OSO-Charger Installation, Operation & Maintenance Instructions

Please leave this instruction booklet with the home owner as it contains important warranty, maintenance and safety information



Read this manual carefully before commencing installation.
This manual covers all wall mounted Charger units.

OSO Charger Pump MBC 12 & Bypass Kit – Wall Mounted

WRAS APPROVED PRODUCT

5 YEAR WARRANTY

CE

PRODUCT DESCRIPTION

OSO Charger MBC 12 pump assembly, consists of case, pump and connecting hoses.

APPLICATION

OSO Charger MBC 12 is designed to offer stored clean, potable cold water under pressure for all domestic or small commercial applications where mains water is insufficient to offer consistent and reliable water services.
Installation parameters must not exceed the values given in the technical specifications.

STORAGE

If this product is not to be installed immediately on receipt, ensure that it is stored in a dry, frost and vibration free location in its original packaging.

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WARNINGS:



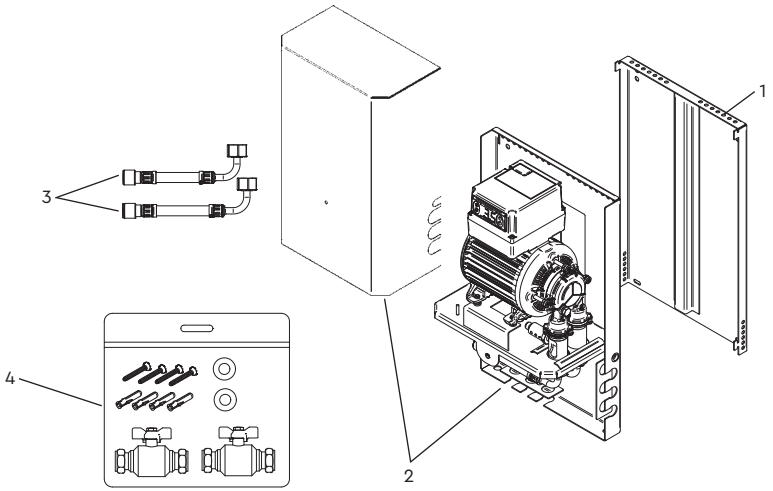
- **The Charger MBC12 must not be used for any other application without the written consent of OSO Hotwater UK Ltd and in particular, must not be connected directly to the mains water supply.**
- **This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.**
- **Children shall not play with the appliance.**
- **Cleaning and user maintenance shall not be made by children without supervision.**
- **Maximum head (closed valve) 43 metres.**
- **The motor casing can become very hot under normal operating conditions. Care must be taken to ensure it cannot be touched during operation.**
- **The electrical installation must be carried out in accordance with the current national electrical regulations.**
- **The electrical installation must be installed by a qualified person.**
- **In the interests of electrical safety a 30 mA residual current device (R.C.D. not supplied) should be installed in the supply circuit. This may be part of a consumer unit or a separate unit.**
- **Before starting work on the electrical supply ensure power supply is isolated.**
- **DO NOT allow the supply cord to contact hot surfaces, including the motor shell, pump body or pipework. The cord should be safely routed and secured by cable clips.**

- **This appliance must be earthed via the supply cord, which must be correctly connected to the earth point located in the terminal box.**
- **The supply cord and internal wiring within the terminal box are routed and secured to ensure compliance with the electrical standard EN 60335–1. It is essential that prior to any disturbance of this internal wiring, all cable routing and securing details are carefully noted to ensure re-assembly to the same factory pattern is always maintained.**
- **If the supply cord is to be changed or is damaged, it must be replaced with a special cord assembly available from Stuart Turner or one of their approved repairers.**

Please read installation details carefully as they are intended to ensure this product provides long, trouble free service. Failure to install the unit in accordance with the installation instructions will lead to invalidation of the warranty. These instructions must be left with the product.

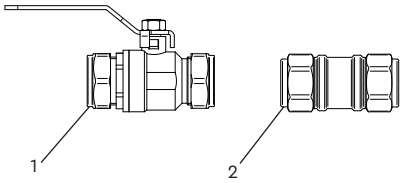
CHECKLIST

IMPORTANT: Your OSO Charger MBC 12 system will be delivered in two boxes. Please check the contents within 24 hours of receipt and if any component is damaged, please contact OSO Hotwater UK Ltd immediately.



Package 1
Fig. 1

Image not to scale



Package 2
Fig. 2

Image not to scale

Item		Description	Qty	Item		Description	Qty
Package 1	1	Mounting tray	1	Package 1 cont..	4	Hose washers	2
	2	Pump assembly	1		4	Fixing screws	4
	3	Hoses	2		4	Wall plugs	4
	4	Ball valve	2	Package 2	1	Ball valve	1
					2	Single check valve	1

Your product may vary slightly from the picture above.

1 INTRODUCTION

1.1 Congratulations on buying a Oso Charger MBC 12 system, designed to offer consistent and reliable water services throughout the property.

1.2 **Trademarks & Trade Names**

Superstream Charger are registered Trademarks of OSO hot water UK

1.3 **How the Charger MBC 12 System works:**

The Superstream vessel stores water from the rising main in a sealed water chamber, separated from the air space by a rubber diaphragm and pressurised to an optimum setting. When water is drawn off by downstream services, the water from the mains is supplemented by the water from the vessel to provide a balanced supply at consistent pressure to downstream services.

On occasions where the static pressure is less than 2 bar, a charger pump unit can be used to ensure sufficient pressure is available for the Superstream system to continue to function correctly.

The Charger MBC 12 pipework manifold incorporates a unique 'green energy' bypass. If the incoming mains water supply delivers more than 12 l/min this bypass should be left open to allow any additional flow rate to pass directly into the vessel via the integral non-return valve. If the incoming flow rate is less that 12 l/min the bypass valve should be left **closed** in order to ensure optimum efficiency of the Charger pump.

2 IMPORTANT FACTS READ BEFORE COMMENCING INSTALLATION

A **Commissioning**

2.11 Ensure the pump is primed as described in the priming section before starting, damage to the shaft seal will result otherwise. See Section 8.16 – Commissioning.

B **Water temperature**

This unit is designed for cold water applications only which should not exceed the following values:

2.12 The maximum allowable water temperature is 35 °C.

2.13 The minimum allowable water temperature is 4 °C.

C **Pipework – General**

2.14 **Secure pipework:** Ensure pipework to and from the Oso Charger Pump MBC 12 is independently supported & clipped to prevent forces being transferred to inlet and outlet branches of pump. Flexible hoses supplied must be used.

2.15 **Flux:** Solder joints must be completed and flux residues removed prior to pump installation **(flux damage will void any warranty)**.

2.16 **Pipework design:** Care should be taken in the design of pipework runs to minimize the risk of air locks e.g. use drawn bends rather than 90° bends.

D **Plumbing Installation Regulations**

2.17 The plumbing installation must comply with the current water and building regulations.

2.18 The plumbing installation must be installed by a qualified person.

3 LOCATION – GENERAL

3.11 **Access:** For emergencies and maintenance the OSO Charger MBC 12 must be easily accessible.

3.12 **Protection:** The system must be located in a dry position, and protected from freezing. Avoid environments which have a high ambient temperature, high humidity or excessive condensation and salt damage, etc.

3.13 **Ventilation:** Ensure an adequate air flow to cool the pump. Separate the pump from other appliances that generate heat.

3.14 **Safety:** The motor casing can become very hot under normal operating conditions. Care must be taken to ensure it cannot be touched during operation.

3.15 **Water retention:** Site the pump in a location where in the unlikely event of a water leak, any spillage is contained or routed to avoid electrics or areas sensitive to water damage.

3.16 **Static inlet pressure:** Ensure the static inlet head at the pump does not exceed the values shown in the table under point 7.13.

3.17 **Incoming mains water pressure:** The incoming water pressure of at least 0.1 bar is required.

3.18 Ensure that location of the unit allows adequate space to give reasonable access to all parts to accommodate service/commissioning.

3.19 **Ambient temperature:** The pump must be sited in a location where the maximum ambient temperature does not exceed 40 °C.

3.20 **Pipework:** Pipework should be sized to ensure optimum performance of the system.

3.21 **Direction of flow:** See Fig. 2 to identify the suction and discharge connections.

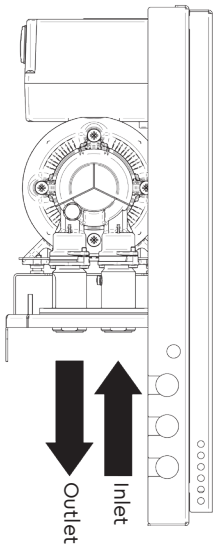


Fig. 2

4 TERMINOLOGY

4.11 Upstream Line-in Kits (ULK)

Monobloc upstream line-in kit:
The Mainsboost Monobloc is a patent pending mains regulating device and should be installed on the rising main between the stopcock and the Mainsboost vessel. The Monobloc unit is used on 22mm or 28mm upstream line in kits.
Upstream line-in kits:
Upstream line-in kits for 35mm, 42mm & 54mm installations use separate regulating components and should be installed on the rising main between the stopcock and the Mainsboost vessel.

4.12 System Designation

It is important to understand what upstream and downstream refers to before starting the installation.

Upstream
The term 'Upstream' refers to the system configuration from the consumer's stopcock to the point where the supply reaches the inlet port of the Mainsboost vessel.
Downstream
The term 'Downstream' refers to the system configuration from the outlet tapping on the Superstream vessel, along the distribution header (if configured in this way) and into the distribution pipework and outlets. This includes hot and cold services where both are present (see Fig. 3).

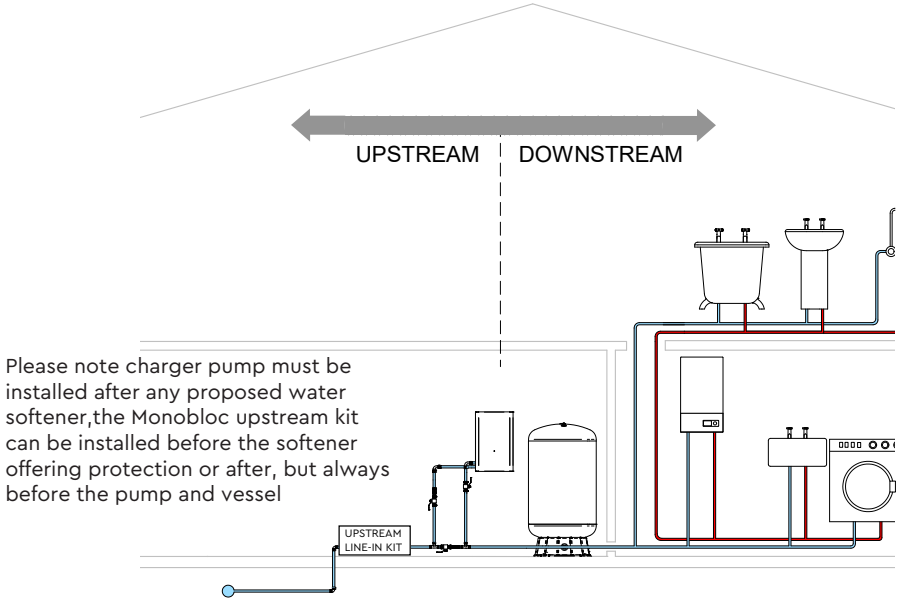


Fig. 3 System designation

5 INSTALLATION

Select best position to mount Charger pump unit (Fig. 4).

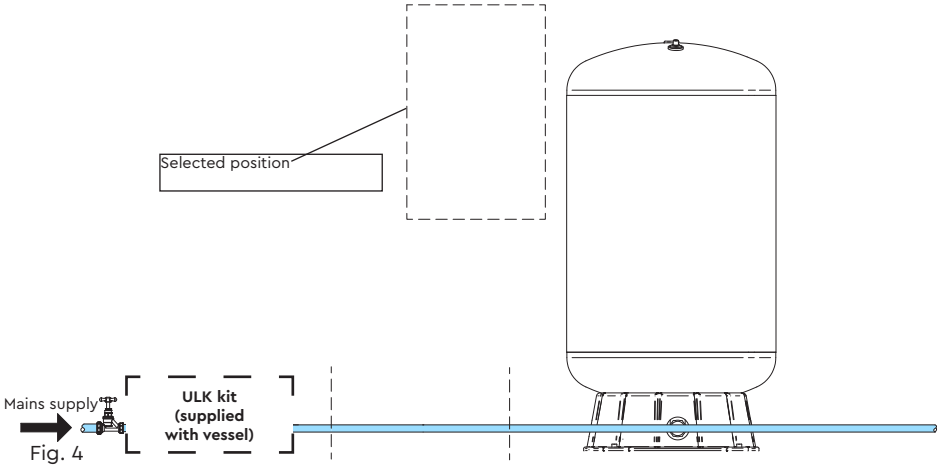


Fig. 4

1) Fit mounting plate onto wall ensuring level (Fig. 5).
2) Hook pump assembly onto mounting plate and secure in place using M6 set screw (Fig. 5).

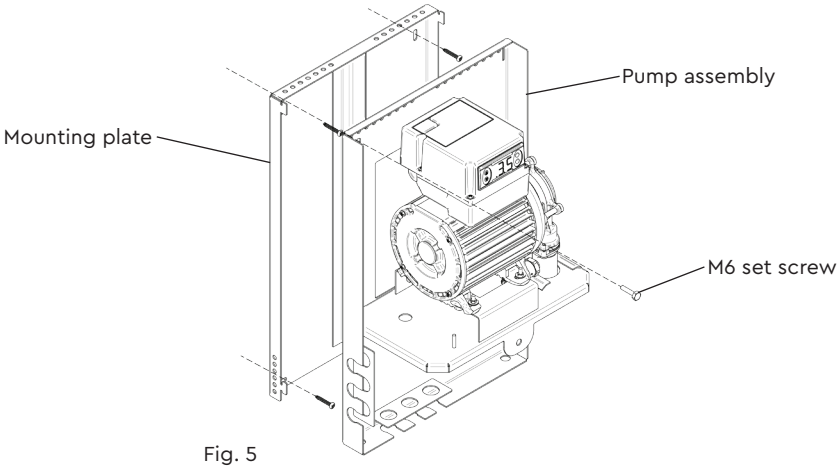


Fig. 5

3) Your charger will have been supplied with either a green energy lever valve and check valve to suit the main water supply size of (22, 28 or 35 mm). Having ensured the stopcock is turned off and (if installing on an existing Mainsboost system) drained it, remove a section of pipe to allow fitting of 2 tee pieces (not supplied), the lever valve and check valve (Fig. 6).
4) The Charger unit has been designed to allow pipework connections to be made in the most convenient way, select the best route.
5) Care should be taken not to kink the hoses or bend them through an angle greater than 30 degrees.
6) Route 15 mm feed and return from the tees inserted in the main, passing through the isolating valves supplied (Fig. 6).
7) Ensure grommets are fitted correctly in all case apertures to ensure the pipework **does not** vibrate against the case (Fig. 6).
8) Install the supplied ULK kit as per the instructions supplied with it and in the location shown in figure 6.

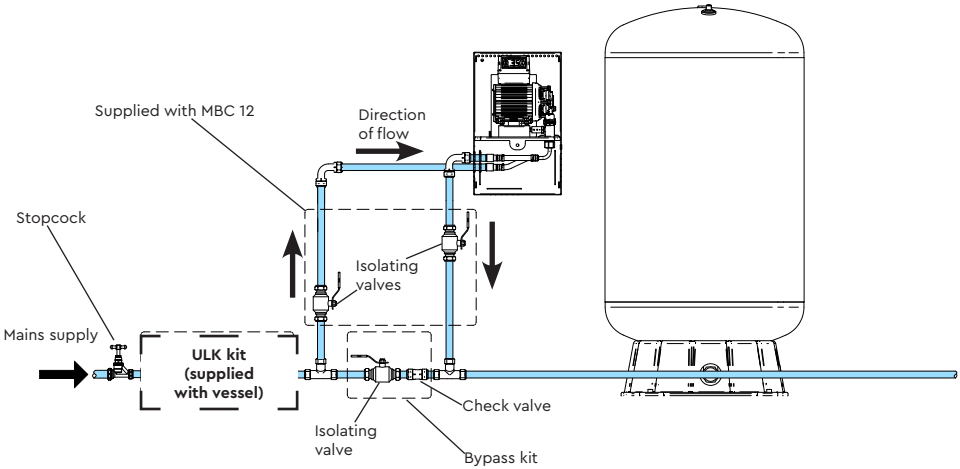


Fig. 6

6 ELECTRICAL



6.11 **Regulations:** The electrical installation must be carried out in accordance with the current local regulations by a qualified person.

6.12 **Safety:** In the interests of electrical safety a 30 mA residual current device (**R.C.D. not supplied**) should be installed in the supply circuit. This may be part of a consumer unit or a separate unit.

6.13 Before starting work on the electrical supply ensure power supply is isolated.

6.14 **DO NOT** allow the supply cord to contact hot surfaces, including the motor shell, pump body or pipework. The cord should be safely routed and secured by cable clips.

6.15 **Earthing:** This appliance must be earthed via the supply cord, which must be correctly connected to the earth point located in the terminal box.

6.16 **Connections:** The pump must be permanently connected to the fixed wiring of the mains supply using the factory fitted supply cord, via a dedicated double pole switched fused spur off the ring main.

6.17 **Wiring of connection unit:**



WARNING: This appliance must be earthed.

The wires in the mains lead (supply cord) are coloured in accordance with the following code:

Green and Yellow: Earth
Blue: Neutral
Brown: Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your connection unit proceed as follows:

- The wire which is coloured green and yellow must be connected to the terminal in the connection unit which is marked with the letter E or by the earth symbol: ⏚ or coloured green or green and yellow.
- The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
- The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

6.18 **Wiring diagram:**

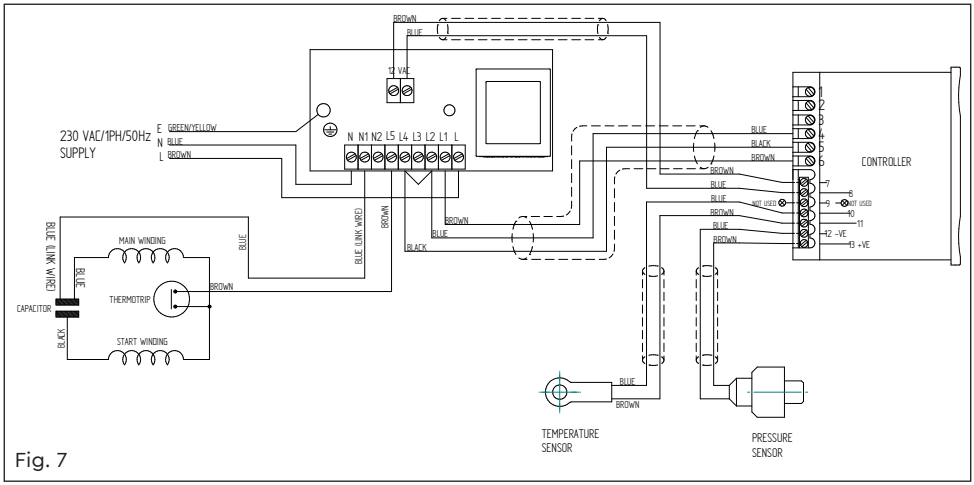


Fig. 7

6.19 **Fuse:** All models should be protected by a 3 Amp fuse.

6.20 **Supply cord replacement:**



The internal wiring within the terminal box is routed and secured to ensure compliance with the electrical standard EN 60335–1. It is essential that prior to any disturbance of this internal wiring, all cable routing and securing details are carefully noted to ensure re-assembly to the same factory pattern is always maintained.

6.21 If the supply cord is to be changed or damaged, it must be replaced by a special cord available from OSO Hotwater UK Ltd or one of its approved repairers.

7 COMMISSIONING

7.11 **System check:** Ensure that the electrical supply to the pump is switched off before opening the mains water supply stopcock and checking for leaks.

7.12 **Check mains static pressure:**

- Now close outlets and check pressure gauge after 'Y' strainer – for static mains pressure and note it.
- Turn stopcock off and leave outlet taps open.

7.13 Check the chart below for the correct pump pressure setting against the static mains pressure recorded.

MBC 12 pump max. set pressure	Static mains pressure	Set vessel pre-charge pressure to	Differential	Set PRV maximum setting to
	bar	bar	bar	bar
3 bar	1.0	1.2	1.8	1.0
3 bar	1.5	1.2	1.8	1.5
3 bar	2.0	1.2	1.8	2.0
3.5 bar	2.5	1.7	1.8	2.5
3.5 bar	3.0	1.7	1.8	2.5

Warning: NOTE PRV setting must not exceed 5.0 bar.

Refer to the Superstream instruction manual for the correct commissioning of the vessels.

7.14 **Control module:**

The control module (Fig. 8) has been factory pre-set to the following conditions.

Settings as per factory preset:	
Set point	SP: 3 bar
Diff pressure	DIFF: 0.7 bar
Low pressure	LPR: 0.3 bar
High pressure	HPR: 4.5 bar
Pump run timer	PRT: 180
Pump number	NPM: 2 (do not tamper)
CRE setting	0

Should the parameter need changing follow these steps.

- The pump parameters are displayed in the following sequence:
  Set point (SP),
  Differential (DIFF),
  Low pressure trip (LPR),
  High pressure trip (HPR),
  Pump run timer (PRT),
  Pump Number (NPM),
  Relay setting (CRE),
  Number of alarms (NAL1/NAL2),
  Hours run (HR1/HE2).
- Press and hold the set button for 5–7 seconds. (This gains access to the pump parameters).
- Press the up/down arrows to change the selected parameter(s) to the desired value.
- After changing the required parameter(s) press the set button twice in quick succession to lock the new value into the controller memory.
- It is possible to scroll through all the pump parameter values by simply pressing the set button once after each parameter value has been displayed.

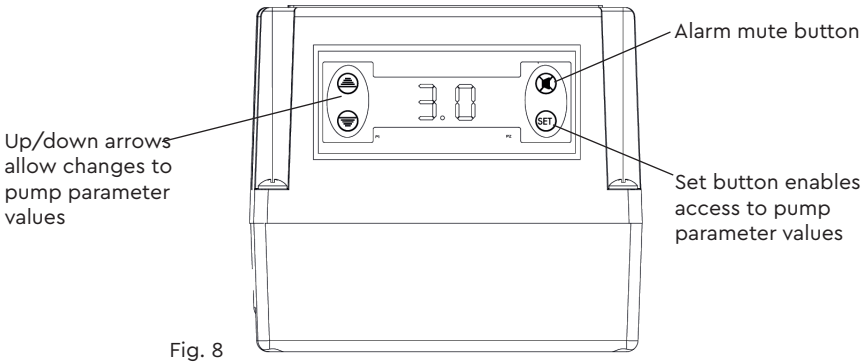


Fig. 8

7.15 On completion of the installation, follow the commissioning process below.

- **Leave** pump power switched off.
- **Leave** all outlet valves closed.
- Turn on stopcock and open inlet ballvalve, both pressure gauges on inlet and PRV will start to show movement as the mains pressure fills the system.
- Check for leaks on all joints made.
- Dependant on the incoming mains pressure the Mainsboost vessel will start to fill with water.
- Switch on the power to the pump, it will sense the pressure in the system and if less than 3 bar will start to assist filling of the system.
- Close Superstream vessel isolation valve
- Allow the pump to continue running until air has been completely purged from the system, all outlets will have to be opened and closed.
- All outlets have been closed, open the vessel isolation valve.
- The pump will continue to run to charge the system, this may take some time dependant on size and number of vessels fitted.

Once the system is completely full the pump will stop and only start again if the vessel pressure drops below set point minus the differential of the pump control.

Green Energy

– **Bypass**

If the flowrate is greater than 12 l/min leave the isolation valve open. If the flowrate is less than 12 l/min close the isolation valve.

8 TECHNICAL SPECIFICATION

Pump		OSO Charger MBC 12–22 44928	OSO Charger MBC 12–28 44929
General	Warranty	5 years (fittings and ULK 2 years)	
	WRAS approval	1501305	
	Approvals	WRAS, CE	
	Typical noise	60 dB(A)	
Features	Pump type	Peripheral	
	Bypass kit	22 mm	28 mm
	Mounting	Wall	
	Flexible hoses	2	
	Dry run protection	✓	✓
Materials	Pump body	Brass	
	Impeller	Brass	
	Mechanical seal	EPDM / PTFE / Al. Oxide	
Performance	Maximum head – closed valve	4.3 bar (43 metres)	
	Maximum working pressure*	600 kPa (6 bar)	
	Maximum ambient air temperature	40 °C	
	Min / Max water temperature	Min 4 °C / Max 35 °C	
Connections	Pump connections	G ¾ male	
Flexible hoses	Connections	15 mm push-in x G ¾ female x 235 mm long 15 mm push-in x G ¾ female x 200 mm long	
Motor	Type	Induction (thermal trip/auto reset)	
	Duty rating	Continuous (S1)	
Electrical	Power supply (Vac/Ph/Hz)	230 V a.c. / 1 / 50 Hz	
	Power consumption – P1	398 Watts	
	Current – full load	1.8 Amps	
	Fuse rating	3 Amps	
	Power cable length	1.5 metres (pre-wired)	
Physical	Enclosure protection	IPX4	
	Width	290 mm	
	Depth	180 mm	
	Height – excluding hoses	465 mm	
	Weight – including fittings	15.3 Kg	

OSO Hotwater UK Ltd reserve the right to amend the specification in line with its policy of continuous development of its products.

*NOTE: The maximum pressure that can be applied to the pump under any installation conditions.

8.11 **Noise:** The equivalent continuous A-weighted sound pressure level at a distance of 1 metre from the pump does not exceed 70 dB(A).

9 TROUBLE SHOOTING GUIDE

9.11 Alarm

The Charger™ controller has an internal alarm buzzer.
When the alarm is triggered the buzzer will sound and a related failure message will appear on the display.
The alarm will sound when the following conditions occur:- when alarm sounds investigate and rectify cause.
Then press alarm mute button, alarm will stop.

Remote alarm option
A remote alarm option is available, the Charger™ unit would need to be ordered in advance pre-wired for this option. Please consult Stuart Turner. Attempting to change the Charger™ MBC 12 wiring will invalidate the guarantee.

9.12 Alarm fault codes

	Displayed message	Fault description	Action
A	**Hnt** high temp cut out	Pump head overheating – head temperature has exceeded the set Hnt value	Allow pump to cool. Ensure the ULK check valves and pump bypass are clear of debris.
B	**Hpr** Hi pressure cut out	The current pressure rises above the Hpr value	Investigate the cause, then turn power off and on to reset or allow self reset.
C	**Lpr** Low pressure cut out	The current pressure falls below the set Lpr value	Investigate the cause, then turn power off and on to reset or allow self reset.
D	**Prt** pump run time	The pump has run longer than the set Prt value	Investigate cause, then turn power off and on. Contact Stuart Turner if problem persists
E	**PF1**	Pump failure	Contact Stuart Turner.

All alarms automatically reset except Prt and PF1.

10 YOUR WARRANTY

Congratulations on purchasing a OSO Charger MBC 12 Pump.

We are confident this product will give you many years of trouble free service as all our products are manufactured to the very highest standard.

The Charger MBC 12 pump is covered by a **five year** warranty. The Superstream Monobloc and other ULK/bypass components are warrantied for **two years.**

Within the warranty period we will repair, free of charge, any defects in the Charger MBC 12 resulting from faults in material or workmanship, repairing or exchanging the part affected or whole unit as we may reasonably decide.

Not covered by this warranty: Damage arising from incorrect installation, improper use, unauthorised repair, normal wear and tear and defects which have a negligible effect on the value or operation of the unit. Failure caused by quality of water, agrressive water, well water.

Reasonable evidence must be supplied that the product has been purchased within the guarantee term prior to the date of claim (such as proof of purchase or the product serial number).

This warranty is in addition to your statutory rights as a consumer. If you are in any doubt as to these rights, please contact your local Trading Standards Department.

In the event of a claim please telephone our customer support.

+44 0191 482 0800

You should obtain appropriate insurance cover for any loss or damage which is not covered by Oso Hot Water UK in this provision.

Please record here for your reference:

MODEL NO.	SERIAL NO.	DATE PURCHASED

DECLARATION OF CONFORMITY

Machinery Directive – 2006/42/EC
BS EN 12100, BS EN 809
Low Voltage Directive – 2014/35/EU
BS EN 60335-1, BS EN 60335-2-41
EMC Directive – 2014/30/EU
BS EN 55014-1, BS EN 55014-2, BS EN 61000-3-2, BS EN 61000-3-3, BS EN 61000-4-2, BS EN 61000-4-3, BS EN 61000-4-4, BS EN 61000-4-5, BS EN 61000-4-6, BS EN 61000-4-11
EMF Directive – 1999/519/EC
BS EN 62233
RoHs Directive – 2011/65/EU
WEEE Directive – 2012/19/EU

IT IS HEREBY CERTIFIED THAT THE STUART ELECTRIC MOTOR DRIVEN PUMP AS SERIAL NUMBER BELOW, COMPLIES WITH THE ESSENTIAL REQUIREMENTS OF THE ABOVE E.E.C. DIRECTIVES.

RESPONSIBLE PERSON AND MANUFACTURER

OSO Hotwater UK Ltd

Signed ..... Engineering Manager

OSO Hotwater UK Ltd are an approved company to BS EN ISO 9001:2015

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