

Installation, Operating & Maintenance Instructions

for

CP and PC Self-Priming Bronze regenerative (turbine) Motor Pump Units



**TO OBTAIN THE BEST PERFORMANCE FROM
YOUR PUMP PLEASE READ THESE
INSTRUCTIONS CAREFULLY**

Failure to observe the recommended procedures may result in damage to equipment and personal injury, and may invalidate the supplier's warranty.

IMPORTANT

Bronze CP and PC-series pumps are designed for use with clean seawater or freshwater. They may safely be used with diesel fuel, kerosene, or gas oil.

CP and PC-series pumps are **NOT SUITABLE FOR USE WITH PETROL (GASOLINE)** or other low flash-point fuels and solvents

1. INSTALLING THE PUMP

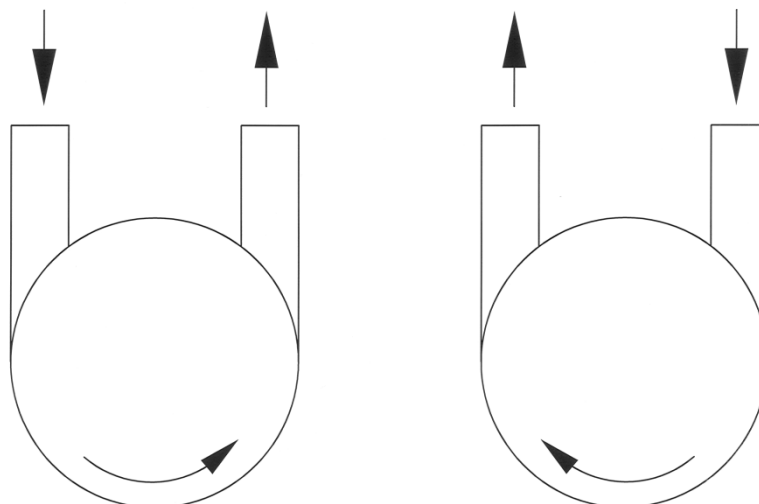
- 1.1 Align rigid pipes accurately with the pump ports, so as not to distort or damage the pump head.
- 1.2 Locate the pump on a firm base in a well-ventilated area close to the liquid source and preferably not more than 2m above it. Check with your pump supplier if you require a higher self-priming lift. Allow adequate access for maintenance.
- 1.3 The pump must be mounted horizontally with the ports upwards.
- 1.4 Keep the inlet pipe short, with as few bends and fittings as possible. Use full bore ball valves and radiused bends, not sharp elbows. Make sure the inlet line is completely airtight.
- 1.5 Fit a non-return valve in the inlet line, to prevent back flow and possible siphoning when the pump is stopped.
- 1.6 The bore of the inlet and discharge lines should be the same size as the nominal bore of the pump inlet port. If the inlet line is long it may be necessary to increase the bore to reduce friction losses. Check with your pump supplier if necessary.
- 1.7 Use rigid pipe or reinforced inlet hose that will not deform or collapse under suction conditions.
- 1.8 Isolating ball valves in the inlet and discharge lines will simplify removal of the pump when maintenance is required.
- 1.9 Inlet and discharge pressure gauges can assist greatly in ensuring that the pump is running within the manufacturer's recommended limits of flow and pressure.
- 1.10 Fit an inlet strainer of approximately 0.5mm mesh and of open surface area at least 2.5 times the nominal cross-sectional area of the inlet port. The strainer should be inspected at intervals and cleaned when necessary.

- 1.11 A competent electrician should carry out the electrical installation. The cable must be capable of handling the motor current. Low voltage d.c. units may need larger cables with conductors of increased cross-section, to avoid excessive voltage drop on starting and running. If in doubt consult your pump supplier. Fuses or circuit breakers should be fitted close to the low voltage d.c. source to protect the wiring.
- 1.12 Use of a proper electrical starter is strongly advised with ac motor-pump units. A starter will:
- prevent accidental re-starts after power failure.
 - provide a safe water-protected switch enclosure (e.g., to IP55 'hose-protected' specification).
 - protect the motor with a correctly set thermal overload cut-out: a fuse protects only the wiring.
 - withstand the heavy starting current of the motor, preventing arcing and rapid contact wear.
 - allow automatic controls (e.g., float switches) to operate the pump without having to handle the full motor current.

Ask your pump supplier for details of a suitable electrical starter.

2. STARTING THE PUMP

- 2.1 Fill the pump body with liquid. This is essential for self-priming, and also protects the pump against dry running. The pump is now able to prime itself on first and subsequent starts.
- 2.2 Open the inlet and discharge lines fully.
- 2.3 Start the motor briefly to ensure the pump is rotating in the correct direction. The direction of motor rotation will give the direction of flow shown below.



To alter the direction of rotation of a dc motor, reverse the leads. For a single-phase ac motor, reverse the polarity of the start winding in relation to the run winding. If in doubt, obtain the help of a qualified electrician.

- 2.4 Start the pump. Close the discharge valve slowly until the required flow and/or pressure are established. See also paragraph 1.9. Any residual air in the pipework should clear itself within a few seconds.
- 2.5 Use a valve in the discharge line to regulate the flow rate. A regenerative pump takes more power as the flow is restricted, so do not restrict the flow more than necessary. Do not stop the flow completely. Some flow must be permitted to avoid overloading the motor. Check that the motor current does not exceed that shown on the motor rating plate.
- 2.6 If satisfactory flow and pressure are not established within a short period, stop the pump and restart it. If the problem persists, stop the pump and investigate the cause. Check inlet pipework for airtightness. Check for closed valves, clogged filters, and other obstructions. Check for air locks in the pipework. Check the pump body has been filled with liquid.
- 2.7 Never restrict the inlet line to the pump while it is running. Restriction of the inlet line may cause the pump to cavitate, leading to loss of efficiency and rapid wear
- 2.8 Do not run the pump dry. Dry running will damage the shaft seal.

3. MAINTENANCE

- 3.1 In general, these pumps do not require routine maintenance. Check the pump regularly for leaks, vibration, running hot and physical damage.
- 3.2 Motor bearings are sealed for life. If the motor becomes noisy, stiff or uneven to turn, replace the bearings.
- 3.3 If the shaft seal leaks, replace it promptly. Damage to other components caused by prolonged seal leakage is not covered by the supplier's guarantee.
- 3.4 If a salt water pump is to be shut down for an extended period, circulate clean fresh water through it for several minutes, to avoid the risk of internal encrustation. If the pump is put into store, it should be kept clean and dry.

4. DISASSEMBLY

- 4.1 Remove the end cover screws, end cover and O-ring. Holding the rear end of the motor shaft with a spanner to prevent rotation, unscrew the impeller nut.
- 4.2 Remove the impeller. If it does not slide easily off the shaft, use a puller.
- 4.3 Remove the shaft seal carefully. The pump head may now be removed by undoing the bolts at the back of the head. Note that these head bolts are fitted with spring washers.

4.4 Detach the motor flange from the pump head by undoing the retaining bolts.

5. CHANGING MOTOR BRUSHES ON DC MOTORS

External brushes: unscrew brush-retaining cap, remove old brush and insert new brush.

Internal brushes: unscrew motor rear cover, pull back spring and remove brush. The electrical connection is secured by a small screw. Connect new brush, put brush in holder and let it spring back in place. Replace cover

6. REASSEMBLY

Follow the disassembly instructions in reverse order.

Take particular care not to contaminate or damage the polished surfaces of the mechanical seal: avoid touching them with the fingers.

Follow the operating instructions when re-installing and re-commissioning the pump.

7. SPARE PARTS

Spare parts can be obtained from your pump supplier.

8. REPAIR SERVICE

Contact your pump supplier for a comprehensive repair service.

Supplied by: