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PRO LINE



Reverse Osmosis System Installation & Service Guide



#PRO LINE-50

*Please read this manual carefully
before attempting installation.*

Please read this entire instruction manual prior to installation!

FACTORY PREPARATION

This reverse osmosis unit is thoroughly tested before shipment. Test procedures include:

1. Quality test of the product water produced to assure that minimum standards of impurity rejection are met.
2. Test of all components to assure correct function.
3. Flow rate measurement to assure that efficiency specifications are met.

WARNING

The feed water supply must comply with the following conditions for the warranty to remain valid.

- | | |
|---|---|
| 1. Temperature Range | 40°F to 85°F (4.4°C – 29.4°C) |
| 2. Water Pressure | 40 psi to 70 psi (2.8 – 4.8 bar) |
| 3. Maximum Total Dissolved Solid CTA Membrane | 1500 ppm |
| Maximum Total Dissolved Solid TFC Membrane | 2500 ppm |
| 4. pH Range | CTA Membrane 5.0 to 8.0
TFC Membrane 3.0 to 11.0 |
| 5. Maximum Hardness | 10 gpg (171 mg/l) |
| 6. Maximum Free Chlorine in Supply | Less than 2 ppm |
| 7. Maximum Turbidity | 1 NTU |
| 8. Sulfide, Iron, and Manganese | Less than 0.01 |
| 9. This system must be connected to the COLD water supply only. | |
| 10. Do not allow unit to freeze. The membrane always contains water and will be destroyed if frozen. | |
| 11. Do not use where the water is microbiologically unsafe or with water of unknown quality without adequate disinfection before or after the unit. | |
| 12. All local plumbing codes are to be followed. | |

PRE INSTALLATION INSPECTION

After opening the shipping container, locate the following items

1. Reverse Osmosis Head Assembly
2. Storage Tank
3. Long reach Faucet with Mounting Hardware
4. Water Supply Connector (optional)
5. Drain Saddle (optional)
6. Four colors of polyethylene tubing
7. Storage tank shut off valve with tube connection

INSTALLATION TOOL LIST

(NOT SUPPLIED)

1. 3/8 VSR Drill
2. Channel Locks
3. 1/2" Open End Wrench
4. 9/16" Open End Wrench
5. 1/2" Carbide Drill Bit w/ 3/8" Shaft
6. 1/4" Drill Bit
7. Flat Head and a Phillips Head Screwdriver
8. Flashlight or Droplight
9. Safety goggles

SHOULD TOOLS LISTED NOT BE AVAILABLE,
CONTACT YOUR DISTRIBUTOR FOR ASSISTANCE.

Do not use where the water is microbiologically unsafe or with water of unknown quality without adequate disinfection before or after the unit

PRECAUTIONS

IMPORTANT: If the hardness of your water is above 10 grains per gallon (gpg) (171mg/L), lime scale will build up rapidly on the membrane. Scale buildup will plug the membrane and make the system ineffective. We do not recommend these reverse osmosis systems be used with water in excess of 10 gpg (171 mg/L) hardness, unless the water is softened prior to the reverse osmosis (RO) system.

NOTE: If your water pressure and temperature are at the low end of the listed range (40 psi [2.8 bar] and 40°F [4.4°C]), and the TDS level is near the maximum (1500 ppm), the system will not function properly. Under these extreme conditions, installing a booster pump to increase the water pressure will allow the system to perform effectively. Low pressure booster pumps are available from your dealer and will quietly supply the required pressure to your reverse osmosis unit for optimum performance and life.

NOTE: If local water pressure exceeds 70 psi, a pressure regulator should be installed, reducing the water pressure into the system. Operating the system at pressure exceeding 70 psi will void the warranty.

WARNING: Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system. Systems certified for cyst reduction may be used on disinfected waters that may contain filterable cysts.

NOTE: Substances reduced are not necessarily in your water. System must be maintained according to manufacturer's instructions, including replacement of filter cartridges.

WARNING: This system contains replaceable cartridges and a replaceable membrane, critical for to the efficiency of the system. Product water should be tested periodically to verify that the system is working properly. Changes in taste, odor, and color of the filtered water indicate that the cartridge(s) and/or membrane should be replaced. Replacement of the reverse osmosis membrane should be with one of identical specifications, as defined by the manufacturer, to assure the same efficiency and contaminant reduction performance.

WARNING: The RO system is acceptable for treatment of influent concentrations of no more than 27 mg/L nitrate and 3 mg/L nitrite in combination measured as N and is certified for nitrate/nitrite reduction only for water supplies with a pressure of 40 psig (280 kPa) or greater.

WARNING: The RO system shall only be used for arsenic reduction on chlorinated water supplies containing detectable residual free chlorine at the system inlet. Water systems using an in-line chlorinator should provide a one-minute chlorine contact time before the RO system.

WARNING: The RO system will not protect against disease-causing bacteria or remove naturally-occurring harmless bacteria.

WARNING: The RO system must be protected against freezing which can cause the filter housings to crack and water leakage. We strongly recommend that the filter housings be replaced every ten years. Housings that have been in use for longer than ten years should be replaced immediately.

WARNING: Do not use Plumber's Putty in the installation of this product as it may cause cracking of the filter housing threads.

WARNING: Chlorine will destroy the Reverse Osmosis membrane. If you use these RO systems with a chlorinated or periodically-chlorinated water supply, it is ABSOLUTELY NECESSARY to use a carbon pre-filter. The carbon pre-filter should be changed at least every 4 months to avoid chlorine breakthrough.

NOTE: To make sure no chlorine is present in the water that reaches the membrane, you may want to use a chlorine test kit to check the reject water that flows from the membrane to the drain. No chlorine should be detected.

CAUTION: During extended periods of non-use (such as during a vacation), remove the membrane from the membrane housing and place it in a sealed plastic bag. Store membrane in refrigerator for future use. DO NOT FREEZE.

CAUTION: If system stands for more than 2 to 3 days without being used, the storage tank should be emptied.

GENERAL DESCRIPTION OF SYSTEM

This under counter reverse osmosis water treatment system includes three major components identified as the **Reverse Osmosis Head Assembly**, the **Storage Tank** and the **Long Reach Faucet**.

The **Reverse Osmosis Head Assembly** is comprised of three to five separate filtering stages, determined by your water treatment requirements. Each stage is designed to remove a particular type of impurity and are identified as:

- A) The sediment filter which reduces suspended matter from tap water by passing it through a cartridge filter preparing the water for the reverse osmosis membrane.
- B) Precarbon which contains activated carbon to reduce chlorine. In systems with TFC membrane, chlorine will damage membrane.
- C) The Reverse Osmosis Membrane which is a semi-permeable membrane and is the heart of the system. Here, the remaining suspended solids and most of the dissolved impurities are separated from the water molecules and flushed down the drain.
- D) The postfilter which contains activated carbon, removes any residual taste and odor from the product water.

The **Storage Tank** is designed to store up to 2 ½ gallons of product water. The storage tank is shipped pressurized (5-7 psi when empty) to force the water up to the long reach faucet when it is opened.

The **Long Reach Faucet** provides a convenient means to draw water from the R.O. storage tank. It is a compact, chrome plated fixture with a two position black handle that allows either continuous flow when lifted up or an intermittent flow when the handle is pushed down.



NOTE: Some models may have a faucet with a chrome rotating handle to regulate the flow.

This system can be used to supply water to an ice maker or additional remote faucets. If such an arrangement is desired, contact the distributor for further information.

INSTALLATION PROCEDURE

This reverse osmosis unit is designed to operate at water pressure in the range from 40 psi to 70 psi.

At lower pressures the reverse osmosis membrane will produce lower quantity and quality drinking water and severe damage to the system may result. Low pressure boost pumps are available from your dealer and will quietly supply the required pressure to the reverse osmosis unit for optimum performance and life.

If local water pressure exceeds 70 psi, a pressure regulator should be installed, reducing the water pressure into the system. Operating the system at pressure exceeding 70 psi voids the warranty on the system.

PREPARATION FOR INSTALLATION

This reverse osmosis unit is compactly designed to fit under most kitchen sinks. Before proceeding with the installation, the optimum positioning of components must be determined. The following guidelines should be considered in making this determination.

- A) The **Reverse Osmosis Head Assembly** will free stand alone or may be mounted against a vertical surface in a position to allow access for service and filter cartridge changing. The reverse osmosis head assembly should be relatively close to the sink drain and the long reach faucet location to maximize flow rate.
- B) The **Storage Tank** should be located where it can be removed, if necessary, without taking away needed storage space. The storage tank can be placed in any position, including on its side, without affecting the performance of the system. The storage tank can also be located up to fifteen feet (15') away from the reverse osmosis head assembly with nominal pressure loss.
- C) The **Long Reach Faucet** location should be convenient and positioned to assure a free flow pattern into the sink. It must also be in a location that allows ready accessible from the sink with clear access for the mounting hardware. If the faucet stud will not be of sufficient length, an extension is available.

INSTALLATION OF WATER SUPPLY CONNECTOR



WARNING: Connect to cold water only. Connecting the reverse osmosis head assembly to Hot water will damage the module and void the Warranty.

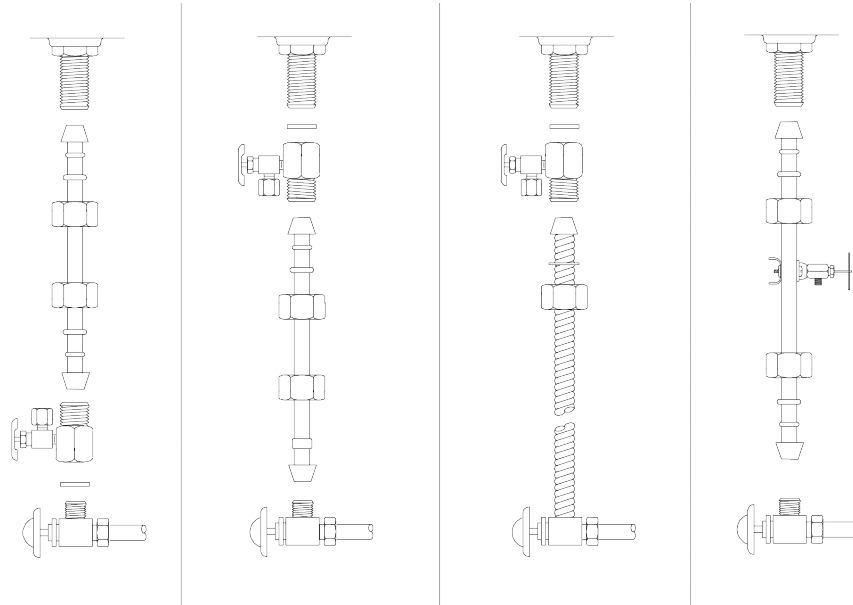
1. Turn off the cold water supply to the sink faucet by locating the round or oblong handle on the right side of the sink cabinet and turning clockwise until water supply is off. If you are not sure which is the cold water line, turn on the hot water for a few minutes and feel the pipes.



NOTE: Some mixing type faucets may require that the hot water be shut off as well. If the cold water shut-off valve fails to turn off the water, the house water supply can be turned off at the main.

2. The water supply adaptor can be installed at the faucet connection of the cold water line or at the shut-off valve connection. Typical installations below:

TYPICAL FEED WATER CONNECTIONS



3. Disconnect the threaded nut at the connection and thread the water supply adaptor, with the flat washer and cone washer in place, onto the connection and tighten. Connect the tubing to the water supply to the sink faucet and check for leaks.

INSTALLATION OF SADDLE VALVE ASSEMBLY

TO INSTALL THE "SADDLE TAPPING VALVE" ON COPPER TUBE
(Steel or Brass Pipe see below)



CAUTION: Do not turn handle before or while installing the saddle valve. Also confirm the piercing lance does not protrude beyond the rubber gasket.

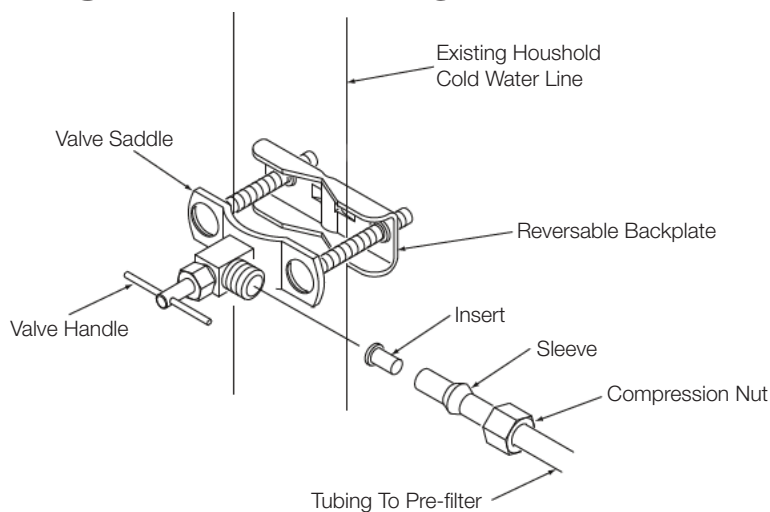
1. Locate the cold water shut off valve on the cold water line under your sink.
2. Assemble the saddle valve on copper tube.
 - A) For 3/8" O.D. tubing use "Pat. Pend." Bracket with side projections to prevent distortion of the tubing.
 - B) Use "V" side of bracket for all larger sizes of tubing.
3. Tighten screws evenly keeping the brackets parallel to one another.
4. Make the water connection to the outlet of the saddle valve. Should you fail to do this before piercing the tube a small amount of water will escape from outlet until you are fully pierced.
5. Turn the handle clockwise until you feel it is firmly seated.



NOTE: You have now pierced the copper tube and the valve is closed.

6. Turn the handle counterclockwise to open the valve.
7. Turn on cold water shut off valve to check installation for leaks. Allow water to run from sink faucet for a few minutes to clear any debris in the line caused by installation.

SADDLE TAPPING VALVE



TO INSTALL THE "SADDLE TAPPING VALVE" ON STEEL OR BRASS PIPE

1. Shut off water supply and drain the line.
2. Drill a 3/16" hole in pipe. Use a hand drill to avoid shock hazard.
3. Turn handle to expose lance beyond the rubber gasket no more than 3/16"
4. Place body of valve over hole so that lance fits into the hole.
5. Tighten bottom clamp evenly-Brackets should be parallel.
6. Turn handle clockwise to close valve.
7. Open the water supply and allow water to run from sink for a few minutes to clean any debris in the line caused by installation.
8. Turn handle counter clockwise to open valve.

INSTALLATION OF DRAIN SADDLE

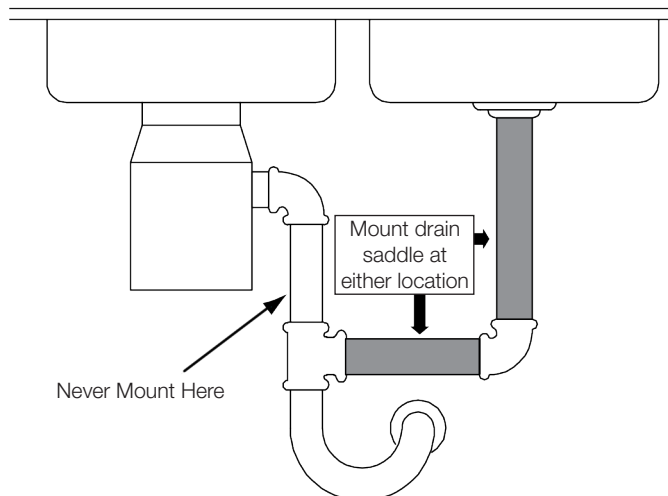
1. The drain saddle should be installed above the trap on the vertical or horizontal tailpipe
2. Drill a ¼" hole into the drain pipe observing the above positioning.
To avoid noise on the vertical pipe, position the drain saddle low above the trap



NOTE: If positioning on the horizontal pipe (preferred location) the hole for the drain saddle should be drilled at a slight incline to avoid noise.

3. Mount drain saddle, aligning holes.
4. Carefully tighten the bracket screws evenly keeping the brackets parallel.

SADDLE TAPPING VALVE



INSTALLATION OF LONG REACH FAUCET



NOTE: This system includes a standard sink top long reach faucet without an air-gap. In localities where plumbing codes require installation of an air-gap, contact the distributor to obtain an air-gap faucet.

It is recommended that the system representative be consulted for proper tools, techniques and other assistance in performing the following procedure. The units manufacturer accepts no responsibility for sink top damage resulting from this installation.

SAFETY GLASSES should be worn to protect your eyes while drilling the faucet hole.

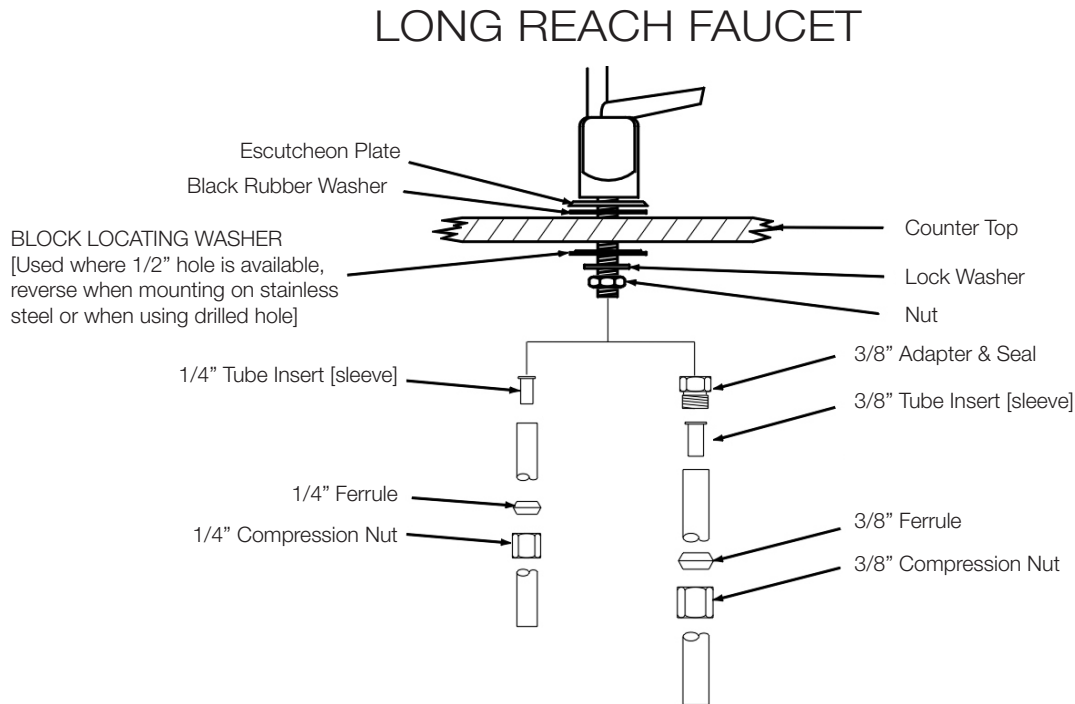
1. For best results a 1/2" carbide tipped masonry drill bit should be used to drill the sink hole for the long reach faucet.
2. Carefully select the faucet location confirming it will have a neat water fall pattern and that the faucet stud will be accessible from below once the hole is completed.



NOTE: If the faucet stud will not be long enough, an extension is available from your distributor.

3. **PORCELAIN SINKS:** Before starting the drill motor, apply firm downward pressure on the drill bit until a crunching occurs. This will help keep the drill bit from walking when starting the hole.
4. **STAINLESS STEEL SINKS:** Before using the 1/2" carbide drill bit, an indent should be made with a center punch to keep the drill bit from walking. A small pilot hole will cause excessive wear on the bit and progress will be slow.
5. Keep steady firm downward pressure while drilling the hole. Too little during the start of the hole will cause excessive wear on the bit and progress will be slow.
6. Once the hole is completed, immediately clean the area of metal chips and roughness around the hole. Metal chips will stain porcelain sinks.

The faucet shown has two operating positions. The black handle can be pushed downward for intermittent water flow or lifted up into a locking position for continuous flow.



MOUNTING THE REVERSE OSMOSIS HEAD ASSEMBLY

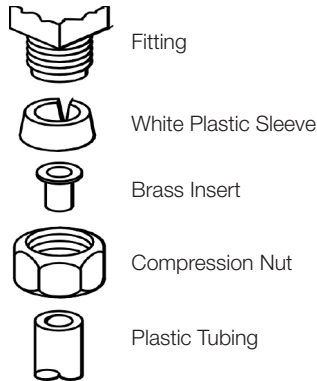
1. Using the bracket as a template, mark the screw location at the desired position.
2. Screw two hex screws into the sidewall leaving enough protruding to allow the bracket to slide over them.

CONNECTING THE FITTINGS

The following types of fitting for tubing connections may be found upon the reverse osmosis drinking water system.

BRASS COMPRESSION - To complete the tubing connections using brass compression fittings:

1. Slide the compression nut onto the tubing
2. Slip a white plastic onto the tubing with the small beveled end towards the end of the tubing. DO NOT use brass sleeves with plastic tubing.
3. Insert a brass insert into the tubing end
4. Bottom the end of the tubing completely into the brass fitting and tighten with a wrench.




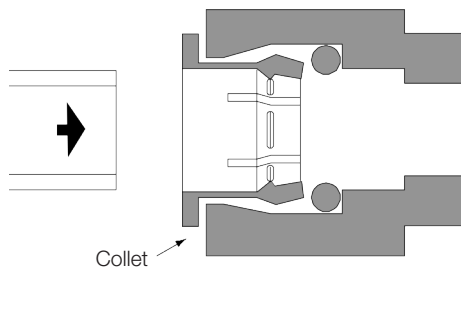
PLASTIC COMPRESSION FITTINGS - To complete the tubing connections using plastic compression fittings:

1. Cut the tubing squarely without burrs.
2. Slip the compression nut over the tubing.
3. Fully insert the tubing into the fitting body until the tubing bottoms. Holding the tubing in place, begin to tighten the compression nut onto the fitting.
4. Hand tighten the compression nut and then tighten with a wrench 1 ½ - 2 turns.
5. All nuts must be retightened when the system reaches projected operating temperature

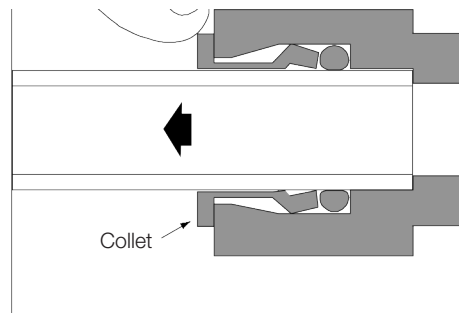
QUICK CONNECT FITTINGS - To complete the tubing connections using quick connect fittings:

1. Confirm the tubing ends are cut squarely not at an angle and without burrs.
2. Firmly insert the end of the tubing into the quick connect fitting until the tubing bottoms. The tubing will insert into the fitting approximately 5/8".
3. To remove the tubing from the quick connect fitting, press firmly and evenly on the protruding collet with your fingers or 3/8" wrench. The gripping mechanism will release and the tubing may be withdrawn

 **NOTE:** If the quick connect fitting slightly weeps water after connecting, Remove the tubing squarely and insert again.



SIMPLY PUSH IN TUBE TO ATTACH



PUSH IN COLLET TO RELEASE TUBE

TUBING CONNECTIONS

TUBING CONNECTIONS below designate tubing color and the label on the reverse osmosis head assembly associated with the fitting connection point.

- A) Connect the BLACK tubing to the DRAIN.
- B) Connect BLUE tubing to long reach FAUCET stud.
- C) Connect WHITE tubing to shut off valve fitting on the storage TANK.
- D) Connect RED tubing to the cold FEED water supply connector.

START-UP PROCEDURE

1. Check to see all connections are made.
2. Check that all of the pre-filter and postfilter housings are secure.
3. Slowly turn on the water by turning the needle valve counterclockwise.
4. The valve handle on top of the tank should be in the open position, parallel to the valve body.
5. The black handle of the long reach faucet should be perpendicular to the spigot (closed).
6. Check for leaks.
7. The reverse osmosis drinking water system processes drinking water at a slow rate and may require 6 to 8 hours before water is readily available from the long reach faucet on a continual basis. It will take longer if also connected to a refrigerator ice maker.



CAUTION: For your safety before using the water from your unit read the following instructions.

DO NOT use the first tank of water. Drain the first full tank of water to the drain in order to purge entrapped air from the system and rinse down the new carbon filter. This process prepares the system to produce quality water.



NOTE: The first few tanks of water may have very small air bubbles in the processed water. It will clear itself with normal use or you may drain the tank additional times.

NOTICE: THE PERFORMANCE OF YOUR WATER SYSTEM IS AFFECTED BY WATER TEMPERATURE AND WATER PRESSURE.

Your water system has been tested to verify that it will reject at least 90% of the total dissolved solids in the tap water and produce the required gallons of quality water in a 24 hour period. These tests were performed at standard conditions in which the tap water was at approximately 68 degrees Fahrenheit (20 degrees C) with a water pressure of 60 psi. Actual performance in your home will vary if the water temperature and pressure are different from these standards.

At temperatures lower than 68 degrees Fahrenheit the amount of water produced will decrease by about 0.1 gallons for each degree of temperature less than 68 degrees Fahrenheit.

At pressures lower than 60 psi, the amount of water produced will decrease by about 0.1 gallons for each 1 psi lower than 60 psi.

TROUBLESHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	SOLUTION
No water Not enough water	Water supply is turned off	Turn water on
	Low water pressure	Unit will not operate at less than 35 psi household line pressure
	Water supply blocked	Clear restriction, rotate valve handle on tap water feed assembly
	Storage tank depleted	Consider adding additional tank to your system if this occurs frequently
	Clogged pre-filter restricting water flow	Replace pre-filter
No drain water	Clogged brine restrictor	Replace brine restrictor
Leaking drain assembly or leak Leaking from air gap opening in faucet Excessive noise coming from faucet	Misalignment of hole in drain saddle	Realign drain saddle
	Hole or drain tube is blocked	Remove debris
	Excessive slack in drain tubing	Cut off excessive tubing
Water has offensive taste or odor	Carbon post filter depleted	Drain storage tank and replace carbon post filter cartridge
	Membrane depleted or fouled	If TDS rejection is below 70% replace membrane
Not enough product water pressure	Low air tank charge	Empty water from storage tank and adjust air pressure in tank to 5-7 psi.



PRO LINE

Limited Warranty

REVERSE OSMOSIS SYSTEM WARRANTY POLICY TWO-YEAR WARRANTY ON ENTIRE UNIT*

For a period of two years the manufacturer will replace or repair any part of the reverse osmosis unit which we find to be defective in operation because of faulty materials or workmanship. You pay only freight and local labor charges.

GENERAL CONDITIONS

Damage to any part of the reverse osmosis unit because of misuse, misapplication, neglect, alteration, accident, installation, or operation contrary to design, or damage caused by freezing, flood, fire, or act of god, is not covered by this warranty.

We assume no warranty liability in connection with the reverse osmosis unit other than as specified herein. This warranty is in lieu of all other warranties, expressed or implied, including warranties of fitness for a particular purpose.

Your reverse osmosis unit is backed by a tradition of quality and service. Behind this product are years of research, design, and production skills. Your unit has been carefully tested and approved at our factory. Through this warranty we are demonstrating confidence in our water treatment equipment.

FOR THIS WARRANTY TO BE VALID THE FOLLOWING CONDITIONS MUST BE MET:

1. The unit must be connected to a chlorinated water supply.
2. The unit must be connected to a microbiologically safe water supply.
3. The water pressure to the reverse osmosis membrane must be between 52 and 70 psi.
4. The water supply temperature cannot exceed 85 degrees fahrenheit.
5. The water supply ph cannot be lower than 4 or higher than 9.
6. The total dissolved solids cannot be higher than 1500 ppm.

* EXCLUDING PRE AND POST FILTERS



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