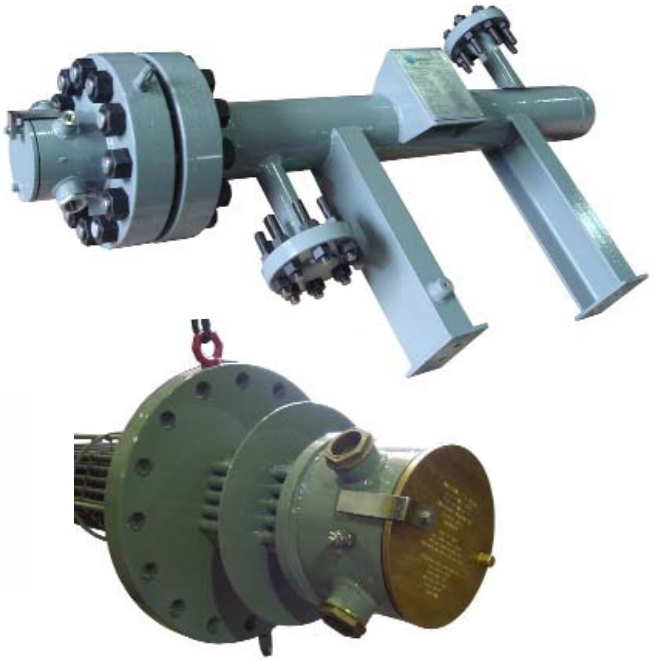
FLANGED IMMERSION HEATERS



350NB - 45 ELEMENTS

Catalogue #	Total Power (kW)			
	Watt Density on Sheath (kW/m²)			
	78	31	19	12
20688 G1	265	106	64	42
20688 G2	280	112	67	45
20688 G3	295	118	71	47
20688 G4	310	124	74	50
20688 G5	325	130	78	52
20688 G6	340	136	82	54
20688 G7	355	142	85	57
20688 G8	370	148	89	59
20688 G9	385	154	92	62
20688 G10	400	160	96	64

Dimensions (mm)			
		With IP66 Enclosure	
A	B	C	D
1270	302	199	380
1345			
1422			
1473			
1550			
1600			
1675			
1730			
1780			
1830			

300NB - 36 ELEMENTS

Catalogue #	Total Power (kW)			
	Watt Density on Sheath (kW/m²)			
	78	31	19	12
20687 G1	205	82	49	33
20687 G2	220	88	53	35
20687 G3	235	94	56	38
20687 G4	250	100	60	40
20687 G5	265	106	64	42
20687 G6	280	112	67	45

Dimensions (mm)			
		With IP66 Enclosure	
A	B	C	D
1220	262	171	349
1320			
1400			
1475			
1550			
1625			

FLANGED IMMERSION HEATERS

250NB - 27 ELEMENTS

Catalogue #	Total Power (kW)			
	Watt Density on Sheath (kW/m²)			
	78	31	19	12
20686 G1	145	58	35	23
20686 G2	160	64	38	26
20686 G3	175	70	42	28
20686 G4	190	76	46	30
20686 G5	205	82	49	33
20686 G6	220	88	53	35

Dimensions (mm)			
		With IP66 Enclosure	
A	B	C	D
1168	226	170	299
1270			
1371			
1473			
1575			
1676			

200NB - 18 ELEMENTS

Catalogue #	Total Power (kW)			
	Watt Density on Sheath (kW/m²)			
	78	31	19	12
20685 G1	85	34	20	14
20685 G2	100	40	24	16
20685 G3	115	46	28	19
20685 G4	130	52	31	21
20685 G5	145	58	35	23
20685 G6	160	64	38	26

Dimensions (mm)			
		With IP66 Enclosure	
A	B	C	D
1041	177	168	247
1193			
1372			
1524			
1676			
1803			

150NB - 9 ELEMENTS

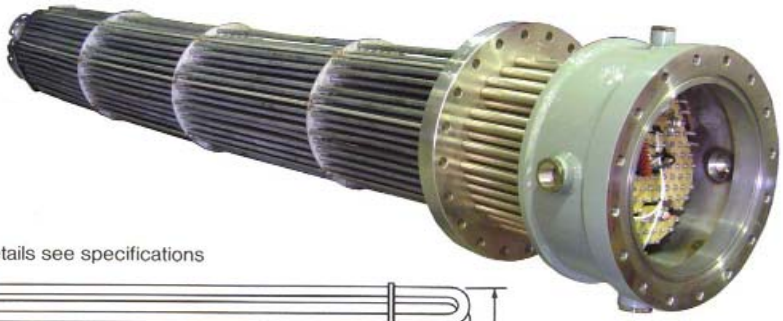
Catalogue #	Total Power (kW)			
	Watt Density on Sheath (kW/m²)			
	78	31	19	12
20684 G1	25	10	6	4
20684 G2	40	16	10	6
20684 G3	55	22	13	9
20684 G4	70	28	17	11
20684 G5	85	34	20	14
20684 G6	100	40	24	16

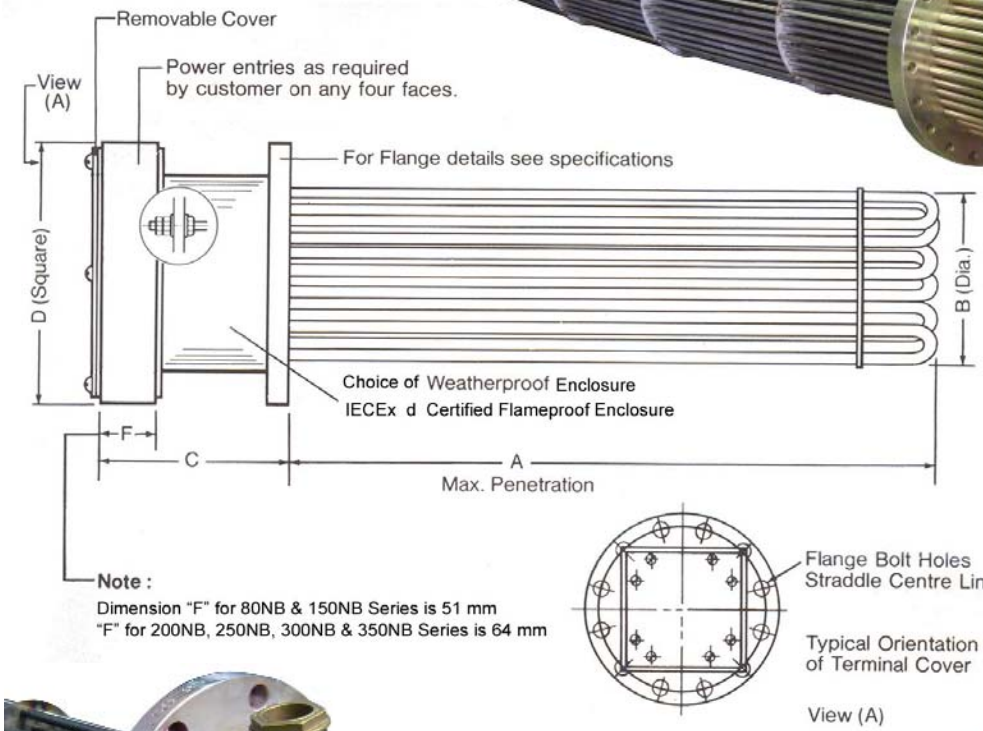
Dimensions (mm)			
		With IP66 Enclosure	
A	B	C	D
609	132	127	184
914			
1212			
1524			
1854			
2210			

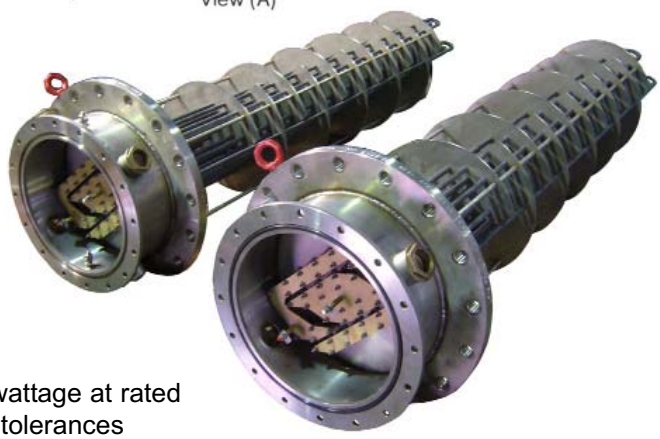
80NB - 3 ELEMENTS

Catalogue #	Total Power (kW)			
	Watt Density on Sheath (kW/m²)			
	78	31	19	12
20683 G1	4	-	-	-
20683 G2	6	2	-	-
20683 G3	8	3	-	-
20683 G4	12	5	3	-
20683 G5	14	6	3	2
20683 G6	20	8	5	3

Dimensions (mm)			
		With IP66 Enclosure	
A	B	C	D
330	73	102	102
457			
584			
812			
940			
1302			







Total Wattage Tolerance	• ±10% of stated wattage at rated voltage. (Other tolerances considered as an option)
Thermostat Pockets	• All series fitted with 2 thermostat pockets 10mm I.D. x 500mm long.
Termination	• All elements terminated with brass busbar and connection studs in accordance with AS3000.
Terminal Covers	• All standard terminal covers are weatherproof with removable front plate finished in high temperature aluminium paint. • Where flanges are to be operated above 100°C. The terminal cover is stood-off the flange. • Power entries as required by customer.
Mounting Orientation	• Optional, but ensure that elements are fully covered by relevant fluid during operation.
Flanges	• All diameters: ANSI B16-5 Class 150 to 2500 AS 2129 Table D, E, F, H. EN1092, AS4087, PN6, PN10, PN16, PN21, PN25, PN35, PN40, PN63, PN100 JIS B2220 0.5kg, 10kg, 16kg

FLANGED IMMERSION HEATERS

Technical considerations

It should be appreciated that heating equipment selection invariably demands evaluation for enhanced equipment life and/or performance, versus initial equipment cost. In addition, both equipment life and performance is often difficult to estimate particularly in the presence of corrosive or unstable substances, and must necessarily be evaluated in the light of empirical experience. Accordingly there may be occasions when, because there is no previous history for a particular duty or application, it is impossible to warrant equipment life or performance. Technical information contained in this publication is intended only as a guide for equipment selection and to desirable practice in layout and installation thereof, in order to avoid commonly encountered problems. Details of the items and conditions of warranty are included in the Company's General Conditions of Sale, copies of which are available on request.

SHEATH POWER DENSITY SELECTION GUIDE
For Static Tanks

Sheath Power Density	Application												
	Clean Water	Mild Acid Solutions	Mild Alkali Solutions, Detergent	Caustic Soda	Soluble Oils, Emulsions	Engine Oil, General Lubricants	Hydraulic and Turbine Oils	Waxes	Heat Transfer Oils	Vegetable Oil Storage	Tallow Storage	Bitumen	Fuel Oil
kW/M^2													
78	✔												
31			✔	✔	✔	✔							
19		✔				✔	✔	✔	✔	✔	✔		
12		✔										✔	✔

Note:

- Final recommendations on power density will be based on actual liquid or gas composition, etc - consult the factory.
- Flange material must be chosen for compatibility with tank material and product being heated.
- Ensure that vessel wall is of adequate strength to carry heater if unsupported.
- Ensure that connection lugs are adequately sized, all electrical connections are properly tightened, and correctly rated wiring is used.
- Make allowances for servicing of heater (withdraw space, lifting access, etc).

Control:

- GRIMWOOD can provide full three phase Thyristor-power units. These are available with three wire star or delta, four wire star with neutral and six wire open delta load configurations. These units easily interface with your plant PLC and SCADA systems.

FLANGED CIRCULATION HEATERS

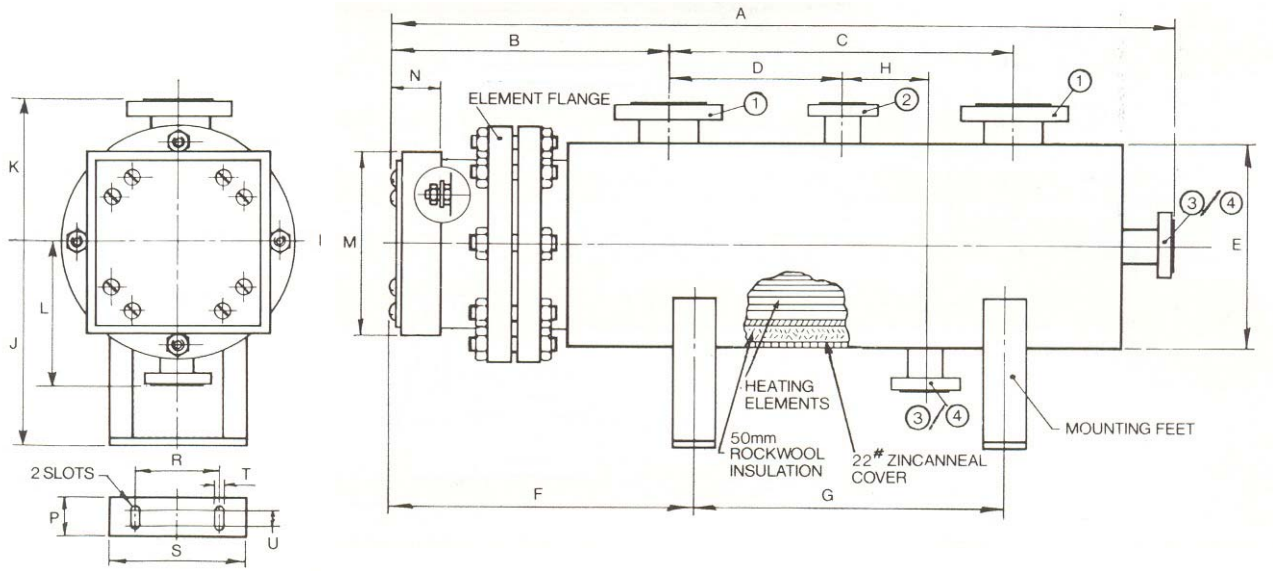
Grimwood Flanged Circulation Heaters are designed to utilise a Grimwood Flanged Immersion element bundle in a compatable pressure vessel. Vessels are available in accordance with AS1210, ASME and European PED requirements.

• Vessel designs are specified individually to meet the requirements of each application.

• There is the opportunity to specify the operating temperatures and pressures.

• Special corrosion prevention methods, or materials of construction can be accomodated.

• Thermal insulation options include mineral fibre and for low temperature applications polyurethane foam.



INFORMATION TO BE SUPPLIED BY THE PURCHASER TO THE DESIGNER/MANUFACTURER

FOR THE SUPPLY OF A PRESSURE VESSEL TO AS 1210-1977 + AMENDMENTS

Note: This information refers to appendix E of AS1210 and other clauses therein as noted.

E1 GENERAL To assist in ensuring that the completed vessel will comply with the requirements of AS 1210-1977 + amendments the information listed in Paragraphs E2 to E7, inclusive, should be provided by the purchaser to the designer/manufacturer not later than the placement of the order.

The purchaser should include such additional requirements which are necessary to enable the vessel to carry out its intended function in a satisfactory manner.

E2 DESIGN To enable the vessel to be designed in accordance with the minimum requirements (Clause 3.1.2), the following information should be supplied by the purchaser:

NOTE: Where the purchaser is responsible for the design (see Clause 3.1.2) some or all of these items may, by agreement, be omitted.

(a) Size and overall dimensions.
(b) Number, size, location and type of connections and openings.
(c) Type and mode of support.
(d) Design pressure and design temperature.
(e) Operating pressure and operating temperature, and if vessel is to operate below 20°C, the design minimum temperature and coincident pressure.
(f) Number of operating cycles expected from intended service of vessel.
(g) Material to be used and corrosion allowance (if equivalent materials are to be used this should be stated—see Clause 2.3).
(h) Classification of vessel (see Clause 1.7).
(i) Nature of contents and type of gas, if vessel is to be used for liquefied gas storage.
(j) Statement whether vessel is to be used as a transport vessel.
(k) Any excessive loads to be applied to nozzles or other parts of vessel (see Clause 3.19.10.1(b)).

In addition to the minimum requirements of this Standard, the purchaser may require other features to be incorporated. These may rule out permissible alternatives as allowed by the Standard; require a higher quality workmanship; or require optional features to be incorporated. The following additional items may then have to be considered:

(i) Special tolerances on dimensions and machined surfaces.
(ii) Specific weld details.
(iii) Surface treatment and finishes internal and external.
(iv) Insulation—cold or hot—as required.
(v) Additional heat treatments.
(vi) Specific welding procedures to be used.
(vii) Specific inspection techniques to be used, e.g. ultrasonic or magnetic particle examination.
(viii) Supply and installation of instruments, valves, safety valves and the like (see Clause 8.1.1).
(ix) Specific details on flanges, flange to nozzle connections, nozzle to shell connections, tubeplate to shell connections, and the like.
(x) Lifting lugs and associated reinforcements.
(xi) Limitation on weight (e.g. transport vessels).
(xii) Others.

E3 VERIFICATION OF DESIGN Where the vessel is designed by the manufacturer, the purchaser should ensure that the manufacturer obtains the design verification in accordance with the AS 3920.1. The purchaser should also state whether the design, specifications and drawings made by the manufacturer are to be accepted by the purchaser prior to start of manufacture.

NOTE: Where the vessel is designed by the purchaser it is expected that the purchaser will himself be responsible for ensuring appropriate design verification.

E4 INSPECTIONS The purchaser should specify on the order any additional inspections required to be made and the stages at which these are to be carried out.

E5 TESTING Where special tests, such as pneumatic testing (see Clause 5.11), corrosion testing (see Clause 5.17), leak testing (see Clause 5.13.4) and similar, are required, these shall be specified.

E6 DISPATCH The purchaser should specify on the order, any particular requirements regarding cleaning, sealing, transportation and protection during transportation of vessel see Section 9).

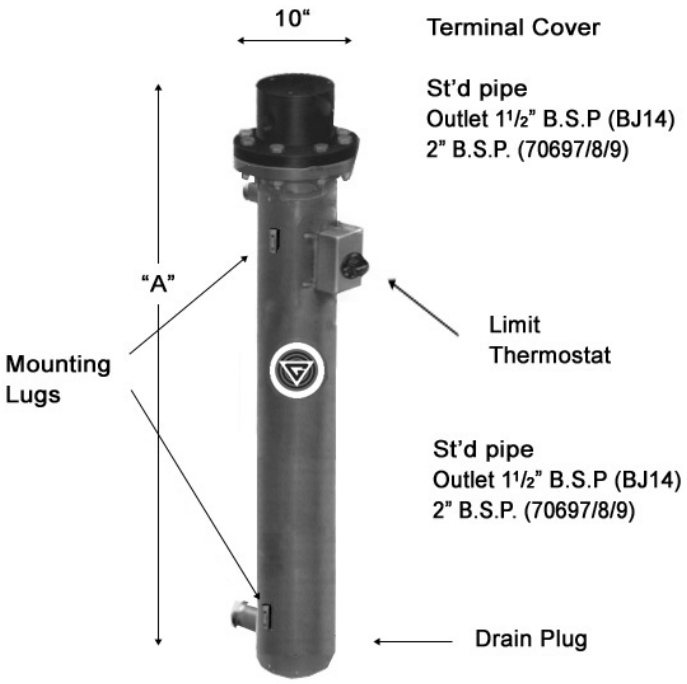
E7 CERTIFICATION AND DOCUMENTATION The purchaser should specify any data required from the manufacturer (see Appendix F).

SWIMMING POOL HEATERS

type BJ14A000, BJ14B000, 70697, 70698, 70699

Construction: "U" shaped tubular elements are mounted in a stainless steel flange, the element assembly is then attached to a heavy wall stainless cylinder.
Elements are rated at 240 volt, and heaters are supplied connected for 415V/240V.
3-phase supply. Standard control voltage is 240V.

Installation: Each heater is supplied with protective thermostat. A flow switch, control thermostat and magnetic contactor will also be required, and are available as optional extras.
These units are designed to suit a variety of water heating applications such as spa pools, swimming pools, and hot water circulation systems where pressure vessels are not required.



SPECIFICATIONS: 240/415 V			
PART No	**kW**	**DIM "A"**	Multiples of kW nominated can be achieved by connecting standard heaters in series flow.
BJ14A000	30	40" (1016 mm)	
BJ14B000	45	51" (1295 mm)	
70697	90	56" (1422 mm)	
70698	60	56" (1422 mm)	
70699	70	56" (1422 mm)	

LIGHTWEIGHT CIRCULATION HEATERS

Mounting Instructions:

1. a) If heater is installed horizontally, inlet and outlet pipes must be in the uppermost position. Preferably a 1 ½" incline should be used with the terminal box end of the heater in the uppermost position,
b) If installed vertically the inlet line must be at the bottom of the heater with the terminal end at the top.

2. After heater is mounted, make piping connections as shown in attached diagram. If heater is mounted above water level of the pool a non-return valve should be fitted to the inlet pipe of the heater or alternatively the piping should be arranged to keep heater full at all times (see sketch below).
A flow switch or pressure switch should be fitted to the outlet pipe from the heater to prevent the heater operating under a no flow condition.

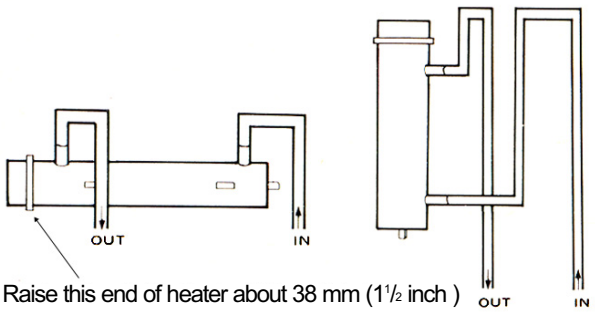
3. Piping connections are as follows:
a) BJ14A000, BJ14B000: 1 ½" BSP Male threaded pipe.
b) 70697, 70698 and 70699 series: 2" BSP Male threaded pipe.

WARNING:
UNDER NO CIRCUMSTANCES MUST STOP COCKS BE FITTED TO THE INLET AND OUTLET OF THE HEATER WITHOUT FITTING SUITABLE VENT BETWEEN THE STOP COCK AND HEATER.

4.

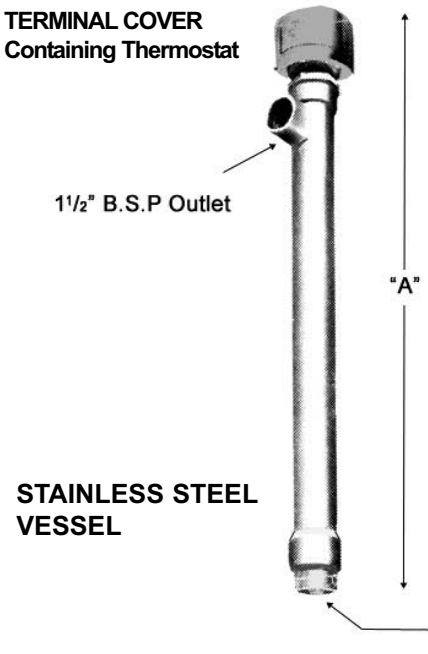
PART No	MINIMUM FLOW RATE
BJ14A000	4540 litres/h
BJ14B000	6536 litres/h
70697	11804 litres/h
70698	13620 litres/h
70699	18160 litres/h

These maximum flow rates are based on maximum heater efficiency. Where flow rate is unknown or below this level, it should be at least sufficient to allow only a small temperature rise across the heater. If noticeably hot water comes from heater, flow rate is too low. Change in temperature across heater should be just detectable by placing hand on heater outlet pipe.



SPA POOL HEATERS

type FW19A000, FW19B000, FW19C000



MINIMUM FLOW
through heaters for
best results
10 kW - 2180 l/hr
15 kW - 3270 l/hr

SPECIFICATIONS: 240/415 V			
PART No	**kW**	**DIM "A"**	**WEIGHT**
FW19A000	10	33" (838 mm)	7kg
FW19B000	15	43" (1092 mm)	9kg
FW19C000	20	50" (1270 mm)	11kg