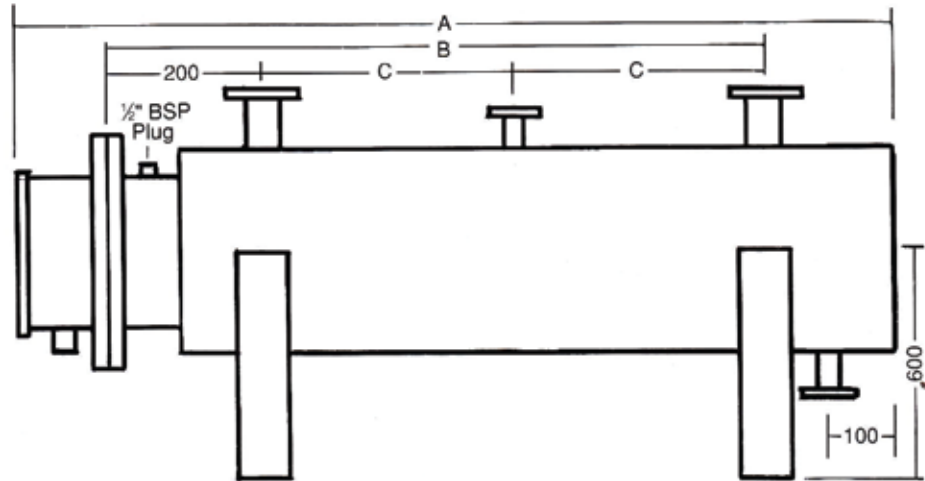
Incoloy tubular heaters rated at 100Kw/sqm. Each heater is rated at 415 volts from and including FIW60 to FIW400.

FLANGED IMMERSION HEATERS - OIL

FLANGED IMMERSION HEATER



IN-LINE CIRCULATION HEATER



EXAMPLES OF TUBULAR HEATERS RATED AT 24 Kw/sqm

FLANGED IMMERSION HEATER – OIL					
Rating kW	Catalogue Number	Flange Size mm	Immersion length mm	Number of Heaters	Number of Stages
5	FIO5	80	1285	3	1
10	FIO10	150	925	9	1
15	FIO15	150	1285	9	1
20	FIO20	200	925	18	1
30	FIO30	200	1285	18	1
40	FIO40	250	1170	27	1
50	FIO50	250	1400	27	1
60	FIO60	300	1290	36	2
80	FIO80	350	1360	45	3
95	FIO95	350	1580	45	3

CIRCULATION HEATERS – OIL					
Catalogue Number	Dimensions mm				
	A	B	C	Inlet Outlet	Bleed Drain
CHO5	1610	1510	542	25NB	25NB
CHO10	1300	1150	363	50NB	25NB
CHO15	1660	1150	543	50NB	25NB
CHO20	1350	1510	363	80NB	25NB
CHO30	1710	1510	543	80NB	25NB
CHO40	1700	1395	485	80NB	25NB
CHO50	1930	1625	600	80NB	25NB
CHO60	1820	1515	545	100NB	25NB
CHO80	1890	1585	580	150NB	25NB
CHO95	2110	1805	690	150NB	25NB

In industry there are many oils which require heating with varying characteristics and properties. To ensure you select the correct heater for your application, experienced Hotco technicians are available to provide advice.