RANGE CYLINDERS
Innovating hot water since 1904

Installation, Operation and Maintenance Manual

For unvented hot water cylinders with internal thermal expansion

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Part No: 026447 V1 - April 2025

CONTENTS

See insert sheet for product-specific technical performance, specification details and lists of spare parts and approvals.

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 19 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 25-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**.

Your Cylinder and Its Components

TABLE OF COMPONENTS All cylinders are supplied with the necessary fittings, safety and control devices needed to connect to the cold water mains. All have been pre-adjusted. High quality controls have been selected to combine high flow rate performance with minimum pressure drop. See insert sheet for a list of spare parts. Direct Models (Electric) Indirect Models (Single Coil) Indirect Solar Models (Twin Coil)	Inlet Control set	Temp & Pressure relief valve	Anti Splash Tundish	Titanium Immersion Heater	Two Port Valve	Integrated Dual Thermostat	Single High Limit Stat	Sensor pocket retaining bungs	Robo-kit including Heating Expansion Vessal	Two Channel Programmable Thermostat with DHW Control	Programmable Thermostat	Circulating Pump	Installation & Maintenance Instructions
Indirect Pre-Plumb Models – 1 Zone	⊙	⊙	⊙	⊙	⊙	⊙			⊙	⊙		⊙	⊙
Indirect Pre-Plumb Models – 2 Zone	⊙	⊙	⊙	⊙	⊙	⊙			⊙	⊙	⊙	⊙	⊙
System Fit Indirect Pre-Plumb Models – 1 & 2 Zone	⊙	⊙	⊙	⊙	⊙	⊙			⊙	⊙			⊙
Solar Indirect Pre-Plumb Models – 1 Zone	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		⊙	⊙
Solar Indirect Pre-Plumb Models – 2 Zone	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Indirect Models	⊙	⊙	⊙	⊙	⊙	⊙							⊙
Direct Models (Electric)	⊙	⊙	⊙	⊙									⊙
Solar Indirect Models	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙					⊙

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. Assessements of risks for carrying the cy

linder 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, 1.5 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 VERTICALLY on a flat base capable of supporting the weight of the cylinder when full. The minimum recommended cupboard size is 650mm wide by 750 deep.

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 410 mm long.

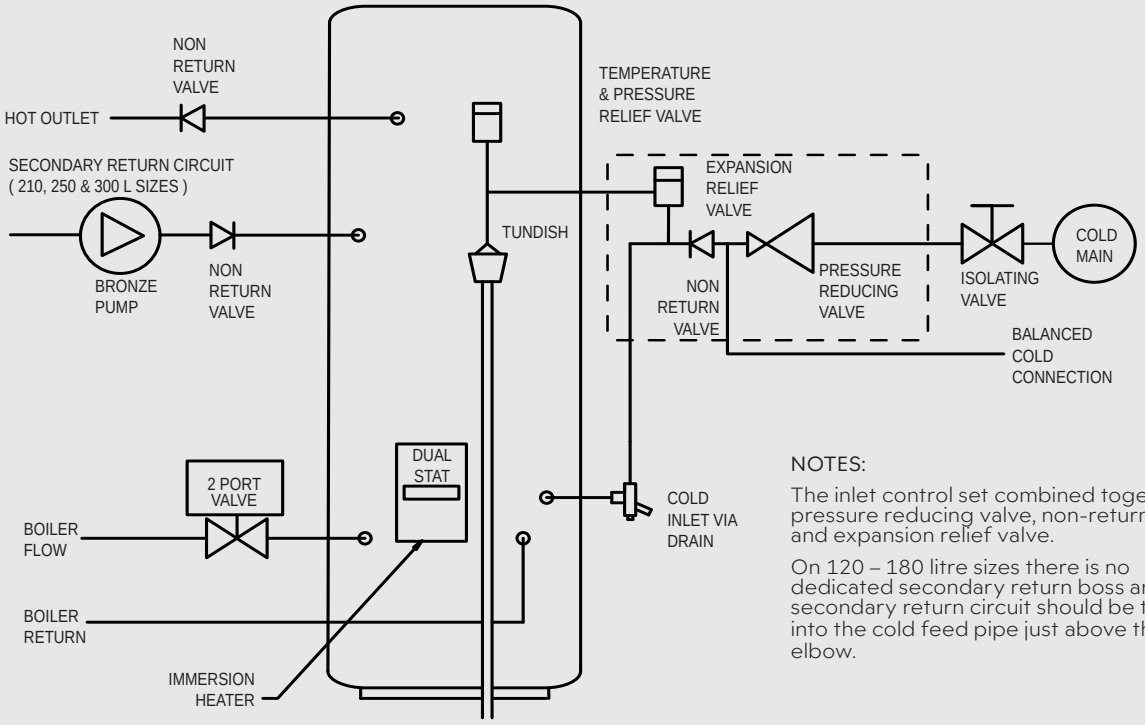
When planning for access, consider the possibility of decommissioning, removing or replacing the entire unit as may be necessary in the future.

Flushing the heating system (retrofit installations)

Part L of the 2022 Building Regulations requires all central heating systems to be cleaned and dosed with protective inhibitors whenever major works are carried out. Failure to do so will put the product guarantee at risk.

Installation Instructions

SCHEMATIC DIAGRAM



NOTES:

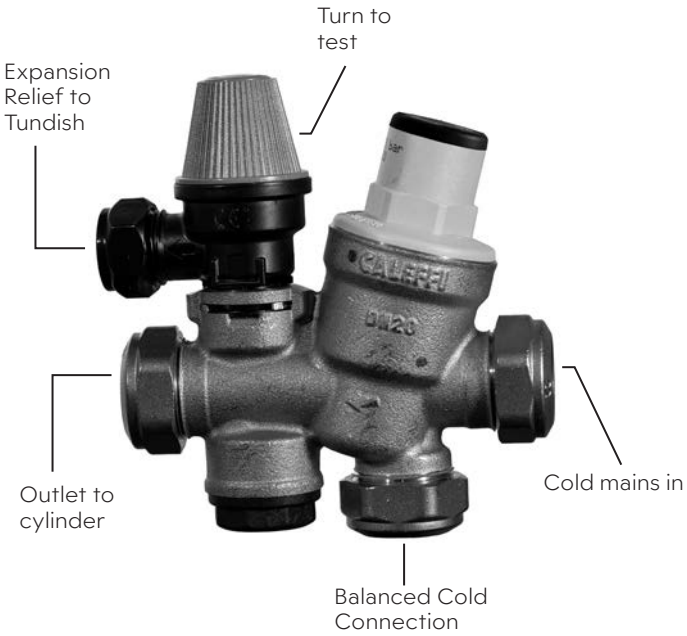
The inlet control set combined together a pressure reducing valve, non-return valve and expansion relief valve.

On 120 – 180 litre sizes there is no dedicated secondary return boss and the secondary return circuit should be tee'd into the cold feed pipe just above the drain elbow.

Cold mains pipework

Run the cold main through the building to the place where the unvented cylinder is to be installed. Take care not to run the cold pipe near hot water or heating pipework so that the heat pick-up is minimized. Identify the cold water supply pipe and fit an isolating valve (not supplied).

A 22mm BS1010 stopcock can typically be used but a 22mm quarter turn full bore valve would be better as it does not restrict the flow as much. Do not use "screwdriver slot" or similar valves. 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 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.

Cylinder connections

All of the pipework connections on the cylinder are designed to accept 2mm BS-R250 copper tube. The threaded bosses are ¾" BSP male parallel thread. Suitable nuts and olives are provided.

Cut the tube with a pipe 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 gland nut in the prescribed manner. Upon filling/ commissioning, ensure all connections are completely watertight. 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 over-pressurising the other. This can be achieved by feeding all cold outlets from the 22mm balanced cold connection featured on the monobloc 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 monobloc 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 unbalanced 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. This can be reduced to 15mm and 10mm as appropriate for the type of tap etc. Your aim should be to reduce the volume of the hot draw-off pipework to a practical minimum so that the time taken for the hot water is as quick as possible.

A non-return valve is provided to prevent back-pressure from the cold water entering the cylinder via the hot water outlet. Failure to fit the non-return valve provided in accordance with the below instructions may result in guarantee claims being refused.

The non-return valve **MUST** be located in the same space as the unvented cylinder and be clearly visible. It should be fitted in the pipework immediately after the hot water outlet from the cylinder. If an elbow is required immediately after the hot water outlet boss, then the non-return valve may be fitted in the first available straight section of the pipe after the elbow, providing this is within the cylinder cupboard and visible.

The non-return valve body includes 2 compression fittings, one at each end, to enable the valve to be connected into standard 22mm pipework. Cut a short length of 22mm copper pipe (e.g. 75-100mm to suit your installation) to fit between the hot water outlet boss on the cylinder or the elbow and the upstream side of the non-return valve.

IMPORTANT: You **MUST** ensure the non-return valve is connected in the correct orientation, with the arrow in the direction of flow of the water i.e. pointing away from the cylinder. Connect the downstream side of the non-return valve to the rest of the hot water system using 22mm copper pipe. Tighten connections and check for leaks after the system is pressurized.

Where monobloc mixing taps and showers are used, these should be installed to comply with the Water Supply (Water Fittings) Regulations 1999. If these devices are supplied with un-balanced supplies there should be single check valves installed at both inlets, to stop over pressurising of either supply.

Primary coil connections for indirect units

For Solar input models refer to page 6 before making any connections.

Connect the primary connections (Indirect only) using the compression connections provided. The primary circuit must be positively pumped. Gravity circulation is not suitable. Either primary connection may be used as the primary flow, reheat times are not effected. The primary circuit can be open vented or sealed, with up to a maximum pressure of 3.5 bar and maximum flow temp of 85°C. If you seal the primary circuit an additional expansion vessel and safety valve is required. The boiler may be Gas, Electric or Oil but must be under effective thermostatic control. Uncontrolled heat sources such as some AGA's, back boilers, solid fuel stoves, etc. are **NOT SUITABLE**. Please contact our Technical department for guidance. Connect the two port zone valve (indirect only) into the primary flow pipework.

After commisioning and checking pipe connections insulate

all pipework with pipe insulation material. Insulate discharge pipework and temperature and pressure relief valve ensuring access to the release knob and view of tundish is not blocked.

Connections - solar coil

On solar models, the flow and return from the solar heat source are to beconnected to the lower coil.
Either of the solar coil connections 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 G1 on pages 8 and 9), with the high limit sensor fitted into the dry stat pocket (Position G2 on pages 8 and 9).
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 unvented cylinder can be used with secondary circulation. An appropriate WRAS approved bronze circulator should be used in conjunction with a 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. Secondary circulation should be avoided on Direct electrically heated units being used on off-peak electricity tariffs.

A secondary return boss is fitted as standard on 210, 250 & 300 ltr units. On smaller sizes, tee into the cold feed pipe above the drain.

Immersion heaters

The immersion heater is supplied with remotely mounted thermostat within the heater enclosure. The thermostat switches both live and neutral and comprises an adjustable control and a high limit manually resettable thermal cut-out. All thermostat connections and probe mounts are factory fitted.

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 1.5mm^2 3 core heat resistant (85°C HOFR) sheathed flex complying to BS EN 50525-1.

Do not operate the immersion heater/s until the unit 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. Each immersion heater must be earthed.

Remove the thermostat cover by removing the retaining screw, opening the cover and sliding it to the left to disengage from the retaining clamps.

Connect to the terminal block ensuring the outer sheath is clamped and the cables are secured without strain on any of the components or cables.

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.

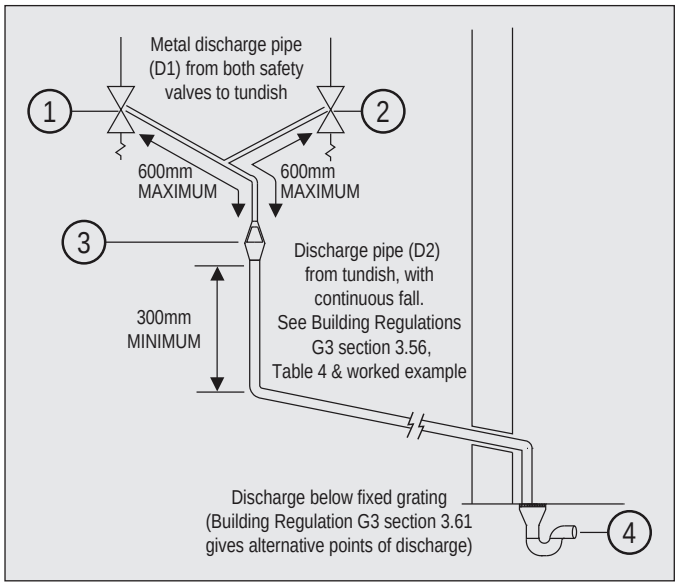
Complete the wiring – use the appropriate wiring diagrams on pages 11-12.

Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.

Discharge arrangement

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. Ensuring to position the tundish in the same compartment as the cylinder and so that any discharge is visible.

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 discharge water to indicate an issue with the plumbing & heating system, please refer to the fault finding guide page 18. 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.

The tundish should be located in a position so 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. 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.

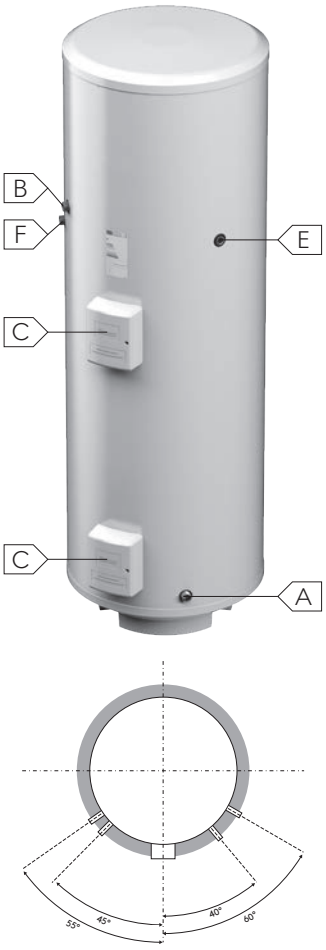
As the actual length is 7m, a 28mm (D2) copper pipe will be satisfactory.

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

Product Diagrams Range Tribune Xe

DIRECT



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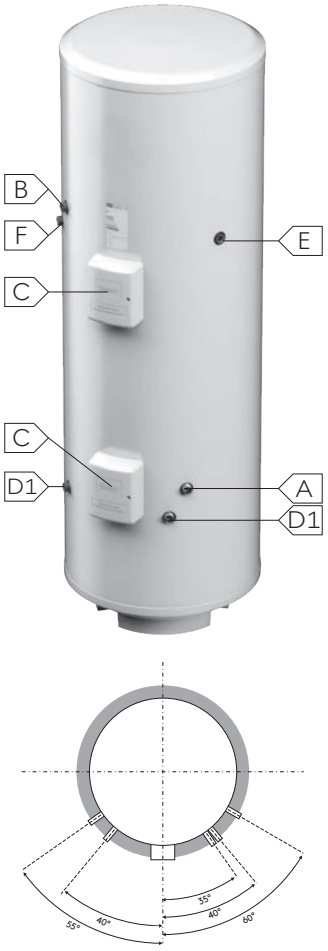

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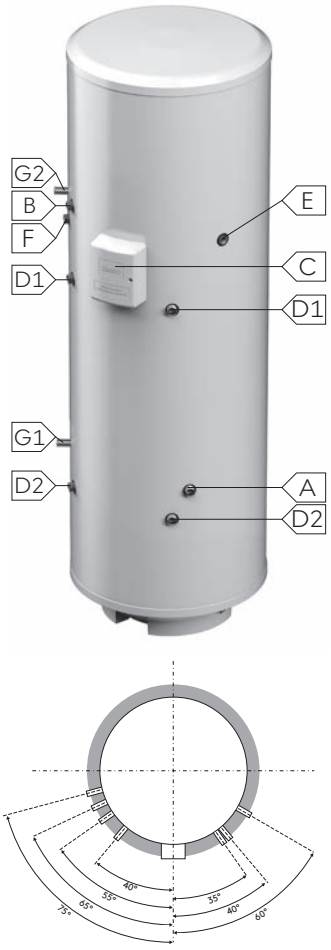
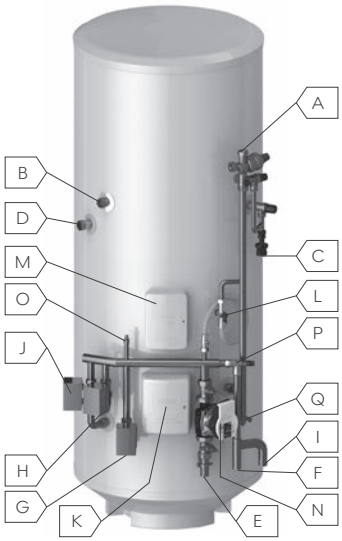


CYLINDER ONLY

A	22mm Cold feed
B	22m Hot water outlet
C	1¼"BSP - 3kW 14" Long titanium immersion heater(factory-fitted)
D1	22mm Compression connections - Boiler coil
D2	22mm Compression connections - Solar coil
E	¾" BSP union nut x 15mm (10bar / 90°C) Temperature & pressure relief valve (factory-fitted)
F	22mm Compression connections secondary return (210L, 250L & 300L only)
G1	Dry stat pocket (solar)
G2	Dry stat pocket (high limit)

INDIRECT / SYSTEM FIT



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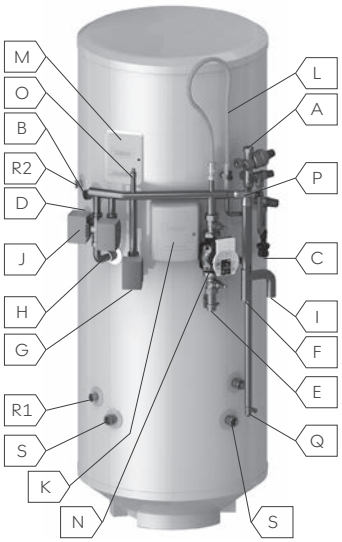


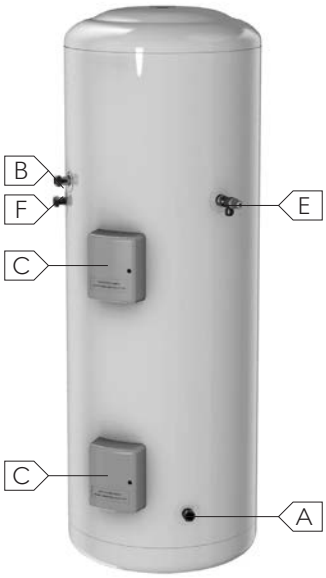
PRE-PLUMBED CYLINDER

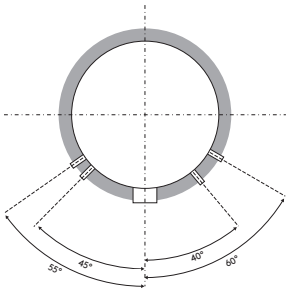
A	22mm Inlet control set – cold feed
B	22mm Hot water draw-off
C	22mm Tundish drain off
D	22mm Secondary return (210L, 250L & 300L only)
E	28mm Flow from boiler
F	28mm Return to boiler
G	22mm Central heating flow - two port valve
H	22mm Central heating flow - two port valve (Twin zone only)
I	28mm Central heating return
J	DHW two port valve
K	Immersion heater & dual thermostats

L	Filling loop flexible hose
M	Wiring centre
N	Circulating pump (Not on system-fit models)
O	Manual bottle air eliminator
P	Auto bypass valve
Q	Cold feed drain
R1	Dry Stat pocket – Solar
R2	Dry Stat pocket – High limit
S	22mm Solar coil connections

Product Diagrams Albion Ultrasteel+

DIRECT





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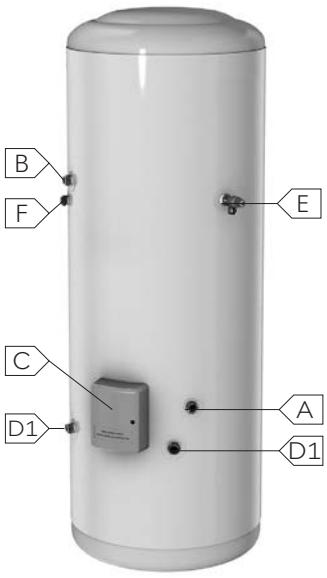

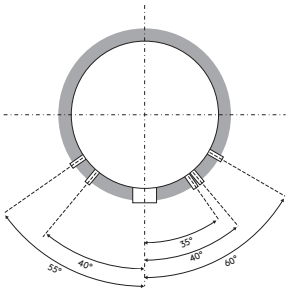

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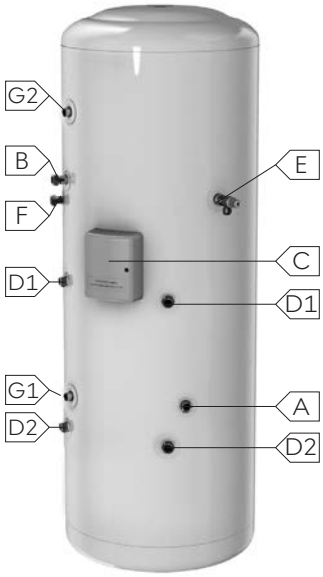
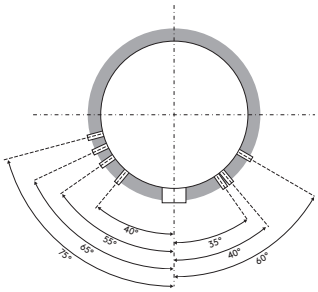
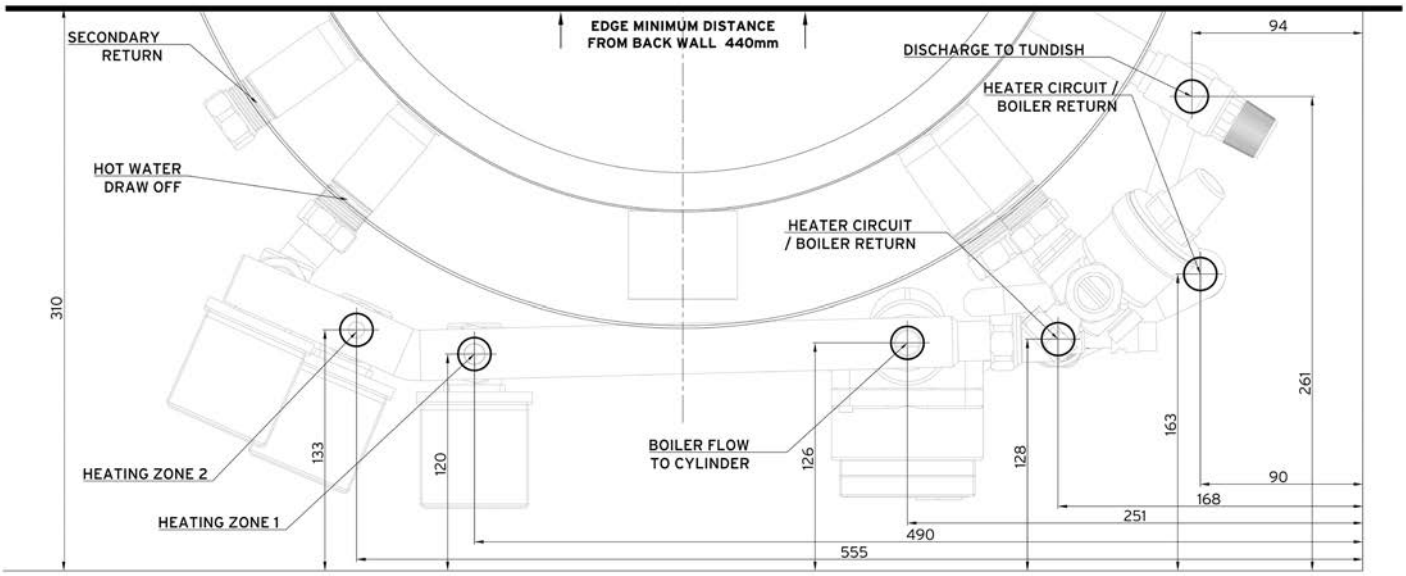




CYLINDER ONLY

A	22mm Cold feed
B	22m Hot water outlet
C	1¼"BSP - 3kW 14" Long titanium immersion heater(factory-fitted)
D1	22mm Compression connections - Boiler coil
D2	22mm Compression connections - Solar coil
E	¾" BSP union nut x 15mm (10bar / 90°C) Temperature & pressure relief valve (factory-fitted)
F	22mm Compression connections secondary return (210L, 250L & 300L only)
G1	Dry stat pocket (solar)
G2	Dry stat pocket (high limit)

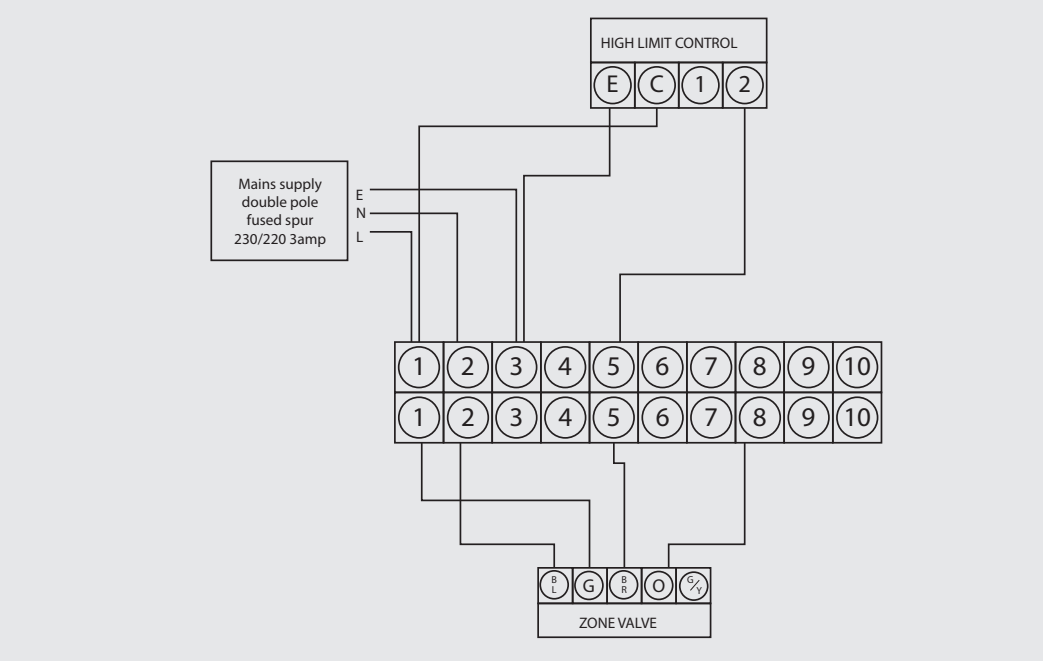
Pre-Plumbed First Fix Pipework Position

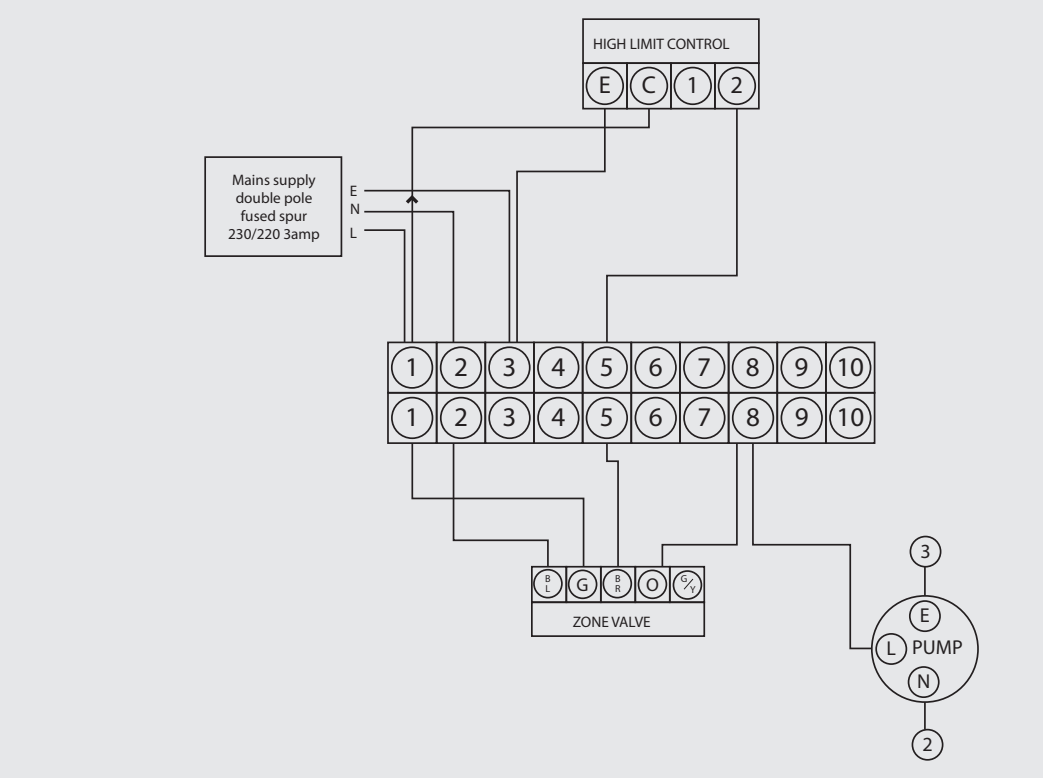


Specification Details

Maximum Inlet Water Pressure	12 Bar 1. 2MPa
Operating Pressure	3.0 Bar
Expansion Valve Opening Pressure & Maximum design pressure	8.0 Bar
Opening Pressure of T & P Valve	10.0 Bar
Opening Temperature of T & P Valve	90°C
Maximum Pressure on Primary Circuit (Indirect & Solar Coil)	3.5 Bar
Maximum operating temperature of the heating fluid	80°C
Minimum Inlet Pressure	1 Bar 100 KPa
Element Rating	3kW @ 240 V
Fuse Requirement	13A via Double Pole Switch
High Limit Thermostat for Element - Temperature Set Point	85°C

Typical Schematic Wiring Diagrams Solar High Limit Control



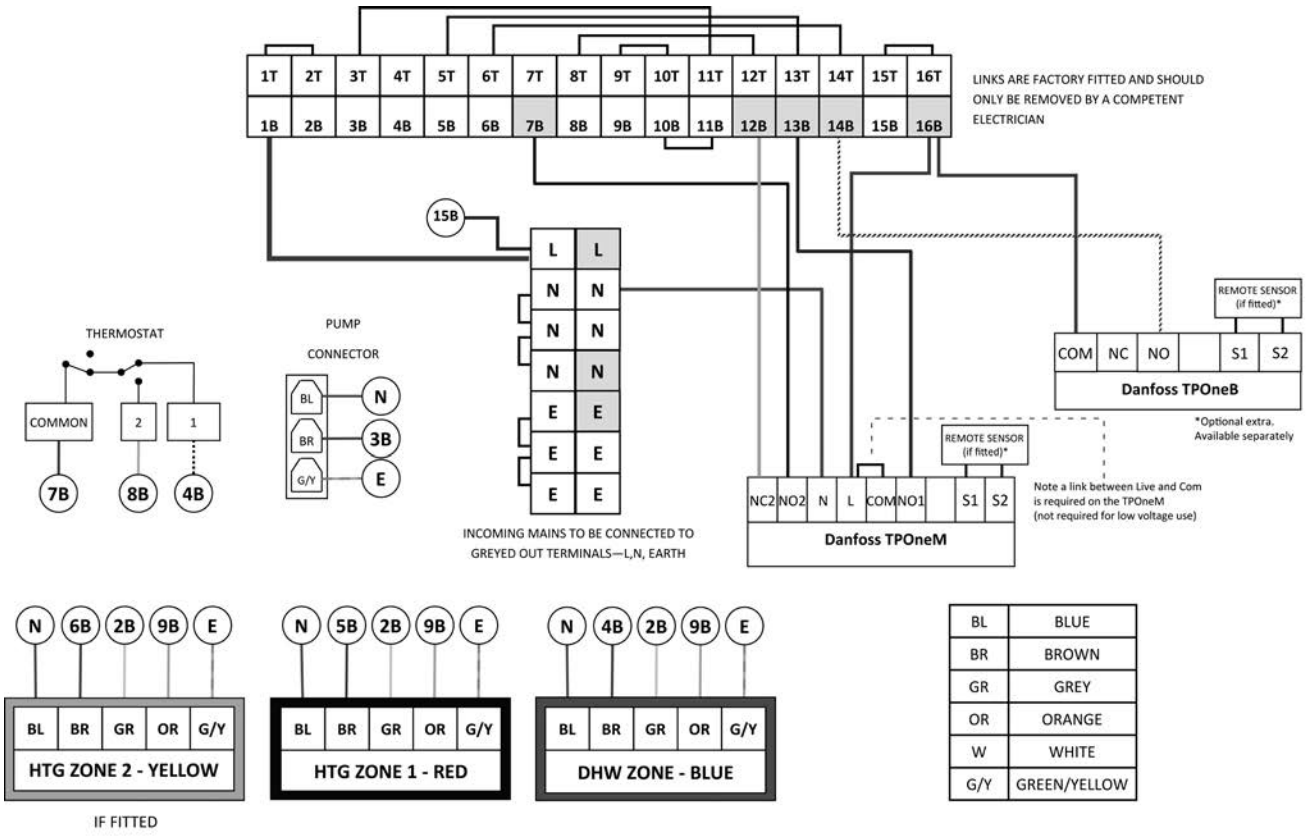


These schematic wiring diagrams depict an IMIT high limit control stat and the connections are numbered accordingly. Where an alternative is supplied connect as per manufacturer's instructions.

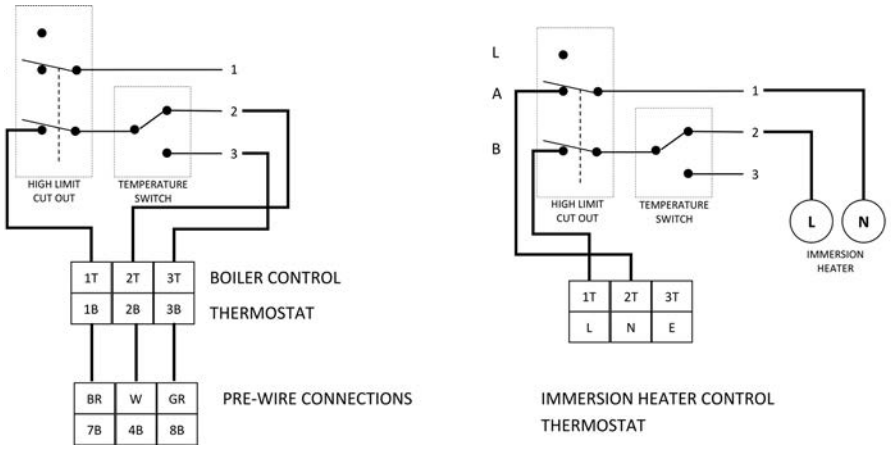
Typical Schematic Wiring Diagrams

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 manufacturer's 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)



TWIN HEATING ZONE WIRING DIAGRAM



Titanium Immersion Heater 1¼" BSP

One-piece Titanium Immersion has a 1¼" BSP thread, integral in the head of the unit. A standard 55mm box spanner can be used for removal/replacement. No special immersion key is required.

Before commencing work to remove the immersion heater ensure the cylinder is fully drained of water see page 17. Ensure heating controls are turned off.

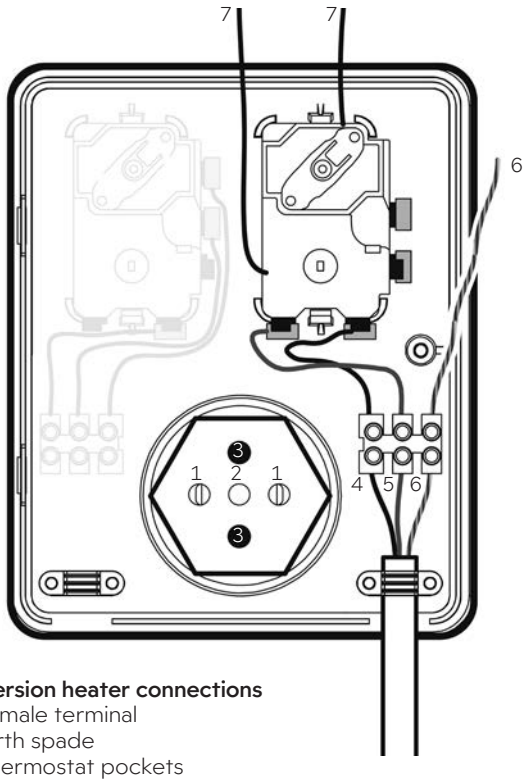
WARNING - DANGER OF ELECTRIC SHOCK!

DO NOT remove thermostat enclosure without isolating the supply to the product. If in doubt do not continue and seek advice from a competent electrician.

1. Check immersion heater compatibilaty with the cylinder.
2. The new immersion is supplied with a new 'O'-ring. Do not re-use the old 'O'-ring. Check the 'O'-ring is seated in place correctly on the immersion and is free from damage or debris. Lubricate 'O'-ring with a suitable WRAS approved grease.
3. Open the heater enclosure cover by removing the retaining screw and sliding it to the left to disengage the retaining clamps. Disconnect the red, black and green/yellow wires from the terminal spades on the immersion. Remove the thermostat probes from the immersion by carefully pulling them until they are free from the pocket.
4. Remove the old immersion heater using 55mm box spanner and suitable tommy bar. If no suitable spanner is available, it will be necessary to remove the thermostat housing from the cylinder by unscrewing the 3 self-tapping screws, to allow side access to the immersion with a 'C' spanner or adjustable spanner. If no suitable tool is available, do not attempt to replace the immersion.
5. Fit the new immersion heater using the same tool as for removal.

   The immersion should be firmly tightened.

   Note: Sealing performance is not dependant on the tightening torque, however the immersion should never be loose. Overtightening will result in damage to the threads.
6. Re-fit the probes into the pocket in the same order as they were removed. Re-fit the wires to the spade terminals ensuring the green/yellow earth wire is fitted to the centre terminal.
7. Before re-fitting the front cover, re-fill the cylinder and check for leaks: If any leakage occurs investigate the cause and rectify before continuing.
8. Open a hot outlet and refill cylinder from mains. Allow water to flow out of outlet. Once a good flow is achieved, close outlet.
9. When cylinder reaches maximum available pressure, re-check for leaks.
10. Turn hot water programmer back on. Allow cylinder to heat up. Check water is hot and thermostats are operating.
11. Now at operating temperature, re-check for leaks. After confirming everything is operating correctly, the front cover can be replaced.
12. Replace the front cover ensuring the wires are routed to avoid any trapping. Re-fit and tighten front cover screw.

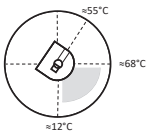


Immersion heater connections
1. Female terminal
2. Earth spade
3. Thermostat pockets

Terminal block
4. Live
5. Neutral
6. Earth

Remote Thermostat
7. Thermostatic probes

Thermostat Settings



Pre-Plumbed Cylinder Installation

Cold mains pipework

Run the cold main through the building to the place where the unvented pre-plumbed unit is to be installed. Take care not to run the cold pipe near hot water or heating pipework so that the heat pick-up is minimized. Identify the cold water supply pipe and fit an isolating valve (not supplied). A 22mm BS1010 stopcock can typically be used but a 22mm quarter turn full bore valve would be better as it does not restrict the flow as much. Do not use "screwdriver slot" or similar valves. Make the connection to the inlet control set (Position 2). Ensure that the arrow points in the direction of the water flow.

Cylinder connections

All of the pipework connections on the cylinder are suitable for 22mm copper pipe. The threads on connections are ¾" BSP parallel male thread. Suitable nuts and olives are provided, in the Accessory pack. Only connect 22mm Table X copper tube to these connections. Cut the tube with a pipe 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 gland nut in the prescribed manner. Upon filling/commissioning, ensure all connections are completely watertight.

Balanced cold connection

If there are to be showers, bidets or monobloc taps in the installation then a balanced cold supply is necessary. There is a 22mm balanced connection on the inlet set.

Hot water pipework

Connect to HWDO (Position B on diagram). Run the first part of the hot water distribution pipework in 22mm. This can be reduced to 15mm and 10mm as appropriate for the type of tap etc. Your aim should be to reduce the volume of the hot draw-off pipework to a practical minimum so that the time taken for the hot water is as quick as possible. Where monobloc mixing taps and showers are used, these should be installed to comply with the Water Supply (Water Fittings) Regulations 1999. If these devices are supplied with un-balanced supplies there should be single check valves installed at both inlets, to stop over pressurising of either supply.

Connections for indirect units

Connect to the boiler flow and return (Positions E & F) lines. An additional expansion vessel and safety valve is supplied. The boiler may be Gas, Electric or Oil but must be under effective thermostatic control. Uncontrolled heat sources such as some AGA's, back boilers, solid fuel stoves, etc. are **NOT SUITABLE.** Please contact our Technical department for guidance. Connect to (Position G) for the radiator circuits. Twin zone heating unit are supplied with 2 port zone valves in positions G and H.

Connections for solar coils

Connect to the solar coil as detailed on page 6. Ensure the solar pump is connected via the over temperature cut-out as described on page 6.

Secondary circulation

The unvented cylinder can be used with secondary circulation. An appropriate WRAS approved bronze circulator should be used in conjunction with a 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. A secondary return boss is fitted as standard on 210, 250 & 300 ltr units (Position F). On smaller sizes, tee into the cold feed pipe above the drain.

Immersion heaters

The immersion heater is supplied with remotely mounted thermostat within the heater enclosure. The thermostat switches both live and neutral and comprises an adjustable control and a high limit manually resettable thermal cut-out. All thermostat connections and probe mounts are factory fitted.

The electrical supply to each immersion heater must be fused at 13A via a double pole isolating switch to BS 3456. The cable must be 1.5mm^2 3-core heat resistant (85°C HOFR) sheathed flex complying to BS 6141:1981 Table 8. Do not operate the immersion heater/s until the unit 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. Each immersion heater must be earthed.

Remove the thermostat cover by removing the retaining screw, opening the cover and sliding it to the left to disengage from the retaining clamps.

Connect to the terminal block ensuring the outer sheath is clamped and the cables are secured without strain on any of the components or cables.

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 diagram on pages 11-12.

Commissioning

Carry out commissioning as per instructions on page 15 and in line with boiler manufacturer's instructions for the heating and the primary circuit. Primary pipework must be filled, bled and tested in accordance with the boiler manufacturer's instructions, to avoid damage to the circulation pump.

Commissioning and 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. 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. 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: If you are installing the unvented cylinder with a solar system, always consult the manufacturer's instructions for any special requirements around flushing and dosing. Failure to adequately flush and dose the system will invalidate the product guarantee.

Direct units

After filling with water and after sterilisation liquid has been purged, switch on the power to the immersion heaters and allow the unit to start to heat. The immersion heater is supplied preset at 55°C. Turning fully to + sets to approx 65°C. Allow unit to heat up, adjust the thermostat so that the heater switches off at 60°C. Record information on the Benchmark Commissioning Checklist (page 19).

Indirect units

Consult the boiler manufacturer's commissioning instructions and fill the primary circuit. Ensure the lever on the two port valve is set to the filling position. 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 (page 19).

Storage temperature

The recommended storage temperature for both direct and indirect cylinders is 60-65°C. In hard water areas consideration should be given to reducing this to 50-55°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 and 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 reseat 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 at 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 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.

Operator and Owner Info

Extended guarantee

Remember to activate your extended 25-year guarantee on the stainless steel inner vessel and the 2-year guarantee on parts by registering your cylidner online at **https://rangecylinders.info/a02** with in 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.

Recharge the expansion space

All sealed heating systems will require re-pressurising from time to time, including systems with unvented cylinders. One indicator the system is ready for re-pressurising is water discharging through the tundish. When this happens with a Tribune Xe or Ultrasteel+ cylinder just follow these simple steps:

Step 1: Turn off the boiler and immersion heaters to the cylinder.

Step 2: Allow the water to cool through your normal usage. Alternatively run off all the hot water by opening the lowest hot tap in the property until the water runs cold. Once complete turn the tap off.

Step 3: Turn off the water supply to the cylinder, via the stopcocks.

Step 4: Open the lowest hot tap in the property.

Step 5: With the hot tap open, turn the T&P valve on the cylinder anticlockwise by 45º and hold in this position until the gurgling noise stops and water stops running from the tap. Close the T&P valve.

Step 6: Turn on the water supply to the cylinder, via the stopcock and when normal flow returns to the lowest tap, close the tap.

Step 7: Turn the boiler and immersion heaters back on, and you're finished.

Depletion of the air gap is the most common reason for water discharging through the tundish and is there for the first cause that must be eliminated. However, should the problem persist, it could be an indication of other issues such as the cylinder overheating, due to a faulty thermostat or zone valve. **IF WATER DISCHARGE THROUGH THE TUNDISH CONTINUES THIS INDICATES A FAULT CONDITION AND ACTION IS NEEDED**. 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 PLUMBER TO SERVICE THE UNIT**. Tell them you have a fault on an unvented cylinder.

At the end of cylinder's operational life, make sure it is decommissioned and disposed of correctly; see page 15 for more details.

Servicing and Maintenance

General

Servicing should only be carried out by competent installers and only spare parts approved by the manufacture may be used. NEVER bypass any safety devices or operate the unit without them being fully operational.

Draining

To drain down the cylinder, Isolate from the electrical supply to prevent the immersion heaters burning out. Turn off the boiler or other heat source and isolate the unit from the cold mains. Connect hose to the drain cock and secure with jubilee clip. Run hose to drain point lower than the cylinder, open the drain cock, hold open the T&P valve on the cylinder and alow the cylinder to drain. The cold feed dip pipe enables full draining of the cylinder.

WARNING: WATER DRAINED OFF MAY BE VERY HOT!

IMPORTANT: After draining the cylinder do not close the T&P valve 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. It is essential that the following checks are performed by a competent installer on an annual basis.

An annual service should include the following as a minimum:

1. Visually check the cylinder for any obvious defects. Make suitable checks to assess that the appliance has been installed corectly.
2. Recharging of the expansion space, see above.
3. Check the T&PR and Expansion Valves are operating correctly. Water should be run through each valve for approximately 30 seconds to ensure that any loose scale build up, or debris is flushed through be-fore re sealing.
4. Whilst checking the safety valve operation above, check that the tundish drains and discharges cor-rectly, and there are no blockages. **WARNING: THE WATER DISCHARGED MAY BE VERY HOT!**
5. Cleaning of filter on inlet control set, checking the condition of any seals and replace if necessary.
6. Check that any external controls such as heating system programmer are operating correctly. Testing of thermostats to ensure they are functioning correctly.
7. Carry out a visual check of any electrical wiring associated with the cylinder, immersion heater and its controls, it must be repared by a qualified person in order to avoid a hazard.
8. Test immersion heater for continuity and resistance.
9. Record temperature of hot water at outlet after 1 minute of flow.

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.

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**.

Fault Finding

FAULT	POSSIBLE CAUSE	SOLUTION
Water escaping from the case	Compression fittings not sealing	Check/remake joint with sealing paste
Cold water at Hot taps	Direct - immersion heater not switched on or cutout has triggered	Check / reset
	Indirect - boiler not working	Check boiler - consult boiler manufacturers' instructions
	Indirect - motorised valve fault	Check plumbing / wiring to motorised valve
	Indirect - cutout in dual stat has operated	Reset and investigate cause
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 no greater than 3.0 bar.
	If continual - expansion relief valve seat may be damaged	Remove cartridge - check seat and renew if necessary
	Unit it being back pressurised Loss of air gap in cylinder	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 (see page 5). Follow recharge steps on page 16.
Water discharges from temperature &. pressure relief valve	Unit has overheated - thermal controls have failed	"Switch off power to 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 main 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	If tap runs cold after a minute or so the pipe is picking up heat from heating pipework.	Insulate / re-route
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.

Benchmark Scheme

Benchmark places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it 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.centralheating.co.uk for more information.

The installer must follow the Benchmark code of practice for the Benchmark certification to be valid. The Benchmark code of practice can be found on the internet using the following internet site www.centralheating.co.uk and follow links.

Range Cylinders Ltd 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.

Please ensure that the installer has fully completed the Benchmark Commissionin Checklist on page 19 of this installation instructions and that you have signed it to say that you have received a full and clear explanation of its operation.

The installer is legally required to complete a commissioning checklist as a means of complying with the appropriate Building Regulations (England and Wales).

All installations must be notified to Local Area 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 Checklist. This product should be serviced regularly to optimise its safety, efficiency and performance. The Benchmark Checklist will be required in the event of any guarantee.

MAINS PRESSURE HOT WATER STORAGE SYSTEM COMMISSIONING CHECKLIST

This Commissioning Checklist is to be completed in full by the competent person who commissioned the storage system as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission this equipment to the manufacturer's instructions may invalidate the warranty but does not affect statutory rights.

Customer Name ______ Telephone Number ______

Address ______

Cylinder Make and Model ______

Cylinder Serial Number ______

Commissioned by *(print name)* ______ Registered Operative ID Number ______

Company Name ______ Telephone Number ______

Company Address ______

______ Commissioning Date ______

To be completed by the customer on receipt of a Building Regulations Compliance Certificate*:

Building Regulations Notification Number *(if applicable)* ______

ALL SYSTEMS PRIMARY SETTINGS (indirect heating only)

Is the primary circuit a sealed or open vented system?	Sealed ☐	Open ☐
What is the maximum primary flow temperature?		☐ °C

ALL SYSTEMS

What is the incoming static cold water pressure at the inlet to the system?			☐ *bar*
Has a strainer been cleaned of installation debris (if fitted)?		Yes ☐	No ☐
Is the installation in a hard water area (above 200ppm)?		Yes ☐	No ☐
If yes, has a water scale reducer been fitted?		Yes ☐	No ☐
What type of scale reducer has been fitted?			
What is the hot water thermostat set temperature?			☐ °C
What is the maximum hot water flow rate at set thermostat temperature (measured at high flow outlet)?			☐ *l/min*
Time and temperature controls have been fitted in compliance with Part L of the Building Regulations?			Yes ☐
Type of control system (if applicable)	Y Plan ☐	S Plan ☐	Other ☐
Is the cylinder solar (or other renewable) compatible?		Yes ☐	No ☐
What is the hot water temperature at the nearest outlet?			☐ °C
All appropriate pipes have been insulated up to 1 metre or the point where they become concealed			Yes ☐

UNVENTED SYSTEMS ONLY

Where is the pressure reducing valve situated (if fitted)?		
What is the pressure reducing valve setting?		☐ *bar*
Has a combined temperature and pressure relief valve and expansion valve been fitted and discharge tested?	Yes ☐	No ☐
The tundish and discharge pipework have been connected and terminated to Part G of the Building Regulations		Yes ☐
Are all energy sources fitted with a cut out device?	Yes ☐	No ☐
Has the expansion vessel or internal air space been checked?	Yes ☐	No ☐

THERMAL STORES ONLY

What store temperature is achievable?	☐ °C
What is the maximum hot water temperature?	☐ °C

ALL INSTALLATIONS

The hot water system complies with the appropriate Building Regulations	Yes ☐
The system has been installed and commissioned in accordance with the manufacturer's instructions	Yes ☐
The system controls have been demonstrated to and understood by the customer	Yes ☐
The manufacturer's literature, including Benchmark Checklist and Service Record, has been explained and left with the customer	Yes ☐

Commissioning Engineer's Signature ______

Customer's Signature ______

(To confirm satisfactory demonstration and receipt of manufacturer's literature)

*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.

benchmark COLLECTIVE MARK
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

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 25-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.