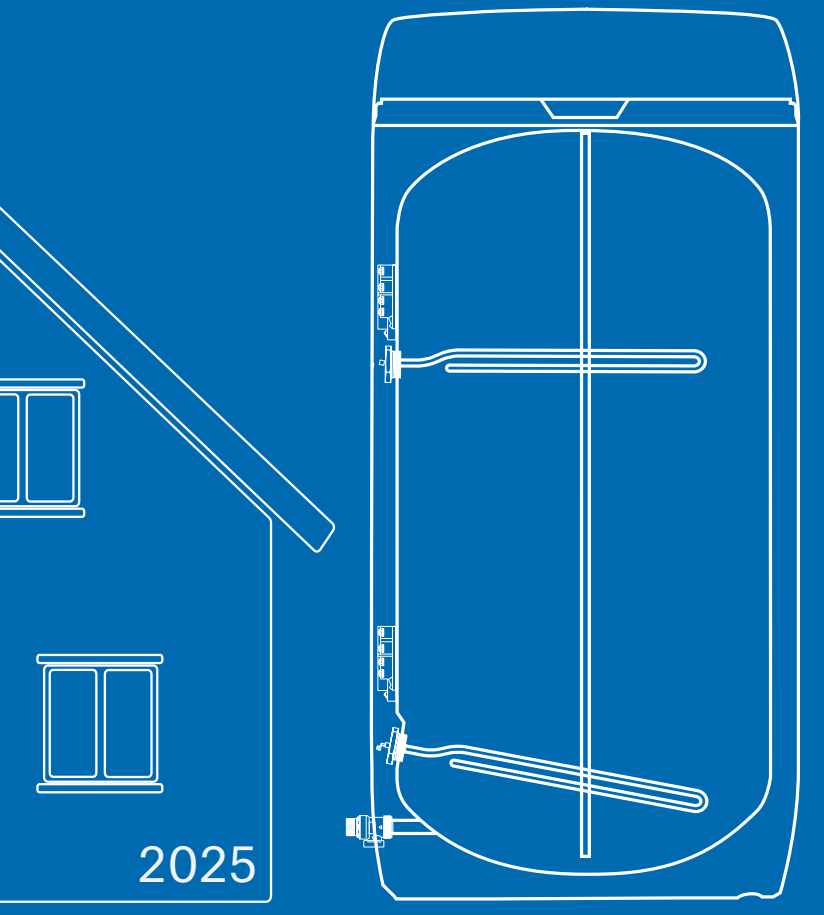
OSO HOTWATER

WATER HEATING GUIDE

THIRD EDITION



2025

CONTENTS

OSO HOTWATER

MANUFACTURERS OF THE WORLD'S MOST EFFICIENT WATER HEATERS

Independent and family owned
Innovators, specialists and experts in water heater design and technology
Driven by ecological and energy efficiency concerns
Fully robotised manufacturing plant, with robots that are designed and built in-house.
Multi award winning

Founded in 1932
Made the world's first mass produced stainless steel unvented cylinder in 1968
First to use internal expansion 1989
First mass produced stainless cylinder in UK 1989
First to use vacuum insulation in 2015

OSO stainless steel thickness is a minimum of 1.2mm*

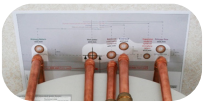
SIZE RANGE	OSO UNIT(S)	TYPE	PAGE
0-5 Litres	Nano	Direct	26
30-100 Litres	Multipoint	Direct	27
120-300 Litres	Super Xpress ,Supercoil, Delta, Delta Geo, Delta Powercyl, Slimline	Direct, Indirect, Renewables	4-20
400-1000 Litres	Maxi Standard, Maxi Xpress, Maxi Coil, Maxi Geocoil, Maxi Accu	Direct, Indirect, Renewables	36
1000-20,000 Litres	Maxi Bespoke	Direct, Indirect, Renewables	39

*1.1mm for Multipoint

SUPER COIL S_2C

INDIRECT

RAPID FIT



OVERVIEW

- All connections, motorized valve, vessels and valve gear housed under a removable lid.
- Unique patented design, pre-plumbed with the installer in mind
- Saves 3-4 hours in labour time during a typical installation
- Simplified process- demystifies unvented cylinders
- Perfect cylinder choice for a system boiler or 4 pipe system.
- High Performance cylinder that complies with the Domestic Heating Design Guide on insulation and coil size
- Heats a bath full of water in 8.5 mins
- Large super fast coil may mean cylinder can be downsized

FEATURES

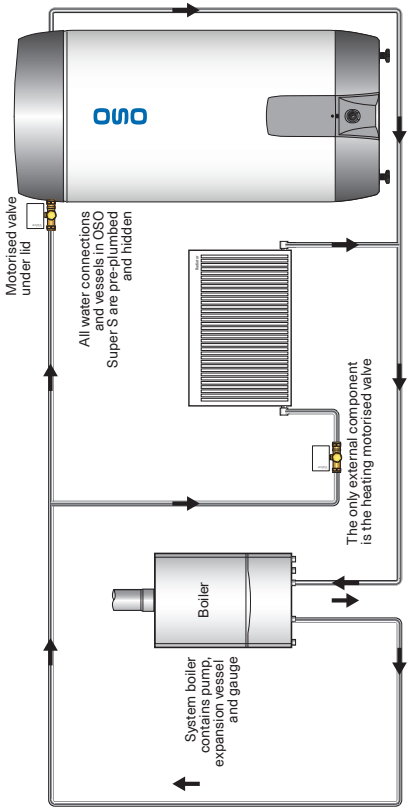
- Expansion solution has all the advantages of internal expansion but none of the drawbacks
- No need to find a secure wall fixing for exp vessel
- Template first fix like a combi – cylinder not required
- All pipes in the same area makes for a really neat job
- Typically requires up to 6m less 22mm pipe due to the location of valve gear
- Heat loss reduced by valves and vessels being under lid
- S_2C indirect smooth coils do not encourage limescale build up
- Secondary return option on all cylinder sizes
- Simple and quick to service – can be drained down when hot, unlike some brands
- 4.5 kw on-site upgrade available
- 5 bar on site hot water upgrade available
- Immersion heater at bottom makes it ideal for linking to Photo Voltaic solar panels (100% of water heated) **See page 17**
- Factory fitted blending valve delivers hot water at a maximum temperature of 60°C

*300 has a wall mounted vessel

TABLE

Size	V40*	595 W x H	kW rating	Coil size M^2	Recovery	Heat loss Kwh/24hr
150	240	1110	16.7	0.8	19.2	1.174
180	272	1160	20.9	1.0	16.8	1.322
210	333	1300	20.9	1.0	21	1.397
250	412	1550	21.5	1.0	25.2	1.651
300	454	1750	23.6	1.1	28.2	1.766

*V40 calculated at 65°C store temp
The v40 is the amount of 40 degree water a unit can create.
More details on **page 23**



S_2C is factory fitted with a flow through expansion valve with minimum pipework to the vessels in accordance with building and water regulations approval.

Installation video

S_2C website page

DELTA COIL

INDIRECT

A-RATED

Perfect partner for an A - Rated Boiler

OVERVIEW

- The most efficient cylinders in the world.
- Built with vacuum insulation for an A - Rating
- Lowest heat losses currently available on any unit.
- On average 37% less heat loss compared to a similar unit without vacuum insulation.
- ErP A-Rated.
- Helps to achieve a SAP assessment or Part-L building regs pass.
- Saves money, energy and reduces carbon footprint.
- High Performance cylinder that complies with the Domestic Heating Design Guide on insulation and coil size

FEATURES

- Keeps the water warm far longer than any other unit.
- Vacuum insulation makes the unit like a thermos flask.
- On average only loses 1 thermal unit per day
- External expansion vessel.
- 5 bar hot water upgrade option.
- Smooth coils resist limescale

TABLE

Size	ERP	595W x H	kW rating	Coil size M^2	Recovery	Heat loss Kwh/24hr
150	A	1005	17.2	0.7	17	0.94
210	A	1270	20.1	1.1	21	1.03

For 300l model see delta powercyl on next page

DC website page

DELTA POWERCYL

INDIRECT

HIGH FLOW/HIGH PRESSURE

OVERVIEW

- Ideal for luxury projects or light commercial applications.
- Unbeatable performance, high flow rate and high pressure.
- 28mm connections operating up to 5 bar.
- Delivers in excess of 100 litres per minute of mixed water.
- Super fast recovery coils.
- Produces 1300l of 60°C hot water in first hour
- Erp A Rated.
- High Performance cylinder that complies with the Domestic Heating Design Guide on insulation and coil size
- Super fast recovery allows you to downsize from a larger unit.
- Built with vacuum insulation for an A - rating

FEATURES

- Vacuum insulation makes the unit like a flask.
- Keeps the water warm far longer than any other unit.
- External expansion vessel.
- Can be linked together to feed 35mm pipework or larger.
- A perfect partner for the OSO Superstream Accumulator units.
- Smooth coils resist limescale

TABLE

Size	ERP	595 W x H	kW rating	Coil size M^2	Recovery	Heat loss Kwh/24hr
300	A	1750	32	1.8	18	1.18

DCF website

SLIMLINE

INDIRECT

SPACE EFFICIENT

OVERVIEW

- The narrowest unvented cylinder on the market.
- Just 435 mm wide!

FEATURES

- Vacuum insulated for minimal heat losses.
- Can be easily linked together to double the volume.
- External expansion vessel.
- 3kw Immersion heater.
- Secondary return connection.
- Designed to replace 18”/450mm copper cylinders

TABLE

Size	ERP	435 W x H	kW rating	Coil size M^2	Recovery	Heat loss Kwh/24hr
150	C	1651	16.5	0.7	17	1.82

Slimline website

INDIRECT SIZING CHART

NO OF BEDS	NO OF BATH OR SHOWER ROOMS	OSO CYLINDER VOLUME	V40 @65°C	RECOVERY TIME (SC)
2	1-2	150	240	21
3	1	150	240	21
	2	180	272	17
	3	210	333	20
4	2	180	272	17
	3	210	333	20
	4	250	412	25
5	2	180	272	17
	3	210	333	20
	4	250	412	25
	5	300 Powercyl	477	18
6	2	180	272	17
	3	210	333	20
	4	250	412	25
	5	300 Powercyl	477	18
	6	300 Powercyl	477	18

Large bath volumes or very high shower flow rates may increase estimated cylinder sizes.

The V40 is the amount of 40 degrees hot water a unit can create **see page 23.** This is the total bath volume/showering water.

We would assume a standard bath would use 120-140L and an average shower about 50-70 L.

Consult OSO directly for an accurate free bespoke calculation.

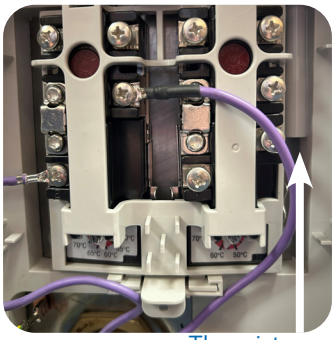
Enter your design requirements in the portal for a free design

Water calculator

PROBE/THERMISTOR CONTROLLED BOILERS

Many boiler manufacturers now offer the option of controlling the cylinder water temperature via a thermistor probe. (Also referred to as 4 pipe boilers). All OSO units have positions for the boiler probe to be sited. The S_2C is a pre-plumbed unit for a 4 pipe boiler.

The probe fits neatly Into a dedicated sensor pocket illustrated below



Thermistor pocket

The Delta range has a dedicated pocket situated behind foam cover

DELTA GEO

HEAT PUMP

OVERVIEW

- The most efficient cylinders in the world
- Includes vacuum insulated panels for maximum energy retention
- Industry leading heat loss figures
- Heat loss figures that positively help in achieving SAP / Part L Building Regulations
- ERP A-Rated
- Saves money, energy and carbon.

FEATURES

- Vacuum insulation turns the cylinder into a Thermos flask
- On average only loses 1 thermal unit per day
- Keeps water hot longer than any other cylinder
- Very large coil surface area – MCS friendly
- Enhanced coil volume for improved thermal delivery
- Smooth Indirect coils that do not encourage limescale build up
- On average vacuum insulation reduces heat loss by 37%
- 5 Bar on-site hot water upgrade available

Can also be fitted with a traditional boiler for rapid heat up and recovery times
High Performance cylinder that complies with Domestic Heating Design Guide on insulation and coil size.
A perfect partner for an A-rated boiler

TABLE

The Maxi MGC heat pump unit is available in 400/600/1000 litre sizes **(see page 36-39)**.

Geo Heat pump	ERP	595 W x H	Coil Area M^2	Max heat pump size	Kw coil 82^0 flow boiler	Heat loss Kwh per 24hr	Heat loss watts	Coil Vol litres
200	A	1270	2.6	15 kW	75kW	1.03	43	14.5
300	A	1750	3.1	18 kW	90kW	1.18	49	17

DGC website

OPTIMA

COMBINED INDIRECT HEAT PUMP CYLINDER AND BUFFER/VOLUMISER TANK

OVERVIEW

- Cylinder and buffer in a single footprint
- Buffer vessel can also be used as a volumiser
- Increases efficiency
- Reduces installation cost
- Quicker to fit
- Makes heat pump system work better
- Stainless steel
- Heats the hot water cylinder faster
- Includes vacuum insulated panels for maximum energy retention
- ERP A-Rated

FEATURES

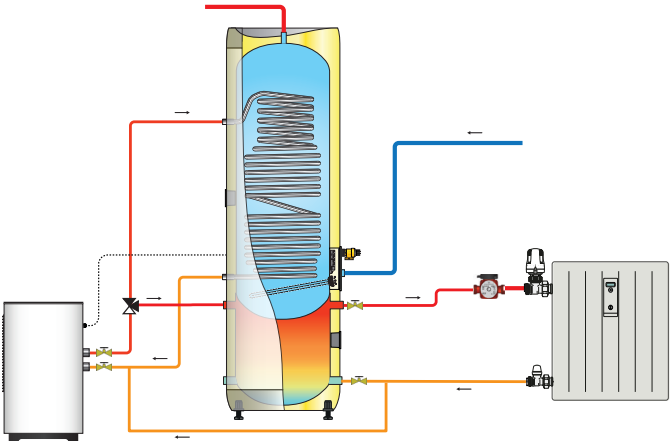
- Only takes up the space of a single cylinder
- Has the capability to pre- heat the cylinder via the buffer tank while in heating mode
- Rising heat from the buffer means that it reduces (or eradicates) the turning off of space heating when in hot water mode
- Increases customer comfort as space heating temperature remains more stable
- Reduced materials needed as both units built into one
- Speedier install as not piping 2 units together
- Buffer tank and volumiser maximises heat pump SCOP
- Maintains energy flow into heating when HP heating water
- Delivers pre-heated primary water into heating on initial demand
- Solar PV can be put into the immersion heater

OGC website

TABLE

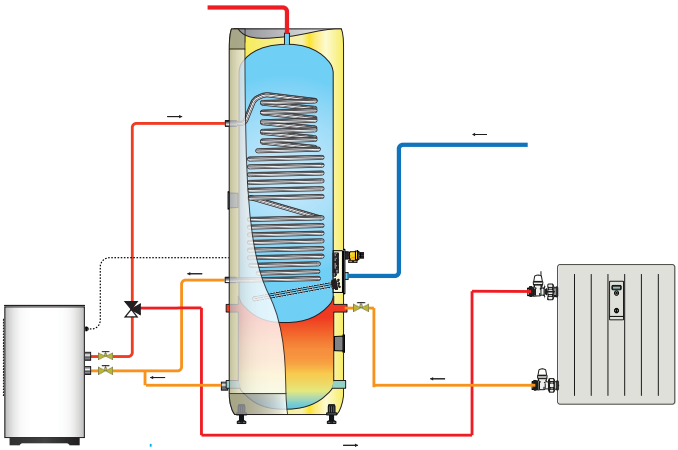
Optima OGC	595 W x H	DHW Vol litres	Buffer Vol litres	Coil Area M^2	Kw coil 82^0 flow	Heat loss Kwh / 24hr	Erp
300	1755	225	65	$2.6m^2$	75	1.08	A

Diagram to show the lower tank used as a buffer vessel



Optima

Diagram to show the lower tank used as a volumiser



Optima

OGC website

AQUASUSTAIN

INTEGRATED HEAT PUMP CYLINDER

OVERVIEW

- Stainless steel unvented cylinder heated by a dedicated heat pump
- R290 refrigerant
- Heats to 60^0 without the need to use immersion heater
- ERP A+ rating
- 100% renewable
- 2 sizes available
- Positively helps in achieving SAP and Part L Building Regulations

FEATURES

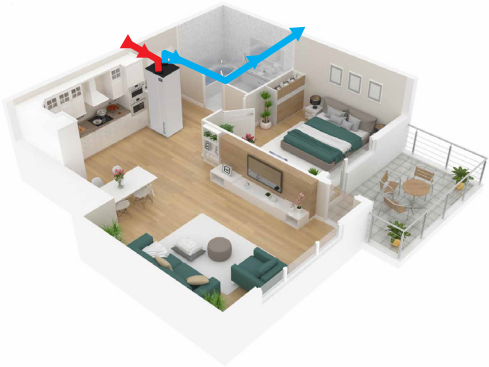
- Stainless steel construction superior to mild steel glass lined alternatives
- R290 refrigerant Global Warming Potential of 3
- R290 far more environmentally friendly than R134 alternatives
- R290 produces more useable hot water due to higher storage temperature achieved
- 3 duct size options
- Long length duct capabilities
- Internal immersion heater for back-up or faster recovery
- Customer friendly control panel
- Neat rectangular case

TABLE

Volume	ERP	600 W x H	COP @ 7^0	Min air flow m^3/Hr	Max DHW temp with HP only	Refrigerant
200	A+	1540	2.95	215	60	R290
260	A+	1907	3.24	215	60	R290

AquaSustain suggested sizing table

Apartment type	Bath	Seperate shower	AquaSustain
1 bed	0	1	200
1 bed	1	0	200
2 bed	0	1	200
2 bed	0	2	200
2 bed	1	1	260
3 bed	0	1	260
3 bed	0	2	260
3 bed	0	3	260
3 bed	1	1	260



External air intake

Heat Pump Category – Exhaust Air MEV
Service Provision – Water heating only
Brand name – OSO Hotwater

NCM (SAP) identifier 200 – 108965

NCM (SAP) identifier 260 – 108964

Aquasustain website

BUFFER/VOLUMISER

HEAT PUMP

OVERVIEW

- Stainless steel buffer tank
- Increases heat pump efficiency
- Increased comfort
- 3 sizes available
- More durable than mild steel

FEATURES

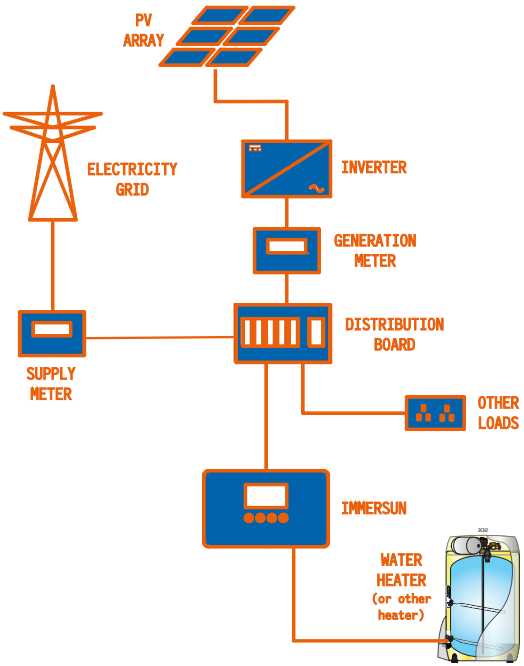
- Buffer tank maximises Heat pump SCOP
- Maintains energy flow into heating when HP heating water
- Delivers pre-heated water into heating on initial demand
- 10 year warranty
- 4 tappings (1" female)
- Stainless will not corrode and damage the heat pump

TABLE

Description	Dimension mm	Tapping size	Vol litres
A60	435 x 726	1" female	60
A100	435 x 1156	1" female	100
A200	595 x 1265	1" female	200

Buffer website

SOLAR VOLTAIC



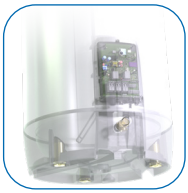
A solar diverter unit works by allowing the electricity created by photo voltaic solar panels to be utilised by the immersion heater in an OSO cylinder. When the amount of PV generated electricity is greater than the demand in the home (ie when the house is empty), the excess electricity is usually exported into the grid. The Solar Diverter stops this occurring and diverts it to the immersion heater effectively heating the hot water free of charge.

The diverter can be fitted to a standard OSO immersion heater because diverters restrict the input to the PV generated electricity only, taking no power from the grid.

The OSO Supercoil unit **(page 4)** is the perfect partner for such a system as the immersion is sited at the bottom of the cylinder. This means that all the water in the cylinder can be heated (or pre-heated) by the free electricity. Most units on the market have their immersion sited halfway up the cylinder. Because heat rises it means such tanks can only be 50% heated/pre-heated as the immersion can only effectively heat where it is sited and the water above it.

SUPERCHARGED S_2S

SMART ENERGY



OVERVIEW

- Demand side response technology
- Enables cylinder to draw power when its most cost effective
- Can save the housholder up to £250 per year on electricity costs
- 200L holds more energy than a Tesla Powerwall (15 vs 13.5kWh)
- Compatable with flexible tarrifs such as Octopus Agile
- Heats to 75^0 to store 30% more energy than a standard cylinder
- Machine learning calculates the houshold's expected hot water demand
- Assists the grid in flattening peaks
- Payback time on investment extremely short (3-4years)
- Supercharged also has all the great installation benefits of the S_2X- see **page 20**

FEATURES

- Algorithm anticipates when electric will be most affordable
- Captures surplus grid overproduction from renewable sources such as wind and solar
- Utilises a high proportion of renewable energy
- Surplus renewable energy is sold of extremely cheaply saving consumers money
- Uses the cylinder like an energy battery
- Can have PV solar input added.
- Anticipates weather conditions
- Can be used as a block management system for commercial buildings.
- 75^0 storage temperature means a 30% increase on V40 compared to a 60^0 heated cylinder (**see page 56**)
- Blending valve ensures water delivered at 60^0
- Retrofittable to S2X

OSO Supercharge website

TABLE

Size	V40*	595 W x H	No of 6 minute 9 LPM showers	Heat loss Kwh/24hr	Heat loss watts
150	261	1110	4.8	1.15	48
210	343	1375	6.4	1.39	58
250	464	1645	8.59	1.66	69

The OSO inCharge mobile app gives you full control:

Activate smart heating

Monitor your hot water levels

Enable sleep/hoiday mode

View historical energy usage

SUPERCHARGED has three temperature sensors*. This more accurately provides the correct amount of hot water for the household mimimising over use of energy. With this clever software, you can be assured of hot water when you need it at the cheapest price available.

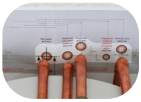
SUPERCHARGED is factory fitted with a flow through expansion valve with minimum pipework to the vessels in accordance with building and water regulations approval

*200L upwards

SUPER XPRESS S_2X

DIRECT

PRE-PLUMBED



FEATURES

- Cylinder completely pre-plumbed and pre-wired
- 3 – 4 hours labour saving during a typical installation
- Produces in excess of 30% more hot water than any other unit of the same volume
- 30% more hot water means unit can be downsized by at least one size, sometimes two
- Titanium immersion heaters
- Stores hot water @ 75^{0}C and is able to collect much more energy than a unit heated to 60^{0}C
- Downsizing saves space, reduces cost and heat-loss figure
- Unique patented design, pre-plumbed with the installer in mind
- All connections, expansion vessels and valve gear housed under a removable lid
- Factory fitted blending valve delivers hot water @ 60^0
- Template first fix means cylinder not required until second fix

OVERVIEW

- No need to find a secure wall fixing for exp vessel
- Expansion solution has all the advantages of internal expansion, but non of the draw backs
- Heat loss figures that positively help in achieving SAP and Part L Building Regulations
- Typically requires up to 6m less 22mm pipe due to the location of valve gear
- Up to a 210L OSO can be sited over a Washer Frame **(see page 24)** Washing machine can be sited in cylinder cupboard
- Secondary return option on 210, 250 and 300L
- Simple and quick to service – can be drained down when hot, unlike some brands
- Timeclock available for all models **(see page 25)**
- 5 Bar hot water on-site upgrade option
- 4.5kw Immersion on-site upgrade option

TABLE

Size	V40* @75	595 W x H	No of 6 minute 9 LPM showers	Heat loss Kwh/24hr	Heat loss watts
120	193	920	3.6	0.96	40
150	260	1110	4.8	1.1296	54
180	323	1200	6	1.368	57
210	353	1375	6.5	1..536	64
250	464	1645	8.6	1.848	77
300	495	1780	9.1	1.968	82

S_2X VIP is factory fitted with a flow through expansion valve with minimum pipework to the vessels in accordance with building and water regulations approval

S_2X website page

SX installation video

SIZING CHART FOR ELECTRICALLY HEATED CYLINDERS IN APARTMENTS

DEMAND AND SIZING				HOT WATER PRODUCTION				Heat Loss		Control Method	HEIGHT
No of Beds	Bath Rooms	Shower rooms	**OSO S_2X VIP** ↓	Amount of 40 °C water created by OSO @ 75° (v40)	Number of 6 minute showers @ 9 LPM (54L) from the OSO	Amount of 40°C degree water created by competitor unit @ 60° (v40)	OSO performance increase (via extra 15°)	kWh 24hrs	Watts	Single Breaker and feed from consumer unit See **page 25**	Total cyl height plus height over OSO washer frame (930 frame & top)
1	0	1	**120**	193	4.2	148	30%	0.96	40	OSO PSS Timer	920/1830
1	1	0	**120**	193	4.2	148	30%	0.96	40	OSO PSS Timer	920/1830
2	0	1	**120**	193	4.2	148	30%	0.96	40	OSO PSS Timer	920/1830
2	1	0	**120**	193	4.2	148	30%	0.96	40	OSO PSS Timer	920/1830
2	1	1	**150**	260	5.7	198	31%	1.296	54	OSO PSD Timer	1110/2020
3	1	0	**150**	260	5.7	198	31%	1.296	54	OSO PSD Timer	1110/2020
3	1	1	**180**	323	7.2	248	30%	1.368	57	OSO PSD Timer	1200/2110
3	1	2	**180**	323	7.2	248	30%	1.368	57	OSO PSD Timer	1200/2110
3	2	1	**180**	323	7.2	248	30%	1.368	57	OSO PSD Timer	1200/2110

Please note the results are particular to Oso. A competitors unit must be one to two sizes larger to match the performance

Student Clusters/ HMO bedsits (if electric)

Cluster no of beds	Individual showers	40° requirement for 6 min showers @ 9 LPM	No secondary return 75°	With secondary return 60°
4	4	216	S_2X 150	S_2X 180
5	5	270	S_2X 180	S_2X 210
6	6	324	S_2X 210	S_2X 250
7	7	378	S_2X 250	S_2X 300/MS 300
8	8	432	S_2X 250	MS 400

V40 FIGURES

You may see on the Super Xpress, Super Coil and Multipoint units we quote a v40 figure. This is the amount of 40° water that a particular unit can create.

Its often referred to as 'mixed water' because its effectively the quantity of hot water with cold added to cool it to a usable temperature such as 40°C.

Its important to note that not all cylinders of the same size have the same v40. That's because a unit that is heated to 70° or 75° such as the Multipoint or Super Xpress, will need a lot more cold water adding to cool it to 40° than one like the Super Coil which only heats to 60°. It is also important to note that a cylinder heated by a heat pump may only get to around 50° and will have a lower V40

The end result of having a hotter storage temperature means a unit can create in excess of 30% more mixed water than one with a 60° storage temperature.

Because of this you will find that you can often use a much smaller OSO unit than you previously thought.

It is vital that when sizing a unit that the v40 figure is what you would use to determine the correct size of cylinder and NOT the cylinder volume.

The v40, or mixed water volume is the amount that will fill the baths and deliver showering water – NOT the hot water cylinder volume alone. Cold water is added. The greater the cold water volume required – the higher the v40.

THE OSO SUPER XPRESS IS THE ONLY MASS PRODUCED UNIT TO USE THIS FEATURE.

IT ALSO HAS A FACTORY FITTED BLENDING VALVE TO DELIVER WATER AT 60°

AS WELL AS PRODUCING MORE WATER
IT SAVES MONEY, SPACE AND REDUCES HEAT-LOSS

OSO WASHING MACHINE FRAME

HEIGHT 910mm
WIDTH 670mm
DEPTH 600mm

PARTS LIST	
QUANTITY	DESCRIPTION
1	TOP FRAME
2	2 SIDE PANELS
1	TOP BOARD
2	BRACINGS
11	M6 WASHERS
11	M6 x 16 SCREWS
4	ADJUSTABLE FEET
4	STICKY PADS
1	ALLEN KEY

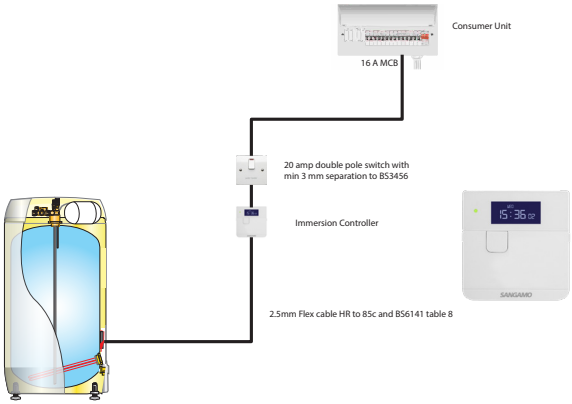
- Enables the siting of a washer in the cylinder cupboard.
- Supports up to a 210 litre OSO unit.
- Reduces noise from washers in open plan dwellings (apartments).
- No extra building footprint sacrificed – wasted space used.
- Ex-stock for speedy despatch.
- Frees up a base unit in the kitchen for something else (ie dishwasher).
- Makes plumbing a little easier as washer is close to services.
- OSO frame is flat packed meaning storage and transport much easier.
- Attractive powder coat finish.
- Fully finished worktop for cylinder.
- Levelling adjustment.
- Height 910mm x Width 670mm x Depth 600mm
- Fully load tested and certified. Test document can be supplied if required

OSO Also can provide a wall hanging bracket for units up to 180 litres.

TIMERS

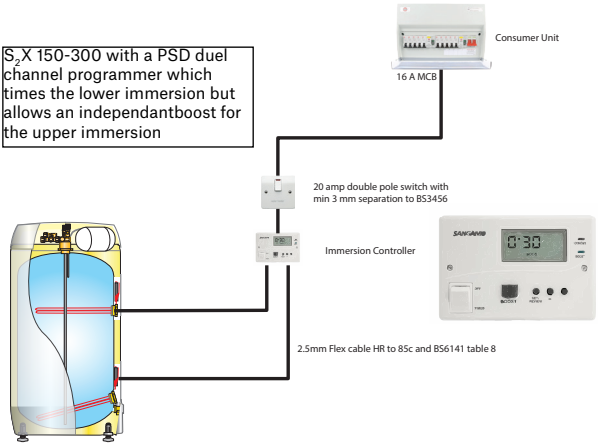
PSS POWERSAVER SELECT

- This is a single channel timer for controlling a single immersion heater.
- We suggest this timer for use with the S_2X120.
- The timer is rated up to 16 amps and also has a boost function, as well as 3 programmable on and off times.



PSD – POWERSAVER DUAL

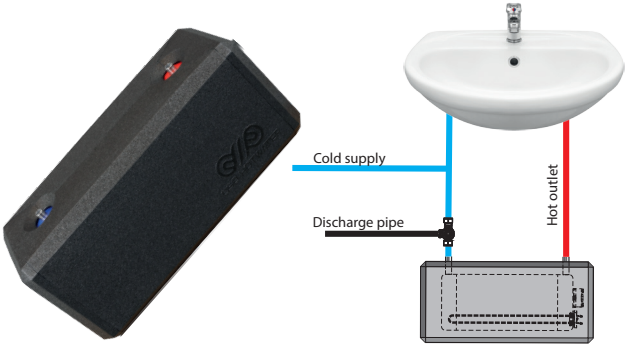
- This is a dual channel timer for controlling a cylinder with two immersion heaters.
- We suggest this timer for use with the S_2X150-300 models.
- The timer is rated up to 13 amps and also has a boost function.
- As well as 3 programmable on and off times.



PSB - BOOST SWITCH

Can be used in conjunction with a PSS. This would enable you to have 2 immersions on at the same time via an additional feed from the consumer Unit. (Same wiring configuration as PSS)

NANO
DIRECT
UNDERSINK



OVERVIEW

- 5 Litre point-of-use undersink water heater.
- Stainless steel construction.
- 10 year warranty.

FEATURES

- 7 litres of mixed water every 8 minutes.
- ErP A-Rated.
- 3 kw Immersion heater.

TABLE

Size litre	ERP	Dimensions mm	V40 litres	Recovery	Heat loss watts
5	A	250 x 234 x 500	7	8	13

Nano website

MULTIPOINT - W

DIRECT

MULTI-OUTLET WATER HEATER

OVERVIEW

- Direct electric water heaters for lighter demands.
- Stainless steel construction with 10 year warranty.
- Universal siting options - wall or floor mounting.
- 70° storage temperature produces 20% more hot water than a unit stored at 60°
- The extra water created by the higher storage temperatures means you can fit a smaller size
- Suitable for domestic or commercial applications.
- 4 sizes 30/50/80/100 litres.

FEATURES

- Extra performance due to storage temp being 70 degrees delivered through a tamperproof blender.
- The 20% extra water means the unit can be downsized saving space.
- 30 and 50L fit inside a standard kitchen base unit.
- 50 and 80L suitable for double shower demands.
- 3kw for speedier recovery.
- Simple plumbing connection - flexi hoses included.
- Simple wiring connection - factory fitted cable.
- Wall bracket included for wall mounting.
- Includes expansion vessel, valves, fittings and flexi hoses. Everything required for install

TABLE

Size	435 W x H	V40 @70	no of 6min 9 l/m showers	no of 5l basins	Recovery time to 65°C	Heat loss W
30	542	52	1	10	29	22
50	697	84	1.5	16	46	29
80	1017	132	2.4	26	80	36
100	1237	168	3.1	33	92	45

Multipoint website

SUPERSTREAM
ACCUMULATORS
FLOW BOOST

OVERVIEW

- A power free silent boosting system that delivers in excess of 80 lpm ***per accumulator.***
- Perfect for poor mains or supplies that have small pipe sizes.
- Enables multiple outlets to run without any pressure drops.
- Boosts both hot and cold water services.

FEATURES

- No Noise.
- No power required.
- No working parts.
- No running costs.
- No servicing required.
- No pumps.
- 100% green.
- All drinkable water – no chlorination required.
- Works even in a power cut.
- 5 Year warranty.
- Can be retro fitted to an existing system.

TABLE

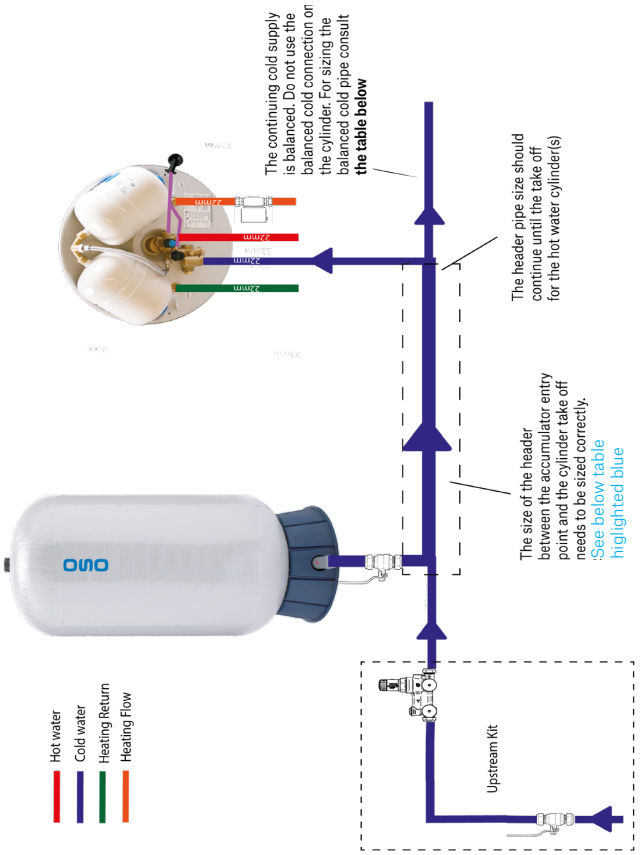
Prod no	Weight kg	Diameter x H	Water capacity L*	Water connection
OSI130	16	418 x 1227	65	1" BSP male
OSI200	22	542 x 1098	100	1¼" BSP male
OSI250	27	542 x 1303	125	1¼" BSP male
OSI350	35	614 x 1448	175	1¼" BSP male
OSI450	46	614 x 1831	225	1¼" BSP male

Superstream website

Superstream video

*Water volume with a 1.5 bar pressure differential (50% of total capacity)

SUPERSTREAM
INSTALLATION



Feed to hot water mm	Feed to balanced cold mm	Header size mm
15 (combi)	15	22
22	15-22	28
28 (or 2x 22mm)	15-22	35
35 (or 3 x22)	22-28	42
42 (or 4 x 22)	28	54

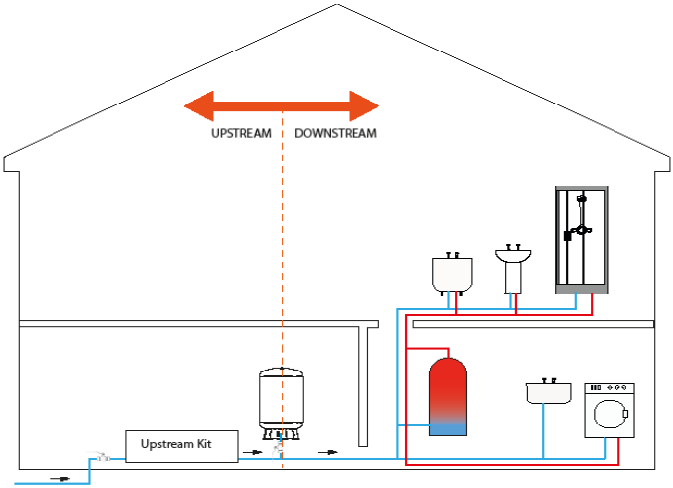
For accurate advice contact OSO directly.

SUPERSTREAM
UPSTREAM KIT/ADD-ON-KIT

As well as containing the accumulator connector, the upstream kit acts as a control for the incoming main to ensure the accumulator isn't damaged by excessive pressure or surges. It also contains a non-return valve to stop the collected water in the accumulator pushing back into the rising main. There's also a strainer to prevent anything damaging the accumulator diaphragm. It also has a gauge that reads the available pressure in the main so you know what to adjust your accumulator air pressure to if required – see info on commissioning on **page 32**

You only need one upstream kit per installation. An Add-on kit is required for each additional accumulator on a multi-accumulator installation. It contains the accumulator connector and full flow isolator valve.

Just for the record **upstream** is before the accumulator, and **downstream** is after it.



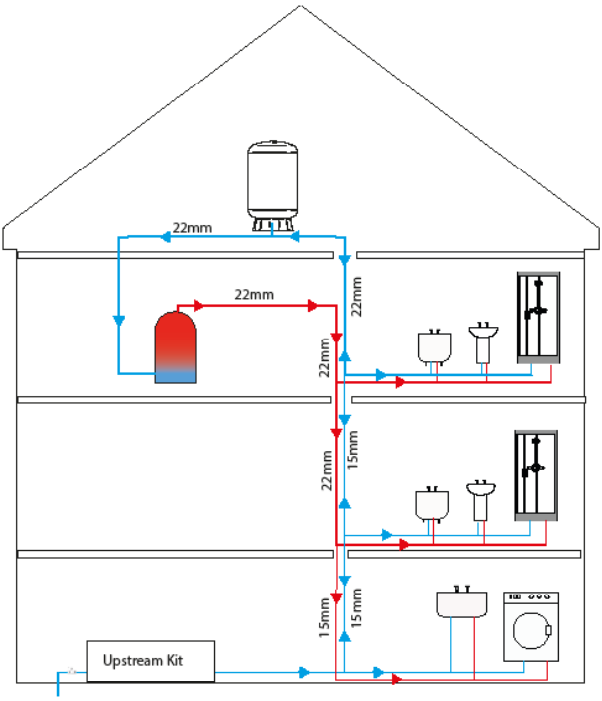
SUPERSTREAM
REVERSE WATER BOOSTING FROM AN ACCUMULATOR

The Non-return valve within the upstream kit prevents back flow of accumulator held water. But this is sometimes something that is useful to have, particularly where the accumulator is sited at an extreme part of the dwelling such as in the roof space. This is very helpful if the rising main cannot be accessed to be upgraded.

In the example shown, the upstream kit has been sited after the mains stop tap. This means that accumulated water can travel backwards down the rising main if there is insufficient water being supplied into the property to service a cold water demand.

Supposing the first floor bathroom in the diagram cannot get a good supply of cold water because the mains supply has very low flow, and also cannot be reached via new pipework from the accumulator. Moving the upstream kit back allows the accumulator to deliver cold water backwards down the rising main, supplementing the supply where its required. If the main stopped altogether the accumulator would deliver backwards right to the ground floor.

This method cannot be done with a Charger pump



SUPERSTREAM
COMMISSIONING AND SETTING UP AN OSO
SUPERSTREAM ACCUMULATOR

Half of the accumulator volume is compressed air. So, a 450 unit will hold 225L of water, whilst the other half is air. It's this compressed air that forces out the stored water like a spring in a jack-in-a-box.

To achieve the recommended 50% storage, the **pressure differential** must be 1.5 bar. That's the difference between the available incoming main and the air inside the accumulator which is factory set at **1.4 bar**.

This means that your incoming main needs to be 1.5 bar higher than the factory setting of 1.4 bar. So, if you have 2.9 bar in the main you don't have to do anything. Just use the accumulator factory setting and the PRV in the upstream kit will keep the pressure below 3 bar.

If you have less than 2 bar in the main, then we would suggest you add a Charger pump **(see page 35)** to achieve 50% storage or more.

If the available rising main is between 2 and 2.9 bar then you can achieve the 1.5 bar differential by reducing the air in the accumulator. You do this via the schrader valve on the top of the unit.

This must be done when the unit is de-pressurised and isolated from the main.

Then simply reduce the air pressure until it is 1.5 bar below the incoming mains pressure.

The minimum pressure you can set the accumulator at is 0.5 bar.

If you want to increase the volume in the accumulator beyond 50% you can decrease the pressure further to allow more water in. This is useful if you have water pressure above 3 bar available.

The max pressure differential allowed is 1.9 bar

For more details on setting pressure please table on next page or consult OSO

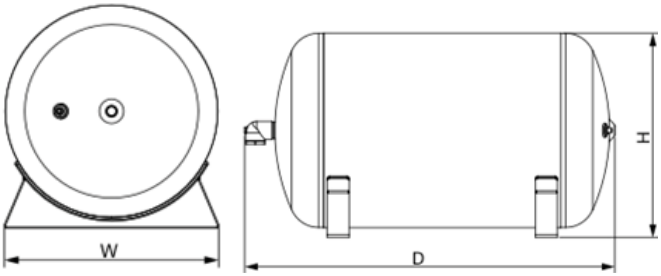
Incoming main	Action	Pressure in accumulator									
0.5 - 2 bar	Fit a charger pump	Leave at 1.4 bar									
2.1 - 2.8 bar	Reduce the air in the accumulator to attain a 1.5 bar differential	Main	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	
		Acc air	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	
2.9 bar or above (standard - approx 50% storage)	Just ensure upstream kit PRV set at 3 bar	Leave at factory setting of 1.4 bar									
2.5 - 3.3 bar (increased storage - approx 55%)	Reduce the air in the accumulator to to attain a 1.9 bar differential to gain additional storage. Alter the PRV **to match** incoming pressure from 3.1 bar upwards.	Main	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3
		Acc air	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4
3.4 bar or above (High pressure and increased storage)	Increase the air in the accumulator to 1.9 bar lower than incoming pressure. Increase the prv to what incoming main is to maintain a 1.9 bar differential	Main	3.4	3.5	3.6	3.7	3.8	3.9			
		Acc air	1.5	1.6	1.7	1.8	1.9	2.0			

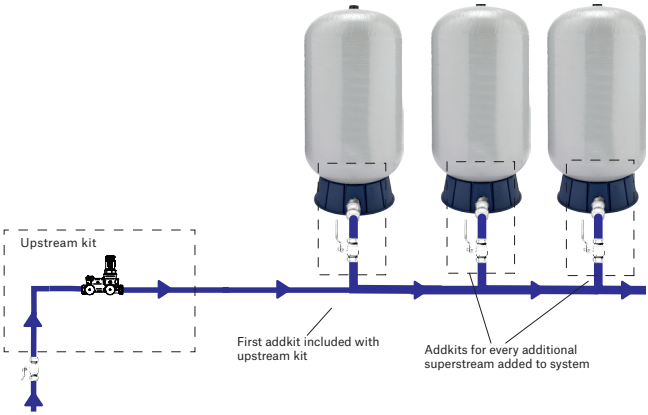
ACCUMULATOR OPTIONS
HORIZONTAL AND MULTIPLE UNITS

The Superstream system can boost anything that has a mains connection. So not only unvented cylinders but also combis, electric showers or dedicated cold supplies.

200 and 250 can be fitted horizontally

Model description	H	W	D
MB 200SH	558mm	540mm	1026mm
MB 250SH	558mm	540mm	1026mm



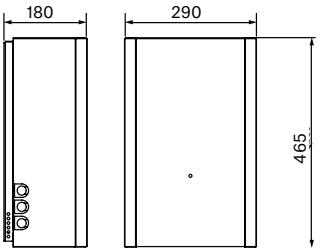


If the installation requires more than one accumulator, only one upstream kit is required per install. However an Add kit is required for each additional accumulator

Contact OSO for sizing advice or a free site visit

OSO CHARGER PUMP

PRESSURE BOOSTER

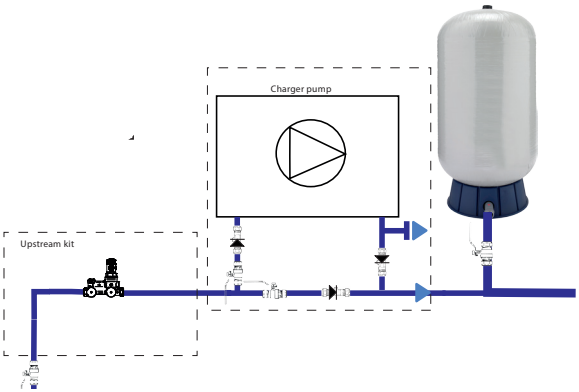


OVERVIEW

- The OSO Charger pump enables the installation of an accumulator system where the incoming main is less than 2 bar. A min stable pressure of 0.3 bar is required
- It is also advisable to consider adding one where the incoming main at ground level is slightly above 2 bar, but the accumulator is on an upper floor and so will be less than two bar at the entry point (head loss is 0.1 bar per metre).
- A charger pump can also be used where there is sufficient pressure for an accumulator system without a charger but the client requires a higher pressure than is currently supplied by the main eg. This may be for high

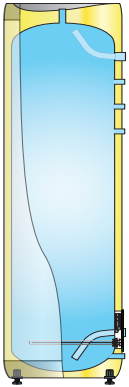
FEATURES

- The Charger can achieve up to 3.5 bar.
- Must be used in conjunction with an OSO Superstream accumulator.
- Can be retro fitted.
- Minimal noise 38dBA.
- Drinkable water.
- Only a proportion of the water is pumped unlike a break tank.
- Will not run until around 1 bar has been taken from the system (Silent for early morning starts).
- Wall mounted.
- Accumulator system still works if the pump is off ie power-cut.



STAINLESS STEEL MAXI COMMERCIAL RANGE - EX STOCK

MAXI STANDARD-

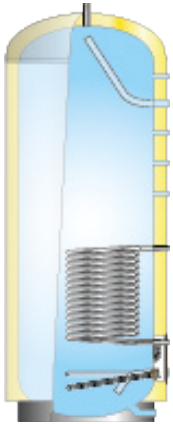


Buffer with 15kW Immersion heater backup. 300 -400 litre

MAXI XPRESS

Buffer with 27kW immersion heater backup. 600-1000 litre

MAXI COIL

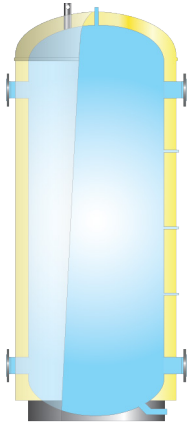


Cylinder with 1.00m² stainless steel coil for indirect heating from external heat source. Electric backup available 15kW. 600- 1000 litre

MAXI GEOCOIL

Specifically designed for heating via heat pump or super fast recovery from a boiler. 3.1 - 7.0m² coils. Electric backup 9-15 kW. 400 - 1000 litre

MAXI ACCU



Cylinder for hot water accumulation. 400 - 1000 litre. Cool water accumulator available on request

1" or 1 1/2" valve kit to be specified on order
MX cylinders require elements to be ordered seperately - Part number 11010542
All elements can be configured single or three phase.
600L and 1000L buffer vessels come with 3 x 1/2" sensor pockets.

		Actual volume Litre	Code	Coil size kW	Recovery time 82°-71°	Coil size m2	Recovery time coil Heat pump	Immersion power	Immersion recovery	Heat Loss W	ErP	G3 kit and vessel Included?	Vessel Size Litres	Tapping sizes H&C	Tapping sizes F&R	Hydraulic Conns H&C	Secondary Return	Usually Ex Stock?	Dia and height	Dry Weight kg
MS	**DIRECT/BUFFER VESSEL WITH ELECTRIC BACK-UP**																			
10241551	OSO MAXI STANDARD MS300 BUFFER/DIRECT 7.5kW + 7.5kW	280	MS300	n/a	n/a	n/a	n/a	15kw	46	83	C	Y	35	1.5"	n/a	n/a	3/4"	Y	595 x 1765	57
10241552	OSO MAXI STANDARD MS400 BUFFER/DIRECT 7.5kW + 7.5kW	372	MS400	n/a	n/a	n/a	n/a	15kw	61	90	C	Y	35	1.5"	n/a	n/a	3/4"	Y	595 x 2225	77
MX	**DIRECT/BUFFER VESSEL WITH FAST RECOVERY ELECTRIC BACK-UP**																			
10241653	OSO MAXI XPRESS MX600 BUFFER/DIRECT 9kW+9kW+9kW	570	MX600	n/a	n/a	n/a	n/a	27kw	47	120	C	Y	60	1.5"	n/a	n/a	3/4"	Y	800 x 2030	139
10241654	OSO MAXI XPRESS MX1000 BUFFER/DIRECT 9kW+9kW+9kW	885	MX1000	n/a	n/a	n/a	n/a	27kw	72	142	C	Y	100	1.5"	n/a	n/a	3/4"	Y	1000 x 2100	244
MC	**INDIRECT UNITS**																			
10241753	OSO MAXI COIL INDIRECT MC600 CYLINDER 7.5kW + 7.5kW	562	MC600	30	46	1.0	n/a	15kw	92	119	C	Y	60	1.5"	1"	n/a	3/4"	Y	800 x 2030	139
10241754	OSO MAXI COIL INDIRECT MC1000 CYLINDER 7.5kW + 7.5kW	875	MC1000	30	72	1.0	n/a	15kw	143	142	C	Y	100	1.5"	1"	n/a	3/4"	Y	1000 x 2100	244
MGC	**UNITS SUITABLE FOR HEAT-PUMPS OR FASTER RECOVERY INDIRECTS**																			
10241852	OSO MAXI GEOCOIL MGC400 CYLINDER 9 kW	362	MGC400	90	10	3.1		9kw	n/a	96	C	Y	35	1.5"	3/4"	n/a	3/4"	Y	595 x 2172	95
10241853	OSO MAXI GEOCOIL MGC600 CYLINDER 7.5kW + 7.5kW	540	MGC600	135	10	4.6	26*	15kw	n/a	118	C	Y	60	1.5"	1.5"	n/a	3/4"	Y	800 x 2030	160
10241854	OSO MAXI GEOCOIL MGC1000 CYLINDER 7.5kW + 7.5kW	838	MGC1000	200	11	7.0	43*	15kw	n/a	141	C	Y	100	1.5"	1.5"	n/a	3/4"	Y	1000 x 2100	265
MA	**ACCUMULATOR/BUFFER VESSEL**																			
8001352	OSO MAXI ACCU ACCUMULATOR MA400 SS/PLUS 6 bar	376	MA400	n/a	n/a	n/a	n/a	n/a	n/a	96	C	N	n/a	n/a	n/a	2"	n/a	Y	595 x 2175	77
8001353	OSO MAXI ACCU ACCUMULATOR MA600 SS/PLUS 6 bar	570	MA600	n/a	n/a	n/a	n/a	n/a	n/a	119	C	N	n/a	n/a	n/a	DN80 PN10	n/a	Y	800 x 2030	148
8001354	OSO MAXI ACCU ACCUMULATORI MA1000 SS/PLUS 6 bar	885	MA1000	n/a	n/a	n/a	n/a	n/a	n/a	140	C	N	n/a	n/a	n/a	DN100 PN10	n/a	Y	1000 x 2100	238

OSO MAXI
COMMERCIAL
EX- STOCK

Maxi cylinder with optional Maxi Charge

OVERVIEW

- A comprehensive range of competitively priced commercial units.
- Demystifying commercial hot water.
- 12 models in 5 types available from 300 up to 1000 litres.
- All in Stainless steel.
- Buffer with electric backup, buffer with fast electric recovery backup, indirect, heat pump/fast recovery and buffer tank.
- Maxi charge retro-fit option available. Designed to reduce electricity running costs by taking advantage of flexible tariffs. See supercharged **page 18**

FEATURES

- The units are held in UK stock for speedy despatch.
- Cylinder price includes full G3 fittings kit and potable vessel.
- Units all have 1.5" hot and cold tappings as standard.
- Fittings kit comes as standard in 1½" but 28mm can be supplied on request.
- Immersion heaters can be configured as single or three phase.
- Can be partnered with OSO Superstream Accumulators.
- 10 year warranty.
- Optional flow through expansion vessel available.

Maxi range website

OSO MAXI
COMMERCIAL
BESPOKE

6 x Maxi 15,000 litre calorifiers

OVERVIEW

- Available up to 20,000 litres with optional vacuum insulation.
- Available as Buffer tanks, indirect, heat pump indirect, twin coil solar thermal, direct and fast recovery direct.
- Short lead times.
- You are able to specify the tapping sizes, coil input and number of immersions as well as adding extra connections and sensor pockets etc.

FEATURES

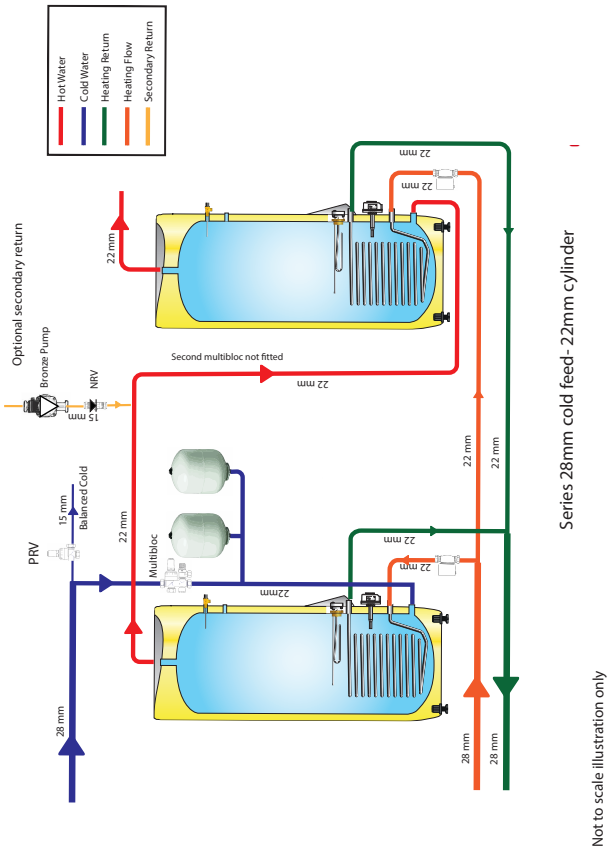
- 5 year warranty.
- Large immersion kW power available.
- Large smooth coil up to 10m$^{2.}$
- Short heat up times on large coils provide a high continuous output.

Please contact OSO directly for price and availability

Page No	Method	Cyl options	Hot water outlet size	Advantages	Disadvantages
41	22 in series	22 Delta Coil Slimline	22	Easy installation and cheap to do. 100% of the stored water always delivered. Less power required from the boiler. Can easily turn first cyl off and reduce capacity by 50% if there are low demand periods.	Limited to a 22mm outlet which we wouldn't advise if the pipe it is feeding is larger than that
42	28 in series	28 Delta powercyl	28	Easy installation and cheap to do. 100% of the stored water always delivered. Less power required from the boiler. Can easily turn first cyl off and reduce capacity by 50% if there are low demand periods. Can run cyls at 5 bar as standard	28 cyls are dearer than 22 but cylinder volumes and tapping sizes must all be the same. If its feeding a 28mm pipe its got to be. Unless you use the next option below.
43	22 in parallel	Super coil 22 Delta coil Slimline	28	Cheaper than 28 in series	Harder install, can't easily reduce storage by 50%, both cylinders will call for the boiler simultaneously - units must be the same size
43	28 in parallel	28 Delta powercyl	35	Usually cheaper and better heat losses than a commercial unit	Harder install, can't easily reduce storage by 50%, both cylinders will call for the boiler simultaneously- units must be the same size
44	Reverse Return	Anything but cylinders must be same size	Same as incoming cold supply	Allows installation of multiple cylinders on a single system. Ideal for odd-numbers where parallel is difficult	Must size pipes correctly to balance the cylinders equally. Cylinder volumes and tapping sizes must all be same.

SERIES CONNECTION – 22MM

Compatible cylinders:
Delta Range
Slimline

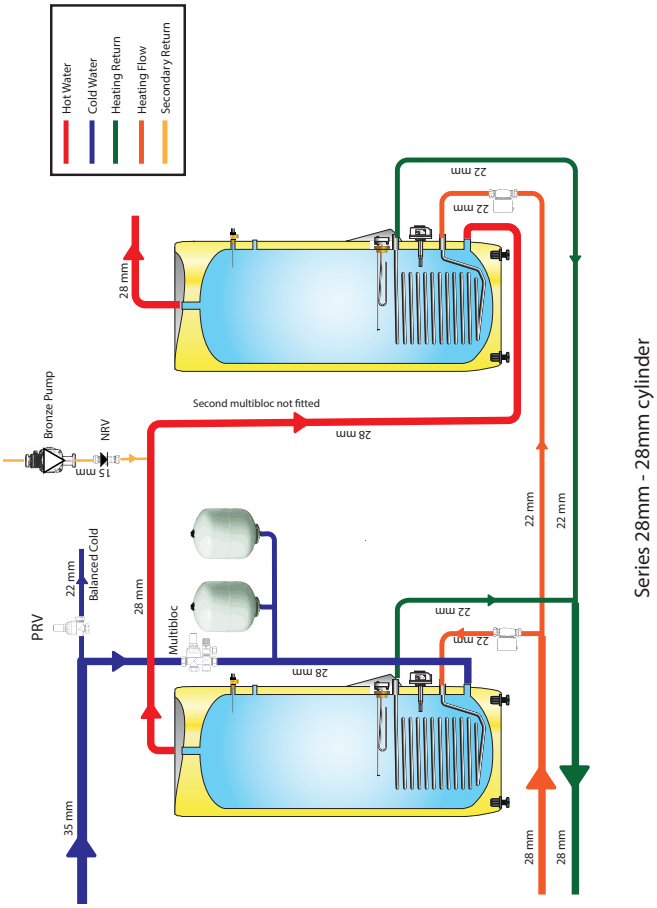


Two different sized cylinders can be used

SERIES CONNECTION 28MM

Compatible Cylinder:

Delta Powercyl (28mm and 5 Bar)
Maxi (28mm)

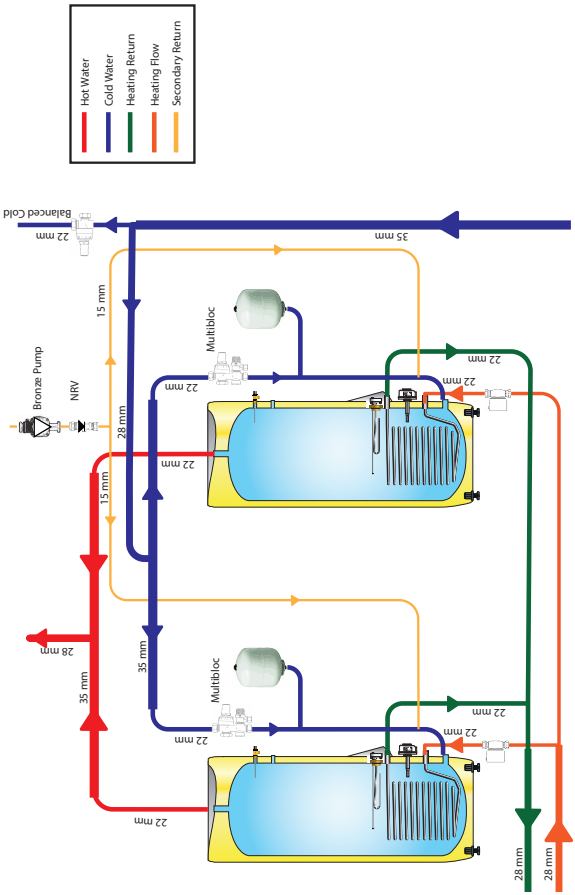


Two different sized cylinders can be used.

PARALLEL CONNECTION 22MM OR 28MM*

Compatible Cylinders:

Supercoil/Super Xpress (**see page 45**)
Delta Range
Slimline
Delta Powercyl*

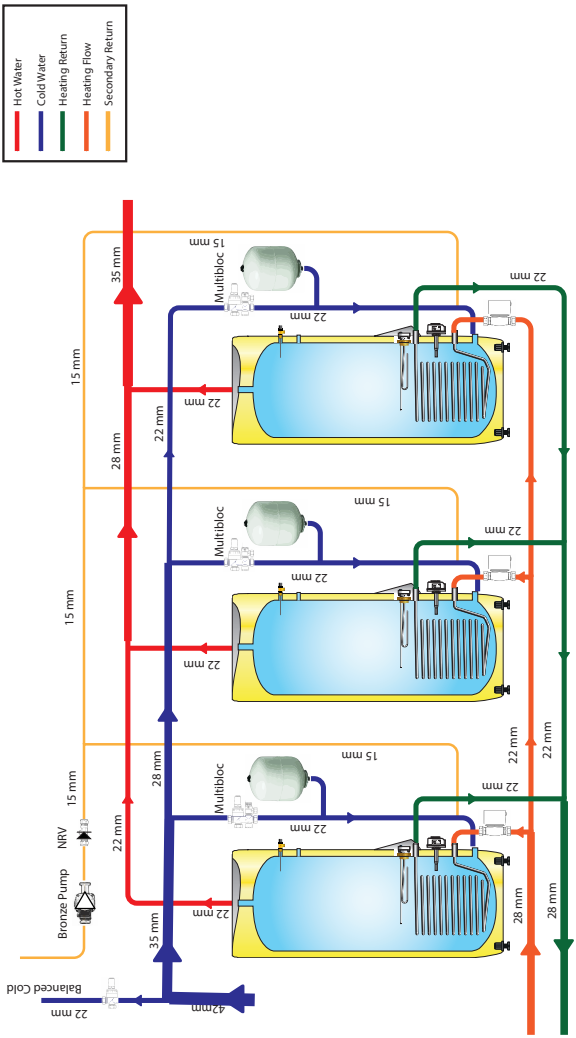


Parallel 28 mm hot x 2 Delta Coil cylinders

(*For 28mm cylinders increase H&C pipe sizes by one size)
Same sized units must be used.

REVERSE RETURN CONNECTION

Compatible with ALL OSO cylinders.
Same size cylinders must be used.

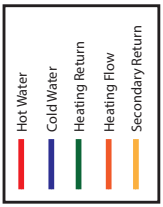


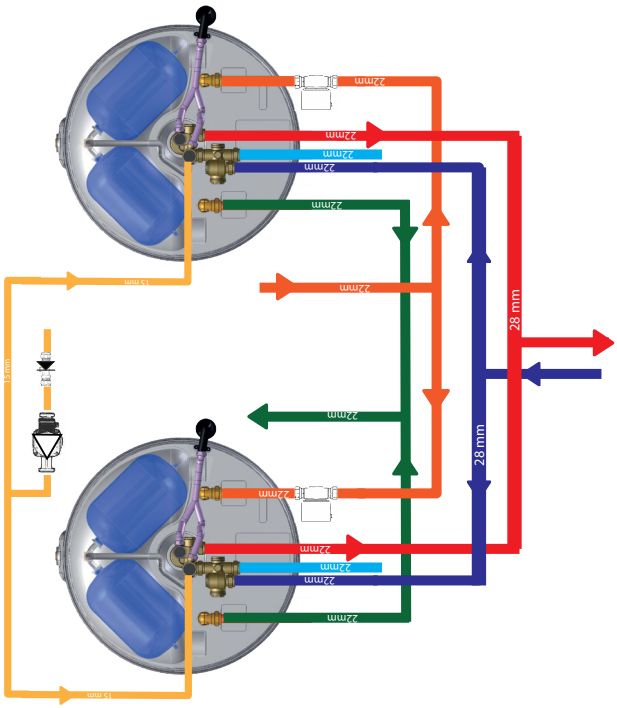
For specific pipe sizing assistance contact OSO.

SUPER COIL/SUPER XPRESS PARALLEL CONNECTION

The Super coil and Super Xpress units can be linked together, but only in parallel.

This means you get the benefit of not only doubling your volume but also your flow rate by increasing the delivery pipework to 28mm. (Same size units must be used).



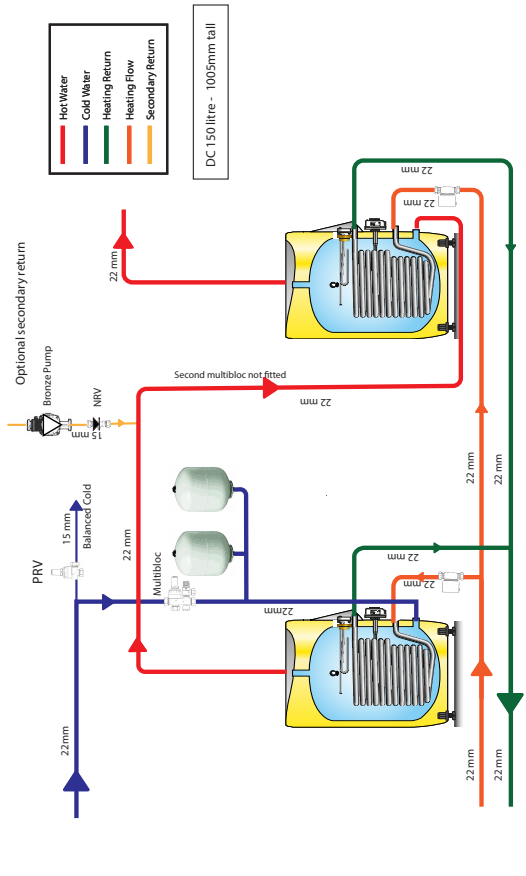


HORIZONTAL CYLINDERS AND RESTRICTED HEIGHT

Horizontal cylinders never deliver the amount of hot water you would expect. This is because the cold feed and hot outlet are closer together than on a standard upright cylinder.

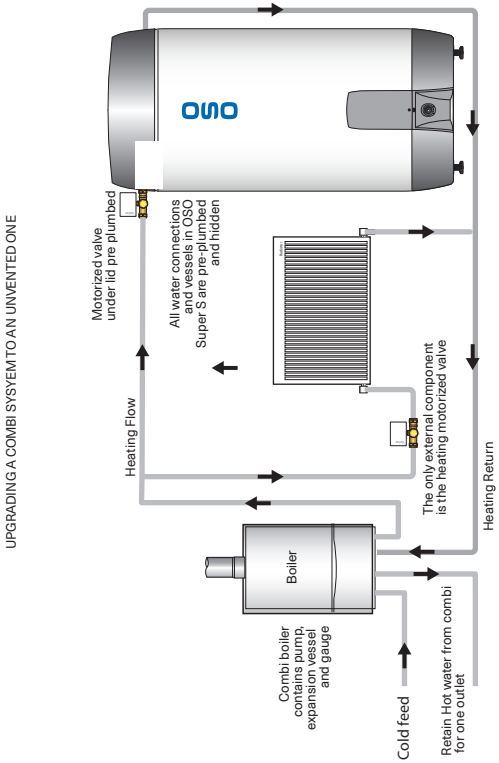
Some may only deliver 60% of the stated volume.
So for this reason OSO Hotwater suggest this option as the best way forward if the desired cylinder is too tall for the available height.

Simply just fit 2 very small OSO units in series (these don't have to be same size). In this manner all the stored water is delivered. You can connect any number of units until you achieve your desired volume. You can also easily add extra ones if demand increases. You will also potentially get a speedy recovery time due to extra coils.



UPGRADING A COMBI SYSTEM TO AN UNVENTED ONE WITH AN OSO SUPERCOIL

It is very simple to upgrade a combi system to an OSO unvented system if a customer is dissatisfied with the performance of their combi boiler or they are adding bathrooms. The combi can be retained as the system boiler and the heating system just needs to be converted to an S-Plan. Depending on the combi boiler, some still need to run hot water to a single outlet but this can be achieved very simply by utilising the nearest hot tap to the boiler. This is a very simple and competitive solution that the super coil solves easily because of the factory fitted nature of the unit.

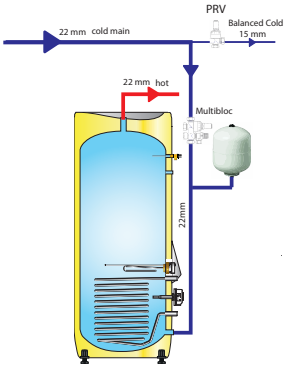


Flow rate comparison – Unvented and Combi boilers								
Type	OSO 22mm	OSO 28mm	24kw combi	28kw combi	32kw combi	35kw combi	38kw combi	43kw combi
Approx mixed water	57 lpm	115 lpm	9.5 lpm	11 lpm	13 lpm	14.5 lpm	16 lpm	17.8 lpm

BALANCED COLD FEED

Although there is a balanced cold feed connection on an OSO cylinder, the whole property's cold supply must not be run from that connection. Ideally only essential mixers such as showers or bidets should be run from there. This is because if too many outlets source their cold from that point, the supply to the cylinder can be starved and the hot water flow will reduce. Furthermore, if the cylinder is drained down or out of action for any reason, the property will have no cold water supply. It is suggested in water regulations paragraph 26 that where possible drinking water taps should be directly connected to the incoming mains water supply and all premises supplied with water for domestic purposes shall have at least one tap conveniently situated for the drawing of drinking water.

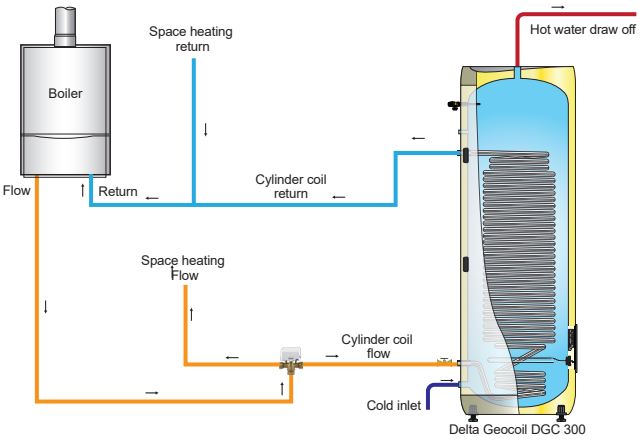
If you want to avoid the above, but want to balance the whole property. Our suggestion would be to feed the cylinder with virgin cold water in 22mm (increase this to match cyl tapping if larger). Then continue the cold into the property in pipework that is one size smaller than the hot water cylinder feed. On this pipe fit a remote pressure reducing valve and set it at the same as the cylinder PRV. This method does not rob the cylinder of water and allows you to set the cold supply at an independent pressure to the hot. This allows the flexibility of increasing or decreasing the cold supply pressure without it affecting the hot water delivery.

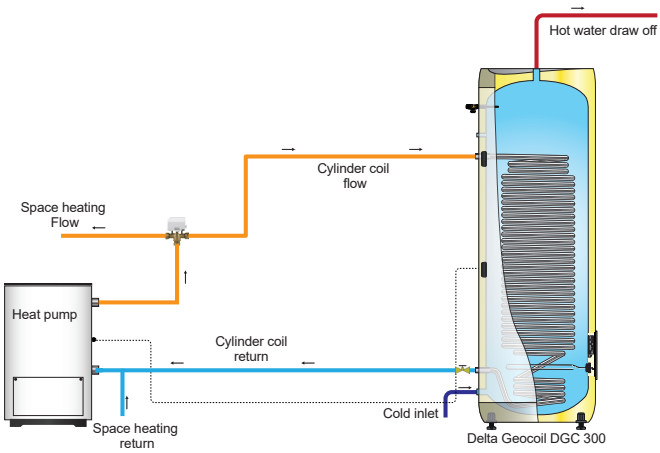


Alternatively, you could fit a 'master' PRV after the incoming stop tap to the property to balance the whole supply. This version is best for retro installs where the original pipework will remain. If the maximum pressure that a cylinder can work at is desired, make sure that the reduction in pressure due to vertical head in getting water to a cylinder on an upper floor is added to the master PRV setting. EG, if a cylinder works up to 3 bar and is 5M above the master PRV site. Add 0.5 bar to the master PRV setting (3.5 bar).

USING HEAT PUMP CYLINDER WITH GAS BOILER OR HEAT PUMP CYLINDER

An OSO heat pump cylinder (such as the Delta DGC or Maxi MGC) can be used as a very fast recovery unit with a boiler. However it is important to note that the flow must go into the bottom of the coil if fed from a boiler. Heat pumps are typically feed into the top of a coil. Its also important to note that the 3-way valve pictured is not a mid-position Y-plan valve. This would be unsuitable. A hot water priority valve used on a W-plan is the correct type to use. If used with a boiler the valve must be able to isolate the cylinder in the event of an overheat situation.





SECONDARY RETURNS

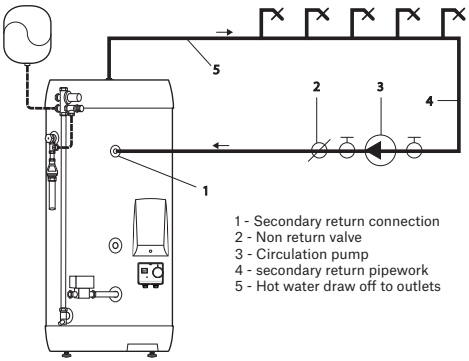
As you'll probably know a secondary return is a pipe loop from the cylinder which enables the instant delivery of hot water at the tap.

It eliminates dead legs and the wasteful run-off of cold or tepid water plus its more convenient for the end user.

All OSO cylinders can accommodate a secondary return either from a dedicated connection or from a tee which would be inserted into the cold feed after the multibloc.

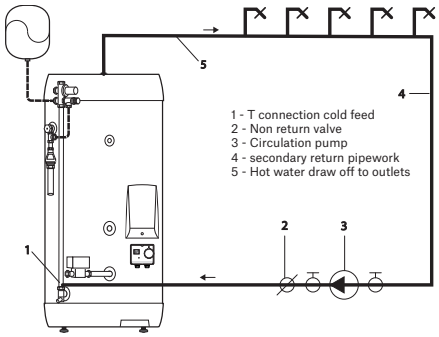
Many current Supercoil and larger Super Xpress models now also have a dedicated secondary port.

Several OSO units have a dedicated secondary return port in the upper part of the cylinder. This tends to be the text-book method of connecting a secondary return, however be aware that uninsulated hot water pipework will start to cool the upper part of the cylinder. Because the thermostat is below the return port, the boiler will not automatically fire to replace any lost energy.



1 - Secondary return connection
2 - Non return valve
3 - Circulation pump
4 - secondary return pipework
5 - Hot water draw off to outlets

All OSO units with an external multibloc valve, can have the secondary return connected after the valve. This would be the suggested method if the hot water pipework is unlagged or if the insulation condition is unknown. If the return water is cooler than the cylinder stat setting the boiler can fire to replace the lost energy.



Further things to consider are:

1. Where the secondary return is very long or the pipe size large, the water volume is greater. This water is effectively extra stored water on top of what the cylinder is holding. In certain circumstances this may have an effect on the size of the expansion vessel. If the extra loop volume increases the hot water volume beyond what the vessel can accommodate the expansion relief valve may emit water during the heat up cycle. The solution would be to add another small expansion vessel to accommodate the extra volume.

2. It is advisable to fit some kind of timing device to control the bronze pump to ensure it isn't running constantly.

3. Plastic pipe is generally not permissable on secondary returns- please check pipe manufacturers advice before proceeding.

4. Make sure a non-return valve is always fitted between the bronze pump and cylinder and that it is pointing the correct way ie allowing water to return to the cylinder.

5. If fitting a secondary return on a Direct OSO Super Xpress please ensure that the cylinder thermostat is reduced from its factory setting of 75 to 60 degrees to avoid mixing at the blending valve (SX/S_2Xunits only).

6. If installing a secondary return on a heat pump cylinder please use the tapping provided.

The UK Water Regulations say that hot water must reach the outlet within 30 seconds, at a temperature of 50°C or above. Also the maximum length recommended is 12 metres for 15mm pipe. Therefore care needs to be taken when planning the location of the hot water source and manifolds. When the distances involved are greater, consider installing a ring circuit as a secondary circulating system, with a bronze circulating pump.

VENTED CYLINDER VOLUMES

The table below is an approximate indicator of the volume of older vented cylinders. It may be useful when replacing an existing cylinder which may be unlabelled, allowing you to match the capacity.

Imperial size	Metric size	Volume Direct	Volume Indirect
36x14	900x350	74	72
36x16	900x400	96	94
36x18	900x450	120	117
42x18	1050x450	144	140
48x18	1200x450	166	162
54x20	1350x500	227	221
59x20	1500x500	245	239
71x20	1800x500	318	310

SIZING A BOILER WITH A CYLINDER

You do not need to add the full coil kw capability to a boiler if you are installing an OSO and boiler. Although to achieve the shortest possible recovery time, the full kw capacity would be required, there are other ways of achieving very fast recoveries without fitting a massive boiler.

Firstly, the time control for hot water could be set an hour before the heating comes on in the morning. Similarly it could also heat up an hour before the heating comes on in the evening. The fantastic heat retention properties of OSO product mean that the water only loses a few degrees over a whole day. So holding the hot water for an hour or two will make no difference.

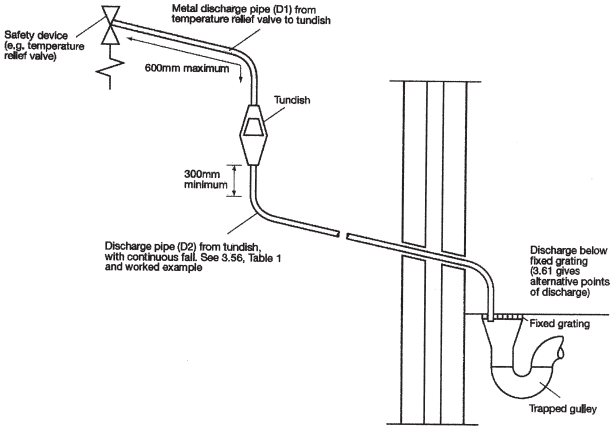
In effect, the boiler would only be replacing the water as it's used, and not a complete cylinder. If this is a workable proposition, then little or no extra capacity needs adding to the boiler because the heating and cylinder are never on at the same time. For peace of mind perhaps adding around 2-3kw (7-10k btu's) would be sufficient.

Alternatively, if a fast recovery is a must, consider installing the unit as a W-Plan for hot water priority **(See page 54)**

DISCHARGE PIPE CALCULATION

'The D2 discharge pipe must be made of metal or other material that has been demonstrated to be capable of safely withstanding temperatures of the water discharged'
Building regs G3 – 2015

Use the table to calculate the discharge pipe D2 pipe size.
Domestic OSO cylinders have a safety valve outlet of ½".
OSO Maxi Commercial cylinders have a safety valve outlet of ¾".



Taken from Building regs G3 – 2015

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 elbown or bends)	Resistance created by each elbow or bend
G 1/2	15 mm	22 mm 28 mm 35 mm	up to 9 m up to 18 m up to 27 m	0.8 m 1.0 m 1.4 m
G 3/4	22 mm	28 mm 35 mm 42 mm	up to 9 m up to 18 m up to 27 m	1.0 m 1.4 m 1.7 m
G 1	28 mm	35 mm 42 mm 54 mm	up to 9 m up to 18 m up to 27 m	1.4 m 1.7 m 2.3 m

'Recent modifications to the G3 section of Building Regs suggest that discharge into a soil stack is permissible in certain circumstances. However please check for current regulations or alternatively contact OSO directly for guidance with our cylinders.

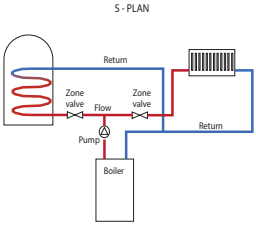
Discharge can be into a soil stack on domestic cylinders under 210 litres, providing pipework complies with BSEN 1329-1:2000 or BS 4514:2001 for further info scan Part G FAQ below.

Part G3 building Regs

Part G3 FAQ

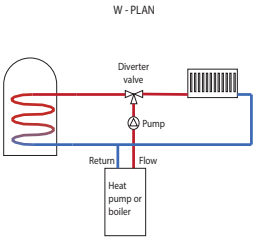
DIFFERENT PIPEWORK OPTIONS AND SYSTEMS ('PLANS')

S plan



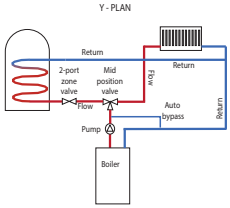
Both heating and hot water can be ON or OFF independently. Most importantly the MV going to the cylinder can spring shut in the case of cylinder overheat at 85° this is the preferred method of installing an unvented cylinder with a boiler.

W plan



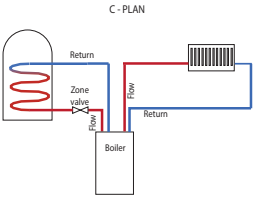
The W plan is for 'hot water priority' which means it creates hot water OR heating but not both at the same time like the S or Y Plan. Basically, if you need the heat source to react very quickly to a hot water requirement, this is the method to choose. If it was used with an unvented cylinder you would have to insert a 2-way valve between the cylinder and 3-way valve to act as a thermal shut off, unless you are using a 3 way valve that fails to safe. The W Plan is what is now generally used on heat pump systems. What is important is that the 2-way valve should be fitted between the unvented cylinder and 3-way valve, but on HP systems this rarely happens. That is because HP's can generally only get the hot water up to about 55° and so achieving 85° for thermal cut-out is unlikely. However, the building regs still stipulate that the 2-way should be fitted.

Y plan



The additional 2 - way motorised valve (supplied with cyl) has to be added to the Y Plan to make sure there is a 'thermal shut off device' in the case of overheat. You may come across existing Y Plans with vented cylinders that are being changed to unvented. In those situations the 2-way valve MUST be incorporated. It often isn't because some installers think that the 3 way does everything the system requires in controlling the Htg and HW. It does, but without the additional 2-way valve there is no way of isolating the cylinder in overheat which is technically illegal.

C plan (4 pipe)



A version of the C Plan was revived a few years ago when certain boiler manufacturers brought out 4 pipe boilers. The 4 pipes are flow and return to the heating and flow and return to the cylinder coil. Boiler manufacturers have said 'you don't need to fit any motorised valves.' This obviously makes the installers job easier on plumbing and wiring. However the law states that you have to fit the 2-way valve if its with an unvented cylinder, specifically for over heat protection. Some boiler manufacturers disagree and go it alone saying their boiler will shut down on overheat. This really does not satisfy the regs unless the boiler namufacturer can supply evidence to prove this.
The modern 4-pipe boiler will control the hot water via a probe. (**see page 10**). The OSO Super Coil cylinder is a pre plumbed unit for such an installation.

WATER RELATED INFO

The following tables and information are used by OSO Hotwater for the purpose of calculating cylinder and accumulator volumes as well as tapping and pipe sizes. They are approximate figures and not absolutely exact as other factors can affect supply. However they are suitable as a sizing guide.

Pressure

1 bar = 10M head.
In other words, if water rises 10M it will lose 1 bar pressure.
Elbows and valves add to the resistance and reduce the pressure further.
But for a basic example, if you have 3 bar at ground level and you rise 10M you will have approx 2 bar at the top.

Weight

1 Litre weighs 1 KG.
1000 Litres is a metric tonne (1000 KG) and is 1 M^3 (1M x 1M x 1M).
In a bath, the body "displaces" its submerged weight in Kg as an identical amount in litres

Expansion

Water expands at just under 5% when heated.
Typically a vessel would be sized at around 10%.
It also needs to be 'potable' which means suitable for drinkable water.

Water mix calculator

Not all cylinders of the same size produce the same amount of hot water. It all depends on the heat source

Heat Source	Storage Temp	Storage Vol eg	Hot %	Cold %	V40	Cold water added (Litres)
			40°			
OSO Immersion S2X	75	100L	57	43	175L	75
OSO Immersion Multipoint	70	100L	60	40	166L	66
Boiler (@72°)	60	100L	70	30	143L	43
Heat Pump (@55°)	50	100L	80	20	125L	25
Partial Reheat	40	100L	100	0	100L	0

Approximate V40 = storage vol ÷ (hot % ÷ 100)
(more V40 info **on P23**)

It is vital that the heat source is considered when sizing a cylinder because most heat pumps cannot achieve the storage temperatures that boilers can without assistance from immersion heaters. This also means that less cold is required to cool the stored water on delivery. Heat pump cylinders therefore need to be larger than a boiler heated alternative to satisfy the same requirement.

*The OSO S_2X uniquely stores at 75°C and so has the opposite effect meaning it can be decreased in size to provide the same output as a boiler heated cylinder.

Approximate Demands (Boiler or immersion heated)

Item	Mixed flow LPM	Hot LPM (70%)	Cold LPM (30%)	Approx volume L
Basin	6	4.2	1.8	5
Sink	10	7	3	10
Shower (standard)	14	9.8	4.2	84*
Shower (water saving)	9	6.3	2.7	54*
Bath	18	12.6	5.4	120-140*
Power shower	22	15.4	6.6	132*

*Assuming a 6min shower and standard sized bath

Building regs section G2 suggests ***"a max shower flow rate should be 10 lpm and a persons daily consumption should not exceed 125 litres"*** But check with your customer about their individual requirements.

Effectively all taps in the table above could theoretically be individually fed by 15mm pipe (because they need less than 20 l/m) – this helps reduce dead leg delays, but must be from a suitable sized header that can carry the total hot water requirement.

Flow and Pipe Volume

Approximate pipe flow rates
(Plastic plumbing systems reduce the flow further due to pipe inserts).

Copper	MDPE	LPM	Volume per M (Litres)
15mm	20mm	20	0.14
22mm	25mm	40	0.32
28mm	32mm	80	0.54
35mm		120	0.83
42mm		180	1.23
54mm		300	2.09

eg 50m of 22mm would hold 16 litres (50 x 0.32).
eg 28mm pipe could supply two 22mm pipes without a pressure drop. (2 x 40 lpm)

Dead leg Calculator

	Delay at outlet at particular flow rates with a 10 M dead leg		
Copper tube size	20 LPM	40 LPM	80 LPM
15	4 secs		
22	10 secs	5 secs	
28	16 secs	8 secs	4 secs

If the hot water takes longer than 30 seconds to reach the tap, then a secondary circulation is required.*

*BPEC level 2 diploma in plumbing section 7

CONVERSION TABLES

Imperial to metric conversion table

Imperial	Metric	
Length		
1 Inch	25.4mm	2.5cm
1 Foot	30cm	0.3m
1 Yard	91cm	0.9m
1 Mile	1609m	1.6km
Volume		
1 Fluid oz	28.4ml	2.8cl
1 Pint	57cl	0.57L
1 Gallon	4.5L	
Weight		
1 oz	28.3g	
1 Pound	454g	0.45kg
1 Stone	6.35kg	
1 Ton	1016kg	1.02 tonnes
Temperature		
1°F	-17.22°C	(°F – 32) x5 ÷ 9 = °C
Pressure		
1 psi	0.07 bar	
Heat		
1 BTU	0.293w	0.000293kw

Converting heat loss

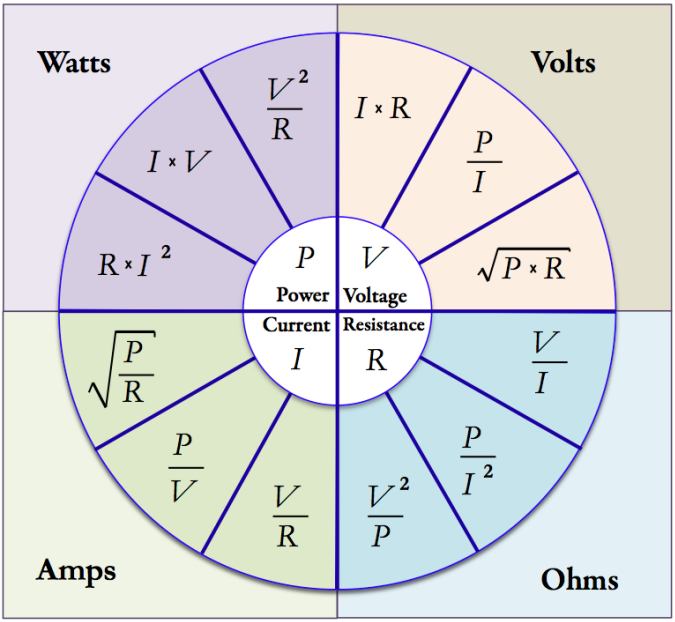
W to kwh/24 = W x 24 ÷ 1000
Kwh/24 to W = kW/24hr x 1000 ÷ 24

Metric to imperial conversion table

Metric	Imperial	
Length		
1 mm	0.04 in	
1 cm	0.4 in	
1 m	3.28 ft	1.09 yds
1 km	0.6 miles	
Volume		
1 ml	0.035 fl/oz	
1 cl	0.35 fl/oz	0.017 pt
1 litre	1.76 pt	0.22 gall
Weight		
1 g	0.035 oz	
1 kg	2.2 lb	0.16 st
1 Tonne	157.5 st	0.98 ton
Temperature		
0^0C	32^0F	°C x 1.8 + 32 = °F
Pressure		
1 bar	14.5 psi	
Heat		
1 kw	3412.14 BTU	

OHMS LAW

Ohm's law states that the current through a conductor between two points is directly proportional to the voltage across the two points. Use these equations to calculate your power or current.



E.G. Watts ÷ Volts = Amps

LEGIONELLA

Hot water storage must be at least 60°C to eliminate legionella. (Health & Safety Executive)

Legionella is a naturally occurring bacteria that commonly exists in water. It is dormant and harmless in cold water at temperatures below 20°C

Legionella will multiply at temperatures between 20 & 45°C.

Storage at 60°C or above ensures rapid elimination.

All above information is from the HSE Health & Safety Executive and can be accessed using link below:

Government legionella advice

OSO WATER SIZING TOOL

The QR code below will lead you to OSO's cylinder sizing tool. Simply fill in the details of your project and an OSO representative will contact you with the results within 48hrs.

What we can establish from tour results

- Cylinder size
- Cylinder recovery time
- Answers in indirect or direct
- Answers up to 1000L (or multiples thereof)
- If the main is not big enough
- The size the main needs to be.
- The accumulator size(s) to boost existing main (If neessary)
- The accumulator refill time
- If you need a pump with the accumulators
- The hot water pipework size from the cylinder
- The best method to link multiple cylinders
- Cylinder dimensions

Water calculator

PRODUCT CODES

PRODUCT NAME	ITEM NO
Aquasustain 200	11012314
Aquasustain 260	11012315
S2S 150 - supercharged	11014146
S2S 210 - supercharged	11014147
S2S 250 - supercharged	11014148
S2X 120	11011685
S2X 150	11011686
S2X 180	11011687
S2X 210	11011688
S2X 250	11011689
S2X 300	11011690
S2C 150 - Super Coil	11011671
S2C 180 - Super Coil	11011672
S2C 210 - Super Coil	11011673
S2C 250 - Super Coil	11011674
S2C 300 - Super Coil	11011676
DC 150 - Delta Coil	11003258
DC 210 - Delta Coil	11009118
DCF 300 - Powercyl	11009125
DGC 200 - Delta Geo	11009121
DGC 300 - Delta Geo	11009123
OGC300 - Optima	11003523
15RI 150 - Slimline	11003003
OSO Multipoint 30L Direct water heater	11008568
OSO Multipoint 50L Direct water heater	11008569
OSO Multipoint 80L Direct water heater	11008570
OSO Multipoint 100L Direct water heater	11008571
N5 - Nano	11003306
Buffer Tank 60	11009165
Buffer Tank 100	11003162
Buffer Tank 200	11009745
SuperStream 130	11007350
SuperStream 200	11007351
SuperStream 250	11007352
SuperStream 350	11007353
SuperStream 450	11007355

Upstream kit 22	11007380
Upstream kit 28	11007380
Add on kit	11007327
Charger 28	11007348
Horizontal Cradle	11007329
Washing machine frame	11007385
Wall Bracket	11000256
PSS Single channel timer	11007347
PSD Dual channel timer	11007346
PSB Boost switch	11007212
Maxi MA400	11003194
Maxi MA600	11011538
Maxi MA1000	11003345
Maxi MS300	11011537
Maxi MS400	11011538
Maxi MX600	11009810
Maxi MX1000	11003281
Maxi MC600	11009864
Maxi MC1000	11009915
Maxi MGC400	11011539
Maxi MGC600	11009918
Maxi MGC1000	11009922

SPARES

PART NUMBER	DESCRIPTION
	20 SERIES 2000-2012
UK250440	Commissioning Valve ZMTC250440
UK250445-ELB	Elbow / Drain Cock ZELB 250 445
UK355045	Multibloc (Replaces 355013)
UK550853	½" Pressure & Temperature Relief Valve
UKPREL355045	8 Bar Expansion Relief Valve
UKREDC312015	Adj Reducer Cartridge 1.5-5.5 Bar Adj suits 355045
UKREDC355045	2.1 Bar Replacement Cartridge
92000	Motorised Honeywell Valve
8015189	71269 - 4.5Kw Immersion with 2 x 4mm cables -
8015192	3Kw 1 1/4" 240v Immersion Heater replaces 71259
80030	Y Plan Thermostat SPDT (4114)
80020	TS2 40-70 Thermostat 80020
UKAX12	Expansion Vessel 12 ltr with Wall Bracket
UKAX18	Expansion Vessel 18 Ltr with Wall Bracket
UKAX24	Expansion Vessel 24 ltr with Wall Bracket
UKAX25	Expansion Vessel 25 Ltr with Wall Bracket
UKAX35	Expansion Vessel 35 Ltr with Wall Bracket
81024	Sensor Pockets (Replaces 81019)
UK219005	Tundish 15mm x 22mm
	DELTA 2016-
UK250445-ELB	Elbow / Drain Cock ZELB 250 445
UK355030	Multibloc (Ecoline) CWIC 355 030
UK550853	½" Pressure & Temperature Relief Valve
UKPREL355030	6.0 BAR PRESSURE RELIEF VALVE for multibloc 355030
UKREDC312015	Adj Reducer Cartridge 1.5-5.5 Bar Adj suits 355045
UKREDC355030	3 BAR PRV CARTRIDGE for 355030
92000	Motorised Honeywell Valve
92300	P & T Valve - 1 W 40 XL - 8 405 036in
71242	Electric Immersion Heater 3Kw Delta
80314	Thermostat for Immersion heater Delta
80345	Thermostat for Boiler Delta
UKAX12	Expansion Vessel 12 ltr with Wall Bracket
UKAX18	Expansion Vessel 18 Ltr with Wall Bracket
UKAX24	Expansion Vessel 24 ltr with Wall Bracket
UKAX25	Expansion Vessel 25 Ltr with Wall Bracket
UKAX35	Expansion Vessel 35 Ltr with Wall Bracket
75086	Electric Cover Delta

UK219005	Tundish 15mm x 22mm
ECOLINE 2014 -	
UK214005	Expansion Relief Valve Cartridge 6 Bar
UK250445-ELB	Elbow / Drain Cock ZELB 250 445
UK355030	Multibloc (Ecoline) CWIC 355 030
UK550853	½" Pressure & Temperature Relief Valve
UKPREL355030	6.0 BAR PRESSURE RELIEF VALVE for multibloc 355030
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UKAX18	Expansion Vessel 18 Ltr with Wall Bracket
UKAX24	Expansion Vessel 24 ltr with Wall Bracket
UKAX25	Expansion Vessel 25 Ltr with Wall Bracket
UKAX35	Expansion Vessel 35 Ltr with Wall Bracket
UK219005	Tundish 15mm x 22mm
8015189	71269 - 4.5Kw Immersion with 2 x 4mm cables -
8015192	3Kw 1 1/4" 240v Immersion Heater replaces 71259
80030	Y Plan Thermostat SPDT (4114)
POWERCYL DELTA /20 SERIES 1 INCH FITTINGS	
UK214009	Exp Relief Cartridge 8 Bar b/s
UK250446-ELB	1" Elbow / Drain Cock 1in MI x 28mm
UK350002	1" Adjustable PRV 0.5 - 5 bar Cartridge
UKC352306	1" multibloc adjustable
UK219001	Tundish 22mm x 28mm
SUPER SC/SX OLD 2008 - 2021	
UK550853	½" Pressure & Temperature Relief Valve
90231	Pressure Reduction Valve Sole 604
90232	Mixing/Blending Valve Sole 109
90235	Stop-mix assembly
90412	Drain Cock Sole 350
90415	Drain valve super S new connection
90423	Expansion Valve Sole 381
92000	Motorised Honeywell Valve
71252	3kw 1 1/4" 240v Immersion (to use with smart stat)
8015189	71269 - 4.5Kw Immersion with 2 x 4mm cables -
8015192	3Kw 1 1/4" 240v Immersion Heater replaces 71259
80030	Y Plan Thermostat SPDT (4114)
80317	Standard Rod Thermostat for IQ cylinder

80020	TS2 40-70 Thermostat 80020
UKAX24	Expansion Vessel 24 ltr with Wall Bracket
UKAX25	Expansion Vessel 25 Ltr with Wall Bracket
115800	115800 Expansion Vessel 5.5ltr
91995	Tundish
91900	Flexi Y hose super s
8015893	80725 - Thermostat Clip Double -
SUPER SC/SX NEW 2021 -	
90225	Valve super S with Sec return complete
90226	Valve Super S without Sec return complete
90415	Drain valve super S new connection
90423	Expansion Valve Sole 381
92000	Motorised Honeywell Valve
8015189	71269 - 4.5Kw Immersion with 2 x 4mm cables -
8015192	3Kw 1 1/4" 240v Immersion Heater replaces 71259
80030	Y Plan Thermostat SPDT (4114)
8015825	TS2 40-70 Thermostat 80020
UKAX24	Expansion Vessel 24 ltr with Wall Bracket
UKAX25	Expansion Vessel 25 Ltr with Wall Bracket
115800	115800 Expansion Vessel 5.5ltr
91995	Tundish
91900	Flexi Y hose super s
80020	80725 - Thermostat Clip Double -
90243	Service kit,Super S UK , Pressure reducing valve m
90244	Service kit,Super S UK ,mixing valve mechanism
91802	91802 FLEX hose super s ,BEND G1/2FxG1/2F RE
92023	VALVE ,P&T,G1/2M,Caleffi m/adapter
92115	VALVE SV-383,8BAR,sec.ret,G1/2"M,4MS,EN1489
D6052	Box spanner 1 1/4" - 1"
MISC	
IMMPROGBOOST	Boost switch
UKIMMPROG PSDF2	OSO Imm Controller Powersaver Dual Flexi (PSDF2)
UKIMMPROG PSS2 120L	OSO Imm Controller Powersaver Select (PSS2) 120L
WMF-HV	Washing Machine Frame
8015434	wall bracket new replaces 21380

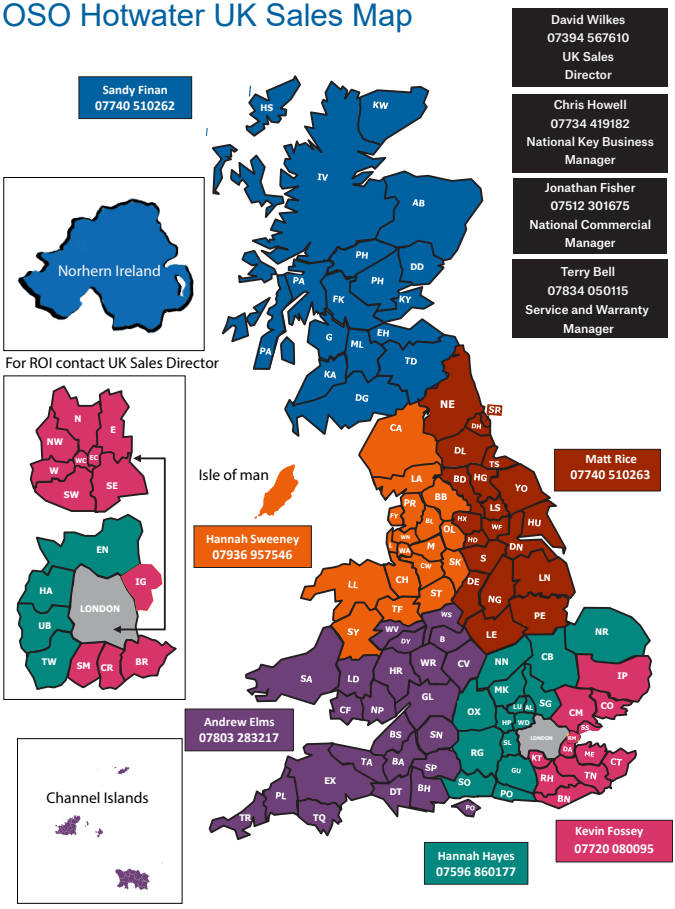
Plenty of other spare parts are available plus ones from older or less popular units.

Most can be found at **www.oso-spares.co.uk**
Or call **0191 482 0800**

Spares website

AREA MANAGER CONTACTS

OSO Hotwater UK Sales Map



For area manager details scan code

SERVICING

All unvented cylinders need to be serviced annually. These are the steps to go through when servicing OSO units sold over the last two decades

20 SERIES (AIR BUBBLE CYLINDER) (APRIL 2000- 2011)

1. Check expansion relief opens and reseals.
2. Check temp and pressure relief opens and reseals
3. Check line strainer is clear
4. Check immersion heater stat is operating
5. Do a visual check for any signs of corrosion (particularly immersions)
6. Check cylinder stat opens and closes motorised valve (indirects)
7. Drain cylinder to commisioning cock half way up cylinder to recharge the air bubble (refill with taps closed)
8. Once filled expel air from the hot water pipework through hot taps

20 SERIES WITH EXTERNAL VESSEL (FLOODED) (2011 -) Also DELTA and ECOLINE RANGES

1. Same as above 1-6 (1-5 on direct cylinders)
2. Check vessel pre charge (when depressurised)
3. Re-charge if below presure stated on label

SUPER SERIES (SUPER XPRESS/SUPER COIL) (EXTERNAL VESSELS UNDER LID) (2009 -)

1. Same as above 1-6 (1-5 on direct cylinders)
2. Check vessel pre charge (when depressurised
3. Re-charge if below pressure stated on label

We have a national network of trained service enginners.

To arrange a quote for a service or to arrange any warranty work.

Call 0191 482 0800 option 3

Or scan here

APPROVED

OSO Approved is a national network of trained service engineers who can undertake service work on our behalf.

If you would like to become an approved service engineer and receive out of warranty work from us please sign up on the QR code below

Scan to enquire

NOTES

SOCIAL MEDIA

SHARE YOUR INSTALLATION IMAGES WITH US

OSO HOTWATER

Sales
sales.uk@oso-hotwater.co.uk
0191 482 0800 option 1

Technical
technical@oso-hotwater.co.uk
0191 482 0800 option 2

Service/Warranty
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0191 482 0800 option 3

Web
www.osohotwater.co.uk

Spares
www.oso-spares.co.uk

Choose OSO, can you afford not to?