




PLASTIC SUMP PUMP MODEL 'EO3/4'

OPERATION AND
SERVICE GUIDE
O-0903_A
JUNE 2011

Refer to Bulletin P-312 and F-506 (sub-Admiral)
Parts List P-8956 and P-7325 (sub-Admiral).

SAFETY PRECAUTIONS BEFORE STARTING PUMP

1. Read operating instructions and instructions supplied with chemicals to be used.
2. Refer to 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 Titanium. 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 solutions with a maximum specific gravity of 1.4. Solutions with higher specific gravities will require the impeller diameter to be trimmed or the pump discharge must be restricted.
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.

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 3 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

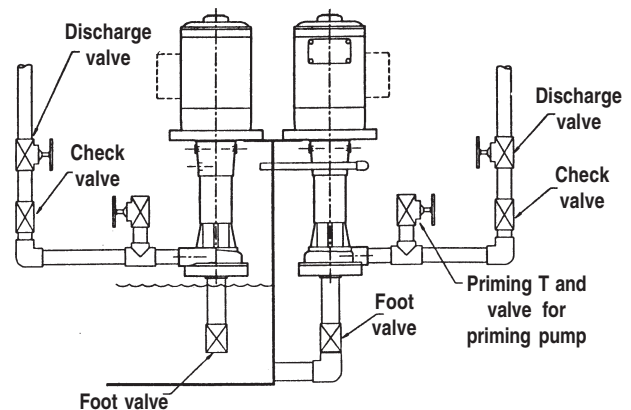


DIAGRAM 1

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 tanks are inadvertently overfilled. (See Diagram 2)

RECOMMENDED LIQUID LEVEL

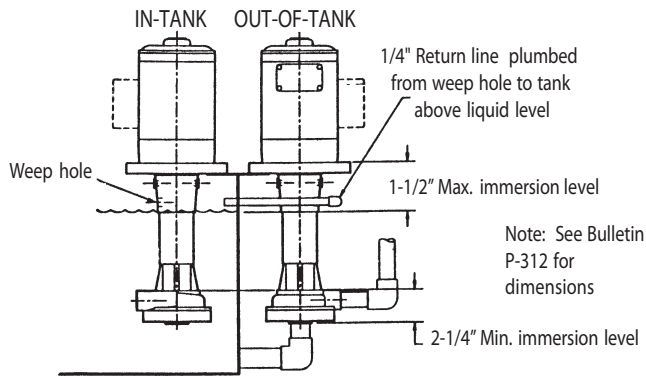


DIAGRAM 2

RECOMMENDED PLUMBING UNDER FLOODED CONDITIONS

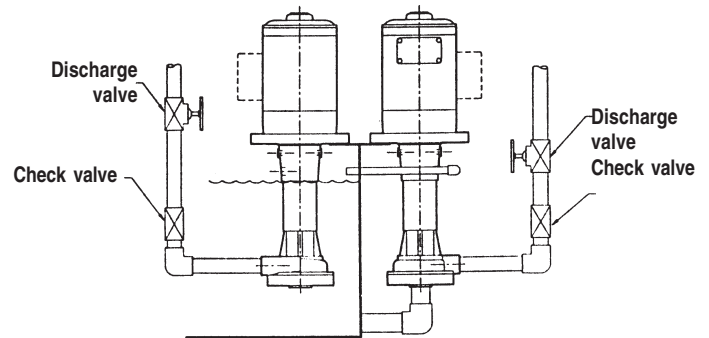


DIAGRAM 3

PRE START-UP

1. Verify that operating temperature is not in excess of pump design temperature.
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.)
5. SUB-ADMIRAL users
 - a. Insert filter cartridges into cartridges adapter and tighten thumbscrews to hold filter in place.
 - b. Insert filter plug (99-0645) into hole on bottom of filter cartridge.
 - c. Install Ser-Ductor Nozzle onto elbow. Point Ser-Ductor towards bottom of tank. With mounting bracket provided, secure pump to lip of tank.
 - d. Check to ensure that the intake port on the side of pump column is submersed at least one inch below solution level. This is necessary for pump to properly self-prime and to increase life of filter media. If intake hole is too close to the top of the solution level, the pump will suck air.
 - e. Unit may be used without the discharge eductor installed. Eductor provides five gallons of agitation for each gallon discharged from pump.

! 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 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" threaded pipe nipple approximately 6" long
- Flat blade screwdriver
- 7/16" wrench
- Dial indicator
- Rubber mallet
- Pliers

DISASSEMBLY

1. Lay pump horizontally on bench.
2. Unscrew suction retainer counterclockwise. Remove suction cover by inserting a 1" threaded pipe through center thread. Use a slight rocking motion while pulling outward.
3. To remove impeller, hold motor shaft stationary by inserting a screwdriver through fan cover access hole at top of motor into slot of shaft. While holding the shaft stationary, turn the impeller with the handles of a pair of pliers counterclockwise until loose and remove.
4. To remove body, loosen and remove four bolts from motor. Pull body straight off gently. DO NOT ROCK as fume barrier could become damaged. Removing the fume barrier is only necessary when replacing it. If replacing, insert screwdriver and pry fume barrier out of fume barrier holder.

RE-ASSEMBLY

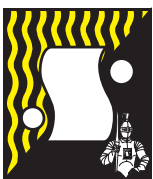
1. Before re-assembling pump, the motor shaft should be checked for total indicator runout (TIR). TIR must not exceed .005". To check the TIR, place end of indicator at the shaft end just behind threads.
 - a. If TIR is less than .005", continue with re-assembly of pump.
 - b. If it is more than .005", but less than .015", tap on high side of shaft with a rubber mallet until TIR is .005" or less.
- NOTE: To protect motor bearings support shaft area nearest motor with a block of wood or similar material.
- c. If TIR is greater than .015", motor should be replaced.
2. If fume barrier needs replacing, press into place with fingers until it bottoms out. Lip indent of fume barrier should be towards impeller.
 3. Place body over shaft carefully while passing over fume barrier so lip is not torn or flipped. Ensure pump body is completely seated. Apply medium strength thread locker to mounting bolts. Insert bolts with lock and flat washers and tighten to motor.
 4. Hold motor shaft stationary by inserting screwdriver in the shaft slot through top of motor. Install impeller on motor shaft, turn clockwise by hand or with the handle end of a pair of pliers until tight.
 5. Check that impeller is centered in pump body. The impeller must not be touching the inside of body.
 6. With the unit in a vertical position, motor down, rotate

impeller by hand to make sure there's no rubbing.

7. Before replacing suction cover, check O-ring for cuts, nicks, etc. and replace if damaged. Lubricate O-ring with suitable rubber lubricant. Place suction cover in pump, push in with the flat of your hand or tap with a rubber mallet until seated squarely in body
8. Replace suction retainer by screwing on in a clockwise direction. Hand tighten.
9. With suction cover and retainer in place once again, rotate impeller to make sure there is no rubbing.

TROUBLESHOOTING

1. **Motor Stops** - Check for correct voltage, wiring and motor direction. See that the starter has correct overload heaters. Take an amp meter reading at operating conditions and compare to value on motor nameplate. Measured value should be equal to or less than rated value. Check for friction-free rotation by turning motor fan with power disconnected.
2. **Pump does not deliver correct flow**- Check suction strainer or pump inlet for debris. Compare required flow conditions to original specifications and pump curve. Check motor rotation.
3. **Pumps up column at start-up**- Check liquid level and compare with recommended immersion levels shown on Bulletin P-312.
4. **Backflows up column at shut-down**- Check for large volume of liquid in pump discharge lines. If liquid is surging up the column, install a check valve in the discharge. Many different types of check valves exist. Each type has benefits and drawbacks which can adversely affect the pump. Test valves on water for proper operation.
5. Review parts list and maintain an inventory of recommended spare parts for emergency replacement. This will assure that the pump is returned to operation with minimum delay.
6. With pump running, listen for any unusual noise, vibration or other abnormal condition which could influence pump performance.
7. At maximum flow conditions, measure amperage on all lines. If in excess of motor nameplate ratings, stop pump and consult Sales Department.



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