

Installation, Operation and Maintenance Manual

Range Tribune MXi Unvented Cylinders - Powered by Mixergy Smart Technology



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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

For over 90 years, Kingspan's unvented hot water cylinders have continued to meet the evolving and demanding hot water needs of homes in the UK and Ireland.

When installed and maintained in accordance with this manual, Kingspan cylinders will reliably store and generate hot water for years to come. This manual details how to prepare, install, commission, service, operate and decommission unvented heat pump hot water cylinders with a separate external thermal expansion vessel and buffer tanks.

As well as comprehensive instructions for installers, the manual provides guidance and guarantee information for homeowners.



Kingspan 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



Read these instructions before commencing installation. 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.

After installation the Commissioning Checklists on pages 10 and 22 must be completed and left with these instructions with the householder for future reference.

IMPORTANT NOTE TO THE CYLINDER OWNER



Please ensure that the installer has fully completed the Commissioning Checklists on page 10 and 22 of this installation manual. You will need this information should you need to make a claim against your product guarantee in the future.

This product requires servicing every 12 months and the Service Record must be maintained to protect your 25-year guarantee. For operational instructions see pages 20 to 21 and download the Mixergy Householder Guide - link on page 21.

Please note, all images are for illustrative purposes only and specific products will vary for each product line.



We take every care to ensure that the information in this document is accurate at the point of publication. Specification may vary (within a small parameter) due to manufacturing process variations or environmental conditions. All images are for illustration purposes only and should not be taken as binding. The actual product may vary, and specification/ dimensions/ colour/ other attributes may differ.

To ensure you are viewing the most recent and accurate product information, please scan the QR code above or visit this link:

<https://www.kingspan.com/content/dam/kingspan/kwe/products/tribune-mxi-cylinders/kingspan-range-tribune-mxi-1057899-manual-en-gb.pdf>

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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 moisture.

Handling product

The unvented cylinder should be carried upright where possible. Assessments of risks for carrying the unit should be conducted. Use more than one person for carrying where appropriate. Never carry the cylinder using the components. Always follow the latest guidelines for lifting techniques to avoid injury or 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 and 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.

Note: the system must be fed from domestic mains water supply compliant with Water Regulations 2000. The use of well water or a private borehole will void the cylinder's guarantee.

Electricity supply

The unvented cylinder requires 230-240 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 that meets the current BS Standards. The cable must be at least 2.5mm² heat resistant (85°C HOFr) sheathed flex, complying with the current BS Standards.

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 unvented cylinder or buffer tank should be protected from frost. Particular care is needed if siting in a garage, outbuilding or loft space. All exposed pipework should be insulated. The units must be installed in the correct orientation i.e. vertically, on a flat base capable of supporting the weight of the cylinder when full. The minimum recommended cupboard size for a standard vertical model is 750mm square.

Access and maintenance

Consideration should be given to the position of discharge pipes (tundish) drain valves. Avoid positioning these too close to electrical devices and components. Also, allow sufficient space so the cylinder can be inspected, maintained and serviced in the future, as indicated in the paragraph above.

The immersion heaters are 445mm long, and care should be taken to ensure that they can be withdrawn, enabling the immersion heater to be replaced at the end of its working life and providing inspection access to the interior of the cylinder when servicing.

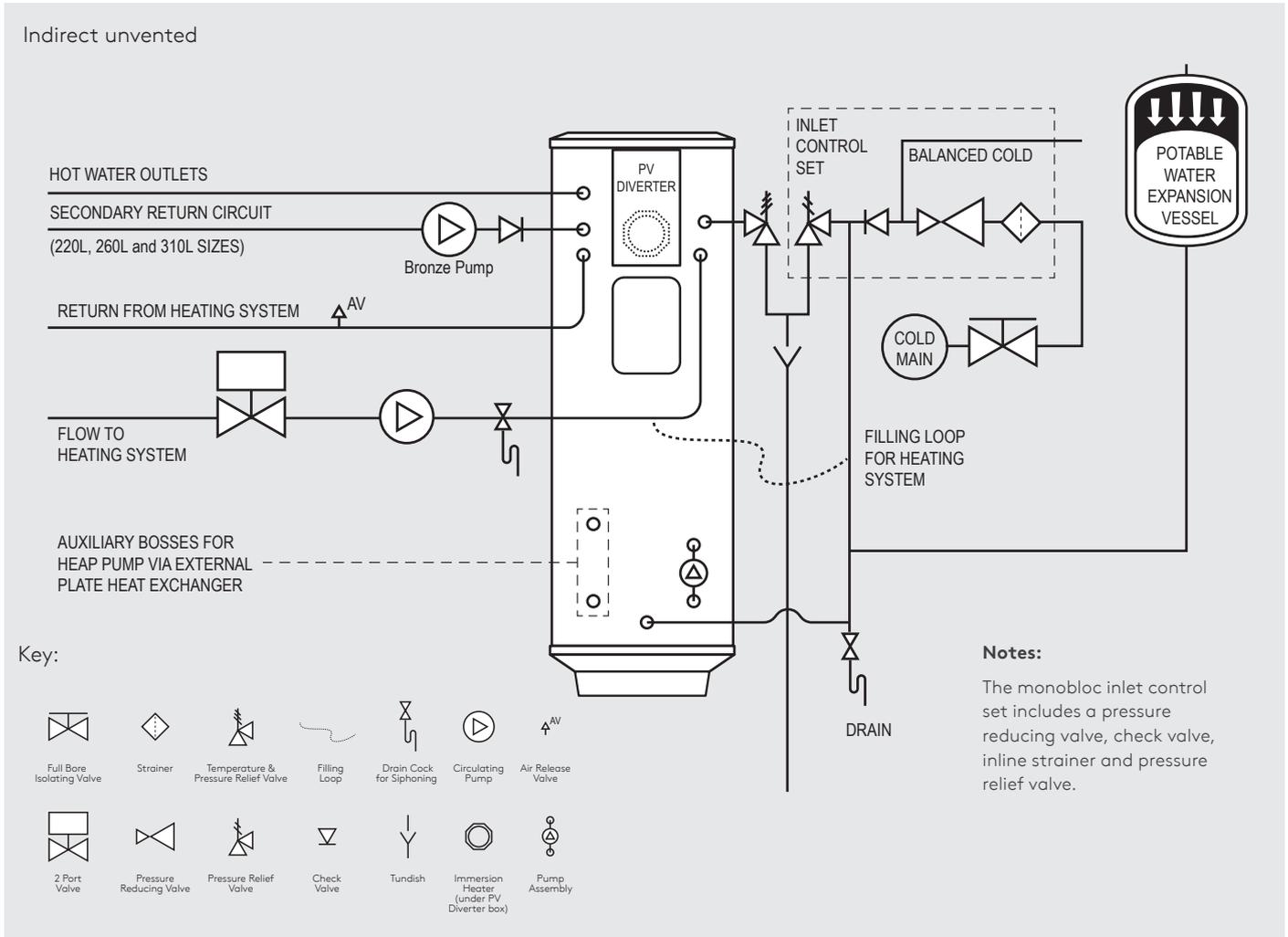
Also, care should be taken while opening the Solar Diverter box in order to access the immersion heater, as the outer box is connected with the inside of the box using a wire. Please ensure the connection is not broken when opening the box.

The discharge pipework from the safety valves should fall continuously and terminate safely.

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.

System Schematic - Plumbing



Installation Instructions - Unvented Cylinders

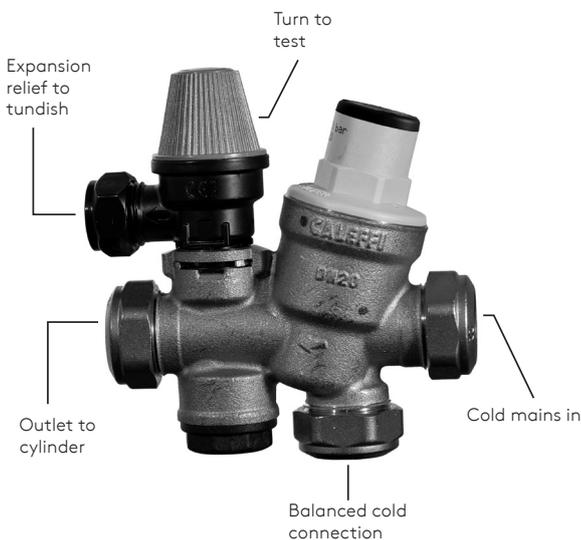
Unvented hot water cylinders should only be installed and maintained by a trained, competent and qualified installer in accordance with local Building Regulations.

Cold mains pipework

Run the cold mains through the building to the place where the unvented cylinder is to be installed.

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 a stopcock can be used, however this may reduce the flow rate. **DO NOT** use a "screwdriver slot" or similar service valve.

Make the connection to the cold feed of the cylinder and incorporate a drain valve. Position the drain valve as low as possible and 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.



Installation Instructions - (Cont.)

Select a suitable position for the potable water expansion vessel, ensuring that the top of the vessel is accessible for servicing. Charge the potable water expansion vessel to 3 bar and mount it to the wall using the fixing kit supplied. Use suitable fixings capable of supporting the weight of the vessel when full (and with appropriate consideration to wall material). We recommend connecting the expansion vessel to the cold feed pipework between the monobloc inlet control set and the cold inlet on the cylinder.

Cylinder connections

The cylinder should be plumbed in using 22mm BS-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.

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

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.

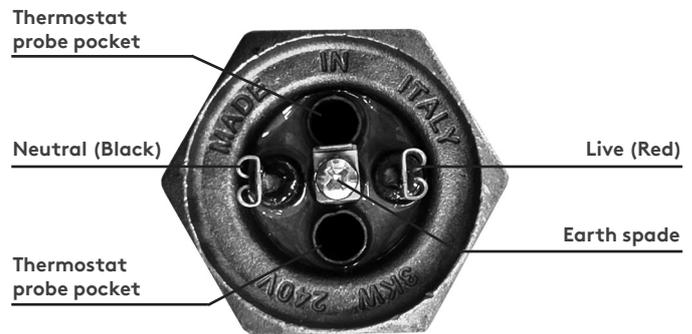
Where there are showers, bidets or monobloc mixing taps in the installation, these need to be installed to comply with the Water Supply (Water Fittings) Regulations 1999. If these devices have unbalanced supplies, there must be single check valves installed at both inlets.

Hot water pipework

Run the first part of the hot water distribution pipework in 22mm, 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 page 12).

Immersion heaters

Only immersion heaters with a thermal cut-out that comply with BS EN 60335-2-73 may be used. The titanium immersion heater supplied has a 1¼" BSP thread, is rated at 3kW at 230-240 Volt and includes both a thermostat and a high limit cut-out.



Only use original manufacturers' parts; fitting a non-approved immersion may affect your guarantee. Part numbers can be found on page 13.

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' ring will seal easily. For electricity 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. Never exceed the recommended exposure time to the sterilisation liquid, as this, too, can cause premature failure. Damage to the immersion heater from sterilisation or flushing chemicals may invalidate the guarantee.

Primary coil connection for indirect units

Connect the primary connections using the fittings provided. The primary circuit must be positively pumped. Gravity circulation is not suitable.

The primary circuit has coils with a maximum working pressure of 3.5 bar. When the indirect heat source is capable of exceeding 70°C, connect the supplied two-port motorised valve into the primary flow pipework to control the heating of the cylinder.

Indirect unvented hot water cylinders powered by Mixergy smart technology provide hot water heating indirectly via an electric, gas- or oil-fired boiler. That must be under effective thermostatic control.

Uncontrolled heat sources such as some AGAs, back boilers, solid fuel stoves, etc. are **not suitable**. Please contact our Technical Department if required for guidance.

The cylinders can also be supplied with components to make them compatible for use with a heat pump or solar panels. See the section below for details.

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

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Installation Instructions - (Cont.)

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. 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

Installation Instructions – Electrical Connections

Electrical installations must be carried out by a competent electrician. All electrical wiring to electronics, zone valves and immersion heaters must be earthed and to current IEE Wiring Regulations. Ensure all electrical supplies are switched off before making any connection to the units.

Electrical wiring

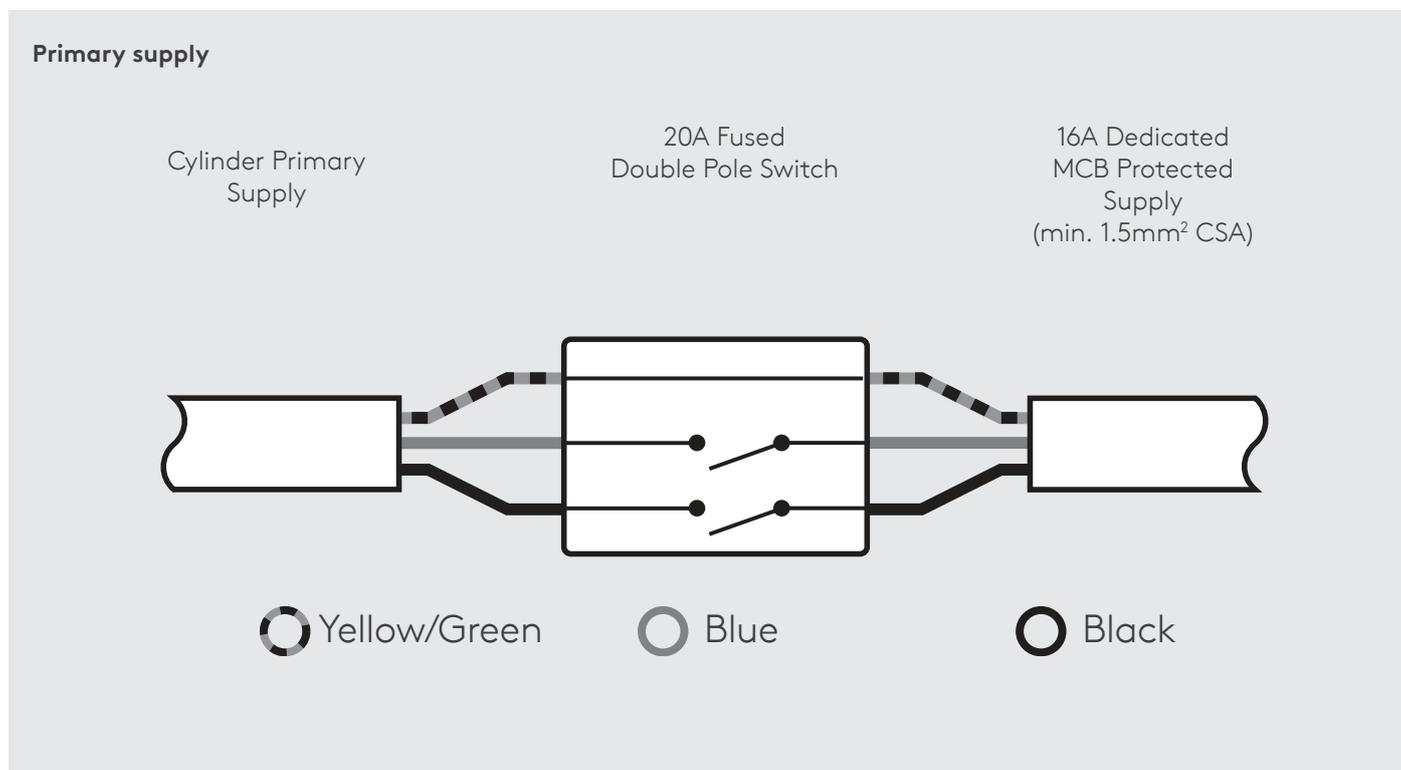
Complete the wiring using the cylinder installation instructions below in conjunction with the appropriate S/Y plan complete wiring diagrams on pages 14 and 15.

Unvented cylinders powered by Mixergy smart technology are supplied with a cable. Any extensions to the supplied cabling should match or exceed the current and voltage ratings of the cables to be extended.

Primary supply

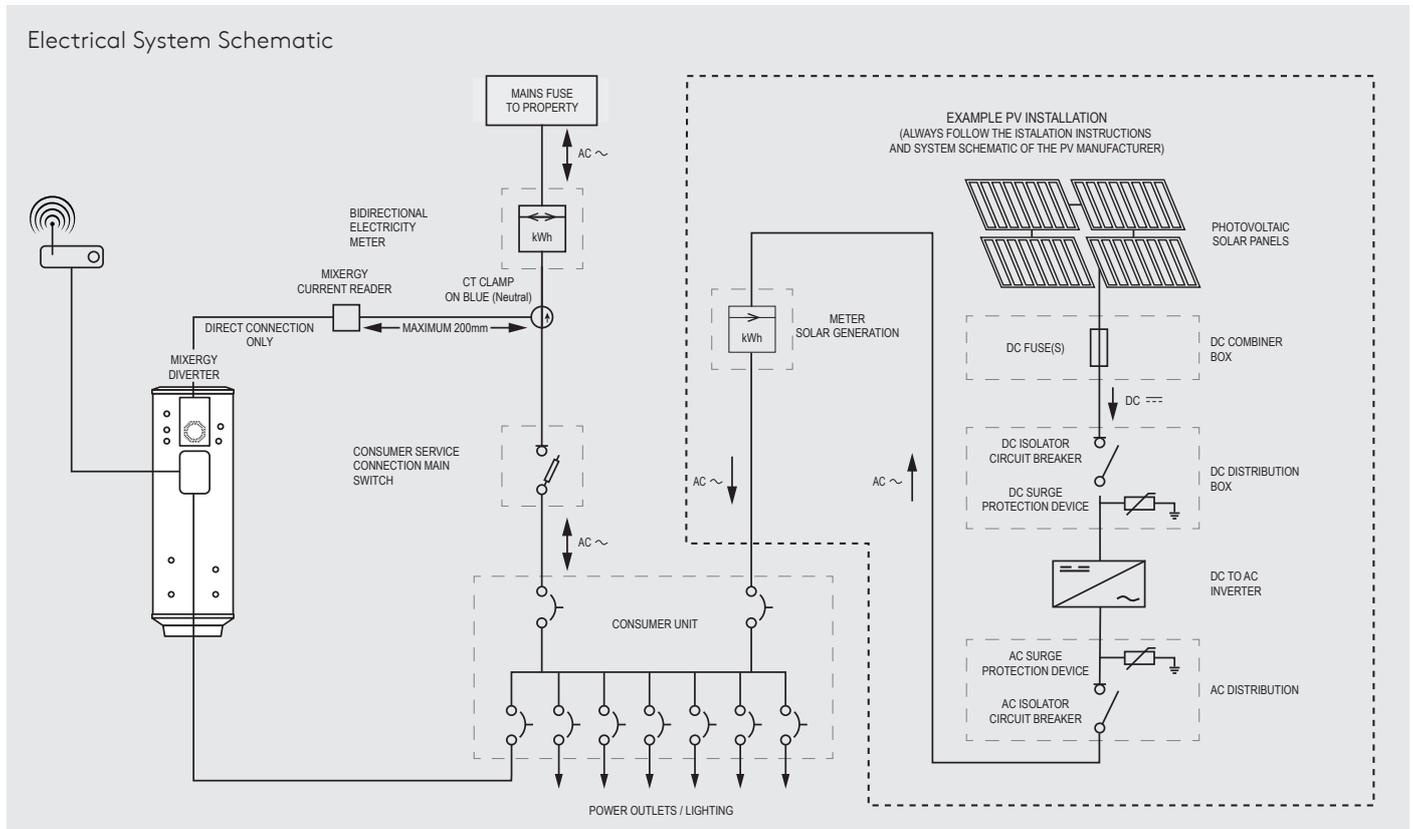
13A, 230-240V~, 1.5mm² CSA

The white 3-core (L,N,E) cable labelled 'PRIMARY SUPPLY' must be connected to the household's main supply via a dedicated 16A MCB protected circuit with a 20A DP switch, as seen in this diagram. This is the primary power supply for the control electronics and is used to power the immersion when the cylinder is set to heat in direct mode.



Installation Instructions (cont.)

Connecting the Mixergy PV Diverter

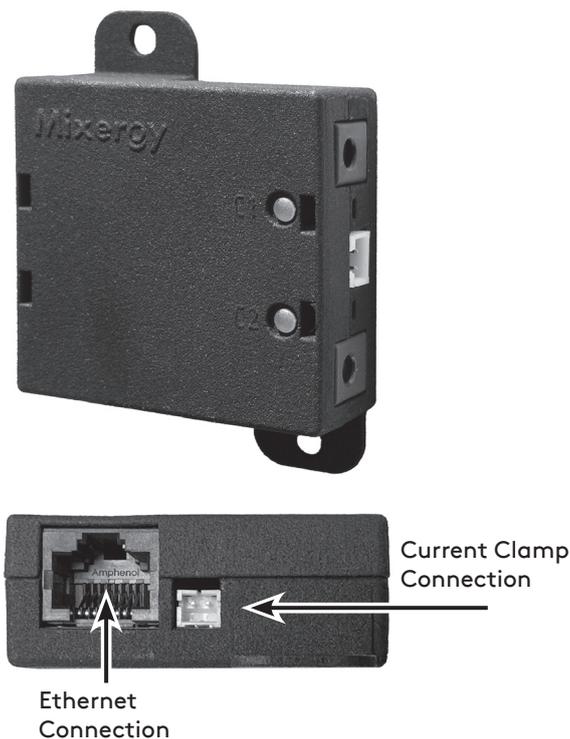


Positioning the current reader

The current reader device must be placed within 200mm of the household's incoming mains supply cabling to allow the current clamp to reach the cabling.

Fitting the current clamp

The current clamp must be attached around the **NEUTRAL** (Blue/Black) cable on the incoming mains supply with the arrow pointing towards the incoming supply 80/100A main fuse. The current clamp should then be plugged into the the bottom of the current reader next to the ethernet connection.



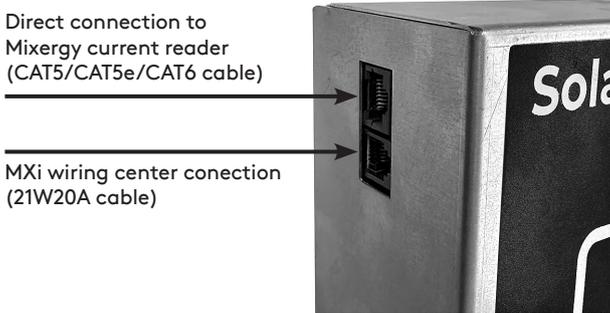
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Installation Instructions (cont.)

Connection of the PV Diverter

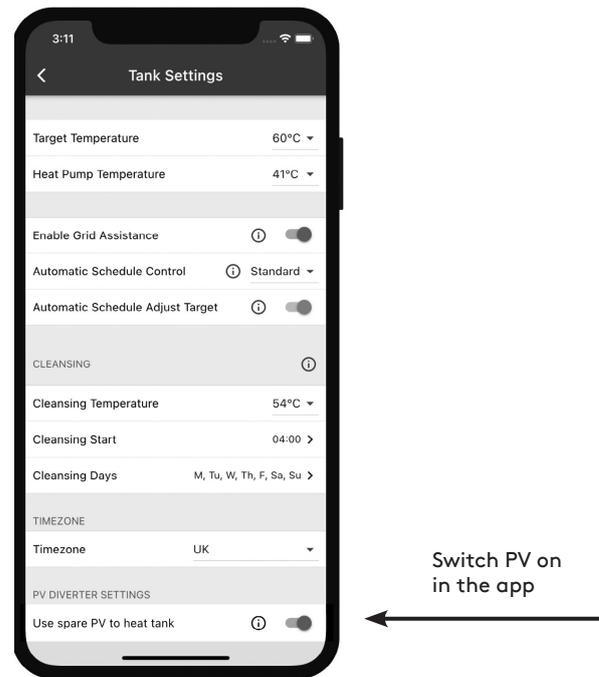
The current reader must be connected to the diverter, to the ethernet port on the top right hand side of the PV diverter, using either CAT5e or CAT6 ethernet cable. Ensure that the cable used contains all 4 twisted pairs (8 conductors).

Note: While ethernet cable is used for this connection, the communication protocols used are not compatible with standard networking hardware and the connection between the diverter and clamp must be **DIRECT**, i.e. no network switch or routing equipment is to be fitted between the PV diverter and the current reader.



Software setup for PV

To enable the diverter functionality, ensure the "Use spare PV to heat tank" is selected. This option can be found in the 'Tank Settings' section of the smartphone app.



PV Diverter Commissioning Checklist

Have the solar panels been correctly installed and commissioned?	
Has a solar inverter been installed and properly commissioned according to the manufacturer's instructions?	
Has the smart cylinder and diverter been installed and properly commissioned?	
Has the current clamp been fitted correctly, i.e. positioned on incoming NEUTRAL cable pointing towards the incoming supply?	
Has the current measurement devices (clamp and reader) been connected and installed correctly?	
Signature of Commissioning Engineer	
Company Name:	
Contact Number:	
Date:	

Troubleshooting PV Diverter

If the cylinder is unable to detect the presence of the current reader, this will be indicated by a rapidly flashing red light on the front of the cylinder controller. If this is the case, double check the wiring between the cylinder controller, diverter and current clamp. If the problem persists contact Kingspan's technical support.

If the cylinder switches the immersion on to full power at all times when diverting, this likely indicates that the current clamp has been installed with the arrow pointing in the wrong direction. Double check the arrow is pointing towards the incoming supply. If the problem persists contact Kingspan's technical support.

Internet connectivity

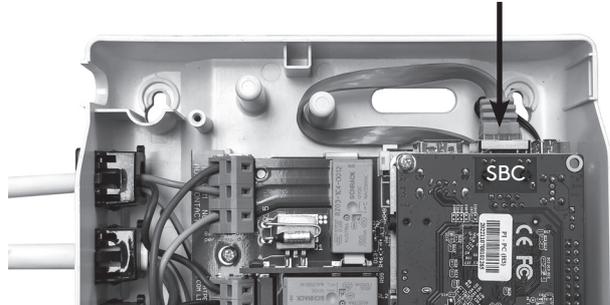
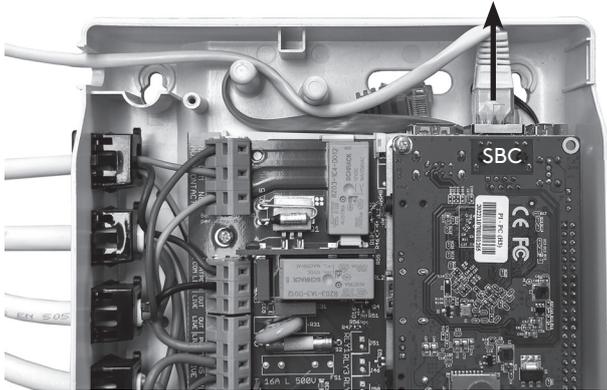
An internet connection is required to operate the cylinder as efficiently as possible and take full advantage of the Mixergy technology and smart energy tariffs. There are two ways the cylinder can be connected to the internet; option one is to connect the ethernet cable from the MXi wiring centre on the front of the cylinder to a live network port connected to the internet. **This network port should be located within 2m of the cylinder to allow the ethernet cable to reach.** CAT5/CAT5e/CAT6 network connection should be used.

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Installation Instructions (cont.)

If there is no ethernet port available near the cylinder, the Range Tribune MXi can be configured to connect to the internet using the powerline into the cylinder and a powerline network adaptor. If configuring the cylinder for this option, made the cylinder safe by isolating it from all power supplies (note that the cylinder has 2 power supplies), then open the MXi wiring centre on the front of the cylinder and remove the ethernet cable that is plugged into the SBC.

Within the centre, you will find a second ethernet cable hanging loose. Plug it into the ethernet connection on SBC, replace the wiring centre cover and reconnect the power supplies to the cylinder.



If the property already utilises powerline network adaptors, we recommend pairing the cylinder with the existing network. Alternatively, create one by plugging in the TP-Link supplied and connecting this to the internet router, pairing with the cylinder as detailed on page 16. NOTE: Both the cylinder and powerline network adaptor need to be on the same electrical phase.

Specification Details

Installing the powerline adaptor

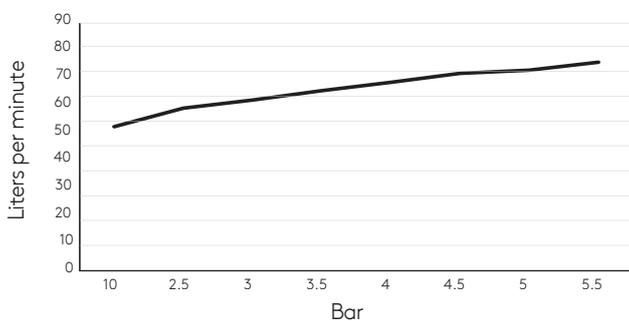
Unvented cylinders powered by Mixergy are made from Duplex stainless steel and are encased in a strong pre-coated steel case that's highly insulated, using polyurethane foam with a very low GWP. Further details are below.

Materials:

- Inner shell – Duplex stainless steel
- Coil – 22mm 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 advanced welding production methods under a controlled oxygen purged process, to maximise the corrosion-resistant qualities of the high-grade Duplex stainless steel. Every cylinder is checked using 15 bar pressure testing.

Flow rates



Immersion heater

- 1¼" BSP parallel threaded head
- 410mm (16") Long life titanium element
- Combined thermostat and safety cut-out
- Element rating 3kW at 230-240 Volt A/C
- 13A fuse requirement (via double pole switch)

Guarantee

The inner vessel carries an extended 25-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 pages 26 to 28.

Technical specifications

Maximum Inlet Water Pressure to the Pressure Reducing Valve	10.0 bar
Maximum Operating Pressure/Maximum Design Pressure	3.0 bar
Expansion Relief Valve Setting	6.0 bar
Expansion Vessel Charge Pressure	3.0 bar
T&P Relief Valve Setting (pressure)	7.0 bar
T&P Relief Valve Setting (temperature)	90°C
Maximum Coil Pressure (indirect cylinders)	3.5 bar
Thermostat safety cut-out temperature	80°C
Control Thermostat Temperature Range (digital)	50°C - 65°C
Immersion Heater Element Rating	2.7-3kW 230-240 Volt
Immersion Heater Specification	EN 60335-2-72

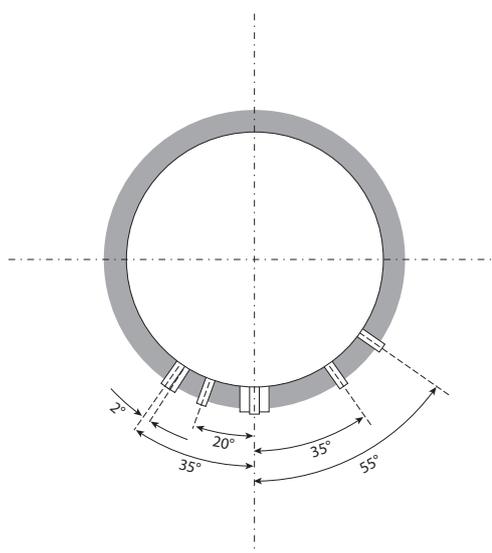
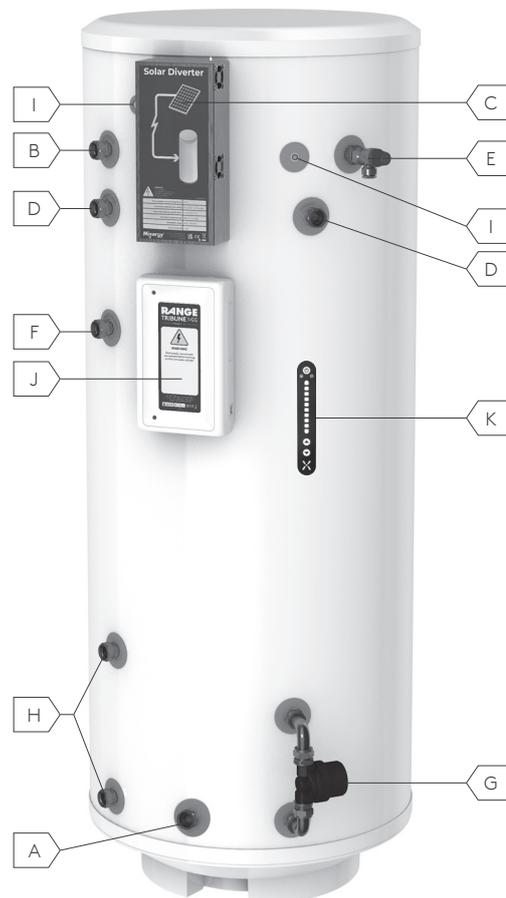
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Product Diagrams

Indirect unvented cylinder powered by Mixergy smart technology

Connections

- A 22mm Cold feed
- B 22mm Hot water outlet
- C Immersion heater with PV diverter
- D 22mm Boiler coil connections
- E Temperature & pressure relief valve
- F 22mm Secondary return (for cylinders with a capacity of 220L and above only)
- G Pump assembly
- H 22mm Auxiliary flow and return bosses for plate heat exchanger
- I Auxiliary thermostat pocket
- J Wiring centre
- K Mixergy control gauge



Technical Performance and Specification Data - Fiche

Nominal Capacity (Litre)	Product Codes	Energy Rating	Standing Loss (W)	Total Height (mm)	Diameter (mm)	Weight Empty (kg)	Weight Full (kg)	Weight of Heating Kit (kg) UPT only	Actual Cylinder Capacity (Litres)	Heat-up Time (Minutes) Calculated	Heat Loss (kW/24Hr)	Coil Primary Flow (L.P.M.)	Coil Primary Area (m ²)	Coil Pressure Drop (Bar)	Coil Primary (Litres)	Coil Primary (kW Rating)
130	MXPV130TNERP, MXPV130TNUPTERP	C	56	1000	583	29	159	22.7	130	24	1.33	15	0.67	0.14	3.70	19.9
160	MXPV160TNERP, MXPV160TNUPTERP	B	53	1186	583	34	194	22.7	160	27	1.27	15	0.77	0.16	4.20	21.9
190	MXPV190TNERP, MXPV190TNUPTERP	C	64	1368	583	39	228	22.7	189	29	1.52	15	0.86	0.17	4.75	23.9
220	MXPV220TNERP, MXPV220TNUPTERP	C	68	1558	583	44	263	22.7	219	34	1.63	15	0.86	0.17	4.75	23.8
260	MXPV260TNERP, MXPV260TNUPTERP	C	73	1805	583	51	308.5	24.5	257.5	38	1.73	15	0.96	0.18	5.28	24.1
310	MXPV310TNERP, MXPV310TNUPTERP	C	71	2075	583	63	364	24.5	301	46	1.69	15	0.96	0.18	5.28	23.8

Range Tribune MXi - Indirect Unvented Cylinders with PV Diverter

Parts List

Inlet Control Set with Balanced Cold CODE: 1001849	Temperature & Pressure Relief Valve CODE: 0025414	Filling Loop CODE: 0009218	Acetal Tundish CODE: 1000093	Heating Expansion Vessel 18L CODE: 0025007 25L CODE: 0025008	Auto Bypass Valve CODE: 0025430	Circulating Pump CODE: 0026737	Pump Gate Valves CODE: 0025459	12-Way Wiring Centre CODE: 0027048	Mixergy Control Gauge CODE: 1058995	Current Clamp CODE: 1058997	Olive Pack CODE: 0014510	Nut Pack CODE: 0021570
Solar Diverter	PV Diverter & MXi Wiring Centre CODE: 1057558	Potable Water Expansion Vessel 19L CODE: 0008960 24L CODE: 0008961	Two Port Valve CODE: 0025408	Heating Zone Controls CODE: 0026645	Heating Zone Controls CODE: 0026645	Two Port Valve CODE: 0025408	Two Port Valve CODE: 0025408	Two Port Valve CODE: 0025408	Two Port Valve CODE: 0025408	Two Port Valve CODE: 0025408	Two Port Valve CODE: 0025408	Two Port Valve CODE: 0025408

UK CA CE

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

3 Bar
Max design pressure (DHW)

65 mm
Insulation Thickness

60°
Recommended Stored Water Temperature

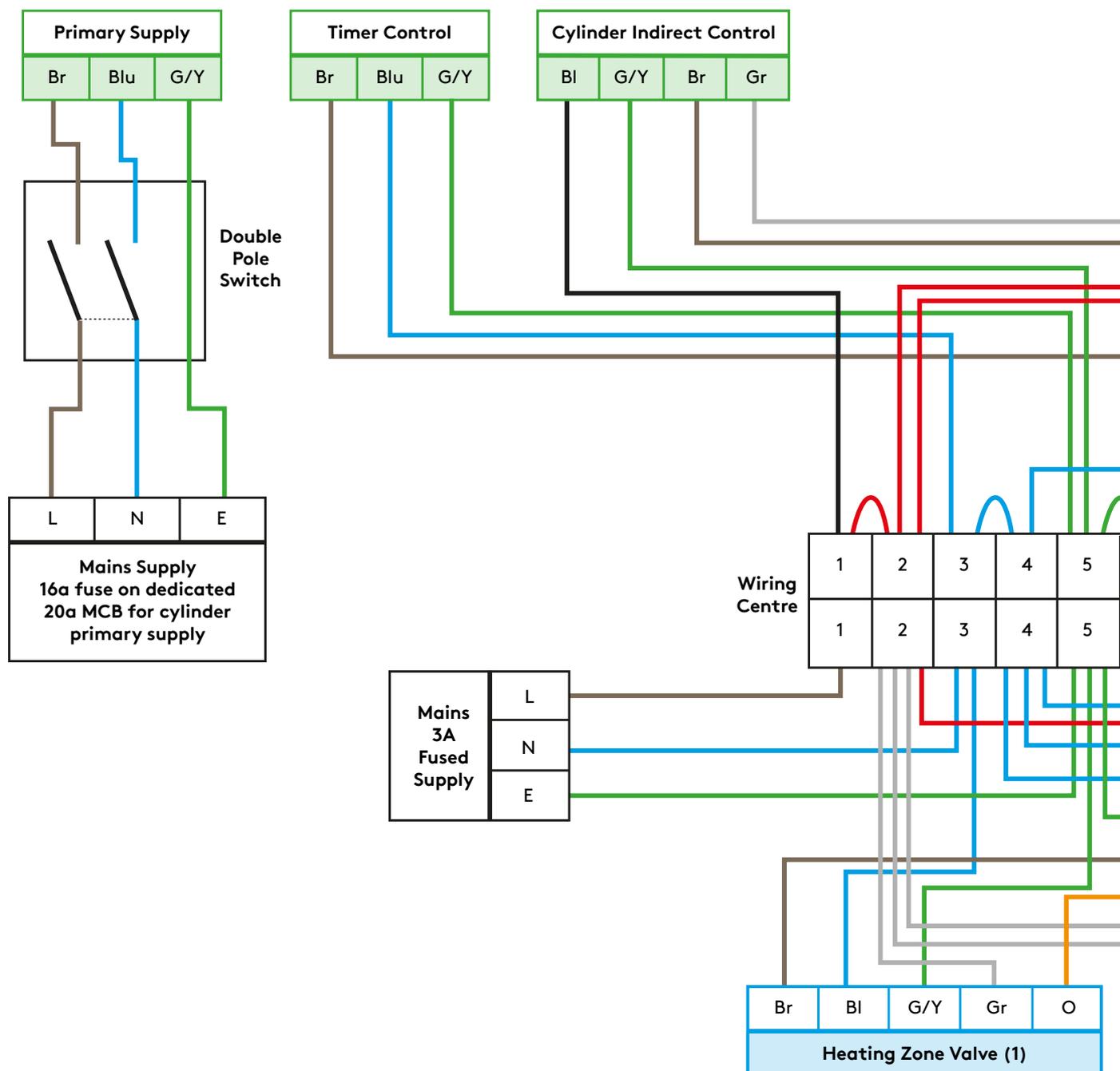
3.5 Bar
Max primary coil pressure

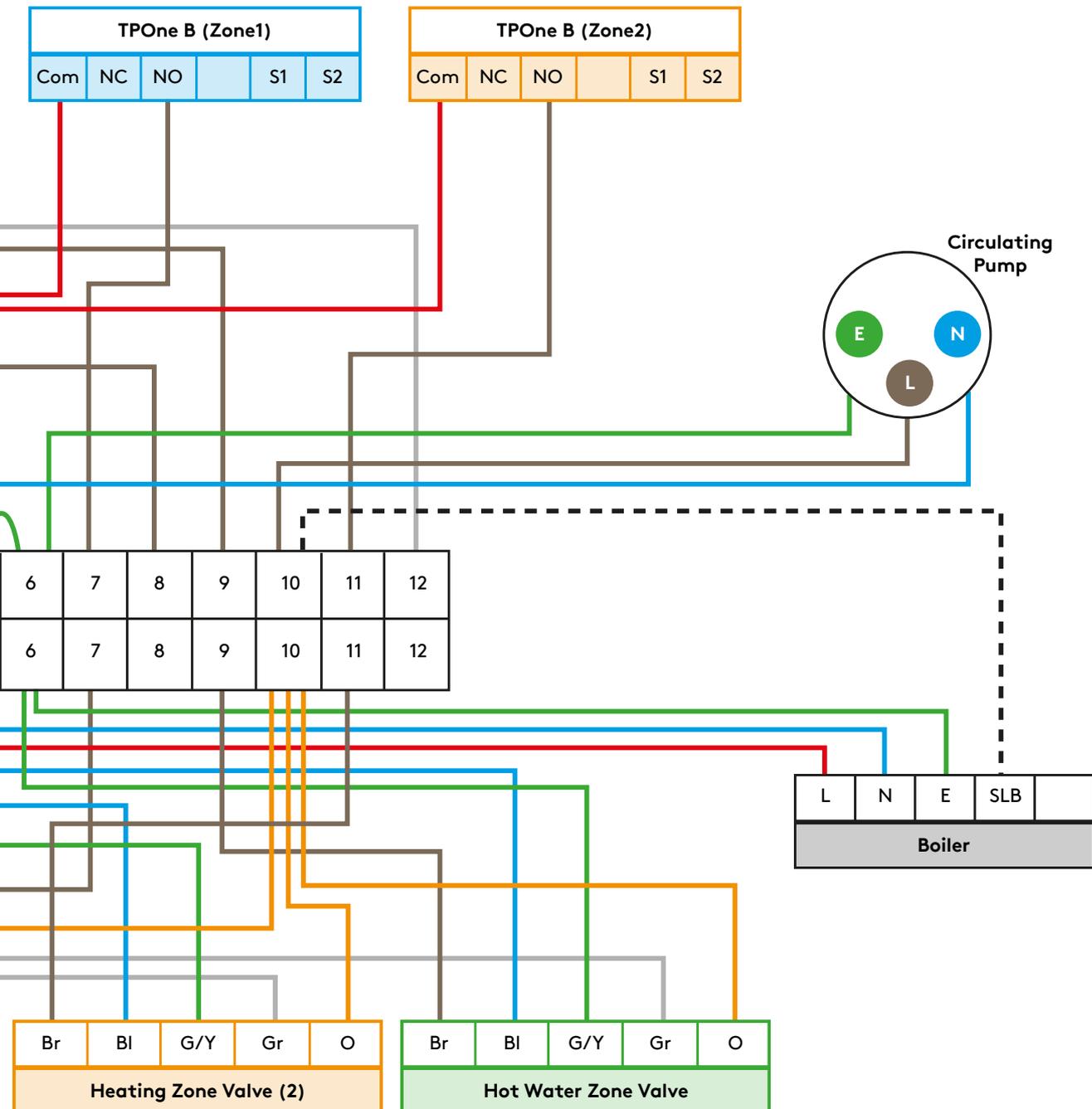
Recommended Minimum Input
25 L.P.M.
@
1.5 Bar

GB

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.





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.

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 heat pump or 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.

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

Switching on the cylinder

Do not switch on unless the cylinder is completely filled with water.

Switch on the unvented cylinder and check for correct operation.

Unvented cylinders powered by Mixergy smart technology come supplied in 'eco' mode which is designed to satisfy the minimum charge requirements of BS EN 50440:2015 M draw profile. Pressing any button on the gauge twice will exit 'eco' mode.

Ensure the cylinder's gauge illuminates and all buttons (boost UP, boost DOWN and power) work correctly.

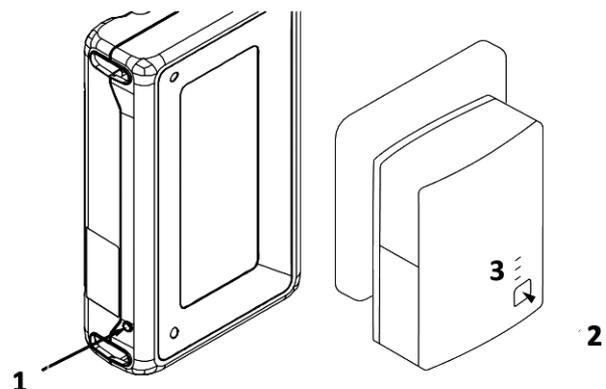
For further information on gauge operation please reference the Mixergy User Guide.

Connect and pair the cylinder to the internet.

Connect the cylinder to the internet by pairing to the included powerline adapter.

In the case that the cylinder does not automatically pair to the powerline adapter, or connection to an existing homeplug AV network is desired, follow the steps below to pair the cylinder to the network.

1. Use a thin tool to depress and hold the pair button for 1-2 seconds.
2. Depress the pair button on the powerline adapter for 1-2 seconds within 2 minutes of step 2.
3. Observe all 3 LEDs as solid green on the powerline adapter.



NOTE: The cylinder must be registered and connected online in order to validate the 25-year guarantee.

Mixergy Enterprise Installer App

For a faster and better setup experience, installers are advised to download and install the Mixergy Enterprise Installer app for Apple or Android smartphones and use this to aid the setup process.

Scan here for links to
download the app



Using the cylinder without an internet connection

The unvented cylinder has a gauge on its side where you can control cylinder functions.

Indirect cylinders

Ensure the heating circuit has been fully flushed, carrying out commissioning in line with the boiler (or 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 boiler 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 circulation pump.

Set the two port valve into the manual open position by moving the lever on the valve and fill the primary circuit ensuring the appropriate inhibitors are added in the right concentrations. When full, move the lever back into the auto position. Switch the programmer to Domestic Hot Water (DHW) and allow the unit to start to heat. Adjust the dial of the 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 22).

Important:

Changing heat sources

All unvented cylinders powered by Mixergy smart technology leave the factory in direct operation. In the case of a indirect or heat pump installation, the cylinder's primary heat source **MUST** be switched to indirect to allow for operation of the 2 port valve and boiler, or the system will not function correctly.

This can be achieved in the following ways:

1. Where the cylinder has been commissioned and an internet connection established, the primary heat source can be changed by the installer using the Mixergy Enterprise Installer app or by the user via the standard Mixergy app.
2. Where an internet connection cannot be made to the cylinder during commissioning, the primary heat source can be set by holding the boost UP and boost DOWN buttons simultaneously. The display will light white to acknowledge that you have entered this mode. To change the heat source, let go of the buttons once any of the display LEDs has changed to the required colour (BLUE for direct, RED for indirect and GREEN for heat pump). The display will then flash either blue, red or green to indicate the new default heat source. Switch the cylinder off and on (power cycle) for the change to take effect.

Important Note:

Any heat source that is set while the cylinder is offline will be overwritten once the cylinder establishes an internet connection. Please ensure that the default heat source is set correctly on the app once the system is fully connected.

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.

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.

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 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 boiler or other heat source. 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.

To re-fill, follow the commissioning instructions.

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 boiler or heat pump service.

1. Expansion relief valve – manually open the twist cap and check that the water is discharged and runs clearly through the tundish and out at the final discharge point. Ensure that the valve re-seats/re-seals itself.
2. Temperature & pressure relief valve – repeat the above procedure. Ensure that the valve re-seats/re-seals itself.
WARNING: The water discharged may be very hot!
3. Check the immersion heater is working correctly and is controlling the water at a temperature between 55°C and 65°C.
4. Check the pressure in the expansion vessel is charged to 3 bar. The air valve on expansion vessel is a Schrader (car tyre) type under the removable plastic cap. The vessel can be checked and recharged by switching off the stopcock or isolating the water supply to the cylinder, then opening a hot tap to deplete the pressure inside the cylinder. If there is insufficient pressure within the vessel, top up the vessel via a pump and recharge to 3.0 bar. Air, nitrogen or CO₂ may be used to charge the expansion vessel.
5. Unscrew the head on the inlet control set and clean the mesh filter within (some water may escape).
6. The Service Record on pages 23 to 25 of this manual must be updated at each service.

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Servicing and Maintenance (cont.)

Troubleshooting

Troubleshooting table

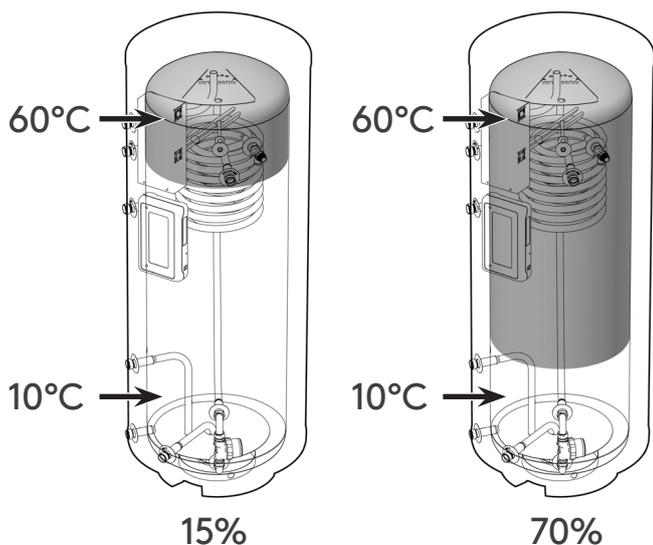
Issue	Possible Cause	Solution
Water escaping from the case	Compression fitting on hot draw-off not sealing	Check/remake joint with sealing paste
	Leaking cylinder	Isolate supply and contact us
Cold water at hot taps	Heat source not working	Check heat source - consult boiler / heat pump / solar manufacturer's 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 and 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 backpressurised	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	No fault - 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
Noise during hot water draw-off, typically worse in the morning	Loose pipework	Install extra clips
	Water hammer	Fit a shock arrestor
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
Status LED error codes	Flashing green	System OK
	Solid green/red	System updating. Do not remove power
	Very slow flashing red every 2 seconds - temperature sensor problem	Check temperature sensor
	Slow flashing red once a second - no gauge detected	Contact Mixergy
	Fast flashing red twice a second - energy measurement issue	Contact Mixergy
Internet connectivity issues	Very fast flashing red, five times a second - main processor issue	Contact Mixergy
	Suspected connectivity issue	Refer to the Mixergy User Guide and FAQs.
Electrical fault	Electrical fault	Contact Kingspan

See page 10 for Troubleshooting the PV Diverter.

Operator and owner info

User instructions

Your unvented hot water cylinder is powered by Mixergy smart technology. This allows you to heat and store only the amount of hot water you'll need, as shown in these diagrams. The stored hot water is then mixed with cold to a usable safe temperature of around 40°C near to the outlet via a mixer tap, valve or in the sink, bath or basin.



Mixergy app

Your unvented cylinder has a gauge on its side where you can control cylinder functions. However, for more precise controls you should download the Mixergy app from the App Store or Google Play, which allows you to control your hot water from anywhere. Create an account and add your cylinder to your account. You can then choose a heating schedule, heat source and set your hot water temperature.

Scan here for links to
download the app



Changing account details

If the user of the account tied to the cylinder needs to be changed, for example if there is a new tenant or homeowner, it's simple to disassociate the cylinder from the existing account before re-registering. Do this by pressing and holding the boost down and power buttons for approximately 15 seconds.

Annual servicing

Your unvented hot water cylinder requires annual servicing in order to ensure safe working and optimum performance. This is typically timed to coincide with the annual boiler or heat pump service. You should employ a competent installer to perform the annual service and complete the Service Record to maintain your 25-year guarantee on the inner vessel.

If water is flowing through the tundish, this is an indication of a problem with a part of your heating system and action is needed. Call 0345 260 0258 for advice.

If this water is hot, turn the heat pump/boiler and 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.

After draining

Important: After draining the cylinder, the hot tap must be left fully open until the cylinder has fully cooled. Failure to follow this instruction may result in damage to the cylinder and will invalidate the guarantee.

The installer must follow the Benchmark Code of Practice for the Benchmark certification to be valid; please see page 22 and the Guarantee terms and conditions on pages 26 to 28 for further details.

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Householder guide

You can download a copy of Mixergy's householder user guide from cylinders.kwe.kingspan.com/mixergy-user-guide or by scanning the QR code below.



Scan here to download
the Mixergy User Guide

Specification - cylinder details & performance

Please refer to page 11, 12 & 13 within this manual.

Spare parts

See page 13 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 25-year guarantee to be valid. The Benchmark Code of Practice can be found online via www.benchmark.org.uk.

Kingspan 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 pages 10 and 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 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 Commissioning Checklist.

This product should be serviced regularly to optimise its safety, efficiency and performance. The service engineer should complete the relevant Service Record after each annual service. The Benchmark Commissioning Checklist and completed Service Record will be required in the event of any guarantee claim.

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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. The guarantee is extended to a total of 25 years for the stainless steel inner vessel and 2 years on parts in domestic properties.

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.

Please read the following conditions before registering your product and before seeking any guarantee service support.

Important: The manufacturer's guarantee is subject to the homeowner registering with the Customer Service Department within 30 days of commissioning or occupation if new build.

Information to confirm:

- Product make / model
- Serial number
- Details of installation (can be found in the Commissioning Checklist left by installer)

Important: You must complete the Registration Card provided and return to Kingspan Water & Energy, Service Department - Cylinders, 180 Gilford Road, Portadown, Co. Armagh, Northern Ireland, BT63 5LF or register the product online at:

<http://kingspancylinders.com/guarantee>

If you do not register the product, the guarantee will be limited to 12 months from the date of commissioning.

The product must be maintained by a competent person* within 12 months after commissioning and thereafter at 12-monthly intervals. As the manufacturer, we reserve the right to seek evidence of this maintenance to our reasonable satisfaction before approving any guarantee servicing and repairs. This may include evidence of completed Service Record and service agreement / invoice.

Annual services are available from the Customer Service/ Technical Support team.

* 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 its 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 compliant with Water Regulations 2000, i.e. the water must not be supplied from a well or borehole.
- **The product has only been used for the storage of wholesome water (max. 250mg/l chloride); for hard water areas, the use of an electrolytic scale reducer is recommended.**
- 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 and Service Record included with this product 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 or installer has registered the product with the manufacturer's Customer Service Department (by returning completed Registration Card or online) within 30 days of commissioning or occupation if new build. Failure to do so may result in a reduced guarantee period.
- Evidence of purchase and date of supply must be submitted upon making a claim.
- 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 guarantee is fully transferable from a change of legal ownership of the property.

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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 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 failure of the Mixergy app or its associated services and/or controls. Responsibility for the provision and maintenance of these services connected with the smart functionality of the cylinder and any associated liability sits with Mixergy Ltd, Company Reg. 09137387, www.mixergy.co.uk

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 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.

Privacy and Data Protection

Mixergy Ltd is the data controller for your personal details when submitted under the Mixergy app, and this will be governed by their privacy policy, available from Mixergy Ltd upon request.

These details may be shared with Kingspan as a named data processor for troubleshooting and fault finding, for analysis of energy usage of individual or groups of cylinders and for providing services to you as necessary throughout the life of the cylinders guarantee period.

Mixergy may also share the anonymised data with other stakeholders, such as the housebuilder, developer, contractor or landlord, to analyse energy usage of individual or groups of cylinders.

Kingspan's privacy policy will manage personal details submitted to Kingspan as part of the cylinder guarantee registration, service contract or part of doing business with us. Kingspan shall be the data controller for those details.



AFFIX
YOUR
STAMP
HERE

