



# FSA FILTER SYSTEMS AUSTRALIA

## Reverse Osmosis Installation 5 Stage 200GPD System LSRO-200G

### **WARNING:**

For correct operation of this appliance it is essential to observe the manufacturer's instructions.

This system must be installed in a vertical position on a solid base.

### **Installation:**

This system is designed for both Point of Use and Point of Entry Filtration. Installation must be completed by a qualified Plumber. Failure to follow the manufacturer's instructions and guidelines may void warranty and insurance.

### **Reverse Osmosis Filtration:**

The Reverse Osmosis Membrane is the workhorse of any RO system. It is constructed from a wrapped semi-permeable membrane material that uses pressure to separate impurities such as ions, minerals and other larger molecules from the water, carrying them to waste.

\*Reverse Osmosis membranes do not have a L Capacity for filter replacements due to the variables that can make the filter life vary significantly. This is mostly due to the water quality. The most accurate way to test an RO membrane for effectiveness is to use a TDS Meter. TDS meters measure the total dissolved solids in ppm in the water. To test your membrane, get a baseline reading out of your tap (unfiltered water) and then compare that to a reading directly off the membrane (disconnect the tube before it goes into the post filter cartridge). You can expect to get a difference of approx. 90-98% between the readings which indicate that the membrane is functioning correctly. If this % is beginning to drop below 90% it suggests that the RO membrane requires replacement.

### **Working Specifications:**

Max Pressure	125 psi
Working Pressure	50psi (350 kPa)
Max Flow	1L/Min
Temperature	1°C – 40°C

### **Inlet Water Quality Requirements:**

TDS	< 2000 mg/L
Hardness	< 120 mg/L
Chloride	< 500 mg/L
Iron	< 0.3 mg/L
Manganese	< 0.1 mg/L

# Installation / Set Up

There are several ways that this system can be used in both plumbed in (close circuit) and inline (open circuit) applications all of which have their pros and cons. This system is fitted with high and low-pressure switches so the system can detect when the pumps need to operate or shut off.

A pressure limiting valve must be installed before this system (usually supplied with the unit) to limit the incoming pressure to 350kPa – If your static water pressure is 350kPa or less, the PLV may not be required – Please contact the supplier to confirm.

## Filter System Installation:

1. Unscrew filter housings and unwrap the filter cartridges, ensure only to handle the carbon cartridge by the end caps.
2. The filters in order from right to left should be: Pleated Washable Sediment filter, Poly Spun Sediment Filter, Carbon Block Water Filter.
3. Tighten up the housings using the spanner. NOTE: The housings will need to be firmly tightened to ensure that the O-Rings seal correctly.
4. Disconnect tubing from the membrane housing at the screw cap end, then unscrew the membrane housing cap. (The membrane housing is stage 4 on this system and is clamped on to the top of the bracket).
5. Unwrap the membrane filter from its vacuum sealed packet. Caution: only handle the membrane by the plastic stems on either end for sanitary reasons. Push the membrane into the housing with the "O-ring Stem" first leaving the stem end without the O-rings exposed at the screw cap end.
6. Screw the cap back on, making sure both O-rings are seated correctly so they don't get pinched. Use the Multi-purpose opening spanner to help tighten the membrane cap.
7. Connect the system to the inlet feed water line (3/8").
8. Connect the Drain line using the 1/4" tubing and install to either the drain clamp or loose into a sink etc.
9. Connect the storage tank (if applicable) to the tank tee fitting using 1/4" tubing. NOTE: These systems are supplied without tank connections, if you need to use this with a storage tank, please contact the supplier for the required fittings. Where the tank is not present, there will be an elbow connecting the membrane to the post filter.
10. Connect your Outlet line (filtered water) to either the faucet or running into container/rain water tank depending on your application.
11. Plug in the system to power and turn on, + turn on feed water, Run the system for 5 to 10 minutes to flush out the filters, during this time, check for leaks, pay special attention to areas surrounding the power supply and pump as they are not water proof. Some sputtering may occur as air is purged from the system. When using a storage tank, allow 1 to 3 hours for it to fill (depending on size) and then open the outlet or faucet to expel the water faster. This will help shorten flush times.
12. When the system has been adequately flushed and all carbon fines and residual tastes are gone, the system is ready for water production.

# Operation

Ensure feed water is within the specifications of the system.

The rating of this Reverse Osmosis system is 200GPD as per the membrane specifications meaning this system is capable of approx. 0.5L/Min of water production, this will vary depending on water quality and a number of factors. The systems are designed to be run in a closed loop configuration where the system runs off a float switch or timer, this type of configuration allows for system downtime and helps extend the lifespan of the pump as the system is intermittently producing water

When the system is installed in an open loop configuration and the pumps haven't been allowed any downtime you may expect to see a decrease in the pumps lifespan. If you intend to use the system this way please contact us as we may have a better solution for your specific circumstance

Production scenario for closed loop configuration – The system is run for up to 8hrs a day with a 30 min cool down period, in this configuration the system will produce approx. 250L +/- per day. This is the recommended runtime scenario specified by the manufacturer for extended pump lifespan

Production scenario for open loop configuration – The system is run for continuously without a cool down period, in this configuration the system will produce approx. 750L +/- per day. This is the maximum capacity of what this system can produce however this may also decrease pump lifespan\*

\*Note : the pumps comes with a 90 day replacement guarantee/12 month pro-rata warranty per pump from date of invoice. If the pump fails within the first 90 days of operation, we will replace it, if it fails from 90-365 days, we will cover it on a pro-rata basis. The pumps as well as the filters are classed as a consumable item

## **Inline (Open Circuit):**

Inline installations are the most common for these types of systems. Frequently used to filter bore water directly into a rain water tank or to filter municipal town water into a De-Ionising filter.

This installation is simple and may not require a plumber as the system connects to an existing tap that has its own control valve (such as an outdoor tap). The system is joined to the tap via 3/8" tubing and the tap controls water flow to the system. When the tap is off the switches will trigger the solenoids, which will shut off the pumps automatically. When the tap is turned on and pressure returns to the inlet of the system, the low-pressure switch will re-trigger the solenoid, opening it and turning the pumps back on.

## **Plumbed In (Closed Circuit):**

This type of installation is commonly utilised when the system runs off a float valve or timer. A qualified plumber may be required if the installation involves modifying any current plumbing.

When the System has a constant water supply under pressure, the high-pressure switch is utilised to detect if the outlet of the system is open or closed (in the case of a tap or float valve). When the outlet is free flowing the system will operate normally until the outlet valve is stopped. When this occurs, the high-pressure switch can identify that the water is no longer flowing and will trigger the pumps to cut off. The pumps will begin working again once the pressure drops (i.e. when the tap/float opens and releases pressure on the system).

## **Using Push-Fit fittings aka "John Guest" fittings:**

If you come across a push-fit fitting, you need to firmly push the tubing into the opening until you feel a “click” which signifies that the tubing has pushed through the internal O-ring and is seated correctly. If leaking occurs, it may be due to roughly cut tubing OR the tubing is not pushed in far enough. To remove tubing from push-fit fittings, depress the floating collet (shown in below photo), then pull the tubing out.



### **Brief Technical Overview:**

**Inlet:** The inlet is located at the front inlet of the right-hand white filter housing. It comes fitted with a 3/8” push fit connection (that is plugged during transit). Remove this plug as per the above explanation and connect your raw water inlet to this point.

**Drain:** On top of the bracket, you will find a small white valve labelled with a 2000cc sticker/print. This is the Waste Water line or ‘Drain Line’ that will carry the discharge water from the membrane to waste. Using the supplied 1/4” tubing, run this to a drain.

**Pre-Filters:** This system uses standard size 10” x 2.5” Pre-filters that are designed to remove sediment, and chemicals from the water to protect the reverse osmosis membranes. Failure to maintain these filters may allow residual chlorine or other chemicals to enter the membranes which may reduce their filter life.

**Post Filter:** As standard the GT1-20LS system will come fitted with a 2.5” inline GAC filter as a final stage of filtration, this filter is not required if the system is being used with a DI filter. DI filters can be in the form of an inline cartridge (that will take place of the GAC) or in a larger canister filter (10” x 4.5”). When the DI canister filter is used, there will be no post filter mounted to the GT1-20LS System as the Canister filter is a separate unit. The ‘outlet’ of the RO system will be located at the rear and have an inline 1/4” joiner (with plug inserted). Run 1/4” Tubing from this fitting to the DI canister filter (GT1-101).

## **Maintenance**

### **Pre-filters:**

On Municipal water supplied, the pre-filters should be changed every 45,000L (720 Hours constant Run Time) OR 6 Months, whichever occurs first.

### **Membranes:**

Reverse Osmosis membranes have a variance in their filter life and this is affected by several things including water quality, usage, temperature and filter maintenance. RO membranes should be monitored ongoing using a TDS test pen (GT28-9) or Fixed TDS meter (GT28-6) to determine when the membranes are no longer functioning above the desired rejection rate (90% – 98%).

### **Post Carbon Filter:**

This filter should be changed every 5,000L or 6 Months, whichever occurs first.

### **DI Resin:**

Due to the nature of resins and the variance of water quality, this media will also need to be monitored with a TDS pen or meter to determine when the filter media has expired. DI resin will extract residual ions from the water reducing the RO water back to a 0 TDS reading. The filter media will require changing once the TDS exceeds your required limit. To change the DI media:

- **Inline DI Filter:** Disconnect the tubing from the inline filter and remove the filter from its mounting clamps. Unscrew the end cap in an upright position and remove the sediment pad and o- ring to avoid getting debris on the o-ring seal. Discard the filter media and rinse the cartridge with clean water, removing and remaining DI resin. Refill the housing with resin, replace the pad and o-ring and replace the head cap.
- **DI Cannister Filter:** Undo the housing cap and remove the DI cartridge. Unscrew the filter from the bottom and discard the DI media. Rinse the housing and sediment pad with clean water removing any of the remaining expired DI. Fill the cannister with 1Kg of DI media (Try not to compress it, gently tap the cannister to allow the media to settle into position). Replace the sediment pas and screw the cap back on.

## Replacement Parts

### **Pre-filters:**

GT2-6K	20 Micron Washable Sediment Filter	3 - 6 Months
GT2-2K	5 Micron Polyspun Sediment Filter	6 Months
GT4-7CTO	5 Micron CTO Coconut Carbon Block	6 - 12 Months

### **RO Membranes:**

GT13-60	Reverse Osmosis Membrane 200GPD	TDS Checking Required (1 – 3 Years)
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### **Post Filters:**

GT6-7C	5 Micron inline GAC 2.5"	5,000L / 6 Months
GT6-22	Inline DI Filter 2.5"	Check TDS / 3 Months
GT5-12S-350	350g refill pack suit inline DI Filter 2.5"	Check TDS / 3 Months
GT4-14DI	10" x 4.5" DI Cannister Filter Cartridge	Check TDS / 6 – 12 Months
GT5-12S (1Kg per refill)	Mixed Bed DI Resin	Check TDS / 6 – 12 Months

### **Pumps/Solenoids/Switches:**

GT13-38LS	8200L Reverse Osmosis Booster Pump 200GPD	2,000Hr (12 Months)
GT13-40	Low Pressure Switch	
GT13-41	High Pressure Switch	

### **Housings:**

GT8-0S	10" x 2.5" White Filter Housing
GT8-31	1812 Reverse Osmosis Membrane Housing
GT8-11G	10" x 4.5" DI Cannister Housing (Big Blue)