PURITY SERIES

Usage and Care Manual

Models: AC-PURITY-CT-RO

Your Partner in Cool.

AQUA COOLER

Your Partner in Cool.

INTRODUCTION

Thank you and congratulations on selecting the Aqua Cooler Purity RO Series.

Purity Rerverse Osmosis systems are among the best appliances you can find on the market to improve water taste and quality. With the water quality of our environment worsening, we have been prompted to design and manufacture this compact, domestic RO purifier to meet these challenges with the highest quality solutions.

Your Purity RO system will provide many benefits and advantages:

- No chemicals added to water.
- Provides high quality water.
- Ensures high production.
- Low maintenance costs.
- Compact innovative design and concept.
- No installation or water connections.
- No water waste. All water can be used.
- Saves time on set up and maintenance.

With the Purity Series you will enjoy the improved taste of water for drinking, coffee, juice and ice cubes and any other drinking water use. RO water also enhances the flavour of food when cooking. Enjoy healthier water for your whole family.

TECHNICAL SPECIFICATIONS	
MODEL	AC-PURITY-CT-RO
DIMENSIONS	415 x 250 x 380mm (HxWxD)
WEIGHT	15kg
TEMPERATURE RANGE (max/min)	40°C/4°C
INLET TDS (MAX.)	800ppm
HARDNESS (MAX.)	25 grain
RO MEMBRANE	Type 1x1812 75 GPD
PRODUCTION	284 litres per day
ELECTRICAL OPERATION	24 W
ELECTRICAL ADAPTOR	100-240V I 50/60Hz
TREATED WATER RESERVOIR CAPACITY:	2 litres
SUPPLY WATER PITCHER CAPACITY	4 litres

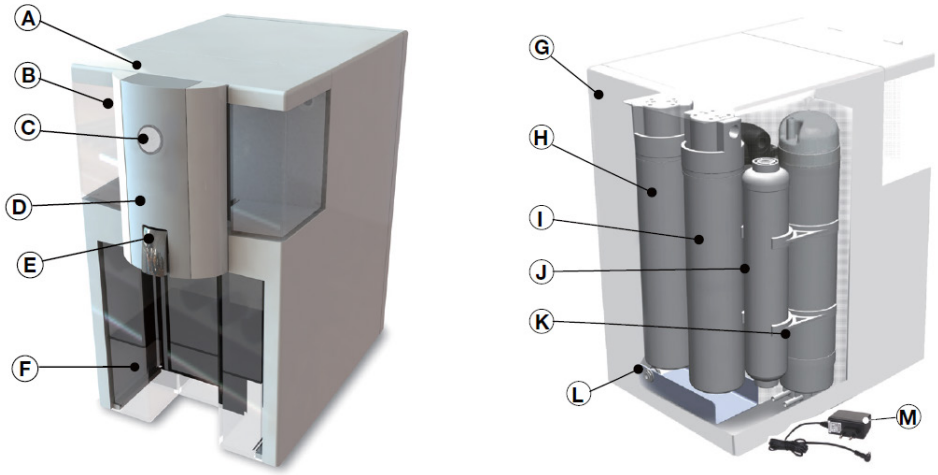
What is Natural Osmosis and Reverse Osmosis?

Natural or direct osmosis is common in nature, found in places like the semi-permeable membranes which are part of the vast majority of organisms (e.g. plant roots, our own body organs, cell membranes, etc.)

When two solutions of different concentrations of salts (TDS -Total Dissolved Solids) are separated by a semi permeable membrane, it naturally produces a flow of water from the less concentrated solution to the higher concentrated solution. This flow continues until the concentrations on both sides of the membrane are equal.

To overcome this tendency, and reverse the natural flow of the system, (in order to obtain a flow of water from a higher salt concentration solution to a lower salt concentration solution) pressure is applied to the water on the side of the membrane with the higher concentration. Pure water is collected from the lower pressure side of the membrane and this process is what is called reverse osmosis. Today, reverse osmosis is one of the best methods for improving the characteristics of water by a physical process (without using chemicals).

PARTS DESCRIPTION



A	Pure Water Reservoir Cover	**H**	PP Sediment Prefilter
B	Pure Water Reservoir	**I**	Carbon Prefilter
C	Push Button Control	**J**	Postfiler pH Adjuster
D	Front Panel Cover	**K**	RO Membrane
E	Dispenser	**L**	Power Socket
F	Supply Pitcher	**M**	Electrical Transformer
G	Back Cover		

4 Stage Filtration & Booster Pump:

Stage 1: Prefilter PP5 Micron - This stage removes particles suspended in inlet water.

Stage 2: Prefilter Carbon - Removes free chlorine, odor, organic contaminants, pesticides and chemicals that contribute to undesirable taste and odour.

Stage 3: 75GPD RO Membrane - This is the heart of the Purity Series, and removes contaminants down to a molecular level. (see page 2 for an explanation of "What is Reverse Osmosis")

Stage 4: Post Filter Carbon - Removes any remaining odours and tastes.

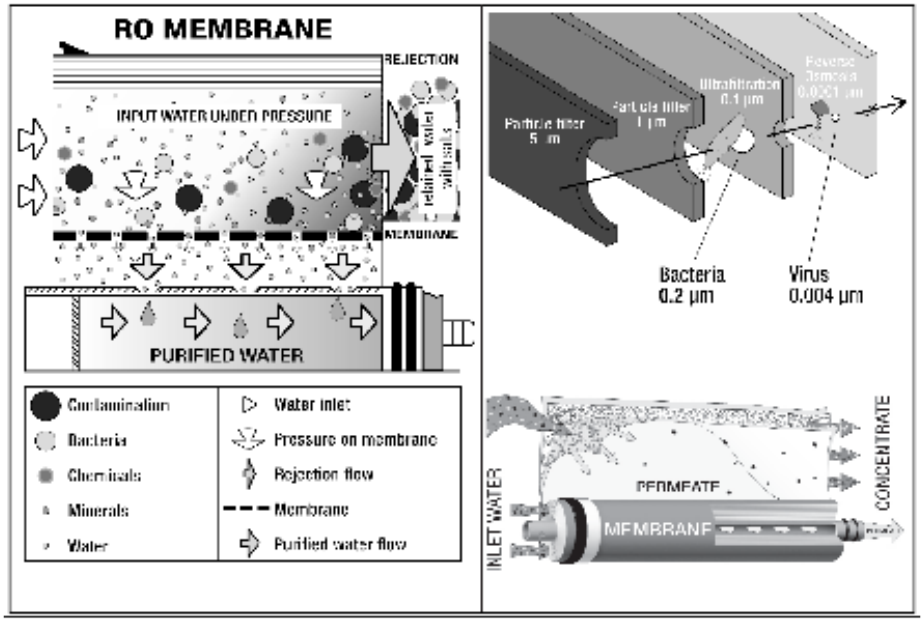
Pump UP-7000 - UP-7000 Pump provides top quality, quiet, efficient operation for pressure for RO process.

RO MEMBRANE

How does the membrane work?

Pressure is applied to the water on the inlet side of the semi permeable membrane, so that part of it (RO water) will flow through the pores of the membrane, while the rest of the water (water rejected with high salt concentration) will be diverted back to the supply pitcher to recycle and optimize performance.

Since the diameter of the pores of the membrane is less than 0.0001 microns, only water molecules and a small amount of minerals (sodium, potassium, calcium, magnesium, etc.) will pass through the membrane. Larger molecules will be "rejected" from passing through the membrane.



CONTAMINANT REDUCTION

Contaminants and other substances reduced by Reverse Osmosis Membrane

The chemical composition and concentration of salts and other substances in the inlet water will affect the water produced. The reverse osmosis membrane of the Purity Series is able to reduce the concentration of elements and compounds listed in the following tables and more.

INORGANICS	
ELEMENT / COMPOUND	**REDUCTION**
Sodium	90-95 %
Calcium	93-98 %
Magnesium	93-98 %
Aluminium	93-98 %
Copper	93-98 %
Nickel	93-98 %
Zinc	93-98 %
Barium	93-98 %
Carbonates	93-98 %
Chlorine	90-95 %
Bicarbonates	90-95 %
Nitrates	45-55 %
Phosphates	93-98 %
Fluoride	93-98 %
Cyanide	90-95 %
Sulfates	90-95 %
Boron	40-45 %
Arsenic	93-98 %

ORGANICS	
ELEMENT / COMPOUND	**REDUCTION**
Total Organic Compounds	98 %
Glucose	98-99 %
Acetone	70 %
Isopropanol	90 %
Ethyl benzene	71 %
Ethylphenol	84 %
Tetrachloroethlyene	68-80 %
Urea	70 %
1,2,4 tricholorobenzene	96 %
1,1,1 trichloralethane	98 %

OPERATION

Operation Conditions

- Do not use water above 40 °C
- The ambient temperature must be between 4 °C and 45 °C.
- Keep the system from extreme temperatures, like cooking surfaces, direct sunlight, and extreme environmental conditions.
- Avoid external dripping on the purifier.

Cautions

Do not use with water that is microbiologically unsafe, of unknown quality, or without adequate disinfection before or after the system. If the water being used is from a public supply, it will comply with requirements for water to be used for the Purity Series purifier and system will substantially improve the water quality.

In the event that the water to be treated is not from a public water supply, or is of unknown origin, in order to ensure proper purification, contact Aqua Cooler to advise you on the most appropriate physical, chemical and bacteriological water treatment to use with your Purity Series.

Unplug the unit before repair, inspection or filter replacement.

Effect of TDS Concentration in the inlet water

Production rate will vary depending on the TDS content (Total Dissolved Solids) and temperature of water to be treated. Water with a lower temperature and higher TDS will be filtered slower than water which is warmer or of a lower TDS.

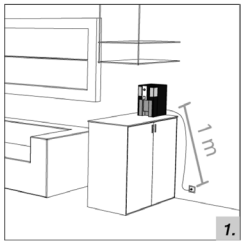
It is recommended to use water with a maximum hardness of 25 grains in order to obtain optimum performance.

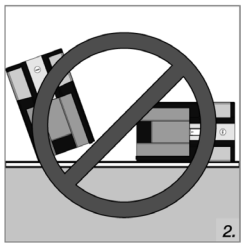
If the inlet water is of hardness greater than 25 grains, or contains high concentrations of iron or manganese, or hyper chlorination, there may be a reduction in membrane life and performance of certain components of the purifier.

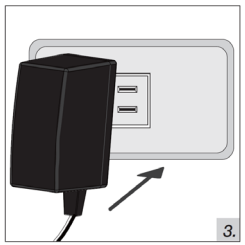
The Purity Series is designed for TDS up to 800 ppm. For TDS above 800 ppm, consult with Aqua Cooler. (If the water being used is from a public supply, it will comply with requirements for water to be used for the Purity Series.)

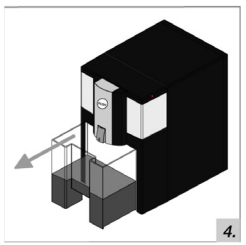
START UP

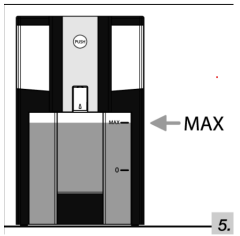
1. Remove purifier and contents from box and place on a convenient counter top or table within 1 metre of an electrical outlet. (fig. 1)
2. Equipment must be operated on a level surface and not inclined. (fig. 2)
3. Plug the transformer wire into the power socket on the back of the Purity. Plug the electric cord into a wall socket. (fig. 3) (The Push Button Control LED will glow blue)
4. Remove the supply pitcher from its base by pulling out on the front handle.(fig. 4) (The LED will flash yellow)
5. Place the pitcher under a faucet and fill to the "Max" level marked on the front of the pitcher. (fig. 5)
6. Replace the supply pitcher to the base of the Purity, being sure the pitcher is securely seated into the base. (The Push Button Control should glow steady blue.)
7. Press the control button once. (fig. 7). The purifier will draw water from the supply pitcher and direct purified water to the Pure Water Tank.
   A full course of treatment produces approximately 2 litres of pure water, stored on the upper reservoir. Unfiltered water is directed back to the supply pitcher for recycling, allowing optimum performance.
8. To dispense Purified water, either push in or pull out on the dispenser handle. When pulled out, the handle will stay in the open position. (fig. 8)

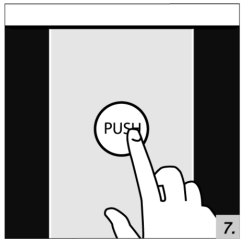


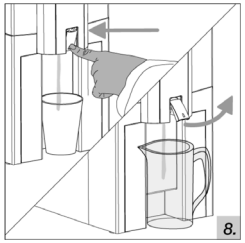












CONTROL DIAL

User Interface
The Purity Series has a blue, yellow and red color coded LED electronic control which integrates a timer, and security functions to efficiently manage the filtering cycle and indicate any malfunctions detected.
The chart below shows condition of purifier by color coding.

LED Flashing	STATUS LED	FUNCTION	MEANING
LED Fixed Blue		**POWER ON**	System is waitng for cycle.
LED Flashing Yellow		**ALARM**	The supply pitcher is not mounted or set correctly.
LED Flasing Blue		**FILTERING**	The system is in operation and treatment is in process.
LED Fixed Yellow		**FILTERING COMPLETE or ALARM**	Pure water has been drawn off from the supply pitcher to the "minimum" level and automatically turned off. Cycle complete. The lower reservoir is empty or has insufficient water
LED Fixed Red		**FILTER CHANG INDICATOR**	Time to change filters
LED Flashing Red		**MAINTENANCE INDICATOR**	Time for system maintenance. Check RO membrane and post filter.

TREATMENT CYCLE TIME

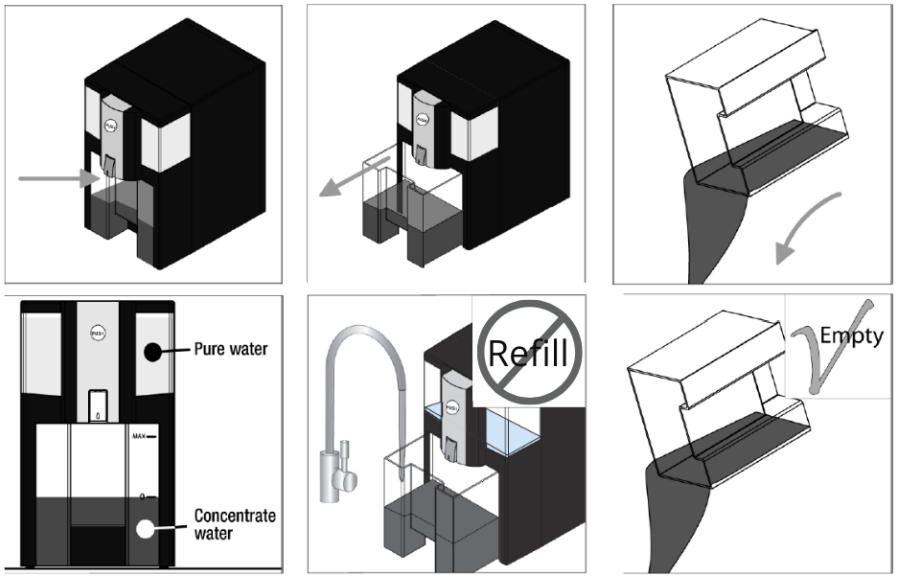
The time required to complete one cycle will vary according to water quality, water temperature and how long the filters have been used. The filtering process will turn off automatically once the cycle is completed.

Filtration Completed less than 20 minutes = Normal condition
Filtration Completed more than 20 minutes - Filters should be changed.

Gradually as the filters and membrane become used, the filtering cycle time will become longer. Usually the filtering process will complete before reaching a preset 20 minute time limit. If the cycle does not complete in one 20 minute cycle, this indicates that the filters should be changed.

CHANGING WATER SUPPLY IN PITCHER

After completing a filter cycle, completely empty the supply pitcher, and refill with fresh water before starting another cycle. The water remaining in the supply pitcher after a filtration cycle has a higher concentration of TDS, so starting a new cycle, by adding fresh water to this remaining concentrate water will lower system performance and can damage the RO membrane and filters.



FILTER INITIALIZATION

When the purifier is being used for the first time, the filters should be rinsed by running the purifier for two cycles, and discarding the water. Water from the first cycle may contain fine carbon sediment from the post filter which may give the water a slight gray color. This carbon is food grade and healthy, and will not affect the quality of the water. After filtering two cycles, the pure water reservoir may be removed from the purifier and rinsed with tap water.

With filters rinsed, the purifier may now be used for pure water filtration.

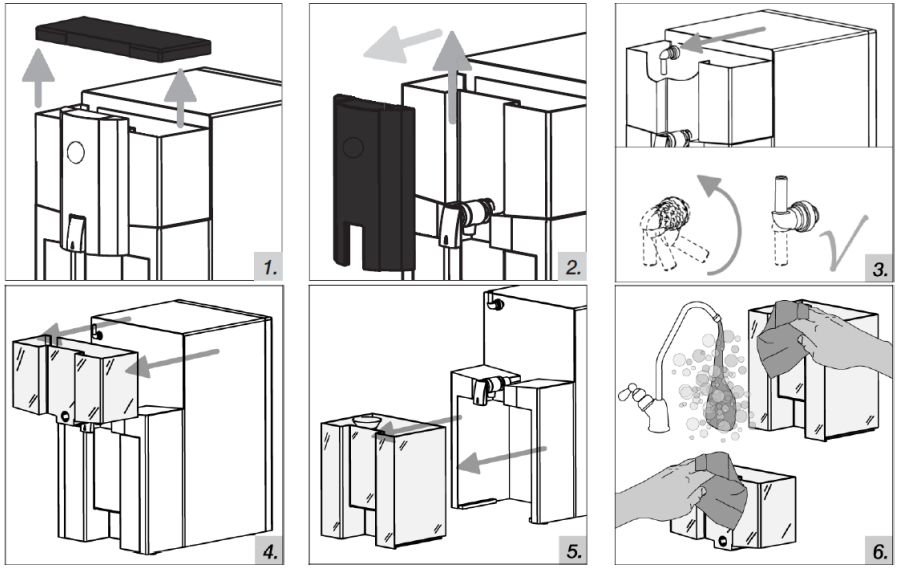
Water should not be stored in the purifier for extended periods of time exceeding one week.

If you plan to not use the purifier for more than one week, completely empty the water supply pitcher and pure water reservoir, and disconnect the power supply. When you return, filter two cycles of water to rinse the system.

If the purifier has not been used for more than a month, remove and wash with soap and water both the supply pitcher and pure water reservoir. Rinse the reservoirs and filter two cycles of water to rinse the system.

CLEANING PURE WATER RESERVOIR

1. Remove top cover.
2. Slide the front cover panel up and remove.
3. Turn the pure water supply tube so it is pointing up.
4. Slide the pure water reservoir forward to remove.
5. Remove supply pitcher.
6. Wash both reservoirs with a soft cloth and soap and water.



FILTER REPLACEMENT

Periodic filter replacement is required to ensure water quality and proper performance of filters. Filters should be changed as indicated below.

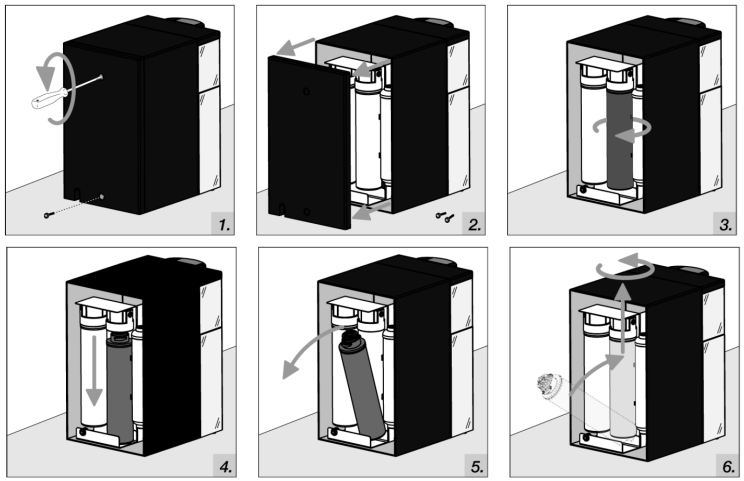
Sediment Prefilter
12 months maximum
Carbon Prefilter
12 months maximum
RO Membrane
2 years
Post Filter pH Regulator
12 months maximum

HOW TO CHANGE FILTERS

Sediment Prefilter & Carbon Prefilter

To change the prefilters proceed as follow;

1. Unscrew the two screws on the back of purifier.
2. Remove the back cover.
3. Identify the filter to be changed. Rotate clockwise.
4. Once unscrewed, remove from purifier.
5. Remove new filter from packaging and insert into purifier by gently pushing upwards while rotating counterclockwise until seated in place. (fig. 6 above)
6. Replace back cover.

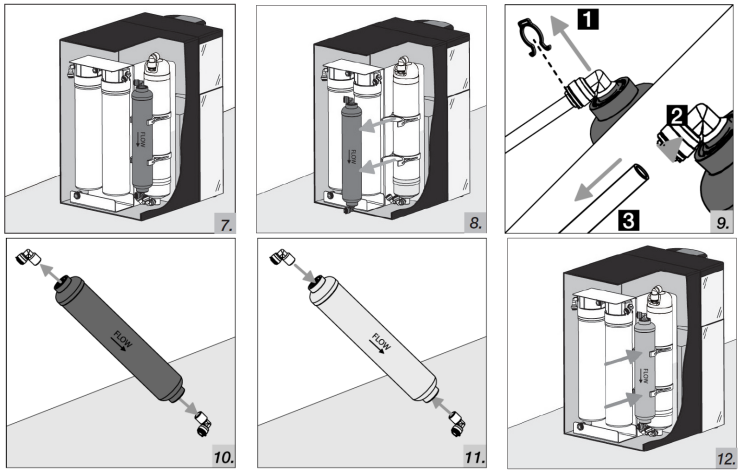


HOW TO CHANGE FILTERS (CONT.)

Postfilter Replacement

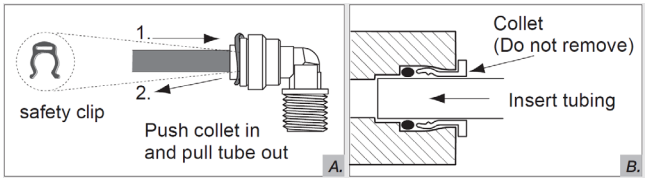
To change the postfilter proceed as follow;

1. Remove the back cover.
2. Pull the postfilter out to free it from the retaining clips. (fig. 8)
3. Disconnect the tubes from the elbow connectors on both ends of the postfilter. To do this, (1) remove the safety clip from under the collet sleeves on the elbow connector. (Fig. 9 and diagrams below) (2) Push the collet sleeves in towards the elbow connector. (3) While holding the collet sleeves in, pull the tube out of the elbow.
4. Unscrew the elbow connectors from the ends of the postfilter. (fig.10)
5. Remove new post filter from its wrapping and screw the elbow connectors into the ends of the new postfilter. (fig. 11)
6. Insert the tubes into the top and bottom elbow connectors paying attention to the direction of flow indicated by the arrow on the outside of the post filter, (top to bottom). Be sure to push the tubes all the way in to the elbow till they set at the back of the elbow. Slide the collet sleeve out and replace safety clip under collet sleeve.
7. Mount the postfilter back into the retaining clips. (fig. 12) and replace back cover.



How Quick Connectors Work

- To remove tubing from the connector: Remove the safety clip from under the collet, push in the collet, and pull the tube out. (fig. A)
- Installation. Ensure the tube is clean and free of burrs. Push the tube into the connector until it stops. (fig. B)
- Replace safety clip.



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RO MEMBRANE REPLACEMENT

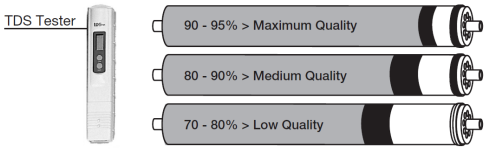
How to tell if the RO membrane needs replacement:
The condition of the membrane is assessed by testing the percent TDS rejection:
Using a TDS meter, compare the TDS of the inlet water to the pure RO water, and obtain the percentage of TDS rejection.

$$\%\ \text{rejection rate} = \frac{\text{TDS of inlet water} - \text{TDS of pure water}}{\text{TDS of inlet water}} \times 100$$

Example:

Inlet water TDS = 300ppm; Pure water TDS = 18ppm

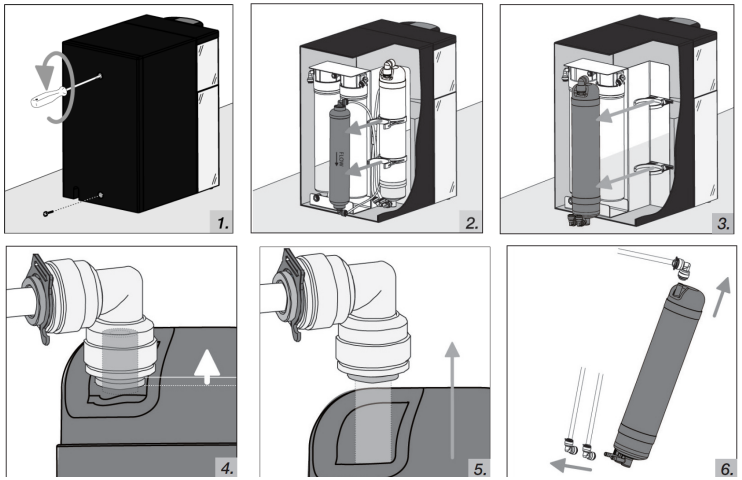
$$\frac{300 - 18}{300} \times 100 = 96\%\ \text{rejection ate}$$



If rejection goes below 70% the membrane life has come to an end.

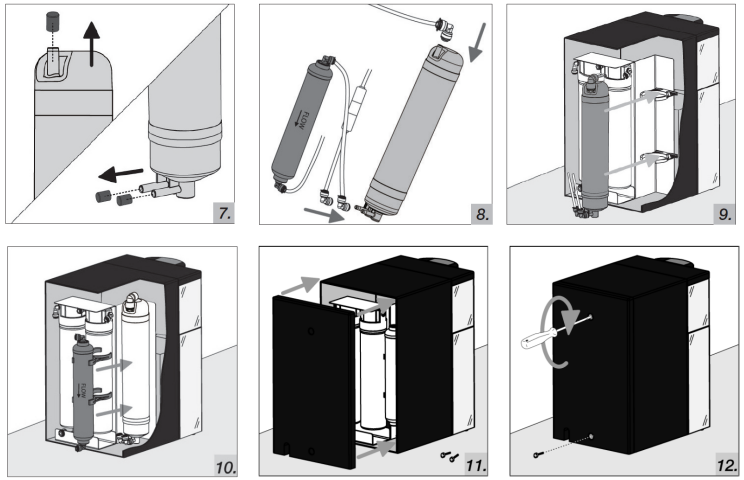
How to replace the RO Membrane

1. Remove the back cover.
2. Remove the postfilter from the postfilter retaining clips, (fig. 2) and remove the retaining clips from the RO cartridge.
3. Pull the RO membrane cartridge to remove it from the RO cartridge retaining clips.
4. To remove the elbows from the RO cartridge, push the collet sleeves into the elbow connector.
5. While holding the collet sleeves in, pull the elbow off the top of the RO cartridge.
6. In the same way, remove the two elbows from the bottom of the RO cartridge.



RO MEMBRANE REPLACEMENT (CONT.)

7. Remove the new RO cartridge from its packaging and remove the protection caps from the top and bottom of the cartridge. (fig. 7)
8. Replace the elbow connectors to their corresponding spikes on the RO cartridge. (fig. 8)
9. Replace the membrane cartridge back into the retaining clips. (fig. 9)
10. Replace the postfilter retaining clips back onto the RO cartridge, and replace postfilter into retaining clips. (fig. 10)
11. Replace back cover. (fig. 11& 12)



TROUBLESHOOTING

SYMPTOM	CAUSE	SOLUTION
The faucet is dripping	Dispenser defective	Call for service.
Leakage outside the system	Several possible causes	Call for serivce.
Zero production	No water in the lower reservoir	Fill tank.
	No power	Check power supply. If problem persists, call for service.
	Lower reservoir misplaced	Ensure that the lower reservoir is positioned properly. If problem persists, call for service.
Production limited	Inner tube pinched	Check and repair.
	Water to be treated outside the operating range	Check the quality of the water to be treated of call for service.
	Filter elements have exceeded their useful life	Replace filters or call for service.
Taste and odour		Call for service.
Filtering won't start	No water in the lower reservoir	Fill tank.
	No power	Check power supply. If problem persists, call for service.
	Lower reservoir misplaced	Ensure that the lower reservoir is positioned properly. If problem persists, call for service.
LED Off	The transformer is disconnected or defective.	Make sure the transformer is properly attached. Call for service.

FILTER CHANGE & MAINTENANCE RECORD

Purchase Date: ______________________________

DATE	FILTERS CHANGED	MAINTENANCE	SIGNATURE
__/__/____	☐ Prefilter ☐ Carbon ☐ Postfilter	☐ Cleaning ☐ Repair ________ ☐ RO Membrane ☐ Other ________	
__/__/____	☐ Prefilter ☐ Carbon ☐ Postfilter	☐ Cleaning ☐ Repair ________ ☐ RO Membrane ☐ Other ________	
__/__/____	☐ Prefilter ☐ Carbon ☐ Postfilter	☐ Cleaning ☐ Repair ________ ☐ RO Membrane ☐ Other ________	
__/__/____	☐ Prefilter ☐ Carbon ☐ Postfilter	☐ Cleaning ☐ Repair ________ ☐ RO Membrane ☐ Other ________	
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__/__/____	☐ Prefilter ☐ Carbon ☐ Postfilter	☐ Cleaning ☐ Repair ________ ☐ RO Membrane ☐ Other ________	

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