



Super S Installation Manual

For Super SX120IQ and SC120

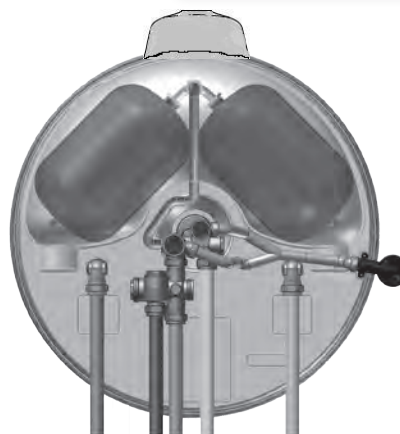
This cylinder is manufactured and approved in accordance with EN 12897 : 2006

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OSO Super S front view



Top view



Thank-you for purchasing the OSO Super S unvented hot water cylinder.

Designed to be simple and neat to install, the Super S differs from other unvented cylinders in that all of the principle connections, including hot and cold water pipes, expansion vessel and primary heating pipes on indirect units are connected to the top of the cylinder. Full size template is provided to facilitate pipe positioning.

OSO advise that the connecting pipes and electrical cables are fixed in place prior to the positioning of the cylinder. Moving the cylinder into position should be the last thing done before connection of pipes and commissioning of the cylinder.

This manual gives detailed advice for installation and should be read carefully prior to fitting any unvented unit. Where components are supplied only for indirect units, this is clearly shown. OSO Super S cylinders are not suitable for gravity fed primary systems. In known hard water regions, precautions should be taken to prevent limescale formation in hot water cylinders, in accordance with Building Regulation Part L, Domestic Heating Compliance Guide.

This OSO cylinder must be installed by a competent person and be installed in compliance with the OSO Installation and Maintenance Instructions, all current legislation, codes of practice and regulations governing the installation of unvented hot water cylinders in force at the date of installation.

PLEASE READ THIS MANUAL BEFORE INSTALLATION AND LEAVE UNDER THE CYLINDER TOP LID. THE MANUAL AND ATTACHED LOGBOOK SERVE AS THE CYLINDER GUARANTEE.

1. General information

1.1 Health and Safety regulations.

Handling Operations Regulations 1992 defines manual handling as: “any transporting or supporting of a load (including the lifting, putting down, pushing, pulling, carrying or moving thereof) by hand or bodily force” The Regulations set no specific requirements such as weight limits. However common sense still has to be used based on an ergonomic approach for each individual. The Super S should be transported and stored in a vertical position.

1.2 Siting the Super S

The cylinder should not be positioned until the connecting pipework and cables are fitted. There are few restrictions on the siting of the OSO Super S, however it should not be sited anywhere open to frost attack. The unit should be placed on a stable flat surface capable of withstanding the weight of the cylinder when full (see table on page 16) and access must be allowed for maintenance purposes. Prior to positioning the cylinder, wind out the feet in the base to protrude by 10mm. If wall mounted with an OSO wall bracket, the wall should be capable of withstanding the forces generated by the weight of the full cylinder. Provision should also be allowed for the routing of the discharge pipe away from the cylinder to an outside point according to building regulation G3. (See page 15)

1.3 Component Check list

Components supplied with the unit in a separate accessory kit for site fitting

- Tundish (including screws).
- Plastic cable clamp.
- Flexible Y-hose.
- Motorised valve (indirect only).
- Elbows (2) for primary heating connections (indirect only).

Components factory fitted

- Expansion vessel.
- Flexible hose for expansion vessel.
- Combination valve, includes line strainer, pressure reducing valve, balanced cold water connection, (for shower or bidet only), blanking cap for balanced cold water connection, temperature & pressure relief valve and hot water blending valve.
- Immersion heater - (3kW).
- Thermostats / thermal cut-out.
- Drain Cock.
- Lid for cylinder.

Documentation supplied

- Installation manual & benchmark logbook
- Template for connecting pipework
- Adhesive for template

1.4 Supply requirements

An uninterrupted 22mm cold water mains supply is recommended, however if only a 15mm supply is available, this may be used provided there is sufficient flow rate available. A minimum standing pressure of 2.5 bar and a flow rate of 20 litres per minute with a 1 bar dynamic pressure is recommended. The cylinder will operate at lower pressures and flow rates however the performance will be compromised. The OSO unvented unit is designed for use with supply pressure up to 8 bar. For pressures over 8 bar an additional pressure reducing valve must be fitted in the supply pipe to the unit.

1.5 Expansion vessel - description and product use

expansion vessels (single on 120) are factory fitted to the multifunction valve Part K (see fig 1, page 3) using the supplied flexible hose

1.6 Compatible fittings and components

All thermostatically controlled boilers are compatible with indirect OSO cylinders.

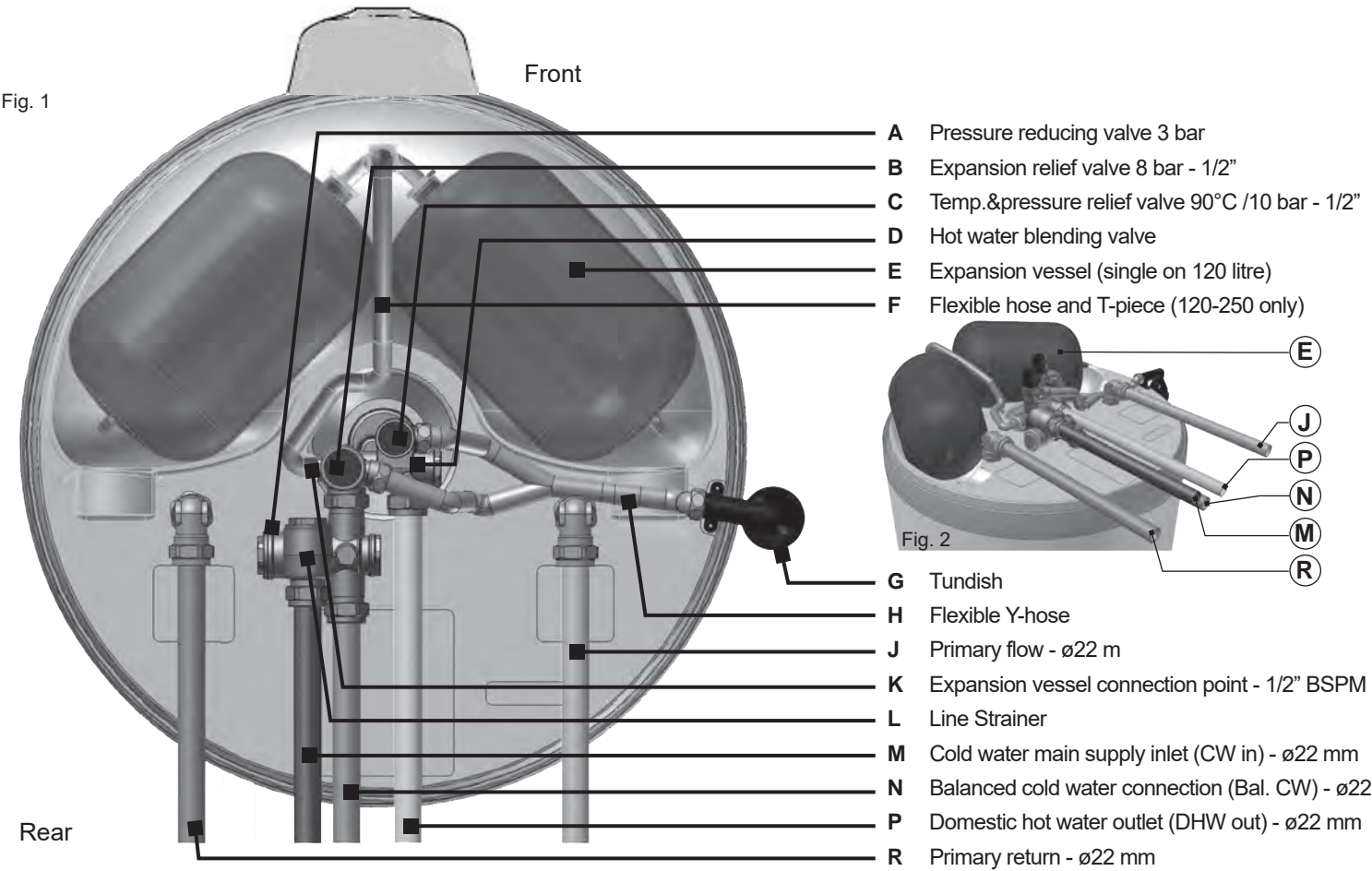
1.7 Non-compatible products.

Solid fuel boilers, wood burning stoves and other non-thermostatically controlled heat sources must not be used with unvented cylinders.

1.8 Wall mounting

Wall mounting brackets are available for OSO unvented units Super S 120-180.

2. Cylinder Specifications



Important: 120 units are factory fitted with expansion vessel (E) and flexible hose . S

3. Preparation of installation area

3.1 Pipework.

The OSO Super S has all pipework connections at the top of the cylinder with these pipes secured to the rear wall. A template is provided to assist in the placement of these pipes. Decide where the cylinder is to be positioned and secure the wall template (using supplied adhesive) with the cross on the back wall at least 326mm from the left wall. Ensure the cylinder feet are wound out to protrude by 10mm. Refer to table C to position the cross at the correct height above the base for the appropriate capacity of the cylinder. Please note that if the cylinder will be raised on its feet or on a plinth/higher flooring level, the height of the template above the floor will need to be raised by an equivalent amount. The connecting pipe tails should be fitted so they reach out away from the back wall horizontally, perpendicular to the wall and parallel with each other. Table B shows the exact lengths these tails should be cut from wall to reach the cylinder connections. If pipes are clipped up the back wall behind the cylinder position, the tails should be longer. Use the lengths marked "below". If the pipes approach the template points from above/side, use the lengths marked "above". OSO recommend that the discharge pipe should be located at the left side of the cylinder.

Table B

Tail lengths from wall/mm	Above	Below
Cold feed in	202	242
Hot water out	274	314
Balanced cold out	188	228
Primary flow & return	238	278

Table C

Type	+ above base/mm	Cable tail - indirect (SC) and lower element direct (SX) / mm	Cable tail for upper element of direct (SX) / mm
120	765	550	-
150	945	550	810
180	1055	550	910
210	1195	550	1040
250	1445	550	1170
300	1645	550	1335

3.2 Electrical connections.

The OSO Super S is provided with two channels in the base to lay electrical cables to the cylinder. The channels run diagonally from the front centre to the rear left and right and allow the installation to be neat with minimum visible cabling. Two heat resistant 1.5 mm triple core cables are required for each cylinder (only one for SX 120). Cables should be sufficient length to reach from the junction box, through the base channels and leave the amount of tail from the front of the cylinder shown in table C to be able to reach the electrical connections. When the cylinder is moved into position the cables should be fed up another channel behind the casing at the front of the cylinder into the electrical box. Cables for upper immersion heaters on direct units continue through this box to a higher channel leading to the upper electrical box. When cables are in place they can be secured using the cable clamp supplied in the fittings bag

4. Pipe Connection & Commissioning

Before connecting the cold supply, flush the cold supply pipework of all flux and debris. Lift off the cylinder lid allowing access to the combination valve and other connections.

4.1 Check the expansion vessels and hose connections are tight.

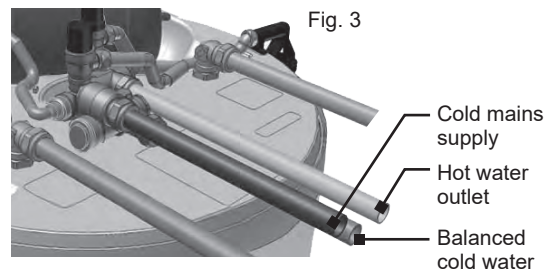
4.2 Remove the template and position the cylinder to meet the heating and domestic water pipes.

4.3 The Combination valve at the top of the cylinder is factory fitted and is water-tight. If necessary it can be rotated in either direction to suit the connecting pipework, up to half a turn without losing its seal.

4.4 Cold mains supply - Connect the cold mains supply to the combination valve cold feed (Fig. 3). The OSO unvented unit is designed for use with supply pressure up to 8 bar. For water pressures above 8 bar an additional pressure reducing valve must be fitted to the cold water supply pipe.

4.5 Hot water outlet.

Connect the hot water distribution pipe to the combination valve hot water outlet (Fig. 3).



4.6 Balanced cold water supply (optional).

If no balanced cold supply is required, tighten the supplied blanking cap. If a balanced mains pressure cold water supply is required to a shower or bidet (over rim type only, ascending spray type requires type AA, AB or AD air gap), remove blanking cap and connect to the shower or bidet cold supply on the combination valve (2). (Major shower manufacturers advise fitting a mini expansion vessel in the balanced cold supply pipework to accommodate thermal expansion and prevent tightening of shower controls) Using the balanced cold connection to feed bath taps can reduce the flow available to the unvented cylinder.

4.7 Flexible Y-hose

The flexible Y-hose is preformed to the correct shape. Connect the inlet ends to the expansion relief valve and the temperature and pressure relief valve.

4.8 Tundish

Recommended position of the tundish is to the left of the cylinder as seen from the front. Connect the tundish inlet to the outlet end of the flexible Y-hose. Tundish should be visible and positioned away from electrical devices. Tundish can be secured with supplied screws.

4.9 Discharge pipe

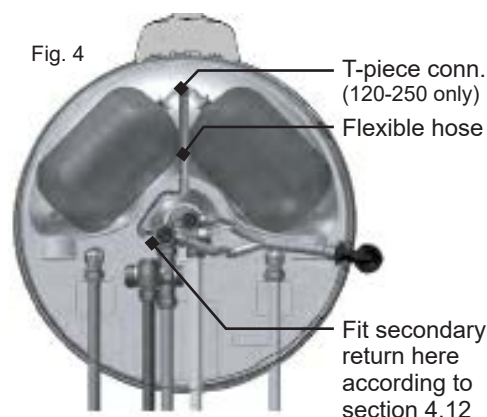
Connect the tundish outlet to the discharge pipe. Install the Tundish in a vertical position within a maximum of 500 mm from the Temperature and Pressure Relief Valve drain connection. Ensure the expansion relief pipework discharges through the tundish. Tundish pipework must be 22 mm with a minimum vertical length of 300 mm below tundish. Maximum permitted length of 22 mm pipework is 9 m. Each bend or elbow is equivalent to 0.8 m of pipework. All pipework must have continuous fall and discharge in a safe, visible position. If any doubt, refer to Building Regulation G3. Discharge pipe must be dedicated to the cylinder and must not be used for any other purpose.

4.10 Primary flow & return and motorised valve (Indirect only)

Fit the elbows supplied to the primary flow & return connections. Make the boiler primary flow and return pipes to the unit. The motorised valve can be connected to either the primary flow or return pipe. Ensure that the direction of flow is correct. It is possible to fit the motorised valve on the flow pipe on its side to fit under the cylinder lid. For electrical connection of the motorised valve and immersion heater, please read Electrical Installation Instructions. (Pages 5)

4.11 Secondary return (optional)

If a secondary return is connected, the cylinder thermostats should be set to a maximum of 60°C. Reduce thermostat settings to "Smart -" on direct units. A secondary return can be connected via the expansion vessel connection to the combination valve. Remove the hose, connect a short length of 15 mm copper tube, fit a T piece, connect in the secondary return and reconnect the exp. vessel hose to the remaining T piece outlet. An additional expansion vessel will be required if the secondary return "loop" exceeds 10% of the cylinder capacity. 1 metre of 22 mm pipe holds approximately 1/3 litre of water. 15 mm pipes carry approximately half that volume. Secondary return must be pumped by a bronze pump and fitted with non return valves to ensure correct direction of flow.



5. Commissioning and filling up

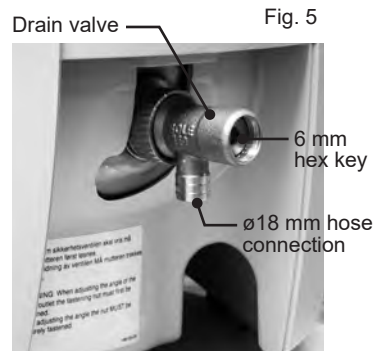
1. Check all connections for tightness. Open hot water tap furthest away from the OSO water heater.
2. Open the mains stop cock to fill the water heater . When water flows evenly from tap, allow to run for a few minutes to flush through any dirt, swarf or residue, then close the tap . Open successive hot taps to purge any remaining air.
3. Check all water connections for leaks and rectify if necessary.
4. Manually operate Expansion relief valve B (see fig. 1 on page 3) to ensure free water flow through discharge pip by turning knob counter-clockwise. To close continue to turn counter-clockwise until the valve shuts.
5. Manually operate Temperature and Pressure Relief Valve C (see fig. 1 on page 3) to ensure free water flows through discharge pipe (Turn knob counter-clockwise).
6. Switch electrical power on.
7. Replace the cylinder lid – this is important as the lid prevents heat loss from the cylinder and combination valve, conserving valuable energy. Do not place heavy objects on the lid.

Draining & flushing out the system.

Draining.

Switch off the electrical power (Important to avoid damage to element). Isolate boiler from OSO unit. Turn off the cold water supply valve. Open hot water tap. Open drain at base of cylinder using a 6 mm hex key. The unit will drain. Draining process may be speeded up by opening the temperature and pressure relief valve. An internal ø18 mm hose can be applied to lead the water to a gully, sink or similar (see fig. 5)

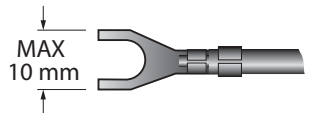
System flushing will not be necessary under normal circumstances as the line strainer will prevent ingress of foreign materials, however if flushing is required, run at least 50 litres of water from the cylinder at the highest possible flowrate. Close the taps and follow draining procedure (above).



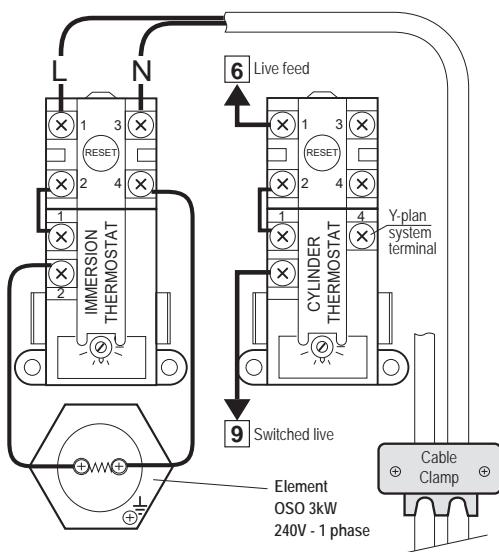
6. Electrical installation - all wiring must conform to current IEE regulations

6.1 Immersion heaters

Power to immersion heaters should not be switched on until the unit is filled with water. All indirect units are fitted with one 3 kW immersion heater which is located behind the electrical box. With the exception of the 120 litre all direct units have two 3 kW immersion heaters the lower immersion having Smart Contol. Immersion heaters must be wired through the factory fitted thermostat and thermal cut-out according to diagram on the reverse of the electrical box cover . Alternative thermostats should not be used, regulations require immersion heaters on unvented cylinders to be connected with a thermal cut-out. Recommended torque is 0,2 kp (20Nm)
End terminal must not exceed 10 mm



6.2.1 Wiring for Immersions Indirect SC 120-300



Follow the wiring instructions connecting the live, neutral and earth as indicated. The unit must be connected to a minimum 16amp dedicated permanent supply complying with current I.E.E Wiring regulations, isolation is required via a minimum 20amp double pole isolation switch with a minimum 3mm separation is required. All electrical wiring should be carried out by a competent electrician, using a heat resistant cable (minimum 85°C), and be in accordance with the latest I.E.E Wiring Regulations. All internal wiring is factory mounted. Each immersion heater has a working thermostat adjustable between 40°C - 70°C. A safety cut-out is also incorporated within the thermostat and will operate at 85°C ± 3°C. Should this happen, check reasons for thermal cut-out button being released and when satisfied press the reset button

Important: Before resetting the safety cut-out or altering the thermostat setting, isolate electrical supply to the unit prior to removal of the lid. Ensure the lid to the electrical box is replaced correctly and the retaining screw is fitted.

6.3 Wiring for immersions Direct SXD 120

The 80323 Smart Thermostat with embedded iQ Smart Technology has been designed for compliance with European regulations newly introduced for Electric Storage Water Heater (ESWH) efficiency and energy saving.

The thermostat has a wide range of configurations to provide the maximum flexibility with the OSO Sole 109 blending valve.

The 80323 Smart Thermostat configuration maximises efficiency improvement provides all mandatory smart control features.

6.3.1 Smart Technology

Smart Control for water heaters will save energy and money for consumers by adapting the energy used to the typical household requirements for water heating.

When the water heater is first switched on, the smart control operates like a normal thermostat for 7 days, but during this time, will monitor and learn the habits of the household.

After 7 days the smart control will reduce the energy used by the water heater to match the requirements of the household. The smart system stays in learning mode and will alter the energy usage in a accordance with changes in household hot water usage.

80323 Smart Thermostat includes embedded software with a high performance algorithm which has been tested and approved in both laboratories and in field conditions. The algorithm has been also tested as per the procedure defined in prEN50440.

80323 Smart Thermostat software implements a self setting algorithm which is performed at first power ON and repeated throughout the product life whenever there is a need for product performances optimization.

This automatic setting determines a set of parameters in direct relationship with the power of the heating element and the tank capacity.

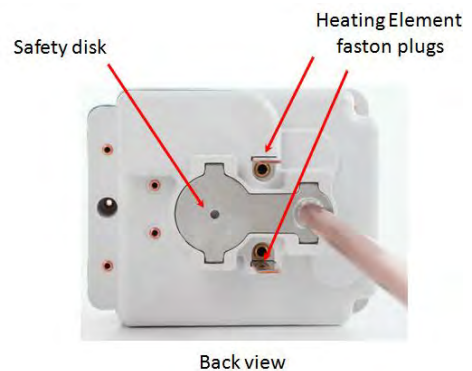
Conductor length - wire stripping

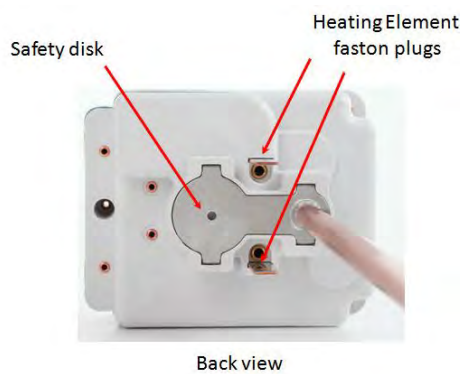
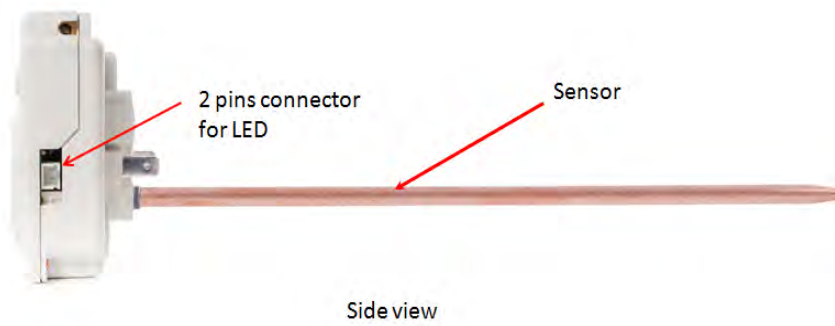
When connecting electric wires to the iQ thermostat the recommended conductor length is 12 mm +/- 1 mm - see illustration (1). Wire terminal screws (A and B) should be tightened to 0,6 Nm +/- 0,1 Nm.



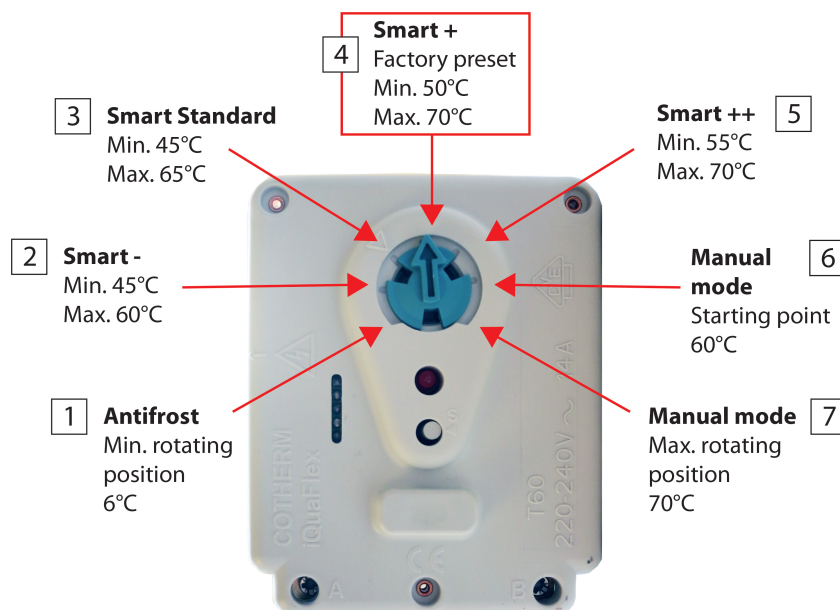
The Smart Thermostat is designed to be directly plugged into an immersion heating element and includes:

- ✓ Mechanical double pole disk safety
- ✓ Safety limiter set between 65°C and 90°C depending on ESWH
- ✓ Manual reset safety
- ✓ LED indicator : Power, Error, Warm-up
- ✓ 2 pins connector for remote LED (not used)
- ✓ Rotating knob for product setting
- ✓ Smart Sensor
- ✓ Horizontal or Vertical mounting
- ✓ Riveted tamper proof cover
- ✓ Screw pillar terminals
- ✓ Anti-Legionella function
- ✓ 14A / 220V – 240V / 50 Hz / 3000 W max





6.3.2 Smart Control Settings



The rotating knob allows selection of desired comfort level, factory default setting is Smart +.

Position	Label	Description	Temperature
1	Antifrost	Prevent water freezing	6°C
2	Smart -	Energy saving : Automatically adjust volume of hot water availability based on past consumption	From 45°C To 60°C
3	Smart (Default factory position)	Energy saving : Automatically adjust volume of hot water availability based on past consumption	From 45°C To 65°C
4	Smart +	Energy saving : Automatically adjust volume of hot water availability based on past consumption	From 50°C To 70°C
5	Smart ++	Energy saving : Automatically adjust volume of hot water availability based on past consumption	From 55°C To 75°C
6	Manual	Continuous manual temperature setting	60°C
7	Manual	Continuous manual temperature setting	75°C

Further to the initial installation, end-users or installers may select different position if the factory preset position doesn't meet hot water expectations.

The factory default position, designated by a small arrow on the top cover, is the recommended position for usage after water heater installation. This position is the setting applied to determine the energy label in conformance with ecolabelling european directive.

6.3.3 Smart Control RED LED Indicator

The red LED on the top cover of 80323 Smart Thermostat Standalone provides information about product status as described in the following table.

LED Mode	Description	Indication
Off	Off full time	Product is in OFF mode
Blinking every 10s	[OFF] = 10s / [ON] = 1s	Product is ready and in normal operation
Solid ON	Full time ON	Product is ready and in normal operation and an heating-up is on progress
Fast Blinking	[OFF] = 1S / [ON] = 1s	Defect detected (see Causes of potential defects)
Fast Double Blinking at Start	2 times [OFF]=0,5s / [ON] = 0,5s	Confirmation of Factory preset position of the rotating knob.

6.3.4 Dried Heat Protection

80323 Smart Thermostat can detect the absence of water in the water tank. This detection is made by software that prevents damage to the element in the event of power being switched to element whilst cylinder is empty.

Dried heat detection is indicated by red LED indicator or by the remote LED if any. After dry heat detection and the filling of the water heater, a software reset is required to have Thermostat operational again.

Key benefits

- Household tenant safety
- Prevent after sale return after installation , due to dried heat situation
- Prevent any dried heat conditions

6.3.5 Software Reset

A software reset is required after any error detection. To perform a software reset, switch the main power supply of the water heater off, select the vacation/antifrost position and switch the power back on. After a software reset, smart and comfort level can be selected by rotating the knob. OSO recommends selection of the Smart standard factory preset position.

6.3.6 Anti Legionella Cycle

The anti-legionella cycle reduces the risk of development of bacteria in the water stored inside the tank. When the water heater is installed and in operation a process will permanently monitor the water temperature. The process is applicable in all modes. Whenever risk conditions are detected that might cause the development of bacteria, 80323 Smart Thermostat standalone will automatically perform full water heat cycle above 65°C.

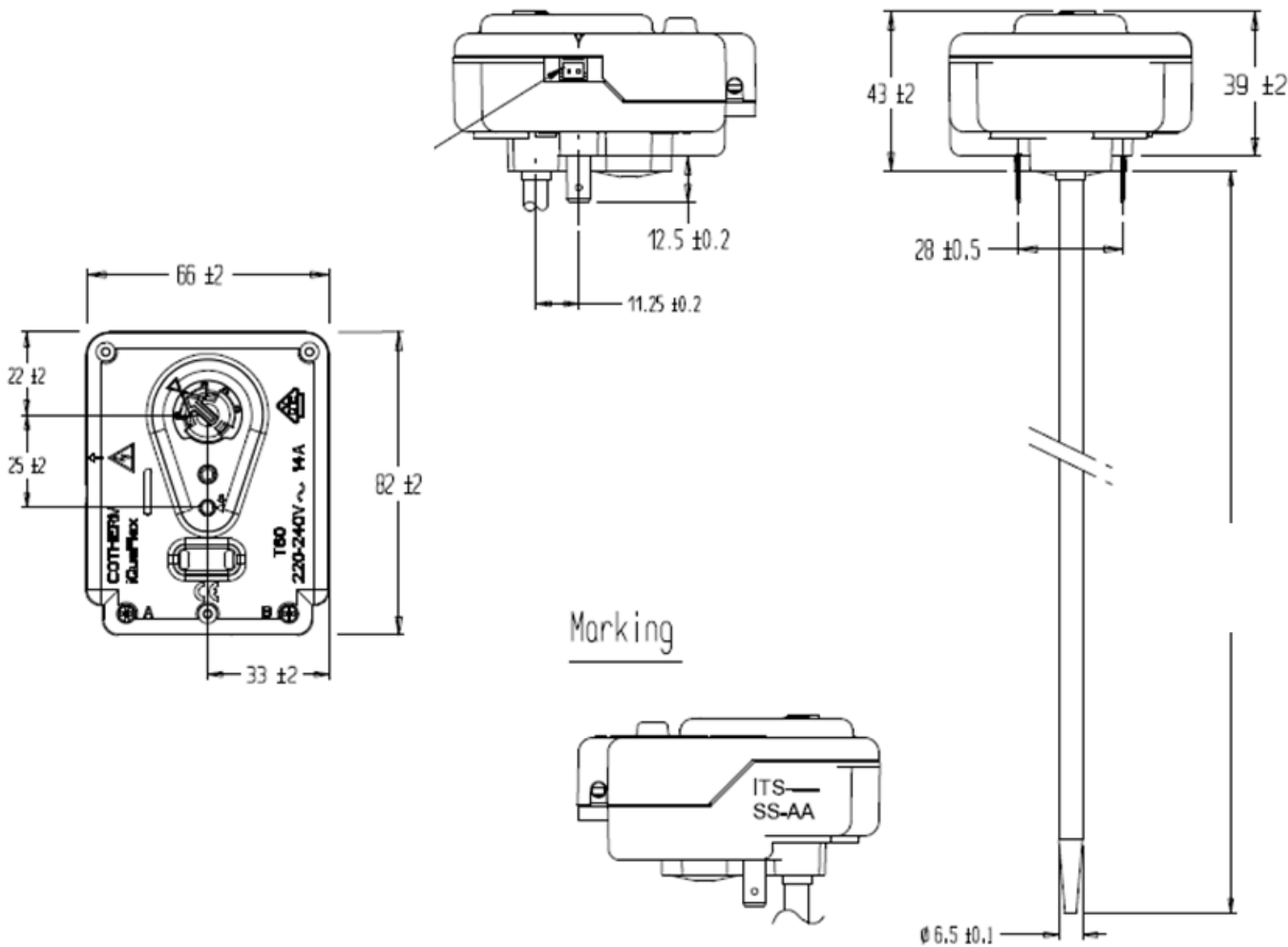
6.3.7 Smart Control OFF PEAK Function

80323 Smart Thermostat can support smart function in Off-peak installation configuration. 80323 Smart Thermostat will automatically detect the installation in Off-peak configuration based on presence or absence of power supply during a day. In smart mode, the controller will self manage the adaptation of the algorithm to enable the smart energy saving. During power-off periods, the red LED indicator is turned off.

6.3.8 Smart Control Power Supply

Power supply has been designed to cover a wide range of voltages and operating conditions, the 80323 Smart Thermostat operates from 195Vac to 275Vac.

Operating conditions	Min	Typical	Max.
T° 0°C to 60°C	195Vac	220/240Vac	275Vac



A minimum space clearance is requested to avoid ambient overheating. A minimum of 5 mm from the top cover and 10 mm from the side of the product are recommended.

6.3.9 Smart Control Technical Data

Items	Description
Product purpose	Energy controller for Electric Storage Water Heater including thermal safety cut-off
Product construction	Hybrid control including electronic regulation and mechanical safety cut-out: 2-pole bimetal cut-out
Terminal Type	Power terminals: screw pillar terminal
Method of connection and disconnection	Faston connector to Heating Elements
Wiring type	Power : Power connection to pillar terminal are suitable for the range of wires as mentioned in Table 10.1.4 of EN 60730-1
Method for mounting	OEM manufacturers of ESWH insure that this product will have dedicated space in respect with product size. A clearance of 5mm from top cover and 10 mm from each side of the product are recommended
Manual Reset Cut-out	Manual reset of safety cut out can be applied after a minimum of 30°C drop in tank temperature
Action	Thermostat 1.B ; thermal cut-out 2.B
Extent of sensing elements	Smart sensor regulation + 1 disk safety cut-off
Rate impulse voltage	2500V
Light connector	Male XH-2 connector
Light Connector, Max current	forward voltage 3.2V for 20mA
Maximum power of electric Heating element supported	3KW
Maximum Current Amp.	14A
Max Ambient temperature operation	60°C
Thermostat temperature range	5°C - 75°C
Thermal cut-out	78°C ± 3°C
Heat and fire resistance category	D
Horizontal Heating Elements	Yes
Vertical Heating Elements	Yes
Horizontal Water Heater	Yes
Vertical Water Heater	Yes
Lever Control	No
Smart Off Peak	Yes
Power Supply Max Cut Off	20h
Water Heater Size	120
Ambient Temperature	60°C
Temperature Regulation	5°C - 75°C
Switching Capacity	65°C - 90°C

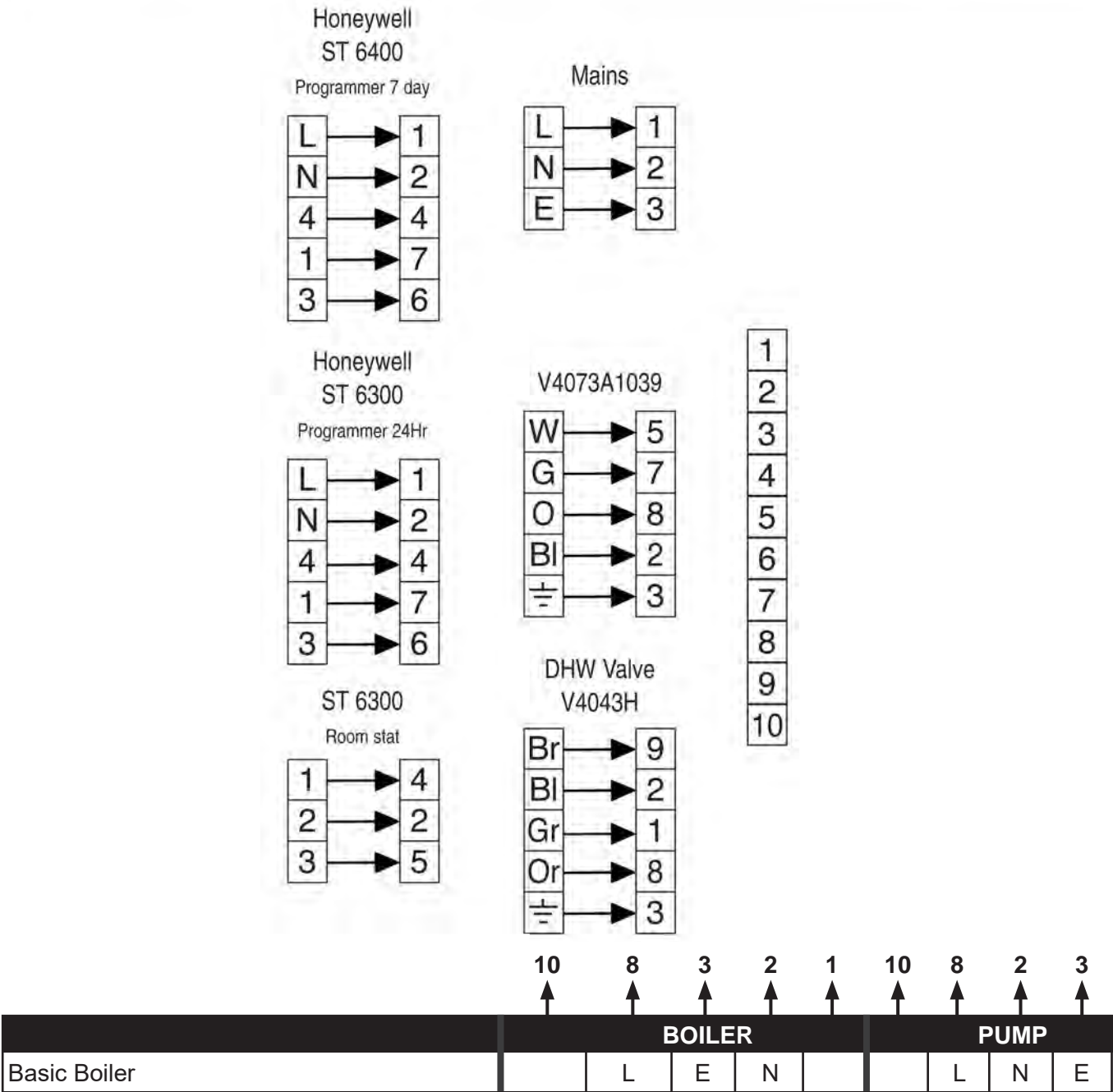
6.4 Indirect System wiring

Motorised valve: To comply with regulations governing the installation of indirect unvented cylinders, a motorised valve must be fitted in the primary pipework. Your OSO unit has been supplied with a two port motorised valve, which will act as a positive energy cut-out should the safety cut-out operate. The motorised valve will also control the temperature of the domestic stored water via the cylinder thermostat, which is located in the electrical box. The unit should be installed on an “S” or “Y” plan system. Please follow the wiring instructions carefully.

The working thermostat which controls the temperature of the domestic hot water is adjustable between 40°C - 70°C. A safety cut out is also incorporated within the thermostat and will operate at 85°C ± 3°C. Should the safety cut out be brought into operation, the motorised valve will operate and close down the primary flow to the cylinder. To reset the safety cut-out and the motorised valve the reset button must be pressed in. If using a 6-wire 28mm or 1” BSP V4043H on either circuit the white wire is not needed and must be made electrically safe.

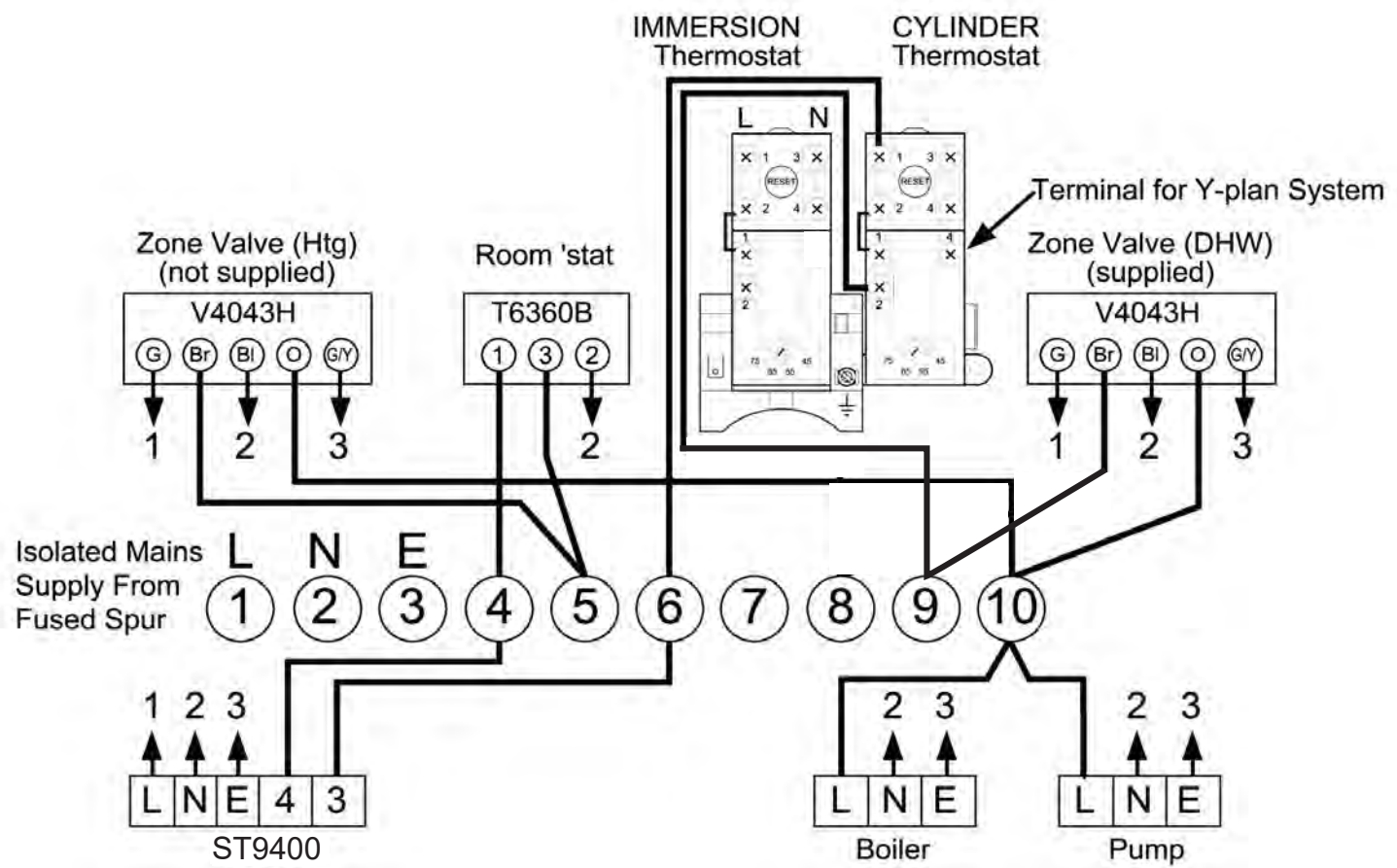
OSO Hotwater (UK) Limited can not be responsible if alternative wiring plans are used. Important: Before resetting the safety cut-out or altering the thermostat setting isolate electrical supply to the unit before removal of the lid.

If using a 6-wire 28mm or 1" BSP V4043H on either circuit the white wire is not needed and must be made electrically safe.

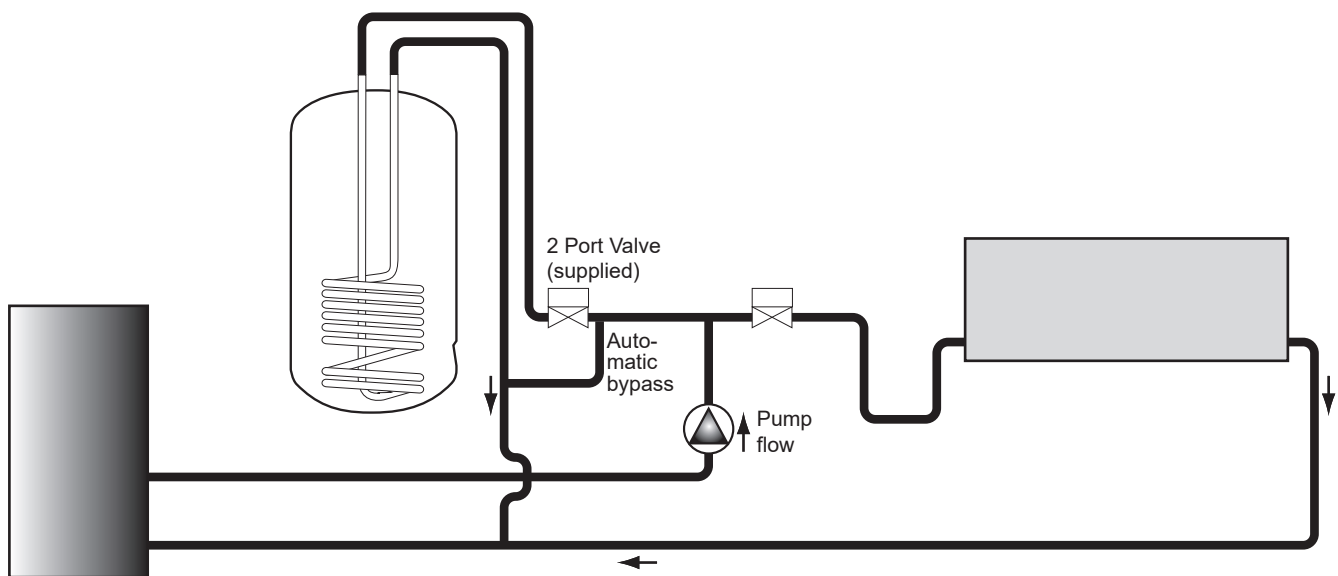


The wiring plan shown is based on the use of a 10-way Junction Box (Honeywell Part no. 42002116-001)
Junction Box terminal 10 is switched live and, if needed, terminal 9 is pump live.

S Plan Wiring Layout

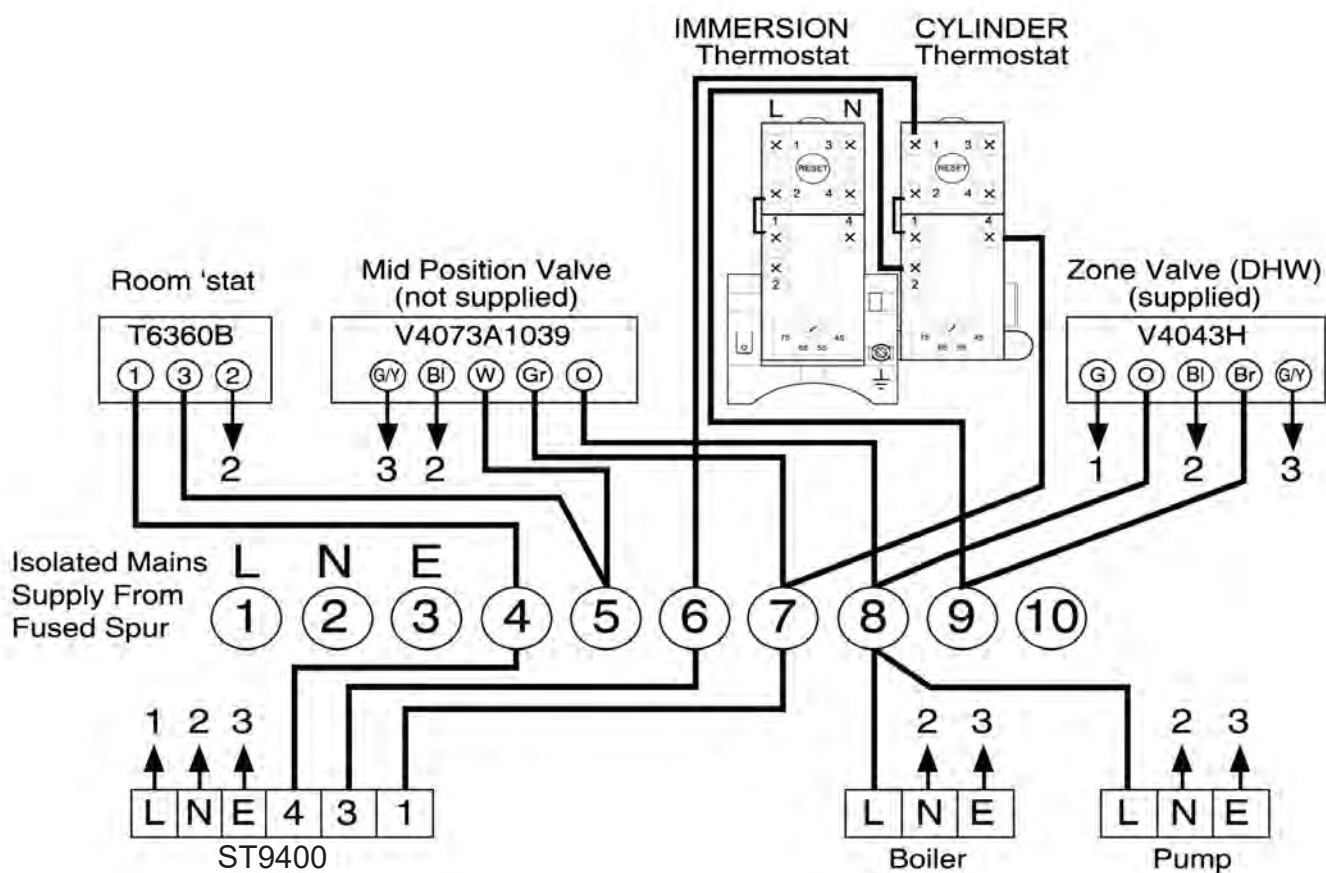


S Plan System Schematic

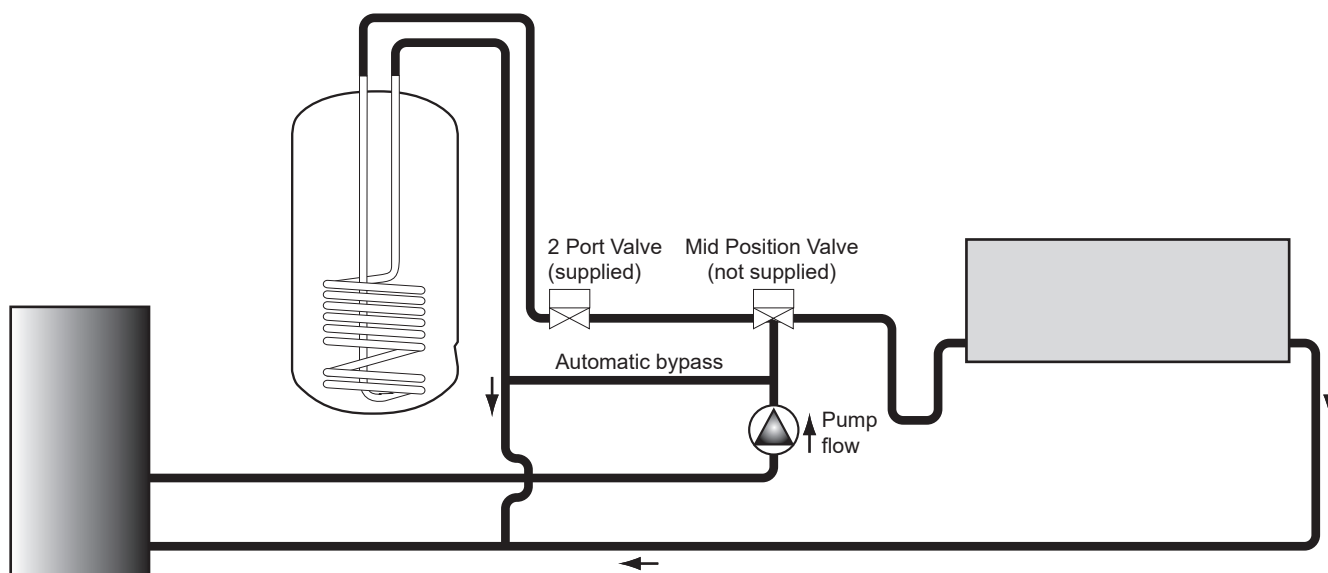


Y Plan Wiring Layout

A Honeywell 10 way Junction Box must be used in a Y plan system.
No other wiring centre is acceptable.



Y Plan System Schematic



7. Safety and Servicing

Maintenance must be carried out by a competent person.

Safety Cut-out

1. The safety cut-out operates if:
 - a. Wiring is incorrect.
 - b. The immersion heater thermostat or cylinder thermostat fails.
 - c. Thermostat is set too high.
2. Remember before resetting the safety cut-out or altering the thermostat setting, isolate electrical supply to the unit prior to removal of the electrical box lid.
3. Reduce thermostat setting and press the reset button. After adjustments are completed, ensure the lid to the electrical box is replaced correctly and the retaining screw is fitted
4. If still out of operation, contact installer.

Intermittent or slow discharge from tundish

1. Turn off the electrical supply to the immersion heaters.
2. Turn off cold water supply valve.
3. Open a hot tap.
4. Turn the knob on the Temperature and Pressure Relief Valve (5) to the left and hold in this position for thirty seconds.
5. Attach a foot pump with a schraeder (car type) valve to the expansion vessel.
6. Pump up to 3.5 bar
7. Open cold water supply valve.
8. When water flows through open tap, close tap
9. Turn on electrical supply to the immersion heaters.

Continuous very hot water discharge from tundish

This indicates a malfunction of a thermal cut-out, operating thermostat or the combined temperature and pressure relief valve. Turn off the electrical supply to the immersion heater and also isolate an indirect unit from the boiler. Contact the installer or competent engineer.

Expansion vessel maintenance

The expansion vessels do not require annual maintenance and should not be tampered with unless an intermittent or slow discharge from the tundish occurs when water is being heated. In this situation, maintenance must be carried out by competent person and the precharge pressure must be restored to the original value. An annual visual inspection is recommended. **Important:** To check the precharge the expansion vessel must be completely empty of water. If the precharge pressure is different from the value shown on the label it must be restored to the original value.

Do not remove expansion vessel without depressurizing the cylinder and draining 10 litres of water from the drain valve at the base of the cylinder.

Guarantee

Cylinder should be serviced annually and benchmark logbook should be updated in order to validate guarantee. Logbook and service records act as guarantee document. For terms of guarantee please see Benchmark logbook on page 14.

Servicing Procedure:

Line strainer

1. Isolate cold water supply.
2. Unscrew the retaining nut of the valve. The strainer mesh can be removed.
3. Clean the mesh under running water.
4. Replace mesh and reassemble valve.

Expansion relief valve

Ensure that expansion relief valve works by manually opening to discharge water to tundish.

Temperature and Pressure relief valve

Ensure that Temperature & Pressure Relief valve works by manually opening to discharge water to tundish.

Combination valve

The combination valve can be separated into two sections by disconnecting the compression fitting in the middle. The entire valve can be removed by unscrewing from the top connection. When refitting, the valve does not tighten, the seal is created by a double O-ring. To create the seal, the valve should be wound down until it will not go any further, then wound back up less than one full turn to point in the desired direction.

Drain cock

To remove drain cock, drain cylinder fully. When cylinder has drained, unscrew rear locking ring behind drain cock (turn clockwise). Pull drain cock off. Reverse procedure to refit drain cock. Locking ring only needs to be hand tight, seal comes from double o-ring.

Internal inspection

The immersion heater can be removed to provide visual inspection access to the cylinder.

8. OSO Fault Finding Guide

FAULT	POSSIBLE CAUSE	SOLUTION
No water flow from hot taps.	1. Mains supply off. 2. Strainer blocked.	1. Check and open stopcock. 2. Turn off water supply. Remove strainer and clean (see Servicing Procedure page 14).
Water from hot taps is cold.	1. Immersion heaters not switched on. 2. Immersion heater thermal cut-out has operated 3. Programmer set to central heating or not switched on. 4. Boiler not working. 5. Cylinder thermal cut-out has operated (indirect units only). 6. Motorised valve not operating correctly.	1. Check and switch on. 2. Check and reset button (see thermostat diagram page 8 and safety cut-out on page 6 of installation manual). 3. Check and set to hot water. 4. Check boiler operation. If fault suspected consult installer or boiler manufacturer. 5. As at No. 2. 6. Check wiring and/or plumbing connections to motorised valve (see pages 5-13 of the installation manual).
Intermittent water discharge.	1. Reduced expansion vessel charge.	1. Follow instruction page 14: "Intermittent or slow water discharge from tundish".
Continuous water discharge.	1. Thermal control failure (Note: Water will be hot). 2. Cold water inlet Pressure Reducing Valve not working. 3. Temperature and pressure relief valve faulty. 4. Expansion relief valve not working properly.	1. Switch off power to immersion heater(s) and boiler supply to the unit. When discharge has stopped, check thermal controls, replace if faulty. Contact a competent person. 2. Check pressure from valve, if greater than 3 bar replace (see page 14 of installation manual). 3. Drain 10 litres from cylinder and replace valve. 4. Check and replace if faulty (see page 6 of installation

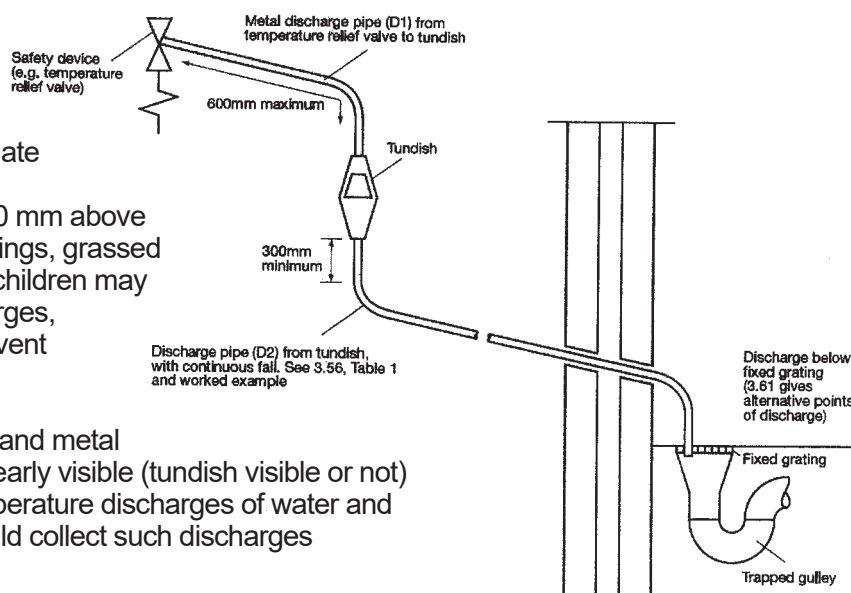
Important - note: Disconnect electrical supply before removing any electrical equipment covers.

Alternative Discharge

Discharge pipes should be in metal and dedicated to the unvented cylinder. The pipe should have a continuous fall and should terminate in a safe and visible place.

Downward discharges at low level, i.e. up to 100 mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable providing that where children may play or otherwise come into contact with discharges, a wire cage or similar guard is positioned to prevent contact, whilst maintaining visibility.

Discharge at high level, i.e. into a metal hopper and metal down pipe with the end of the discharge pipe clearly visible (tundish visible or not) or onto a roof capable of withstanding high temperature discharges of water and 3 m from any plastics guttering system that would collect such discharges (tundish visible).



Where a single pipe serves a number of discharges, such as in blocks of flats, the number served should be limited to not more than 6 systems so that any installation discharging can be traced reasonably easily. The single common discharge pipe should be at least one pipe size larger than the largest individual discharge pipe to be connected. For further information contact your Building Control Office

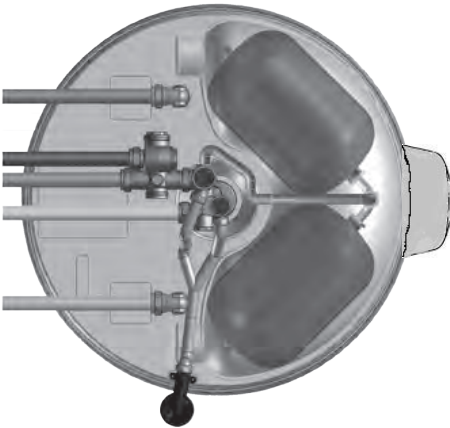
Table D

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 (i.e. no elbows or bends)	Resistance created by each elbow or bend
		22 mm	up to 9 m	0.8 m
G1/2	15 mm	28 mm	up to 18 m	1.0 m
		35 mm	up to 27 m	1.4 m
		28 mm	up to 9 m	1.0 m
G3/4	22 mm	35 mm	up to 18 m	1.4 m
		42 mm	up to 27 m	1.7 m
		35 mm	up to 9 m	1.4 m
G1	28 mm	42 mm	up to 18 m	1.7 m
		54 mm	up to 27 m	2.3 m

9. Technical and Performance specifications

Technical specification	
Cylinder material	Stainless steel
Coil construction	Stainless steel, 22mm dia.
Max design pressure	8 bar
Max primary pressure	8 bar
Min supply flow rat	20 litres/min at 1 bar dynamic pressure
(Cylinder will operate at lower flow rates but performance may be impaired)	
Thermal cut-out immersion heater	78 ± 3°C
Thermal cut-out primary circuit	85°C
Thermostat range	40°C - 70°C
Cylinder thermostat setting (direct)	Smart +
Cylinder thermostat setting (indirect)	60°C
Pressure Reducing Valve setting (PRV)	3 bar
Blending valve setting	60°C
Expansion relief valve	8 bar
Temperature & Pressure relief valve	90°C, 10 bar
Immersion heater	Incoloy, 3kW, 230V

	SX120iQ	SC120
Height(mm)	950	950
Diameter(mm)	580	580
Weight empty(kg)	34	34
Weight full(Kg)	188	188
Actual Capacity (cold) (ltr)	111	109
Heat up (bottom element) 10° - max(min)	168	-
Heat up (coil) 10° - max(min)	-	24
Recovery (bottom element) after 75%(min)	126	-
Recovery (coil) after 75%(min)	-	17
Hot water 40°- V40 ltr	192	162
Standing Heat Loss kWh/24h	1.03	1.06
Expansion vessel cap. (ltr)	6	6
Expansion vessel pr charge (bar)	3.5	3.5
Pressure drop primary coil (bar)	-	0.03
operating pressure CW feed (bar)	3	3
operating pressure Coil (bar)	-	2.5

Spare parts list	Description	Part no.
	Expansion vessels 5.3 l. 1 vessel for 120 l., 2 for 150-250 l.	115800
	Pressure reducing valve	90231
	Expansion relief valve 8 bar	90423
	Combination/mixing valve adapter to cylinder	90232
	Temperature & pressure relief valve	550853
	Expansion vessel flexible hose same for all volumes 120-250 l.	91800
	Drain valve	90412
	Immersion heater, Incoloy 3 kW for indirect	8015192
	Honeywell valve, indirect only	92000
	Accessory kit Super SX Direct	157600
	Accessory kit Super SC Indirect	157601
	Cylinder thermostat, Indirect	80030
	Immersion thermostat, both Indirect	80020
	Smart Thermostat	80323
	Immersion heater, Incoloy 3 kW for indirect.	71248

To obtain the address of a local stockist contact:
OSO HOTWATER (UK) LIMITED
 Endeavor House, Seventh Avenue, Team Valley
 Trading Estate, Gateshead, Tyne & Wear, NE11 0RU
 Phone: (0191) 482 0800 • Fax: (0191) 491 3655
 E-mail technical.uk@oso-hotwater.com
 E-mail spareparts.uk@oso-hotwater.com
 E-mail sales.uk@oso-hotwater.com
 www.osohotwater.co.uk

All replacement parts should be supplied by OSO HOTWATER (UK) LIMITED

TDS - Technical Data Sheet - Direct electric water heater - ErP data								
Directive: 2010/30/EU Regulation: EU 812/2013			Directive: 2009/125/EC Regulation: EU 814/2013					
Water heater Efficiency according to standard: EN50440 : 2015								
TRADE MARK	M.T. ITEM No.	MODEL/IDENTIFIER	ErP profile	ErP Rating	Energy eff. %	AEC - kWh/a	Th. stat setting °C	Smart control
OSO Hotwater AS	10802651	SX 120 - 3 kW/1x230VIQ	M	C	38	1336	70	√
OSO Hotwater AS	10802652	SX 150 - 3+3 kW/1x230VIQ	L	C	38	2670	70	√
OSO Hotwater AS	10802653	SX 180 - 3+3 kW/1x230VIQ	L	C	40	2559	70	√
OSO Hotwater AS	10802654	SX 210 - 3+3 kW/1x230VIQ	L	C	39	2641	70	√
OSO Hotwater AS	10802655	SX 250 - 3+3 kW/1x230VIQ	XL	C	39	4298	70	√
OSO Hotwater AS	10802656	SX 300 - 3+3 kW/1x230VIQ	XI	C	39	4325	70	√

TDS - Technical Data Sheet - Indirect storage tank - ErP data					
Directive: 2010/30/EU		Regulation: EU 812/2013		Directive: 2009/125/EC	
				Regulation: EU 814/2013	
Water heater Efficiency according to standard: EN50440 : 2015					
TRADE MARK	M.T. ITEM No.	MODEL/IDENTIFIER	Rating ErP	Heat loss - W	Storage vol.
OSO Hotwater AS	10802951	SC 120 - 3 kW/1x230V + coil 0,5m ²	B	44	109
OSO Hotwater AS	10802952	SC 150 - 3 kW/1x230V + coil 0,8m ²	B	52	142
OSO Hotwater AS	10802953	SC 180 - 3 kW/1x230V + coil 0,8m ²	C	61	163
OSO Hotwater AS	10802954	SC 210 - 3 kW/1x230V + coil 0,8m ²	C	67	190
OSO Hotwater AS	10802955	SC 250 - 3 kW/1x230V + coil 0,8m ²	C	80	239
OSO Hotwater AS	10802956	SC 300 - 3 kW/1x230V + coil 0,8m ²	C	84	277

This indirect hot water storage tank is intended to be connected to a high efficiency external energy source such a heat pump, solar device, biomass or district heating. The immersion heaters are intended for backup and supplementary use only. Immersion heaters as sole heat source should be avoided and would lead to higher energy consumption and higher operating cost.

IT IS THE RESPONSIBILITY OF THE INSTALLER TO COMPLETE THIS LOG BOOK AND PASS IT ON TO THE CUSTOMER. FAILURE TO DO SO MAY INVALIDATE THE CYLINDER GUARANTEE



*The code of practice for the installation,
commissioning & servicing of mains pressure hot water storage*

Installation, Commissioning and Service Record Log Book

CUSTOMER DETAILS

NAME _____

ADDRESS _____

TEL No. _____

IMPORTANT

1. Please, keep the Log Book in a safe place for future reference.
2. This Log Book is to be completed in full by the competent person(s) who commissioned the equipment and then handed to the customer. When this is done, the Log Book is a commissioning certificate that can be accepted as evidence of compliance with the appropriate Building Regulations.
3. Failure to install and commission this appliance to the manufacturer's instructions may invalidate the guarantee.

The above does not affect your statutory rights.



© HEATING AND HOTWATER INFORMATION COUNCIL

HWA charter members agree to:

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

For full details on the HWA charter please visit <http://www.hotwater.org.uk/>

INSTALLER & COMMISSIONING ENGINEER DETAILS

INSTALLER DETAILS

COMPANY NAME

DATE

ADDRESS

INSTALLER NAME

TEL No.

REGISTRATION DETAILS

REGISTERED OPERATIVE ID CARD No.
(IF APPLICABLE)

COMMISSIONING ENGINEER (IF DIFFERENT)

NAME

DATE

ADDRESS

TEL No.

REGISTRATION DETAILS

REGISTERED OPERATIVE ID CARD No.
(IF APPLICABLE)

GUARANTEE - OSO UNVENTED HOTWATER CYLINDER

The OSO stainless steel inner vessel is guaranteed against material defect or manufacturing faults for a period of 25 years from the date of purchase. All other parts including, but not limited to factory fitted electrical elements (damage caused by lime scale excluded), expansion vessel, thermostats and valves are guaranteed against material defects or manufacturing faults for 2 years from the date of purchase. In the event of a replacement component being required OSO Hotwater will supply such part(s) free of charge and freight paid, on condition that the defective component is delivered, freight paid to OSO Hotwater within 2 weeks of written notice being given to OSO Hotwater of the defect. Such replacement parts shall be guaranteed under the terms of this guarantee to the unexpired period of the aforementioned 2 year period.

This warranty is conditional upon the OSO cylinder being installed in compliance with the OSO Installation & Maintenance Instructions, all current legislation, codes of practice and regulations governing the installation of unvented hot water cylinders in force at the date of installation and provided that:

1. The water quality shall be in accordance with European Council Directive 98/83 EC, or revised version at the date of installation, and is not fed with water from a private supply.
Particular: Chloride content: Max. 250 mg/l
Sulphate content: Max. 250 mg/l
Combination Chloride/sulphate: Max. 300 mg/l (in total)
2. The OSO cylinder is filled with water before turning the electricity supply on to the heater elements.
3. The benchmark certificate is completed at the time of installation.
4. The OSO cylinder is serviced and maintained every 12 months and is marked as such in the benchmark logbook provided with the cylinder. Invoices for the maintenance work should be kept as proof of regular maintenance. Care should be taken of the logbook and invoices as they serve as the guarantee certificate for the cylinder.
5. If the newly fitted water heater is not in regular use then it must be flushed through with fresh water for at least 15 minutes. Open at least one hot water tap once per week, during a period of at least 4 weeks.
6. The OSO unvented cylinder has not been modified in any way other than by OSO Hotwater and is only used for the storage of potable water.
7. No factory fitted parts have been removed for unauthorised repair or replacement.
8. Defects caused by frost, excess pressure, salt dehardner process, transient voltage, lightning strikes or incorrect installation, repair or use, are not covered by this warranty. A laboratory evaluation of possible defects can be ordered by the user, however the user must pay for this where the above mentioned conditions have not been fulfilled. Evidence of the purchase date and the date of supply must also be submitted with your claim.
9. To validate the warranty the user must complete and return the warranty card supplied accompanied by proof of purchase within 60 days of purchase. Evidence of the purchase date and the date of supply / installation must be submitted.

This guarantee does not confer any rights other than those expressly set out above and does not cover any claims for consequential loss or damage. This guarantee is offered as an extra benefit and does not affect your statutory rights as a consumer.

IT IS THE RESPONSIBILITY OF THE INSTALLER TO COMPLETE THIS LOGBOOK AND PASS IT ON TO THE CUSTOMER. FAILURE TO DO SO MAY INVALIDATE THE CYLINDER GUARANTEE

APPLIANCE & TIME CONTROL DETAILS

MANUFACTURER	OSO HOTWATER (UK)	MODEL
CAPACITY	litres	SERIAL No.
TYPE	UNVENTED	
TIME CONTROL	PROGRAMMER <input type="checkbox"/> or TIME SWITCH <input type="checkbox"/>	

COMMISSIONING PROCEDURE INFORMATION

BOILER PRIMARY SETTINGS (INDIRECT HEATING ONLY) ALL BOILERS

IS THE PRIMARY A SEALED OR OPEN VENTED SYSTEM?	SEALED <input type="checkbox"/>	OPEN <input type="checkbox"/>
WHAT IS THE BOILER FLOW TEMPERATURE?	<input type="text"/> °C	

ALL MAINS PRESSURISED SYSTEMS

WHAT IS INCOMING STATIC COLD WATER PRESSURE AT THE INLET TO THE PRESSURE REDUCING VALVE?	<input type="text"/> bar
HAS STRAINER (IF FITTED) BEEN CLEANED OF INSTALLATION DEBRIS?	YES <input type="checkbox"/> NO <input type="checkbox"/>
HAS A WATER SCALE REDUCER BEEN FITTED?	YES <input type="checkbox"/> NO <input type="checkbox"/>
WHAT TYPE OF SCALE REDUCER HAS BEEN FITTED?	

UNVENTED SYSTEMS

ARE COMBINED TEMPERATURE AND PRESSURE RELIEF VALVE AND EXPANSION VALVE FITTED AND DISCHARGE TESTED?	YES <input type="checkbox"/> NO <input type="checkbox"/>
IS PRIMARY ENERGY SOURCE CUT OUT FITTED (NORMALLY 2 PORT VALVE)?	YES <input type="checkbox"/> NO <input type="checkbox"/>
WHAT IS THE PRESSURE REDUCING VALVE SETTING (IF FITTED)?	<input type="text"/> bar
WHERE IS OPERATING PRESSURE REDUCING VALVE SITUATED?	YES <input type="checkbox"/> NO <input type="checkbox"/>
HAS THE EXPANSION VESSEL OR INTERNAL AIR SPACE BEEN CHECKED?	YES <input type="checkbox"/> NO <input type="checkbox"/>
WHAT IS THE HOT WATER TEMPERATURE AT THE NEAREST OUTLET?	<input type="text"/> °C

ALL PRODUCTS

DOES THE HOT WATER SYSTEM COMPLY WITH THE APPROPRIATE BUILDING REGULATIONS?	YES <input type="checkbox"/>
HAS THE SYSTEM BEEN INSTALLED AND COMMISSIONED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS?	YES <input type="checkbox"/>
HAVE YOU DEMONSTRATED THE OPERATION OF THE SYSTEM CONTROLS TO THE CUSTOMER?	YES <input type="checkbox"/>
HAVE YOU LEFT ALL THE MANUFACTURER'S LITERATURE WITH THE CUSTOMER?	YES <input type="checkbox"/>
COMPETENT PERSON'S SIGNATURE	CUSTOMER'S SIGNATURE

(To confirm demonstrations of equipment and receipt of appliance instructions)

PLEASE FOLLOW THE INSTALLATION AND COMMISSIONING INSTRUCTIONS
IN THE INSTALLATION MANUAL SUPPLIED WITH THE EQUIPMENT

Notes:

Notes:

SERVICE INTERVAL RECORD

It is recommended that your hot water system is serviced regularly and that your service engineer completes the appropriate Service Interval Record below.

SERVICE PROVIDER

Before completing the appropriate Service Interval Record below, please ensure you have carried out the service as described in the manufacturer's instructions and in compliance with all relevant codes of practice.

SERVICE 1	DATE:
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ENGINEER NAME	
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COMPANY NAME	
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TEL No.	
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COMMENTS	
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SIGNATURE	
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SERVICE 2	DATE:
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ENGINEER NAME	
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COMPANY NAME	
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TEL No.	
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COMMENTS	
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SIGNATURE	
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SERVICE 3	DATE:
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ENGINEER NAME	
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COMPANY NAME	
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TEL No.	
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COMMENTS	
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SIGNATURE	
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SERVICE 4	DATE:
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ENGINEER NAME	
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COMPANY NAME	
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TEL No.	
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COMMENTS	
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SIGNATURE	
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SERVICE 5	DATE:
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ENGINEER NAME	
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COMPANY NAME	
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TEL No.	
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COMMENTS	
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SIGNATURE	
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SERVICE 6	DATE:
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ENGINEER NAME	
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COMPANY NAME	
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TEL No.	
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COMMENTS	
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SIGNATURE	
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SERVICE 7	DATE:
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ENGINEER NAME	
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COMPANY NAME	
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TEL No.	
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COMMENTS	
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SIGNATURE	
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SERVICE 8	DATE:
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ENGINEER NAME	
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COMPANY NAME	
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TEL No.	
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SERVICE 9	DATE:
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ENGINEER NAME	
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COMPANY NAME	
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TEL No.	
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COMMENTS	
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SIGNATURE	
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SERVICE 10	DATE:
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COMPANY NAME	
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TEL No.	
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When all the above services have been completed, please contact your Service Engineer for an additional service interval record sheet.