

INSTALLATION INSTRUCTIONS (BELT DRIVEN)

HIGH PRESSURE PUMP

To minimize vibration, it is best to build brackets on the motor itself, similar to alternator brackets. Use cardboard to construct a pattern first before making these brackets.

The high pressure pump has a **maximum RPM of 1750**. The recommended working RPM is 1450.

Minimum RPM for ECHO Tec. watermaker models:	200 - 500:	900 RPM
	600 - 900:	1050 RPM
	1200 - 1500:	1225 RPM

The high-pressure pump can run on lower RPM. This will decrease the specified production only.

The high pressure pump can turn in either direction.

Ensure proper pulley diameter on your engine. The electro magnetic clutch has a pulley diameter of **7"/177mm**.

To determine the proper motor pulley size, use the formula below as a guideline.

$$\text{PUMP PULLEY DIAMETER } 7"/177\text{mm} \times \frac{\text{RPM PUMP}}{\text{RPM MOTOR}} = \text{MOTOR PULLEY DIAMETER}$$

CAUTION: RE-TIGHTEN ALL FASTENERS AFTER 50 HOURS OF OPERATION AND CHECK FREQUENTLY FOR BELT TENSION AND CHAFING OF HIGH-PRESSURE HOSES.

The electrical installation should only be done by a professional electrician.

Connect the +wire of the magnetic clutch to the system switch on the control panel. Supply 12V DC to the switch. This wire needs to be protected by a 10A fuse.

When the batteries minus are connected to the main engine, an additional –wire is not necessary. Please seek professional advice when the main engine is isolated from the battery.

Fill the pump with 7.5 oz. / 0.22 ltr. of SAE 90 non-detergent, non-toxic crankcase oil.

MEMBRANE HOUSING

Mount the high-pressure membrane housing(s) with the provided brackets vertical (with the flow upwards) or horizontal in a convenient location away from the heat of the engine as close as possible to the high pressure pump.

The membrane is sealed within its housing by plugs at both ends. Inside is a small amount of preservative to keep the membrane moist and prevent bacterial growth.

It is important that this preservative does not evaporate and allow the membrane to dry out. If this happens, the membrane will be destroyed.

The efficiency of the preservative, under best conditions, is approximately one year. We recommend you install and use your watermaker as soon as possible.

When all other components and hoses/tubes are completely assembled, remove the caps on the high-pressure fittings and the sealed tube from the product water outlet on the membrane housing/s, then finish making all final hose/tube connections. This will insure that the membrane is kept moist until the last possible moment before operation.

CONTROL PANEL

Mount the control panel in an easily accessible location as close as possible to the membrane housing(s).

SEA STRAINER

Mount the sea strainer with the provided 3/4" NPT nylon nipple directly to the intake of the 20micron pre-filter housing. If an optional boost pump is required (refer to "Available Options and Accessories"), mount the sea strainer in a serviceable location in between the sea-cock and the boost pump. Connect the barbed fittings with the reinforced 3/4" vinyl hose. Secure the hose with the stainless steel hose clamps.

PRE-FILTER HOUSING

Mount the pre-filter in a serviceable location and connect the bottom port of the cleaning / storage valve to the bottom intake hose fitting of the high-pressure pump. Secure the hose with the two stainless steel hose clamps. If the optional 3/4" nylon tee with flush/storage valve is supplied, connect the 3/4" hose fitting on the tee to the bottom intake fitting of the high pressure pump.

INSTALL ALL PLUMBING TO ELIMINATE ANY AIR POCKETS IN THE SYSTEM

CAUTION: USE A MAXIMUM OF THREE WRAPS OF TEFLON TAPE ON ALL THREADS TO PREVENT LEAKAGE, IF YOU HAVE TO RE-SEAL FITTINGS. ALWAYS KEEP THE TAPE BACK FROM THE END OF THE FITTINGS (AT LEAST TWO THREADS). DO NOT ALLOW ANY TAPE TO ENTER THE SYSTEM.

HIGH PRESSURE HOSE

The high pressure hose has factory mounted high pressure couplings on each end (also included are two field attachable fittings). This hose comes in a 20foot length, so it may be cut to suit your needs. Leave a little extra length of hose.

Never bend the high pressure hose tighter than a 4"/10cm radius.

Assembly instructions for the 316 stainless steel field attachable high-pressure couplings:

- 1) Cut the hose in a clean 90° angle cut (preferably with a cutting disc).
- 2) Remove nipple from coupling.
- 3) Apply dishwashing liquid diluted at 1:1 with water on to the outer hose.

- Rotate the high pressure fitting anti clock wise on to the hose.
- 4) Apply dishwashing liquid on to the nipple of the high-pressure coupling and the inside of the hose.
 - 5) Counter the high pressure coupling with the supplied hexagonal fitting and screw the nipple into the hose.

Run one of the high-pressure hoses from the output of the HP pump (O ring sealed fitting) to the O ring sealed fitting at the end of the membrane that is marked IN.

Run the second high-pressure hose from the outlet of the RO membrane housing to the pressure control valve in the control panel.

CAUTION: WHEN CONNECTING THE HIGH-PRESSURE HOSE FITTINGS TO THE MEMBRANE HOUSING(S), AVOID TURNING THE FITTINGS OF THE MEMBRANE HOUSING. THE END CAPS ARE MADE FROM DELRIN (INDUSTRIAL PLASTIC) AND CAN CRACK IF OVER TIGHTENED.

PRODUCT WATER TUBING

Connect the product water tubing from the center fitting(s) of the membrane housing(s) to the bottom inlet of the flow meter, in the control panel. Connect the tubing from each output port of the 3-way valve to your water tank and to the taste/test station of your choice.

CAUTION: UNDER NO CIRCUMSTANCES SHOULD THE PRODUCT WATER LINE BE ALLOWED TO BECOME BLOCKED WHILE THE SYSTEM IS RUNNING. DO NOT INSTALL SHUT-OFF VALVES ANYWHERE IN THIS LINE.

CAUTION: DO NOT ALLOW CHLORINATED WATER FROM YOUR STORAGE TANK TO FLOW BACK INTO THE R.O. MEMBRANE.

You may directly “T” your product water line into the tank vent (Refer to the Flow Diagram). This avoids chlorinated water to back flow from your water tanks into the R.O. membrane and does not require a new fitting in your tank.

When using a spigot as the taste/test station, be sure you have no shut-off valves in the product water line. A hand pump style spigot, with a check valve **only**, is acceptable. If using this type of spigot for two sources, install a low-pressure check-valve in the product line and “T” it into the existing hand pump spigot line.

REJECT WATER TUBING/HOSE

Connect the outlet of the pressure control valve on the control panel with a reject thru-hull of your choice (preferably above the water line).