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Domestic Reverse Osmosis System Installation and Maintenance Manual

For Systems: RO50-NP34, RO50-NP35, RO50-NP36

RO50-A1 & RO50-A1M



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General Information

TO BE INSTALLED ON COLD WATER SUPPLY ONLY

TURN OFF MAINS WATER SUPPLY BEFORE STARTING INSTALLATION

**PLEASE CAREFULLY READ THROUGH MANUAL BEFORE INSTALLING
SYSTEM.**

**PLEASE KEEP THIS MANUAL IN A SAFE PLACE. INSTRUCTIONS ARE
INCLUDED FOR FILTER CHANGES**

**PLEASE NOTE THAT RO SYSTEMS REQUIRE A MINIMUM OF 3 BAR
(45PSI) PRESSURE TO WORK. THE HIGHER THE PRESSURE THE
BETTER THE PERFORMANCE WILL BE. OPTIMAL PRESSURE: 5.5 BAR
(80PSI)** (BOOSTER PUMP KITS CAN BE PURCHASED ON OUR WEBSITE)

**THE PUMPED UNITS REQUIRE A MINIMUM OF 2 BAR (30PSI) PRESSURE
AND REQUIRE A STANDARD 3 PIN UK SOCKET.**

Our reverse osmosis system will remove more than 96% of: foreign particles, colloid, organic substances, heavy metals, soluble solids, bacteria, viruses, pyrogen, nitrate, microorganisms, hormones, Fluoride and other harmful impurities. It only retains water molecules and dissolved oxygen. To achieve this, RO systems use a special kind of semi-permeable membrane. This membrane is protected by pre-filters, these remove sediment, particulates and Chlorine. The membrane has layers of filtration which the water is pushed through, any water that does not go through all the layers is expelled to the waste line leaving only the pure filtrated water to store in the tank. All our Domestic units have an auto shut off valve, this allows the system to control when water is and is not required. If your tank is full, the system will stop production. If the tank is low/empty the unit will start to produce water. RO units waste around 70% of the water and will get the TDS down to around 10-20% of the incoming TDS readings.

Pumped Units: The pump will also turn on and off as required.

6 Stage Unit -

Stage one: Polypropylene pre-filter to remove sediment and dirt down to 5 microns.

Stage two: Granular activated carbon (GAC) filter.

Stage three: High density 5 Micron carbon block filter to remove chlorine.

Stage four: Reverse osmosis membrane, filters down to 0.0001 micron.

Stage five: Post carbon in-line filter to improve taste and odour.

Stage six: Post mineral filter to enrich the water with health essential mineral including Calcium, Magnesium, Potassium and Sodium.

4 Stage Unit - Excludes stage two (GAC filter) (E)

5 Stage Unit - Excludes stage six (post mineral filter) (R)

Main Technical Parameter-

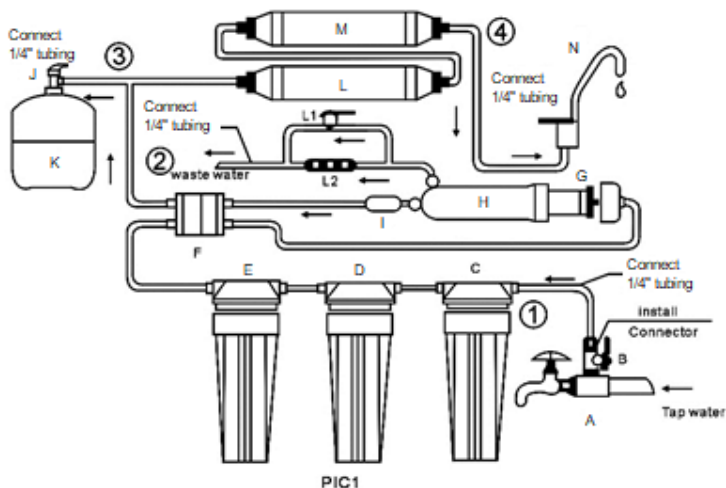
- 1) Purified water output (*based on optimum water pressure*):
 - 50GPD membrane, 185L/day
- 2) Water storage tank capacity:
 - 3 Gallon / Holds 6.5L
- 3) Inlet water temperature: 4~42°C
- 4) Pre-treatment filters total water output: >1000L
- 5) Water supply: tap or ground water, TDS <1000ppm
- 6) Operating bar pressure: 3 Bar (45PSI) or more. Optimal pressure to received performance above is 5.5 bar (80PSI). Please do not use on water pressure that exceeds 7 bar (100PSI) without a pressure limiting valve.

Pumped Units:

- 7) Volt: AC220V/110V – DC24V / 50-60HZ
- 8) Power: 25W
- 9) Type of Guard against electric shock: Type II
- 10) The pump is adjustable. Use the allen screw on the head to adjust the pressure. *Please note: the pump will arrive on the highest setting. Please do not use pump on pressure that exceeds 7 bar (100 psi).*

System Layout and Components (6 Stage Unit)

RO50-NP34, RO50-NP35, RO50-NP36



A. Three way feed water connector	B. Ball valve
C. Filter housing (PP sediment cartridge)	D. Filter housing (GAC cartridge)
E. Filter housing (carbon block cartridge)	F. Four way valve
G. RO membrane	H. Membrane housing
I. Check valve	J. Tank valve
K. Pressurised tank	L. Post carbon inline cartridge
M. Re-mineraliser cartridge	N. Faucet
L1. Flush valve	L2. Flow restrictor
1, 2, 3 and 4: Connect 1/4" tubing	

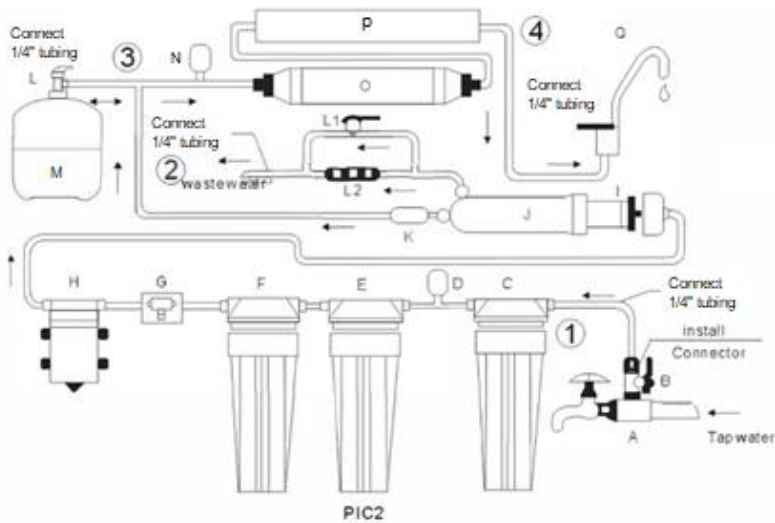
4 Stage Unit - Excludes stage 2 (GAC filter) (E) & stage 6 (post mineral filter) (R)

5 Stage Unit - Excludes stage 6 (post mineral filter) (R)

6 Stage Unit – includes a pressure gauge

System Layout and Components (6 Stage Pumped Unit)

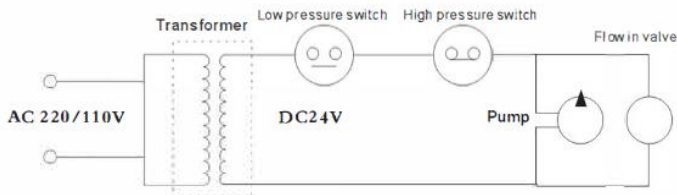
RO50-A1, RO50-A1M



A. Three way feed water connector	B. Ball valve
C. Filter housing (PP sediment cartridge)	D. Low pressure switch
E. Filter housing (GAC cartridge)	F. Filter housing (carbon block cartridge)
G. Flow in valve	H. Booster pump
I. RO membrane	J. Membrane housing
K. Check valve	L. Tank valve
M. Pressurised tank	N. High pressure switch
O. Post carbon inline cartridge	P. Re-mineraliser cartridge
Q. Faucet	
L1. Flush valve	L2. Flow restrictor
1, 2, 3 and 4: Connect ¼" tubing	

5 Stage Unit – Excludes Stage six (post mineral filter) (R)

Pump Operation Principle Diagram



Preparation

Recommended Equipment List

- Variable speed drill
- Drill bit: $\frac{1}{8}$ " (for guidance) $\frac{1}{4}$ " (to drain) and $\frac{1}{2}$ " (for tap)
- Pliers
- Phillips screwdriver
- Plastic tube cutter / Stanley Blade

The 5 metres of tubing provided is to be used at points marked 1, 2, 3 and 4 on PIC1 (page 4 & 5). You can also find these marks on the coloured stoppers on the RO system.

Mark 1 (Red stopper) – Cold water supply to RO system

Mark 2 (Black stopper) – Waste water to drain

Mark 3 (Yellow stopper) – Valve outlet on RO system to water tank

Mark 4 (Blue stopper) – Last stage on RO system to drinking water tap

Fittings included



Tap can be installed either attached to a wall (Fig.1) or on a counter-top (Fig. 2)

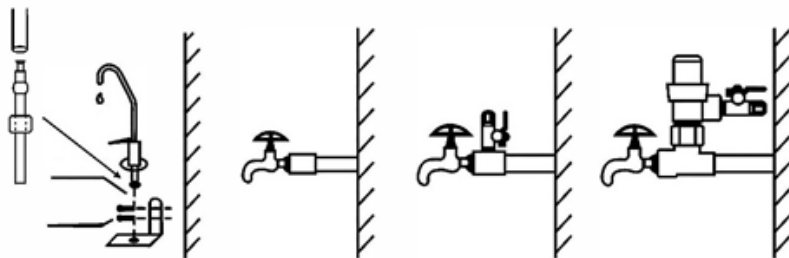


Fig. 1 Tap on wall using bracket

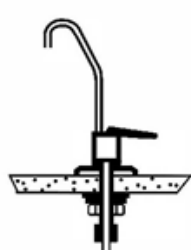


Fig. 2 Tap on counter-top

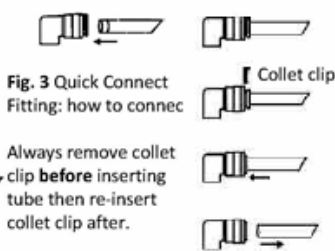


Fig. 3 Quick Connect Fitting: how to connect

Always remove collet clip **before** inserting tube then re-insert collet clip after.

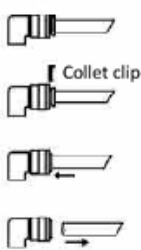


Fig. 4. QC Fitting: how to disconnect

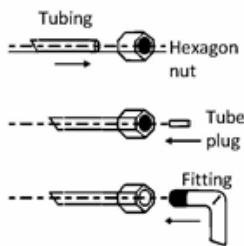


Fig. 5 JACO Fitting

Fitting types: The two types of fitting used in this installation are Quick-connect (push-fit) and JACO fitting.

1. Quick-Connect (QC) fitting:
How to connect – See Fig. 3. Remove collet clip, insert tubing into fitting until it locks. Gently pull tubing back to ensure fit is secure. Re-place collet clip.

How to disconnect – See Fig. 4. Remove collet clip, push down on collet so it is completely flush with the fitting and pull tubing simultaneously.
2. JACO Fitting: See Fig. 5. Slide compression (hexagon) nut onto tubing, insert tube plug into tubing. Insert tubing into the opening of fitting and screw on the compression nut tightly.

Installation

TO BE INSTALLED ON COLD WATER SUPPLY ONLY

**TURN OFF MAINS WATER SUPPLY BEFORE STARTING
INSTALLATION**

**WHEN CUTTING TUBING TO SIZE, ENSURE THAT IT IS CUT
STRAIGHT WITH NO JAGGED EDGES**

Install tap

1. Determine location for tap, cut tubing to length (see fig.1 and 2) and install tap using the diagram below or using white fitting provided:

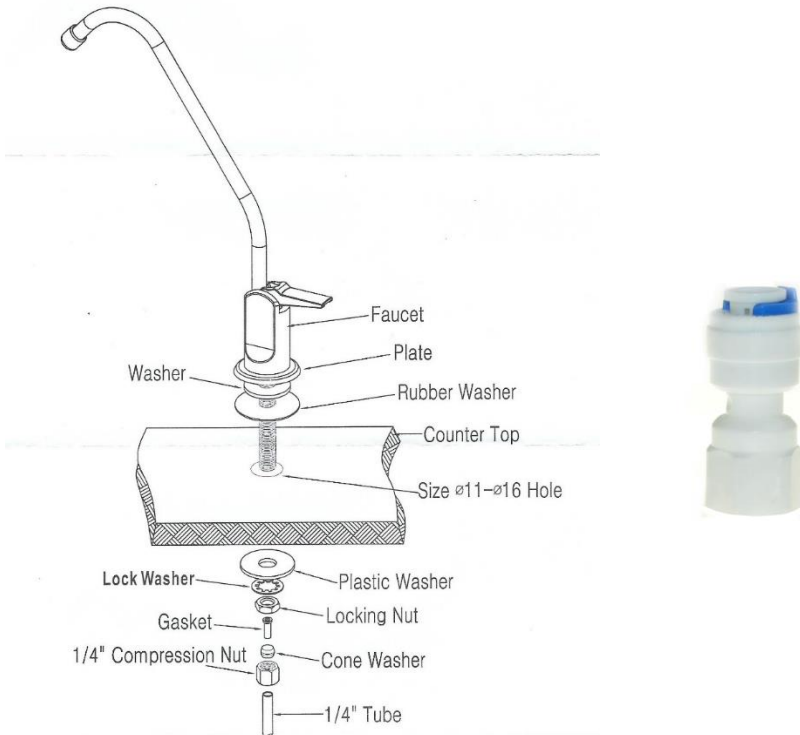


Diagram for illustration purposes only, your tap may differ, but installation is identical.

Connect to cold water supply.

There are 2 different fitting options to use. Please look at points 2. & 3. for the best option for you.

2. 2 Piece:

This is to go in between the $\frac{1}{2}$ " hose from your cold water feed to your current kitchen tap.

Screw the isolator tap into the body. Remove the hose from the cold-water feed ball-o-fix fitting and screw the ball-o-fix male thread into the female end of the fitting, then screw the female hose onto the male end of the fitting.



3. Tee Piece:

Cut into existing 15mm copper pipe and compress the fitting onto the pipe. Using the white $\frac{3}{4}$ " Female fitting, screw this onto the end of the tee piece.



Install drain clamp

Determine location for drain clamp based on plumbing layout. Drain should be installed **above** the trap on either the horizontal or vertical tailpiece, it should be mounted as low as possible to avoid draining noise.



4. ($\frac{1}{8}$ " Optional) using a $\frac{1}{8}$ " drill bit, drill a $\frac{1}{8}$ " hole into one side of the drain pipe. Then to enlarge the hole, use a $\frac{1}{4}$ " drill bit.

5. Taking the side of the drain clamp with the QC fitting, stick the self-adhesive sponge provided to the inside of the drain clamp (remove centre piece of sponge beforehand). Place one half of the plastic clamp on either side of the drain pipe with, and clamp loosely using the nuts and bolts included.

6. Align hole on drain clamp with drilled hole. A drill bit (or pen/pencil) may be used to help with alignment. Once aligned, tighten clamp with Phillips screwdriver. **Avoid over-tightening clamp.**

7. Determine length of tubing needed for connection from RO system to drain clamp and cut to length. Push tubing into fitting on clamp and insert blue collet clip under collet. Pull the tubing back to check seal is secure.

Assemble Main RO system

8. Remove all packaging and plastic wrapping/seals from filters. **Do not include the membrane in this step.**

9. Connect housings to RO system shown in PIC1 & PIC2 by hand and then use spanner provided to completely tighten. From right to left (closest to inlet):

- Sediment 5-micron pre-filter in 1st stage housing
- GAC (carbon) filter in 2nd stage housing (**Not on 4 stage unit**)
- Carbon block filter in 3rd stage housing (**2nd Stage on 4 stage unit**)

Connect system

Determine length of tubing needed between RO system and water tank and remove red stopper on water tank. Connect tubing from cold water supply, drinking tap, drain clamp and water tank to RO system by removing the coloured stoppers and inserting tubing into the connections listed below:

Mark 1 (Red stopper) – Cold water supply to RO system

Mark 2 (Black stopper) – Waste water to drain

Mark 3 (Yellow stopper) – Valve outlet on RO system to water tank

Mark 4 (Blue stopper) – Last stage on RO system to drinking water tap

RO Pumped Units – Connect your unit to the mains supply and turn on.

Check all tubing is secure by pulling back on tubing, remembering to always remove collet clips before inserting tubing.

Turn on your properties mains water supply.

System Flushing –

It is very important to flush the RO system through in 3 stages to protect the membrane and to ensure optimum performance for your unit.

Flushing the unit releases any carbon fines, dust, air etc from the pre and post filters which may have been present at the manufacturing process. By flushing the unit in 3 stages this stops the membrane from getting clogged or a reduction in flow as the pre and post filters have already been flushed.

1st System Flush-

The pre-filters now need to be flushed **BEFORE** the membrane is added to the unit.

Turn the valve on the storage tank to 'off'.

Turn on mains water supply by putting the ball-o-fix and isolator tap to 'on' position (1/4" turn from off position). (The ball-o-fix fitting can be left in 'on' position from here and the isolator tap is to be used to turn the water 'on' and 'off').

Open the faucet and let the water run for approximately 5 minutes or until the water runs clear. While the water is flowing this will also release any trapped air in the unit, so the tap may splutter.

(If you have a unit with a pump, the pump will start up when the above is carried out).

Check around the unit for any leaks. *(If a leak is found, turn off the water, open the faucet to drain the system and check the fitting / tubing where the leak was found. Also see our troubleshooting section on page 16. Once the issue is resolved, start process again).*

Turn off the mains water and leave faucet open until all water has drained out. Then close the faucet.

Insert Membrane

10. To insert membrane, remove post filters by pulling on bracket connected to the membrane housing. Remove the tubing from the QC fitting (inlet to membrane housing).

12. Lift membrane housing out of brackets and unscrew housing cap using spanner provided. Please ensure the o'ring is kept on the thread on the body of the membrane housing (not inside the housing cap).

13. Remove air tight film from membrane only (not blue film) and insert into housing with the end with two black O-rings first. Screw cap back on, push housing back into bracket and re-attached post filters. Check tubing either end to prevent leaks.



2nd System Flush-

Still leaving the tank valve closed, turn the L1 valve (see PIC1 and PIC2) to the open position.

Turn on the water by putting the isolator tap to 'on' position (1/4" turn from off position).

Open the faucet and let the water run for approximately 5 minutes.

Check around the unit for any leaks. (As per 1st system flush).

Turn off the mains water and leave faucet open until all water has drained out. Then close the faucet.

CLOSE THE L1 VALVE

3rd (Final) System Flush -

Turn the valve on the storage tank to 'on'.

Turn on the water by putting the isolator tap to 'on' position (1/4" turn from off position).

You will hear the RO unit starting to produce water and the pump start (if applicable). Double check the unit for leaks. (As per 1st system flush)

Let the RO tank fill (this can take up to 4 hours for the first fill) once the tank is full, open the faucet and drain all the water from the tank. It is not recommended to use or drink the water from the first tank full, please ensure this water is drained from the faucet. Once the tank is empty, close the faucet and the unit will then start producing water again.

Maintenance

It is highly recommended to change your filters periodically to maintain the highest level of filtration from your RO system. Changing your filters regularly can also prolong the life of your RO system. The table (adjacent page) shows how often it is recommended to replace each filter/stage in your system. This is dependent upon water quality; water hardness & particulates may result in filters being changed more regularly than shown:

Filter Stage	Material	Functions	Material life (depending on water quality)
1 st Stage	PP 5 Micron	Removes un-dissolved contaminants i.e. sand, silt and rust etc.	6 Months
2 nd Stage	Granular Activated Carbon	Removes chlorine, organic fertiliser, agricultural chemicals and Insecticides.	6 Months
3 rd Stage	Carbon Block	Re-filtration of 2 nd stage.	6 Months
4 th Stage	RO Membrane	Removes heavy metals, bacteria, hormones and fluoride etc.	1-3 Years
5 th Stage	Inline Carbon	To improve taste and odour.	6 Months

6 Stage Unit – It is recommended to change the mineral filter every 6 months (R).

RO Membrane Pressure Washing -

When the RO membrane purifies the water, there are impurities and bacteria left on the surface of the membrane which may affect the quality and volume of the purified water. The RO membrane needs to be cleaned periodically. Our units will flush the RO membrane manually by turning 'on' the flush valve (L1 – see PIC 1 and PIC 2) for 2-3 minutes once a week. Please ensure this valve is **CLOSED** when complete.

(L1 Valve- looking down at the valve from the front of the unit, the 'off' position is to the left (9 o'clock) the 'on' position is down (6 o'clock).

Replacement Filter Codes:

Please enter these codes into the search bar on our website:

<u>System Code</u>	<u>Filter Codes WITHOUT Membrane</u>	<u>Filter Codes WITH Membrane</u>
RO50-NP34	FF-RO-REPL-D4	FF-RO-REPL-D4-50GPD
RO50-NP35 & RO50-A1	FF-RO-REPL-D5	FF-RO-REPL-D5-50GPD
RO50-NP36 & RO50-A1M	FF-RO-REPL-D6	FF-RO-REPL-D6-50GPD

All replacement filters and membranes can be purchased through our website www.finerfilters.co.uk or call us on 01704 807600.

Replacing your filters-

(Filters only, not membrane)-

Please have some towels and cloths ready as some water will escape from the unit.

Turn the valve on the storage tank to 'off'.

Turn off the water by putting the isolator tap to 'off' position (1/4" turn from on position).

Turn off the water pump (if applicable).

Open the faucet to drain as much water from the unit as possible.

REMOVE THE MEMBRANE FROM THE HOUSING AND SET ASIDE UNTIL FILTERS HAVE BEEN CHANGED AND THE UNIT FLUSHED

Carefully remove the housing bowls and empty any residual water down the sink and remove the exhausted filters.

Remove the wrapping of the new filter(s) and insert into housing(s).

Screw housing bowl back into place.

Repeat this for all filters contained in the housing bowls.

Post In-Line filter(s) including Mineral Filter -

Inline Post Filter(s) - Remove the collet clips from the fitting and using the quick release, remove the tubing on both sides. (Lift filter off bracket if easier).

Un-screw the fittings from the end of the inline filter. Dispose of exhausted filter.

Remove any residual PTFE tap from the male thread of the fittings.

Using the PTFE tape provided with the unit, thread 15-20 wraps of PTFE tap around the male end of both fittings.

Remove the new inline filter from the packaging and screw the fittings back in place. Ensure the filter is the correct way by the flow arrow.

Put filter back in place and re-insert the tubing and collet clip and pull back to ensure inserted correctly.

Turn the Pump back on (if applicable) and carry out 1st System Flush from page 11.

Carefully add membrane back into the housing and carry out the 2nd flushing stage on page 12.

Replacing Filters and Membrane –

Please carry out all steps from the Replacing Filters section and carry out the 1st flushing stage.

Follow the instructions for inserting your membrane on page 11 then carry out the 2nd flushing stage.

Finally, go to 3rd (Final) Flushing stage to complete the filter and Membrane changes.

Troubleshooting

Symptom	Probable Cause	Solution
No water from tap	1. Water supply is off 2. Tank valve is in 'off' position 3. Tank improperly pressurised 4. Pre, or post filter clogged 5. RO membrane damaged or clogged 6. Output line crimped	1. Turn water supply on and/or isolator tap in on position 2. Turn Valve to 'on' position 3. Set tank pressure to 5-7psi when empty 4. Check/replace pre, or post filter 5. Check/replace membrane 6. Remove crimp
No water to tank	1. Tank improperly pressurised 2. Flush valve open 3. Fault on non-return valve fitting	1. Set tank pressure to 5-7psi when empty 2. Ensure L1 flush valve is closed 3. Fitting requires replacing
Slow flow from tap	1. Pre, or post filter clogged 2. Low air pressure in RO tank 3. Tank not filled yet	1. Check/replace pre, or post filter 2. Raise tank pressure to 5-7 psi 3. Allow tank a few hours to fill
Membrane or Drop in housing leaking from seal	1. O-ring not seated properly 2. Housing not tightened fully	1. Make sure O-ring is in groove and lubricated (Membrane housing see insert membrane on pg 11) 2. Use wrench provided to tighten fully

Bad taste or odour	1. Membrane not installed correctly 2. Bad membrane 3. New system (or new filters/membrane)	1. Check membrane is installed as instructed 2. If TDS reading is below 80%, replace Membrane 3. Ensure the correct flushing instructions are followed and the tank is allowed to fill once and expelled before water is consumed.
System continually running	1. Automatic shut off valve defective 2. Low input pressure	1. Determine which valve is defective 2. If pressure is below 30psi, water pressure needs increasing, or booster pump kit required.
Leaking tap	1. Leaking fitting 2. Leak at base of tap stem	1. Check fitting is threaded correctly. Ensure tubing is pushed into fitting properly and has been cut straight 2. Replace tap
Cloudy/milky ice cubes or water	1. Defective membrane 2. New filters or membrane	1. Replace if TDS reading is below 85% 2. Flush system through as per instructions in manual
Leaking fitting	1. Fitting damaged or cracked 2. Tubing not pushed in fitting or screw fit not installed properly	1. Replace fitting 2. Push tubing in firmly until it locks. Check screw fit is installed correctly, refer to image in installation