

Replacing the Reverse Osmosis (RO) Membranes

Changing your membranes is a relatively straightforward procedure that can be achieved by carefully following these instructions. During disassembly, water will run out of the unit, so we recommend disassembling in a wet area.

Your Rainman dealer should have supplied 2 x heavy duty cable ties min 580mm or 22.5" (plus spares) with your new membranes.

You will need a few basic tools:

- Wire Cutters
- Needle-nose pliers
- 14 mm socket wrench
- 16 mm open ended spanner
- metric allen keys
- Teflon tape

STEP 1: Removing the RO Unit from the case

Cut the 2 cable ties that secure the 2 pressure vessels into the case.
Using the 2 remaining cable ties as handles lift the unit out of the case:



STEP 2: Identifying flow direction

It is important to identify the direction of flow through the membrane(s) before starting. The upstream end of the 1st pressure vessel is the end with the black high pressure hose that plugs into the pressure unit. The upstream end of the 2nd pressure vessel is the end where the water flows in through the stainless steel bridge pipe from the downstream end of the 1st vessel. The upstream end of each vessel should still be marked with permanent marker from the Rainman factory. If not, we suggest marking the upstream ends to prevent any chance of confusion later on.



STEP3: Removing the end plugs from the pressure vessels

It is usually possible to change membranes by opening only the upstream ends of the pressure vessels. In the upstream end of the 1st vessel, unscrew the 2 socket head screws and remove the 2 crescent shaped retaining “ears”:

Now gently pull the plug out by gripping the hose fitting:

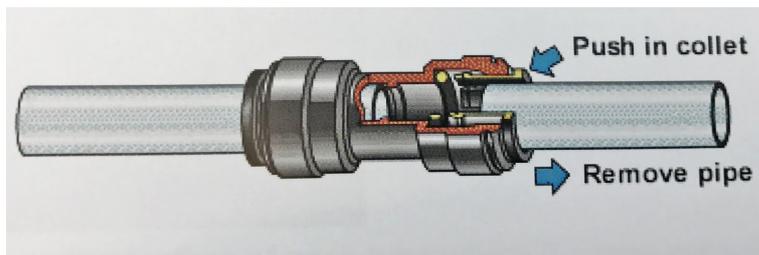
Important: when removing the end plugs, take care to place them on a clean surface. The o-rings are covered with clear lubricant to ensure the proper function of the o-ring. The o-rings must not be



allowed to become contaminated with particles or other debris.

The upstream end of the 2nd vessel the center port is fitted with a product water fitting, and this fitting must be removed before the ears can be removed.

Note: When removing the hoses from the product water fitting be sure to push the collet in as shown before trying to remove the tube.



It is easier to remove the product water fitting before removing the bridge pipe because the bridge pipe will stop the end plug from rotating whilst you unfasten the product water fitting.



Then remove the bridge pipe and remove the ears



Tip: if you do not have a specialized tool, needle nose pliers can be used as shown to help prevent the end plug from rotating whilst removing the permeate fitting:



Tip: you can re-attach the bridge pipe loosely and use it as a handle to remove the end plug:

STEP 4: Removing the membranes

Each membrane has a black cup type seal at one end:

This should always be at the upstream end of the pressure vessel.



The membranes can now be removed by gripping the central permeate tube with needle-nose pliers:



Important: If you are planning to reuse the membranes you are removing, cover the pliers with several layers of rag or rap with tape to prevent damage to the permeate tube.

The cup seal might get caught in the internal groove in the pressure vessel as it comes out.

Gently move the membrane from side to side whilst pulling firmly to release it from the groove.

If you cannot get the seal past the groove, you will need to remove the other (downstream) end plug and push the membrane out that end.

STEP 5: Replacing the membranes

Insert the new membranes into the upstream end of the housings. Note: be sure to insert the new membranes in the same orientation as the old ones, ie: with the cup seal at the upstream end of the vessel.

STEP 6: Replacing the end plugs

Replacing the end plugs is the reverse of removal taking note of the following points:
Check that there is no debris on either the o-rings on the end plug or in the ends of the pressure vessels. Add more food-grade grease to either or both of these if they appear dry. Damaged or flattened o-rings should be replaced. Apply fresh thread tape to the product water fitting(s) before replacement.