

# **ISG VERTICAL INLINE PUMP**

## **Operation Manual**

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# 1. Installation & Operation

- When pump hot or poison liquid, there should be a guard or a sign to prevent people from touching pump surface by accident.
- The pump should be sited in a well ventilated and ambient temperature should be bigger than 0°C (frost-free position).
- The arrow on the flange indicates the flowing direction. The direction of motor rotation is clockwise from motor end which can be seen from the sign on motor fan cover.
- If motor power is not more than 2.2kW, pump can be installed horizontally or vertically on pipes.
- If motor power is bigger than 2.2kW, pump must be installed vertically on pipes.

## Notice:

1. The motor for pump must site higher than pipes.
2. When installation, there should be enough space on top of pump for cleaning and dismantling in order to move motor and clean up parts. The enough space is as follows:
  - It should be 300mm if motor power is less than or equal to 4.0kW.
  - It should be 1000mm if motor power is 5.5kW or bigger than 5.5kW.
  - In the pump room, on very top of the motor, it should be well ventilated by air or by mechanism device.

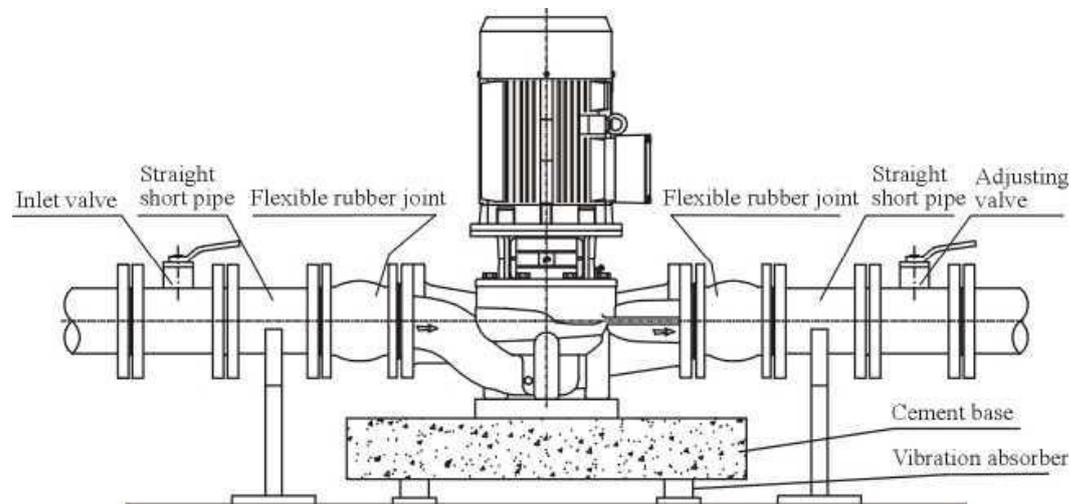
If the pump is used to pump thick and easy to froze liquid at 0°C which will lead to block the pump, heat device can be used. When the pump stops, if it is so cold that will lead to frozen the flowing liquid, water-out hole must face down and it must be opened.

## 1 .Requirement for pipes.

- 1) If the pump or pipes will be cleaned or maintained usually, it is required to install valves on the two sides of the pipes to prevent from draining the system.
- 2) If the pipes on the two sides can support pump and matched motor power is less or equal to 2.2kW, pump can be hung on the pipes.
- 3) If the matched motor power is bigger than 2.2kW, place some concrete base or vibration resistant device as fig. shows below. The base

or vibration resistance device is also workable with the motor less than 3kW.

### Adjusting valve



- 4) When installing pipes, pump must be supported hardly. In order to prevent pipes from being pressed greatly.
- 5) The inlet size of pump must be fulfilled with the designed flow and designed pressure for suction.
- 6) When installing pipes, it must be avoided that grain or deposit to go down to the bottom of the pump.
- 7) When installing pipes, it must be avoided that there was air in the pipes, especially in suction pipe.

**Notice:** Pump is not allowed to be started if the valves are closed completely, which will lead to temperature rising or vapor. It will damage flow part or seal of pump. Before starting pump, open inlet valves fully, open outlet valve a little or open little flow bypass, the flow should be 10% of the nominal flow which is indicated in the pump nameplate.

### 2. Terminal box

Before starting pump, power cables should be checked, check the switch if it is switched on or not. Make sure switch will not be switched on by accident before connecting cables. Terminal box can be installed by turning at 90° with motor. To change the place of terminal box can be done as follows.

- 1) Switch off the power.
- 2) Remove the screws locking motor and pump.
- 3) Turn motor to the required place.
- 4) Rescrew the screws locking motor and pump and tighten screws.
- 5) Refit the safe device and connect power cables.

### **3. Base**

**There are two screwed holes in the bottom of pump which is for connecting base. The base size will be decided as required.**

### **4. Frost-free protection**

**Pump can't be used in the cold days or easy to be frozen days. If it must be used in the above condition, drain pump and pipes when pump stops.**

## **2, Electrical connection**

- 1. The power cable connection of the pump should be complied with local regulations.**
- 2. The electrical connections should be carried out by an authorized electrician.**
- 3. Before changing or turning terminal box or moving or dismantling p-ump, power supply must be switched off.**
- 4. Pump must be connected with outer main power cables by one-way switch.**
- 5. Power voltage and frequency should comply with operating voltage and frequency indicated in the pump nameplate.**
- 6. Pump should be earthed and electricity leakage precaution should be applied. Electrical device should be connected reliably, to ensure that the motor will not be damaged by lack of phase, unstable voltage or overload.**

## **3, Pump starting**

**Do not start the pump until it has been filled with liquid fully and air vented fully.**

### **1. Filling water to pump**

- 1) Close the pump valve, release air vent screw on the pump head, unscrew it a little to vent the air fully. Be careful not let the air vent screw aim to people or motor or other objects that will be damaged by the liquid in the pump. And do not take away the air vent screw. Do not aim the air vent screw hole to people or motor or other objects that will be damaged**

by the liquid in the pump especially pumping hot water or chemical preparation to prevent them from hurting.

- 2) Open valve slowly until liquid flow from air vent screw steadily.
- 3) Tighten air vent screw and open valve fully.

## 2. Running

- 1) Before pump starting, open inlet valve fully and open outlet valve a little.
- 2) Checking pump rotating direction, open outlet valve slowly to adjust the flow till required.
- 3) Note pump running, stop and repair it when there is something wrong.

# 4, Repair and maintenance

Before pump starting, make sure switches can be switched on/off to guarantee power can be switched freely.

## 1. Pump unit

Pump should be checked and maintained periodically. If the pump will not used for a long time, inject some silicone grease for lubricating in shaft and shaft seal to prevent the surface of shaft seal from being choked.

## 2. Motor

- Motor should be checked regularly. Ensure site well ventilated, keep motor clean.
- If pump is installed in a place full of dust, check and clean up motor regularly.

# 5, Trouble and trouble shooting

Before open, repair, dismantle or move pump, make sure that the electricity power has been switched off and will not be switched on by accident. For parallel connected pumps, spare pump moving slowly is normal.

<b>Faults</b>	<b>Possible reason</b>	<b>Solutions</b>
<b>Motor can't be started</b>	<b>1, Power supply is defective.</b> <b>2, Motor is overload.</b> <b>3, Controlling circuit is defective.</b>	<b>1, Check power supply.</b> <b>2, Check pump system.</b> <b>3, Check controlling device.</b>
<b>Pumps no water</b>	<b>1, Pump runs reversely.</b> <b>2, Too much suction height.</b> <b>3, Too less water in casing.</b> <b>4, Suction, discharge valve is closed.</b> <b>5, There is air in suction or pump</b>	<b>1, Change power supply cables.</b> <b>2, Lower pump position.</b> <b>3, Add more water in pump.</b> <b>4, Open valve.</b> <b>5, Refill liquid, vent air fully.</b>
<b>Insufficient flow</b>	<b>1, Pipes are blocked.</b> <b>2, Chose the wrong model.</b> <b>3, There is air in suction pipelines.</b> <b>4, Wear ring is broken.</b>	<b>1, Clean blockage.</b> <b>2, Re-choose model.</b> <b>3, Check pipelines.</b> <b>4, Replace wear rings.</b>
<b>Pump consumes too big power</b>	<b>1, Too big flow.</b> <b>2, Motor bearing wears out.</b>	<b>1, Adjust flow.</b> <b>2, Replace bearing or change motor.</b>
<b>There is too big noise</b>	<b>1, Pump parts broken.</b> <b>2, Motor bearing wears out.</b> <b>3, Motor shaft and pump shaft are not in the same line.</b>	<b>1, Replace pump parts.</b> <b>2, Replace motor bearing.</b> <b>2, Adjust the pump and motor connection.</b>

## **6, Important Notice**

**1, Customers will not be advised if this manual is updated.**

**2, Pump will be guaranteed for one year under normal operation with the correct model. Wearing parts are not included.**

**3, Users shall be responsible for damage if they disassemble the pumps by themselves in guaranteed period.**