



WATER TECHNOLOGY
MAYEB LECHNOFOCY

Osmio HT+ Direct Flow Reverse Osmosis Manual





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1. Introduction

The Osmio HT+ Direct Flow Reverse Osmosis System has been designed and built specifically for point of use applications for homes, workplaces, laboratories, dental practices and more. This model replaces all tank based reverse osmosis systems. Being direct flow, the Osmio HT+ Direct Flow Reverse Osmosis System does not use a tank, but instead has a larger pump and membrane so it can provide a direct flow of water. This offers massive advantages:

- No need to sanitise a tank
- Huge saving in the amount of water going to drain
- Overall, less costs in bills and improved sanitary condition of the system - all leading to a much more reliable and efficient operation.

There are two models of the Osmio HT+

- Osmio HT+ Home & Office
- Osmio HT+ Lab & Dental
- They are identical except the last stage filter before the tap is a remineraliser adding carbon, calcium and magnesium in the Home & Office Model, and the opposite of that with is deionisation using DI Resin in the lab and dental model (RODI)

2. Product Features

- Plug & Play parts for easy maintenance
- Total of 5 hygienically packaged filters
- Smart Water Technology digital controller
- Analyses water TDS, tracks filter lifetime and optimizes performance
- Automatic flush of membrane filters for optimum water quality every 8 hours if idle
- Standing model, no need to mount to wall
- Small footprint for easy installation and service
- 6 Month pre-filter change lifetime
- RO Membrane filter change lifetime when TDS changes (18-24 months)
- Post filter can be remineralising or Deionising (demineralising) depending on which model you have

Osmio HT+ system comes complete with 304 stainless steel tap and installation kit. Osmio HT+ is a digitally controlled reverse osmosis system with Smart Water capability. The system incorporates high quality filters, easy Plug & Play components and a digital controller which tracks filter lifetime as well as measure instantaneous water purity. The Osmio HT+ system comes equipped with a digital controller with Smart Water capabilities. It can be set to make a sound alarm and/or cut the water flow when filter lifetime is achieved. The system continuously analyses the purified water and displays the results on screen. If the system is not used it will routinely conduct a flush every 6 hours for 30 seconds. The Smart Water System does many things in the

background such as track water TDS, errors and filter lifetime in order to give the highest up-time possible while delivering the best user experience. With the push of a button or by looking at the bar graph on the display, the user will know exactly how many days are left until the next filter change. The Osmio HT+ system will also create a sound alarm when it is time to change the filters and even cut the water flow if it is surpassed significantly.

3. Technical Specifications

Please note that this system requires a **minimum of 2 bar standing pressure** or else the flow rate from the tap will be less than 1 litre per minute but there could also be damage to the RO pump.

Electricity 100 - 240 VAC / 50-60 Hz

Feed Water Pressure 2 Bar Min. - 6 Bar Max. Please use a pressure reducer if feed water pressure is above 6 bar.

Feed Water Temperature 4 - 40°C

Feed Water Connection 1/2" NPT

System Dimensions 48cm Height x 36cm Width x 24cm Depth

System Weight 12 KG

4. Feed Water Specifications

For the conditions below, the system will produce 60 liters of water per hour. Please ensure you contact Osmio Water team if your feed water does not meet these levels. Ensure that water going into the system is microbiologically safe. If you are on a private supply, ensure there is proper UV treatment to the water before it supplies the Osmio HT+.

pH 6.5 - 8.5

Turbidity < 5 NTU

TDS < 1000 PPM

Hardness < 500 PPM CaCO₃ (50°F) (28°dH)

Chloride < 250 PPM

Free Chlorine < 0.7 PPM

Iron < 0.1 PPM

Manganese < 0.1 PPM

Silica < 0.1 PPM

Chemical Oxygen Demand < 5 PPM O₂

Total Bacteria Count < 50 CFU / mL

E. Coli < 3 CFU

5. Osmio HT+ Filters

1) 5 Micron Sediment Filter - For particles and dust to 5 microns. - recommended change **every 6 months**

2) GAC Carbon Filter - For chlorine and chemical parameters - recommended change **every 6 months**

3) CTO Carbon Block - All of the above + fine particles, heavy metals such as iron, manganese, and other rust - recommended change **every 6 months**

4) 400 GPD Reverse Osmosis Membrane - Dissolved solids, chemicals, microorganisms, nano sized suspended solids, much more - recommended change **every 12-18 months**

5) Anti-bacterial Water Filter. 5th Filter Active Ceramic & GAC Carbon

- recommended change **every 6 months**

or DI Resin Filter - this needs to be changed as and when needed if the TDS, which starts from 0 will increase throughout weeks of usage. This needs monitoring and changing before it exceeds the maximum allowed by your Autoclave.

6. Connection Schematic

There are 3 connections that have to be made, and they are made using simple push fittings:

1

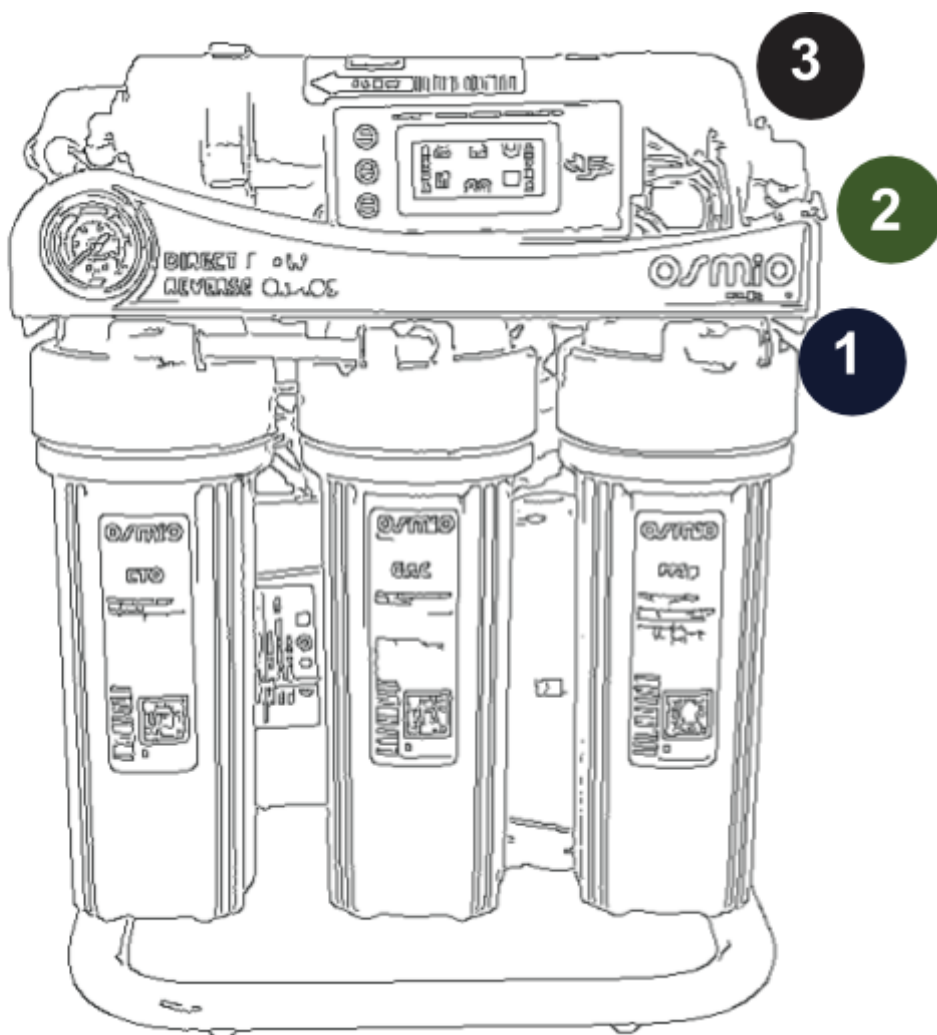
The Incoming water

2

To the Tap

3

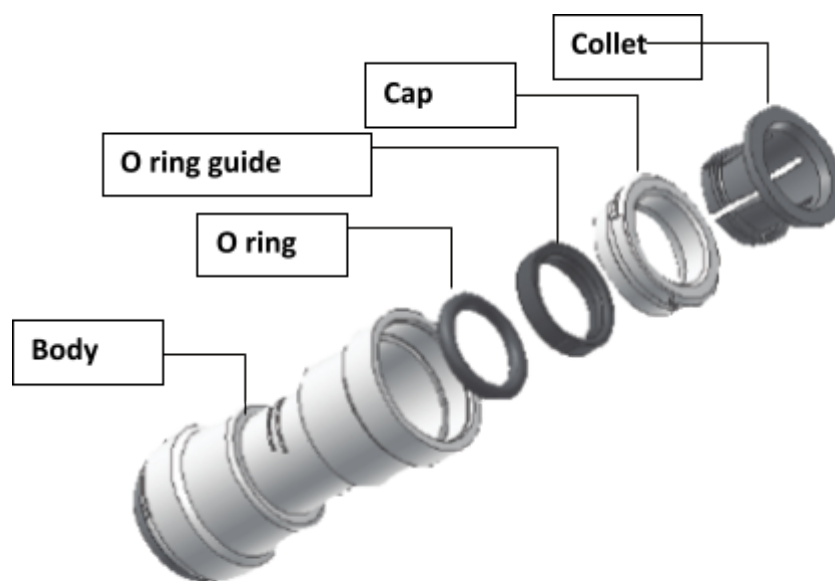
To the Drain (this is on the backside of the system)



How to Use Quick Connect Fittings

Quick connect fittings (push fittings) are used in a wide variety of plumbing, heating, electrical and fire suppression systems. Quick connect works by inserting the tubing into a connection mechanism that deploys fastening teeth onto the tubing surface. When opposing force is applied to the union, the teeth are forced deeper into the tubing, preventing separation of the union. The advantages of using quick connect fittings are:

- They offer a significant time saving benefit over traditional connectors • They tend to have less user failures compared to traditional connectors
- They require little skill or strength for their usage
- They do not require any tools to use and maintain them



Exploded Diagram of a Quick Connect Fitting

Systems take advantage of quick connect fittings.

To make a connection, the tubing is simply pushed into the fitting. The unique locking system holds the tubing firmly in place without deforming it or restricting flow. Use the steps in the figure on the next page in reference to quick connect tubing connections for this system.

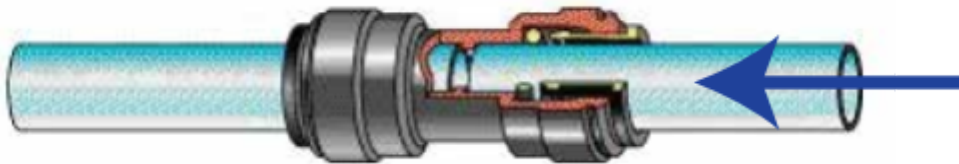
Step 1: It is essential that the outside diameter of the tubing being inserted into the fitting is completely free of scratch marks, dirt and any other material. Inspect the outside of the tubing carefully.

Step 2: It is also very important that the sliced edge of the tubing is cut cleanly. If the tubing needs to be cut, use a sharp knife or scissors. Make sure to remove all burrs or sharp edges before inserting the tubing into the fitting.

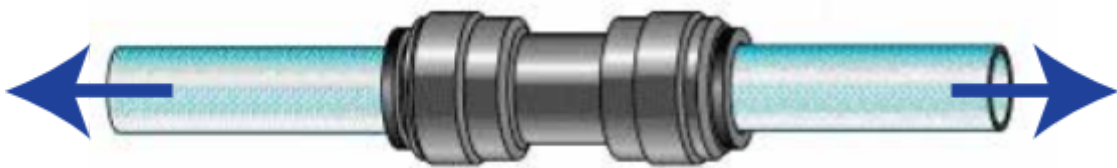
Step 3: The fitting grips the tubing before it seals. Lightly push the tubing into the fitting until the grip is felt.



Step 4: Now push the tubing into the fitting harder until the tube stop is felt. The collet has stainless steel teeth which hold the tubing in position while the O-ring provides a permanent leak proof seal.



Step 5: Pull on the tubing away from the fitting and make sure it stays firmly in place. It is good practice to test the connection with pressurized water before finishing installation.



Step 6: To disconnect the tubing from the fitting, ensure that the system is depressurized first. Push in the collet squarely against the face of the fitting. With the collet held in this position, the tubing can be removed by pulling. The fitting and tubing can be reused.



How to Use Quick Connect Fittings

7. Planning the Installation

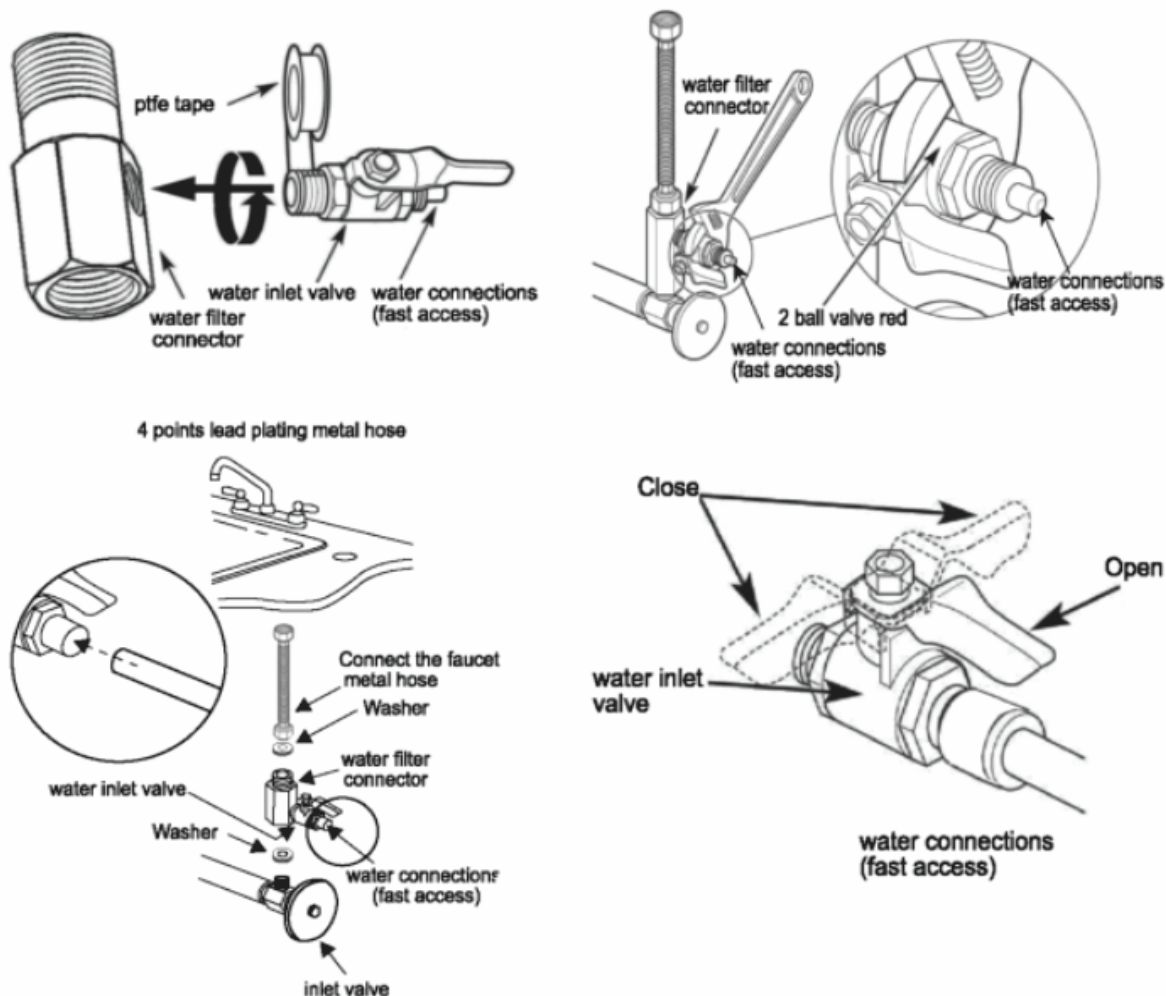
First remove the items from your box and check for any damage.

In order to install the Osmio HT+ , you will need the following tools and equipment:

- Drill & suitable drill bits for your worktop or sink (making 5mm, 7mm, 12mm holes)
- Adjustable Spanner & Pipe/Plumbers Wrench
- Scissors or Tube Cutter
- Phillips screwdriver
- PTFE Tape
- Plumbers Silicone Grease

8. Installation Step 1: Feed Water Connection

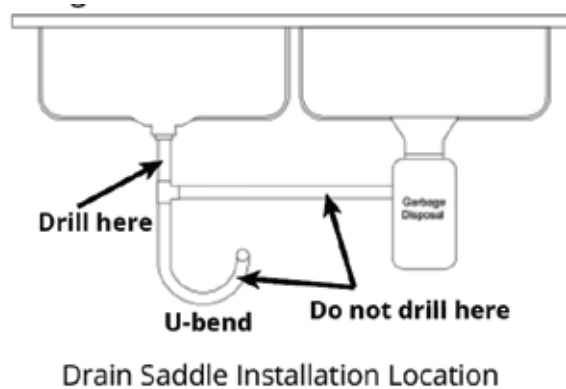
The purpose of the feed water connection is to feed the system with water to be purified by tapping the cold-water supply which is usually located under the kitchen counter. It has 1/2" male and 1/2" female and a tee off. The easiest place to fit it would be where the cold hose is connected to the pipework, just remove the hose and the feed in valve goes there to tee off water to the system.



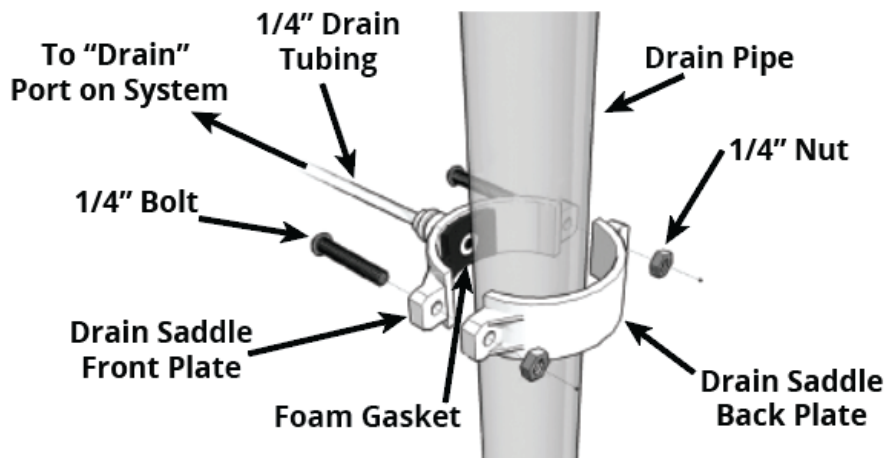
9. Installation Step 2: Drain Saddle Connection

The purpose of the drain saddle is to prevent the tubing connected to the drain from popping out of place and potentially leaking where the system is installed. The drain tubing could also be put into an upstand, or you can drill a hole in a waste pipe and silicone around it to make it seal.

Step 1: Select a location for the drain hole based on the design of the plumbing. The drain saddle should be installed above the u-bend, if possible, on a vertical tail piece. Locate the drain saddle away from the garbage disposal to prevent potential contamination and system fouling. Please see the figure below for a more detailed explanation. Use a 7 mm (1/4") drill bit to drill a small hole in the drainpipe for the drain to pass through. Clean the debris from the plumbing and hold before continuing.



Step 2: Remove the backing from the foam gasket and stick that half of the drain saddle on the drainpipe so that the holes line up (a small drill bit or other long narrow object can be used to help align correctly). Place the other half of the drain saddle on the opposite side of the drainpipe. Clamp and loosely tighten the drain saddle using the nuts and bolts included. Use a Phillips screwdriver to tighten the drain saddle. Connect the tubing from the drain saddle quick connection to the "Drain" connection on the system.



Drain Saddle Connection Diagram

10. Installation Step 3: Installing the Tap

Your Osmio HT+ comes with a high-quality tap which we have made even easier to fit. All you need to do is drill a 12mm hole in your sink or worktop, put the tap in place and tighten it by hand. If you are needing to drill granite, marble, or any other solid worktop, please seek professional advice about how to do this if you have not done it before. Osmio has a range of three way taps which are better suited to marble or granite worktops.

The tap is supplied with a quick connect push fitting so you can easily connect the tubing from the system to the tap.



11. Installation Step 4: Membrane & Filters Installation

Before handling the Reverse Osmosis Membrane, it is important that you wear sanitary gloves. This is because if you touch the membrane by hand you will immediately put bacteria on it which will start a new family inside your membrane housing and eventually foul your membrane. When bacteria gets into the sheets of the membrane and starts growing, it will open those sheets and the TDS will increase.



1) Remove Blue Clip



2) Remove Push Fitting



3) Unscrew Membrane Cap



Use the membrane spanner wrench provided in your kit to loosen it if you need to. Turn anti-clockwise to loosen.

4) Insert Membrane



Insert the membrane into the membrane housing. Ensure it goes into the socket at the other end of the housing inside it and the membrane is flush with the top of the housing.

5) Screw Membrane Housing Lid Back On



Insert the membrane into the membrane housing. Ensure it goes into the socket at the other end of the housing inside it and the membrane is flush with the top of the housing. Apply a small amount of silicon grease to the O ring on the membrane Cap. Screw membrane housing back clockwise.

6) Insert Push Fitting & Clip



Insert the push fitting back into the membrane housing.



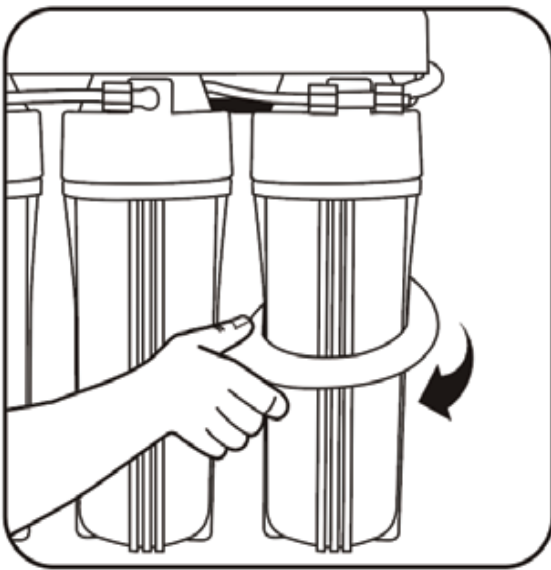
Insert the collet clip back into the push fitting.

7) Install Pre Filters

The 3 pre-filters are inside the bowls **(IN THEIR PACKAGING)** so you must first unscrew the bowls and remove the filters from the bowls.



Never handle the filters by hand. Always use sterile procedures and sterile gloves. Touching them by hand can immediately compromise the hygiene of the system.



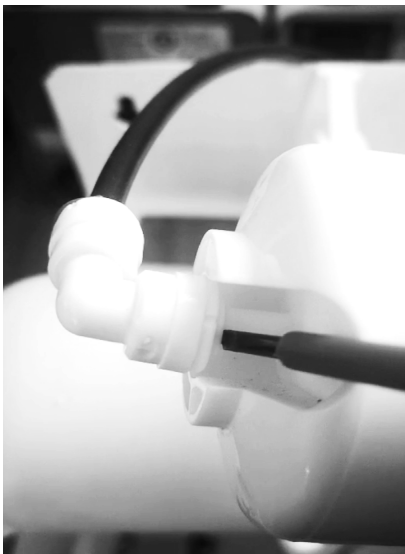
To open the bowls, use the housing spanner and turn clockwise.

Remove the pre-filters and their packaging.

Place each filter back into the bowl and ensure they are centered.

By hand then re-screw back on each bowl, ensuring first that the O-ring is both seated correctly, not damaged in any way, and is greased and lubricated. If the O-rings are dry this means the bowl will not easily turn and therefore it is highly likely it will leak. In this case, ensure you grease the O-ring and each time you do a filter change.

Changing the Post Filter



To change the post filter, you need to use a flat edge screw driver or edge of a knife to flatten the collet and push the fitting off. See image to the left, the movement would be off to the left with the screwdriver as shown.

Replacing the filter is a simple process of just pushing the fitting onto the end stem of the new filter. Please note the arrow of direction of the flow on the filter when changing them.



12. System Start Up and Operation

Once all of the connections are made from the previous sections, we can now take the following commissioning steps.

- 1) Make sure that the installed tap is in the on position (faucet lever perpendicular to faucet body). This will allow for pressure to not build up in the system during start-up and also, we want to drain out the first few liters of production.
- 2) **SLOWLY** turn on the incoming water at the feed-in valve by turning the red lever to point in the line to the pipe (this turns the water on).
- 3) Plug the system power cord into an electrical socket. This will start the system boot up process. The system will sound a series of beeps and the lights on the front of the system will activate.
- 4) After the beeps, the system will commence by first a “flush” process which can be observed from the on-board digital panel. In this process the membrane sheets are washed by high flow water that goes directly to the drain line. This process will last up to 90 seconds and the system will next enter the “pump” cycle which also can be observed from the digital panel. In this process the system will start producing water which can be seen running from the faucet tap.
- 5) Run the water from the tap for 5 minutes. During this time the TDS value on the digital panel should be controlled. Make sure that it is inside of the 0 - 40 PPM range before turning off the faucet.
- 6) Once the faucet is turned off, the system will remain in the “pump” cycle until it is fully pressurized. Once this is done, it may be followed by a short “flush” cycle of 5-10 seconds to make sure any residuals left on the membrane sheet surface is flushed to drain. Next, the system will go into “Tank Full” mode where it is in stand-by waiting to produce water. The LED lights are automatically turned off in the “Tank Full” mode. Additionally, the TDS reading is not active and will display “000 PPM” on the screen (TDS is only measured actively during Flush and Pump cycles).

13. Digital Controller

The board is equipped with three key buttons:

- 1) Select Button
- 2) Clear Button
- 3) Flush Button





The key functions are as follows:

1. Filter Selection Button function: This is for setting the filter lifetime and is used on installation and non-filter changes. Use this button to select the Filter Lifetime (F1) or press again to select the RO Membrane Lifetime (F2)
2. Filter Clear Button function: When pressing the selection key to select the filter cartridge or membrane, then press this CLEAR button and then the selected membrane or filter lifetime will be reset with full bars showing.
3. Flush Button: Pressing this button will put the Osmio HT+ into the manual flushing state, which will rinse the membrane for 30 seconds. Whilst this happens, the LED screen “FLUSH” symbol will flash.

Symbol Key

SOURCE: If the system has a shortage of water, the **SOURCE** light will flash and a buzzer will alarm.

CHECK: This will come on if the system goes into the maintenance state, **CHECK** mark will flash indicating a problem with the system.

PURIFY: This will light when the system is actually producing water.

F1: This is the indicator of filter life (not including the membrane - F2). As the bar drops to the bottom this indicates the filters must be changed. Preset to 6 months.

F2: This is the indicator of MEMBRANE Filter life. As the bar drops to the bottom this indicates the filters must be changed. Preset to 2 years (24 months)

FULL: flushing.

When **PURIFY** and **FULL** are both showing, this then shows the TDS* value of pure water (*range 0~99 ppm)

Wiring Key

No.	Wire Color	Wiring
1	Yellow	Low-pressure switch
2	Blue	High-pressure switch
3	Blue	High-pressure switch
4	Red	Flush valve
5	Green	Pump
6	Black	Solenoid valve
7	Yellow	Low-pressure switch
8	Green	Pump
9	Black	Solenoid valve
10	Red	Flush valve
11	White	24Vdc
12	Pink	24Vdc

Digital Controller Specification

Power	<1.2W(Max)
Operating temperature	-20°C - +70°C
Operating Humidity	5%-85%
Operating voltage	DC24V
Load Current	3A
Load voltage	24VDC
Size	135x65x32mm

14. Filter Changes & Sanitisation Process

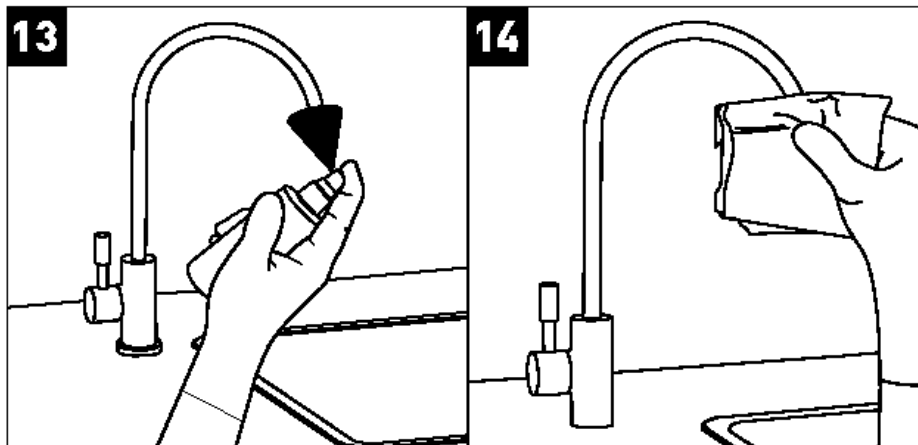
The system will require periodic filter changes and sanitisation.

Sanitisation Process



We suggested sanitising your system every 12 months. If the power has been switched off, the system will not be able to autoflush as it would every 8 hours if the power is left on. So if you go away on holiday, do nothing! Do not turn off the incoming water or the power, then it will every 8 hours autoflush itself. If you need to sanitise your unit, do it prior to a new filter set going in afterwards, and follow the steps below:

1. Shut off main incoming water valve at the feed in red (red lever turn it to right angle to pipe).
2. Dispense water from the tap and leave the tap open.
3. Remove stage 1-3 filters, from filter housing.
4. Remove membrane from membrane housing. If old then discard, if mid term then simply place the membrane in a sanitary bag until you are ready to put it back in.
5. Antibacterial Water Filter.
6. Reinstall all the filter and membrane housings without filters and membrane (remember to pour about 6-8 ounces of chlorine / hydrogen peroxide in stage 1 housing).
7. Reattach all connections.
8. Turn back on the main valve.
9. Let the system run until some water comes out the tap. Then close the tap.
10. Let it now sit for 10 minutes and then turn on the tap to flush.



11. Do this at least twice until the smell of chlorine / hydrogen

peroxide is diluted.

12. Shut off main valve again, install all new filters and membrane.
13. Spray the tap spout with your sanitising solution.
14. Wipe the tap spout with a sanitary wipe or clean tissue.

Pay special attention to keeping the tap regularly clean, as most RO systems will first get contaminated from this point.

15. Turn on the main valve and flush for 5 minutes.

16. Your sanitisation is now complete. Next log your work on the Service Log and book in the calendar the next sanitisation / filter change.

Problem	Cause	Solution
Leak between fitting and installed part	Fitting not installed correctly	Remove the fitting, apply teflon tape if necessary and install again
Leak between fitting and tubing	Tubing not inserted correctly	Remove and reinstall the tubing
	O-ring inside fitting damaged	Replace fitting
Drain saddle leak	Drain saddle not installed properly	Reinstall the drain saddle per Section 4.5 on page 17
Pre-filter / Membrane housing leak	O-ring seal is misaligned	Check that the o-ring is properly aligned in the o-ring groove
	O-ring is damaged	Replace the o-ring
	Housing not properly tightened	Tighten the housing with the included housing wrench
Water flows too slow from the faucet	Water supply pressure is too low	Non-pumped systems require min. 3 bar feed water pressure to operate while pumped systems require min. 2.5 bar pressure to operate. Check your supply pressure. If necessary, install a booster pump at the water main.
		Replace the filter
	Pre-filter or membrane filters are clogged	
	Tubing is kinked	Make sure no tubings to and from the system are kinked
	The flow from the system is meant to be 0.5 litres per minute upwards	Try doing some deep abdominal breathing and be patient and relax.
System is operating noisy	Sounds like whistle - air is stuck in the shut-off valve	The air will go away with continued operation
	Water supply pressure is too high	Check the inlet feed water pressure, If necessary install a pressure reducer
The system is always on (water continuously flows to drain)	Water supply pressure is too low	Check your supply pressure. If necessary, install a booster pump at the water main.
	Pre-filter or membrane filters are clogged	Replace the filters
	Missing or misplaced flow restrictor	Check for the location of the flow restrictor

	Shut-off valve failure	Replace the shut-off valve
	Check valve failure	Replace the check valve
"Cloudy" or "Milky" purified water. After a few seconds it becomes clear again.	During first time start-up air pressure is trapped in the system	This is normal and will pass in 3-4 days
	If happens after weeks or months of operation, feed water is supplied intermittently with air	This is also normal and can be minimized by running the system for 15-20 minutes every few weeks
Purified water has bad taste or smell	Filters are at end-of-life	Replace the filters
	Contamination in the system	Sanitize the system

Service Log Table

[illegible]

After Sales & Warranty

Your system comes with a 2 year limited return to base warranty. This means if something goes wrong with your system, it will have to be disconnected, drained, put in a box and made available to collect or be dropped off at a local drop off point for the courier. It would then be repaired, tested and sent back to you ready to reconnect. The warranty is limited and conditional on all the input water parameters being met through the installation and maintenance side. This means that your system must have the right input pressure (not too low or too high). Your system should have pre-filters changed every 6 months, and the RO membrane minimum every 2 years to meet the conditions of your warranty. Your warranty is strictly subject to you meeting the input water conditions specified in this manual. If you are not sure about your input water levels, go to your water company's website and search for your water quality report for your supply zone. Pay particular attention to hardness and iron levels if you are on mains water, as these can adversely affect RO systems. If you are unsure, please consult Osmio Water before choosing this system.

Warranty Registration

If you have not purchased your system directly from Osmio, please fill out this form below to register your warranty with us:

First Name: _____ Last Name: _____

Full Address: _____

Mobile Number: _____

Email: _____

Date of Purchase: _____

Date of Install: _____

Where Purchased: _____

Installed By: _____

Model Number: _____ Serial Number: _____