

Installation, Operation and Maintenance Manual

For unvented heat pump cylinders and buffer tanks



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Range Cylinders

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CONTENTS

3	Preparing to Install the Unvented Cylinder
4	System Schematics
5	Installation Instructions - Buffer Tanks
5	Installation Instructions - Unvented Cylinders
9	Specification Details
10	Product Diagrams
14	Technical Performance Data Fiche
16	Parts List
17	Wiring Diagrams
19	Commissioning & Decommissioning
20	Operator and Owner Info
21	Servicing and Maintenance
21	Fault Finding
22	Benchmark Commissioning Checklist
23	Guarantee - Terms & Conditions



Benchmark places responsibilities on both the manufacturer and installer. The purpose is to ensure that customers are provided with the correct equipment for their needs, that the equipment is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference. Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hotwater Industry Council who manage and promote the Scheme. Visit www.benchmark.org.uk for more information.

INTRODUCTION

Range Cylinders has been manufacturing hot water products in the UK since 1904. Our associated brands - Tribune, Ultrasteel, Aerocyl, Albion and Ferham - are known for their high quality, performance and innovation. We are committed to meeting the construction industry's current and future hot water needs, whether you are an installer, merchant, specifier or a homeowner. Our extensive product portfolio includes specialised cylinders, such as heat pump cylinders and buffer tanks, and thermal batteries equipped with smart technology. Additionally, we offer a comprehensive selection of standard unvented and vented cylinders and cold water cisterns in different capacities to suit your specific applications. Plus, we offer first-class technical support for all our products.



Range Cylinders are Charter Members of the Hot Water Association and undertake to meet the requirements of the Charter Scheme:

- To supply fit for purpose products clearly and honestly described
- To supply products that meet or exceed appropriate standards and building and water regulations
- To provide pre and post technical support
- To provide a clear and concise warranty details to customers.

For further details on the Charter, please visit www.hotwater.org.uk/hwa-charter

IMPORTANT NOTE TO THE INSTALLER



Unvented cylinders are a controlled service as defined in the latest edition of the Building Regulations and should only be fitted by a competent person. You must ensure the installation complies with the current Building Regulations and/or Technical Standards Documents for England, Scotland, Wales, N Ireland or Ireland.

All installations in England & Wales must be notified to LABC directly or via your CPS for a compliance certificate.

Ensure you always read the manufacturer's instructions before commencing installation. After installation the instructions should be left for the householder for future reference.

Commissioning Checklists on page 22 must be completed and a copy submitted to Range Cylinders Ltd by emailing cylinder.records@rangecylinders.co.uk or filling out the online form at <https://rangecylinders.info/a01>

IMPORTANT NOTE TO THE HOMEOWNER



To activate the extended 10-year guarantee on the stainless steel inner vessel and the 2-year guarantee on parts, the **HOMEOWNER**—not the installer—**MUST** register the cylinder with Range Cylinders Ltd within one month of the cylinder's first use by emailing cylinder.records@rangecylinders.co.uk or filling out the online form at <https://rangecylinders.info/a02>

If this registration is not completed, the guarantee will be limited to 2 years for the inner vessel and 1 year for parts, as outlined in our Terms and Conditions.

Additionally, to maintain all guarantees, records of annual servicing must be submitted to Range Cylinders Ltd every 12 months by the homeowner and all subsequent homeowners. This can be done either through our online form at <https://rangecylinders.info/a03> or by calling **0345 260 0258**.

The Manufacturer: Range Cylinders Ltd is registered at 48 Thornes Lane, Wakefield, West Yorkshire, WF1 5RR. Company No: 16206043. VAT No: 485209473. We take great care to ensure that the information in this document is accurate at the time of publication. However, please note that the actual product may vary in specifications, dimensions, colour and other attributes due to factors in the manufacturing process and environmental conditions.

As part of our ongoing commitment to delivering high-quality products, we continually improve our processes, which may lead to significant changes over time. For this reason, we recommend you always seek the most up-to-date product information at the time of purchase. Unless stated otherwise, images are only for illustration and should not be considered binding.

Preparing to Install the Unvented Cylinder

Storage prior to installation

The unvented cylinder should be stored in its original packaging in an upright position in an area free from excessive damp.

Handling product

The unvented cylinder should be carried upright where possible. Assessments of risks for carrying the cylinder should be conducted. Use more than 1 person for carrying where appropriate. Always follow latest guide lines for lifting techniques, to avoid injury and damage to the product.

Water supply

The unvented cylinder operates at 3 bar and is capable of delivering 50L/min. However the performance of any unvented system is only as good as the mains water supply.

Installers should assess the maximum possible water demand, taking into consideration that both hot and cold services are supplied simultaneously from the mains.

The water supply should be checked to ensure it can meet these requirements. If necessary, consult the local water company regarding the likely pressure & flow rate availability.

If measuring the water pressure, note that a high static (no flow) mains pressure is no guarantee of good flow availability. In a domestic installation, 1 bar and 25 L/min. should be regarded as the minimum.

We recommend that a 22mm or ¾" cold mains pipework is used to feed the unit and ensure adequate flow rate. Consideration should be given to upgrading existing 15mm or ½" cold mains pipework to a larger size if the recommended minimum pressure/flow rate is not being achieved.

The product must only be used to store wholesome water, supplied by the public water main and in compliance with the drinking water directive EN 98/83 EC, or the latest version applicable at the time of installation. The water should not be hard or aggressive, i.e. the water chemistry shall comply with the following:

Characteristic	Permitted Levels
Total Dissolved Solids	≤ 600 mg/litre
Total Hardness	≤ 200 mg/litre
Chloride	≤ 300 mg/litre
Magnesium	≤ 10 mg/litre
Calcium	≤ 20 mg/litre
Sodium	≤ 150 mg/litre
Iron	≤ 1 mg/litre
Maximum pH	9.5
Minimum pH	6.5
Electrical Conductivity (EC) @25°C	≤ 750 uS/cm
Saturation Index (LSI) @80°C	> -1.0 to <0.8

For all installations where the quality of the mains water supply falls outside of the above specification suitable mitigation measures must be implemented by the installer.

NOTE: All off mains water supplies are not permitted under any circumstances.

Electric supply

The unvented cylinder requires 240 Volt electrical supply for the immersion elements. The electrical supply to each immersion heater must be fused at 13A via a double pole isolating switch to BS 60335. The cable must be at least 2.5mm² heat resistant (85°C HOFR) sheathed flex complying to BS EN 50525-1.

Siting the unit

The unvented cylinder can supply outlets above it or at some distance from it. Site the unit to minimise "dead leg" distances, especially to the point of most frequent use.

Outlets above the unvented cylinder will reduce the outlet pressure available by 0.1 bar for every 1m of height difference. The unit should be protected from frost. Particular care is needed if siting in a garage or outbuilding. All exposed pipework should be insulated. The unvented cylinder must be installed in the correct orientation i.e. vertically (unless you're using a horizontal model) on a flat base capable of supporting the weight of the cylinder when full. The minimum recommended cupboard size for a standard vertical models is 750mm square, 675mm for slimline models and 900mm for 400L and 500L models.

Access and maintenance

Ensure that the cylinder is positioned to allow for proper arrangements of the discharge pipework while avoiding electrical devices and components.

There should also be sufficient space for future inspection, maintenance and servicing of the cylinder, including the replacement of immersion heaters that are 450 mm long.

When planning for access, consider the possibility of decommissioning, removing or replacing the entire unit as may be necessary in the future.

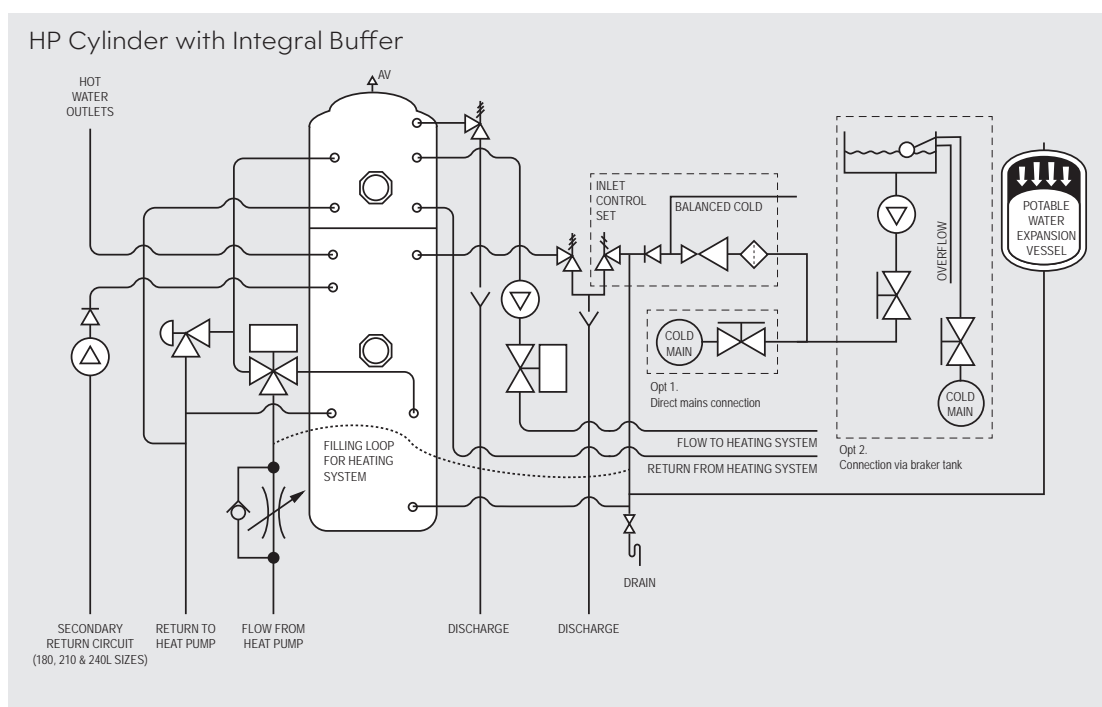
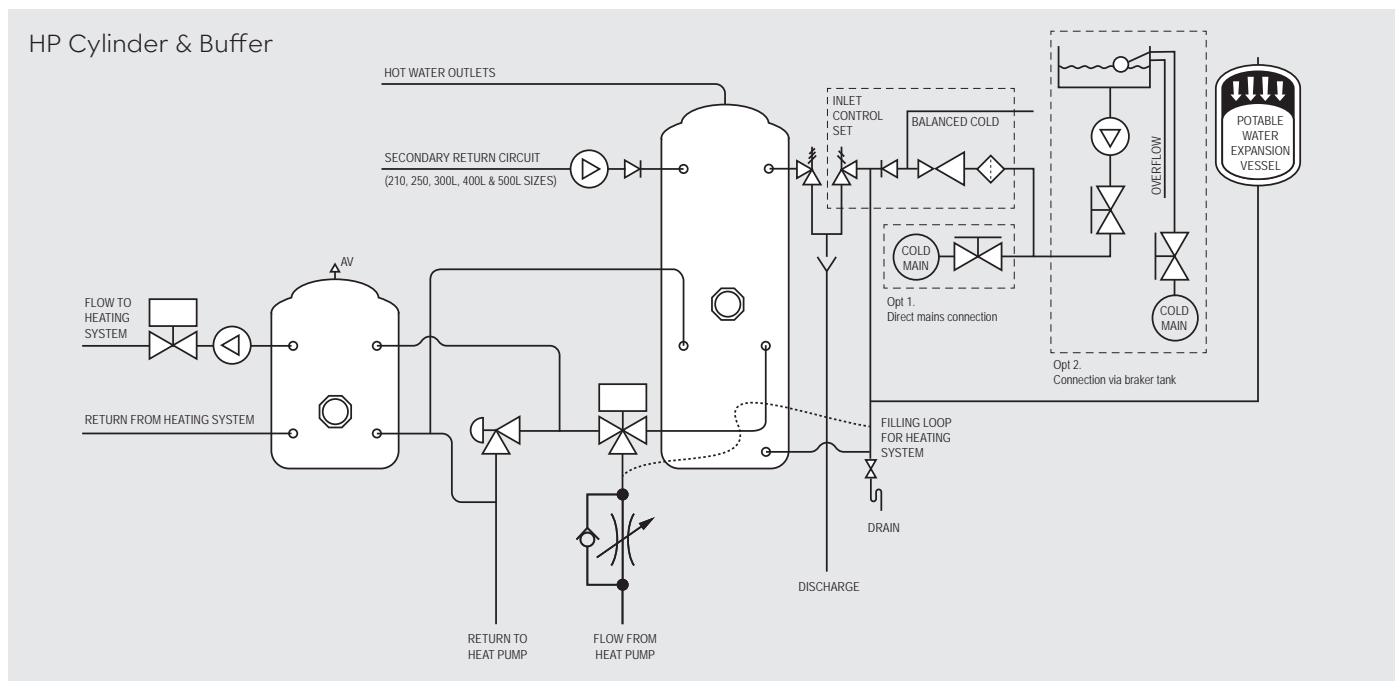
Flushing the heating system (retrofit installations)

Part L of the 2022 Building Regulations require that all central heating systems are cleaned and dosed with protective inhibitor whenever major works are carried out. This includes the fitting or changing of a buffer tank as this will substantially impact the volume of water held within the heating system. First flush shall be performed prior to fitting any new equipment such as the buffer tank or heat pump, to protect the equipment from damage. Failure to do so will put the product guarantee at risk.

Range Cylinders

Installation, Operation and Maintenance Manual for
unvented heat pump cylinders and buffer tanks

System Schematics



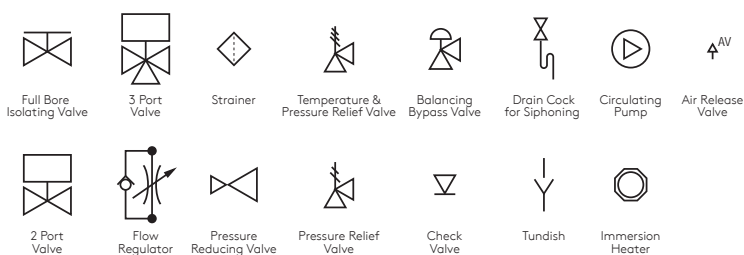
Notes:

These are typical examples of heat pump schematics. In the event these differ from the instructions issued by the heat pump manufacturer, the installer should always give precedence to the heat pump instructions.

The pressure reducing valve, non-return valve, expansion relief valve and strainer are combined together in the inlet control set.

For cylinders without a dedicated secondary return boss, the secondary return circuit should be tee'd into the cold feed pipe work, just before the cylinder's cold feed and any drain cock connection, if a secondary return is required.

Key:



Installation Instructions - Buffer Tanks

Buffer tank - stand-alone

Select a suitable location to install the buffer tank into your heating system, ensuring you follow the relevant guidance issued by heat pump manufacturer on proximity and configuration of the system.

On our stand-alone buffer tanks we recommend using full bore 22mm quarter turn ball valves on the flow and return connections so that the buffer can be isolated for easier maintenance. The buffer tank should be plumbed in using BS EN1057-R250 copper tube.

Make the flow connections (Positions I on page 10), first from the heat pump and then onto the heating system. Then make the return connections (Positions J on page 10), first from the heating system and then onto the heat pump. Finally, fit a vent connection (Position H on page 10). Upon filling/commissioning, ensure all connections are completely watertight, including immersion bosses.

Buffer tank - Integral

Our HP cylinder with integral buffer is partially pre-plumbed with 28mm pipework, we recommend using full bore 28mm quarter turn ball valves on the flow and return connections so that the unit can be isolated for easier maintenance.

If your heat pump manufacturer's instructions differ from the system schematic on page 4, precedence should be given to your heat pump manufacturer's instructions, falling

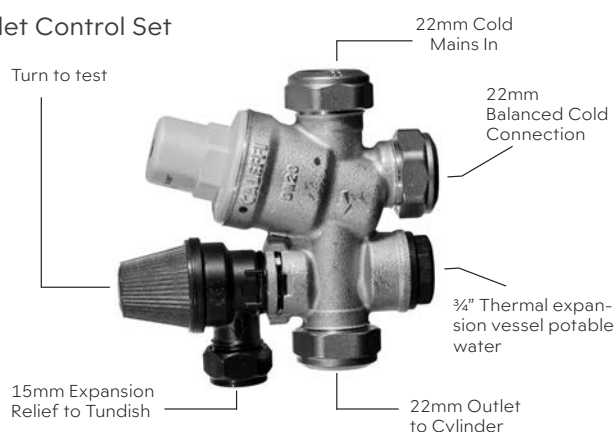
back on these instructions in the absence of direction from the heat pump manufacturer.

Plumb in the flow pipework from the heat pump into the 28mm pipe leading to 3 port valve (Position K on pages 12 & 13), connecting via a suitable flow regulator valve capable of meeting your heat pump's requirements (Note some heat pumps come with flow valves fitted). Now make the return connection to the heat pump (Position L on pages 12 & 13). You now need to make the 28mm flow connection from the buffer tank to the heating system connecting to 28mm pipe. First, following best practice, fit an appropriate circulating pump with two pump valves to (Position I on pages 12 & 13), then fit a two-port valve and connect to the heating system. Now make the return connection from the heating system connecting to 28mm pipe (Position J on pages 12 & 13). Fit the vent connection (Position H on pages 12 & 13) and if required by the heat pump manufacturer, fit the heating thermostat (Position G2 on pages 12 & 13). Finally, connect tundish via 15mm pipe to the T&P valve (Position E2 on pages 12 & 13) and route the discharge pipe, ensuring the tundish and pipework are plumbed and fitted in accordance with Part G3 of schedule 1 of the Building Regulations (see pages 7-8 for more details on discharge). Upon filling/commissioning, ensure all connections are completely watertight, including immersion bosses and any pre-plumbed pipework if applicable.

Follow the the unvented cylinder instructions below for how to fit the cylinder part of the product.

Installation Instructions - Unvented Cylinders

Inlet Control Set



Cold mains pipework

Run the cold mains through the building to the place where the unvented cylinder is to be installed. Where local building regulations do not permit the cylinder to be connected directly to mains supply, run the cold feed from a cold feed break tank using a suitable pump to boost pressure. The pump **MUST** be used in conjunction with a sensor in the feed tank to ensure tank does not drain empty and pull air. Take care to prevent heat pick-up by not running the cold pipe near hot water or heating pipework. This cold water supply pipe **MUST** be fitted with an isolating valve (not supplied).

We recommend using a full bore quarter turn ball valve, alternatively stopcock can be used, however this may reduce the flow rate. **DO NOT** use a "screwdriver slot" or similar service valve.

For pre-plumbed units simply make the connection to the inlet control set (Position A page 12 & 13). For standard models make the connection to the cold feed of the cylinder and incorporate a drain valve. Position the drain valve no higher than the cold inlet to ensure sufficient draining of the cylinder when required. Position the inlet control just above the Temperature & Pressure Relief Valve (TPRV) mounted on the side of the cylinder. This ensures that the cylinder does not have to be drained down in order to service the inlet control set. Ensure that the arrow points in the direction of the water flow.

Select a suitable position for the potable water expansion vessel. Mount it to the wall using the bracket attached to the vessel. Use suitable fittings capable of supporting full vessel weight (and with appropriate consideration to wall material). We recommend connect the expansion vessel to the cold feed pipework between the inlet control set and the cold inlet on the cylinder. Alternatively remove the blanking plug from the inlet control set and connect using a 3/4" male BSP threaded fitting. Ensure that the top of the vessel is accessible for servicing.

Range Cylinders

Installation, Operation and Maintenance Manual for
unvented heat pump cylinders and buffer tanks

Installation Instructions - (Cont.)

Cylinder connections

The cylinder should be plumbed in using BS EN1057-R250 copper tube. Cut the tube square using a rotary tube cutter and ensure no sharp edges or burrs protrude. Slide both gland nut and olive onto the tube and push tube fully home into the connection, ensuring the tube end fully bottoms on the connection recess. Smear the outer wall of the olive with plumbing paste and tighten the gland nut in the prescribed manner.

Alternatively, if you are using imperial pipework, you may prefer to use a threaded imperial fitting and connect directly to the BSP thread on the cylinder boss.

Upon filling/commissioning, ensure all connections are completely watertight, including immersion bosses and any pre-plumbed pipework if applicable.

Note: No control or isolation valve should be fitted between the expansion relief valve and the storage cylinder. The relief valve connections should not be used for any other purpose.

Balanced connections

A balanced hot and cold supply is necessary to stop one from overpressurising the other. This can be achieved by feeding all cold outlets from the 22mm balanced cold connection featured on the inlet control set. If you are not using this balanced cold connection and using an alternative method to balance the supply, you must cap off the inlet control set's balanced cold connection.

Where there are showers, bidets or monobloc mixing taps in the installation, these need to be installed to comply with the Water Supply (Water Fittings) Regulations 1999. If these devices have un-balanced supplies, there must be single check valves installed at both inlets.

Hot water pipework

Run the first part of the hot water distribution pipework in 22mm/ ¾", only reducing pipe diameter near the outlet, if required to suit the type of tap for example. You should aim to keep the run length of any hot water pipework from the cylinder to outlet to a practical minimum so the time taken for the hot water to reach the outlet is as quick as possible. Then connect the hot water pipework to the hot water draw-off on the cylinder (Position B in the diagrams on pages 10 to 13).

Connections - heat pump coil

This is specifically designed for use with heat pumps with its high kW rating for maximum energy transfer, on heat pump with solar cylinders this is the upper coil.

For non pre-plumbed cylinders, make the heat pump flow and return connections (Position D1 on pages 10-11). Note that this heating circuit must be positively pumped. Gravity circulation is not suitable. Either connection may be used as the flow, reheat times are not affected.

Follow the heat pump manufacturer's guidance for the pressure of this circuit (up to a maximum pressure of

3.5 bar), installing an additional expansion vessel and safety valve if required. The flow pipework shall include a motorised valve before the flow coil connection, to control the heating of the cylinder.

On pre-plumbed models connect to the heat pump flow and return (Positions K & L on pages 12 & 13), then connect the radiator/underfloor heating circuit (Positions I & J on pages 12 & 13) of heating system flow and return.

The heat pump's thermostatic sensor should be fitted into the dry stat pocket (Position G1 on pages 12 & 13).

Connections - solar coil

The flow and return from the solar heat source are to be connected to the lower coil on heat pump and solar models. Either of the solar coil connection may be utilised as the flow or return. The solar circuit must have its own dedicated circulating pump, thermal and safety controls, which must be installed as per the solar manufacturer's instructions. The solar control system used must be of the solar differential control type and should be connected to the solar sensor.

The solar thermostatic sensor should be fitted into the dry stat pocket (Positions D2 on page 11), with the high limit sensor fitted into the dry stat pocket (Position G, page 11).

It is necessary to connect the solar pump via the overtemperature high limit cut-out (provided) to ensure the heat input to the solar coil is interrupted if the cylinder overheats. Some method to prevent thermosyphoning must also be employed. Non-return check valves in the primary flow and return pipework would be acceptable. If solar controls do not offer appropriate isolation, a two port zone valve (not supplied) can be used with the pump and high limit stat.

Note: Installations should be in line with the Domestic Heating Compliance Guide document L1A and L1B including their advice on sizing both cylinder dedicated solar areas and heat exchangers to the surface area of the solar collectors. Using this guide we are able to offer sizing advice for specification.

Secondary circulation

The cylinders can be used with secondary circulation if required. Use an appropriate WRAS approved bronze or stainless steel circulator in conjunction with a WRAS approved non-return valve to prevent backflow. On large secondary circulation systems it may be necessary to incorporate an extra expansion vessel into the circuit to accommodate the increased system water volume.

Immersion heaters

Only immersion heaters with a thermal cut-out that comply with BS EN 60335-2-73 may be used. To help ensure this, the immersion heaters have a special 1¾" thread, they are rated at 3kW at 220-240 volt and include both a thermostat and a high limit cut-out.

Important: For full instructions on wiring and fitting the immersion heater supplied with the cylinder, refer to the instructions housed under the cap of the immersion heater.

Please order the correct replacement via ourselves; fitting non-approved immersions may affect your guarantee.

When fitting, ensure the 'O' ring is positioned correctly on the head of the immersion heater and lubricate before fitting. Fit it by hand until almost home then tighten gently, as the 'O' rings will seal easily. Electrical supply - refer to page 3.

Do not operate the immersion heater(s) until the cylinder is full of water.

Do not operate the immersion heater(s) if any sterilisation liquid is in the cylinder as this will cause premature failure.

If the water quality is aggressive or the cylinder is to be used on a system with a heat pump that struggles to achieve the set temperature, we recommend exchanging the immersion heater for a titanium element.

Note: Immersion heaters should never be used as the primary heat source.

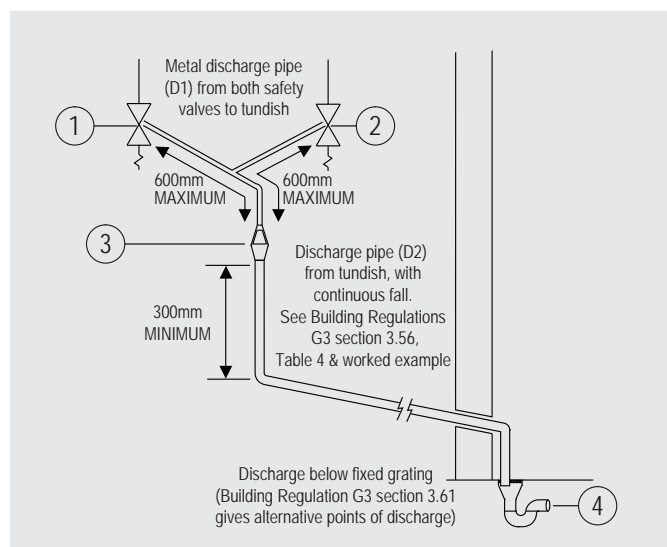
Electrical connections

Warning: This appliance must be earthed and all wiring should be completed by a competent electrician in accordance with the latest I.E.E wiring regulations.

Complete the wiring – use the appropriate wiring diagrams on pages 17-18.

Discharge arrangement

For pre-plumbed models, you simply need to connect 22mm discharge pipe to the tundish and then route the discharge pipe as explained below. For non pre-plumbed cylinders you will need to position the inlet control group so that the discharge from both safety valves can be joined together via a 15mm tee (see diagram below). Connect the tundish and then connect and route the discharge pipe.



Ensure all pipes to and from the tundish are cut square, are free from burrs or damage, and that the tundish is fitted vertically. The discharge pipework must be routed in accordance with Part G3 of schedule 1 of the Building Regulations. The information that follows is not exhaustive and if you are in doubt you should seek advice.

- 1 Expansion relief valve on inlet control set
- 2 Temperature & pressure relief valve on cylinder
- 3 Tundish
- 4 Discharge below fixed grating.

Note: The discharge will consist of scalding water and steam. Asphalt, roofing felt and non-metallic rainwater goods may be damaged by such discharges.

Note: Although Building Regulations now permit the D2 pipe from the tundish to be installed in soil stacks within premises, we do not recommend this, as discharge from the temperature and pressure valve may continue for long periods of time. It is the installer's responsibility to ensure the discharge pipework can support the discharge for prolonged periods. If used, follow the guidance given in the G3 Building Regulations (mechanical seal without water trap). As discharge can be in excess of 90°C, discharge into plastic pipework is also not recommended.

The two safety valves will only discharge water under fault conditions. When operating normally water will not be discharged. The tundish should be located in the same space as the unvented hot water storage system and be fitted as close as possible to, and lower than, the safety device, with no more than 600mm of pipe between the valve outlet and the tundish. The tundish should be positioned away from electrical devices.

Any discharge should be visible at the tundish. The tundish should be located such that any discharge is visible. In addition, where discharges from safety devices may not be apparent, extra consideration should be given, e.g. for people with impaired vision or mobility. This could be via the installation of a suitable electronically operated or other safety device to warn when discharge takes place.

The discharge pipe (D2) from the tundish should:

- A Have a vertical section of pipe at least 300mm long, below the tundish before any elbows or bends in the pipework.
- B Be installed with a continuous fall of at least 1 in 200 thereafter.

The discharge pipe (D2) from the tundish should be of metal or other material that has been demonstrated to be capable of withstanding temperatures of the water discharged.

The discharge pipe (D2) should be at least one pipe size larger than the nominal outlet size of the safety device, unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long.

Range Cylinders

Installation, Operation and Maintenance Manual for
unvented heat pump cylinders and buffer tanks

Installation Instructions - (Cont.)

Therefore, discharge pipes between 9m and 18m equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device; between 18 and 27m at least three sizes larger. Bends must be taken into account in calculating the flow resistance. Refer to the diagram, Table 2 and the worked example.

An alternative approach for sizing discharge pipes would be to follow BS EN 806:2 specifications for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.

The discharge pipe (D2) should terminate in a safe place where there is no risk to persons in the vicinity of the discharge. Examples of acceptable discharge arrangements are:

- A To a trapped gully with the end of the pipe below the fixed grating and above the water seal.
- B Downward discharges at a low level; i.e. up to 100mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable, providing that – where children play or otherwise could come into contact with discharges – a visible wire cage or similar guard is positioned to prevent contact.
- C Discharges at a high level; e.g. into a metal hopper and metal down pipe with the end of the discharge pipe clearly visible; or onto a roof capable of withstanding high temperature discharges of water and 3m from any plastic guttering systems that would collect such discharges.
- D Device to warn when discharge takes place.

Discharge worked example

The example below is for G1/2 temperature relief valve with a discharge pipe (D2) having four elbows and a length of 7m from the tundish to the point of discharge.

Maximum resistance allowed for a straight length of 22mm copper discharge pipe (D2) from a G1/2 temperature relief valve is: 9.0m.

Subtract the resistance for four 22mm elbows at 0.8m each = 3.2m.

Therefore the maximum permitted length equates to: 5.8m.

5.8m is less than the actual length of 7m, therefore calculate the next largest size.

Maximum resistance allowed for a straight length of 28mm pipe (D2) from a G1/2 temperature relief valve equates to: 14m.

As the actual length is 7m, a 28mm (D2) copper pipe will be satisfactory.

Table 2: Sizing of copper discharge pipe 'D2' for a temperature relief valve with a G1/2 outlet size (as supplied).

Size of discharge pipework	Maximum length of straight pipe (no bends or elbows)	Deduct the figure below from the maximum length for each bend or elbow in the discharge pipe
22mm	Up to 9m	0.8m
28mm	Up to 18m	1.0m
35mm	Up to 27m	1.4m

Specification Details

The unvented cylinders and buffer tanks are made from Duplex stainless steel for excellent corrosion resistance, are encased in a strong rust-proofed steel case and are highly insulated with environmentally-friendly foam. Further details are below.

Materials

- Inner shell – Duplex stainless steel
- Coil – 28mm diameter stainless steel
- Bosses – Stainless steel
- Polyurethane CFC- and HCFC-free foam insulation. This insulation has an Ozone Depletion Potential of Zero and a Global Warming Potential of 3.1.
- Casing – galvanized steel, durable finish
- Anode – none required

All cylinders are welded using our advanced TIG welding production methods, under a controlled oxygen purged process, to maximize the corrosion resistant qualities of the high-grade Duplex stainless steel. Every cylinder is checked using 15 bar pressure testing.

Immersion heater

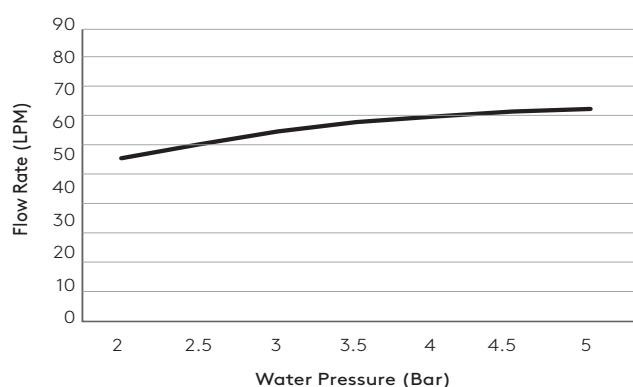
- 1 3/4" BSP parallel threaded head
- Long life low noise element and thermostat pocket
- Brazed construction
- Combined thermostat and safety cut-out
- Element rating 3kW at 230-240 volt A/C

Guarantee

The inner vessel carries an extended 10-year guarantee against faulty materials or manufacture with all parts supplied with the cylinder carrying an extended 2-year guarantee. Extended guarantees are subject to terms and conditions - see page 23.

Flow rates

Our cylinders are renowned for their fast flow rates. The graph below illustrates the speed at which hot water can be distributed reliably throughout the home.



Pressure specifications - The Stand Alone Buffer Tank

Operating Pressure	Refer to HP Manufacturer's guidance
Maximum Operating Pressure	Refer to HP Manufacturer's guidance or 3.5 bar Max

Pressure specifications - The Integral Buffer Tank

Operating Pressure	Refer to HP Manufacturer's guidance
Maximum Operating Pressure	Refer to HP Manufacturer's guidance or 3.5 bar Max
Opening Pressure of T & P Valve	7.0 bar
Opening Temperature of T & P Valve	90°C

For pressure specification for the unvented cylinder refer to table below.

Pressure specifications - The Unvented Cylinder

Maximum Inlet Water Pressure	12.0 bar
Operating Pressure/Maximum Design Pressure	3.0 bar
Expansion Valve Opening Pressure	6.0 bar
Expansion Vessel Charge Pressure	3.0 bar
Maximum Operating Pressure	3.0 bar
Opening Pressure of T & P Valve	7.0 bar
Opening Temperature of T & P Valve	90°C
Maximum Coil Pressure	3.5 bar

Immersion Element specifications

Element Rating	3kW 230-240 volt
Thread Type	1 3/4" BSP
Fuse Requirement (Via Double Pole Switch)	13A
Control Thermostat Element Temperature Range	45°C - 65°C
High Limit Thermostat Element Temperature Set Point	85°C

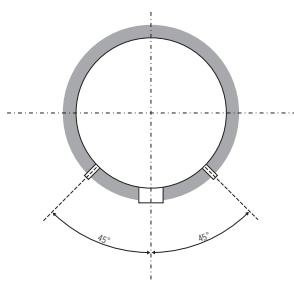
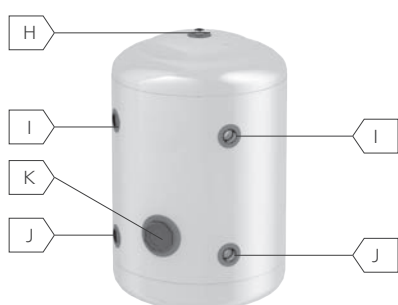
Upgrading to a titanium or stainless steel immersion heater should be considered in hard water areas or if fitting an immersion to the buffer tank.

Range Cylinders

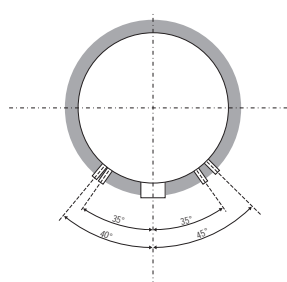
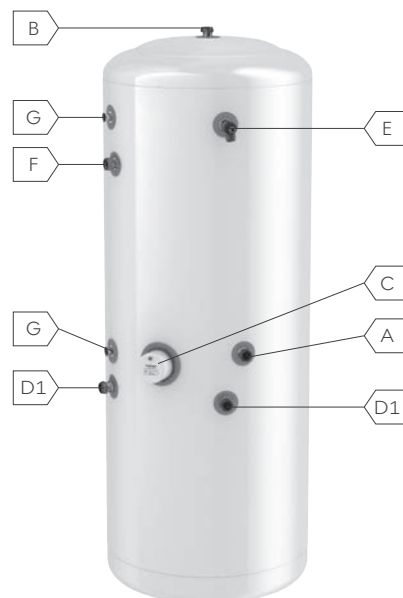
Installation, Operation and Maintenance Manual for
unvented heat pump cylinders and buffer tanks

Product Diagrams

BUFFER TANK



HEAT PUMP

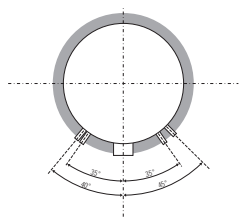
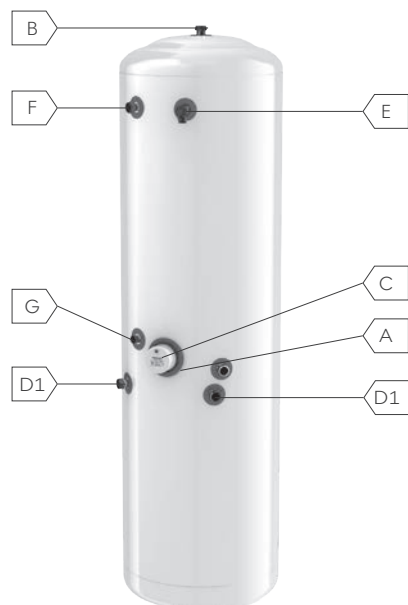


CONNECTIONS

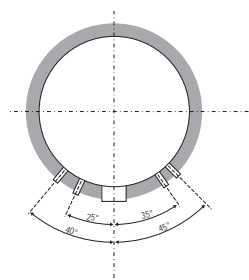
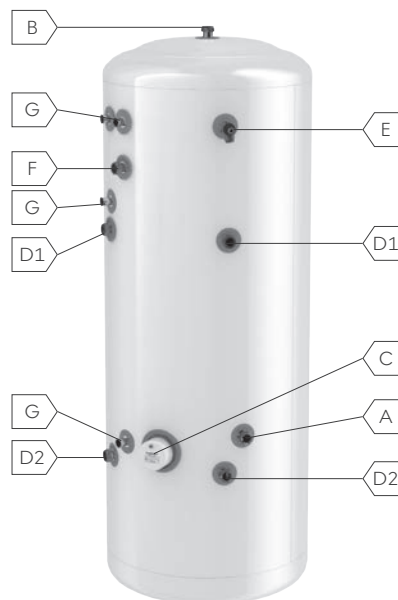
- A Cold feed - 22mm Compression
($\frac{3}{4}$ " Male BSP without nuts)
- B Hot water outlet - 22mm Compression
($\frac{3}{4}$ " Male BSP without nuts)
- C Immersion heater*
- D1 Heat pump coil connections - 22mm
Compression ($\frac{3}{4}$ " Male BSP without nuts)
- D2 Solar coil connections - 22mm Compression
($\frac{3}{4}$ " Male BSP without nuts)
- E Temperature & pressure relief valve*
- F 22mm Secondary return (for cylinders with
a capacity of 210L and above only)
- G Dry stat pocket
- H Vent connection - 22mm Compression
($\frac{3}{4}$ " Male BSP without nuts)
- I Flow - 1" Female BSP
- J Return - 1" Female BSP
- K Inspection hatch $1\frac{3}{4}$ " Female boss
and blanking plate

Product Diagrams

HEAT PUMP SLIMLINE



HEAT PUMP & SOLAR

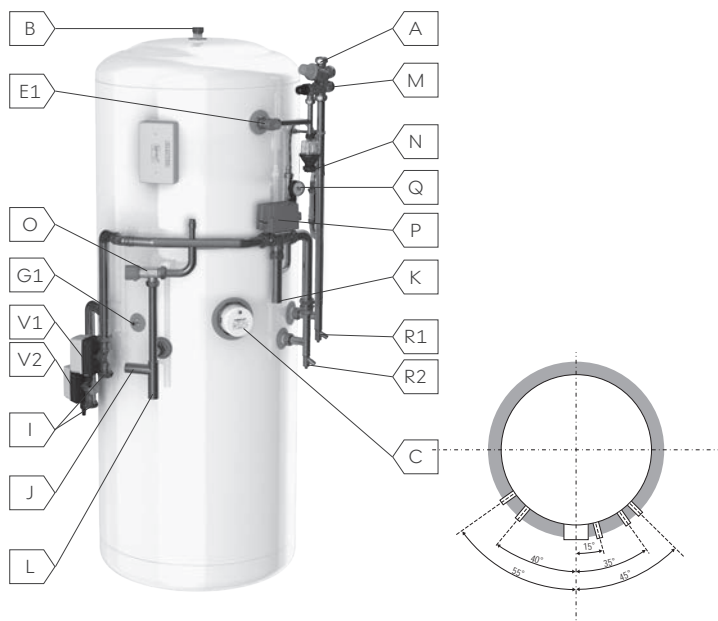


Range Cylinders

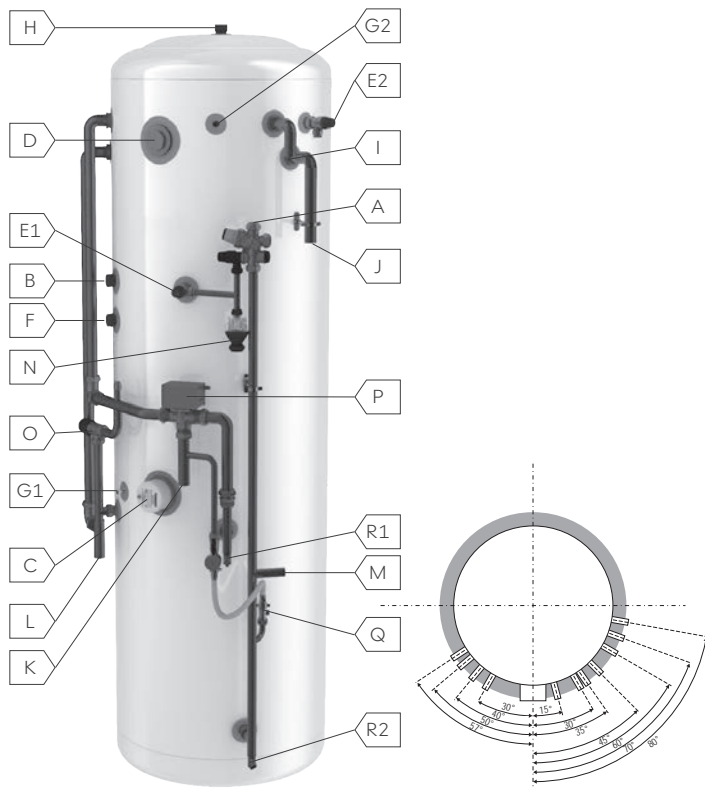
Installation, Operation and Maintenance Manual for
unvented heat pump cylinders and buffer tanks

Product Diagrams (cont.)

HEAT PUMP PRE-PLUMBED 1 & 2 ZONE



HEAT PUMP WITH INTEGRAL BUFFER TANK

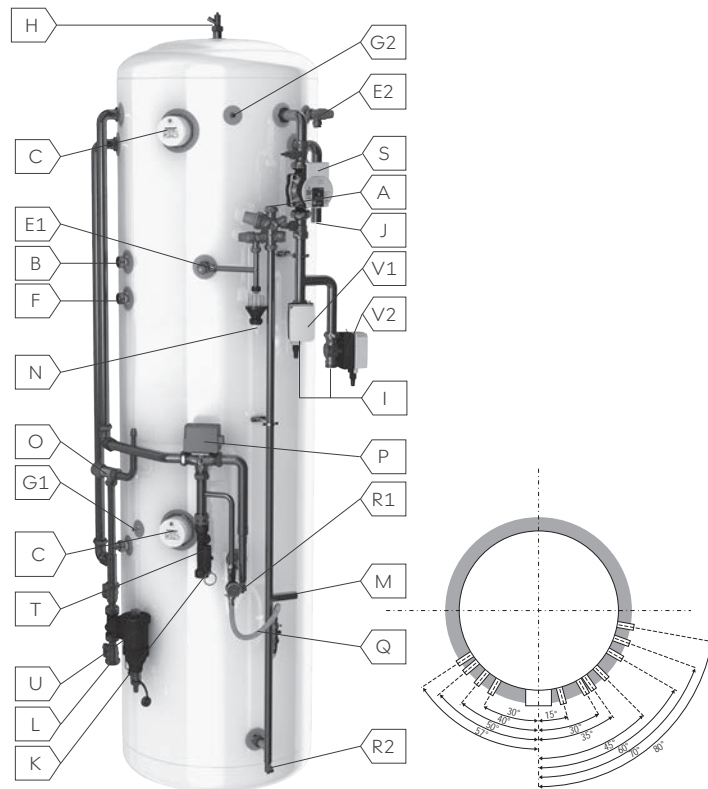


CONNECTIONS

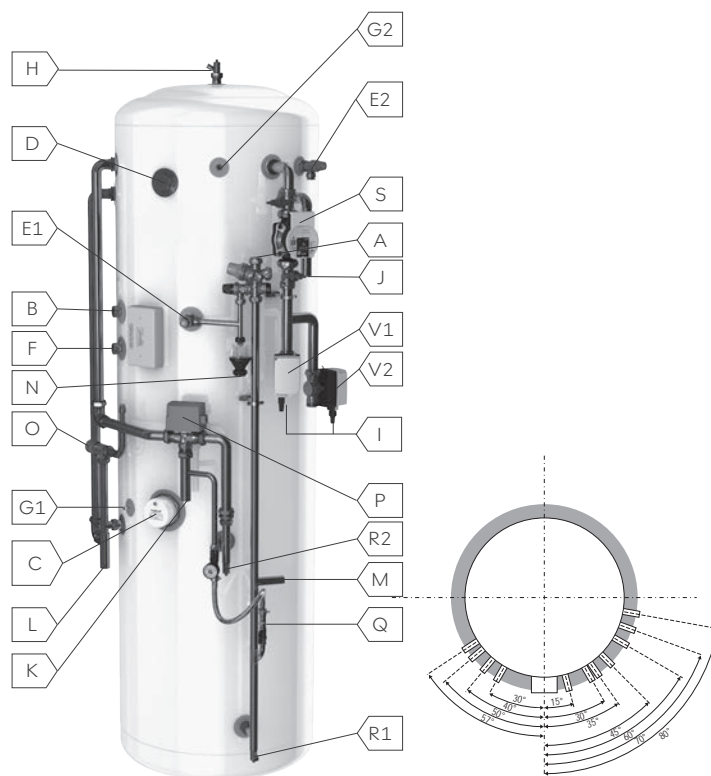
- A Inlet control set cold feed - 22mm Compression
- B Hot water draw-off - 22mm Compression (3/4" Male BSP without nuts)
- C 3kW Immersion heater
- E1 Temperature & pressure relief valve - Cylinder
- E2 Temperature & pressure relief valve - Buffer Tank
- F 22mm Secondary return
- G1 10mm Dry stat pocket - Cylinder
- G2 10mm Dry stat pocket - Buffer Tank
- H Air release valve
- K 28mm Flow from heat pump
- I 28mm Flow to heating system
- J 28mm Return from heating system
- L 28mm Return to heap pump
- M To potable expansion vessel
- N Anti-splash tundish 22mm discharge connection
- O Balancing bypass valve
- P 28mm Three port valve
- Q Filling loop
- R1 Drain Cock - Heating system
- R2 Drain Cock - Cylinder
- S Circulating pump
- T Flow regulator valve
- U Magnetic filter with 28mm isolation valves
- V1 Two port valve - Single zone heating
- V2 Two port valve - Twin zone heating (HT & PT models only)

Product Diagrams (cont.)

**HEAT PUMP WITH INTEGRAL BUFFER TANK -
1 & 2 ZONE**



**HEAT PUMP WITH INTEGRAL BUFFER TANK -
2 ZONE (HT)**



Technical Performance and Specification Data - Fiche

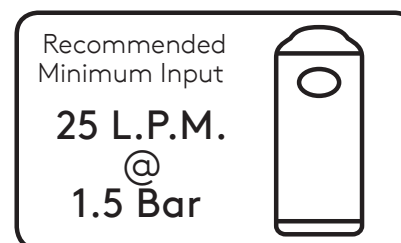
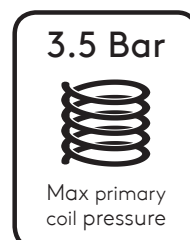
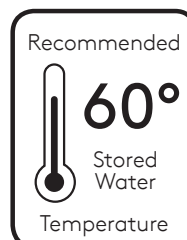
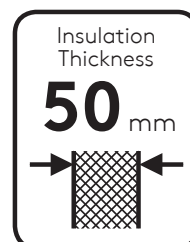
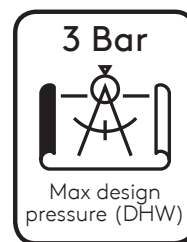
Nominal Cap. (Litre)		Product Codes	Energy Rating	Standing Loss (W)	Total Height (mm)	Diameter (mm)	Weight Empty (kg)	Weight Full (kg)	Actual Cylinder Capacity (Litre)	Actual Buffer Capacity (Litre)	H (mm)
Buffer tank											
60	HPB60ERP		C	47*	714	475	16	79	n/a	63	
90	HPB90ERP		C	58*	1089	475	24	129	n/a	105	
150	HPB150ERP		C	59*	1117	550	25	176	n/a	151	
180	HPB180ERP		C	67*	1305	550	29	210	n/a	181	
210	HPB210ERP		C	75*	1493	550	33	244	n/a	211	
Heat pump cylinders with integral buffer tank											
180	HPIB180/50ERP		C	64	1711	550	59	275	172	44	
210	HPIB210/50ERP		C	75	1899	550	65	311	202	44	
240	HPIB240/50ERP		C	80	2103	550	69	348	235	44	
180	HPIB180/50POERP		C	64	1711	550	59	275	172	44	
210	HPIB210/50POERP		C	75	1899	550	65	311	202	44	
240	HPIB240/50POERP		C	80	2103	550	69	348	235	44	
Heat pump cylinders with integral buffer tank - Single Zone and Twin Zone											
180	HPIB180/50PERP		C	64	1711	550	66	282	172	44	
210	HPIB210/50PERP		C	75	1899	550	70	316	202	44	
240	HPIB240/50PERP		C	80	2103	550	76	355	235	44	
180	HPIB180/50PTERP		C	64	1711	550	67	283	172	44	
210	HPIB210/50PTERP		C	75	1899	550	71	317	202	44	
240	HPIB240/50PTERP		C	80	2103	550	77	356	235	44	
Heat pump cylinders with integral buffer tank - Twin Zone (no filter, no flow setter)											
180	HPIB180/50HTERP		C	64	1711	550	65	281	172	44	
210	HPIB210/50HTERP		C	75	1899	550	69	315	202	44	
240	HPIB240/50HTERP		C	80	2103	550	77	356	235	44	
Heat pump unvented hot water cylinders											
150	HP150ERP, HP150FBERP		C	59	1117	550	40	174	135	n/a	
180	HP180ERP, HP180FBERP, HP180PERP		C	67	1305	550	44	209	165	n/a	
210	HP210ERP, HP210FBERP, HP210PERP		C	75	1493	550	48	242	195	n/a	
250	HP250ERP, HP250FBERP, HP250PERP		C	84	1744	550	53	288	235	n/a	
300	HP300ERP, HP300FBERP		C	93	2057	550	60	345	285	n/a	
400	HP400ERP		C	102	1653	693	82	460	378	n/a	
500	HP500ERP		C	110	1943	693	93	551	458	n/a	
Heat pump unvented hot water cylinders - Pre-plumbed											
150	HP150PERP, HP150PTERP		C	59	1117	550	45	187	135	n/a	
180	HP180PERP, HP180PTERP		C	67	1305	550	49	221	165	n/a	
210	HP210PERP, HP210PTERP		C	75	1493	550	53	255	195	n/a	
250	HP250PERP, HP250PTERP		C	84	1744	550	58	300	235	n/a	
300	HP300PERP, HP300PTERP		C	93	2057	550	65	357	285	n/a	
Heat pump slimline unvented hot water cylinders											
150	HP150SLMERP		C	66	1458	475	40	185	145	n/a	
180	HP180SLMERP		C	72	1708	475	45	218	173	n/a	
210	HP210SLMERP		C	87	2021	475	51	259	208	n/a	
Heat pump & solar unvented hot water cylinders											
180	HPS180ERP		C	67	1305	550	58	219	161	n/a	
210	HPS210ERP		C	75	1493	550	61	251	190	n/a	
250	HPS250ERP		C	84	1744	550	65	295	230	n/a	
300	HPS300ERP		C	93	2057	550	77	357	280	n/a	
400	HPS400ERP		C	102	1653	693	92	461	369	n/a	
500	HPS500ERP		C	110	1943	693	103	552	449	n/a	

*Buffer tank ERR ratings are only relevant when used to store DHW and not installed as part of the heating circuit.

Heat-up Time (Minutes)	Heat Loss (kW/24Hr)	Coil Primary Flow (L.P.M.)	Pressure Drop HP Coil (Bar)	HP Coil Surface Area (m²)	HP Coil Capacity (Litres)	HP Coil (kW Rating)
n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a
20	1.53	15	0.14	1.7	8.0	32
23	1.80	15	0.14	1.7	8.0	32
27	1.91	15	0.14	1.7	8.0	32
20	1.53	15	0.14	1.7	8.0	32
23	1.80	15	0.14	1.7	8.0	32
27	1.91	15	0.14	1.7	8.0	32
20	1.53	15	0.14	1.7	8.0	32
23	1.80	15	0.14	1.7	8.0	32
27	1.91	15	0.14	1.7	8.0	32
20	1.53	15	0.14	1.7	8.0	32
23	1.80	15	0.14	1.7	8.0	32
27	1.91	15	0.14	1.7	8.0	32
20	1.53	15	0.14	1.7	8.0	32
23	1.80	15	0.14	1.7	8.0	32
27	1.91	15	0.14	1.7	8.0	32
15	1.41	15	0.08	2.3	14.3	32
20	1.61	15	0.08	2.3	14.3	32
24	1.79	15	0.08	2.3	14.3	32
29	2.02	15	0.08	2.3	14.3	32
34	2.24	15	0.08	2.3	14.3	32
42	2.45	15	0.08	2.3	14.3	32
56	2.65	15	0.08	2.3	14.3	32
15	1.41	15	0.14	1.4	6.0	26
20	1.61	15	0.14	1.7	8.0	32
24	1.79	15	0.14	1.7	8.0	32
29	2.02	15	0.14	1.7	8.0	32
34	2.24	15	0.14	1.7	8.0	32
17	1.58	15	0.14	1.7	8.0	32
20	1.72	15	0.14	1.7	8.0	32
24	2.08	15	0.14	1.7	8.0	32

				Dedicated Solar Volume (Litres)	Solar Coil Surface Area (m²)	Solar Coil Capacity (Litres)	Solar Coil (kW Rating)	Pressure Drop Solar Coil (Bar)	HP Coil Surface Area (m²)	HP Coil Capacity (Litres)	HP Coil (kW Rating)
20	1.61	15	0.08	63	0.7	3.2	19	0.14	2.3	14.3	32
24	1.79	15	0.08	70	0.9	4.1	21	0.17	2.3	14.3	32
29	2.02	15	0.08	72	0.9	4.1	21	0.17	2.3	14.3	32
34	2.24	15	0.08	75	0.9	4.1	21	0.17	2.3	14.3	32
42	2.45	15	0.08	209	1.7	8.0	32	0.14	2.3	14.3	32
56	2.65	15	0.08	220	1.7	8.0	32	0.14	2.3	14.3	32

All Cylinders























BS EN 12897:2016+A1:2020 Water supply. Specification for indirectly heated unvented (closed) storage water heaters.

All dimensions ±3mm unless stated otherwise. All weights ±500g.

Range Cylinders

Installation, Operation and Maintenance Manual for
unvented heat pump cylinders and buffer tanks

Parts List

	Part no: 0027827 Inlet control set – with balanced cold 3 bar PRV 6 bar expansion relief		Part no: 0008960 External expansion vessel DHW - Units 250L & under 19 litre vessel		Part no: 0025408 22mm Two port valve
	Part no: 0025490 Temperature & pressure relief valve 1/2" NPT x 15mm (7 bar / 90°C)		Part no: 0008961 External expansion vessel DHW - Units 300L & over 24 litre vessel		Part no: 1052657 28mm Two port valve
	Part no: 1000093 Anti splash tundish 15 x 22 mm		Part no: 0025054 Immersion heater Incoloy long life 3 kW immersion heater		Part no: 1052951 28mm Three port valve
	Part no: 0023282 High limit thermostat		Part no: 0023280 Dual thermostat		Part no: 1054009 Magnetic filter with 28mm isolation valves
	Part no: 0026980 Two 28mm x 1" BSP male thread adaptors Part no: 0027037 Two fibre washers		Part no: 1053794 Circulator pump Part no: 0021568 Circulator pump cable		
	Part no: 0026998 1" Flow regulator valve with sight glass		Part no: 0025054 Immersion heater Incoloy long life 3 kW immersion heater		Part no: 0026957 15mm Filling loop with pressure gauge
	Part no: 10544853 24 Way wiring centre		Part no: 0027048 12 Way wiring centre		Part no: 22mm street drain cock / air vent
Part no: 1054006 - Buffer Kit comprising of: <ul style="list-style-type: none"> • Circulator pump (1053794) & cable (0021568) • 28mm two port valve (1052657) • Immersion heater & O ring (0025054) 		Part no: 1054015 - Heat Pump Kit comprising of: <ul style="list-style-type: none"> • Flow regulator valve with sight glass (0026998) • Magnetic filter with 28mm isolation valves (1054009) 			

Spare parts

We recommend that only parts provided by the manufacturer are used for spares. Where alternative sources are used, the spares **MUST** meet the original specification as provided by the manufacturer, or be authorised replacements if the original parts are not available, to avoid invalidating the guarantee.

Full range of spare parts is available from Range Cylinders.

Tel: **0345 260 0258**.

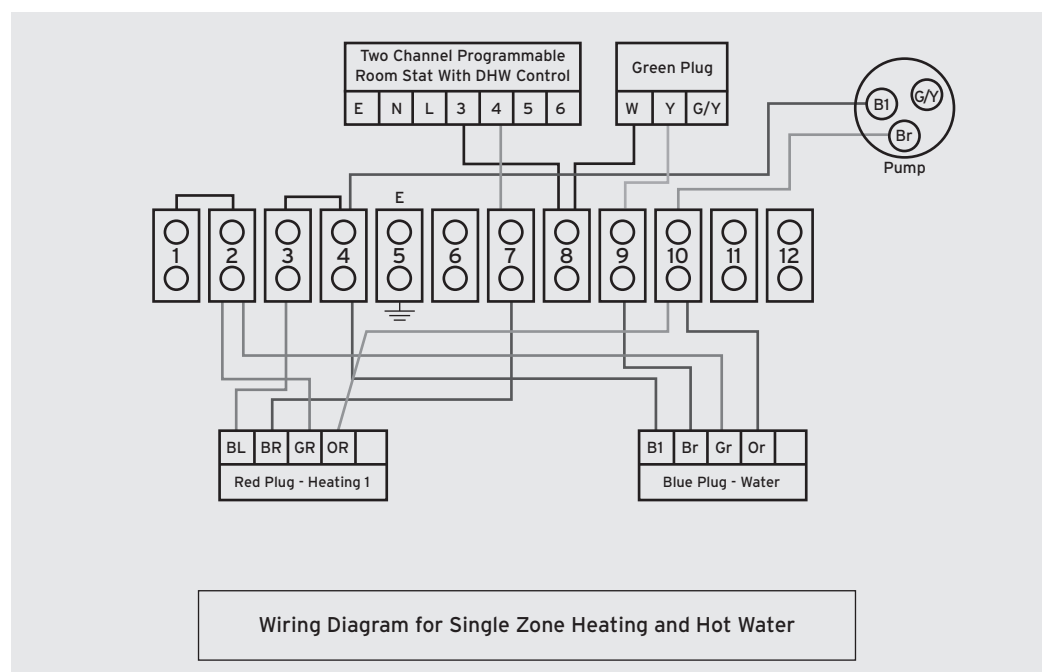
Wiring Diagrams

The diagrams shown relate to the components listed. Other components and other manufacturers' components may vary in their wiring requirements, particularly thermostats. Always refer to manufacturers' instructions which may override the detail in order to function correctly.

SINGLE ZONE HEATING

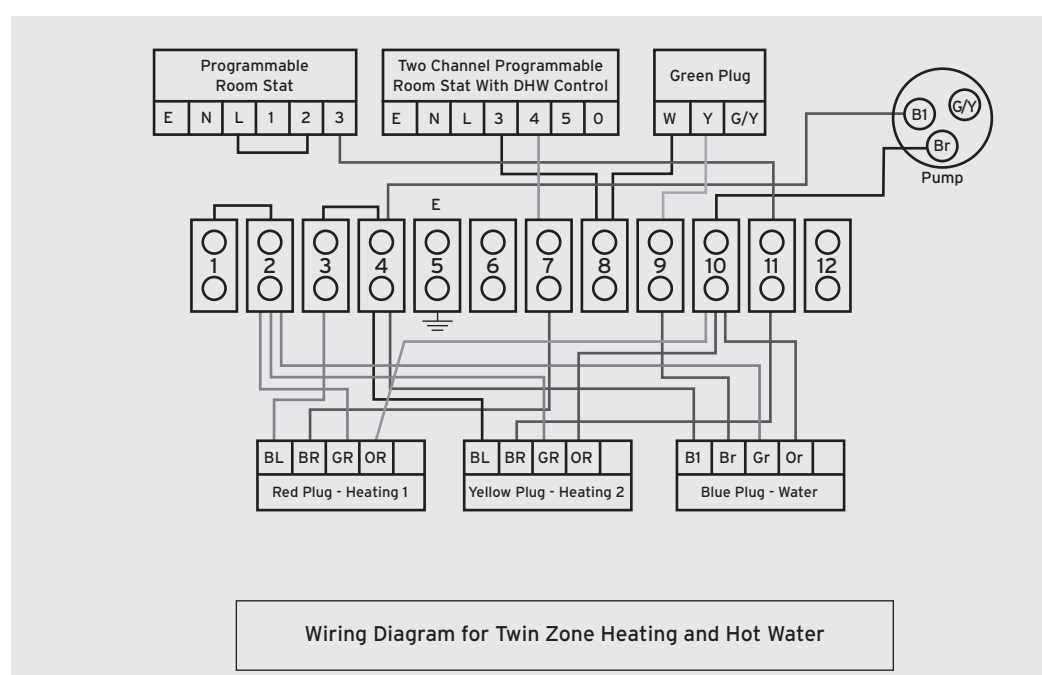
Wiring Diagram for Single Zone Heating and Hot Water

Two channel
Programmable Room Stat
with DHW Control



TWIN ZONE HEATING

Wiring Diagram for
Twin Zone Heating and
Hot Water Two channel
Programmable Room Stat
with DHW Control and
Programmable Room Stat



Note: Please refer to the specification insert sheet for performance details on individual cylinders.

Range Cylinders

Installation, Operation and Maintenance Manual for
unvented heat pump cylinders and buffer tanks

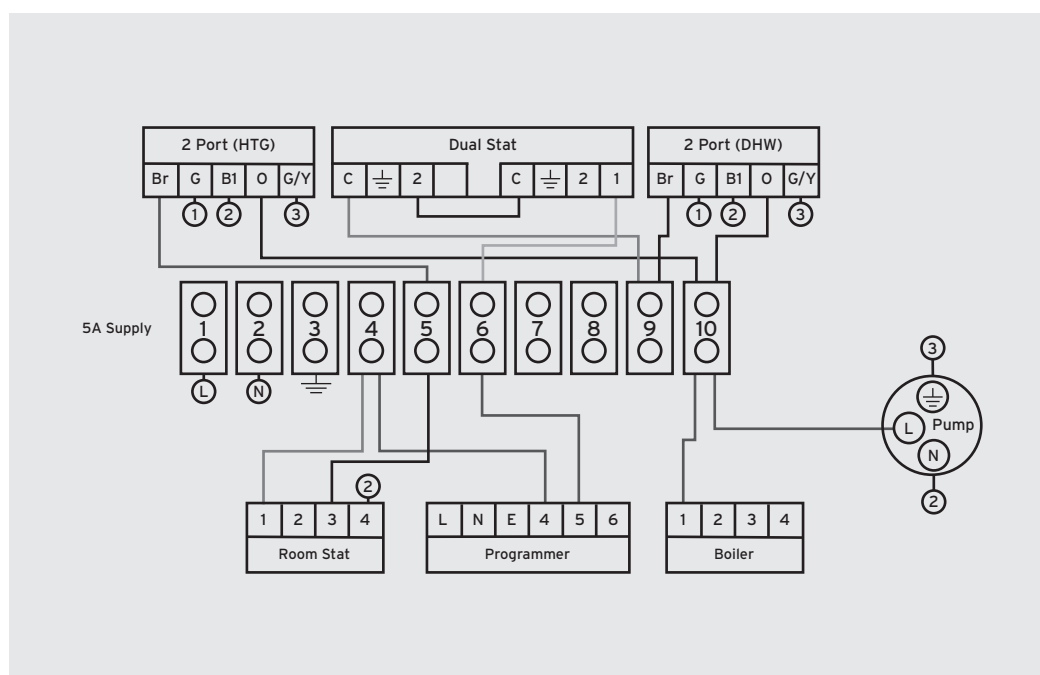
Wiring Diagrams

Variant dual thermostat wiring

The diagrams shown relate to the components listed. Other components and other manufacturers' components may vary in their wiring requirements, particularly thermostats. Always refer to manufacturers' instructions which may override the detail in order to function correctly.

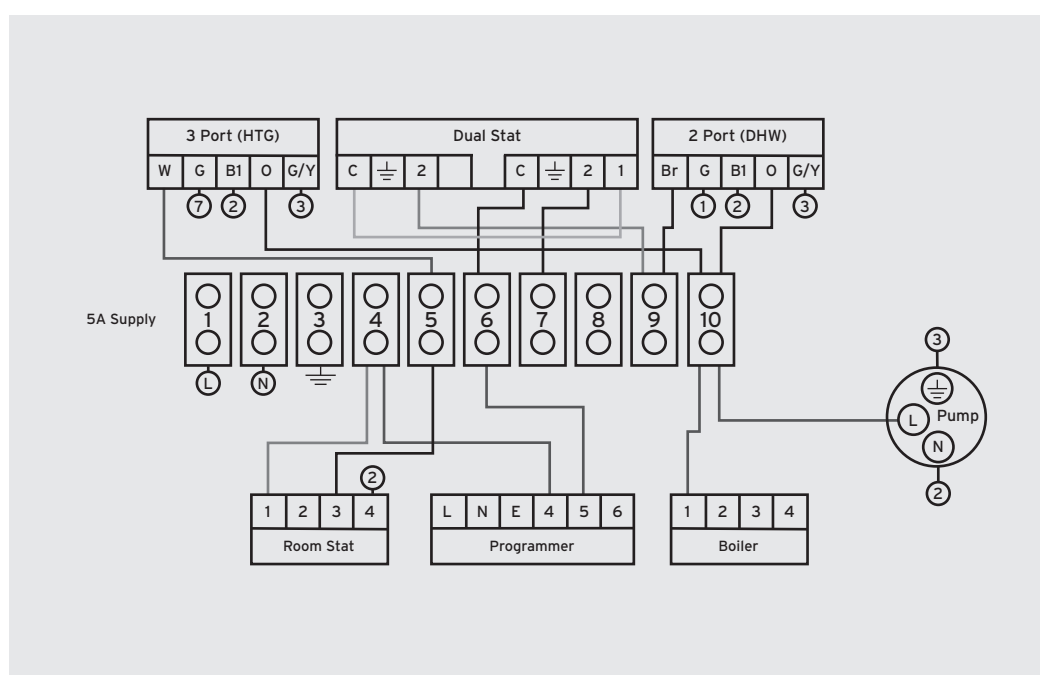
VARIANT DUAL THERMOSTAT WIRING

Wiring Diagram 2 X Two
Port Zone Valves (S-Plan)



VARIANT DUAL THERMOSTAT WIRING

Wiring Diagram 3 Port Mid
Position (Y-Plan) +2 Port
Valve



Commissioning & Decommissioning

Sterilisation

Only switch on power to the immersion heaters once sterilisation liquid has been purged and the cylinder filled with water.

Flushing & filling the cylinder

Check that the pressure in the expansion vessel is 3 bar (45psi), i.e. the same as the setting of the pressure reducing valve. The valve is of the car tyre (schrader) type. Check all the connections for tightness including any factory made connections such as the immersion heater and the temperature and pressure relief valve. Before filling, open the hot tap furthest away from the unvented cylinder to let air out.

Open the cold main isolation valve and allow the unit to fill. When water flows from the tap allow it to run for a short while to flush through any dirt, swarf or flux residue. Close the tap and open every other hot tap in turn to purge all remaining air.

WARNING: If the unit is to be left unused following installation and commissioning, e.g. unoccupied properties, the hot water cylinder should be drained or regularly flushed through with fresh mains water at least once every 30 days.

Flushing and filling the heating system

Part L of the 2022 Building Regulations requires that all central heating systems are cleaned and dosed with protective inhibitor whenever any major works are carried out to the system. This includes the fitting of or changing of a buffer tank as this substantially impacts the volume of water held within the heating system. For retrofit installations we recommend you follow best practice, thoroughly flushing the system once, prior to fitting new equipment, with a second flush after the equipment is fitted, before the system is commissioned.

When the heating system is filled, it must be dosed with a suitable inhibitor in the correct ratios for the system size to protect against corrosion and limescale. Always consult the inhibitor chemical manufacturer's instructions for safety and correct dosing procedure.

Important: Always consult the heat pump manufacturer's instructions for any special requirements around flushing and dosing. Failure to adequately flush and dose the system will invalidate the product guarantee.

Unvented heat pump cylinder

Ensure the heating circuit has been fully flushed, carrying out commissioning in line with the heat pump manufacturer's commissioning instructions for the heating and the primary circuit. Primary pipework must be filled, vented and tested in accordance with the heat pump manufacturer's instructions. To ensure all pipework is fully vented, bleed valves may need opening, especially on any raised pipes; inadequate flushing or venting could cause damage to the heat pump or

circulation pump. Ensure the lever on the two port & three port valve is set to the filling position and fill the primary circuit, ensuring the appropriate inhibitors are added in the right concentrations. When full, move the lever back. Switch the programmer to domestic hot water (DHW) and allow the unit to start to heat. Adjust the dial of the dual thermostat to between 55°C and 65°C as required. Allow unit to heat up; adjust the thermostat so that the heater switches off at 60°C. Record information on the Benchmark Commissioning Checklist.

Storage temperature

The recommended storage temperature for both direct and indirect cylinders is 60–65°C. In many healthcare applications the guidance on legionella control and safe water delivery temperatures will require storing the water at 60–65°C, distributing at 50–55°C and using thermostatic mixing valves to control the final temperature. For details consult the NHS estates guidance on safe hot water temperatures.

Safety checks

During heat-up double check all pipework for leaks, ensuring all connections, including the immersion heaters and any pre-plumbed connections, are watertight. There should be no sign of water coming from either the expansion relief valve or the temperature/pressure relief valve.

Now hold both of these safety valves fully open, allowing as much water as possible to flow through the tundish. Check that your discharge pipework is free from debris and is carrying the water away to waste efficiently. It is normal that some water will splash out of the tundish. This should be minimised by ensuring the tundish, D1 and D2 pipes are vertical to allow clean flow. Release the valves and check that they reseal properly.

On completion of commissioning, fill in the Benchmark Commissioning Checklist and leave with the homeowner.

Benchmark scheme

The installer must follow the Benchmark Code of Practice for the Benchmark certification to be valid. The benchmark code of practice can be found online via www.benchmark.org.uk.

Decommissioning & disposal

Damage to the environment and risks to personal health are avoided by the proper decommissioning and disposal of this product. To decommission your unvented hot water cylinder, isolate the electricity supply to the immersion heater and heat pump/boiler, before draining the cylinder and safely disconnecting all fixtures and fittings. The cylinder is made from many recyclable materials; therefore we strongly encourage recycling of this product at your local authority recycling centre at the end of its working life. For more information on proper disposal, please contact your local council or waste disposal office.

Range Cylinders

Installation, Operation and Maintenance Manual for
unvented heat pump cylinders and buffer tanks

Operator and owner info

Extended guarantee

Remember to activate your extended 10-year guarantee on the stainless steel inner vessel and the 2-year guarantee on parts by registering your cylinder online at <https://rangecylinders.info/a02> within one month of the cylinder's first use.

If this registration is not completed, the guarantee will be limited to 2 years for the inner vessel and 1 year for parts, as outlined in our Terms and Conditions.

Annual servicing

To maintain your cylinder and ensure it continues to operate safely and efficiently, it must be serviced by a G3-qualified heating engineer within 12 months of its initial commissioning and at 12-month intervals thereafter.

It is your responsibility to ensure that all services are logged online within one month of each service. You can do this by completing our online form at:

<https://rangecylinders.info/a03>.

Failure to comply with any of these servicing requirements will void your guarantees.

Usage

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

Your unvented cylinder should operate automatically in normal use, with only minimal input from yourself as a user.

Temperature

To ensure the water in the cylinder remains hygienic the cylinder temperature is factory set to store the water at 65°C and we advise all users not to change this. It is intended that the hot water should be mixed with cold water at the outlet point such as a bath, basin, shower, or kitchen sink, down to a safe usable temperature to suit. Appropriate safety considerations should be taken at the outlets such as the fitting of mixer valves/taps or thermostatic mixer valves/taps, especially in situations where there are vulnerable users.

Set up the user controls/programmers that have been installed with your cylinder to control when you would like to heat up the water by following the manufacturer's instructions. Note, most modern controls will include special holiday settings to ensure you don't waste energy when you are away.

Water discharging

If water is flowing from the safety valves through the tundish, this indicates a fault in your heating system and action is needed. Call 0345 260 0258 for advice.

If this water is hot, turn the boiler/ and/or the immersion heater off. Do not turn off the water until the discharge runs cool. The discharge may also stop.

Call out a competent installer to diagnose the issue with the heating system. Tell them you have a fault on your hot water system and that the system includes an unvented hot water cylinder.

Specification - cylinder details & performance

Please refer to pages 14-15 of this installation manual.

Spare parts

See page 16 for a list of approved parts and part numbers.

Benchmark scheme

Installer must follow the Benchmark Code of Practice for the Benchmark certification and your 10-year guarantee to be valid. The Benchmark Code of Practice can be found online via www.benchmark.org.uk.

Range Cylinders is a licensed member of the Benchmark Scheme which aims to improve the standards of installation and commissioning of domestic heating and hot water systems in the UK and to encourage regular servicing to optimise safety, efficiency and performance.

Benchmark is managed and promoted by the Heating and Hotwater Industry Council. For more information visit: www.benchmark.org.uk.

Important: Please ensure that the installer has fully completed the Commissioning Checklists on page 22 of this installation instructions and that you have signed it to say that you have received a full and clear explanation of your cylinder's operation.

The installer is legally required to complete this Benchmark Commissioning Checklist as a means of complying with the appropriate Building Regulations.

All installations must be notified by the installer to the Local Authority Building Control either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer who should, on receipt, write the Notification Number on the Benchmark Commissioning Checklist.

The Benchmark Commissioning Checklist will be required in the event of any guarantee claim.

Servicing and Maintenance

General

Servicing should only be carried out by competent installers and only spare parts approved by the manufacturer may be used. Never bypass any of the safety devices and never operate the unit without all of the safety devices being in place and fully operational.

Draining

Isolate from the electrical supply to prevent the immersion heaters burning out. Turn off the heat pump/boiler. Isolate the unit from the cold mains. Attach a hose to the draining tap ensuring that it reaches to a level below the unit (this will ensure an efficient syphon is set up and the maximum amount of water is drained from the unit). First open the hot tap closest to the unit and then open the draining tap.

WARNING: Water drained off may be very hot!

Important: After draining the cylinder do not close the hot tap until the cylinder has fully cooled. Failure to follow this instruction may result in damage to the cylinder and will invalidate the guarantee.

Annual maintenance

The unvented cylinder requires an annual service in order to ensure safe working and optimum performance and

to maintain the guarantee. It is essential that the following checks are performed by a competent installer on an annual basis. Commonly this is done at the same time as the annual heat pump or boiler service.

- 1) Twist the cap of the expansion relief valve on the inlet control set and allow water to flow for 5 seconds. Release and make sure it reseats correctly. Repeat with the pressure / temperature relief valve. In both cases check that the discharge pipework is carrying the water away adequately. If not, check for blockages etc. and clear.

WARNING: The water discharged may be very hot!

- 2) Check that any immersion heaters fitted are working correctly and that they are controlling the water at a temperature between 55°C and 65°C.
- 3) Check the pressure in the expansion vessel is charged to 3 bar. Turn off the water supply to the unit and open a hot tap first. The air valve on expansion vessel is a Schrader (car tyre) type. Air, nitrogen or CO₂ may be used to charge the expansion vessel.
- 4) Unscrew the head on the inlet control set and clean the mesh filter within (some water may escape).

NOTE: Every annual service needs to be logged by the homeowner using our online form to maintain the guarantee. Please assist any homeowner needing help.

Fault Finding

Issue	Possible Cause	Solution
Water escaping from the case	Compression fitting on hot draw-off not sealing	Check/remake joint with sealing paste
	Leaking cylinder	Isolate supply and contact us
Cold water at hot taps	Heat pump not working	Check heat source - consult heat pump manufacturer's instructions
	Motorised valve fault	Check plumbing / wiring to motorised valve
	Cut-out in dual stat has operated	Reset and investigate cause
	Immersion heater not switched on or cut-out has triggered	Check / reset
	Circulating pump fault	Check pump & consult manufacturer's instructions
Water discharges from expansion relief valve	If continual - pressure reducing valve (part of inlet control set) may not be operating correctly	Check outlet pressure from inlet control set is 3 bar
	If continual - expansion relief valve seat may be damaged	Remove cartridge - check seat and renew if necessary
	If intermittent - expansion vessel charge may have reduced / bladder perished	Check pressure in expansion vessel. Recharge to 3 bar if necessary. If bladder perished replace vessel
	Unit is being back pressurised	With cylinder cold check pressure in cylinder. If this is the same as the incoming mains pressure then you are getting backfeed. Install a balanced cold supply
Water discharges from temperature & pressure relief valve	Unit has overheated - thermal controls have failed	Switch off power to heat pump, boiler and immersion heaters. Leave water supply on. Wait until discharge stops. Isolate water supply and replace if faulty
Milky / cloudy water	Oxygenated water	Water from any pressurised system will release oxygen bubbles when flowing. The bubbles will settle out
No hot water flow	Cold mains off	Check and open stopcock
	Strainer blocked in pressure reducing valve	Isolate water supply and clean
	Inlet control set may be fitted incorrectly	Check and refit as required
Hot or warm water from cold tap	Loose pipework	Install extra clips
Noise	Note: Cylinders don't contain sufficient moving parts to generate noise; they only amplify sounds from other heating system parts. Common underlying causes of noise may include incorrect pump settings or flow rates, poor pipework design, water hammer, excessively high water pressure, trapped air, loose pipes, limescale buildup or sludge and compatibility issues with components, such as using the wrong type of valve.	Identify the source of the noise and eliminate it, where necessary, reviewing the wider system design and taking corrective action. Where elimination isn't possible, implement measures to reduce the issue, such as installing shock arresters, flow controls and pressure reducers.

Guarantee Terms & Conditions

This guarantee applies only to products and parts supplied by the unvented cylinder manufacturer and its associated brands.

The manufacturer guarantees that for a period of 2 years on the stainless steel inner vessel and 1 year on parts, from the date of commissioning or legal completion if new build, the products and associated components installed will conform to the manufacturer's specification and be free from defects in materials and workmanship, subject to the conditions set out below.

Please note: this guarantee excludes all pipework and connections, and any ancillary equipment that may be connected to the product, i.e. descaling equipment, water softeners etc.

Important: To activate the extended 10-year guarantee on the stainless steel inner vessel and the 2-year guarantee on parts for domestic properties, the **HOMEOWNER MUST REGISTER** the cylinder with Range Cylinders Ltd within one month of the cylinder's first use. If you do not register within one month of first use you won't be eligible for the extended guarantee.

This guarantee means that the manufacturer will take responsibility for the cost of guarantee repair of a product by a service engineer approved by the manufacturer, so that the product shall conform to the manufacturer's specification.

The manufacturer reserves the right, at its discretion, to replace a product or major component where it considers it to be beyond economical repair.

In the event of a breakdown during the guarantee period contact our Customer Service Department. Guarantee repair is free of charge to you for any parts and labour, providing all the guarantee conditions have been met.

Important: The product must be maintained by a competent person* within 12 months after commissioning and thereafter at 12-monthly intervals, with a plus or minus 30-day grace period. The homeowner must log each service with the manufacturer online or over the phone within one month of each service. Failure to comply with any of these servicing requirements will **VOID ALL GUARANTEES!**

As the manufacturer, we reserve the right to seek additional evidence of this maintenance to our reasonable satisfaction before approving any guarantee servicing and repairs. This may include copies of invoices for the servicing.

* A competent person is defined as a person representing a business, who has been adjudged by an accredited body (an example of which is BPEC) to be sufficiently competent to self-certify that their work complies with Document (G) Part 3 of the Building Regulations of England and Wales. May include SEI registered installers and/or FAS trained plumbers who have completed the renewables technology module.

Any exchanged components will become the legal property of the manufacturer.

This guarantee is valid provided that:

- The product has been installed by a competent installer and as per the instructions contained in this installation manual and all relevant Codes of Practice and Regulations in force at the time of installation.
- Any disinfection has been carried out in accordance with BS EN 806:4.
- The product has not been modified in any way.
- The system is fed from domestic mains water supply that meets specification on page 3 of this installation manual.
- Any third party labour charges associated with replacing the unit or any of its components have been authorised in advance by the Customer Service/ Technical Support team.
- It has only been used for storage of potable water.
- The product has not been subjected to frost, nor has it been tampered with or been subjected to misuse or neglect.
- No factory fitted parts have been removed for unauthorised repair or replacement.
- The Benchmark™ Commissioning Checklist included with this installation manual have been completed.
- Regular maintenance has been carried out by a competent person in accordance with the requirements set out in the maintenance section of the installation manual.
- The owner has registered the product with the manufacturer's Customer Service Department within 30 days of cylinder's first use.
- Only replacement parts authorised by the manufacturer have been used.

If a defect arises and a valid claim is received within the guarantee period, at its option and to the extent permitted by law, the manufacturer shall either:

- 1) Repair the defect at no charge, using new or refurbished replacement parts, or
- 2) Exchange the product with a product that is new or which has been manufactured using new or serviceable used parts, or
- 3) Refund the purchase price or a reasonable proportion of the purchase price.

The manufacturer reserves the right to inspect the product at your home before proceeding with any guarantee repair or replacement.

Any valid guarantee claims or guarantee service do not extend the original guarantee period. Information on extended guarantee is available upon request.

The guarantee only applies to the property at which the product was originally installed and applies only to properties in the United Kingdom and Ireland.

The guarantees are fully transferable from a change of legal ownership of the property.

Exclusions

The manufacturer will not be liable for any fault or costs arising from incorrect installation, incorrect application, lack of regular maintenance or neglect, accidental damage, malicious damage, misuse, any alteration, tampering or repair carried by a non-competent person.

The guarantee does not cover:

- The product, if the factory fitted temperature and pressure relief valve has been tampered with or removed.
- The effects of scale build up or the effects of corrosion.
- Additional costs that result from inadequate access provision such as removal of walls, ceilings, doors, other equipment or damage to decorative finishes, such as tiles, skirting board, door frames etc. Sufficient access is defined as enough space to reach all parts for servicing and maintenance up to and including the full removal and exchange of the cylinder.
- Any consequential losses caused by the failure or malfunction of the product.
- Faults and any associated costs arising from lack of power or water.
- Failure incurred by water contamination, air pollution and natural disasters.
- Installations outside the United Kingdom or Ireland.
- Any consequential loss, loss of profits, revenues or receipts howsoever arising from any non-conformity or defect affecting the product, or from any delay in repair or replacement of the product.
- Any loss or damage caused by delay in conduct of services or supply of parts required to rectify the non-conformity or defect.
- Cost of repair or replacement of any product consumables or decorative finishes, such as filters and casings.

The manufacturer shall not be responsible for any consequential damage, howsoever caused.

This guarantee does not affect any legal rights you may have as a consumer under applicable national legislation governing your purchase of this product.

For installations outside of the United Kingdom or Ireland, please contact the Range Cylinders Customer Service Department.

The manufacturer shall make final determination as to the validity of any guarantee claim, and shall be entitled to charge you all reasonable costs incurred in investigating the claim where no fault is found, or the guarantee claim is rejected in accordance with these conditions.

Range Cylinders

Installation, Operation and Maintenance Manual for
unvented heat pump cylinders and buffer tanks