




# SERIES 'EO' PLASTIC SUMP PUMP MODELS 'EO1' & 'EO1¼'

OPERATION AND  
SERVICE GUIDE  
O-908  
JULY 1999

Refer to Bulletin P-312 and Parts List P-8985.

## SAFETY PRECAUTIONS BEFORE STARTING PUMP

1. Read operating instructions and instructions supplied with chemicals to be used.
2. Refer to a chemical resistance data chart for compatibility of materials in pump with solution to be used.
3. Note temperature and pressure limitations.
4. Personnel operating pump should always wear suitable protective clothing: face mask or goggles, apron, gloves.
5. All piping must be supported and aligned independently.
6. Always close valves slowly to avoid hydraulic shock.
7. Ensure that all fittings and connections are properly tightened.
8.  Ground motor before connecting to electrical power supply. Failure to ground motor can cause severe or fatal electrical shock hazard. DO NOT ground to gas supply line.

## BEFORE CHANGING APPLICATION OR PERFORMING MAINTENANCE

1. Wear protective clothing as described in Item 4 above.
2. Flush pump thoroughly with a neutralizing solution to prevent possible harm to personnel.
3. Shut off power to motor at disconnect switch.

## IMPORTANT

1. The pump is constructed of CPVC, polypropylene or PVDF as ordered. Fasteners are stainless steel. Pump shaft is made from stainless steel and protected by a plastic sleeve. The plastic should be chemically compatible with the solution being pumped, and care should be taken to protect the pump components against unnecessary wear and physical abuse.
2. Record all model and serial numbers for future reference. Always specify model number and serial number when ordering parts.
3. Pump flow curves are based upon pumping water. Increased motor horsepower may be necessary for pumping other liquids, or reduced motor horsepower may be permissible when pumping at higher discharge head/low flow rates. Refer to Pump Curve.
4. Impellers are designed to offer maximum pump output and the motors are sized for non-overloading at maximum flow conditions.
5. Plastic piping has a high thermal expansion and this

should be considered when attaching the discharge piping. Refer to Bulletin A-213 for pipe, pipe fittings etc.

## PLUMBING

When a suction line or suction extension is required, the pipe must be equal to or one size larger than the suction entrance. Make sure all couplings or connections are airtight. Bottom of the suction extension should always be at least 2 pipe diameters above the bottom of the tank. The use of a check valve on the discharge of the pump is recommended for either flooded suction or non-flooded suction. On a non-flooded suction, a foot valve on the end of the submerged suction line must be installed. Installing a priming 'T'-connection with a small valve between pump body and check valve will help to prime pump. (See Diagram 1)

## RECOMMENDED PLUMBING UNDER NON-FLOODED CONDITIONS

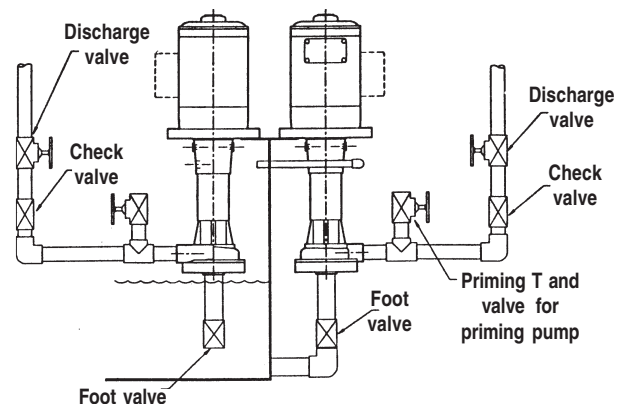


DIAGRAM 1

**NOTE:** Priming 'T' should be located just outside discharge or no higher than halfway between discharge and upper weep hole in pump housing, (Diagram 1). It is advisable to use a discharge valve after the check valve. All plumbing and accessories must be supported other than by the pump to prevent possible distortion of the pump body. The correct liquid level is very important. If the liquid level is too high, it could cause motor damage. Recommended liquid level is halfway between the weep hole and the top of the volute. See Bulletin P-312 for exact dimensions.

**NOTE:** For out-of-tank installation, weep hole should be plumbed back to tank to prevent spills if tank is inadvertently overfilled. (See Diagram 2)

## PRE START-UP

### RECOMMENDED LIQUID LEVEL

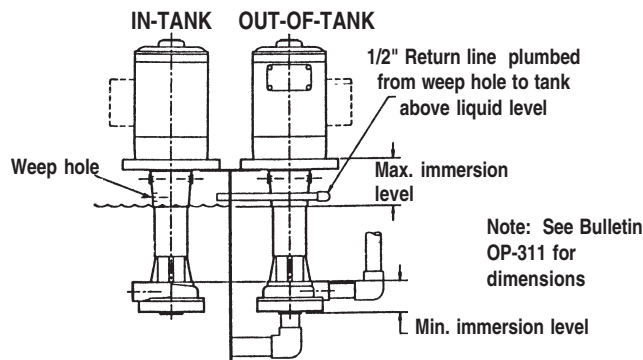


DIAGRAM 2

1. Verify that operating temperature is not in excess of pump design temperature. See Bulletin P-312.
2. Connect electrical supply to motor starter. Match voltage to nameplate voltage on motor. Incorrect voltage can cause fire or seriously damage motor, voiding warranty. If starter is furnished, verify that the starter is wired for the correct operating voltage with the correct overload heaters. It is recommended that a motor starter be installed for overload protection if one was not provided with the pump assembly.
3. Secure pump to corner of tank or sump and complete discharge piping. If pump is above a hot (160°F) liquid, it is recommended to support mounting plate on all four sides.
4. Pump rotation is counterclockwise when looking at the pump suction, or clockwise when looking down on the motor fan. (Check rotation arrow.) For 3-phase motors, it is necessary to verify correct direction of rotation by momentarily "jogging" the motor. An instantaneous "ON-OFF" of the starter is ample to check rotation. To change direction of rotation, interchange any two of lines L1, L2, or L3.

**⚠ CAUTION: Extended running in reverse will cause pump damage, reduced performance and possible failure, voiding warranty.** To avoid possible problems, we recommend checking rotation without liquid to the pump. This eliminates torque to the impeller. This pump can run dry for extended time without damage.

## START-UP

1. ON NON-FLOODED conditions, manually prime pump through priming 'T' on discharge line.

**⚠ CAUTION: DO NOT USE PUMP WEEP HOLE TO FILL PUMP** as this could fill the impeller with liquid and result in damage at start up. Close all valves in discharge line, leaving suction fully open. A closed suction valve could result in damage to the impeller and

shaft. Start pump and open discharge valve slightly to allow any trapped air to escape. Then open discharge valve to desired flow rate.

2. Under FLOODED conditions (see Diagram 3), open valves on both suction and discharge to allow any trapped air to escape. Then close all valves on discharge side while leaving open all valves on suction side. Start the pump and slightly open discharge valve

### RECOMMENDED PLUMBING UNDER FLOODED CONDITIONS

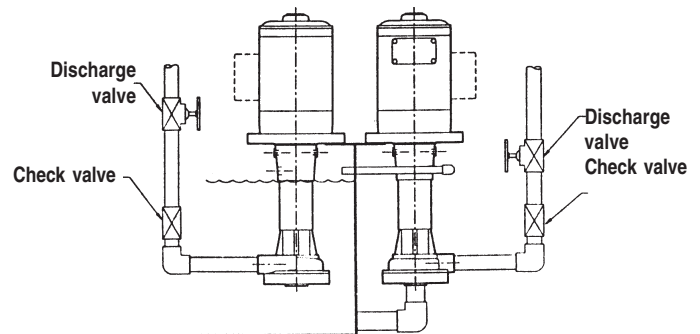


DIAGRAM 3

to allow any additional trapped air to escape. Then open discharge valve to desired flow rate.

## PUMP SERVICE

**⚠ CAUTION: DISCONNECT POWER TO PUMP BEFORE SERVICING to avoid dangerous or fatal electrical shock hazards.**

**⚠ CAUTION: Before disassembly make sure pump is completely flushed and drained.**

## TOOLS NEEDED

- 1-1/4" or 1-1/2" threaded pipe nipple approximately 6" long
- 9/16" wrench
- Screwdriver (flat blade)
- Dial indicator
- Rubber mallet

## DISASSEMBLY

1. Lay pump horizontally on bench.
2. Unscrew suction retainer (9) counterclockwise. Remove suction cover (5) by inserting a threaded pipe (1-1/4" for EO1 or 1-1/2" for EO1 1/4) through center thread. Use a slight rocking motion while pulling outward.
3. To remove impeller (6), hold impeller stationary while using standard (flat blade) screwdriver on impeller lockdown (14) turning in counterclockwise direction. Remove lockdown and 'O'-ring. Slide impeller from shaft.

4. To remove body (11) and mounting plate (12), loosen and remove four body bolts (4) from motor. Column body can now be removed. Pull body straight off gently. Do not rock as vapor seal could become damaged. Do not misplace CPVC spacer (23) located between motor and mounting plate.

### TO REPLACE PUMP SHAFT

1. Remove suction cover, impeller, and column as described.
2. Attach vise grips to fan end of motor shaft and pump shaft. Remove pump shaft by turning counterclockwise.
3. Insert new shaft and use "Liquid Thread Lock" on threads. Tighten pump shaft until it butts against motor shaft.
4. Check run-out (eccentricity) of shaft by turning shaft and measuring at extreme end with dial indicator. It must be less than .005 TIR. Straighten shaft by pressing down on that area of the shaft where maximum run-out occurs.
5. Reassemble column, impeller and suction cover.

### POSITIONING OF DISCHARGE PORT

Remove four body bolts (4) from motor. Rotate body (11) until discharge is at position desired. Replace bolts.

### ASSEMBLY

1. Place motor (1) with pump shaft (3) vertically on bench. Place mounting plate (12) and body (11) over shaft carefully while passing over fume barrier (2) so lip is not torn or flipped. Place mounting plate (12) on the four spacers (23) located at each threaded hole. Note where discharge is positioned, then insert four mounting bolts (4) and washers (10) and tighten. When tightening bolts, check that shaft is centered in column at impeller end.
2. Install impeller (6) on pump shaft by sliding impeller over pump shaft and rotate until it falls into keyway of pump shaft. Replace "O"-ring (8) and impeller lock-down (14) using screwdriver, tighten down. Rotate impeller (6) by hand to make sure there is no rubbing.
3. Before replacing suction cover (5), check "O"-ring (7). Check "O"-ring for cuts, nicks etc. and replace if damaged. Place suction cover (5) in pump. Push in with the flat of your hand or tap with rubber mallet until seated squarely in body (11).
4. Replace suction retainer (9) by screwing on in a clockwise direction. Hand tighten.
5. With suction cover (5) and suction retainer (9) in place, once again rotate impeller to make sure there is no rubbing.



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