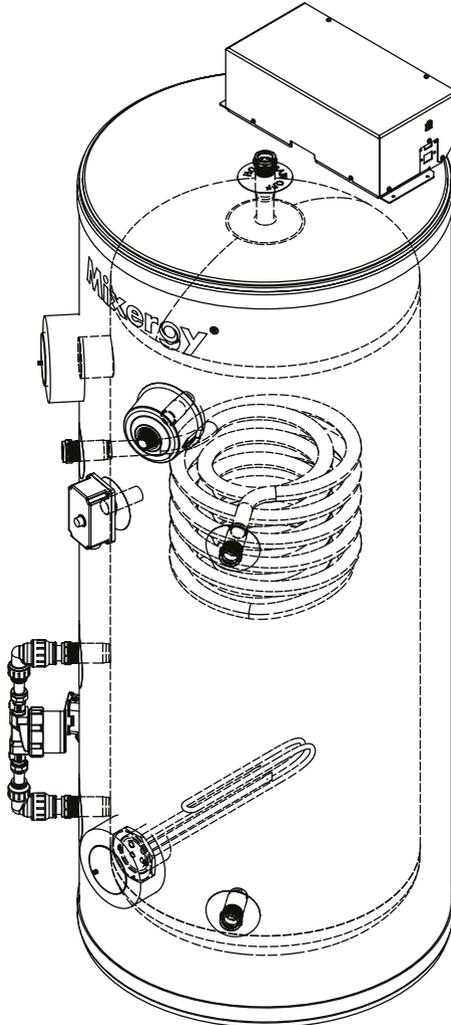


Mixergy®

Installation and servicing instructions

For stainless steel hot water systems



Please leave with householder

Failure to install and maintain this system in accordance with these instructions will invalidate the manufacturer's warranty.

Mixergy Ltd
2 Canal View
Wharf Farm
Cassington
Oxfordshire
OX29 4DB

V6 03/10/18

System details

System ID

For further information on this system, please contact us:

Tel: 01865 884343

E-Mail: info@mixergy.co.uk

Technical data

Max. supply pressure to pressure reducing valve	1 MPa (10 bar)
Operating pressure	0.3 MPa (3 bar)
Expansion vessel charge pressure	0.3 MPa (3 bar)
Expansion relief valve setting	0.6 MPa (6 bar)
P&T relief valve setting (pressure)	0.7 MPa (7 bar)
P&T relief valve setting (temperature)	90
Energy cut-out thermostat temperature setting	80
Coil max. working pressure (indirect/dual coil)	0.35 MPa (3.5 bar)
Immersion heater rating	230-240 V~ 2.7-3.0 kW

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Additional components

- Monoblock kit incl. pressure reducing valve, check valve, pressure and temperature relief valve and expansion relief valve
- Tundish
- Expansion vessel incl. mounting bracket and flexible hose
- 3 kW immersion heater(s) 1.3/4" BSP (fitted)
- High limit thermostat (indirect only, fitted)
- Wi-Fi adapter (fitted)
- USB extension cable
- Wireless access point
- Ethernet cable

Model sizes and weights

Capacity (L)	Diameter (mm)	Height (mm)	Direct weight (kg)		Indirect weight (kg)	
			Dry	Wet	Dry	Wet
120	545	1055	26	146	30	150
150	545	1255	33	183	38	188
180	545	1435	38	118	42	222
210	545	1625	41	251	45	255
300	545	2095	55	355	60	360

Design notes

The Mixergy Hot Water System is currently available in three basic variations:

- Mixergy Direct - Provides hot water heated by electricity and is designed primarily for use with off peak electricity.
- Mixergy Indirect - Provides hot water by an internal primary coil which is designed for use with electric, gas or oil fired boilers.
- Mixergy Heat Pump - Provides hot water by an external heat exchanger which is designed for use with air or ground source heat pumps.

For more information regarding solar thermal and dual source systems, please contact Mixergy Ltd.



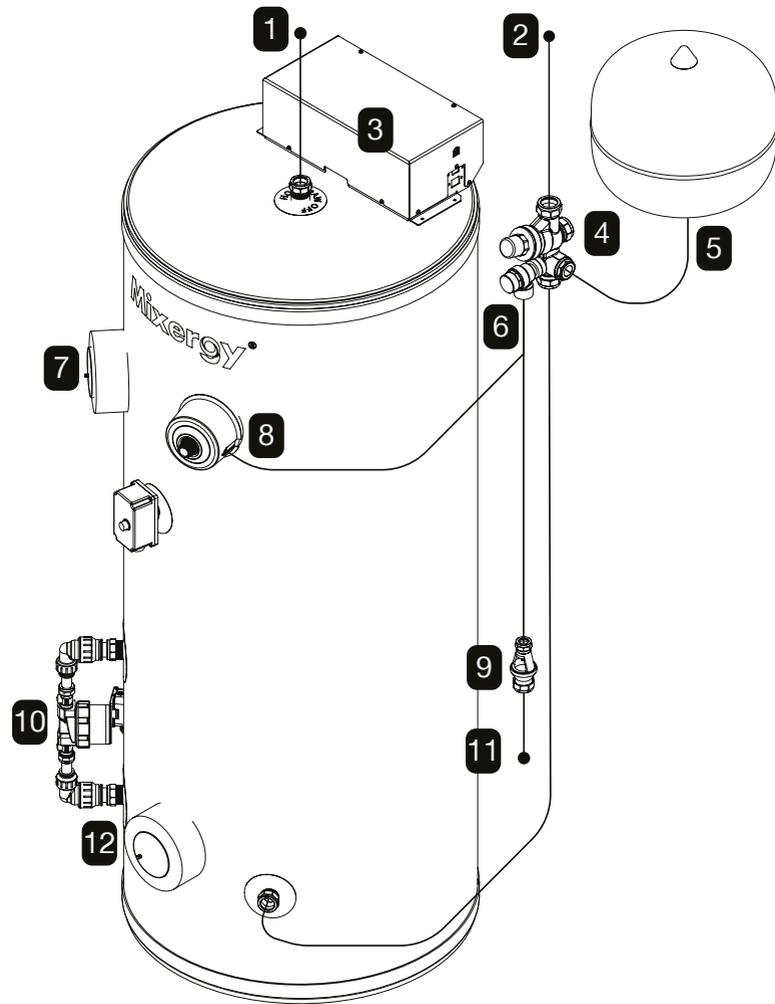
Unvented hot water cylinders must not be used with solid fuel boilers as the energy source.

All models are factory fitted / supplied with immersion heaters that have built-in thermal cut-outs. Immersion heaters without thermal cut-outs must not be fitted.

All unvented installations must be fitted with a pressure reducing valve (supplied) and P&T relief valve (fitted). These must not be removed or used for any other purposes than what they are designed for.

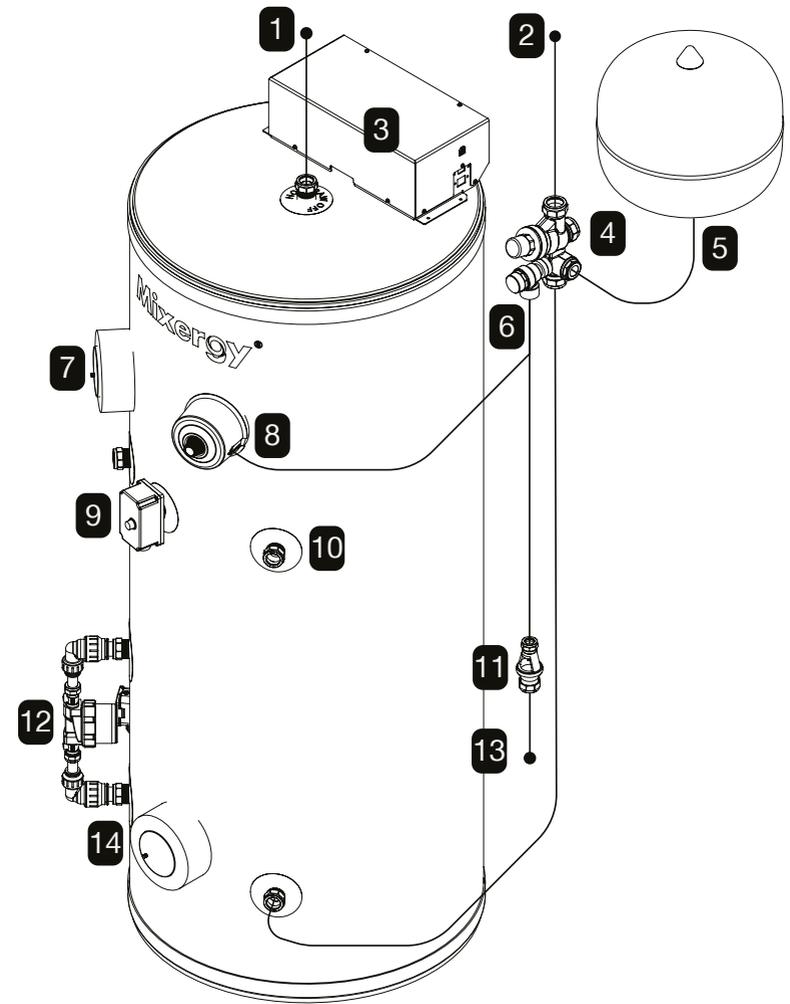
The unit should be handled with care in order to avoid damage. It should be stored upright in a dry place.

Schematic: Direct



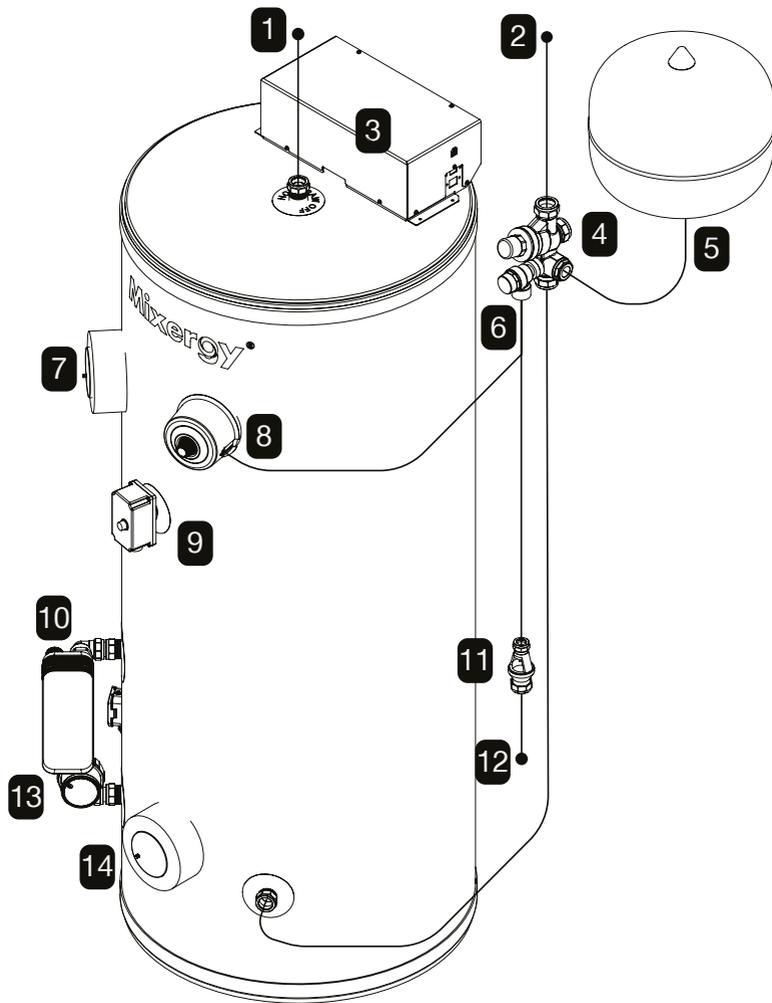
- | | |
|-----------------------------------|--|
| 1 Hot draw off | 7 Primary immersion |
| 2 Cold feed | 8 T&P relief valve |
| 3 Electronics enclosure | 9 Tundish |
| 4 Cold water control group | 10 Pump assembly |
| 5 Expansion vessel | 11 Discharge pipe |
| 6 Expansion relief valve | 12 Backup immersion (if fitted) |

Schematic: Indirect



- | | |
|-----------------------------------|--|
| 1 Hot draw off | 8 T&P relief valve |
| 2 Cold feed | 9 High limit thermostat |
| 3 Electronics enclosure | 10 Indirect coil ports |
| 4 Cold water control group | 11 Tundish |
| 5 Expansion vessel | 12 Pump assembly |
| 6 Expansion relief valve | 13 Discharge pipe |
| 7 Primary immersion | 14 Backup immersion (if fitted) |

Schematic: Heat pump



- | | | | |
|---|--------------------------|----|------------------------------|
| 1 | Hot draw off | 8 | T&P relief valve |
| 2 | Cold feed | 9 | High limit thermostat |
| 3 | Electronics enclosure | 10 | Heat pump exchanger ports |
| 4 | Cold water control group | 11 | Tundish |
| 5 | Expansion vessel | 12 | Discharge pipe |
| 6 | Expansion relief valve | 13 | Pump assembly |
| 7 | Primary immersion | 14 | Backup immersion (if fitted) |

8

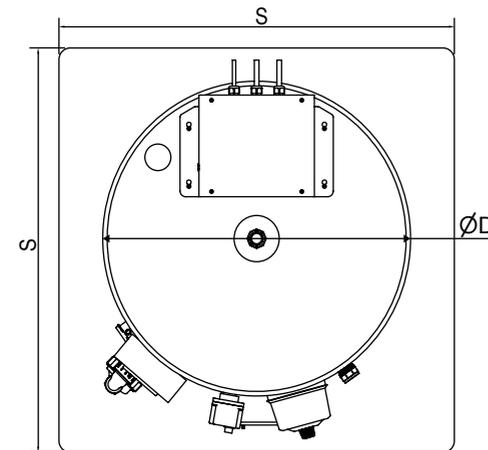
Installation: general guidelines



In the case of an unvented installation, install of this product should only be carried out by a “competent operative” i.e. the installer must have attended a recognised course in unvented hot water systems or received appropriate training in their apprenticeship. All registered operatives should carry an Identification Card issued by the institute of Unvented Hot Water Systems.

The installation area should be able to cope with the weight, incoming pipes and discharge pipe when full. Full weights are listed on page 4 of this booklet.

Position of the unit should suit the installation; all connections should be to the front for ease of access. Ensure suitable space is left for access for repair and/or replacement of immersions and valves etc. Ensure atleast 150mm of vertical clearance above the cylinder. Refer to the diagram below for guidelines on space requirements:



Nominal diameter ØD (mm)	Space requirement S (mm)
565	700
610	850

9

Installation: general guidelines

- In the case of an unvented installation, installers should ensure incoming mains pressure is less than 1 MPa (10 bar) and that local authority approval for installation of unvented systems is granted. Ensure adequate flow rate is available.
- Excessive use of flux can damage the unit and especially the valves and expansion vessel (if supplied.) Avoid over-use and ensure the system is fully flushed of any debris or flux after connection. If a full sterilisation of all the pipework including the cylinder is required then a complete drain down and flush of the unit is essential. A simple flush through with water is not adequate in removing all sterilising solution within the cylinder. Under no circumstances should sterilising solution be left in the cylinder any longer than required (seek dosage requirements from chemical manufacturer.)
- The unit should be piped in with a nominal 22mm pipe to ensure adequate flow rate. The unit is supplied with a monobloc pressure reducing valve that has a set pressure of 3.0 bar. The valve also consists of a serviceable strainer, non return valve, expansion valve, connection for an expansion vessel and balanced cold feed supply. We would strongly recommend fitting an isolating valve (not supplied) prior to the monobloc valve for ease of maintenance at a later date. Under no circumstances should an insulating valve be fitted between the expansion valve and the storage cylinder.
- Please ensure that a drain valve is fitted to the lowest part of the unit, **The drain valve must be fitted as low as possible so that 80% of the cylinders total capacity can be drained off.**
- The tundish, which shows visible discharge from the relief valves, is to be in a prominent, visible and safe position away from any electrical devices. See discharge and safety devices on page 17.

Installation: general guidelines

- The temperature and pressure relief valve is set at 90°C / 7 bar and is factory fitted and sealed prior to dispatch. Whilst we endeavour to make sure there are no leaks from the seal, we would advise checking the connection as the valve may have been disrupted in transit.



The relief valves are only to be used for relief discharge purposes. No valves should be fitted between the relief valves and the cylinder.

- The expansion vessel should be checked and if required charged at 3.0 bar. The vessel should be mounted securely to the wall or sufficient support with the fixing kit supplied. The connection hose should be fitted between the vessel and monobloc kit.



The electrical supply to each immersion heater must be installed by a qualified electrician.

- On Indirect Units, where a Coil is fitted to the cylinder, the supplied Two Port Motorized Zone Valve must be fitted in accordance with the instruction details supplied for the appropriate installation. Maximum working pressure of the coils is 3.5 Bar. All electrical wiring to electronics, zone valve and immersion heaters must be earthed and to current IEE Wiring Regulations.

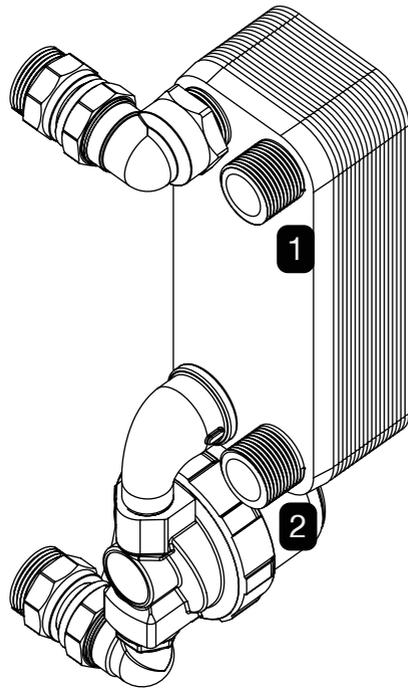
Installation: heat pump

Hydraulic connections

Mixergy heat pump cylinders use a high output plate heat exchanger rather than a coil within the tank. Hydraulic connections for heat pump systems should be made such that the heat pump output flows into the port labelled **1** and the return flows out of the port labelled **2**. It is recommended that the heat pump loop temperature for DHW be set between 50°C and 55°C.

Electrical connections

For electrical connections, the Mixergy system should be wired up in accordance with the home's heating system in whichever configuration is appropriate (S or Y plan). For further information please refer to page 14.



Hydraulic connections for the heat exchanger are given in 3/4" BSP. It is recommended that thread sealant or a face seal is used to prevent leaking.

Installation: electrical



ENSURE ALL ELECTRICAL SUPPLIES ARE SWITCHED OFF BEFORE MAKING ANY CONNECTION TO THE UNIT. ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY COMPETENT ELECTRICIAN AND BE IN ACCORDANCE WITH THE LATEST I.E.E. REGULATIONS.

External wiring

Mixergy stainless steel water systems come supplied with cable included to facilitate easy installation. The purpose and installation requirements for each cable are given below.

Supply

The white 3-core (L+N+E) cable labelled 'supply' must be connected to the peak supply via a dedicated 16A MCB protected circuit with a 20A DP switch.

Sense

The black 2-core (L+N) cable labelled 'sense' can be used to integrate the Mixergy system with any existing timers or controllers i.e. economy 7 timer or a nest controller. See 'Indirect/Heat pump and external controller wiring' on page 14 for more details on wiring in an external controller.

Installation: electrical

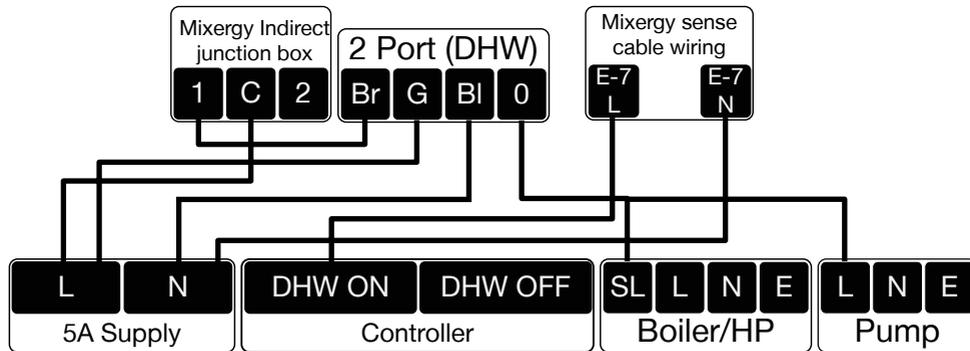
Indirect/Heat pump and external controller wiring

Mixergy indirect and heat pump systems can be wired into both S-plan and Y-plan heating configurations. Please use the following diagrams for reference.

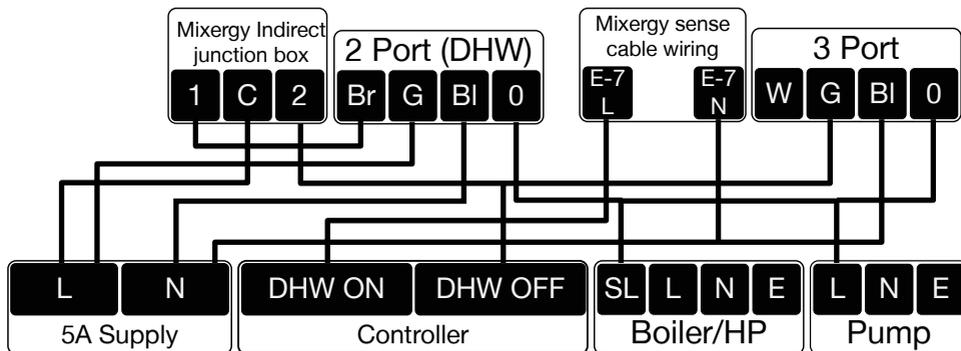


These diagrams only provide instruction for the wiring of the DHW system and should not be used as a reference for a complete heating system.

Wiring diagram with 2 port zone valve (S-PLAN)



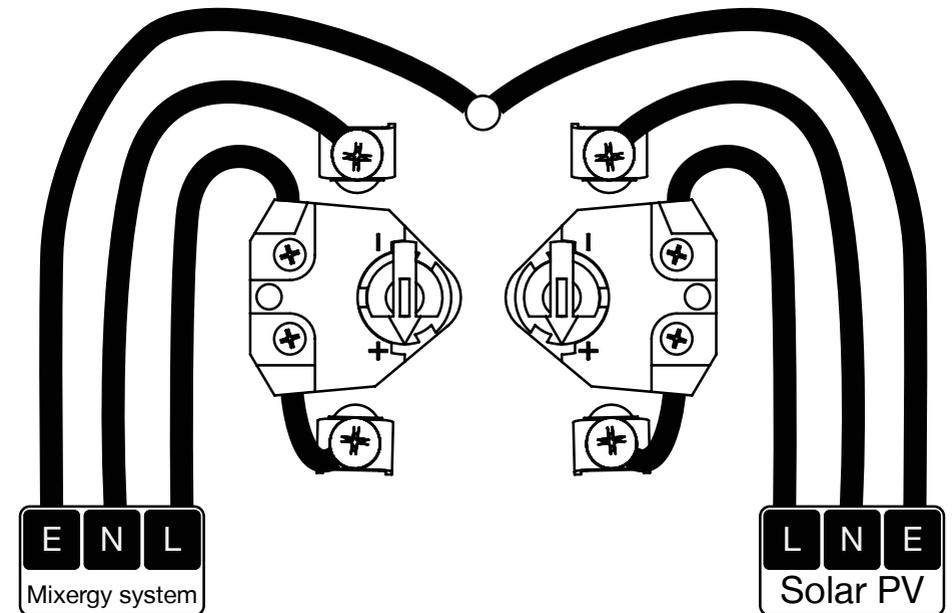
Wiring diagram with 3 port mid position valve and 2 port zone valve (Y-PLAN)



Installation: electrical

PV diverters

If your Mixergy system is equipped for use with a PV diverter, a dual immersion will be fitted to replace the primary immersion shown in the schematics on page 6 and 7. This immersion will come factory wired into the Mixergy system. However, additional wiring will be required to integrate the PV diverter. Please remove the foam insulating ring and plastic immersion cap. Use the wiring diagram below for reference.



Ensure both supplies are isolated before performing work. Check continuity between immersion contacts before wiring. DO NOT CONNECT SOLAR PV AND MAINS L+N TOGETHER.

Installation: connectivity

Connecting to the internet

The Mixergy system requires internet connectivity to allow for remote control of the tank. To achieve this, it is necessary to connect the tank to the home's internet router using the included wireless access point and USB Wi-Fi adapter.

Installing the wireless access point

To install the wireless access point, first find a power socket that is within 1.5m of the household's internet router. Plug the module into the socket and then run the included ethernet cable from the access point to the router.

Checking connectivity

Following installation and commissioning of the system, a connectivity check should be performed by attempting to register the system online. In the event that a connection cannot be made, please use the included USB extension cable to reposition the Wi-Fi adapter (located on the right side of the enclosure) to an area with stronger signal. If the connection still cannot be made, please contact Mixergy Ltd. directly.

Discharge pipework

Discharge pipes from safety devices

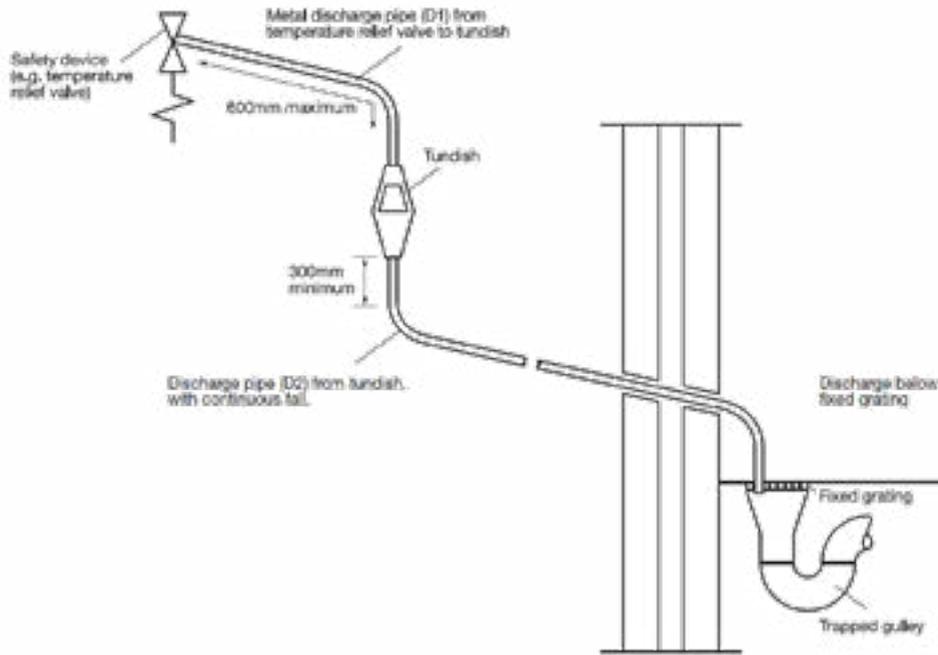
- Safety devices such as temperature relief valves or combined temperature and pressure relief valves should discharge either directly or by way of a manifold via a short length of metal pipe (D1) to a tundish.
- The diameter of discharge pipe (D1) should be not less than the nominal outlet size of the safety device, e.g. temperature relief valve.
- Where a manifold is used it should be sized to accept and discharge the total discharge from the discharge pipes connected to it.
- Where valves other than a temperature and pressure relief valve from a single unvented hot water system discharge by way of the same manifold that is used by the safety devices, the manifold should be factory fitted as part of the hot water storage system unit or package.

Tundish

- The tundish should be vertical, 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. Note: To comply with the Water Supply (Water Fittings) Regulations, the tundish should incorporate a suitable air gap.
- Any discharge should be visible at the tundish. In addition, where discharges from safety devices may not be apparent, e.g. in dwellings occupied by people with impaired vision or mobility, consideration should be given to the installation of a suitable safety device to warn when discharge takes place, e.g. electronically operated.

Discharge pipework

Typical discharge pipe arrangement



Sizing of copper discharge pipe 'D2' for common temperature relief valve outlet sizes

Valve outlet size	Minimum size of discharge pipe D1	Minimum size of discharge pipe D2 from tundish	Maximum resistance allowed, expressed as a length of straight pipe	Resistance created by each elbow or bend
G 1/2"	15 mm	22 mm	< 9 m	0.8 m
		28 mm	< 18 m	1.0 m
		35 mm	< 27 m	1.4 m
G 3/4"	22 mm	28 mm	< 9 m	1.0 m
		35 mm	< 18 m	1.4 m
		42 mm	< 27 m	1.7 m
G 1"	28 mm	35 mm	< 9 m	1.4 m
		42 mm	< 18 m	1.7 m
		54 mm	< 27 m	2.3 m

Discharge pipework

Discharge pipe D2

- The discharge pipe (D2) from the tundish should have a vertical section of pipe at least 300mm long below the tundish before any elbows or bends in the pipework. It should be installed with a continuous fall of at least 1 in 200.
- The discharge pipe (D2) should be made of metal or other material that has been demonstrated to be capable of safely withstanding temperatures of the water discharged and is clearly and permanently marked to identify the product and performance standard (e.g. as specified in the relevant part of BS 7291-1:2006.)
- 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, i.e. for discharge pipes between 9m and 18m the 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 3 sizes larger, and so on; bends must be taken into account in calculating the flow resistance.
- Where a single common discharge pipe serves more than one system, it should be at least one pipe size larger than the largest individual discharge pipe (D2) to be connected.

Note: An alternative approach for sizing discharge pipes would be to follow Annex D, section D.2 of BS 6700:2006 + A1:2009 Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.

Discharge pipework

- The discharge pipe should not be connected to a soil discharge stack unless it can be demonstrated that the soil discharge stack is capable of safely withstanding the temperatures of the water discharged, in which case, it should contain a mechanical seal, not incorporating a water trap, which allows water into the branch pipe without allowing foul air from the drain to be ventilated through the tundish.
- If plastic pipes are used as branch pipes carrying discharge from a safety device, they should be either polybutylene (PB) or crosslinked polyethylene (PE-X) complying with national standards such as Class S of BS 7291-2:2006 or Class S of BS 7291-3:2000 respectively; and be continuously marked with a warning that no sanitary appliances should be connected to the pipe.
- Where pipes cannot be connected to the stack it may be possible to route a dedicated pipe alongside or in close proximity to the discharge stack.

Note: Plastic pipes should be joined and assembled with fittings appropriate to the circumstances in which they are used as set out in BS EN ISO 1043-1:2002.

Discharge pipework

Termination of discharge pipe

The discharge pipe (D2) from the tundish 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:

- To a trapped gully with the end of the pipe below a fixed grating and above the water seal.
- Downward discharges at low level; i.e. up to 100mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable providing that a wire cage or similar guard is positioned to prevent contact, whilst maintaining visibility.
- Discharges at high level: e.g. into a metal hopper and metal downpipe with the end of the discharge pipe clearly visible or onto a roof capable of withstanding high temperature discharges of water and 3 m from any plastic guttering system that would collect such discharges.

Commissioning

All factory fitted valves etc. are fitted using a thread sealant. If this seal is broken it should be re-sealed using a suitable sealant. It is the installer's responsibility to ensure all the connections are water tight prior to leaving the property.

1. Ensure the drain on the cold feed pipework is closed.
2. Open a hot tap the furthest distance from the unit.
3. Gradually open the cold mains isolator valve and fill cylinder until water appears at the hot tap. Attend to each hot water outlet in turn and ensure water flow is obtained at each outlet expelling any air within the pipework.
4. To ensure the safety valves are operating correctly, turn the tops of the valves independently to ensure water passes through the valve and into the tundish. Once this is confirmed open both valves together allowing as much water as possible to flow through the tundish. At this point make sure that your discharge pipework is free from debris and is transporting the water away to waste effectively. The valves can then be released and a check should be made to ensure they have re-seated correctly.
5. Switch on the Mixergy system and check for correct operation. Mixergy systems 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 will exit eco mode. To re-enable eco mode, hold down power and illuminate buttons simultaneously for 10 seconds.



Ensure the system gauge illuminates and all buttons (brighten, boost and power) work correctly. For further information on gauge operation please reference the user guide.

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. Failure to install and commission this equipment to the manufacturer's instructions may invalidate the warranty but does not affect statutory rights. Please ensure all information is filled in correctly below.

Fitter details	
System ID no.	<input type="text"/>
Commissioned by	<input type="text"/>
Registration operative no.	<input type="text"/>
Approval licence no.	<input type="text"/>
Company name	<input type="text"/>
Company address	<input type="text"/>
Commissioning date	<input type="text"/>
Telephone no.	<input type="text"/>
Building regulations notification no.	<input type="text"/>

Commissioning checklist

System primary settings

Is the circuit sealed or vented?

Set system pressure

bar

Unvented systems only

Has a T&P relief valve and expansion relief valve been fitted and discharge tested?

Is a cut-out device fitted?

Pressure reducing valve setting

bar

Has the expansion vessel been checked?

Final checks

The system complies with the appropriate building regulations

The system has been installed and commissioned in accordance with the manufacturer's instructions

The system controls have been demonstrated to and understood by the customer

The manufacturer's literature, has been explained and left with the customer

Commissioning engineer's signature

Customer's signature

Date

/ /

Problem solving



Discharge from either of the relief valves indicates a malfunction in the system and must be investigated immediately.

Overheated water

In the unlikely event of overheated (95°C) water being discharged, the heat source i.e. the immersion heaters should be switched off immediately and a competent engineer called out. Please contact Mixergy directly.



Do not shut off the cold water supply to the unit.

Water discharge

If water is occasionally being discharged as the water is heated, this would be likely to indicate that the Expansion Vessel needs to be recharged. In the event of this occurring, switch off all power supplies to the cylinder, and re-charge the vessel. If water is continually being discharged, firstly check with a gauge that the pressure allowed through the Pressure Reducing Valve does not exceed 3 bar. If it does exceed 3 bar then the valve should be stripped, cleaned and inspected. Should a replacement be required then only one supplied by Mixergy Ltd should be used.

Electrical fault

If an electrical fault is suspected or the electrical system does not operate as expected, please contact Mixergy directly.

Problem solving

Expansion vessel check and re-charging

Check Pressure via the Schrader valve on top of the vessel which is situated under the removable cap plastic cap. The vessel can be checked and recharged by switching off the stopcock or isolating the water supply to the cylinder, then open a hot tap to deplete the pressure inside the cylinder. Unscrew the black plastic cap on the expansion vessel to reveal the Schrader valve, with the aid of a pressure gauge ensure the pressure reads 3.0 bar. If there is insufficient pressure within the vessel, top up the vessel via a pump and recharge to 3.0 bar.

Safety valves

If all previous checks have been done and water is still being discharged from either safety valve, determined which valve is faulty and replace one supplied by Mixergy Ltd.

Cross flow

If all the valves have been replaced and the vessel re commissioned then the system could be suffering from cross flow, this is when the hot and cold systems are not balance and higher pressure cold water is forced back into the cylinder. If this is the case then an additional pressure reducing valve maybe required to reduce the cold water supply.

Immersion heaters

If the immersion heater is not heating the water adequately it has either failed (in which case a replacement immersion heater as supplied by the manufacturer should be fitted), an electrical fault is present or the electrical cut-out has operated due to the control thermostat being set too high or being faulty. Activate the reset button under the immersion cover. If the problem persists please contact Mixergy directly.

Draining system

1. Switch off the immersion heater(s), boiler and any other heat sources
2. Switch off water at mains
3. Open nearest hot tap
4. Open Drain to start draining the cylinder

To re-fill follow the commissioning instructions.



To flush out the system, drain the unit as above, fill and repeat.

If after recharging the expansion vessel the cylinder is still discharging, it may be due to cross-flow - ensure appropriate check valves are fitted. The Pressure Reducing Valve, one of the Relief Valves, or the Expansion Vessel has failed. The component should be identified and replaced by one supplied by Mixergy Ltd.

Replacement parts

Notes



Do not attempt to repair or replace any parts of the Mixergy system unless you are a trained operative. If you suspect a fault or a replacement part is needed, please contact Mixergy directly.

To determine the correct parts for your system, please ensure you have your tank ID number which can be found on both the system label and page 2 of this manual.