

**B** | **BACKER  
HEATROD**

**BRINGING WARMTH  
TO YOUR WORLD**





Immersion heating is still the most efficient way to heat liquids quickly and safely. Often the key is the knowledge of which heater to apply to which type of media. Our industrial range of immersion heaters covers all the angles.

## Industrial, Digital and Light Industrial/Commercial Immersion Heaters

### HR Range



### HRi Range

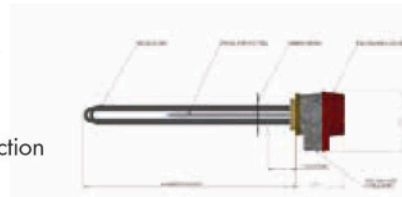


### HRD Range



### HR Range Immersion Heater

The HR Range of immersion heaters are designed for commercial and light industrial applications. The terminal box is proven for ease of wiring and flexible for access in all types of locations. Along with the standard range detailed we also manufacture using different levels of element sheath protection depending on the environment which the heater is being installed into.



- Key Features:**
- IP55 Rotatable Terminal Cover
  - Incoloy 800 Sheath
  - For Use in Water in Commercial/Light Industrial Applications
  - Separate Power and Control Glands
  - Dual Thermostat Pocket
  - Large Range of Thermostats available
  - Unique Design offers both Single and Three Phase Installation



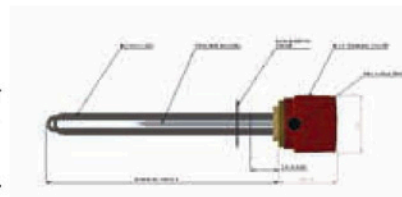
PART No.			(kW)	(V)	Connection	Immersed Length (in/mm)	Element Diameter (mm)	No. Elements	Watts Density (W/cm <sup>2</sup> )	Add Suffix	Temperature Range (°C)	Cut-Out Temperature (°C)
2 1/4" BSP	2" BSP	1 3/4" BSP										
HR311A	HR311B	HR311C	3	240/415	1/3PH	11 / 280	8	3	8.5	A	50 - 80	45 - 95
HR616A	HR616B	HR616C	6	240/415	1/3PH	16 / 406	8	3	11			
HR624A	HR624B	HR624C	6	240/415	1/3PH	24 / 610	8	3	7			
HR636A	HR636B	HR636C	6	240/415	1/3PH	36 / 914	8	3	4.6	B	45 - 120	N/A
HR916A	HR916B	HR916C	9	415	3PH	16 / 406	8	3	16.5			
HR924A	HR924B	HR924C	9	415	3PH	24 / 610	8	3	10.5			
HR936A	HR936B	HR936C	9	415	3PH	36 / 914	11	3	5.2			
HR1236A	HR1236B	HR1236C	12	415	3PH	36 / 914	11	3	6.9			

\* For example: a HR616B 2" 6kW 16" immersion heater with a 45-120°C thermostat range would become a HR616BB

Standard product comes with control and cut-out thermostat (Temperature Range: 13-65°C. Cut-out: 87°C)

### HRi Range Immersion Heater

The HRi Range of immersion heaters are designed specifically for high usage environments with a maximum of 8.5W/cm<sup>2</sup>. This heater is ideal for use in water and chemical applications, due to the low watts density of the element sheath. With Incoloy 825 elements fitted as standard this heater offers resistance to aggressive liquids and hard water process applications.



- Key Features:**
- IP67 Rotatable Terminal Cover
  - Incoloy 825 Sheath
  - Low Watts Density (8.5W/cm<sup>2</sup> Max)
  - Separate Power and Control Glands
  - Dual Thermostat Pocket
  - Large range of Thermostats available
  - Unique design offers both Single and Three Phase Installation



PART No.			(kW)	(V)	Connection	Immersed Length (in/mm)	Element Diameter (mm)	No. Elements	Watts Density (W/cm <sup>2</sup> )	Add Suffix	Temperature Range (°C)	Cut-Out Temperature (°C)
2 1/2" BSP	2" BSP	1 3/4" BSP										
HRI311L	HRI311A	HRI311B	3	240/415	1/3PH	11 / 280	8	3	8.5	A	50 - 80	45 - 95
HRI624L	HRI624A	HRI624B	6	240/415	1/3PH	24 / 610	8	3	7			
HRI636L	HRI636A	HRI636B	6	240/415	1/3PH	36 / 914	8	3	4.6			
HRI930L	HRI930A	HRI930B	9	415	3PH	24 / 610	8	3	8.2	B	45 - 120	N/A
HRI936L	HRI936A	HRI936B	9	415	3PH	36 / 914	11	3	5.2			
HRI1236L	HRI1236A	HRI1236B	12	415	3PH	36 / 914	11	3	6.9			

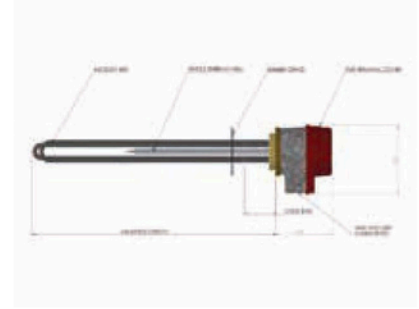
\* For example: a HRI624B 2" 6kW 16" immersion heater with a 45-120°C thermostat range would become a HRI624BB

Standard product comes with control and cut-out thermostat (Temperature Range: 13-65°C. Cut-out: 87°C)



## HRD Range Immersion Heater

The HRD Range is designed to be heavy duty with flexibility in mind for easy installation into multiple industrial liquid heating applications. The terminal box is proven for ease of wiring and flexible for access in all types of locations. The digital controller can be programmed and wired for both single or 3-phase operation. The product has a wide temperature range aimed at industrial environments. Along with the standard Incoloy sheath we also manufacture using different levels of element sheath protection depending on the environment which the heater is being installed into.



- Key Features:**
- IP55 Rotatable Terminal Cover
  - Incoloy 800 Sheath
  - External Input available
  - Unique Design Offers Single and Three Phase Configuration
  - Adjustable Electronic Cut-Out
  - Automatic Reset Mechanical Cut-Out
  - Highly Accurate Digital Control
  - Hysteresis Control
  - Interchangeable Manual Cut-out (75, 95, 110, 220°C)

PART No.			(kW)	(V)	Connection	Immersed Length (in/mm)	Element Diameter (mm)	No. Elements	Watts Density (W/cm <sup>2</sup> )	Add Suffix	Temperature Range (°C)	Mechanical Cut-Out Temp (°C)
2 1/4" BSP	2" BSP	1 3/4" BSP										
HRD311A	HRD311B	HRD311C	3	240/415	1/3PH	11 / 280	8	3	8.5	A	0 - 70	75
HRD616A	HRD616B	HRD616C	6	240/415	1/3PH	16 / 406	8	3	11			
HRD624A	HRD624B	HRD624C	6	240/415	1/3PH	24 / 610	8	3	7			
HRD636A	HRD636B	HRD636C	6	240/415	1/3PH	36 / 914	8	3	4.6	B	0 - 85	90
HRD916A	HRD916B	HRD916C	9	415	3PH	16 / 406	8	3	16.5			
HRD924A	HRD924B	HRD924C	9	415	3PH	24 / 610	8	3	10.5	C	0 - 105	110
HRD936A	HRD936B	HRD936C	9	415	3PH	36 / 914	11	3	5.2			
HRD1236A	HRD1236B	HRD1236C	12	415	3PH	36 / 914	11	3	6.9	D	0 - 215	220

Maximum kW Rating for use with the digital control box is 12kW 415V

\* For example: a HRD616B 2" 6kW 16" immersion heater with a 0-85°C thermostat range would become a HRD616BB



**HRF Range**



**Customised Solutions - Bespoke Product Design**

## HRF Range Flanged Immersion Heater

The HRF Range of flanged immersion heaters are a bespoke product designed specifically to customer requirements. In most cases the heating elements are fully welded into the required flange plate. For certain applications where titanium elements are required mechanical compression fittings are used as an alternative. There are a variety of different control boxes available from Mild Steel powder coated to Stainless Steel 316 for more durable applications.

Heatrod offer various controls including mechanical temperature controls and also a fully digital standalone heater which displays the current heater settings for more accurate requirements.

**For full details on flange specifications and standard heaters please see the HRF Data Sheets.**

- Key Features:**
- IP66 Terminal Cover
  - Various Sheath materials available (Incoloy 800, 825, Stainless Steel 321, 304, 316, 309 & Titanium)
  - Various Sheath Diameters (8.0mm, 9.5mm, 10.9mm & 12.0mm)
  - External Input available
  - Standard and Bespoke Flanges available (PN, ANSI, BS)
  - Typical Flange Diameters 90 - 645mm
  - Hysteresis Control
  - kW rating from 1kW - 500kW dependant on Flange size
  - Range of Gasket Materials



## Industrial vats and Tank Heaters

**The HRV range from Heatrod Elements is a bespoke product designed for heating vats and Tanks. This product is specifically designed for the solution/medium it is intended to heat.**

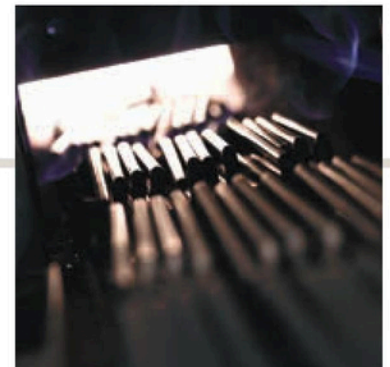
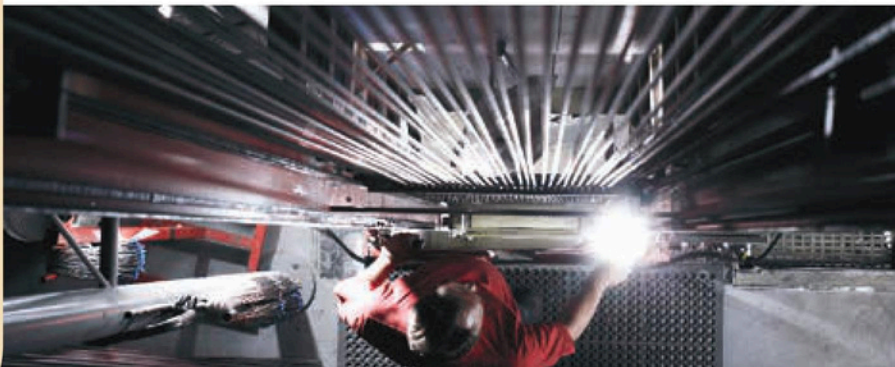
Due to the wide range of applications for this product each heater is designed to be the optimum watts density and power for the solution/medium being heated. For example vat heaters used in oils require a very low watts density compared to water or the heater may get too hot and burn the oil. Our proven range of products are used within a vast range of industrial heating applications and are designed bespoke to customer requirements (let us do the hard work!). We recognise that industrial applications require a high level of reliability and availability is key for this environment.

Please see some examples below. If the solution you require is not listed please contact us.

LEGEND	SHEATH MATERIAL															
	Aluminium	Carbon Steel	Copper	Cast Iron	Inconel 600	Incoloy 800	Lead	Monel 400	304, 321, 347 SS	316 SS	20 Cb-3 SS	C276 Hastelloy	Quartz	Titanium	Teflon	Suggested Density (W/cm <sup>2</sup> )
A = Good to Excellent																
B = Fair to Good																
C = Depends on Conditions																
X = Not Suitable																
BLANK = Data Not Available																
SOLUTION	CORROSION RATING															
Anodizing	X	X	X	X	X	X	A	X	X	X	A	A	A	X	A	3.5 - 4
Castor Oil	BC	A	AC	A	A	A	A	A	BC	B	A	A	A		A	3.5 - 4
Lubricating Oil	B	A	A	A	A	A	A	B	B	B	A	B	A	A		3.5 - 4
Milk	A	B	C		A	A	X	C	A	A	A	A				4.6 - 6.2
Nitric Acid (20%)	X	X	X	BC	BC	AC	X	X	AC	AC	A	AC	A	A	A	2.3
Plating Solutions - Brass										B	AC	AC	A	A	A	3.5 - 5.5
Plating Solutions - Chrome (40%)	X	X	X	X	X	X		X	BC	B	AC	AC	A	A	A	2.1 - 3.1
Water - Potable	C	X	B		A	A		B	BC	BC	A	B	A	A	A	7.7 - 12
Water - Sea	X	X	BC	X	BC	AC		A	C	BC	BC	AC	A	A	A	8.5
Ethylene Glycol	A	A	B	B	B	A	X	B	B	A	A	A	A	A	A	3.5 - 4.7
Vegetable Oil	B	B	BC		B	A		B	B	B	A	AC				3.5 - 4
Whisky	X	X	BC		B			A	A	A	B	AC				8.5

Heatrod also offer digital and mechanical controls for the HRV range which can be included in the mounting box provided with all heaters. This gives customers a turnkey product which is ready to install. Alternatively if there are numerous heaters being installed we can off a standalone control panel to allow the heaters to be controlled via a central control panel, which can then be mounted alongside existing panels.

The controls can vary from basic control function i.e. on/off, or can include timers, solid state relays and contactors to improve efficiency and reduce noise.





## Air and Water Cooled Resistors



### Air Cooled Resistors

**Air cooled resistors are used for a wide range of applications from cranes to land based drilling rigs.**

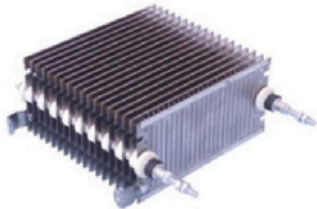
This type of resistor is normally used where water-cooled resistors cannot be used or are considered too expensive. The units are normally not used in ATEX zones due to the surface temperature of the resistor elements.

### Water Cooled Resistors

**Water cooled resistors can be used on oil rigs and ships where space is limited, or the highest degree of up time is required.**

Both seawater cooled and fresh water cooled versions are available. ATEX certified equipment can also be supplied. We can supply a wide range of materials, the most common used is titanium, Incoloy and AISI 316L.

If other materials are required, please contact our sales department. Resistors can be supplied with or without vessels.



### Braking Resistors

**Braking resistors can be used for various applications from drives to trains.**

Braking a train is always done by electric resistors. Mechanical brakes wear too fast and maintenance on mechanical brakes is too expensive. During braking the kinetic energy of the train is transformed into electric energy and, if possible, fed back to the overhead line.

### Aluminium Housed Compact Brake Resistors

**Aluminium housed compact brake resistors are insulated and can easily be mounted in compact constructions.**

They are specially constructed for high pulse loads compared to the average load. The nominal load can be improved by forced air cooling or by mounting the resistors on a heat sink.

The resistor elements are wirewound on mica support sheets.





### 3 Phase (Three Phase) Electronic Contactor (RC 33 Heating Elements)

This range has a rated operation voltage up to 480VAC 50/60Hz, with a rated operational current up to 10/20A AC-1 and a Control voltage from 5-24VDC or 24-230VAC/DC. These units also include built-in varistor protection, LED indication and IP20 protection.

Item selection and technical specification					
Load AC-1/51 Heating Element	Control Voltage	Module Width	Item number by 24-480VAC 50/60Hz Line Voltage	Load in kW by 400V	EAN Nr. 5705 609
10A	5-24 VDC 24-230 VAC/DC	45mm	RC 33 DD 4010 RC 33 DA 4010	Max. 6.9	002 381 002 343
20A	5-24 VDC 24-230 VAC/DC	90mm	RC 33 DD 4020 RC 33 DA 4020	Max. 13.9	002 398 002 350

Load AC-1/51 Heating, Control Voltage and Module Width are all common for each item

## Solid State Relays

**The EPI range of Solid State Relays is an Industrial Single Phase relay with triac or SCR output which is the most widely used in industry applications.**

The relay can be used for resistive, inductive and capacitive loads. The control input voltage is 4-32VDC or 90-280VAC, output current rate 10A, 25A, 40A, 60A, 80A, 100A @ 48-280VAC or 48-660VAC.



Item Number	Load (A)	Load Voltage	Control Voltage
EPI240D10-L	10A	240VAC	4-32VDC
EPI240D25-L	25A	240VAC	4-32VDC
EPI240D40-L	40A	240VAC	4-32VDC
EPI240D60-L	60A	240VAC	4-32VDC
EPI240D80-L	80A	240VAC	4-32VDC
EPI240D100-L	100A	240VAC	4-32VDC
EPI240A25-L	25A	240VAC	90-280VAC
EPI240A60-L	60A	240VAC	90-280VAC

Item Number	Load (A)	Load Voltage	Control Voltage
EPI600D25-L	25A	600VAC	4-32VDC
EPI600D40-L	40A	600VAC	4-32VDC
EPI600D60-L	60A	600VAC	4-32VDC
EPI600D80-L	80A	600VAC	4-32VDC
EPI600D100-L	100A	600VAC	4-32VDC
EPI600A25-L	25A	600VAC	90-280VAC
EPI600A60-L	60A	600VAC	90-280VAC



**The EPQF range of Solid State Relays is an Industrial Three Phase AC output solid state relay. Control voltage is either 90-280VAC or 4-32VDC and load current range from 25 to 100 Amps.**

Load voltage range 48-660VAC. SCR output, dielectric strength 4000Vrms.

Item Number	Load (A)	Load Voltage	Control Voltage
EPQF480D25	25A	480VAC	4-32VDC
EPQF480D40	40A	480VAC	4-32VDC
EPQF480D60	60A	480VAC	4-32VDC
EPQF480D80	80A	480VAC	4-32VDC
EPQF480D100	100A	480VAC	4-32VDC
EPQF480A25	25A	480VAC	90-280VAC
EPQF480A40	40A	480VAC	90-280VAC
EPQF480A60	60A	480VAC	90-280VAC
EPQF480A80	80A	480VAC	90-280VAC
EPQF480A100	100A	480VAC	90-280VAC

### Advantages Over Mechanical Contactors and Relays

- Silent and faster switching operation
- No arcing of contacts, can be used in explosive or flame proof application such as ATEX
- Longer lasting as there are no moving parts susceptible to wear and tear
- Less sensitive to factors such as vibration, mechanical shock and external magnetic field

Heating is nothing without control and our range of industrial products are engineered not only to provide our customers with the complete heating and control package but also to provide the relevant components in order to build and maintain their own heating applications.

## Solid State Contactors



**The P Line Range of Solid State Contactors are built using low thermal expansion (LTE) technology and are available for heating/resistive applications up to 63A.** The P Line Range is available in different versions including Single, Dual or Three Phase Contactors. These units are suitable for a variety of applications wherever downtime is to be reduced in the application.

### 1 Phase (Single Phase) Electronic Contactor (RC 11 Heating Elements)

This range has a rated operation voltage up to 480VAC 50/60Hz, with a rated operational current up to 15/30/50/63A AC-1 and a Control voltage from 5-24VDC or 24-230VAC/DC. These units also include built-in varistor protection, LED indication and IP20 protection.

Item selection and technical specification								
Load AC-1/51 Heating Element	Control Voltage	Module Width	Item number by 12-240VAC 50/60Hz Line Voltage	Load in kW by 230V	EAN Nr. 5705 609	Item number by 24-480VAC 50/60Hz Line Voltage	Load in kW by 400V	EAN Nr. 5705 609
10A	5-24 VDC	22.5mm	RC 11 DD 2310	2.3	002 152			
15A	5-24 VDC 24-230 VAC/DC	22.5mm	RC 11 DD 2315 RC 11 DA 2315	Max. 3.5	002 169 002 077			
30A	5-24 VDC 24-230 VAC/DC	22.5mm	RC 11 DD 2330	Max. 6.9	002 176 002 084	RC 11 DD 4030 RC 11 DA 4030	Max. 12.0	002 213 002 121
50A	5-245-24 VDC 24-230 VAC/DC	22.5mm				RC 11 DD 4050 RC 11 DA 4050	Max. 20.0	002 220 002 138

*Load AC-1/51 Heating, Control Voltage and Module Width are all common for each item*

### 1 Phase (Single Phase) Dual Pole Electronic Contactor (RC 22 Heating Elements)

This range has a rated operation voltage up to 480VAC 50/60Hz, with a rated operational current up to 30/50A AC-1 and a Control voltage from 5-24VDC or 24-230VAC/DC. These units also include built-in varistor protection, LED indication and IP20 protection.

Item selection and technical specification					
Load AC-1/51 Heating Element	Control Voltage	Module Width	Item number by 24-480VAC 50/60Hz Line Voltage	Load in kW by 400V	EAN Nr. 5705 609
1 accumulated	5-24 VDC 24-230 VAC/DC	45mm	RC 22 DD 4030 RC 22 DA 4030	Max. 12.0	002 305 002 268

<sup>1</sup>The indicated loads are accumulated. E.g. the total sum of the current in L1 and L2 (1x 30A / 1x 50A or 2x 15A / 2x 25A)

*Load AC-1/51 Heating, Control Voltage and Module Width are all common for each item*

### 3 Phase (Three Phase) Dual Pole Electronic Contactor (RC 32 Heating Elements)

This range has a rated operation voltage up to 480VAC 50/60Hz, with a rated operational current up to 15/25A AC-1 and a Control voltage from 5-24VDC or 24-230VAC/DC. These units also include built-in varistor protection, LED indication and IP20 protection.

Item selection and technical specification					
Load AC-1/51 Heating Element	Control Voltage	Module Width	Item number by 24-480VAC 50/60Hz Line Voltage	Load in kW by 400V	EAN Nr. 5705 609
15A	5-24 VDC 24-230 VAC/DC	45mm	RC 32 DD 4015 RC 32 DA 4015	Max. 10.4	002 428 002 404
25A	5-24 VDC 24-230 VAC/DC	90mm	RC 32 DD 4025 RC 32 DA 4025	Max. 17.3	002 435 002 411

*Load AC-1/51 Heating, Control Voltage and Module Width are all common for each item*



Heatrod Elements are based in Manchester and have been manufacturing electric heating elements and associated equipment for over 50 years.

This level of experience has allowed the business to develop into industrial products and projects whilst still retaining a base manufacturing capability for heating elements. To guide you in our level of expertise we have produced brochures which introduce you to the three main aspects of our industrial business: **Elements, Industrial** and **Projects**.



## ELEMENTS

**In our Elements brochure you will find reference to all the different types of electric heating elements we produce both in our Manchester factory and in our group companies around the world.**

This ranges from the traditional tubular heating elements which remains the most common and versatile form of electric heating available through to more specialist technologies such as flexible film elements.



## PROJECTS

**Industrial heating processes often demand a level of practical engineering in their design and application in the field.**

Our team of application engineers are trained to be able to consult with our customers in solving their process heating challenges and to be able to provide technically and commercially competitive solutions to our customers. Add to this our centre of competence in Sweden and our ability to manufacture and install locally and you have access to a full project delivery team ready to support you.



Industrial/  
Projects



Energy/  
Environment



Advanced  
technology



Commercial  
equipment



Home  
appliance



Transportation



HVAC



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