



UNDERFLOOR HEATING & HEAT PUMPS

TRADE PRICE LIST

In partnership with

RADICAL
HEATING SOLUTIONS LTD

Your first choice partner for underfloor heating and heat pumps

Local Service for Leading Brands

Radical Heating Solutions supply a comprehensive range of leading branded heating products and components into the plumbing, heating and HVAC industries.

In addition we are principal distributors of Aermec domestic heat pumps in the UK.

Our Objectives

We supply best in class products which are manufactured to the highest standards and give technical support and guidance on the most relevant solution to fit every bespoke situation.

We offer total solutions for renewable energy heating, cooling, dehumidification and swimming pool installations in domestic, commercial and industrial applications.

International and National distribution

With independent warehousing and distribution facilities in Lancashire and Worcester we offer national coverage to our UK customers and deliver our underfloor heating and heat pump products next day to our ever increasing customer base.

Whilst we are a national business we offer local service to our customers by working closely at the point of enquiry to offer pre and post-sale support in every application.

Technical Support

In particular we have been at the forefront of introducing renewable heating technologies in the UK and are experts in underfloor heating systems and heat pump applications.

Our tailor made heating solutions are reinforced with rigorous technical integrity and are supported pre and post installation by our dedicated technical team.

With more than 30 years' experience supporting merchants, installers and specifiers both internationally and in the UK we are extremely proud of the strong relationships we have with our partners and believe that it is our work together approach that resonates most with our client base.



Best Price Guarantees*

We guarantee to beat any like for like quotation for any underfloor heating system where you see the Best Price Guarantee logo in this brochure.

Ordering & Technical Support

Call our Operations team on

0161 711 0612

(multiple lines)

All prices quoted exclude VAT which shall be charged at the current rate
Radical Heating Solutions reserves the right to alter specification without notice

Radical Heating Solutions Ltd (The Company) guarantee to beat any like for like quotation for full underfloor heating systems of identical product specification and integrity provided The Company hold all components in stock at the time of quotation. Individual product prices may vary but the complete system price match is guaranteed as long as component selection and specification is exact. System integrity will not be compromised to price match and the heating design must be approved by The Company. Radical reserve the right to ask for written evidence of like for like product specification, delivery, service and warranties. Own label products will not be price matched. Best Price offer, only applies to full underfloor heating systems which have been technically approved by The Company and does not apply to individual components or systems designed by other parties. The Company price ruling is final.

Radical's UK Locations



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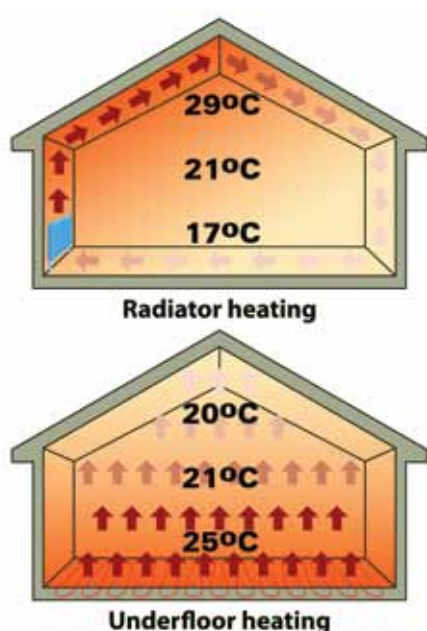
Energy Saving Solutions from Radical

Radical underfloor heating systems produce frictionless radiant heat silently whilst heating your home or place of work. Heat is radiated from the floor and this heat is transferred to the objects in the room including the walls, furniture and people.

Energy saving

With UFH, radiant heat is absorbed and much less heat is lost when compared to traditional radiator heating systems. Radiators rely on convection to raise the air temperature in a room and require very high water system temperatures increasing heating bills significantly when compared to underfloor heating running costs.

As our underfloor systems are incredibly efficient, lower water temperatures are needed to achieve thermal comfort and this fact alone considerably reduces energy costs.



Space saving

With our modern underfloor heating systems, you will experience silent uniform heat distribution with no cold spots in the room. The heat distribution system is completely hidden from view and all floor and wall space can be utilised.

Installation

Installation is simple and can often be completed on a single first fix visit only, there is no need for soldering or brazing so installation is much faster and safer.

Compatibility

Radical underfloor heating systems are compatible with air and ground source heat pumps, condensing gas and oil boilers, solar heating and other renewable energy sources such as wood chip and biomass boilers

System design

We ensure that every underfloor heating design will be tailored specifically to the needs of each individual project. Our precise system designs for domestic and commercial applications include detailed pipe layouts plus full instructions covering all characteristics of each system ensuring you have complete confidence in your installation.

WE OFFER:

- World class products
- Design service
- Controls packages
- Technical support
- Commissioning
- Installation service
- Best price guarantees



Case Studies

Malmaison Oxford Castle - Oxford

Oxford Castle was built in 1071 by a Norman Baron. Enlarged through the centuries, as the residence of nobles and illustrious persons in the history of England, from 1888 to 1996 it was used as a prison. Restructured as a complex of historical-tourist interest, it encloses a shopping centre, theatre, bar and restaurants as well as the "curious" Malmaison Hotel, with 96 bedrooms obtained from the rooms of the old prison



The Aermec solution:

Two extra-silenced air to water chillers, with cooling power of 235 kW have been installed in the technical rooms created in the old prison.

O2 Dome - London [Great Britain]

Built in London to commemorate the new century, opened in 2000 and previously known as the Millenium Dome, this impressive site, 365m in diameter, has undergone extensive development. It is now home to a 23,000 seat arena which plays host to major international rock artists and sporting events. It was also chosen as the venue for the Gymnastics and Ice Hockey finals of the London Olympic Games 2012. The development will eventually also house a huge Entertainment District with cinema, exhibition space, music club, restaurants and bars.

The Aermec solution: Four extra-silenced air handling units, models 10, 14, 19, and 22, have been installed in the music club studios.



UNDERFLOOR HEATING

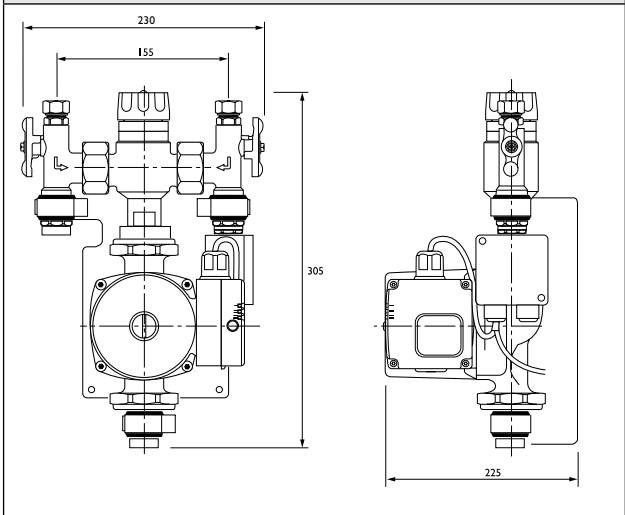


Typical installation

Specifications

Maximum static pressure	10 bar
Maximum temperature	90°C
Adjustable control range	35°C – 60°C
Factory pre-set	35°C (minimum)
Connection sizes	15mm compression (inlet) ½" FBSP (outlets and return)

Dimensions



Underfloor heating is much more efficient than heating with radiators. Radiator systems utilise convection as a means to raise the air temperature in a room and require high water temperatures. Installation is simple and can be achieved on a single fix basis (one visit only), there is no need for soldering or brazing so installation is much faster and safer.

Single Room UFH Control Pack

Features & benefits

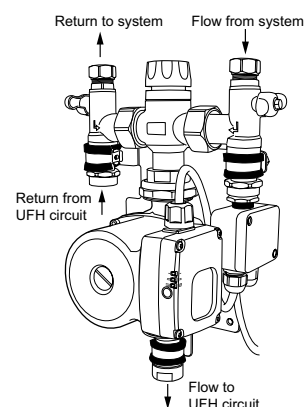
- Easy set up within adjustable range of 35°C to 60°C
- Controls flow temperature to +/- 2°C even with changing boiler flow and return temperatures
- An integrated unit to automatically control underfloor heating temperatures in small areas
- Includes an integrated thermostat for on/off control
- Includes isolating valves as standard
- Pack includes a Grundfos pump as standard but can be supplied with a Wilo pump as an alternative, upon request

Description

The control pack consists of a mixing valve, circulating pump, isolating valves, flow and return connections and fixing kit. Ideal for small areas like kitchens, bathrooms and conservatories.

Single Room UFH Control Pump Pack

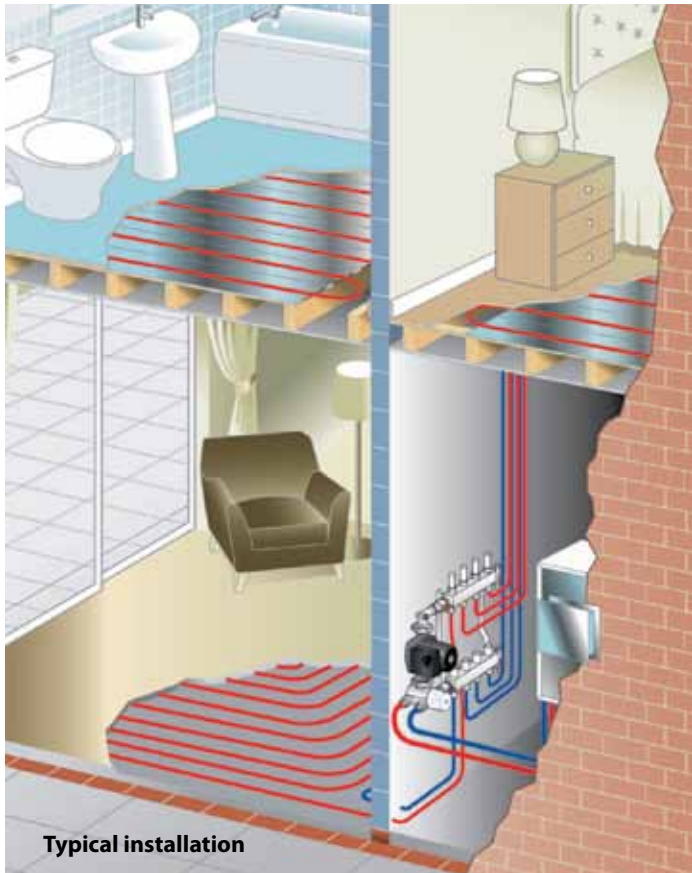
RAD-14	Single room pump pack with mixing valve	£479.00
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Single Room UFH Packages

CODE	Description	List PRICE
RADPACK20M	For room extensions & conservatories up to 20m ² 1 x 125m Coil of 16mm UFH pipe 1 x Single Room Control Unit 1 x Programmable Room Thermostat 200 Pipe clips 2 off 16mm x 2mm Pipe Connectors	£871.00
RADPACK30M	For room extensions & conservatories up to 30m ² 1 x 200m Coil of 16mm UFH pipe 1 x Single Room Control Unit 1x Programmable Room Thermostat 300 x 15mm Pipe Clips 2 off 16mm X 2mm Pipe Connectors	£989.00





Thermomix UHF Control Pack

Features & benefits

- Compact bolt on unit providing quick and simple installation
- Provides controlled mixed temperature water to underfloor heating systems
- Easy set up within the adjustable range of 35 (DegC) to 60 (DegC)
- Controls flow temperature to +/- 2(DegC) even with changing boiler flow and return temperatures
- Nickel plated control pack to match stainless steel UFH manifold
- Blanking cap and pump union can be interchanged, so the pack can be reversed
- Pack includes a Grundfos pump as standard but can be supplied with a Wilo pump as an alternative, upon request

Description

A unique, patented, modular control pack for underfloor heating systems. Designed to be lightweight and compact in order to connect directly onto a standard UFH manifold without the need for extra brackets or support. The control pack consists of a mixing valve, circulating pump, return elbow, manifold adaptor and all necessary seals.

Specifications	
Maximum static pressure	10 bar
Maximum temperature	90°C
Adjustable control range	35°C– 60°C
Factory pre-set	35°C (minimum)
Connection sizes	¾" FBSP (mixer) 1" MBSP (manifold)


Dimensions	

Thermomix UHF Control Pack		
CODE	Description	List PRICE
RAD-13	Thermomix A rated with mixing valve	£405.00

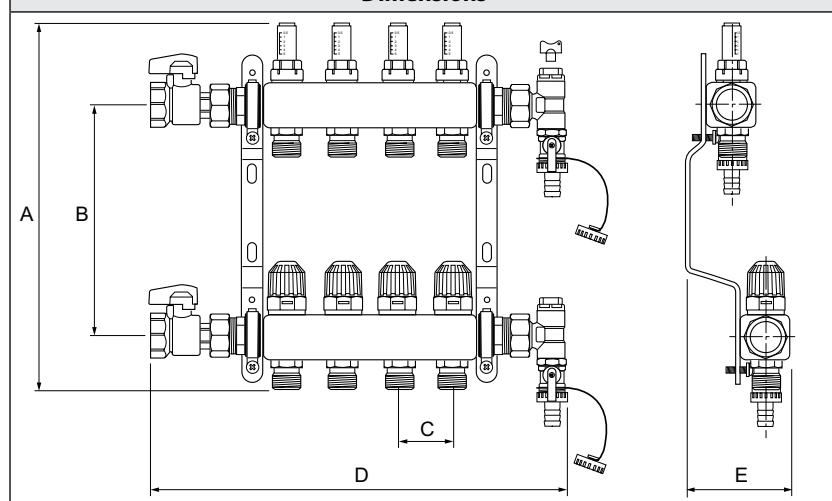
Manifolds

All manifolds supplied complete with isolating valves, manual air vents, flow setting valves, fill and drain valves.

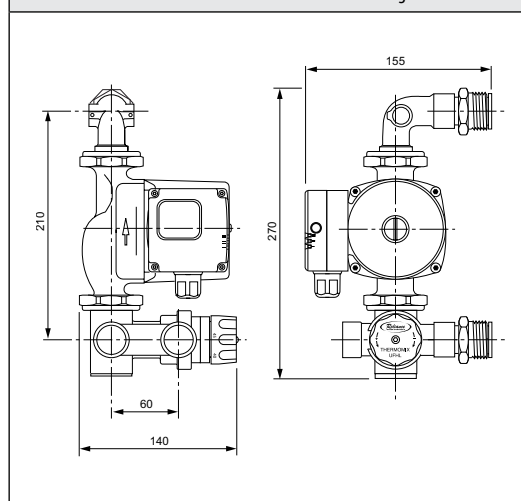
Stainless Steel Underfloor Heating Manifolds

	CODE	PRODUCT	SIZE	A	B	C	D	E	List PRICE
	RAD-02	2 circuit UFH manifold kit	1"	325	210	50	276	90	£196.50
	RAD-03	3 circuit UFH manifold kit	1"	325	210	50	326	90	£204.50
	RAD-04	4 circuit UFH manifold kit	1"	325	210	50	376	90	£227.00
	RAD-05	5 circuit UFH manifold kit	1"	325	210	50	426	90	£275.00
	RAD-06	6 circuit UFH manifold kit	1"	325	210	50	476	90	£294.00
	RAD-07	7 circuit UFH manifold kit	1"	325	210	50	526	90	£346.00
	RAD-08	8 circuit UFH manifold kit	1"	325	210	50	576	90	£362.00
	RAD-09	9 circuit UFH manifold kit	1"	325	210	50	626	90	£397.00
	RAD-10	10 circuit UFH manifold kit	1"	325	210	50	676	90	£418.00
	RAD-11	11 circuit UFH manifold kit	1"	325	210	50	726	90	£455.00
	RAD-12	12 circuit UFH manifold kit	1"	325	210	50	776	90	£487.00

Dimensions



Dimensions for thermomix A rated with mixing valve





Brass FMU2 Underfloor Heating Manifolds


	CODE	PRODUCT	Fitted Length	Ecocirc Pump	Ball Valves	Mixing Valve	Thermo-static Head	Temp Gauge	Flow Setter Valves	Auto Air Vent	List PRICE
	RAD-102	2 circuit UFH manifold kit	400mm	✓	✓	✓	✓	✓	✓	✓	685.00
	RAD-103	3 circuit UFH manifold kit	450mm	✓	✓	✓	✓	✓	✓	✓	701.00
	RAD-104	4 circuit UFH manifold kit	500mm	✓	✓	✓	✓	✓	✓	✓	731.00
	RAD-105	5 circuit UFH manifold kit	550mm	✓	✓	✓	✓	✓	✓	✓	780.00
	RAD-106	6 circuit UFH manifold kit	600mm	✓	✓	✓	✓	✓	✓	✓	798.00
	RAD-107	7 circuit UFH manifold kit	650mm	✓	✓	✓	✓	✓	✓	✓	860.00
	RAD-108	8 circuit UFH manifold kit	700mm	✓	✓	✓	✓	✓	✓	✓	880.00
	RAD-109	9 circuit UFH manifold kit	750mm	✓	✓	✓	✓	✓	✓	✓	920.00
	RAD-110	10 circuit UFH manifold kit	800mm	✓	✓	✓	✓	✓	✓	✓	960.00
	RAD-111	11 circuit UFH manifold kit	850mm	✓	✓	✓	✓	✓	✓	✓	995.00
	RAD-112	12 circuit UFH manifold kit	900mm	✓	✓	✓	✓	✓	✓	✓	1035.00


Manifold Components




Electro Thermic Actuators			
	CODE	SIZE	List PRICE
	RAD-37	230V Actuator	£34.00
	RAD-38	24V Actuator	£34.00


Manifold Connection fittings			
	CODE	SIZE	List PRICE
	RAD-39	Euroconus 16 x 2	£2.95
	RAD-40	Euroconus 15 x 2	£2.95
	RAD-41	Euroconus 12 x2	£2.95
	RAD-69	Jointing couplers	£6.66


Mixing Valves			
	CODE	SIZE	List PRICE
	RAD-42	22mm Heatguard mixing valve	£105.77
	RAD-43	28mm Heatguard mixing valve	£166.00


2 Port Zone Valve			
	CODE	SIZE	List PRICE
	RAD-44	22mm	£54.00
	RAD-45	28mm	£84.00


Grundfos Pump			
	CODE	Description	List PRICE
	RAD-17	Single Grundfos A rated circulating pump	£225.00


Manifold Ball Valves			
	CODE	List PRICE	
	RAD-46	£11.80	


Auto Air Vent		
	CODE	List PRICE
	RAD-47	£6.58

Drain Filling Valve		
	CODE	List PRICE
	RAD-48	£10.92

Manifold Blanking Cap		
	CODE	List PRICE
	RAD-49	£1.82

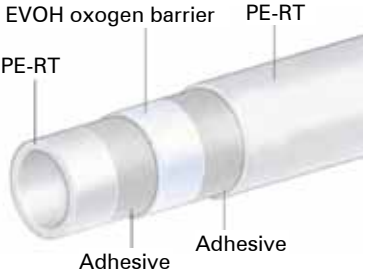
Manifold Flow Meter		
	CODE	List PRICE
	RAD-50	£7.98

Pressure Gauge And Adaptor		
	CODE	List PRICE
	RAD-51	£10.76

Manifold Bleed Valve & Key		
	CODE	List PRICE
	RAD-52	£0.74

Underfloor Heating Pipes And Accessories

PERT Pipe Specification - 75 YEAR WARRANTY

 <p>EVOH oxygen barrier PE-RT PE-RT Adhesive</p>	<p>PERT – EVOH</p> <p>Ethylene vinyl alcohol (EVOH) is a formal copolymer of ethylene and vinyl alcohol. EVOH copolymer is defined by the % ethylene content: lower ethylene content grades have higher barrier properties; higher ethylene content grades have lower temperatures for extrusion. The plastic resin is commonly used as an oxygen barrier in food packaging and petrochemical applications. It is better than other plastics at keeping air out, is highly transparent, weather resistant, oil and solvent resistant, flexible, moldable, recyclable, and even printable. It is also used as a hydrocarbon barrier in plastic fuel tanks and pipes.</p>
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Underfloor Heating Pipes

	CODE	SIZE	List PRICE
	RAD 16	16mm x 2mm Pert Pipe (400m) price per metre	£1.29
	RAD 16AL	16mm x 2mm Pert-Al-Pert price per metre	£1.73
	RAD 12LP	12mm x 1.5mm Pert Pipe price per metre	£1.26

Edge Insulation

	CODE	SIZE	List PRICE
	RAD-60	150mm edge insulation (25m roll)	£34.00


Pipe Conduit

	CODE	SIZE	List PRICE
	RAD-53	Protective Conduit (price per metre)	£1.90

Tacker Gun

	CODE	List PRICE
	RAD-61	£211.11


Clips & Clip Rail

	CODE	SIZE	List PRICE
	RAD-54	40mm Push clips (300 per box)	£0.14 each
	RAD-55	66mm Push clips	£0.14 each
	RAD-56	40mm single hook Tracker clips for staple gun(300 per box)	£0.14 each
	RAD-57	57mm Tracker clips for staple gun(300 per box)	£0.14 each


Pipe Decoiler

	CODE	List PRICE
	RAD-62	£299.00

Clip Rail

	CODE	SIZE	List PRICE
	RAD-58	1m Clip rail with backing adhesive	£4.18

Pipe Bend Support

	CODE	SIZE	List PRICE
	RAD-59	Pipe bend support 14-18mm	£1.46

Pipe Shears

	CODE	List PRICE
	RAD-63	£44.44



Flooring Options



Radical Light Overlay

As part of our range of low floor buildup solutions, we have developed the Radical Light system, incorporating the insulation and underfloor heating pipework within an 18mm or 25mm height. This is an excellent solution in cases where the floor buildup depth is limited – commonly found on refurbishment projects where floor to ceiling heights are fixed.

The Radical Light system can be used in existing and new build applications. It requires a flat and level solid sub floor for the insulation to fully support the floor finish on top. The insulation is pre-grooved to take either 12mm or 16mm underfloor heating pipework and over laid with foil to assist the distribution of heat.

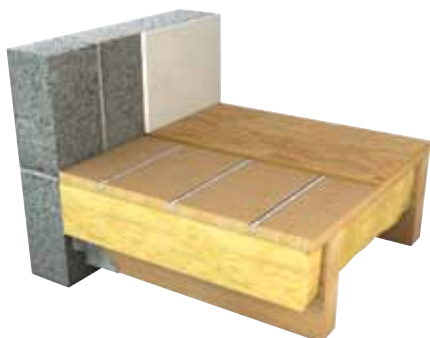


Radical Screed Board

Radical Screedboard is a superb, high density and flexible screedboard solution for laying over a concrete subfloor. It is particularly recommended for tiled floor areas because ceramic tiles can be laid directly over the top with no additional layers required. Boards are high density with impressive sound insulation and heat retention qualities.

The system uses a 12mm PE-RT pipe which we can supply separately.

The pre-grooved channels can be used for all pipe run combinations. The panels can also be easily routed where required for added flexibility.



Radical Timber Board

The Radical Timber Board System is another development of our overlay range, which is designed to provide a structural flooring solution that incorporates a 12mm underfloor heating pipe. A 6mm ply is required to be fixed down over a high grade chipboard at 150mm spacings. This protects the top of the pipe and provides extra floor strength. Floor finishes can be installed directly on top of this to complete the floor buildup.

List prices for Light Overlay EPS 150 Thermal conductivity 01035W/mk

CODE	Board Depth	Board Length	Board Width	Pipe size mm	No. of grooves	Returns	Pipe Centres	Area per Board	Board	m ²
RAD-150	25	1200	1200	15 or 16	6	Radius	200	1.44	£34.01	£23.62
RAD-151	25	1200	1200	15 or 16	8	Bulb	150	1.44	£35.89	£24.92
RAD-152	18	1200	600	12	4	Radius	150	0.72	£14.82	£20.58

List prices for Screed Board Pre grooved panels



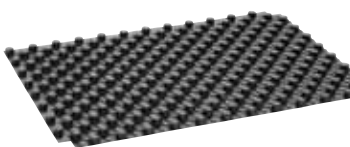

CODE	Board Depth	Board Length	Board Width	Pipe size mm	No. of grooves	Type	Pipe Centres	Area per Board	Board	m ²
RAD-153	18	1200	600	12	4	Straight	150	0.72	£44.81	£62.24
RAD-154	18	1200	600	12	n/a	Returns	150	0.72	£53.90	£74.92


List prices for Radical Timber Board

CODE	Board Depth	Board Length	Board Width	Pipe size mm	No. of grooves	Extra grooves for F&R pipe runs	Returns	Pipe Centres	Type	Area per Board	Board	m ²
Rad-155	22	2400	600	12	4	3	Radius	150	FOILED	1.44	£63.02	£43.77
Rad-156	22	2400	600	12	4	3	Radius	150	Standard	1.44	£46.44	£32.25

Flooring Components




Castellated Floor Insulating Panel <i>These are not weight bearing surfaces. Please ensure that you have sufficient mechanical strength, refer to technical data. For sizing, OH means overall height and TI is thickness of thermal insulation.</i>					
		CODE	SIZE	pack m ²	List PRICE £ per pack
		RAD-64	Standard floor insulating panel 1100 x 600 x OH 32 x T10 (1 board = 0.66m ² area) 22 boards per pack	14.52m ² (each pack 22 boards)	£266.73
		RAD-65	Standard Combi floor insulating panel 1200 x 800 x OH32 x T10 (1 board = 0.96m ² area) 18 boards per pack	17.82m ² (each pack 18 boards)	£362.36


Heat Emission Plates Radical's Heat Emission Plates are for use in timber suspended floors where the joists are at 400mm centres, or in floating floor applications. The plates are 390mm wide x 1m in length. Allow 2.25 plates per m ² of floor area.			
	CODE	SIZE	List PRICE
	RAD-66	Single channel 195mm x 1m x 0.5mm	£7.50
	RAD-67	Double channel 390mm x 1m x 0.5mm x 200mm centres	£13.00
	RAD-68	Closing bend for spreader plates 400mm x 150 x 200mm Centres x 16 dia pipe	£3.68


Underfloor Heating Controls And Wiring Centres


In most systems a room thermostat will be positioned in the room which is being heated and this can be adjusted to ensure the area is heated to the required temperature. Radical offer a selection of controls for our underfloor systems based on application requirements. We supply a range of wiring centres, thermostats and time controls and we will be pleased to discuss technical aspects and individual project requirements with you as necessary.

Thermostats


	Description	
	Programmable stat 230v - PRT - HM	
	CODE	List PRICE
	RAD-26	£92.85


	Description	
	Programmable stat for wetrooms (with probes) 230v - PRT-RP HM	
	CODE	List PRICE
	RAD-27	£98.85


	Description	
	Programmable stat (comes with sensor probe) EM	
	CODE	List PRICE
	RAD-28	£88.00


	Description	
	230v Touchscreen thermostat	
	CODE	List PRICE
	RAD-29	£118



	Description	
	230v Touchscreen thermostat - black or white	
	CODE	List PRICE
	RAD-30	£92.00

	Description	
	Electronic dial stat with set back & probe construction - 230v	
	CODE	List PRICE
	RAD-31	£70.00

	Description	
	Standard Electronic dial stat 230v DS1	
	CODE	List PRICE
	RAD-32	£74.00

	Description	
	Wireless receiver	
	CODE	List PRICE
	RAD-33	£106.00


	Description	
	Wireless stat	
	CODE	List PRICE
	RAD-34	£117.50


Sensors and Probes				
		CODE	DESCRIPTION	List PRICE
		RAD-35	Sensor Probe	£25.00
		RAD-36	Sensor Box	£25.00



Wiring Centres

	Description	
	8 way 230v wiring centre	
	CODE	List PRICE
	RAD-18	£158.00


	Description	
	230v Master wiring centre - 4 way - RC	
	CODE	List PRICE
	RAD-19	£125.00


	Description	
	0 230v Slave wiring centre 4 way	
	CODE	List PRICE
	RAD-20	£55.00

	Description	
	230v 7 day programmer to fit with master/slave wiring centres	
	CODE	List PRICE
	RAD-21	£128.00

	Description	
	8 way low voltage wiring centre - HM UH1	
	CODE	List PRICE
	RAD-22	£150.00

	Description	
	8 way wireless wiring centre - HM UH1-W	
	CODE	List PRICE
	RAD-23	£230.00

	Description	
	4 way 230v wiring centre - HM UH2	
	CODE	List PRICE
	RAD-24	£125.00

	Description	
	8 way 230v wiring centre - HM UH3	
	CODE	List PRICE
	RAD-25	£158.00

Neo Control System - Smart Heating Controls



Neo is the Smart Way to Control your Heating and Hot Water from Anywhere. Up to 32 Rooms can be controlled from your iPhone, Android or Windows Phone. Our neoStat's are stylish, have multiple features and are perfect for controlling underfloor heating, electric floor heating and conventional radiator heating systems.



APP

Retrofit or new installations

Neo thermostats have been designed to replace a standard 230v thermostat and is able to create a network heating system with local and remote access controlled by iPhone and/or tablet applications.

The heating signal and thermostats are hard wired but the communication data is sent via a wireless network.

Connection is simple with the Neo Hub connecting directly to any spare port on your router and becoming part of your "home" network. Multi zones and multi users are covered by the one system control.

Geo Location

Geo Location is an exciting new feature that makes it even easier to reduce your energy costs. Neo will lower the temperature in your home when it detects the last person has left and will turn the heating back on when it will detects someone is on their way home.

Using the Location Services feature on your iPhone or Android SmartPhone, Neo can now help you reduce your energy consumption by turning the heating off when you're out.

Supporting Multi Users, Neo can automatically reduce the temperature in your home when the last person leaves and increase the temperature when the first person returns.

Geo Location is perfect for busy households when a fixed heating schedule just isn't practical.

How does Geo Location work?

Geo Location uses the mobile phone masts, nearby WiFi and your GPS to calculate your position. When you setup Geo Location on Neo, you set a leaving and returning trigger. When you pass these triggers, Neo will adjust the temperature in your home automatically.

Reduce your Energy Cost and Return to a Cozy Home

You can decide the temperature that Neo will control to when you leave home and again when you return. The temperature you ask for will depend on the type of heating system you have and the time your home takes to warm up.

Notifications on your SmartPhone

You will see a notification on your phone when Neo has adjusted the temperature in your home - so you always know when Neo is saving you energy.

You're in Control!

Description	Description	
	CODE	List PRICE
230v Programmable App Enabled Thermostat (white or black)	NEOSTAT	£127.50

Description	Description	
	CODE	List PRICE
Neohub Remote Control Unit	NEOHUB	£250.00

CAD Designs

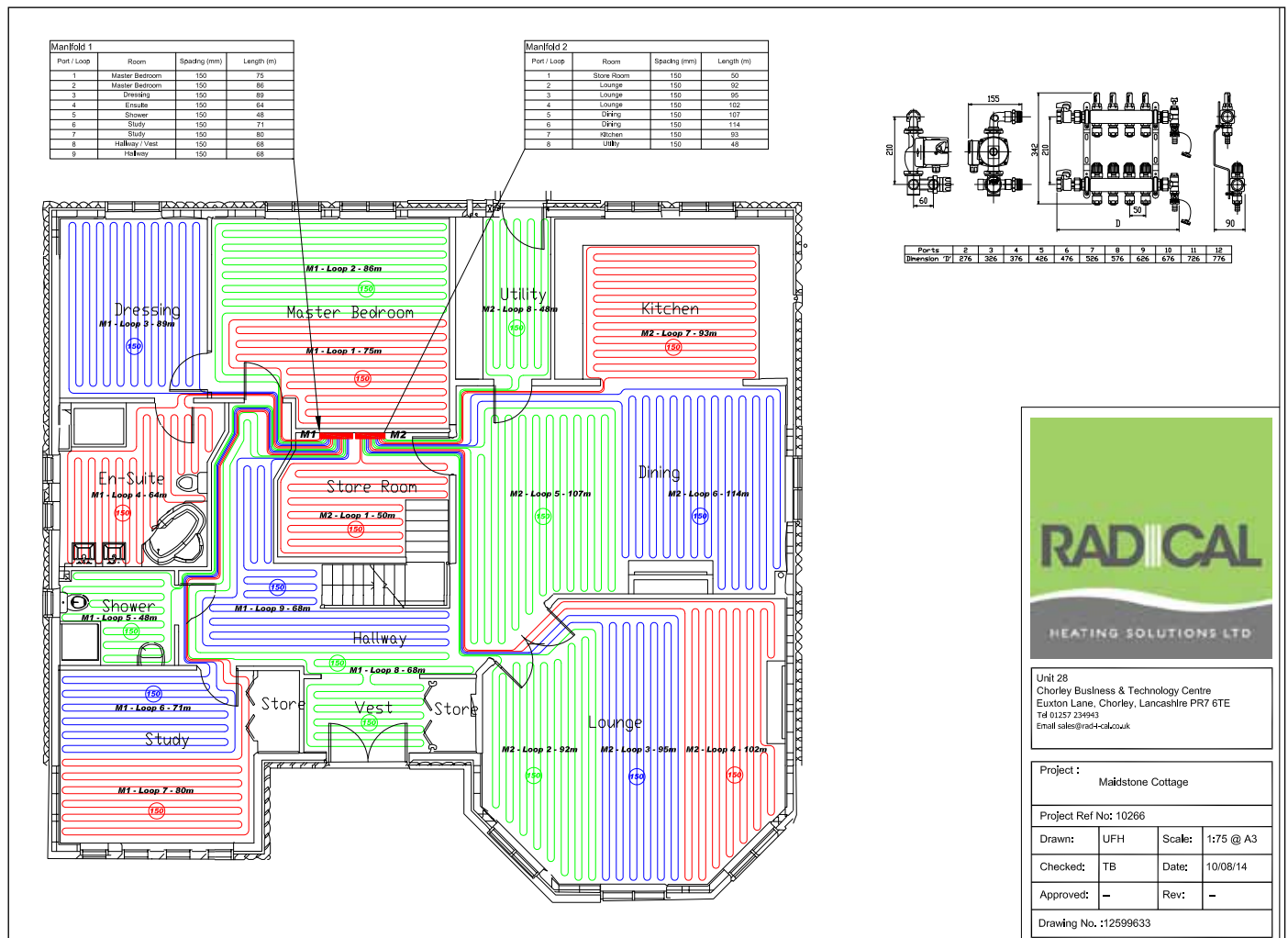
In support of our installation partners we offer a service which includes underfloor heating CAD designs. Our design team has first-hand experience of providing high quality underfloor heating designs that fulfil both the technical and practical requirements of both experienced and first time installers and end users.

Our team is fully trained in underfloor heating design and are so much more than just CAD operators. We have a complete understanding as to what we are producing and why and our engineers have had first-hand experience installing underfloor heating on site.

This experience allows the design engineer to have a full understanding as to what is installable, and how this should be approached.

Focusing on performance and installation, our designs are well thought out to allow for easy fixing and our expert design engineers produce schematics in exact and practical formats which are easy to follow and understand.

Experienced installers recognise that the success of any underfloor heating system will hinge on the integrity of its design and the quality of the installation. Our designs always have the installer in mind so that installation is a straightforward as possible and our design is represented graphically in a manner that can be easily interpreted.



Our business is to produce quality underfloor heating designs with a fast turnaround to enable you to give great service to your customers. We have developed processes to concentrate on this, meaning that designs can be produced 365 days of the year.

Delivery timescales naturally depend on the scope of the project but in general terms you can expect completed designs delivered back to you within 5 days of placing your order. Urgent projects can be undertaken on request and depending on the size we will endeavour to meet your deadlines within a 48 hour timescale.

Underfloor Heating is our core business and by utilising our CAD services which are free of charge, this allows you the freedom to concentrate on yours.

All designs take into account BS EN1264 and CIBSE standards methodology.

HEAT PUMPS

ANK Domestic Air Source

Reversible Air source heat pump for outdoor installation with scroll compressor, inverter fan and selection options that include both integrated circulating pumps and water storage tanks.
Capacity from 6 – 36kW

ANK020HPM



DHW

R410A



Air cooled reversible heat pump for heating water up to 60°C

- Operates in outdoor temperatures down to -20 °C
- Integrated water tank and circulation pump options
- High efficiency scroll compressors

ANK045HPM



UNIT DESCRIPTION

Designed and manufactured to satisfy heating and cooling needs and the production of domestic hot water (DHW) in commercial or residential buildings. ANK heat pumps can be coupled to traditional UK heating systems (S Plan / Y Plan) and guarantee very high efficiencies. Installation is simplified with options that include integrated circulating pumps and storage tanks, which are factory fitted. (versions HP and HA)


UNIT SIZES

Model ANK	020HPM	030HPM	040HPM	045HPM	050HP	085HP	100HP	100HA	150HP	150HA
Height	1028	1281	1281	1281	1281	1281	1450	1450	1450	1450
Width	1000	1000	1000	1000	1000	1000	1750	1750	1750	1750
Depth	400	450	450	450	450	450	750	750	750	750
Weight (empty)	123	154	157	175	182	184	314	364	362	412

ANK150HPM



BSKW

	CODE	Description	List PRICE
	BSKW	BSKW Kit , electric resistance heater of various power (kW) output with both single and 3 phase connections	£725.00

ANK data table

ANK HPM	Nominal Performance	Output kW	Input kW	COP	Volts	Starting Current amps	Water Connections	Fans	Water Flow l/h	Pressure Drop kPa	List Price
020	7/35	8.67	2.12	4.09	230	45	1" 1/4	1	1370	23.0	£6125.00
	0/35	5.92	2.06	2.87							
030	7/35	10.92	2.64	4.14	230	45	1" 1/4	2	1730	15.0	£7604.00
	0/35	7.63	2.55	2.99							
040	7/35	11.93	2.88	4.14	230	45	1" 1/4	2	1870	19.0	£7655.00
	0/35	8.21	2.77	2.96							
045	7/35	14.04	3.27	4.29	230	45	1" 1/4	2	2320	19.0	£8450.00
	0/35	9.83	3.14	3.13							
050	7/35	16.27	3.81	4.27	400	71.3	1" 1/4	2	2650	25.0	£8620.00
	0/35	11.41	3.58	3.19							
085	7/35	18.46	4.36	4.23	400	91.3	1" 1/4	2	3010	30.0	£8870.00
	0/35	12.52	3.75	3.34							
100	7/35	29.12	6.96	4.21	400	72.6	1" 1/4	2	4680	36.0	£13750.00
	0/35	20.77	6.72	3.09							
150	7/35	35.90	8.77	4.08	400	104.7	1" 1/4	2	5760	46.0	£15250.00
	0/35	25.78	8.39	3.07							



WRLH 025 - 650 Ground Source Heat Pumps

WRL025-040



Water cooled reversible heat pumps (geothermal), for the production of hot water up to 60°C
Heating capacities from from 6kW up to 650kW



AVAILABLE VERSIONS:

1. 'H' Standard
2. With geothermal side pumps kit/user side pumps kit
3. Total recovery
4. Storage tank

WRL100-150



High efficiency heat pump, water source for water heating up to 60 (degC), reversible, with domestic hot water. Designed for geothermal applications.

UNIT DESCRIPTION

WRL-H heat pumps are water cooled, reversible heat pumps for the production of hot water up to 60 (deg C), with hermetic scroll cpmpressors that respond perfectly to the requirements of the residential market: - small dimensions, easy installation, low noise. Aermec has designed these units optimising functioning in heat pump mode, achieving high efficiencies.

The heat pumps can be coupled with traditional systems or radiant panels, guaranteeing very high energy efficiency. Installation is simplified, thanks to the integrated hydronic options and the electrical and hydraulic connections are all positioned in the upper part of the unit.

For units above 160kW please contact our sales department for further details

Attention: The data given has been calculated with 25% glycol
- Please refer to Aermec Technical Manual for full specification and performance criteria



WRL180



Heating Mode 0 /-3 & 30/35		WRL025XHM	WRL030XHM	WRL040XHM	WRL050XH	WRL070XH	WRL080XH	WRL100H	WRL140H	WRL160H
Nominal Heating Capacity	kW	6.91	9.06	11.15	14.53	19.02	22.31	29.07	38.04	44.4
Input Power	kW	1.56	1.94	2.4	3.01	3.97	4.71	6.03	7.9	9.43
COP	kW	4.43	4.67	4.65	4.83	4.79	4.74	4.82	4.82	4.71
Condenser Water Flow Rate	l/h	1079	1451	1750	2280	2974	3527	4561	5948	7079
Evaporator Water Consumption	l/h	1502	2063	2484	3265	4254	5038	6529	8523	10122
System Side Pressure Drops	kPa	13	16	19	18	22	27	23	30	38
Geothermic Side Pressure Drops	kPa	31	39	45	45	50	63	50	63	81
Minimum Water Content (Standard)	l/kW	7	7	7	7	7	7	7	7	7
Minimum Water Content (Low Load)	l/kW	14	14	14	14	14	14	14	14	14
Power Supply	Volts	230	230	230	400	400	400	400	400	400
Maximum Current (FLA)	Amps	20	23	27	16	23	26	24	40	46
Peak Current (LRA)	Amps	45	45	45	46.8	54.1	54.1	67.1	70.1	73.1
Sound Power	dBA	55.5	57	57.5	59	60	60.5	62	63	63.5
Sound Pressure(1m)	dBA	41.1	42.6	43.1	44.2	45.2	45.7	46.7	47.7	48.2
Sound Pressure (10m)	dBA	24.3	25.8	26.3	27.7	28.7	29.2	30.6	31.6	32.1
Height	mm	976	976	976	1126	1126	1126	1126	1126	1126
Width	mm	607	607	607	607	607	607	1157	1157	1157
Depth	mm	628	628	628	798	798	798	798	798	798
Weight	kg	120	125	130	150	170	180	260	270	280
Hydraulic Connections	BSP	1" 1/4	1" 1/4	1" 1/4	1" 1/4	1" 1/4	1" 1/4	1" 1/4	1" 1/4	1" 1/4
List Price	GBP	£7,666.67	£8,022.22	£9,278.00	£9,795.56	£10,122.22	£10,348.89	£14,046.67	£14,897.78	£15,513.33

NRL - Commercial and Industrial Heat Pumps

NRL0280



NRL Air cooled heating only heat pump, with scroll compressor and axial fans, for outdoor installation.

Capacity from from 58-938 kW



DHW

R410A

AVAILABLE VERSIONS:

1. 'H' Standard
2. 'HP' with pump
3. 'HA' with pump and storage tank

NRL0700



Air cooled reversible heat pump with axial fans for heating water up to 55°C. Domestic hot water production with ACCESSORIES:

- (with DCPX accessory to regulate fan speed)
- VMF SYSTEM

UNIT DESCRIPTION

Designed specifically to operate in UK climatic conditions, these units are ideal for light industrial/commercial services applications.

The range is the most comprehensive available in the UK and provides menu options that include; Heat pump compact version (H), Heat pump compact/silenced version (HL), Heat pump high efficiency version (HA), High efficiency heat pump/silenced version (HE).

Further options include the factory fitting of circulation pumps and storage tanks.

MAIN ACCESSORIES

- **DCPX**¹: allows correct operation in cooling mode with external temperatures lower than 10 (degrees C) and down to -15°C, and in heating mode from 20°C up to 42 °C.
- **AER485**: RS-485 interface for supervision systems with MODBUS protocol
- **VT/AVX**: shock absorbers
- **DRE**: current soft starter
- **GP**: protection grille
- **RIF**: capacitor device



water 40/45°C, external air 7°/6°C			0280H	0300H	0330H	0350H	0500H	0550H	0600H	0650H	0700H	0750H	0800H	0900H	1000H
Heating capacity	H-HL ¹	kW	58	68	75	82	99	106	129	150	165	201	227	256	293
	HA-HE ¹	kW	59	69	76	86	103	110	135	152	171	204	233	263	293
Total input power	H-HL ¹	kW	18.6	21.3	24.3	27.8	33.2	36.0	43.1	48.0	55.1	65.0	75.0	85.0	96.0
	HA-HE ¹	kW	17.3	20.3	22.5	25.8	31.2	33.8	40.1	44.9	52.1	51.0	74.0	83.0	93.0
COP	H-HL ¹	W/W	3.12	3.19	3.09	3.95	2.98	2.94	2.99	3.13	2.99	3.08	3.03	3.01	3.05
	HA-HE ¹	W/W	3.41	3.40	3.38	3.33	3.30	3.25	3.37	3.39	3.28	3.33	3.15	3.17	3.15

water 40/45°C, external air 7°/6°C			1250H	1400H	1500H	1650H	1800H	2000H	2250H	2500H	2800H	3000H	3300H	3600H	Price list POA
Heating capacity	H-HL ¹	kW	340	384	427	468	503	-	-	-	768	854	936	1006	
	HA-HE ¹	kW	344	388	433	484	523	586	637	688	776	866	968	1046	
Total input power	H-HL ¹	kW	111	126	141	155	166	-	-	-	252	282	310	332	
	HA-HE ¹	kW	110	124	139	153	163	186	203	220	248	278	306	326	
COP	H-HL ¹	W/W	3.06	3.05	3.03	3.02	3.03	-	-	-	3.05	3.03	3.02	3.03	
	HA-HE ¹	W/W	3.13	3.13	3.12	3.16	3.21	3.15	3.14	3.13	3.13	3.12	3.16	3.21	

Pricing for NRL units is on application

WATER STORAGE



Heat Pump Cylinders

Features & benefits

- **Stainless steel** mains pressure cylinders – 25 year guarantee
- **Enhanced surface area coils** designed specifically for heat pumps
- Exceeds Part L of the **Building Regulations** – minimum heat loss
- **Safety kit provided** – meets Part G of the Building Regulations
- **3 bar operation** – high flow rates for fast bath filling and power showers
- A store of mains pressure hot water – **ready on demand**
- **Twin coil units available** – use solar energy for the best of both worlds
- **Commercial sizes available**
- **Low resistance range** available for fast flow rates

General Specification

Material	Duplex Stainless Steel
Operating Pressure Tank & Coils	3 Bar
Pressure Reducing Valve	Max Pressure / 12 Bar / Control Pressure 3 Bar
Expansion Vessel Charge	3 Bar
Expansion Relief Valve	6 Bar

What size do I need?

This information is published as a guide only as individual hot water usage may vary

HP 150 Single Coil	Single Bath
HP 215 Single Coil	Single Bath & Shower
HP 255 Single Coil	Twin Bath
HP 305 Single Coil	Twin Bath & Shower
HP 400 Single Coil	Three Bath and Shower
HP 500 Single Coil	Three Bath & Three Showers or Four Baths & One Shower
HPS 215 Twin Coil	One Bath
HPS 255 Twin Coil	One Bath & Shower
HPS 305 Twin Coil	Twin Bath
HPS 400 Twin Coil	Twin Bath & Two Showers
HPS 500 Twin	Three Baths

Technical Specification

CODE	Vol Litres	Size D x H mm	Area SqM Lower Solar Coil	Area SqM Heat Pump Coil	HC Coil kW Rating*	Ex Vessel Capacity	Heat Loss kWh/24Hrs at 50°C	Weight Empty Kg	Solar Volume	List PRICE
HP 150 Single Coil	150	575 x 1083	-	2	28	12 Litres	0.99	44	-	£1714.00
HP 215 Single Coil	215	575 x 1485	-	3	40	18 Litres	1.41	54	-	£1968.00
HP 255 Single Coil	255	575 x 1750	-	3	40	24 Litres	1.49	57	-	£2032.00
HP 305-3 Single Coil	305	575 x 2023	-	3	40	24 Litres	1.63	61	-	£2119.00
HP 305-4 Single Coil	305	575 x 2023	-	4	55	24 Litres	1.63	63	-	£2226.00
HPL 255 [†] Single Coil	255	575 x 1750	-	3	40	24 Litres	1.49	59	-	£2782.00
HPL 305 Single Coil	305	575 x 2023	-	3	40	24 Litres	1.63	63	-	£2887.00
HPL 400 [†] Single Coil	400	580 x 2050	-	3	40	35 Litres	2.25	85	-	£3461.00
HPL 500 [†] Single Coil	500	662 x 2018	-	3	55	50 Litres	2.60	101	-	£3776.00
HPS 215 Twin Coil	215	575 x 1485	1.10	2	28	18 Litres	1.41	57	80	£2251.00
HPS 255 Twin Coil	255	575 x 1750	1.10	2	28	24 Litres	1.49	58	80	£2321.00
HPS 305-3 Twin Coil	305	575 x 2023	1.10	3	40	24 Litres	1.63	64	80	£2628.00
HPSL 305 [†] -3 Twin Coil	305	575 x 2023	1.10	3	40	24 Litres	1.63	66	80	£3307.00
HPSL 400 [†] Twin Coil	400	580 x 2050	2.00	3	40	35 Litres	2.25	93	170	£3718.00
HPSL 500 [†] Twin Coil	500	662 x 2018	2.00	3	40	50 Litres	2.60	114	200	£4039.00

*At 40°C ΔT, 55°C output, 25 litres/minute flow † Available with low resistant coils only



Buffers Vessels, Pumps and Low Loss Headers

Features & benefits

- 100 litre compact unit - small mild steel insulated unit for **versatile positioning**
- All cylinders types are **stainless steel** and come with **25 year warranty**
- Create a **store of energy** for space heating
- **Fully insulated**
- Sealed system or open vented
- **Commercial sizes available**

General Specification

Material	Duplex Stainless Steel (except mild steel 100L)
Max Operating Pressure & Temperature	3 Bar
Insulation cylinders	Polyurethane foam injection
Insulation 50 & 100 litre tank	Rigid polyurethane & material matting
Thermostat probe pocket	Fitted to cylinders 1/2" boss on 50 & 100 litre tank

Buffer Tank Technical Specification

CODE	Vol Litres	Size mm	Heat Loss kWh/24Hrs	Immersion Heaters	Tappings	List PRICE
BFS 80	80	577 dia x 645	1.29	1 x 3kW	4 x 28mm Male	£908.33
BFS 100	100	420h x 560w x600d	2.05	1 x 3kW	4 x 28mm Male	£777.78
BFS 150	150	577 dia x 1086	1.83	1 x 3kW	4 x 28mm Male	£1,022.22
BFS 215	215	577 dia x 1485	2.19	1 x 3kW	4 x 2" BSP Female	£1,291.67
BFS 255	255	577 dia x 1753	2.31	1 x 3kW	4 x 2" BSP Female	£1,366.67
BFS 305	305	577 dia x 2030	2.51	1 x 3kW	4 x 2" BSP Female	£1,622.22
BFS 400	400	580 dia x 2050	2.92	1 x 3kW	4 x 2" BSP Female	£2,175.00
BFS 500	500	662 dia x 2018	3.98	1 x 3kW	4 x 2" BSP Female	£2,375.00
BFS 1000	1000	990 dia x 1800	N/A	1 x 3kW	4 x 2" BSP Female	POA
BFS 2000	2000	1290 dia x 2288	N/A	1 x 3kW	4 x 2" BSP Female	POA
BFS 3000	3000	1290 dia x 3040	N/A	1 x 3kW	4 x 2" BSP Female	POA

Geo Pump



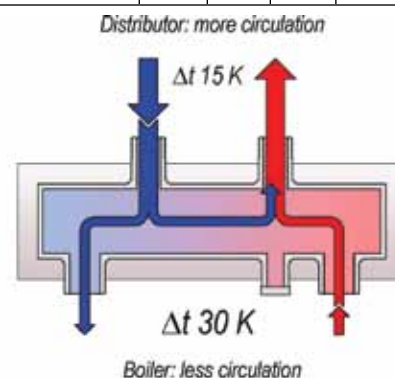
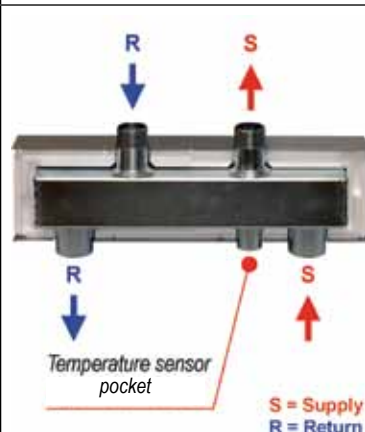
Description

Comprises: Circulating pump, air separator and vent, flow meter, fill and drain points, temperature gauges and safety valve. 1" BSP Male connections

CODE	List PRICE
Geo Pump 2/2	£995.00

Low Loss Header

Code	Description	Length mm	Width mm	Depth mm	List Price
RAD-LLH	HW 60/125 Hydraulic Header with wall fixing set	380	110	110	£424.00



TERMS & CONDITIONS

1 - Definitions

In these Terms and Conditions:-

Company means Radical Heating Solutions Ltd.

Buyer means any customer, company or person ordering Goods and/or Services of the Company and whose order for the Goods and/or Services is accepted by the Company.

Conditions means the Terms and Conditions set out herein.

Contract means the Contract for the sale of Goods and/or services to be provided by the Company pursuant to the Contract.

Goods means the Goods and/or Services the Company agrees to supply.

Notice/Writing includes facsimile transmission, email and other comparable means of communication sent to the other party at its registered office or principal place of business.

Order means a request in writing from the Buyer to the Company to supply any of the Company's Goods and/or Services.

2 - Application

a) Any Goods and/or Services supplied by the Company shall be made exclusively on the basis of and subject to the Terms and Conditions set out below.

b) No addition to, or variation of these Terms and Conditions shall bind the Company unless agreed in writing and signed by a director of the Company. No agent or person employed by the Company has any authority to alter or vary in any way these Terms and Conditions except as stated above. If such variation is accepted by the Company in writing, these Terms and Conditions shall continue to apply as if that variation were incorporated into these Terms and Conditions.

c) Any typographical, clerical or other error or omission in any sales literature, quotation, price list, acceptance of offer, invoice or other document or information issued by the Company shall be subject to correction without liability on the part of the Company.

3 - Acceptance of Orders

a) No order submitted by the Buyer is accepted by the Company unless confirmed in Writing by the Company or delivery of the Goods and/or Services is made by the Company.

b) The Buyer shall be responsible to the Company for ensuring the accuracy of any order submitted by the Buyer to the Company and for giving the Company any necessary information relating to the order within sufficient time to enable the Company to perform the Contract in accordance with its Terms and Conditions.

c) The quantity, quality and description of and any specification for the Goods and/or services are those set out in the Company's quotation or the Buyers order (to the extent accepted by the Company).

d) If the Company accepts any request by the Buyer to supply any Goods and/or Services other than those specifically referred to in the Company's current price list then the Buyer shall indemnify the Company against all losses, damages, costs etc incurred by the Company in connection with any claim for infringement of any patent, copyright, design, trademark or other intellectual property rights. The Company gives no warranty that any Goods and/or Services supplied on this basis will be fit for their intended purpose.

e) The Company may make any changes in the specification of the Goods and/or Services which are required to conform with any applicable statutory or EC requirements or which do not materially affect their quality or performance.

f) No Order which has been accepted by the Company may be cancelled by the Buyer without the written agreement of the Company and the Buyer undertakes to pay all costs, charges and expenses incurred by the Company for any or all work carried out by the Company prior to cancellation.

g) All drawings, designs, specifications, quotations and other information provided by the Company are confidential and all rights of copyright and other intellectual property rights in their respect shall remain the property of the Company and shall not pass to the Buyer.

h) All descriptions, specifications, drawings and particulars of layouts and dimensions submitted by the Company are deemed approximate only and descriptions and illustrations in the Company's catalogues, price lists and other advertising matter shall not form any part of a contract.

i) All goods must be ordered by the Buyer in the packed quantities as shown in the current price lists of the Company.

4 - Delivery and Prices

a) The price of the Goods and/or Services shall be at the price specified in the Company's confirmation of order or, if none, at the price in the Company's current published price list at the date of supply of the Goods and/or Services. Any quoted prices other than those published in the Company's current price list shall be non binding upon the Company unless a fixed quotation is agreed in writing and signed by a director of the Company.

b) All prices are subject to increase to reflect variations from time to time in costs which are due to any factor beyond the control of the Company (including but not limited to costs of materials, labour, transport, currency fluctuation and any tax, fees or charges imposed by the Government or other authority) or any change in delivery dates, quantities specifications given by the Buyer or any failure of the Buyer to give the Company adequate information or instructions.

c) All prices are given by the Company on an ex works basis and exclude VAT and any other duties applicable and the Buyer shall be liable to pay those duties and (subject to condition i) the Company's charges for transport, packaging and insurance.

d) Dates of delivery and deadlines quoted by the Company are deemed

approximate unless explicitly agreed in writing by the Company and the time for delivery shall not be of the essence unless specifically previously agreed by the Company in writing.

e) The Company is entitled to make delivery by instalments against any order it accepts from the Buyer and these Terms and Conditions shall apply to each instalment delivery and any claim by the Buyer in respect of any one or more of the instalments shall not entitle the Buyer to treat the Contract as a whole as repudiated.

f) If the Company failed to deliver the Goods (or any instalment) for any reason other than any cause beyond the Company's reasonable control, or the Buyers fault and the Company is accordingly liable to the Buyer, the Company's liability shall be limited to the excess over the Company's price of the Goods (if any) of the cost to the Buyer (in the cheapest available market) of similar Goods to replace those not delivered.

g) If the Buyer fails to take delivery of the Goods or fails to give the Company adequate delivery instructions at the time stated for delivery then without limiting or any other right or remedy available to the Company, the Company may:

i) Store the goods until actual delivery and charge the Buyer for the reasonable costs (including insurance of storage)

ii) Sell the Goods at the best price readily obtainable and (after deducting all reasonable storage and selling expenses) account to the Buyer for the excess over the price under the Contract or charge the Buyer for any shortfall below the price under the Contract.

h) The mode of transport or delivery shall be at the Company's discretion. For deliveries outside UK, the Company shall be entitled to charge all additional delivery costs to the Buyers account.

i) The Buyer shall be liable to pay delivery charges unless otherwise agreed by a Director of the Company.

j) Goods must be carefully examined on delivery and acceptance thereof duly signed for by the Buyer or his appointed agent will be deemed to constitute acceptance by the Buyer of receipt of the Goods in good condition and conformity in all aspects with the order.

k) i) Unless otherwise agreed in writing by the Company all prices specified by the Company exclude the cost of packing and delivery. Any necessary packaging material shall be invoiced at cost price and shall not be taken back.

ii) The Buyer will dispose of all packaging materials in accordance with the regulations (statutory or otherwise) relating to the protection of the environment.

iii) The Company shall use all reasonable endeavours to ensure, where necessary, the appropriate packaging is used for despatch, but shall not be liable for any damage or loss of Goods between despatch and delivery to the Buyer.

5 - Terms of Payment

a) Unless the Company specifies in writing (signed by a director of the Company or other person authorised by a director) the Buyer shall pay all invoices in full, without any set off, deduction or counter claim, no later than the last business day of the month following the date of the invoice and the time of payment shall be of the essence of the Contract.

b) If the Buyer fails to make any payment by the due date, the Company may suspend any further deliveries to the Buyer and at the Company's discretion, interest will be charged at 4% over the base rate of HSBC bank from the date payment was due until and including the date of the actual payment.

c) If the Buyer issues a cheque which is not honoured on presentation, or if the Company deems it necessary to arrange special presentation of a cheque, the Company reserves the right to debit the Buyer with the cost of doing so.

d) If the Buyer does not meet the Conditions of payment, or in the case of reasonable doubts about the Buyers credit worthiness or the Buyer makes any voluntary arrangement with its creditors, becomes bankrupt, becomes subject of an administration order, or goes into liquidation, the Company may cancel any outstanding contract with the Buyer and all outstanding invoices on the Buyers account with the Company will become due.

6 - Risk and Property

a) The title to all Goods supplied by the Company shall remain with the Company (retained Goods) until such time that cash or cleared funds have been received by the Company in full for those Goods, and all other Goods for which payment is then due, together with any costs incurred by the Company in attaining such payment.

b) The Buyer shall hold the retained Goods as the Company's fiduciary agent and store them in such a way that they can be easily identified as being owned by the Company and shall ensure that they are fully insured.

c) The Buyer has the right to resell the retained Goods in the ordinary course of its business. Rights to pledge, use as collateral or to lend the retained Goods are specifically excluded.

d) The Buyer shall be obliged to inform the Company about any deterioration or destruction of the retained Goods immediately and shall furnish all information necessary to protect the Company's interest against third parties.

e) Until such time as title to the Goods passes to the Buyer the Company may at any time require the Buyer to deliver up the Goods to the Company and if the Buyer fails to do so, enter upon any premises of the Buyer or any third party where the Goods are stored and repossess the Goods.

7 - Defects and Liability

a) Subject to the exclusions set out in 7b below, the Company confirms that the

Goods will correspond with their specification at the time of delivery and will be free from defect in material and workmanship from the date of delivery for twelve months.

b) The Company shall be under no liability in respect of any defect in the Goods arising from any drawing, design or specification supplied by the Buyer.

c) The Company shall be under no liability in respect of any defect arising from fair wear and tear, wilful damage, negligence, abnormal working conditions, failure to follow the Company's instructions (whether oral or in writing), misuse, or alteration or repair of the Goods without the Company's written approval.

d) The Company shall be under no liability (or any other Warranty, Condition or Guarantee) if the total price for the Goods has not been paid by the due date for payment.

e) This liability does not extend to parts, materials or other equipment not manufactured by the Company in respect of which the Buyer shall only be entitled to the benefit of any such warranty or guarantee as is given by the manufacturer to the Company.

f) The Company does not warrant the accuracy or otherwise of any design, drawing, specification, instructions, or other information or advice that it provides as part of its Services and/or as ancillary information in relation to the Goods.

g) Any claim by the Buyer for any defect in the quality or condition of the Goods must be notified in writing to the Company within 7 days of delivery or if failure was not apparent on reasonable inspection, within a reasonable time after discovery of the defect, but in any event within 6 months of delivery.

h) Where the Goods are returned by the Buyer and accepted by the Company as being defective, the Company shall, at its option, either repair or replace such Goods without cost to the Buyer or allow the Buyer a credit on his account. The Company shall not be liable to the Buyer for any claim by the Buyer for any work done on or with the Goods, loss of profit, or for any loss, damage or cost to the Buyer whatsoever, other than the replacement cost of the Goods and the Buyer shall not be entitled to withhold payment by reason of an alleged defect.

i) Except as expressly provided in these Terms and Conditions all warranties, conditions, and other terms implied by statute or common law are excluded.

j) Except in respect of death or personal injury caused by the Company's negligence, the Company shall not be liable to the Buyer by reason of any representation, or any implied warranty, condition or other term, or any duty at common law under the express terms of the Contract for any consequential loss or damage (whether loss of profit or otherwise), costs, expenses, anticipated profits, or other claims for consequential compensation whatsoever (and whether caused by negligence of the Company or its employees or agents or otherwise) which arise out of or in connection with the supply of the Goods and/or Services of the Company.

8 - Force Majeure

The Company shall not be liable to the Buyer to the extent that fulfilment of its obligation to the Buyer has been prevented, hindered or delayed by force majeure as herein defined and without limiting the generality of the foregoing the Company shall be entitled to cancel delivery in whole or in part when it is delayed in or prevented from making delivery by strikes, lock outs, trade disputes or labour troubles or any cause beyond the Company's control including without limitation Act of God, regulation or request, fire, accident, war, riot, delay in transportation, inability to obtain adequate labour, materials or manufacturing facilities and the Company shall not be bound to obtain in the market Goods with which to replace the Goods, delivery of which has been cancelled as a result of any said events.

9 - General Conditions

a) The Company reserves the right to modify or improve any of its products from time to time without any prior notification and such modifications or improvements shall not entitle the Buyer to reject the Goods so improved or modified or any products previously supplied to the Buyer prior to the modification or improvement being affected.

b) The Company may perform any of its obligations or exercise any of its rights under these Terms and Conditions through any member of its Group.

c) Any person who is not a party to any contract under these Terms and Conditions has no right to enforce any part of these Terms and Conditions.

d) Any notice relating to these Terms and Conditions shall be in writing and served or delivered to the other party at its registered office or principal place of business or such other address as may have been notified in writing prior to the party giving notice.

e) If any provision in these Terms and Conditions is found by any competent authority to be invalid or unenforceable in whole or in part, the validity of the other provisions of these Terms and Conditions and the remainder of the provision in question shall not be affected.

f) No waiver by the Company of any breach of these Terms and Conditions shall be considered as a waiver of any subsequent breach of the same or any other provision.

g) The Buyer must not assign any of its rights or obligations under these Terms and Conditions without the prior written consent of the Company.

h) The validity, construction and performance of these Terms and Conditions shall be governed by the law of England and be within the exclusive jurisdiction of the English courts.

i) These Terms and Conditions shall replace any of the Company's previous Terms and Conditions.

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