

Installation and Operating Instructions For Reverse Osmosis Units.

Applies to model Numbers RO 50, RO 75 and RO 150

(Any unit can be upgraded by simply exchanging the membrane and flow restrictor)

Basic Principles

Reverse osmosis is a method of purifying water by forcing it under pressure through a semi permeable membrane and reversing its natural osmotic pressure.

All our RO units use high quality thin film composite membranes to ensure optimum salt removal.

The membrane is designed such that small molecules of pure water can pass through the membrane under pressure but larger particles or molecules with specific chemistry, e.g. phosphates or nitrates cannot and bypass the membrane to waste.

The membranes are rated for flow at 25C and 50 psi. and will generally will have a 96 – 98% stabilised salt rejection level. In practice however the fluid output from the membrane will vary according to water pressure and temperature. At lower temperatures all RO units used will produce a decreased flow rate by approximately 30% at 15 centigrade and by 50% at 9 centigrade. This must be taken into account when choosing the model suitable for your particular needs.

Increasing the incoming water pressure by fitting a **Booster Pump** will normally increase the flow rate considerably as they operate at 8 bar pressure and are particularly useful in areas where the mains water pressure is low or where the optimum flow is required from the unit.

Please read the following instructions carefully before installing your RO unit.

The unit comes fully assembled, but you will need to install the membrane, the flow restrictor and the coloured water pipes as described below.

Sediment and block carbon cartridges

The 5 micron sediment and 10 micron block carbon cartridges are already fitted inside the unit when it is supplied and are there to remove solids and chlorine from the water that would otherwise block or damage the membrane.

We recommend that these are both changed every 6 months to ensure a good flow from your unit and a long life from the membrane. Replacement cartridges are readily available from ProGrow.

One pod of the unit that houses the sediment filter is clear to allow you to see the state of the cartridge. In areas with particularly high sediment levels this may require changing more often.

Using the spanner supplied, check that both pods are sealed but do not over tighten.

To install the membrane

Remove the housing from the top of the U brackets and unscrew the lid by rotating the body.

Remove the membrane from its protective bag and install it so that the end with the two black sealing rings is inserted into the housing first. This should be pushed tight into the tube until the other end of the membrane is almost level with the top of the threads. It should be a snug fit.

Screw the cap back onto the housing ensuring first that the O-ring, (4), is in position and tighten by hand.

Clip the housing back onto the unit.

New 'Easy Flush' external flow restrictor

All of the new units are now fitted with an 'easy flush' external flow restrictor to allow regular flushing of the membrane.

These must be fitted for the unit to operate properly and are specific for each membrane flow rate.

The restrictor is fitted as shown on the diagram and connected in line on the red/orange waste pipe with the arrow in the direction of water flow. Without this part fitted the unit will not produce pure water.

The tap on the restrictor has 2 positions, inline and at 90 degrees to the body of the restrictor.

When inline the water can pass freely through the flow restrictor and this is used like this to flush water through the membrane housing and to waste which washes out any dirt or bacteria from the unit.

To produce water the tap must be at 90 degrees to the restrictor which closes off the flow other than a small hole or restriction. This forces water through the membrane rather than to waste.

By simply rotating ball valve to flush the unit on a monthly basis then the life of the membrane will be extended many fold.

Pipework and fittings

All of the fittings on the RO unit are push fit type allowing easy connection and disconnection of any of the pipes.

We identify the pipes by inserting a small length in each outlet. These pipes are removed by holding the white collar into which it is inserted against the fitting and simply pulling it out. Occasionally these pipes get mixed up during assembly and the easiest way to determine the correct fitting is as follows.

The white pipe is always the feed pipe and easy to identify and should be inserted into the clear sediment chamber. Now insert the other 2 pipes into the membrane housing according to the colours indicated by the short lengths but at this stage do not add the flow restrictor. Next connect the unit to the mains water supply and turn on the tap. You will find that there is much more water coming out of one pipe than the other and this is the waste which should be coloured orange/red. If this is not the case then swap the pipes over and put the flow restrictor on the orange pipe.

To fit the pipe, simply push a cleanly cut end firmly into the fitting and then pull gently back. The internal teeth will secure the pipe so that it does not come back out.

To remove the pipe, push the outer ring against the fitting to release the teeth then pull firmly on the pipe to remove it.

The 3 lengths of pipe supplied are colour coded to identify their use in specific places on the unit.

1 – The waste water pipe is orange and in a permanent installation should be used with the drain saddle supplied.

To fit the drain saddle first find a suitable section of waste pipe under a sink that is not flooded with water and drains easily away. Position the waste saddle and mark the pipe before drilling a 6mm hole. Fit and tighten the saddle in position remembering to fit the foam seal and then insert and tighten the end of the orange pipe into the drain.

The waste water will contain an increased concentration of contaminants which should pass directly to drain or be collected for use in processes that do not require pure water, e.g. watering the garden - **Not suitable for drinking water.**

2 - The pure water flows from the blue pipe, which should be connected to the centre of the membrane and should be run to a suitable collecting container or directly to other process as required.

3 - The feed or mains supply pipe is coloured white and enters the unit on one side of the clear sediment pre-filter housing. This pipe should be connected to the mains water supply using the permanent self-piercing needle valve supplied with the unit or using an optional threaded tap connection which can be used with a threaded garden or washing machine tap.

Installation of the drain saddle and self piercing needle valve is a relatively simple process however we strongly recommend that without prior experience of such installations that this work is carried out by a plumber or other such qualified person.

The needle valve is suitable for use with 9 or 15 mm copper pipe and is clamped to the pipe using the threaded rod at the base and the applicable pipe holder. Once clamped in position the RO pipe can be fitted to the valve using the threaded outlet having first made sure that the copper olive is fitted before tightening up the nut.

To pierce the supply, turn the T bar to screw the needle through the wall of the pipe as far as it will go. The pipe is now pierced and by unscrewing the T bar the water will be allowed to flow to the RO unit.

Operation

Before running the unit for the first time recheck that the filter pods are screwed on tight and that all fittings are connected.

Turn on the mains and note at the beginning that water will only exit the unit through the orange pipe. Some minutes later a slow flow will commence at the exit of the blue pipe. This water is still not yet pure as it contains anti bacterial chemicals applied to the membrane and it is therefore necessary to fully purge unit for at least 60 minutes before using the water.

It is usual to hear a hiss from the flow restrictor when the unit is operating properly.

Never operate the unit for any length of time unattended as a poorly connected pipe may come off under pressure.

Maintenance

The membrane will eventually become blocked and should be replaced after 2-3 years. This is determined by periodically monitoring the water quality with standard water test kits or a TDS Meter. Flushing the membrane will extend its life.

The pre-filter and carbon filter elements should be replaced every 6 months as they will gradually become blocked and show a subsequent reduction in output volume.

The membrane should not be allowed to dry out and the unit should be operated or flushed at least once every 3 weeks to prevent a build up of bacteria in the stagnant water that can form if left for a longer period.

For further information on this or any of our other products please contact us or visit our web site

www.progrow.co.uk

