



# Installation, Operation & Maintenance Manual for:

## D7 Direct Flow Reverse Osmosis System



*Revitalised mind, body and spirit*  
*Pure hydration by*

# osmio

WATER TECHNOLOGY  
M V I F K I F C H M O F O P A

*Smart water technology for point of use and point of entry*



## **The Osmio D7 Direct Flow Reverse Osmosis System**

High quality Reverse Osmosis water filtration system that is specifically designed for safer, healthier waer. Revitalise your mind, body and spirit with the Osmio D7 Reverse Osmosis System.

### **Product Features:**

- Small footprint, under counter mounted system for ease of use.
- Removes up to 99% of over 1,000 contaminants including: lead, chlorine, fluoride, arsenic, heavy metals, asbestos, hardness, sodium, microorganisms and much more.
- Experience clean, safe, good-tasting water every time you turn on the faucet. Enjoy crystal clear ice cubes, fresher tea and coffee, better tasting foods, healthier baby formula – even safer than most bottled water.
- Premium hygienically packaged filters with a 6-12 months filter life-span. High quality components with NSF certification.
- Easy installation and maintenance with Plug & Play parts.
- Direct Flow system which instantly produces RO water.
- Backed by 2-year Osmio Warranty with lifetime support.

# Table of Contents

## 1. Introductions

- 1.1 - Purpose of This Manual
- 1.2 - Purpose of This Product
- 1.3 - Filters
- 1.4 - Pre-Filtration
- 1.5 - Reverse Osmosis Membrane
- 1.6 - Post-Filtration

## 2. Specifications

- 2.1 - Technical Requirements
- 2.2 - Supply Water Requirements

## 3. Planning the Installation

- 3.1 - Tools Required
- 3.2 - Electrical Connection
- 3.3 - Checking the Parts
- 3.4 - Making Space for The System

## 4. Installation, Start-Up and Schematics

- 4.1 - How to Use Quick Connect Fittings
- 4.2 - System Water Connections
- 4.3 - Water Connection Schematic
- 4.4 - Feed Water Connection
- 4.5 - Drain Saddle Connection
- 4.6 - Faucet Connection
- 4.7 - Pre-Filter Installation
- 4.8 - Membrane Installation
- 4.9 - Osmio D7 Direct Flow Reverse Osmosis System Diagram
- 4.10 - Osmio D7 Direct Flow HUD Icons
- 4.11 - Verifying The Installation

## 5. Maintenance

- 5.1 - Recommended Filter Change Durations
- 5.2 - Changing the Filters
- 5.3 - Going on Holiday
- 5.4 - Troubleshooting
- 5.5 - Service Log Table

## 6. After Sales

- 6.1 - Warranty Registration



# 1. Introduction

## 1.1 Purpose of This Manual

The purpose of the Installation, Operation & Maintenance Manual is to give users a reference for Technical Specifications, Connection Diagrams, Installation Procedures, System Operation and System Maintenance of their **Osmio D7 Direct Flow** Reverse Osmosis System. The essential information contained in this manual will allow the user to make full use of the system.

## 1.2 Purpose of This Product

Reverse Osmosis is the most advanced technology of water purification in use today. The technique uses a nanotechnology enabled semipermeable membrane which can reduce or remove most harmful impurities found in tap and well water including: microorganisms, nitrates, heavy metals, insecticides and much more. The table below lists the performance of specific contaminants. This is only a partial list of the virtually hundreds of thousands of contaminants that Reverse Osmosis can filter.

Aluminum	97-98%	Nickel	97-99%
Ammonium	85-95%	Nitrate	93-96%
Arsenic	94-96%	Phosphate	99+%
Bacteria	99+%	Polyphosphate	98-99%
Bicarbonate	95-96%	Potassium	92%
Boron	50-70%	Pyrogen	99+%
Bromide	93-96%	Radioactivity	95-98%
Cadmium	96-98%	Radium	97%
Calcium	96-98%	Selenium	97%
Chloride	94-95%	Silica	85-90%
Chromate	90-98%	Silicate	95-97%
Chromium	96-98%	Silver	95-97%
Copper	97-99%	Sodium	92-98%
Cyanide	90-95%	Sulphate	99+%
Ferrocyanide	98-99%	Sulphite	96-98%
Fluoride	94-96%	Zinc	98-99%
Iron	98-99%		
Lead	96-98%	Insecticides	97%
Magnesium	96-98%	Detergents	97%
Manganese	96-98%	Herbicides	97%
Mercury	96-98%	Virus	99+%
TDS (Total Dissolved Solids)	95-99%	Hardness	93-97%

Estimated Reverse Osmosis Rejection Percentages

\* Figures given above are estimates of normal performance, under normal conditions and water quality.

### 1.3 Filters

The most essential part of any Reverse Osmosis system is its filters. It is a misconception that all filters remove materials from the incoming water, some filters actually add materials into water to improve the taste, increase the mineral content and for other health benefits. Although a Reverse Osmosis system can consist of many filters, they all fall into one of three categories:

- *Pre-Filters*
- *Reverse Osmosis Membrane Filter (RO membrane)*
- *Post-Filters*

This **Osmio D7 System** will consist of five filters, which we will detail below.

### 1.4 Pre-Filtration

The main purpose of pre-filters is to protect the more expensive RO membrane from specific contaminants. Traditional RO systems have pre-filters which only target sediment down to 5 microns and chlorine as they can damage the RO filter and cause it to fail early. The **Osmio D7 Direct Flow system** has the following 3 pre-filters:

- *5 Micron Sediment Filter*
- *Granular Activated Carbon (GAC)*
- *1 Micron Sediment Filter*

The **Osmio D7 Direct Flow System** uses High performance pre-filters which are not only capable of removing Chlorine and Sediments, but also reduce heavy metals as well as other impurities before the water goes into the RO membrane. Heavy metals detrimental to the membranes life-span and performance



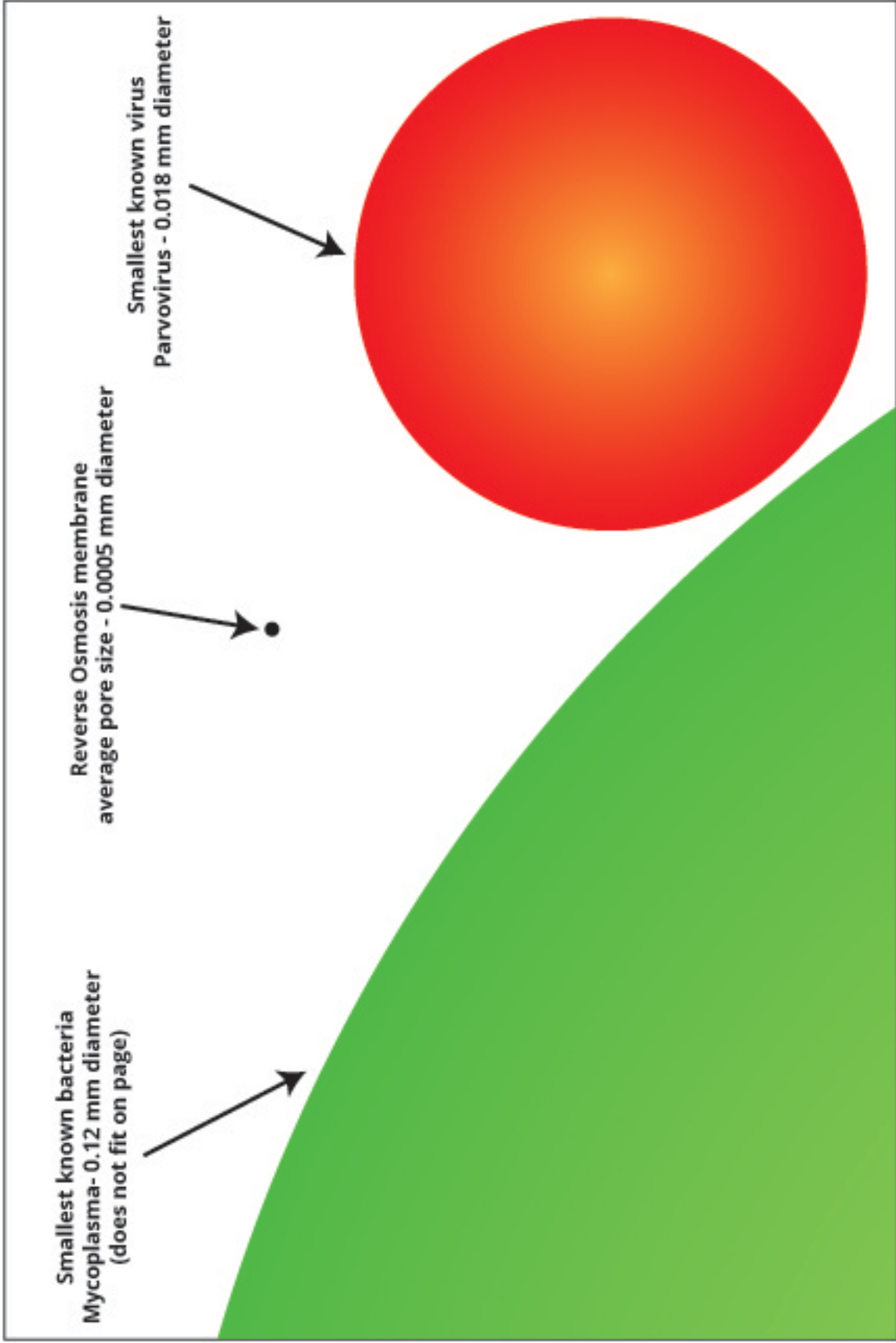
### **1.5 Reverse Osmosis Membrane**

At the heart of every Reverse Osmosis system is the membrane filter. The membrane filter consists of microporous, semipermeable membrane sheets. The average pore sizes on the RO membrane is in the range of 0.0005 mm (0.5 nanometers). The sheets are glued to each other around three edges with a thin spacer in between (this prevents the sheets from sticking to each other) to form a "leaf". Next, depending on the desired capacity of the membrane filter, multiple leafs with mesh spacers in between (to allow the water to pass between leafs) are stacked on top of each other. The stack is then spirally wound with the open end of the leafs adhered to a perforated tube that runs up and down the center.

The membrane filter has one water inlet and two exits. The feed water first travels through the pre-filters and then to the membrane filter. At the exit of the membrane filter one of the ports is the waste water which is connected to the drain, while the other port is the purified water which is plumbed to the post-filters. The figures on the next two pages will help to better understand the RO membrane filter.

### **1.6 Post-Filtration**

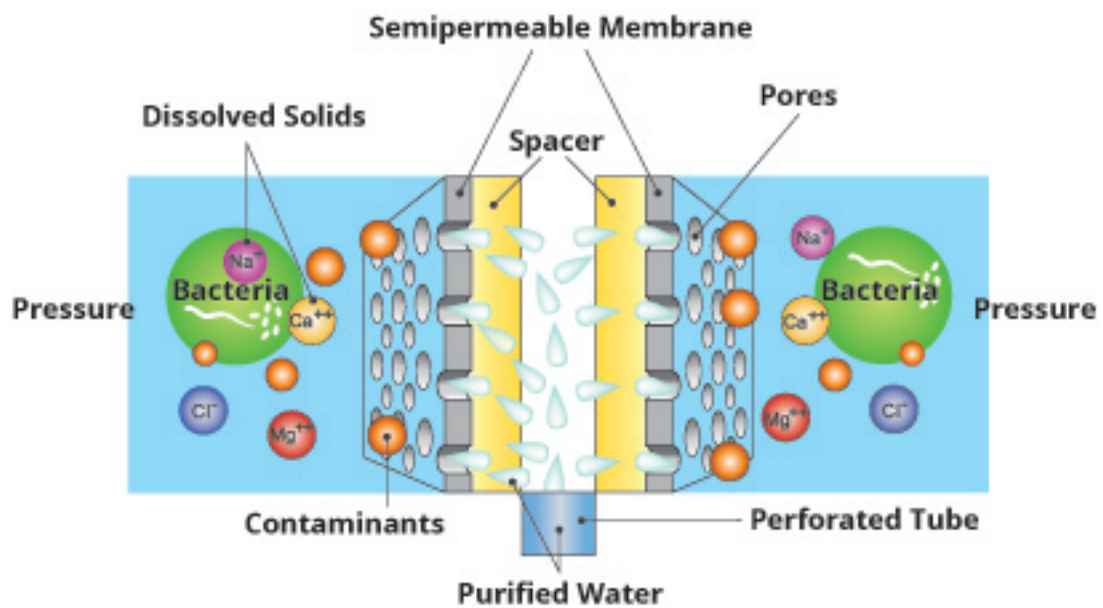
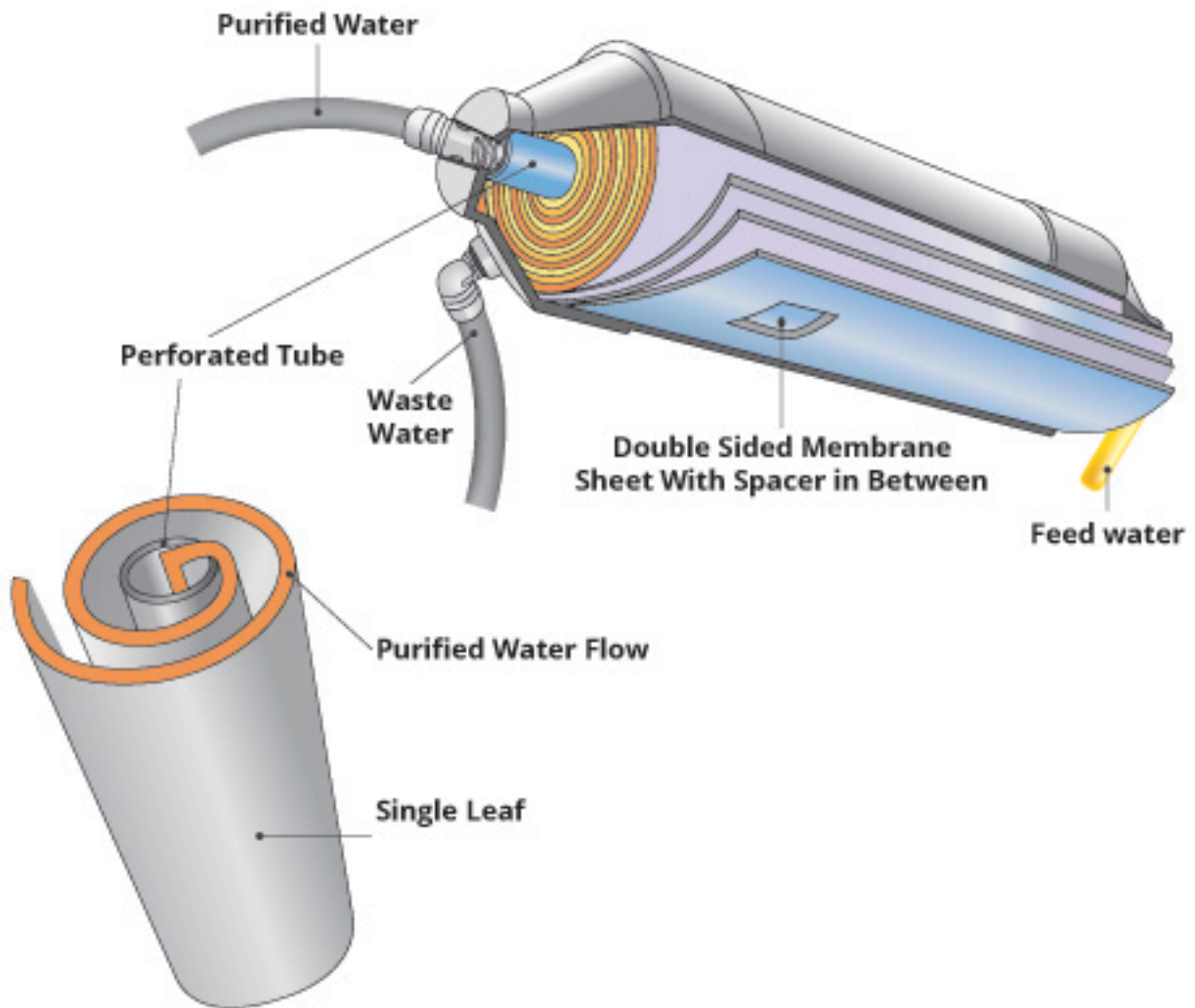
Contrary to including the word "filters" in their name, the post-filters do not actually remove or "filter" anything from the water (exception of coconut shell carbon based final polishing filters). Their purpose is actually the opposite, to add health and aesthetic benefits to the purified water. More specifically for tank-based systems, a final polishing step is needed in order to remove any remaining odours or flavours that may come from the system hoses or the holding tank. Also, for residential systems additional minerals can be added to the purified water to increase it's health benefits.



Relative Size of Membrane Pore Size to Specific Microorganisms



# Reverse Osmosis Membrane Filter



Schematic of a Reverse Osmosis Membrane Filter

## 2. Specifications

### 2.1 Technical Requirements

The technical requirements for this system can be found in the table below.

Electricity	220 VAC/50 Hz*
Feed Water Pressure	1 Bar Min. - 4 Bar Max.**
Feed Water Temperature	5 - 38 °C
Feed Water Connection	1/2" NPT
System Weight (no water)	14 KG

### 2.2 Supply Water Requirements

The supply water requirements for this system can be found on page 9. If the water supply does not meet these requirements, the filter lifetime and output water quality of the system can be affected. Please see the table on the next page for the recommend filter lifetime of this system. This duration will be reduced depending on how much the water quality exceeds the limits.

If the feed water is supplied with raw well water, laboratory test of the water should be done before installing the system. If there is a significant exceeding of these limits, a well water treatment system at the source should be considered to correct the water quality.

Parameter	Value
pH	6.5 - 8.5
Turbidity	< 5 NTU
TDS	< 1000 PPM
Hardness	< 500 PPM CaCO <sub>3</sub> (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 O <sub>2</sub>
Total Bacteria Count	< 50 CFU / mL
E. Coli	< 3 CFU

Supply Water Requirements

## 3. Planning The Installation

### 3.1 Tools Required

The following tools will be needed for the installation of this system.

Tools Required	Installation Function
Electric Drill	Open hole on sink to mount the faucet*
5 mm or 1/8" diamond tip drill bit	Pilot hole for faucet*
12 mm or 1/2" diamond tip drill bit	Main hole for faucet stem*
7 mm or 1/4" tip drill bit	Tubing hole for drain saddle
Adjustable Wrench	Installing feed water diverter valve, metal ball valve and faucet
Phillips Screw Driver	Mount drain saddle
Sharp Scissors or Knife	Shorten tubing if needed

Tools Required for Installation and Their Functions

### 3.2 Electrical Connection

This **Osmio D7 Direct** system comes with all of the internal electrical connections manufactured, installed and tested. It is equipped with an SMPS type power supply which is rated for 3.0 Amps 100-240V~50/60Hz. No additional power conversion should be necessary. The power supply comes with a 1.5 meter length power cord. Depending on the region, the electrical plugs on the power cord will differ. Make sure to have a properly maintained power socket for the system at the place of installation.

Model	D7ROSYS
Capacity	400G/500G
Rated voltage	220V~/50HZ
Power	Rated Power 120W
Type of Anti-Electric-Shock protection	I
Applicable water quality	Mains Water
Applicable water pressure	0.1Mpa~0.4Mpa
Applicable water temperature	5°C~38°C
Ambient humidity	≤90%
Rated pure water flow	62.4L/H 78.8L/H
Rated total pure water flow	6000L/7500L



### 3.3 Checking The Parts

This **Osmio D7 Direct Flow** comes with parts that will be helpful for the installation and maintenance of the system. Under normal circumstances no other parts should be required for a successful install. Please see the table below for a list of the installation parts and their functions.

Installation Parts	Function
Faucet Assembly	Installed on top of the counter to access purified water
Tube Cutter	Used to safely and cleanly cut the tubing
Reverse Osmosis Membrane	Main filter, Comes already pre-installed into the system
1/4" and 3/8" Tubing	1/4" tube to faucet and drain, 3/8" tubing for feed water
Diverter Valve	Tee off cold feed water supply (1/2")
Metal Ball Valve	Recommended to be used on threads to ensure a better seal
PTFE Tape	Connects to tank, disables/enables tank from the system
Drain Saddle Assembly	Mounts to under the counter drain line for system drain
Filter Housing Wrench	Helps to open filter housings during replacements

### 3.4 Making Space for The System

This **Osmio D7** system if you see the figure below, you will have the dimensions of the unit, please take note that the system once full of water will weigh around 18 kilograms. Please make sure the platform the system rests on is adequate to support it's weight, please make sure the tubing is not kinked, bent or damaged.







*Faucet Assembly*



*Tube Cutter*



*PTFE Tape*



*1/2" Diverter Valve*



*Filter Housing Wrench*



*Drain Saddle Assembly*



*Metal Ball Valve*



*400 GPD Reverse Osmosis Membrane Filter*



*1.5 Meter 1/4" Tubing*

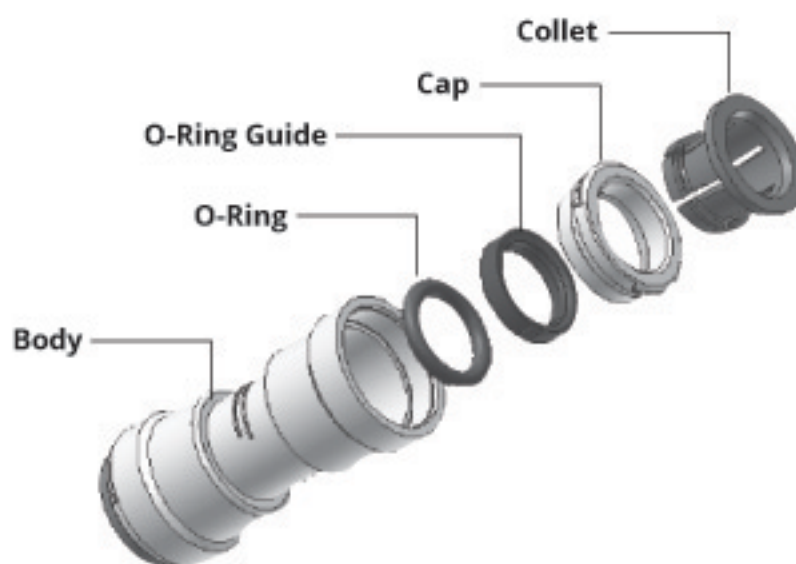
**Osmio D7 Direct Flow Installation Parts**

## 4. Installation and Start-up

### 4.1 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

All **Osmio D7 Direct** 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.

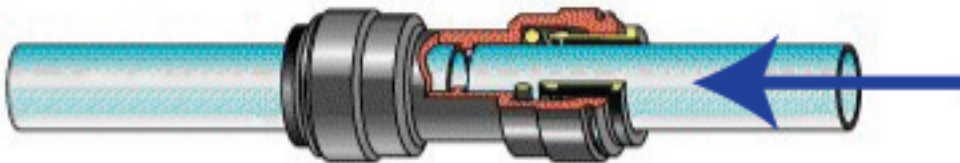
**Step 1:** It is essential that the outside diameter of the tubing being inserted into the fitting is completely free of scratch marks, dirt and any other material. Inspect the outside of the tubing carefully.

**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.

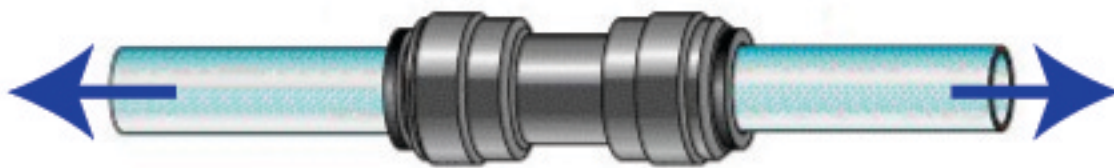
**Step 3:** The fitting grips the tubing before it seals. Lightly push the tubing into the fitting until the grip is felt.



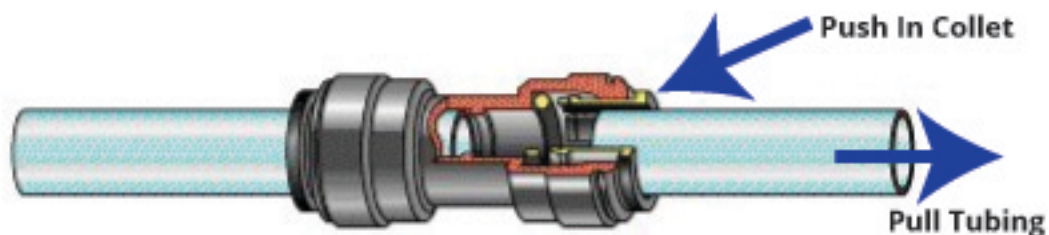
**Step 4:** Now push the tubing into the fitting harder until the tube stop is felt. The collet has stainless steel teeth which hold the tubing in position while the O-ring provides a permanent leak proof seal.



**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



## 4.2 System Water Connections

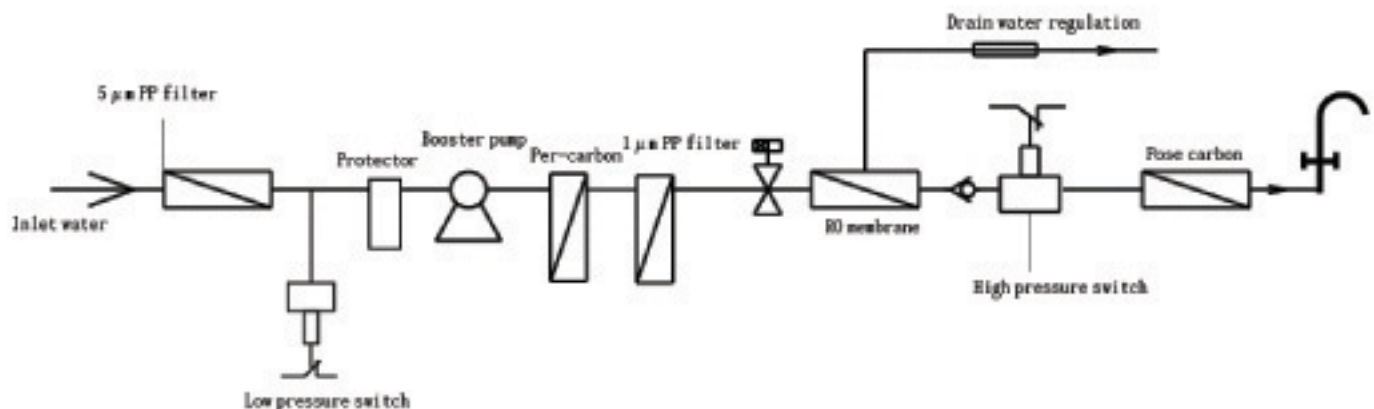
This system comes with three quick connect water ports for easy installation and maintenance. For directions on how to use quick connect fittings, please see the previous page. The following water connections will need to be made: Feed water to RO system, RO system to tank, RO system to drain and RO system to faucet. Please see the table below for the function of each.

Connection	Function	Connected To
Feed Water	Water that needs to be purified	Cold Feed Line
Clean Water	Water that is purified and ready for consumption	Faucet
Drain	Drain from Reverse Osmosis membrane filters	Drain

Function of System Water Connections

## 4.3 Water Connection Schematic

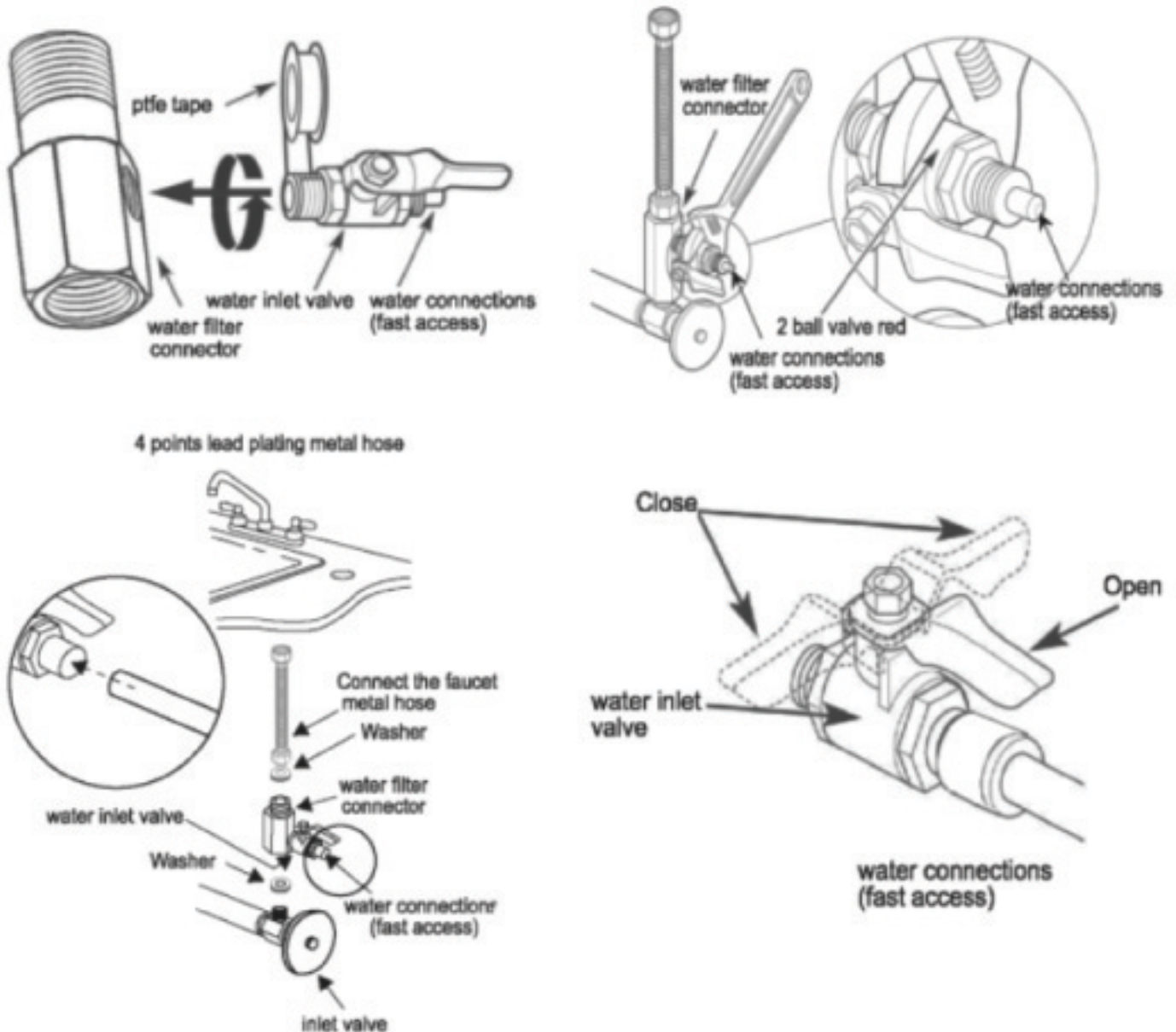
Below is a water connection diagram can be found for the **Osmio D7 Direct Flow** reverse osmosis system.





#### 4.4 Feed Water Connection

The purpose of the feed water connection is to feed the system with water which is to be purified by tapping the cold water supply which is usually located under the kitchen counter. Please see the figure below for instructions on how to make the feed water connection.

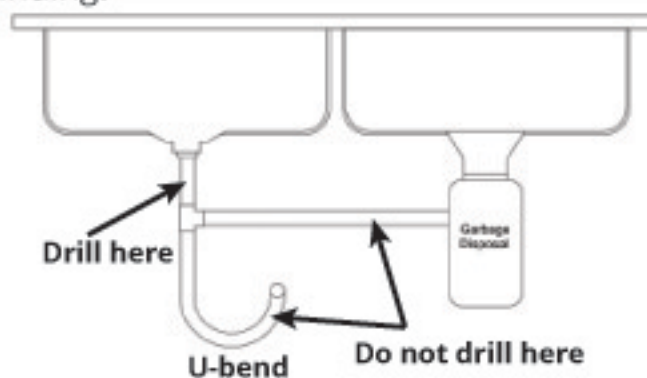


Feed Water Connection Diagram

## 4.5 Drain Saddle Connection

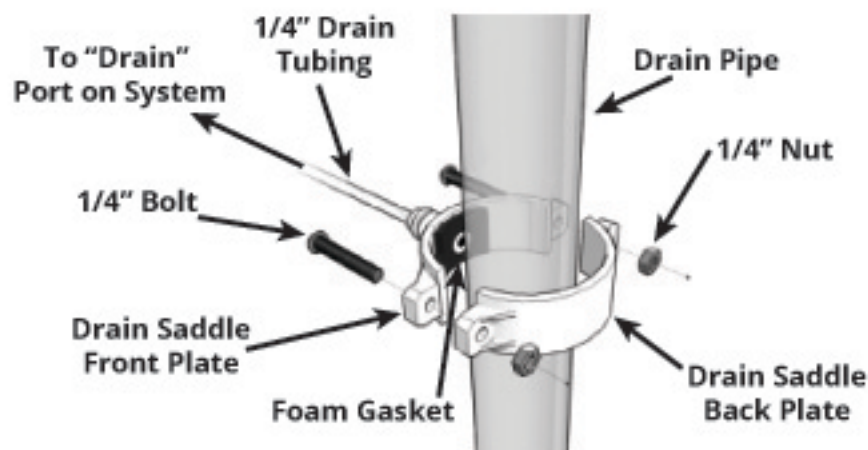
The purpose of the drain saddle is to prevent the tubing connected to drain from popping out of place and potentially leaking where the system is installed. Please see the figure below for instructions on how to make the drain saddle connection.

- 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 figure below for a more detailed explanation. Use a 7 mm (1/4") drill bit to drill a small hole in the drain pipe for the drain to pass through. Clean the debris from the plumbing and hold before continuing.



Drain Saddle Installation Location

- Step 2:** Remove the backing from the foam gasket and stick that half of the drain saddle on the drain pipe 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 drain pipe. 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

## 4.6 Faucet Connection

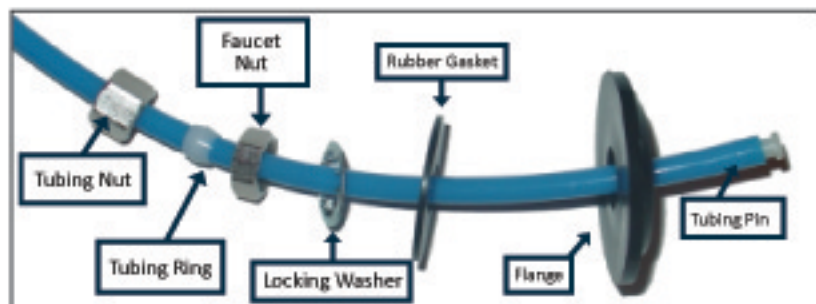
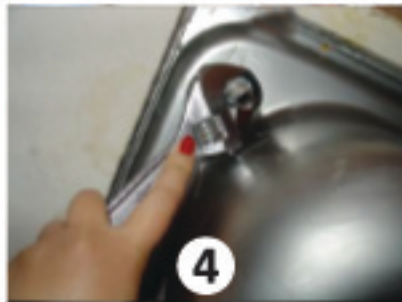
The purpose of the faucet connection is to have access to water on-demand. A proper location needs to be selected on the sink. Special attention needs to be given to the stem on the faucet which will be under the counter, it will need to be accessed in order to fix the tubing nut with a wrench. Once the faucet location is picked, a pilot hole of 5 mm should be made, followed by a 12 mm hole.



**Important:** Choose the correct type of drill bit for counter type.

**Hammer Drill Bit:** Cement, Tile, Granite, Marble and Marmoreal.

**HSS Drill Bit:** Steel, Wood, Chrome, Metal and Aluminum.



1. Place the faucet stem through the 12 mm hole and mount it per the pictures above.
2. Connect the remaining faucet installation parts to the tubing per the diagram above
3. Connect the tubing to the stem of the faucet



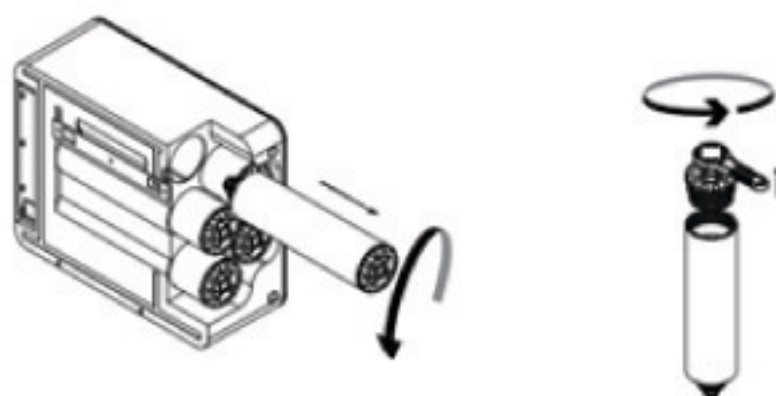
#### 4.7 Pre-filter Installation

The pre-filters are packaged in hygienically sealed bags. Do not break the seal of the bags until right before their installation. Wash the hands with soap before handling the pre-filters. Any bacteria that is passed to the pre-filters can limit their lifetime and performance.

#### 4.8 Membrane Installation

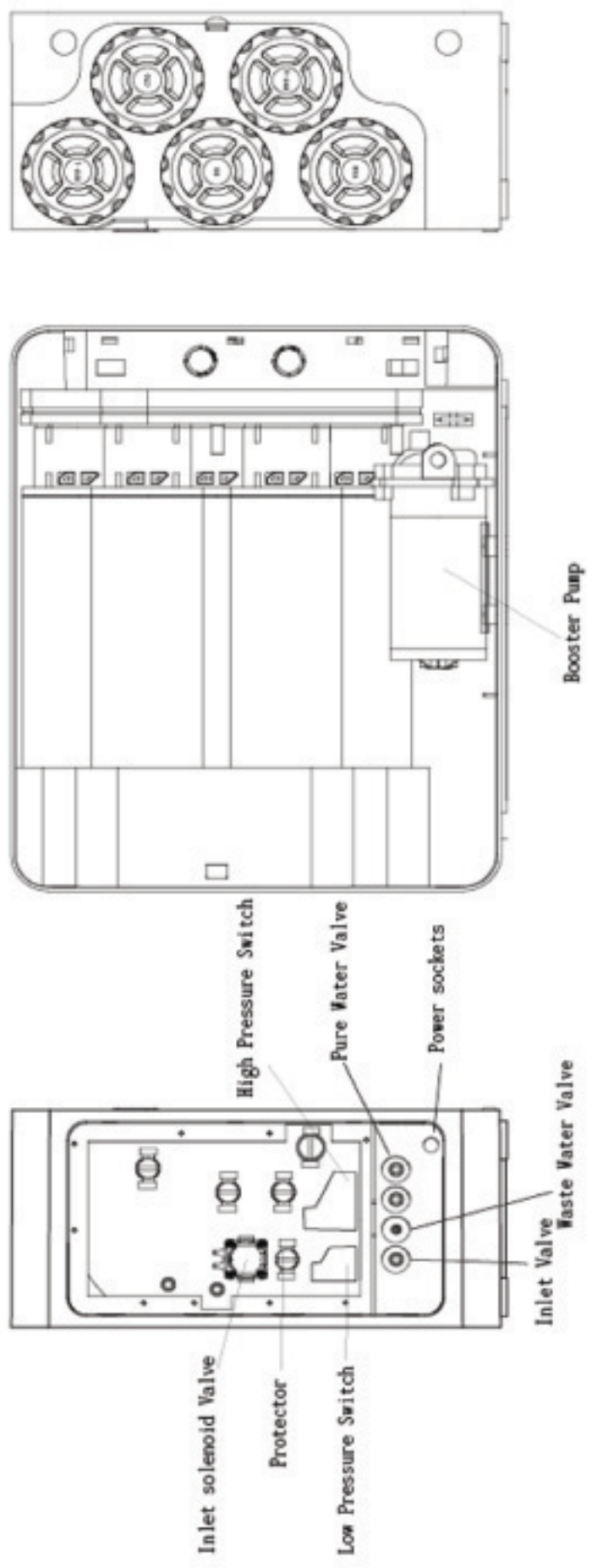
The RO membrane is packaged in a hygienically sealed bag. Do not break the seal of the bag until right before its installation. Wash the hands with soap before handling the filter. Any bacteria that is passed to the RO membrane can limit its lifetime and performance.

1. When changing any filter, open the systems cover to reveal the filters.
2. Open the sealed filters in order of the filter replaced and push and twist into place as according to the corresponding labels on the system
3. Use the filter housing wrench to tighten up the filters.
4. Recover the system with the cover previously removed
5. When installing a brand new set of filters make sure to run the faucet for 5-10 minutes to clear the carbon fines (allow for 3-4 days if any milky look to the water as this is trapped air)














## 4.9 Osmio D7 Direct Flow Reverse Osmosis Diagram



## 4.10 Osmio D7 Direct Flow HUD Icons



Ordinal	Icon	Status description
1		This icon indicates that the internal tank is full and the system is now in standby
2		The “Working” icon indicates that the machine is producing water and flushing rejected water
3		The water shortage icon indicates that the incoming pressure is too low
4		This icon will signal in the event of a machine failure and will shut down after five seconds
5		The individual PPF filter as specified has reached the end of its life span, you will need to replace the filter
6		The activated carbon filter has reached the end of its life span, you will need to replace the filter
7		The PPF filter as specified has reached the end of its life span, you will need to replace the filter
8		The RO membrane filter has reached the end of its life span, you will need to replace the filter
9		The T33 Filter has reached the end of its life span, you will need to replace the filter

## 4.11 Verifying the Installation

To begin please plug the power cord of the Osmio D7 into a well maintained electrical socket. bringing the faucet handle down so that it is perpendicular to the faucet stem.

Now slowly open the feed water valve in order to prevent the hammer effect. At first open it only 10%. After one minute, open the feed water valve to the half way level. Finally after another minute fully open the feed water valve. The system will take on water and slowly push all of the air trapped inside out through the faucet. Once the feed water is opened 10% of the way, the pump should automatically begin to vibrate.

Once the water has reached the faucet, at first blackish color water will flow. This is normal and is caused by the dust that accumulates from the coconut shell carbon granules banging against each other during shipment. Only about half of a liter of blackish water should come out, afterwards followed by clear water.

Next, let the water run like this for 5 minutes and then turn off the faucet. Let the system pressurize for another five minutes and now check the system for leaks. Make sure to carefully look at all of the tubing and fitting connections for any drops. If any leaks are found, the system should be depressurized and the tubing should be removed and inserted back into the fitting.

Allow the system to clear out by running the tap for for 5-10 minutes, At first "cloudy" water can be seen on the purified end. This is normal and safe. The system is just pushing out all of the air that is trapped inside (this can last for up to 3-4 days).



## 5. Maintenance

### 5.1 Recommended Filter Change Durations

Filters can run at higher filtration efficiencies with a longer filter lifetime. There is also a significant amount of added value and technology that can be incorporated into the filters.

**Osmio D7 System** takes advantage of water filtration technology to produce the highest quality water at the lowest cost of ownership. When compared to other systems in the market. However, it should be well noted that there are currently no water filtration systems in the world that are designed to be run until all of the filters clog. In fact some filters fail by opening of the pores as opposed to clogging.

It can generally be stated that the filter lifetime starts once the filters touch water. Even if the user goes on prolonged periods of not using the system (such as vacation) or the water consumption is low, the filter lifetime does not stop or slow down. This is true because the filters are made from organic compounds such as paper, coconut shell, minerals, etc. and they will degrade in water over time.

Additionally, changing of the filters is a "Preventive Maintenance" as opposed to a "Corrective Maintenance". This means that filters are changed in order to prevent future failures whereas corrective measures are done after a failure has taken place.

The filters for the Osmio D7 Direct Flow system have individual lifespans which you can see on the table below

Filter Stage	Usage Cycle
Polypropylene Fiber (PPF5)	6 months
Activated Carbon (GAC10)	6 months
Polypropylene Fiber (PPF1)	6 months
RO Membrane (RO)	24 months
Post Activated Carbon (T33)	12 months
Alkaline Filter	6 months

## 5.2 Changing the Filters

In order to have a successful filter change for this **Osmio Direct Flow** Reverse Osmosis System, please follow the steps on the next page carefully

### Filter Change Procedure

1. For pump based systems unplug the electrical cord from the socket.
2. Close the feed water valve so no water can come to the system.
3. Open the faucet and let the system depressurize.
4. Open the system side panel to access the filters and their slots
5. Remove the used filters and throw them away. Be careful to wash the hands after touching the filters.
6. Proceed to replace the filters with the new set, unpackaging them one by one and replacing as you go.
7. Push and twist the filters into place and they will not rise back up and stay in place
8. Use the filter housing wrench to tighten the filters in place if needed
9. Put side panel back on covering the filters
10. Plug the system back into the socket.
11. Open the feed water valve to allow water to the system.
12. Open the faucet, whilst checking for any leaks, ensuring all is well.
13. Run the tap for 3-5 minutes to attempt to clear air and carbon fines from the water.

### 5.3 Going on Holiday

The **Osmio D7 Direct** reverse osmosis system may go through prolonged periods of time (+2 weeks) when it will not be used. It is important to note that once the filters touch water the life span of the filter starts.

This is true because the filters are made from organic compounds such as paper, coconut shell, minerals, etc. and they will degrade in water over time.

However, if the system will not be used for prolonged periods of time there are certain things that can be done in order to prevent problems arising from not being used for prolonged periods of time. Please follow the steps below if the user plans to not use the system, for prolonged periods of time.

1. Unplug the electrical cord from the socket.
2. Close the feed water valve so no water can come to the system.
3. Open the faucet and let the system depressurize. Wait until the water running from the faucet is gone.
4. Leave the system this way until return from a prolonged period of not using the system.
5. Upon return, plug the electrical cord back into the socket.
6. Slowly open the feed water valve to only 10%. After one minute, open it to the half way level. After another minute fully open the feed water valve.
7. As the faucet remained open from before leaving on holiday, confirm that water is flowing through the faucet. Run water for 15 - 20 minutes this way.
8. The system will be ready to use after emptying the water for 3-5 minutes.