



WATER TREATMENT SYSTEMS

Reverse Osmosis Manual and Information Guide



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TABLE OF CONTENTS

WHAT DOES REVERSE OSMOSIS DO ----- PAGE 1-2

REVERSE OSMOSIS CARE INSTRUCTIONS ----- PAGE 3-7

REVERSE OSMOSIS TROUBLE SHOOTING -----PAGE 8

REVERSE OSMOSIS DIAGRAM ----- PAGE 9

WARRANTY INFORMATION -----PAGE 10-11

HOW REVERSE OSMOSIS WORKS

REVERSE OSMOSIS IS THE PROCESS BY WHICH ORDINARY TAP WATER IS FORCED THROUGH A SEMI-PERMEABLE MEMBRANE, LEAVING UNWANTED SUBSTANCES BEHIND. THESE SUBSTANCES ARE RINSED AWAY PRODUCING CLEAR FRESH TASTING WATER. IT IS A PROCESS USED TO PRODUCE BOTTLED WATER AND IS THE MOST EFFECTIVE TECHNOLOGY KNOWN FOR THE IMPROVEMENT OF DRINKING WATER TODAY.

WHAT DOES REVERSE OSMOSIS REMOVE

REMOVES 86% TO 90% OF ALL ORGANICS INCLUDING: THM'S, PCB'S, PESTICIDES, HERBICIDES, AND BENZENE. THE REJECTION TABLE IS AN AVERAGE AND SHOULD ONLY BE USED AS A GUIDELINE AS TDS, WATER TEMPTERS AND WATER CHEMISTRY CAN VARY AND EFFECTS PERFORMANCE.

<u>MATERIAL</u>	<u>REJECTION %</u>		
ALUMINUM	98-99%	STRONTIUM	96-98%
AMMONIUM	86-92%	SULFATE	98-99%
ARSENIC	94-96%	THIOSULFATE	98-99%
BARIUM	96-98%	LEAD	96-98%
BROMIDE	87-93%	SODIUM	87-93%
CADMIUM	96-98%	SILVER	93-96%
CHLORIDE	93-97%	SILICATE	85-90%
CHROMATE	86-92%	PHOSPHATE	98-99%
CYANIDE	86-92%	NICKLE	65-70%
FERROCYANIDE	98-99%	NITRATE	60-75%
FLUORIDE	87-93%	MANGANESE	95-98%
SULFITE	96-98%	MERCURY	96-98%

PREFILTERS

THE FOLLOWING LIST SHOWS WHICH WATER TREATMENT METHODS PROPERLY SIZED AN INSTALLED ARE MOST EFFECTIVE FOR A GIVEN CONTAMINANT.

SEDIMENT (MECHANICAL) FILTRATION

- SEDIMENTS
- RUST
- DIRT
- ORGANIC MATTER

GRANULATED ACTIVATED CARBON (GAC)

- | | |
|-----------------------|-------------------------|
| • ACETONE | • OIL (DISSOLVED) |
| • ANTIFREEZE | • ORGANIC ACIDS |
| • BENZENES | • ORGANIC ESTERS |
| • CHLORAMINE | • ORGANIC SALTS |
| • CHLOROFORM | • OXALIC ACID |
| • CHLORINE | • OXYGEN |
| • CITRIC ACID | • OZONE |
| • CRESOL | • PCB'S |
| • DEFOLIANTS | • PESTICIDES |
| • DETERGENTS | • PHENOL |
| • DIESEL FUEL | • PLASTIC TASTE |
| • DYES | • POT. PERMANGANATE |
| • ETHYL ACETATE | • PROPYL ACETATE |
| • ETHYL CHLORIDE | • PROPYL CHLORIDE |
| • ETHYL ETHER | • RADON |
| • GASOLINE | • RUBBER TASTE |
| • GLYCOLS | • SODIUM HYPOCHLORITE |
| • HERBICIDES | • SOLVENTS |
| • HYDROGEN PEROXIDE | • SULPHONATED OILS |
| • HYPOCHLOROUS ACID | • TANNINS |
| • INSECTICIDES | • TAR EMULSION |
| • IODINE | • TASTE (FROM DI) |
| • KETONES | • TASTE (FROM ORGANICS) |
| • LACTIC ACID | • THM'S |
| • METHYL BROMIDE | • TOLUENE |
| • METHYL CHLORIDE | • TRICHLORETHYLENE |
| • METHYL ETHYL KETONE | • TURPENTINE |
| • ODORS | • XYLENE |

HOW TO GET THE MOST OUT OF YOUR REVERSE OSMOSIS SYSTEM

USE LOTS OF PURIFIED WATER

YOUR R.O SYSTEM WILL PERFORM BETTER AND LAST LONGER WITH HEAVIER USAGE. USE YOUR R.O WATER FOR PETS, PLANTS (50/50 TAP & R.O), STEAM IRONS, HUMIDIFIERS, DEVELOPING PICTURES, AQUARIUMS, AUTOMOBILE, BATTERIES, JUICES, INFANT FORMULA, ICE CUBES, COOKING, COFFEE, AND TEA, ETC. SEE WHAT A DIFFERENCE IT MAKES.

TO KEEP WATER IT'S FRESHEST

IN ADDITION TO HEAVY USAGE, IT IS A GOOD IDEA TO DRAIN YOUR STORAGE TANK ONCE A MONTH. BEFORE BED OPEN THE FAUCET TO TUN UNTIL IT STOPS, THEN SHUT OFF FAUCET. TANK WILL REFILL DURING THE NIGHT.

WHILE GONE ON VACATION

ALWAYS TURN OFF WATER SUPPLY TO HOUSE AND THE SUPPLY TO THE R.O IF GONE FOR MORE THAN 1 MONTH. YOU MUST REMOVE THE MEMBRANE TO PROTECT IT FROM DRYING OUT. REMOVE THE MEMBRANE FROM THE HOUSING WRAP IN PLASTIC AND STORE IN REFRIGERATOR UNTIL YOU RETURN. YOU WILL ALSO NEED TO DRAIN THE STORAGE TANK TO PREVENT BACTERIA GROWTH. DISCARD THE FIRST TANK OF WATER AFTER RESTARTING THE SYSTEM UPON YOUR RETURN.

IF YOU WILL BE GONE FOR A SHORT TIME AND WATER SUPPLY IS NOT TURNED OFF, YOU SHOULD LEAVE YOUR FAUCET HANDLE IN THE UP POSITION. THIS SLOW DRIPPING WILL HELP PREVENT THE BUILDUP OF BACTERIA.

CHANGE FILTERS AS RECOMMENDED

THIS CANNOT BE OVER EMPHASIZED. AFTER 6-12 MONTHS OF COLLECTING DIRT, SAND, AND OTHER IMPURITIES, THESE FILTERS CANNOT HOLD ANY MORE. THE FILTERS MAY PLUG UP COMPLETELY CUTTING OFF THE FLOW OF DRINKING WATER OR THEY MAY ALLOW IMPURITIES TO PASS THROUGH TO THE SENSITIVE RO MEMBRANE CAUSING DAMAGE AND REDUCING THE PURITY OF YOUR WATER.

PROTECT AGAINST FREEZING

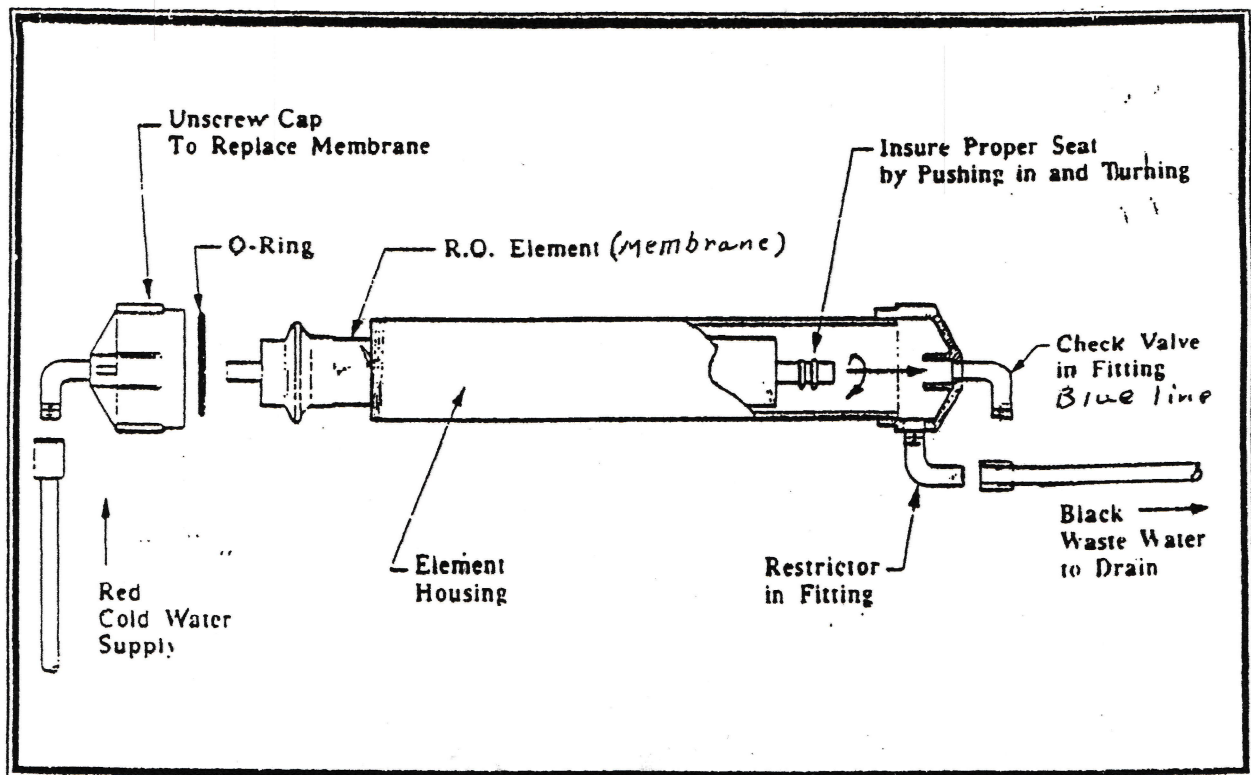
FAILURE TO DO SO MAY RESULT IN CRACKING OF THE FILTER HOUSINGS AND LEAKAGE.

HOW TO CHANGE THE FILTERS

1. TURN OFF THE WATER SUPPLY VALVE TO THE RO SYSTEM. OPEN THE RO FAUCET AND ALLOW THE TANK TO DRAIN COMPLETELY. ONCE THE FLOW FROM THE FAUCET IS A SLOW DRIP TURN OFF THE FAUCET AND THE VALVE TO THE STORAGE TANK.
2. UNSCREW THE FILTER HOUSING AND REMOVE THE USED FILTERS.
3. PLACE THE NEW FILTER IN THE HOUSING AND CAREFULLY SCREW INTO PLACE. **DONT OVER TIGHTEN!!!**
4. TIGHTEN ALL CONNECTIONS
5. TURN ON THE SUPPLY VALVE AND CHECK FOR LEAKS
6. USING THE AIR STEM AT THE BOTTOM OF THE TANK CHECK THE PRESSURE USING A PRESSURE GAGE. THE TANK SHOULD BE 7-10 PSI. IF THE PRESSURE IS LOW ADD AIR USING AN AIR COMPRESSOR OR PUMP.
7. TURN THE STORAGE TANK VALVE ON AND ALLOW THE SYSTEM TO FILL. (TAKES 1 ½ - 2 HOURS WHEN MEMBRANE IS IN GOOD CONDITION)
8. ONCE THE RO TANK IS FULL OPEN THE RO FAUCET TO DRAIN THE FIRST TANK (WATER MAY BE BLACKISH GRAY THIS IS NORMAL DUE TO THE CARBON FILTERS)

REPLACING THE R.O. ELEMENT

- Step 1 Turn off the feed water valve to R.O. system and turn valve on storage tank off. Open R.O. faucet and allow all pressure to bleed off. (allow a few moments for pressure to evacuate the complete system)
- Step 2
- A - Disconnect red/orange line from element housing.
 - B - Unscrew housing end cap and remove element.
 - C - Insert new element in housing (end with O - rings first) until it stops. Move element in a slight circular motion to center element tube (tube in center of element with O rings) with orifice in center of top element housing cap. You should feel the element slide into the housing about another $\frac{1}{2}$ ", this indicates that the element is properly seated in the housing. (if this step is not carefully followed you will get a high flow of untreated water from the product line on the housing to the storage tank)
 - D - Replace housing cap. Reinstall red/orange line and tighten connection.
 - E - Turn feed water valve on until you can hear water entering the system. **Check for leaks !!!**
 - F - Turn feed water valve **all the way on**. Allow to fill until a steady drip flows from the R.O. faucet.
 - G - Close R.O. faucet.
 - H - Open valve on storage tank. Check for leaks. System is now ready for operation.



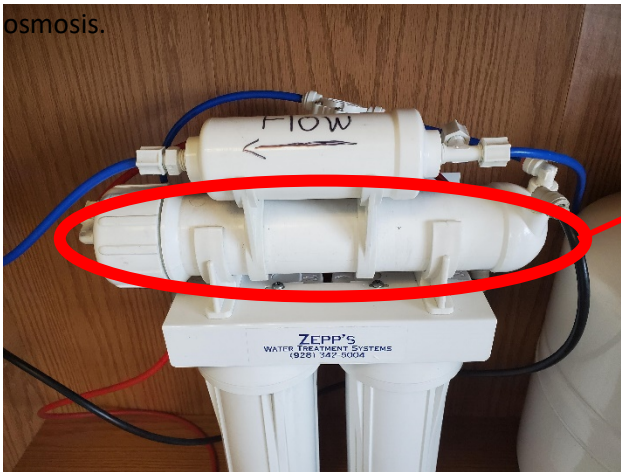
R.O. Element diagram

How to shut down your reverse osmosis

1. Turn off the main water line to the reverse osmosis by following the red line that enters the first filter bowl.
2. Turn on the reverse osmosis faucet and wait for the water stream to reduce to a slow drip. This will drain all the water from your reverse osmosis system and tank should take roughly 5 minutes.

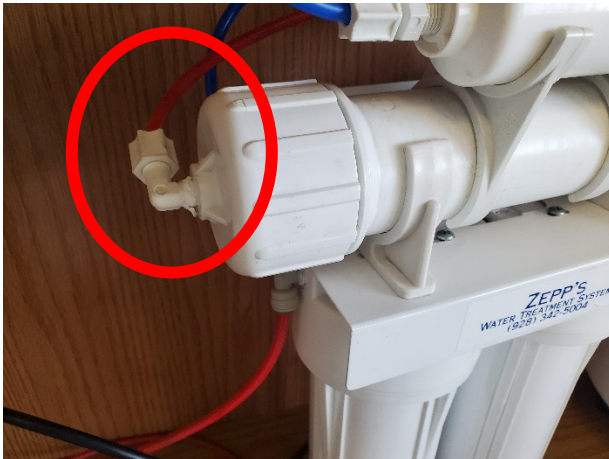
Removing the membrane

3. Locate your membrane housing this will be the larger vertical cylinder on top of the reverse osmosis.

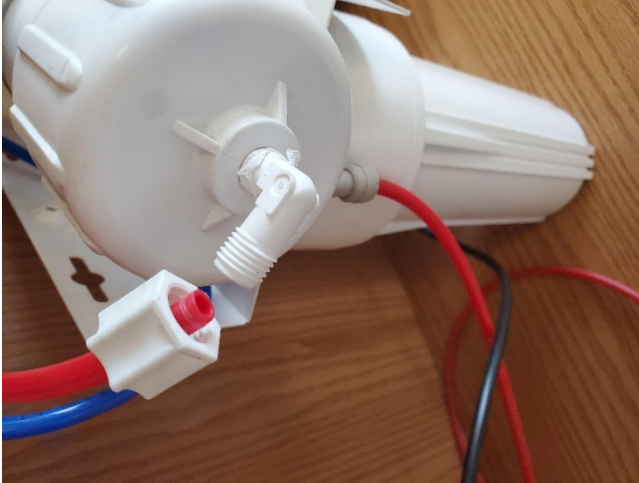


Membrane housing

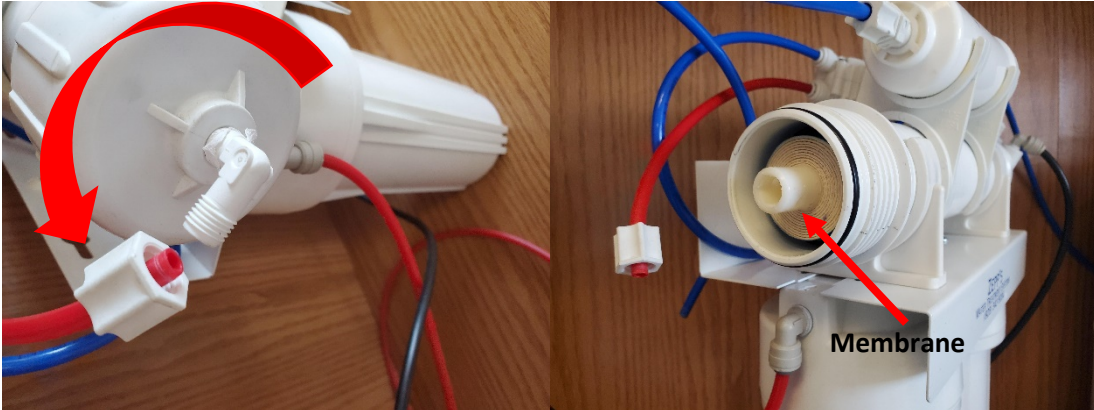
4. On the larger side of the membrane housing there is a red tube connected by a fitting



5. Turn the nut of the fitting to remove it.



6. Turn the lid of the membrane housing counter clock wise to remove



7. Using needle nose pliers pull out the membrane

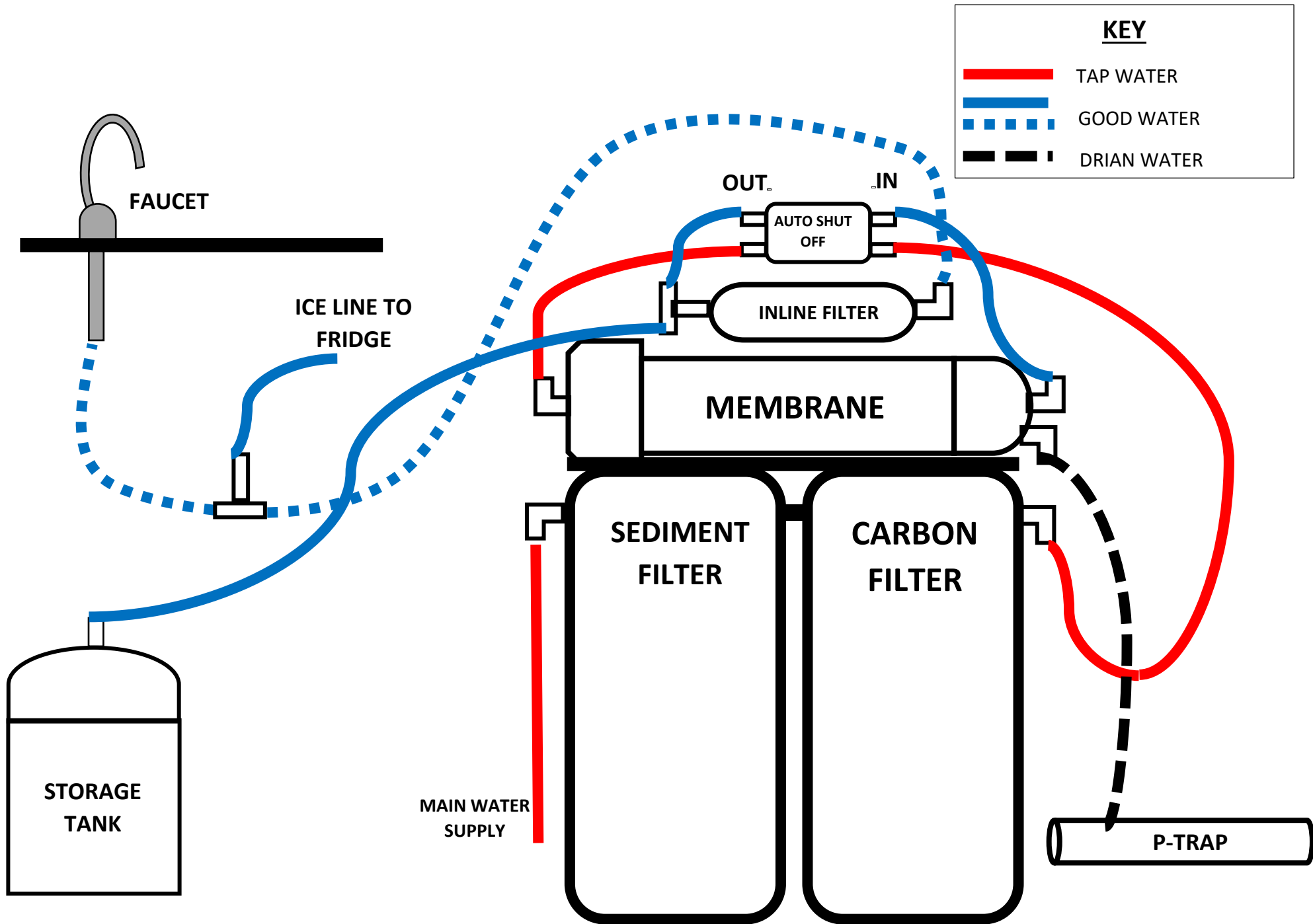


8. Place the membrane in a zip lock bag and store it in the refrigerator while you are not using the reverse osmosis system

*****We also recommend removing the pre-filters from the lower vertical filter bowls and placing them on a dry towel during the time the reverse osmosis is not being used. *****

REVERSE OSMOSIS TROUBLE SHOOTING GUIDE

<u>SYMPTOM</u>	<u>PROBABLE CAUSE</u>	<u>SOLUTION</u>
NO WATER	<ol style="list-style-type: none"> 1. TANK IMPROPERLY PRESSURIZED 2. WATER SUPPLY TURNED OFF 3. LOW WATER PRESSURE (40_{PSI} MIN) 4. PRE-FILTER CLOGGED 5. MEMBRANE DAMAGED OR CLOGGED 6. SUPPLY LINE CRIMPED 7. POST-FILTER CLOGGED 8. TANK VALVE CLOSED 	<ol style="list-style-type: none"> 1. SET TANK PRESSURE AT 7-10_{PSI} 2. TURN ON 3. CALL ZEPPS FOR ASSISTANCE 4. REPLACE 5. REPLACE 6. REMOVE CRIMP 7. REPLACE 8. OPEN VALVE
SLOW FLOW THROUGH FAUCET	<ol style="list-style-type: none"> 1. POST-FILTER CLOGGED 2. LOW AIR PRESSURE IN HOLDING TANK 3. PRE-FILTER CLOGGED 4. LOW WATER PRESSURE (40_{PSI} MIN) 	<ol style="list-style-type: none"> 1. REPLACE 2. RAISE PRESSURE TO 7-10_{PSI} 3. REPLACE 4. CALL ZEPPS FOR ASSISTANCE
LEAKING MEMBRANE HOUSING	<ol style="list-style-type: none"> 1. GLUE JOINT LEAKING 2. THREADED END CAP LEAK 3. COMPRESSION FITTING LEAK 4. LEAK AT SCREW CAP 	<ol style="list-style-type: none"> 1. REPLACE HOUSING 2. LUBE O-RING AND TIGHTEN 3. TIGHTEN OR REPLACE 4. REPLACE O-RING IF DAMAGED
LEAKING POST-FILTER	<ol style="list-style-type: none"> 1. LEAK AT COMPRESSION FITTING 2. LEAK AT POST-FILTER SEAM 	<ol style="list-style-type: none"> 1. TIGHTEN OR REPLACE 2. REPLACE O-RING
LEAKING FAUCE	<ol style="list-style-type: none"> 1. FITTING LEAK 2. SPIGOT DRIPS 3. LEAKING FROM UNDER THE HANDLE OR LOWER 	<ol style="list-style-type: none"> 1. TIGHTEN OR REPLACE 2. ADJUST SET SCREW UNDER FAUCET HANDLE 3. REPLACE FAUCET
BAD TASTE	<ol style="list-style-type: none"> 1. DEFECTIVE MEMBRANE 2. RESTRICTION IN WASTE FLOW 3. CARBON POST-FILTER 4. GROWTH IN TANK 5. LOW WATER PRESSURE (40_{PSI} MIN) 	<ol style="list-style-type: none"> 1. REPLACE 2. CLEAR 3. REPLACE 4. SANITIZE 5. CALL ZEPPS FOR ASSISTANCE



KEY	
	TAP WATER
	GOOD WATER
	DRIAN WATER