

# OPERATION AND MAINTENANCE PS, PS-F AND PS-K SERIES



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## OPERATION AND MAINTENANCE

### 1. INTRODUCTION

Please ensure that you read this manual carefully and in full before unpacking and installing the pump

### 2. UNPACKING AND INSPECTION

Check the following points and if any are incorrect, please contact March May;

1. Does the description on the nameplate comply with your order?
2. Are all items delivered?
3. Is there any damage to the pump and/or parts caused by accident during transport?
4. Are all bolts fully secured?

### 3. PRECAUTIONS FOR OPERATION

#### **-CAUTION-**

\* DO NOT OPERATE THE PUMP WITHOUT POSITIVE PRESSURE

As the abrasion parts are cooling by the pumped liquid, operation without positive pressure or with mis-operation, such as the suction valve closed may damage the internals of the pump.

If the pump has been running in these kind of circumstances or without liquid all, do not prime the pump with any liquid, but allow the pump to stand and cool down for at least one hour. Priming the pump too soon may result in a thermal shock.

#### **-CAUTION-**

\* INFLUENCE OF LIQUID TEMPERATURE

The performance of the pump is not affected by any change in temperature. Liquids may change in viscosity, vapor pressure, corrosiveness, etc when the liquid temperature changes.

Therefore it is necessary to pay full attention to the change in characteristics of the liquid being pumped.

Operating temperature of liquids pumped (max range for clean water ) 0 to 70°C for PS series, 0 to 90°C for PS-F series. Ambient temperature range 0 to 40°C



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### **-CAUTION-**

\* CHANGE IN PERFORMANCE DUE TO SPECIFIC GRAVITY AND VISCOSITY

1. Power requirement is increased by specific gravity but pump performance is not affected.
2. More viscosity affect pump performance and power requirement it's necessary to calculate modified pump performance and modified power requirement in advance.
3. Preparations before operation
  - i. Cleans the inside of the pump piping and tanks completely before installs the pump.
  - ii. Retighten the flange connection bolts and base mounting bolts.
  - iii. Turn the motor fan by screwdriver and check that it turns freely.
  - iv. Prime the pump and verify that the pump is filled with liquid.
  - v. Completely close the discharge valve.
  - vi. Turn the motor fan by using a screwdriver to expel remaining air from the impeller.
  - vii. Verify the direction of rotation of the pump. (C.C.W. from front view) When in reverse of exchange the connection of two phases of the three phases power supply.
4. Precautions during operation
  - I. To operate the pump, close the discharge valve and start the pump. If the pump dose not operates, please check the wiring carefully and correct the fault.
  - II. After the pump is put in operation, gradually open the discharge valve. Use a flow meter and pressure gauge to make sure that the pump is running under your required specification. Check also the differential head of between discharge line and suction line by indication of the discharge and suction pressure gauge.
5. Cease of operation
  - I. Gradually closes the discharge valve. Do not close the discharge by using a solenoid valve or in another quick way. In the event of long discharge piping, the pump is likely to be damaged due to water hammer on closing the discharge too quickly.
  - II. Switch off the motor. Check whether the motor stops smoothly. If not, inspect the internals of the pump.
  - III. When the operation of the pump is stopped for a long time period, or the liquid is likely to freeze, or crystallize, be sure to drain all the liquid from the pump and piping. In the event the liquid cannot be drained, use a band heater and insulate pump and piping so that the liquid cannot freeze.
  - IV. When a power failure occurs, the power switch turned off immediately

#### **4. MAINTENANCE AND INSPECTION**

1. Verify that the pump is running without vibration or any abnormal noise.
2. Inspect the discharge suction tank for liquid level and the suction pressure
3. Check the discharge pressure, flow rate and motor current during operation. Then please compare with the pump data to check if the pump operating condition is normal.
4. If a stand-by pump is installed, operate it from time to time to make sure it can operate at any time.



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## 5. PREVENTITIVE MAINTENANCE

Preventive maintenance should be done annually. The following items should be checked. Inspection of items and corrective actions should be taken in reference to the following table:

PART	INSPECTION	MEASURES
Magnet Housing	Evidence of rubbing	Identify the cause
	Is the housing fixed in the correct position on the shaft?	Rectify position
Rear Casing	Evidence of rubbing on the inner surface	Replace
	Evidence of cracking on the liquid end of the surface	Replace
	Check if there are any scratches on the bottom of the rear casing	Replace
	Check O Ring for wear, creeping, and corrosion	Replace
Magnet Capsule	Evidence of scratching on the end part and cylindrical housing	Identify the cause
	Evidence of cracks in the plastics end face and/or cylindrical housing	Replace magnet capsule
	Blockage of the passage around inner surface	Clean internal passage
Impeller	Evidence of cavitation	Identify the cause
	Contamination and clogging on the blades surface	Identify the cause and clean the blades surface
	Dimensional change in impeller diameter	Identify the cause and clean the impeller

## 6. DISASSEMBLY AND ASSEMBLY

The magnets used to transmit motor power sufficiently, please handle with care the at traction between the drive and driven magnets during disassembly and assembly.

Completely close both discharge and suction valves before assemble.

Be very careful when you pump corrosive liquids. There may be a residue in the pump even after along flushing. Always wear protective clothing and masks when handling contaminated or corrosive liquids.

### 1. Disassembly

- I. Drain the liquid from the pump. At this time completely flush the inside of the pump.



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- II. Remove the bolts from front casing and remove the front casing from the bracket.
- III. Pull the impeller forward for removal. Careful handling each part should ensure that no damage can occur.
- IV. Pull the rear casing forward for removal.

### 2. Assembly

- I. Assemble the pump in reverse order to disassembly.
- II. Before assembly clean all the parts so that no foreign particles are present in or around the parts. Make sure that the parts are not scratched and that the magnets are not contaminated with metallic particles.
- III. Always mount new O-rings after disassembly.
- IV. Tighten all bolts equally and make sure they are not over-tightened.

