

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.

Position the high-pressure pump horizontal with the dipstick up. The 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.

A professional electrician should only do the electrical installation.

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.

The efficiency of the preservative, under best conditions, is approximately one year.

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 and then finish making all final hose/tube connections. This will insure that the membrane is kept moist.

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 seacock of your choice and the boost pump.

To avoid excessive mechanical stress, do not connect/mount the sea strainer directly to the seacock.

Connect the barbed fittings with the supplied coil reinforced intake hose and secure all hoses below water level with two hose clamps. For boost pump installation refer to the "Installation Instructions" (Optional Equipment).

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.

A minimum hose length of 3 feet / 1M is required for pulsation dampening. The hose can be coiled where needed.

Run the second high-pressure hose from the outlet of the RO membrane housing to the pressure control valve in the control panel. Do not over tighten the high pressure fittings. They are O-ring sealed and need little torque to lock only.

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).

THRU-HULL (not supplied)

The boat’s designated intake thru hull should be located in an area that will always be in the water with the boat is used under normal running conditions.

A speed boat scoop could be helpful. Installed with the opening facing the bow, it typically generates a small amount of pressure while moving through the water. It is important not to place the scoop thru-hull directly forward of a speedometer pickup. It is also wise not to place the intake thru-hull slightly aft or outboard of a holding tank, head or galley sink overboard discharge.