# Maxi Standard - MS

300-400 l.

EN



SAFETY INFORMATION O&M INFORMATION INSTALLATION MANUAL TDS - TECHNICAL DATA SHEET



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# **1. SAFETY INSTRUCTIONS**

#### **1.1 General information**

- Read the following safety instructions carefully before installing, maintaining or adjusting the hot water cylinder
- Personal injury or material damage may result if the product is not installed or used in the intended manner.
- Keep this manual and other relevant documents where they are accessible for future reference.
- The manufacturer assumes compliance (by the end-user) with the safety, operating and maintenance instructions supplied and (by the installer) with the fitting manual and relevant standards and regulations in effect at the date of installation.



Symbols used in this manual:

	Could cause serious injury or death
<b>A</b> CAUTION	Could cause minor or moderate injury or damage to property
$\oslash$	DO NOT
0	DO

# 1.2 Safety instructions for users

	∆ WARNING
$\oslash$	If a safety valve is fitted, the valve overflow shall NOT be sealed or plugged.
$\oslash$	The product shall NOT be modified or changed from its original state.
$\oslash$	Children shall NOT play with the product or go near it without supervision.
•	Maintenance/settings shall only be carried out by persons over 18 years of age, with sufficient understanding

	△ CAUTION
$\oslash$	The product shall not be exposed to frost, over-pressure, over-voltage or chlorine treatment. See warranty provisions.
Ø	Maintenance/settings shall not be carried out by persons of diminished physical or mental capacity, unless they have been instructed in the correct use by someone responsible for their safety.

# 1.3 Safety instructions for installers

	∆ WARNING
6	If a PT safety valve is fitted (included), the valve overflow shall NOT be sealed or plugged.
	Any overflow pipe from the safety valve shall be in a suitable dimension and must be uninterruptable, undamaged and frost-free with a fall to a suitable drain or gulley.
	The relevant regulations and standards, and this installation manual, must be followed.

	▲ CAUTION
0	The product shall be placed in a room with a drain, in accordance with current local rules and regulations. Alternatively, fit an automatic stop valve with sensor and overflow from safety valve to drain. Liability for consequential damage will only apply if this is followed.
0	The product shall be properly aligned vertically and horizontally, on a floor suitable for the total weight of the product when in operation. See type plate.
•	The product must have a clearance for servicing of 40 cm in front of the junction boxes / 10 cm over the top connection.

# 2. PRODUCT DESCRIPTION

# 2.1 Product identification

Identification details for your product can be found on the type plate fixed to the product. The type plate contains details of the product in accordance with EN 12897:2016 and EN 60335-2-21, as well as other useful data. See Declaration of Conformity at www.osohotwater.com for more information.

OSO products are designed and manufactured in accordance with:

- Pressure vessel standard EN 12897:2016
- Safety standard EN 60335-2-21
- Welding standard EN ISO 3834-2

OSO Hotwater AS is certified for

Quality	ISO 9001
Environment	ISO 14001
Work environment	ISO 45001

# 2.2 Intended use

Maxi is designed for use as a buffer for tap water and is fitted with electrical peak load elements.

# 2.3 UKCA marking UK

The UKCA mark shows that the product complies with the relevant Directives. See Declaration of Conformity at www.osohotwater.com for more information.

The product complies with Directives for:

- Low voltage LVD 2014/35/EU
- Electromagnetic compatibility EMC 2014/30/EU
- Pressurised equipment PED 2014/68/EU

The safety valve(s) used must be CE marked and conform to PED 2014/68/EU.

# 2.4 Technical data

NRF no.	Product code:	IP class- ification	Capacity, persons	Weight, kg.	Packaging dimensions LxWxH mm.	Freight vol. m <sup>3</sup>	Heating time, hours Dt 65°C	Actual vol. l.
800 2551	MS 300 - 15 kW (2x7,5) / 3x230V	IP44	-	57	595x595x1765	0,62	-	280
800 2552	MS 400 - 15 kW (2x7,5) / 3x230V	IP44	-	77	595x595x2225	0,79	-	372

# 2.5 ErP data - Technical Data Sheet

Brand	Model-no.	Model name	ErP profile	ErP rating	AEC - kWh/a	Thermostat setting °C	Volume 40°C water	Heat loss W
OSO Hotwater AS	11009861	MS 300	-	C	-	75	-	83
OSO Hotwater AS	11008985	MS 400	-	C	-	75	-	90
Regulation: 2017/13	Directive	: 2009	/125/EC - R	egulation: E	U 814/20	13		
Heat loss tested acc. to standard: EN 12897: 2015								

# **3. INSTALLATION INSTRUCTIONS**

#### **3.1 Products covered by these instructions** 800 2551 Maxi Standard - MS 300

800 2551 Maxi Standard - MS 300 800 2552 Maxi Standard - MS 400

# 3.2 Included in delivery

Ref no.	Pcs.	Description
1	1	Hot water cylinder
2	1	PT valve 10 bar/99°C (supplied)
3	1	Installation manual (this document)
4	1	Center support foot with base (supplied)
5	2	Junction box with element / thermostat
6	3	Adjustable feet, factory fitted

# 3.3 Product dimensions

All dimensions in mm.

Product.	А	В	C (HW)	D (CW)	ø	
MS 300	0-40	1685	1366	286	595	
MS 400	0-40	2175	1856	286	595	

Tolerance +/- 5 mm. (not dimension A).



# 3.3.1 Delivery

The product should be transported carefully as shown, with packaging. Use the handles in the box.

# 

Pipe stubs, valves etc. shall not be used to lift the product as this could cause malfunctions.



# 3.4 Requirements for installation location and positioning

	▲ CAUTION
0	The product shall be placed in a room with a drain, in accordance with current local laws and regulations. Alternatively, fit an automatic stop valve with sensor and overflow from safety valve to drain.
•	The product shall be placed in a dry and permanently frost-free position.
•	The product shall be placed on a level floor suitable for the total weight of the product when in operation. See type plate.
•	The product must have a clearance for servicing of 40 cm in front of the junction boxes / 10 cm over the top connection.
	The product shall be easily accessible for servicing and maintenance.





#### 3.5 Installation of center support foot

- A. Unpack the heater and lay it on its side. Use the packaging cardboard as a substrate, take care so that the product does not suffer cosmetic damage.
- B. Two adhesive pads are included with the center support foot. Remove the protective paper on one side and fit the adhesive pads as shown (1).
- C. Remove the second protective paper of the adhesive pads and fit the center support (2) with the foot (3) in the center hole in the bottom of the product (see illustration). Press the support firmly into place.
- D. Unscrew the support foot (3) to the desired height. Raise the boiler so that it stands on the foot of the central support and place the boiler in the desired position in the room.
- E. Adjust the three outer feet (4) until the product is plumb and level. Middle support foot MUST be in full contact with the floor after the adjustment.
- F. Install pipes to the product and fill up with water according to the pipe installation instructions in this manual.

#### 3.6 Pipe installation

The product is designed to be permanently connected to the mains water supply. Approved pipes of the correct size should be used for installation. The relevant standards and regulations must be followed.

No.	Dimension	Connection description
1	G 3/4″ F	Ventilation / hot water (plugged)
2	G 1 ½″ F	Hot water out
3	G 3/4″ F	PT valve
4	G 3/4″ F	Hot water circulation / thermometer
5	G 3/4″ F	Anode
6	G 1 ½″ F	Cold water in
7	G 3/4″ F	Draining/safety valve

#### 3.6.1 Incoming water pressure

The efficiency of the product depends on the incoming cold water pressure. The water pressure should be min. 2 bar and max. 6 bar throughout the day. Excessive water pressure can be adjusted by installing a pressure reduction valve.







#### 3.6.2 Fitting pipes

- A) Run a pipe of suitable size to the connections shown, and affix with suitable sealant. Unused connections must be plugged securely.
- B) The product can connected in series for increased capacity in the system. Use OSO prefabricated SRS manifolds, see illustration.

#### 3.6.3 Fitting of discharge pipe

An discharge pipe (9) in a suitable dimension is run to the safety valve;

- Connects to the discharge (8) on the safety valve (3/4" inside thread).
- Must be fitted uninterruptable, undamaged and frost-free with a fall to a suitable drain.

# **A** CAUTION

Any discharge pipe shall be suited for the supplied safety equipment and must withstand up to 90°C.





#### 3.6.4 Fitting instructions

	▲ CAUTION		
0	The product shall be placed in a room with a drain, in accordance with current local laws and regulations. Alternatively, fit an automatic stop valve with sensor and overflow from safety valve to drain.		
0	The product shall be properly aligned vertically and horizontally, on a floor suitable for the total weight of the product when in operation. See type plate.		
•	The product must have a clearance for servicing of 40 cm in front of the junction boxes / 10 cm over the top connection.		

#### 3.6.5 Fitting recommendation

#### RECOMMENDATION

If the maximum water pressure exceeds 6 bar in a 24-hour period, a reduction valve and expansion vessel shall be fitted.

#### 3.7 Electrical installation

Fixed electrical fittings must be used for installation. Any electric fittings must be installed by an authorised electrician. The relevant standards and regulations must be followed.

#### 3.7.1 Electrical components

Component	Note
Safety thermostat	85°C thermal cut-out
Work thermostat	50-75°C adjustable
Heating element	3-phase 230 V
Internal wires	Heat-resistant

#### 3.7.2 Electrical connections in the junction box

#### 

Constant voltage present at the terminals. Before any electrical work is done, the power supply must be disconnected and secured against activation while the work is in progress.

- A) Supply cable connected to terminal (1) as shown. Supply wires should be secured with suitable strain relievers.
- B) Internal wires from connection piece (1) to thermostats and the wires from thermostats to elements are pre-connected from the factory.
- C) Make sure that the earth wire (yellow wire with green stripe) is connected to the



Cover of junction box should be correctly mounted before the power is switched on. The power must not be switched on until the product has been filled with water.

#### **Reduction of electric power output**

The power output can be reduced in each electric junction box to 2.5 or 5 kW if desired. See pt. 3.7.4. All electrical installation shall be performed by approved installer.

3.7.3 Torque settings		
Component	Torque	
G1.1/4" heating element	60 Nm (+/- 5)	
Thermostat screws	2 Nm (+/- 0,1)	
Screw on the element head	2 Nm (+/- 0,1)	
Screws on terminal (1)	2,5-16 mm <sup>2</sup> : 3 Nm	
	25-35 mm <sup>2</sup> : 6 Nm	

3.7.4 Reduced electric power output 2.5 - 5 kW The electric output from each 7.5 kW el. junction box can be reduced by removing jumpers from the element, see illustration. The product is equipped with two identical junction boxes which both can be altered individually. All electrical installation shall be performed by approved installer.

#### 3.7.5 Fitting instructions

∆ WARNING		
	The product should be filled with water before the power is switched on.	
0	Fixed electrical fittings must be used for installation according to the regulations. Any electric fittings must be installed by an authorised electrician. Components for disconnection must be integrated in the electric connection in accordance with current standards and regulations.	
	The mains cable should withstand 90°C continously. A suitable strain reliever must be fitted.	

▲ CAUTION		
0	The product must have a clearance for servicing of 40 cm in front of the electric junction box cover/10 cm over the highest point.	
0	In case of damage to the power supply cable, this should be replaced with new cable with the correct specifications for the installation. All electrcal work should be performed by an authorised electrician.	

#### 3.7.6 Fitting recommendation

#### RECOMMENDATION

An authorized electrician should calculate the correct supply cable and fuse according to the applicable standards and regulations. Make sure all wires are undamaged and are not pinched.



Electrical connection anagram 2 ractory supplied

9 kW - 3x230V - Factory standard layout. For UK single phase and Uk 3 phase 400v see illustration 2.



#### 5 kW 2x230V effect:

Wire from the right thermostat to the element is removed. The jumpers on the element is arranged as shown. Wiring should be connected from single phase supply. Supplied via a 25 amp double pole



Electrical connection, diagram 2 on ming 9 kW - 3x400V - *NB: Neutral wire is NOT possible.* 



#### 2.5 kW 2x230V effect:

Wire from the right thermostat to the element is removed. The jumpers on the element are removed as shown Wiring should be connected from single phase supply. Supplied via a 20 amp double pole

# 4. INITIAL COMMISSIONING

#### 4.1 Filling with water

First check that all pipes are connected correctly. Then fill the tank according to the needs/ requirements of the system. Make sure that the tank is vented during filling to prevent air pockets.

#### 4.2 Turning on the power

When the cylinder has been filled with water, the power can be switched on.

A) Switch on breaker/fuse.

#### 4.3 Control points

A) Check that all pipe connections to/from the product are tight and not leaking.

B) Check that the power supply to the product is not at risk of exposure to mechanical, thermal or chemical damage.

C) Check that any overflow pipe from the safety valve is clear, undamaged and frost-free with a fall to a suitable drain or gulley.

D) Check that the product is standing firmly vertically and horizontally.

### 4.4 Emptying of water

### **A** WARNING

The water temperature in the product is 75°C and could cause scalding. Before emptying, a hot tap shall be opened to the max. pressure/temperature for min. 3 minutes.

- A) Disconnect the power supply.
- B) Shut off incoming cold water supply.
- C) Open a hot tap to the maximum
- leave open (prevents a vacuum).
- D) The product is emptied via the drain pipe (5).

After emptying, close the drain pipe (5). Close all open taps.

## 4.5 Handover to end-user

THE INSTALLER MUST: Brief the end-user on safety and maintenance instructions. Brief the end-user on settings and emptying the product. Hand this installation manual over to the enduser.

Enter contact details on the type plate on the product.



# 5. USER GUIDE

#### 5.1 Settings

#### 5.1.1 Thermostat setting

The product's thermostats are adjustable from 50-75°C. The thermostat should not be set lower than 60°C to prevent bacteria growth. To adjust the temperature:

- A) Disconnect the power supply.
- B) Remove the cover (2) with a screwdriver.
- C) Adjust the temperature on the thermostats (3) with a screwdriver.

Fit the cover (2) before connecting the power supply.

#### 5.1.2 Resetting the safety thermostat

The safety thermostats on the product cut out when there is a risk of overheating. These are reset by switching off the power supply, removing the cover (2) and pressing the red 'RESET' button (4). If the thermostat cuts out repeatedly, contact the installer.

#### 5.2 Annual inspection

All components fitted in or to the product must be inspected annually. Inspection must be performed by person older than 18 years of age, with appropriate qualifications. Annual inspection includes:

- Checking all connections for leaks. Tighten or maintain properly if required..
- Tighten all connections in the electric junction box:

A) Disconnect power supply and ensure against activation while work is in progress.

B) Remove junction box cover (2) and tighten all connections to the correct torque as shown in table 3.6.3. The junction box cover must be refitted before power is turned back on.

- Inspection of safety valve operation, see pt. 5.3.
- Annual inspection of anode (6):

a)Turn off el. power and water supply.b) Release water pressure by fully opening a hot water tap. Leave tap open.

c) Drain unit through drain connection (5).

d) Unscrew anode (6). If it is depleted (7) replace with new (8). Fasten to set torque, see pt. 5.2.1. e) Open water supply, wait until water flows evenly out of open tap. Close tap. Electric power can now be turned on.

#### **WARNING**

Constant voltage is present in the junction box. Before any electrical work is done, the power supply must be disconnected and secured against activation while the work is in progress.



#### 5.2.1 Torque settings

Component	Torque
Anode	30 Nm (+/- 3)

#### 5.3 Maintenance

MAINTENANCE INSTRUCTIONS		
0	Maintenance shall be carried out by persons over 18 years of age, with sufficient understanding.	
0	Annual inspection of safety valve:	
-	Open valve for 1 min. by turning knob (1) approx. 90 degrees counterclockwise to the open position.	
-	Visually check that the water is flowing freely to the drain.	
-	YES = OK. Close the valve by turning knob (1) further counterclockwise.	$\Diamond$
-	NO = NOT OK. Disconnect power supply / shut off water supply. Contact installer.	Q

# 6. TROUBLESHOOTING

# 6.1 Faults and fixes

If problems arise when the product is in use, check for possible faults and fixes in the table. If you are unsure what is wrong, contact the installer (see data plate on product) or OSO Hotwater AS - see section 7.1.

TROUBLESHOOTING			
Problem	Possible cause of fault	Possible solution	
There is leakage/	Pressure reduction valve, water meter or blocked non-return valve on the water intake. Water pressure into the system is too high.	Fit AX expansion vessel which absorbs expansion during heating, and fit pressure reduction valve for stable water pressure inside the system. The pressure reduction valve is adjusted in according to the pressure in the expansion vessel. Contact auth. installer.	
dripping from the safety valve/there is often water on the floor by the cylinder in the morning	The safety valve is worn or there are particles stuck between the membrane and the valve seat because the water is dirty	Try to flush with water through the safety valve. Open valve for approx. 1 minute. See section 5.2. If the valve still leaks, it must be replaced. Contact auth. installer.	
	Leak from heating element.	Verify as follows: a) cut the electric supply, b) unscrew the cover, c) visually check whether there is a leak from the heating element. If so, replace the gasket/heating element. Contact auth. installer.	
	Power supply interrupted.	Verify that the fuse is on / the plug is plugged in to the wall contact / the earth breaker has not tripped.	
	Thermostat has cut out.	Press the 'RESET' button on the safety thermostat; see 'User guide'.	
No hot water	Heating element is defective.	Replace heating element. Contact auth. installer.	
	Leak in hot water pipe	Verify as follows: a) close the water supply, b) wait 2-3 hours, c) feel the tank to see whether it is hot. If so, there is a leak in the hot water pipe or elsewhere. Contact auth. installer.	
Not enough hot water	High consumption in the system.	Switch to a larger OSO water heater. Contact auth. installer.	
Not high enough	The thermostat is set for low temperatures.	Check the thermostat settings. Turn up to 75°C; see 'User guide'.	
temperature	Change from cold to hot water in taps.	Contact auth. installer.	
Fuse/earth breaker trips repeatedly	Possible fault in the heater's electrical system.	Verify as follows: a) cut the electric supply, b) unscrew the cover, c) visually check the junction box for any problems. If so, contact auth. installer to check. Fit the cover.	
Long time before the water reaches the tap	Long stretch of pipe from water heater to tap.	Fit circulation wire or heating cable to HW pipe. Or fit an auxiliary heater by the tap. Contact auth. installer.	
Knocking in the pipes when the hot tap is closed	Large pressure increase when the tap is closed quickly.	Completely normal. Fit AX expansion vessel if troublesome. Contact auth. installer.	

# 7. WARRANTY CONDITIONS

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#### 7.1 Centerner service

In case of problems that cannot be resolved with the aid of the troubleshooting guide in this installation manual, contact either:

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There compating to not effect the Secon's statutory rights.

- A) The installer who supplied the product.
- B) OSO Hotwater AS: Tel: +47 32 25 00 00 oso@oso.ng / www.gso.no

## 8. REMOVING THE PRODUCT

#### 2.1 Removal

- A) Disconnect the power supply.
- Shut off incoming cold water supply.
- C) Empty the product of writer see section 4.4.
- C) Disconnect all pipes.
- C The product can now be removed.

#### \$.2 Returns achume

This product is necyclable and should be taken to the environmental recycling centre. If the product is to be replaced with a new one, the installer can take the old cylinder away for recroina.



#### **OSO Hotwater AS**

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