

RO TROUBLE SHOOTING

UNIT DOESN'T PRODUCE WATER PROPERLY



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IMPORTANT

*Read through the **entire instruction manual before beginning work on the reverse osmosis system.** Sentry is not responsible for any damage, injury, or monetary loss incurred from failure to read and follow the instructions explicitly. The repair/modification of your system must be done by a local certified plumber who has knowledge of your water conditions and local council bylaws if applicable.*

IMPORTANT NOTES:

- All reverse osmosis systems must be repaired by a suitably qualified or licensed plumber.
- To be AS/NZ compliant this system needs to be installed using a Watermark or AS/NZ certified pressure limiting and backflow prevention valve. A leak detection shut-off device may also be required to comply with our conditions of warranty, these can be retroactively fitted.
- Once the repair is complete the installer should inspect for leaks at threads and tube fittings before leaving, some slow leaks may take as much as half an hour to become apparent.
- Use only certified/original filter cartridges and replacement parts suitable for this appliance.
- Ensure that filter housings are tightened very firmly using the spanner supplied with the system.
- Ensure that sufficient thread tape is used with threaded fittings, do not over tighten threads.
- Units installed under constant pressure have a recommended maximum service life of 10 years.

USING QUICK-FIT FITTINGS

CONNECTING

1. Push the tubing into the quick-fit fitting as per **Figure 1**. You will feel the tube hit resistance about 1cm into the fitting, this is the sealing O-ring. Push the tube a little harder and you will feel the tube push through the O-ring about another 5mm and hit the stopper inside the fitting. Your connection is now made and sealed.
2. Check for leaks when you turn your water back on. If the fitting leaks the tube may not be pushed in enough, or the end of the tube may be damaged/not cut properly.

DISCONNECTING

1. Locate the locking collar on the quick-fit fitting. The locking collar is the small round collar that the tubing goes into on the end of the fitting as per **Figure 2**.
2. Push the locking collar flush against the fitting as per **Figure 3** and whilst firmly holding the locking collar back against the fitting, gently pull the tube out from the fitting. The tube should slide easily from the fitting. If you find yourself using quite a bit of force, try pushing the tubing back into the fitting, holding the collar back against the fitting even firmer and pulling the tube out again.



Figure 1



Figure 2



Figure 3

IS SOMETHING WRONG?

This manual serves to guide you through the process of trouble shooting your reverse osmosis system when it is not producing water properly. Under normal working conditions your unit should provide a set volume of water under pressure whenever you need it, this volume is determined by the capacity of your holding tank (typically 5, 8 or 12 litre capacity).

Once your holding tank is drained your reverse osmosis system will automatically refill the tank. It is important to note that reverse osmosis units produce water at a very low rate, sometimes as low as 5 litres per hour depending on your local water pressure, it can take a few hours for your tank to refill completely from empty. An RO unit will not supply an infinite amount of pure water at constant good pressure and does require time to fill.

If you have drained your holding tank completely water will only flow from the faucet at a steady trickle, this is the rate that the RO unit produces pure water. If you find that your faucet loses pressure suddenly and reduces to a trickle there may not be anything wrong with your system, your tank may just be empty, close your faucet and leave the system for an hour so that it can refill the tank.

If allowing your system a couple of hours to refill does not help, you may have something wrong with your unit. Your system may have an issue if when you open your faucet there is no water at all, if after many hours you only get a slow trickle, if after many hours you get a short burst of pressure followed by a slow trickle, or if your unit takes many hours (5+) to fill the tank.

SIMPLE FIXES

Sometimes there may be a simple solution, try running through the below steps before continuing.

1. Ensure that the feed water/inlet valve is open and allowing water through to the system.
2. Ensure that the blue and white valve on the top of the tank is open (inline with the tube).
3. Check that all of the filter cartridges have been unwrapped before installation.
4. Check that you have sufficient feed water pressure at the inlet – Over 50psi recommended.
5. Check that none of the tubing is kinked/bent in a way to prevent free flow of water.
6. Check that your leak detection device (if fitted) has not been triggered, reset if necessary.

NO WATER COMES OUT AT ALL

If when you open your faucet there is no water at all run through the following steps.

STEP ONE

1. Turn off the water to the unit (close inlet valve on cold water line and valve on top of tank).
2. Disconnect the tube where it connects to the bottom of your faucet under the sink.
3. Point tube into a bucket and turn the water on for 20-30 seconds.
4. Reconnect tubing to the bottom of the faucet.

Does water trickle out of the tube into the bucket at about 100ml per minute or higher? If yes, your faucet may be faulty and may need to be replaced. If no go to **STEP TWO**.

STEP TWO

1. Turn off the water to the unit by closing the inlet valve on your cold water line.
2. Disconnect the tube where it connects to the inlet of the membrane housing.
3. Point tube into a bucket and turn the water on for a few seconds.
4. Reconnect tubing to the inlet of the membrane housing.

Does water shoot out of the tube into the bucket at high pressure? If yes, go to **STEP SIX**, if no go to **STEP THREE**. If the water only comes out slowly/at low pressure go to **STEP THREE**.

STEP THREE

1. Turn off the water to the unit by closing the inlet valve on your cold water line.
2. Disconnect the tube where it connects to the inlet of system (Figure 2).
3. Point tube into a bucket and turn the water on for a few seconds.
4. Reconnect tubing to the inlet of the system.

Does water shoot out of the tube into the bucket at high pressure? If yes, go to **STEP FIVE**, if no or if the water only comes out slowly/at low pressure go to **STEP FOUR**.

STEP FOUR

1. Turn off the water to the unit by closing the inlet valve on your cold water line.
2. Disconnect the tube where it connects to the inlet valve (Figure 3).
3. Take a bucket, position it on front of the valve, and turn the water on for a few seconds.
4. Reconnect tubing to the inlet valve.

Does water shoot out of the inlet valve at high pressure? If not, you will have to replace your inlet valve. If water does shoot out at high pressure it indicates that there is a blockage between your inlet valve and the inlet of the system. If your system is fitted with a leak detection device it may have been triggered, fit a new detection tablet and reset the valve. If your system is fitted with a pressure limiting valve it may be faulty and may need to be replaced.

STEP FIVE

1. Turn off the water to the unit by closing the inlet valve on your cold water line.
2. Unscrew the pre-filter housings and remove the sediment and carbon filters.
3. Check that the plastic wrapping has been removed from the sediment and carbon filters.

If the pre-filters are still in their plastic wrapping this has likely caused the blockage, unwrap the filters and re-install them. If the filters were not wrapped continue with this step.

4. Leave the filters out of the system and re-install the empty housings onto the system.
5. Disconnect the tube where it connects to the inlet of the membrane housing (Figure 1).
6. Point tube into a bucket and turn the water on for a few seconds.
7. Reconnect tubing to the inlet of the membrane housing.

Does water shoot out of the tube into the bucket at high pressure? If yes it indicates that your sediment and carbon filters are clogged and need be replaced, if your filters are new it may indicate that the cartridges are faulty, you will need to fit replacements before using the system. If no it indicates that there is a blockage in the pre-filter housings, you may need to check the ports between the housing caps for blockages.

STEP SIX

1. Check that you are getting waste water flowing from your membrane.
2. Turn off the water to the unit by closing the inlet valve on your cold water line.
3. Disconnect the tube where it connects to your drain pipe under your sink.
4. Point tube into a bucket and turn the water on for 20-30 seconds, you should get a steady trickle out of this tube, usually at a rate of 200-400ml per minute.

Does water trickle out of the waste tube into the bucket? If yes your waste line is fine, go to **STEP SEVEN**. If no water, very little water, or high pressure water comes out your waste flow restrictor may be faulty/blocked – replace it, if this valve is blocked it may have damaged the RO membrane, you may also need to replace your membrane, check the membrane at **STEP SEVEN**.

STEP SEVEN

1. Check that you are getting pure water flowing from your membrane.
2. Turn off the water to the unit by closing the inlet valve on your cold water line.
3. Disconnect the tube where it connects to the pure water outlet of your membrane housing.
4. Put a towel under the end of the membrane housing and turn the water on for 10-15 seconds, you should get a steady trickle out of the pure water outlet on the membrane housing, usually at a rate of 100-200ml per minute.

Does water trickle out of the pure water outlet of the membrane housing? If no your membrane is likely fouled and will need to be replaced. If water does trickle out of the pure water outlet it indicates that everything before the membrane is OK and the fault in the system is likely to do with a blockage in the post-filters, either replace these filters or remove them from the system one at a time to determine which filter is blocked.

SHORT BURST OF PRESSURE, THEN TRICKLE

If when you open your faucet there is a short burst of pressure and then the water slows to a trickle it usually indicates a problem with your holding tank. If you get a constant slow trickle out of your faucet after the short burst of pressure it indicates that the RO unit is working properly.

Before determining if there is something wrong with your tank, make sure that the valve on the top of the tank is open (blue lever in line with the tube). If this valve is closed it will prevent the tank from filling and emptying and result in a short burst of pressure followed by a steady trickle. If this valve was closed, open it and allow an hour for the tank to fill, this may fix the problem.

Pick up your tank and feel its weight, if the tank is heavy like it is full of water this indicates that the tank is filling properly but is not emptying properly, if the tank is light like it is empty this indicates that the tank is not filling properly.

TANK IS HEAVY

1. Tank bladder has lost pressure

The most common cause of a tank not emptying properly or providing adequate pressure is because the bladder has lost pressure and needs to be recharged. Tanks can be recharged with a bicycle pump using the air valve on the tank (NEVER USE AN AIR COMPRESSOR). The air valve can usually be found under a blue cap on the side of the tank (12 and 8 litre tanks) or on the bottom of the tank (5 and 2 litre tanks). A tank can be recharged by following these steps:

1. Open your faucet so that water can run into your sink.
2. Attach your bicycle pump to the air valve on the tank.
3. Begin pumping air into the tank, water should begin to flow out of the faucet.
4. Continue adding air until the tank is empty.
5. Set the pressure in the tank to 7psi once completely empty.
6. Tighten the air valve core on the tank if loose using a valve core tool.

2. Tank valve is faulty

If your tank doesn't drain using the above steps your tank valve may be faulty and may not be opening or closing properly. Remove the tank from the system and take it outside. If opening the valve doesn't let any water out unscrew the valve from the top of the tank, if the tank drains under high pressure with the valve removed you will need to replace the valve, if the tank does not drain with the valve removed and you have pumped it up per above the tank may be faulty.

3. Tank bladder is ruptured

If pumping the tank up fails to drain the tank and pressure does not build up you may have a ruptured bladder, if this is the case you will need to replace the tank. Often when the bladder is ruptured air will blow through the post-filters and out of the faucet.

TANK IS LIGHT

1. Tank valve is faulty

If your RO system is producing water properly but the tank remains empty (light) your tank valve may be faulty and may not be opening or closing properly. Remove the tank from the system and take it outside, unscrew the valve from the top of the tank. Try to blow through the valve once it is removed to ensure that the valve is open, if you cannot blow through the valve easily it may be blocked and may need to be replaced.

2. Tank bladder has too much pressure.

RO systems shut off based on the pressure in the tank, if the air pressure is too high in the tank the system will shut off prematurely and the tank will under-fill with water. Reducing the air pressure in the tank will allow the tank to hold more water but may reduce the water pressure. Lowering the air pressure too far will allow the tank to fill completely but not empty properly it is important to find the balance between pressure and volume of water. If you lower the pressure too much refer to the previous section about adding air to your tank. The air valve can usually be found under a blue cap on the side of the tank (12 and 8 litre tanks) or on the bottom of the tank (5 and 2 litre tanks). Tank air pressure can be adjusted by following these steps:

1. Open your faucet and empty your tank into a bucket, measure the volume of water.
2. Remove the blue cap from the air valve.
3. Reduce the pressure in the tank by 1-2psi by pushing on the valve core.
4. Allow an hour or two for the RO system to refill the tank.
5. Open your faucet and empty your tank into a bucket, measure the volume of water.
6. If the volume has increased, continue removing air until desired volume is achieved.
7. Tighten the air valve core on the tank if loose using a valve core tool.

Note that the capacity of your tank is determined by both the air pressure in the tank and your feed water pressure, lower feed pressure will result in a lower volume of water in the tank. Depending on your pressure it may not be possible for the tank to fill completely, for example a 12L tank may only be able to hold 8-10 litres if feed water pressure isn't particularly high.

SHUT-OFF TROUBLESHOOTING

This booklet should be used when diagnosing and repairing problems with reverse osmosis systems related to automatic shut-off valves and associated hardware.

All Water filter factory and Splish water under-sink reverse osmosis systems are fitted with automatic shut off valves which are designed to cut the water to the unit when the holding tank is full and the faucet is closed.

All under-sink reverse osmosis units are tested before being dispatched to check for proper shut off. It is possible that units can develop issues during shipment or general use which can be diagnosed and remedied using this booklet.

Replacement shut-off valves and associated hardware may be covered under warranty. If your system develops issues during warranty you may be covered for replacement parts to fix these issues and you should contact us immediately before commencing work on the unit.

THE WATER FILTER FACTORY

&

SPLISH WATER

07 5443 3130

Before attempting to diagnose a problem with the system it is important to note that reverse osmosis units produce pure water at a low flow rate. It is normal for a unit to run for up to a couple of hours to fill the holding tank from empty, the unit will not shut off as soon as you close your faucet.

The unit should run until the holding tank is full, the waste water flow should slow to a drip and then eventually cease altogether. The unit should remain shut-off until water is again taken from the faucet.

If there is some air in the post-membrane filters (due to a recent filter change or new install) the system may come on again without the faucet being used – this is normal if the system only activates once or twice and should go away once the air is cleared from the new filters with use. A new system may need to be used a few times (i.e. the tank filled and emptied a couple of times) before the shut-off valves settle in properly.

SYMPTOMS AND SOLUTIONS

Problems with the automatic shut off valves on RO units may become apparent through a number of different symptoms. These symptoms include but are not limited to:

1. System never shuts off, waste water flow continuously.
2. System periodically runs, unit comes on and off frequently.
3. System vibrates loudly when shutting off/coming on.
4. System fails to shut off completely and continuously drips from outlets.

Provided that all minimum/maximum operation variables of the unit are met (minimum feed pressure, water quality etc.), these symptoms can usually be treated with one of three courses of action as listed below.

- 1. Venting system.**
- 2. Replacing product line check valve.**
- 3. Replacing 4-Way shut-off valve.**

These three courses of action are best performed one after the other until the problem is remedied. If these courses of action do not remedy the problem it may be a sign of a more complex issue that requires further attention.

These methods are outlined over the next few pages.

1. VENTING THE SYSTEM

The most likely cause of problems with a system shutting off, especially on new installs or following filter changes is an air pocket in the membrane housing. The pre-filters and post-filter on units generally vent themselves of air quite well, however it is possible for some air to become trapped in the cavity around the membrane.

This pocket of air can cause the unit to not shut off fully, or can cause shuddering during shut-off. Venting the unit is the easiest step to take in solving a shut-off problem and should be attempted first to save effort in replacing valves that don't need replacing.

1. Close the blue/white valve that is fitted to the top of your storage tank. This valve is closed when the blue lever is **NOT** in line with the tubing (Figure 1).
2. Open your sink-top faucet – this allows water to trickle continuously from the faucet, in this state (tank closed, faucet open) the unit will continuously operate.
3. Remove the unit from where it is mounted and tilt it as far as you can to the left (anti-clockwise) whilst it is still running. By putting an angle on the unit it forces any air that is in the membrane housing to run towards the outlets and be purged from the system (Figure 2).
4. Listen for the sound of air escaping from your waste water outlet into your drain, you may hear some spurting/hissing, this is air escaping the unit, hold the unit like this for 30 seconds.
5. Re-mount your system, close your faucet, and re-open your tank again.



Figure 1

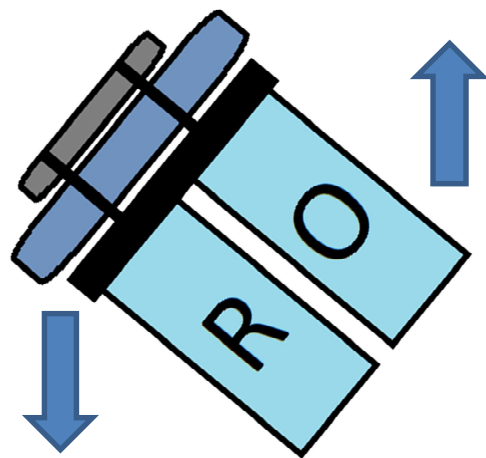


Figure 2

2. REPLACING PRODUCT LINE CHECK-VALVE

If venting the RO unit does not improve the issue that you are having with your unit, the next step is to replace the check-valve fitting on the pure water line.

A faulty check valve allows pressurised water on the pure side of the system to back-flow through the membrane and run out of the waste outlet of the unit – this slowly drains the holding tank and causes the unit to turn on and off (cycling) as it tries to maintain the pressure in the tank. A particularly bad check valve may prevent the unit from shutting off at all.

1. Turn off the feed water to the unit, close the blue/white valve on the tank (Figure 1) and open your faucet. Leave the faucet open until all pressure has left the unit and the water stops flowing. This procedure requires the removal of fittings and tubing, failure to depressurise the unit may result in a rather large puddle.
2. Locate the check-valve fitting (Figure 3) and disconnect the tubing from it (Figure 4). To disconnect tubing, push the collet that is around the tube flush against the fitting, hold it there and simultaneously slip the tube out of the fitting.
3. Unscrew the fitting by rotating it anti-clockwise until it is removed from the unit.
4. Screw the new fitting into the unit, thread the fitting all the way in, but not so far that the head of the fitting touches the membrane housing, if it is overtightened you can snap the head off of the fitting. The replacement fitting should be supplied with thread tape on it, so it should not require any tape or sealant.
5. Reconnect the tubing by pushing it straight into the fitting, you should feel the tube push through an O-ring and seal about 10mm into the fitting.
6. Close your faucet, open the blue/white tank valve, and re-open the feed water to the unit. Check for leaks, if the tubing leaks, it may need to be pushed in further or replaced.



Figure 3

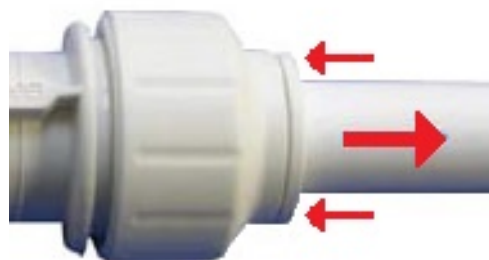


Figure 4

3. REPLACING 4-WAY SHUT-OFF VALVE

If venting the RO unit and replacing the check-valve does not improve the issue that you are having with your unit, the next step is to replace the 4-way shut-off valve.

A faulty 4-way shut-off valve can cause any of the symptoms associated with a unit not shutting off properly.

When replacing a 4-way shut-off valve special care should be taken to ensure that the valve is fitted in the correct orientation and that all tubes are connected to the correct fittings, if the orientation or fittings are mixed up in any way the valve and unit will not operate properly.

It is recommended that you move one tube at a time from the old valve to the new one to avoid confusion. You should not disconnect all of the tubes at once.

Below are instructions on how to disconnect and reconnect tubing, further on below that are figures which illustrate how the valve should be oriented and where each piece of tube should go.

1. Turn off the feed water to the unit, close the blue/white valve on the tank (Figure 1) and open your faucet. Leave the faucet open until all pressure has left the unit and the water stops flowing. This procedure requires the removal of fittings and tubing, failure to de-pressurise the unit may result in a rather large puddle.
2. Locate the 4-way shut-off valve (Figure 5). To access the 4-way shut-off valve you may need to move a number of the post-membrane filters out of the way, these can usually be swung forward over the membrane housing without disconnecting the tubing.
3. Select the first fitting that you are going to move from the valve. Leave the other three fittings connected.
4. Disconnect the tubing (Figure 4) from the first fitting. To disconnect tubing, push the collet that is around the tube flush against the fitting, hold it there and simultaneously slip the tube out of the fitting.
5. Move the tube to the exact same fitting on the new 4-way shut-off valve and reconnect the tubing by pushing it straight into the fitting, you should feel the tube push through an O-ring and seal about 10mm into the fitting.
6. Repeat steps **3** and **4** for the remaining three fittings, one at a time. Use figure 6 for reference is necessary.
7. Close your faucet, open the blue/white tank valve, and re-open the feed water to the unit. Check for leaks, if the tubing leaks, it may need to be pushed in further or replaced.

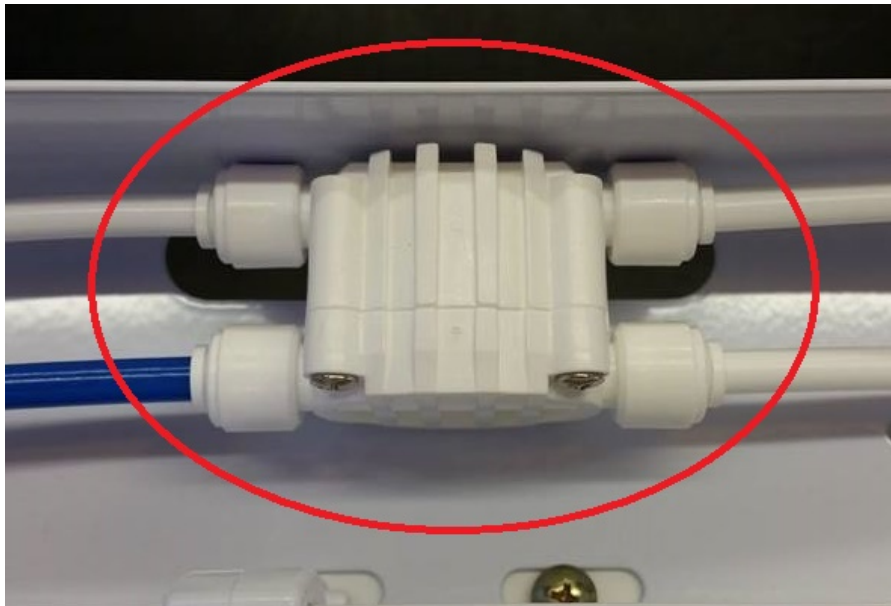


Figure 5

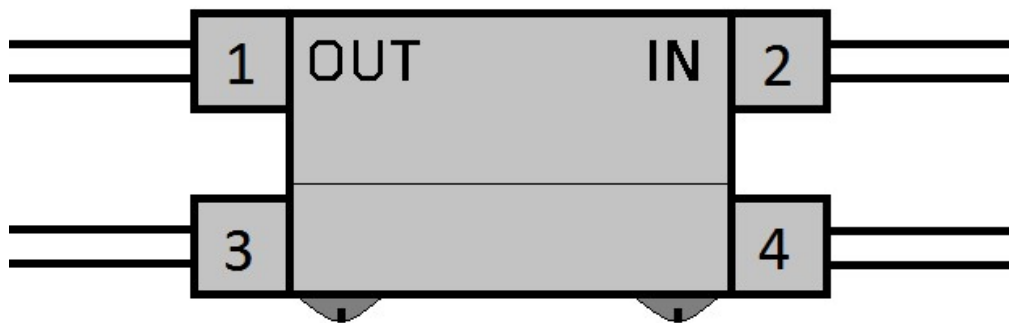


Figure 6

Connection	
1	To inlet of RO membrane housing (left hand side of system)
2	From outlet of last vertical pre-filter housing (Right hand side of system)
3	To inlet of first inline post-membrane filter (left hand side of system) usually blue tube
4	From pure outlet of RO membrane housing/Check-valve (right hand side of system)

Legend to Figure 6