



SERIES 'EC' PLASTIC SUMP PUMPS

MODELS	PRICE CODE NUMBERS	MODELS	PRICE CODE NUMBERS
ECL 3/4-2SC-C.3	45-0201	ECKL 1½-4SC-C1.0	45-0210
ECL 3/4-2SC-D.3	45-0202	ECKL 1½-4SC-D1.0	45-0211
ECL 3/4-3SC-C.75	45-0203	ECKL 1½-5SC-C1.5	45-0212
ECL 3/4-3SC-D.75	45-0204	ECKL 1½-5SC-D1.5	45-0213
		ECKL 1½-5SC-C1.0*	45-0212L
		ECKL 1½-5SC-D1.0*	45-0213L
EKL 3/4-2SC-C.3	45-0401	EKL 1½-4SC-C1.0	45-0410
EKL 3/4-2SC-D.3	45-0402	EKL 1½-4SC-D1.0	45-0411
EKL 3/4-2SC-C.75	45-0403	EKL 1½-5SC-C1.5	45-0412
EKL 3/4-2SC-D.75	45-0404	EKL 1½-5SC-D1.5	45-0413
		EKL 1½-5SC-C1.0*	45-0412L
		EKL 1½-5SC-D1.0*	45-0413L

* For 50 Hz operation

⚠ 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.

⚠ 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 or PVDF, as ordered. Mounting plate fasteners are stainless steel. Pump shaft is made of stainless steel and protected by a plastic sleeve. Casing bolts are CPVC or PVDF. Stainless steel bolts are available. For their use, refer to Note on Page 3. 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

Refer to Bulletin P-304 and Parts List P-2150 and Master Price List F-800.

head. 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. Impellers may be trimmed to reduce flow and discharge head, if desired. See Parts List for impellers of various diameters.
5. Vertical discharge piping from the pump should be independently supported so that the pump does not take the forces generated by the weight of the pipe and the liquid being pumped.
6. Plastic piping has a high thermal expansion this should be considered when attaching discharge or suction piping.
7. If position of discharge is not suitable it can be rotated to other positions. See section under Pump Service.

PRE-START-UP

1. Verify that operating temperature is not in excess of pump design temperature. Refer to specific pump bulletin and refer to chemical resistance guide.
2. Connect electrical supply to motor starter. If starter is furnished, verify that starter and motor are wired for the correct operating voltage. For overload protection, it is recommended that a motor starter be installed if one was not provided with the pump assembly
3. Secure pump to tank or sump and complete discharge piping. If pump is in hot liquid, support mounting plate on all four sides.
4. Wire motor for counterclockwise rotation when looking down on fan end of motor. If pump rotation is incorrect, stop motor and interchange any two power source wires, (three phase only).
5. All units are factory tested to meet published or specified flow rates and to confirm that the pump functioned properly at time of shipment.
6. With pump running, listen for any unusual noise, vibration or other abnormal condition which could influence pump performance. Suction casing must be flooded for pump to prime. See sticker on pump

column.* (See page 2.)

7. Check correct operation of level control. Make necessary adjustments for establishing high level and low level.
8. At maximum flow conditions, measure amperage on electrical lines. If in excess of motor nameplate ratings, stop pump and consult factory.

PUMP SERVICE

TO REPLACE SUCTION CASING OR 'O'-RING SEAL

1. Place pump on work table or bench with fan end of motor on work surface.
2. Remove the hex bolts holding the suction casing to the support casing. Note position of suction casing discharge.
3. "O"-ring can be lifted out of groove in suction casing.
4. Lubricate "O"-ring with water or glycerol.
5. Position suction casing to duplicate original discharge position, replace and tighten casing bolts. CPVC casing bolts should not be overtightened.

TO REPLACE IMPELLER

IMPORTANT: Impeller/sleeve assembly in 1 x 3/4 model is left hand threaded to pump shaft. Impeller/sleeve assembly in 1 1/2 x 1 1/2 model is right hand threaded to pump shaft.

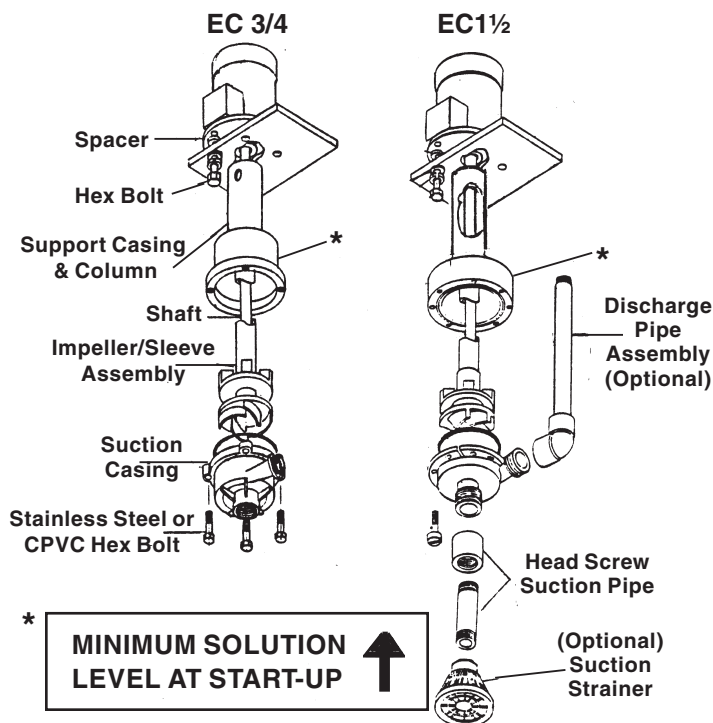
1. Remove suction casing as previously described.
2. Remove motor fan cover and fan.
3. Grip end of motor shaft with vise grips.
4. Remove impeller by turning with a strap wrench or similar tool inserted into the impeller vanes.
5. Replace and tighten impeller using above method. Use "Liquid Thread Lock" on shaft threads. Replace fan (heat fan in hot water to avoid cracking) and fan cover.
6. Replace suction casing as described above.

TO REPLACE SUPPORT CASING AND COLUMN

1. Remove suction casing and impeller as described.
2. Remove the hex bolts holding the mounting plate to the motor "C" face. Support casing and column can be removed. Do not misplace CPVC spacer located between motor and mounting plate.

TO REPLACE PUMP SHAFT

1. Remove suction casing, impeller, support casing 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 .010 TIR. Straighten shaft by pressing down on that area of the shaft where maximum run-out occurs.
5. Reassemble support casing and column, impeller and suction casing.



POSITIONING OF DISCHARGE PORT FOR MODELS WITH 1 x 3/4 CONNECTIONS

1. Remove the four CPVC hex bolts that hold the suction casing to the support casing. Rotate suction casing until discharge is at position desired.
2. Replace hex bolts and tighten alternately. Be careful not to over tighten.

POSITIONING OF DISCHARGE PORT FOR MODELS WITH 1 1/2 x 1 1/2 CONNECTIONS

1. Loosen casing bolts to make small adjustments to discharge direction.
2. Remove casing bolts to make large adjustments to discharge direction.

TO REPLACE MOTOR

Review instructions as outlined.

TROUBLESHOOTING

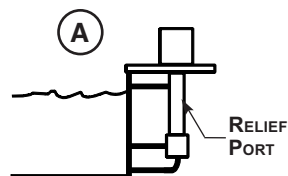
1. **MOTOR STOPS** - check for correct voltage and wiring. See that starter has correct overload heaters. Take an ammeter reading at operating conditions and compare to value on motor nameplate. Measured value should be equal to or less than rated value. Check for friction-free rotation by turning motor fan.
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.
NOTE: Maintain an inventory of replacement parts for minimum downtime of pumps.

PUMPING TIPS

1. When discharging overhead where there may be a considerable volume of liquid in the piping, it is recommended that a check valve be installed in the pump discharge. This will prevent unnecessary back siphoning which could cause cycling of automatic level control, or flood the motor. It may be necessary to vent off air in the discharge line if there is a discharge check valve. An automatic air release valve may be used. Or use a bypass line installed between pump discharge and discharge check valve and returning to source of liquid. A manual valve should be installed in this line.
2. Pumps provided with suction extensions must be started with liquid above the impeller.
3. Verify proper operation of level controls.
4. Check amperage and fuse size if motor cutout occurs.
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. For some applications or when in-tank space is not available, it may be necessary to mount the pump on the outside of the tank. The pump will operate in this manner, however care should be taken when initially priming the pump. Below are several suggested methods of priming for out-of-tank operation. Necessary valves, pipe, fittings and hose not furnished with the assembly may be purchased from stock. If the pump is to be operated near or at shut-off (0 GPM), the relief port in the pump body should be provided with a gravity drain to the tank. Elevation to the port must be above top of tank or connected to side opening in the tank per sketch "A". **IMPORTANT:** For out-of-tank installations, the relief port can never be below liquid level.

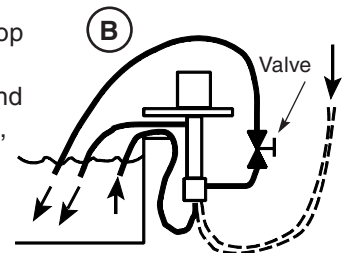
A. SIDE OPENING IN TANK REQUIRES AN EMPTY TANK FOR INSTALLATION

1. Position pump such that relief port is above maximum liquid level.
2. Relief port is factory tapped 1/2" NPT.
3. Using hose or pipe, complete connections to tank wall as shown for suction, relief port and discharge (if not to discharge over top of tank).
4. Pump will prime itself immediately at start-up.



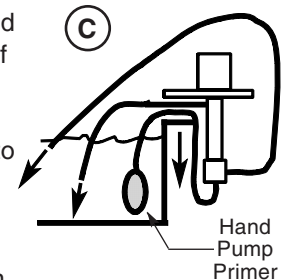
B. SUCTION OVER SIDE OF TANK WITH DISCHARGE VALVE

1. Install straight or elbow hose adapter to pump suction and relief port. Attach proper size and length of hose to each. Mount pump so relief drain connection is ABOVE top of tank.
2. Install control valve and set in closed position.
3. With gloved hand, hold suction hose in position shown by double line. Open end of hose is up and at elevation equal to relief drain.
4. Fill suction hose to very top using liquid from tank.
5. With a cupped gloved hand held over end of the hose, immerse in tank and energize motor.
6. After a few moments, **SLOWLY** open valve to achieve full prime and flow.
7. Set valve position at the desired flow if less than maximum is required.



C. SUCTION OVER SIDE OF TANK WITH HAND PUMP PRIMER

1. Follow instructions of B-1 above.
2. With gloved hand, place Hand Pump Primer Bulb into end of suction hose while below liquid level.
3. Squeeze bulb several times to pump liquid into hose, pump body and discharge hose.
4. When suction hose is full of solution energize motor, then remove bulb from hose end.



NOTE:

For out-of-tank pump mounting, stainless steel bolts at pump casing may be used. Refer to parts sheet for Part No. & quantity.



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