

OWNER'S MANUAL

BSE SERIES Self Priming Centrifugal Pumps



SAFETY WARNINGS



BEFORE OPERATING OR INSTALLING THIS PUMP, READ THIS MANUAL AND FOLLOW ALL SAFETY RULES AND OPERATING INSTRUCTIONS.

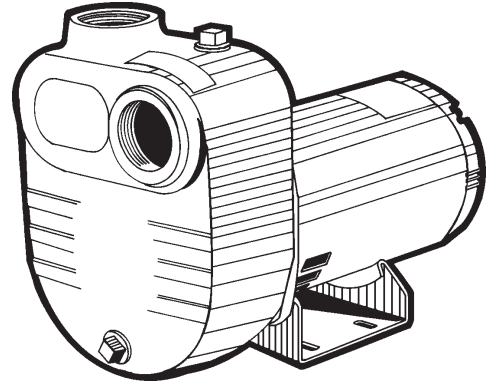
SAFETY CAREFULLY READ THESE SAFETY MESSAGES IN THIS MANUAL AND ON PUMP.

CAUTION

- **DO NOT OPERATE THIS PUMP DRY!**
- Review instructions before operating.

WARNING - ELECTRICAL PRECAUTIONS

All wiring, electrical connections, and system grounding must comply with the National Electrical Code (NEC) and with any local codes and ordinances. Employ a licensed electrician.



WARNING - RISK OF ELECTRICAL SHOCK

- Have an electrician provide electrical power to the motor.
- Motor must be grounded and terminal cover in place to reduce electrical shock hazard.
- Keep motor operating area as dry as possible.
- Always disconnect power before servicing.
- Not investigated for use in swimming pool areas.

APPLICATION

This pump is suitable for installations where the vertical distance from the pump to the water level does not exceed 25

feet. In off-set installations, friction losses in the suction pipe must be taken into consideration.

INSTALLATION

- a) **PUMP LOCATION:** The pump should be installed in a clean, dry and ventilated location which provides adequate drainage, room for servicing and protection from freezing temperatures. It should be bolted down evenly on a good foundation, preferably concrete, to prevent the development of unnecessary stress. Locating the pump as close as possible to the source of water supply reduces the friction losses in the suction pipe and provides for maximum capacities.
- b) **SUCTION PIPE:** It is recommended that only new clean pipe or hose be used and the size be the same as the pump suction tapping. If the pump is installed any appreciable distance away from the source of water supply, the suction pipe should be increased by one size (this would increase the priming time). The suction pipe must always slope upwards from the water source to the pump to avoid air pockets in the line. In cases where the pump has to be reprimed often and it is not necessary that a lot of water be delivered (e.g. draining seepage from behind a cofferdam), it is

advisable to use a 90° or 45° elbow on the suction line. This enables the pump to prime sooner and also prevents kinking of the hose. In cases where a maximum volume of water is required over a prolonged period of time, the suction line should be led almost horizontally to the pump. Thread compound should be used on all pipe joints and connections should be thoroughly tightened. A strainer should be connected to the bottom end of the suction pipe and it should be well submerged at all times.

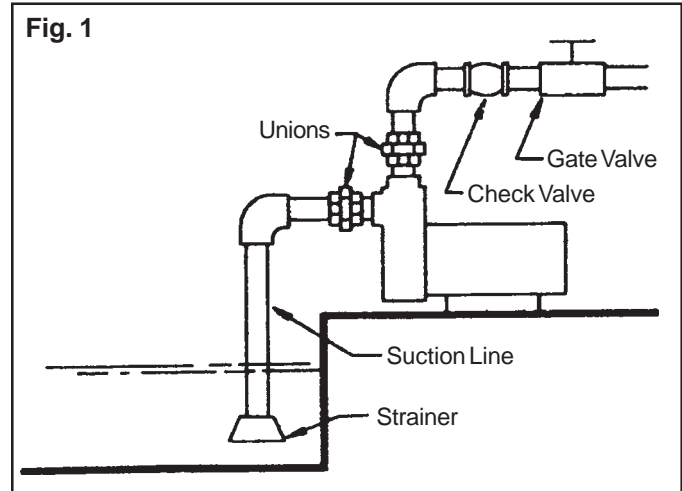
- c) **WIRING:** It is recommended that a separate circuit be led from the distribution panel to the pump unit. A properly fused disconnect switch is to be installed in the line, making sure that the correct gauge of cable is used to carry the load. Very long leads will require a larger cable. For all three phase motors a separate manual thermal overload switch or a magnetic starter having the proper size heater elements must be installed. An electrician should be employed to do the wiring.

OPERATION - PRIMING THE PUMP

WARNING: DO NOT RUN THE PUMP BEFORE PRIMING IT, SINCE THE SEAL AND IMPELLER COULD BE PERMANENTLY DAMAGED.

- a) **PRIMING:** Remove the priming plug located on the top of the casing and fill the pump casing with water. Replace the priming plug.
- b) **IMPELLER ROTATION:** The impeller must rotate in a counter-clockwise direction as seen facing the pump from the front of the casing. In the event of wrong rotation for electric motor models, refer to the instructions furnished with the motor. The rotation of three phase motors can be changed by interchanging any two lead wires.
- c) **STARTING THE PUMP:** Never operate the pump dry as this may damage the seal. If an exceptionally long suction line is used, the water in the pump casing may become overheated or vapour locked. Should this occur, either a check valve must be installed in the suction line or the length of the suction pipe must be shortened.
- d) **DRAINING:** Should the pump be subject to freezing temperatures, it will be necessary to drain the pump

completely. To drain, remove the drain plug located at the bottom of the front face of the pump casing and the priming plug and make sure that the drain hole is not choked. After all the water has been drained, operating the pump for a few seconds will ensure that the impeller is devoid of water (make sure that the suction line is also devoid of water).



MAINTENANCE

WARNING - ELECTRICAL PRECAUTIONS

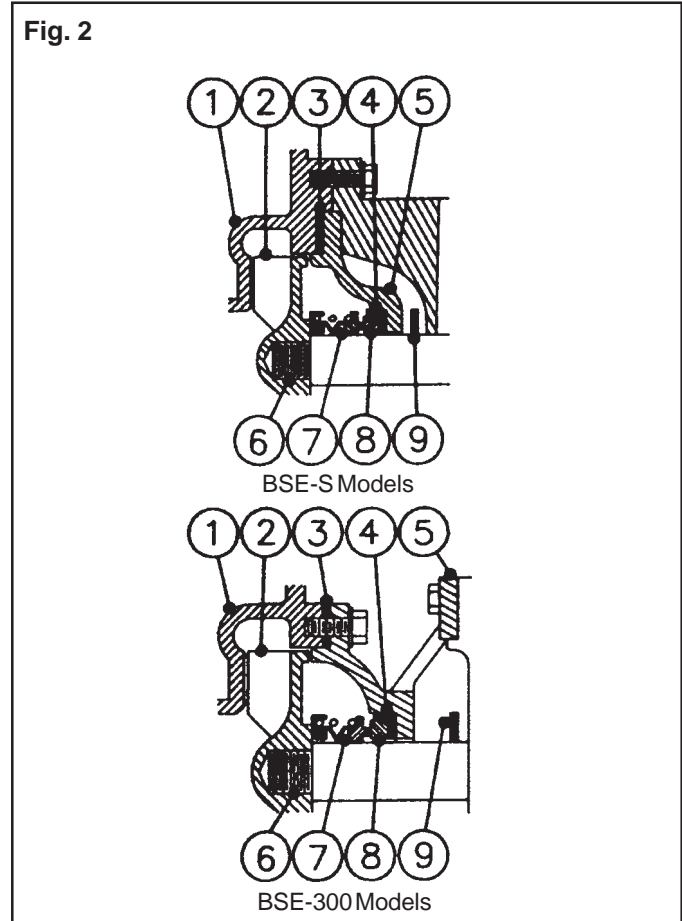
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a) LUBRICATION:

- 1) The pump requires no lubrication.
- 2) Refer to instructions provided by the motor manufacturer.



MAINTENANCE

b) REPLACING MECHANICAL SEAL: (Refer to Figure 2)

To Disassemble:

- 1) Disconnect electric power.
- 2) Drain Pump.
- 3) Disconnect piping.
- 4) Remove the bolts from the casing.
- 5) Unscrew the impeller (2) in a counter-clockwise direction.
- 6) Slip the rotating seal (7) off the shaft.
- 7)
 - i) With square flange motors, remove the seal plate from the motor end shell.
 - ii) With 'C' or 'JM' frame motors, unbolt the adapter from the motor face and remove.
- 8) Inspect the ceramic seat (8). If it needs replacing, press it out of the adapter from the motor end.
- 3) Assemble the adapter to the electric motor or gasoline engine, being very careful so as not to damage the ceramic seat.
- 4) Use liquid soap on the rotating seal and slip it onto the shaft with the shiny side of the ring towards the ceramic seat. Should a sleeve be present in the model, first slide the rotating seal onto the sleeve and then slide the sleeve (the chamfered end first) onto the shaft. Make sure that the shiny side of the ring on the rotating seal is in contact with the ceramic seat.
- 5) Screw on the impeller.
- 6) Assemble the casing to the adapter and use a new gasket (3) and new washers on the bolts.
- 7) Reconnect the suction and discharge piping and the electric wiring.

To Reassemble:

- 1) Clean all parts thoroughly before reassembly.
- 2) Use liquid soap on the rubber cup on the ceramic seat and push it into the adapter, using thumbs only. Make sure that the smooth surface of the ceramic seat faces outwards.

PRECAUTIONS

- a) No matter what the model of the pump, whenever it is dismantled and then reassembled, always check to see that the impeller rotates freely within the casing.
- b) The electric motor models have a flinger on the shaft. This flinger must not be removed.

TROUBLES AND THEIR CAUSES

a) Pump Fails to Prime or Primes Slowly:

- 1) Leaks in the suction line.
- 2) Loose gasket connection due to shrinkage of the gasket.
- 3) Collapsed or clogged suction line.
- 4) Not enough water in the casing for priming.
- 5) Suction lift is too great.

b) Reduced Pressure or Capacity:

- 1) Partially collapsed or clogged suction hose.
- 2) Clogged impeller.
- 3) Leaks in the suction line.
- 4) Strainer or end of suction hose is not properly submerged.
- 5) Suction line is improperly installed, resulting in air pockets in the suction line.
- 6) Suction lift is too great (the greater the suction lift, the lower the capacity and pressure).
- 7) Worn parts, such as the impeller or the pump casing.

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