



SERIES 'X' MAGNETIC COUPLED PUMPS

OPERATION AND
SERVICE GUIDE
O-0194B
JUNE 2009

MATERIAL	MODEL
Polypropylene PVDF ETFE	X40, X50, X100, X200, X250



SAFETY PRECAUTIONS BEFORE INSTALLING PUMP

WARNING: Do not use for pumping flammable liquids or operate near combustible liquids

1. Read operating instructions and instructions supplied with chemicals to be used.
2. Refer to a chemical resistance data chart for compatibility of materials 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 and gloves.
5. All piping must be supported and aligned independently of the pump.
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.

Series 'X' magnetic coupled pumps are constructed of polypropylene, PVDF, or Teflon with Viton "O"-rings. All fasteners are stainless steel for total chemical resistance and non-metallic construction of all wetted components. Impellers are designed to offer maximum pump output and the motors are sized for non-overloading providing continuous flow with liquids up to 1.3 specific gravity. Pump flow curves are based upon water.

IMPORTANT: Magnetic drive pumps can not be used with solutions that contain metallic particles. Care should be taken to protect the pump components against unnecessary wear and physical abuse. Review parts list and maintain an emergency inventory of replacement items to assure that the pump is returned to service with the least delay. Record model, serial and product code numbers for future reference and specify numbers when ordering parts.

INSTALLATION

Secure the motor to a flat, level surface. Locate the pump as close to the process tank as possible. The pump is not self-priming. A flooded suction is required to maintain prime for the pump to function properly. If the pump is installed without flooded suction (not recommended), proper priming of the pump will be required. The suction line and pump must be completely filled with liquid before energizing the motor. A foot valve or priming chamber may be required on the suction line to maintain proper prime. The use of a foot valve could result in the possibility of damage to the pump or pump performance. SERFILCO offers a pressure activated Dri-Stop pump protector to prevent pump damage due to dry operation. It is strongly recommended to avoid the use of elbows on the

Refer to Bulletin P-511.

suction supply line of the pump. The total flow rate will be decreased 2.5 gallons per hour for every 90° elbow on the suction side. Do not place an elbow or valve within ten pipe diameters of the suction supply line of the pump. If it is unavoidable to use elbows or to keep the suction intake piping run as short as possible, the pipe size for the suction intake will have to be increased to compensate for restriction and friction loss, especially if the solution is above ambient temperature. Do not decrease the pipe size for the suction intake of the pump. Increasing discharge pipe one size will minimize head loss from friction. Support piping near pump to minimize strain on the pump casing.

FLUSH SYSTEM

When pumping solutions that will solidify or crystallize, a water flush system added to the piping of the pump will prolong the life of the internal pump components. Install the water inlet and outlet valves between the suction and discharge valves as per the diagram (Figure 1). Connect a water supply line to the inlet valve on the suction piping of the pump. Close suction and discharge valves. Open water inlet and outlet valves. Turn on water supply to flush.

CAUTION: Do not use a flush system with solutions that have an exothermic reaction when mixed with water such as concentrated sulfuric acid.

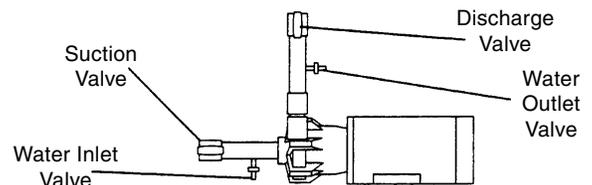


FIGURE 1

ELECTRICAL

Motors are currently available 100-110V/1/50-60Hz or 230V/1/50-60Hz supplied with a line cord. Plug unit into a properly fused receptacle. Install according to NEC and local electrical codes.

OPERATION

Fully open all valves on the suction and discharge of the pump suction line. Rotation of motor must be correct. Incorrect rotation will cause an extreme reduction in flow rate and discharge head. A rotation arrow affixed to the motor indicates proper rotation. View the motor from the fan end and bump start the pump motor to verify correct rotation. Check pump rotation with liquid in the pump. Dry rotation can cause failure of the pump components.

Start pump and check liquid flow. If no flow is determined, immediately stop pump and refer to the Troubleshooting section.

Flow rate and pressure can be adjusted by regulating the discharge valve. Do not close discharge valve completely. This is called "deadheading" the pump. Rapid temperature rise will occur causing considerable damage to the internal pump components.

The valve on the suction of the pump must be in the full open position during operation. If using the suction lift method, prime the system by filling the priming chamber and/or suction line with the liquid to the pump. Allow time for trapped air to work its way out of the lines. If priming by filling the suction line, close the discharge valve before returning the suction line to the tank.

PUMP SERVICE

1. Securely hold or clamp motor in place.
2. Remove the screws from the impeller housing.
3. Remove the front casing, impeller, and magnet capsule from the rear casing.
4. Remove the rear casing "O"-ring.

⚠ WARNING: Magnets are strong. To avoid damage and pinching fingers, tightly grasp pump assembly keeping fingertips away from the area where the housing and motor adapter meet. Keep the drive magnet and impeller assembly away from metal objects and metallic chips.

5. Check impeller drive bushing, thrust ring, mouth ring and spindle for cracks, chips, scoring, or excess wear. Replace as required.
6. Check for loose magnets on drive assembly or scored areas in impeller or rear casing assemblies.

X40, X50, and X100

ASSEMBLY INSTRUCTIONS

1. Place the motor on end, shaft end up, on a stable, horizontal surface/bench.
2. Lower the rear casing, with spindle, into the magnet housing. Insert the impeller into the rear casing. Place the "O"-ring in the rear casing groove.
NOTE: The front thrust pad is attached to the front casing.
3. Orient the front casing so that the discharge port points away from the motor base. Insert and tighten the front casing bolts.

X200 and X250 ASSEMBLY INSTRUCTIONS

1. Place the motor on end, shaft end up, on a stable, horizontal surface/bench.

2. Locate the rear casing cover on top of the motor. Lower the rear casing, with spindle, into the magnet housing. Insert the impeller into the rear casing. Place the "O"-ring in the rear casing groove.
3. Orient the front casing so that the discharge port points away from the motor base. Insert and tighten the front casing bolts with washers.

TROUBLESHOOTING

NO FLOW

1. Pump not primed
2. Discharge head too high. Insufficient NPSH.
3. Suction lift too high.
4. Closed valve.
5. Viscosity or specific gravity too high (magnets uncoupled).

INSUFFICIENT DISCHARGE

1. Air leaks in suction piping.
2. Discharge head higher than anticipated.
3. Suction lift too high or insufficient NPSH. Check also for clogged suction line or foot valve.
4. Foot valve too small.
5. Foot valve or suction opening not submerged enough.

INSUFFICIENT PRESSURE

1. Air or gases in liquid.
2. Impeller diameter too small.
3. Discharge head higher than anticipated.

LOSS OF PRIME

1. Leaking suction line.
2. Suction lift too high or insufficient NPSH.
3. Air or gases in liquid.
4. Foreign matter in impeller.
5. Leaking foot valve.

EXCESSIVE POWER CONSUMPTION

1. Head lower than rating. Pumps too much liquid.
2. Specific gravity or viscosity of liquid pumped is too high or higher than that defined in application.

VIBRATION

1. Excess bearing wear.
2. Magnet drive uncoupled.
3. Loose drive magnet.
4. Pump cavitating.

MODEL CHART

Series	Materials	Connections	Friction Surfaces	Spindle	Rear Thrust	Front Thrust	Bearing	Mouth Ring	Impeller		Motor	HP
									A	B		
X40	PV	5/8"H = 5/8" hose barb	CRT	Ceramic	Rulon/TFE	Rulon/TFE	Ceramic	—	A	to 1.1 S.G.	C.02	1/40
X50	PP**/Viton	3/4"H = 3/4" hose barb							B	to 1.3 S.G.	C.06	1/15
X100	100% PVDF/Viton	3/4"T = 3/4" MNPT							C	to 1.5 S.G.	C.1	1/10
X200	EV	1"H = 1" hose barb							C.2	1/5		
X250	ETFE**/Viton	1"T = 1" MNPT							C.3	1/3		

** Glass reinforced

Standard motors are 115V/1/60 Hz
For optional 230/1/50-60 Hz motors, add -5 to Model No.



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