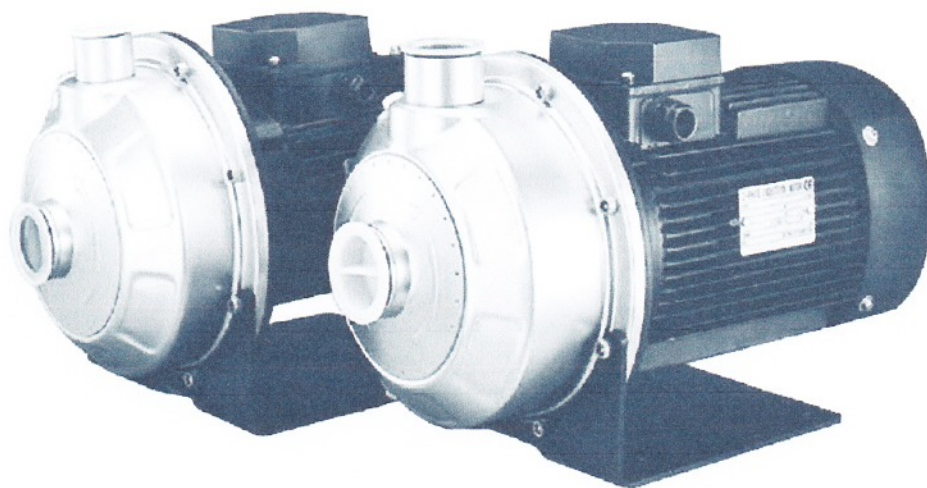




# **SMS**

## **Light Stainless Steel Horizontal Single-stage Centrifugal Pump**

### **Operation Manual**



## I 、 General

SMS Series of pump is a sort of horizontal single stage centrifugal pump. It is connected with the motor by direct connection. The overall structure is very compact; The flow passage components of the pump are made of stainless steel, light erosion proof; Main components of the pump use pressed structure of thin plate with the feature of light weight; Screwed inlet and outlet is provided for convenient connection.

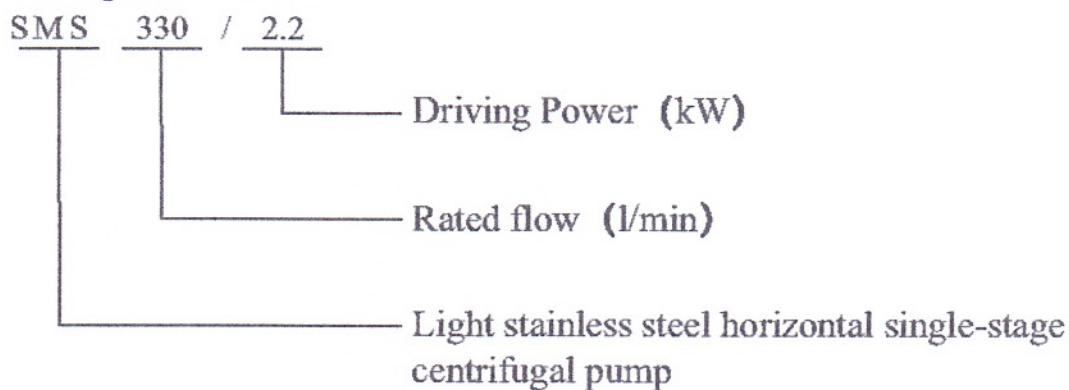
This pump is widely applicable to pressurization and feeding of industrial and civilian clean water or other liquids; water treatment system; water circulating system; agricultural irrigation, etc.

## II 、 Working Condition

- Thin, clean, non-flammable and explosive, not containing the liquid with solid particle fiber;
- Able to transmit light corrosive medium(have a bearing on the content of chloride ion in the medium, thickness of acid or alkali, whether generate corrosion on the rubber and mechanical seal materials);
- When the density or viscosity of the delivered medium is larger than that of clean water, large power motor is required;
- Liquid temperature  $-10^{\circ}\text{C} \sim 85^{\circ}\text{C}$ ;
- Ambient temperature: up to  $+40^{\circ}\text{C}$ ;
- Altitude: up to 1000m;
- Max. Pressure of the system is 8bar;
- Maximum suction stroke: It is determined in accordance with NPSH of the pump, medium temperature, sea level height of the installed position, losses of inlet pipeline, etc;
- Maximum inlet pressure: It is restricted by maximum work pressure.

## III 、 Connotation of the Type

Example as follows:

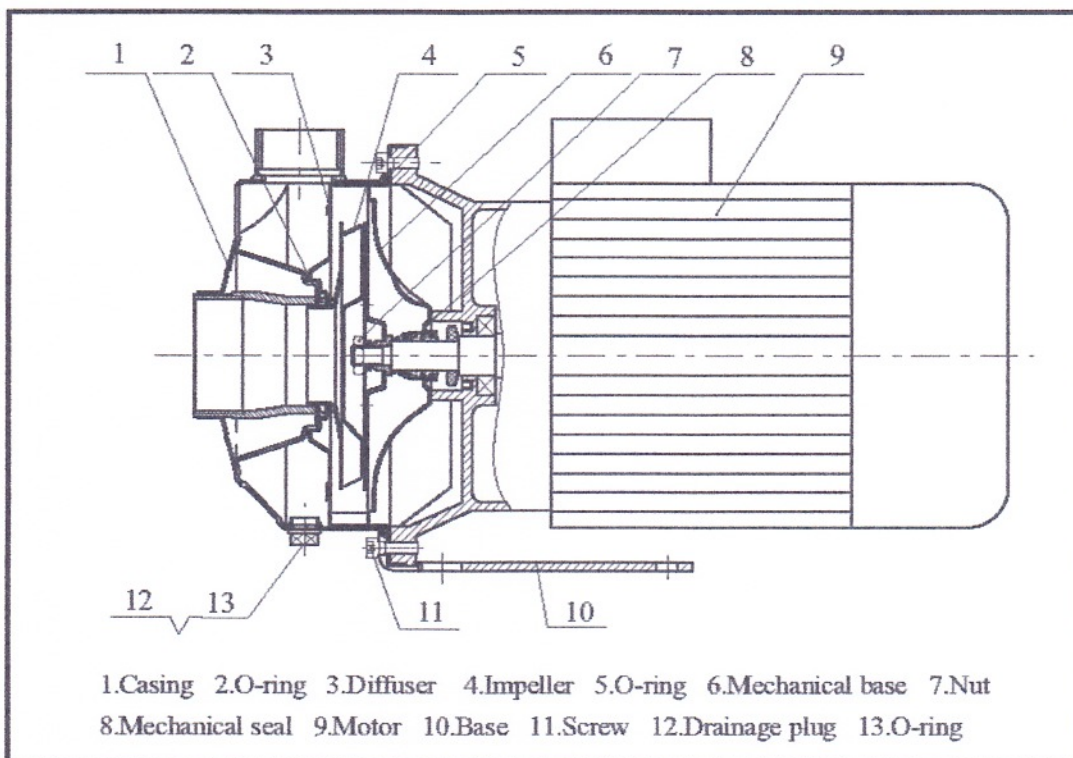




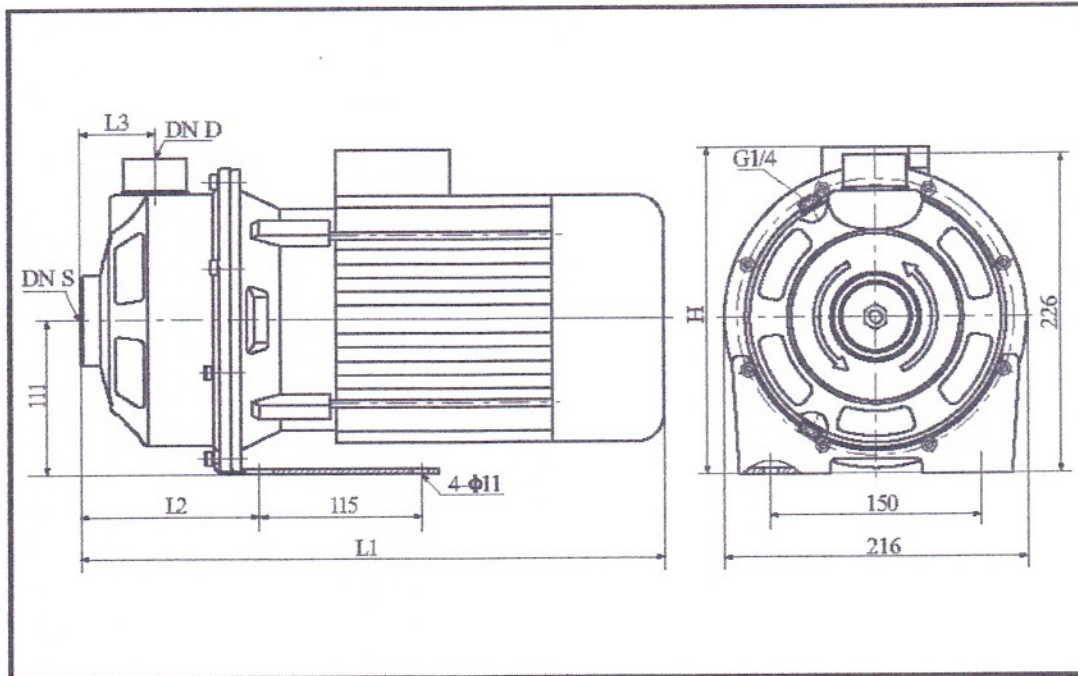
## IV、Performance Data

Model	Driving Power (kW)	Q (m³/h)	1.5	2.5	3.5	4.5	6	7	8	9	10	12	15	18	20	22	24	27
SMS60/0.37	0.37	H (m)	17.4	16.4	14.6	12.6												
SMS60/0.55	0.55		22.4	21.3	19.5	17.4												
SMS60/0.75	0.75		27.8	26.7	25	22.7												
SMS100/0.55	0.55			17.7	16.8	15.6	13.9	12.5	10.8									
SMS100/1.1	1.1			27.4	26.4	25.5	23.4	21.7	20.1	18.1								
SMS160/0.75	0.75					15.3	15.1	14.9	14.5	14.1	13.5	12.5						
SMS160/1.1	1.1					19.5	19.3	19.1	18.8	18.5	17.8	16.5						
SMS250/1.1	1.1						15.9	15.7	15.5	15.2	14.8	14.3	13.1	11.5				
SMS250/1.5	1.5						23.2	22.9	22.7	22.5	22.3	21.4	19.8	17.7				
SMS250/2.2	2.2						28.1	27.9	27.6	27.2	26.6	25.9	24.5	22.6				
SMS330/1.5	1.5							18.9	18.8	18.6	18.4	17.9	16.5	15.1	14	12.7	11.4	
SMS330/2.2	2.2							22.4	22.2	22	21.7	21.4	20.3	18.7	17.3	16.1	14.8	12.2

## V、Sketch of Structure



## VI、 Installation Sketch

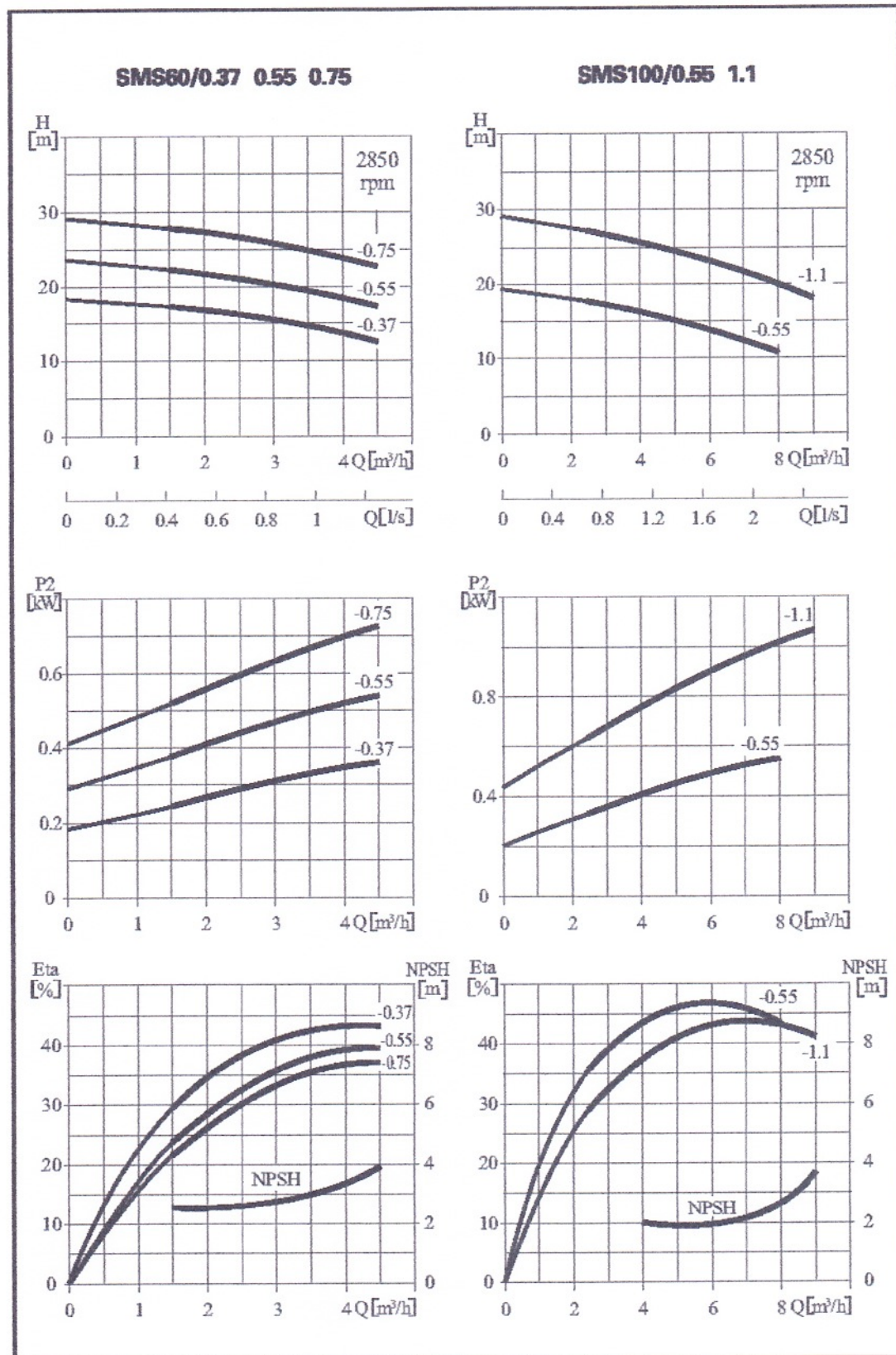


## VI、 Size and Weight

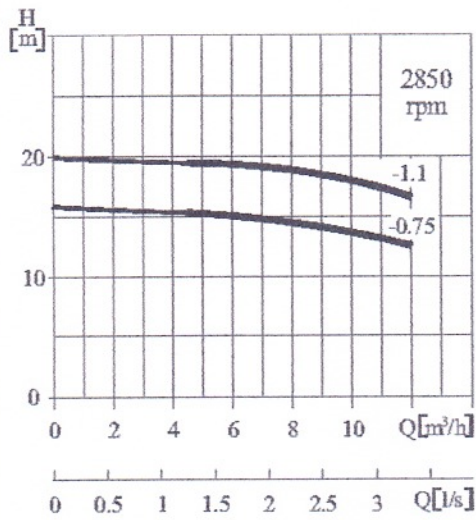
Model	Motor	L1	L2	L3	H(3PH/1PH)	DN S	DN D	Weight
	Power (kW)	mm				Inlet	Outlet	kg
SMS60/0.37	0.37	328	113	51	216 / 230	G1 $\frac{1}{4}$	G1	10
SMS60/0.55	0.55	328	113	51	216 / 230	G1 $\frac{1}{4}$	G1	12
SMS60/0.75	0.75	361	113	51	223 / 245	G1 $\frac{1}{4}$	G1	14
SMS100/0.55	0.55	328	113	51	216 / 230	G1 $\frac{1}{4}$	G1	12
SMS100/1.1	1.1	361	113	51	223 / 245	G1 $\frac{1}{4}$	G1	16
SMS160/0.75	0.75	375	127	54	223 / 245	G1 $\frac{1}{2}$	G1 $\frac{1}{4}$	14
SMS160/1.1	1.1	375	127	54	223 / 245	G1 $\frac{1}{2}$	G1 $\frac{1}{4}$	16
SMS250/1.1	1.1	375	127	54	223 / 245	G1 $\frac{1}{2}$	G1 $\frac{1}{4}$	16
SMS250/1.5	1.5	415	127	54	232 / 253	G1 $\frac{1}{2}$	G1 $\frac{1}{4}$	20
SMS250/2.2	2.2	415	127	54	232 / 253	G1 $\frac{1}{2}$	G1 $\frac{1}{4}$	23
SMS330/1.5	1.5	415	127	54	232 / 253	G2	G1 $\frac{1}{4}$	20
SMS330/2.2	2.2	415	127	54	232 / 253	G2	G1 $\frac{1}{4}$	23



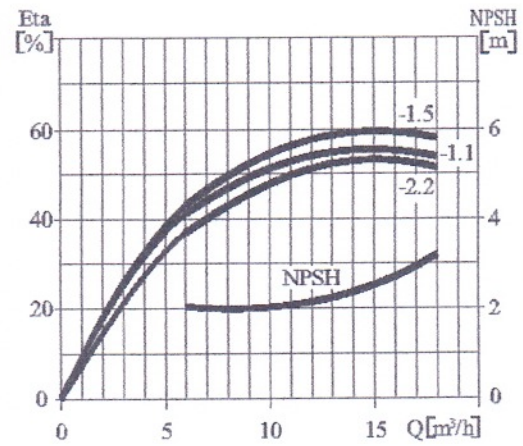
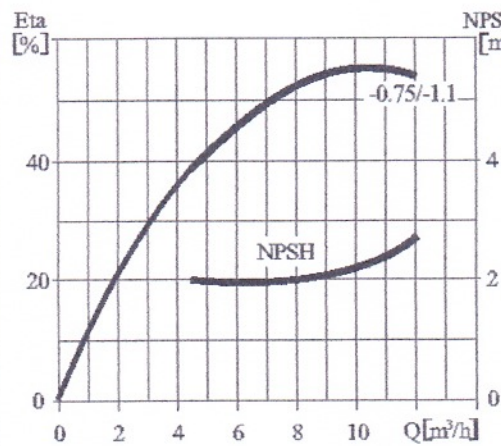
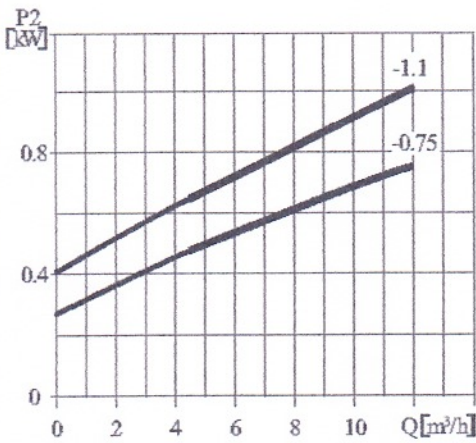
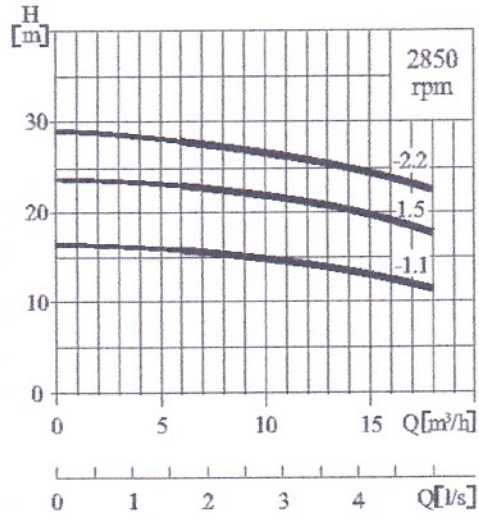
## VI、Performance Curve



**SMS160/0.75 1.1**



**SMS250/1.1 1.5 2.2**





## IX、Installation

1. The pump shall be installed on the place with good ventilation, freezing, solarization and rain proof;

2. The pipeline of suction inlet shall be short as possible. Larger bend diameter shall be used in the corner to reduce the loss of pipeline;

3. It is better that the pipeline of suction inlet adopts the water pipe larger than the inlet of the pump. Connect it with the pump after changing the diameter;

4. The pipeline of the suction inlet shall not be high in the front and low in the rear to prevent the occurrence of air sac;

5. The suction end of the pipeline of the suction inlet shall be fully immersed into the liquid and ensure the joint of each component good seal to avoid the suction of air;

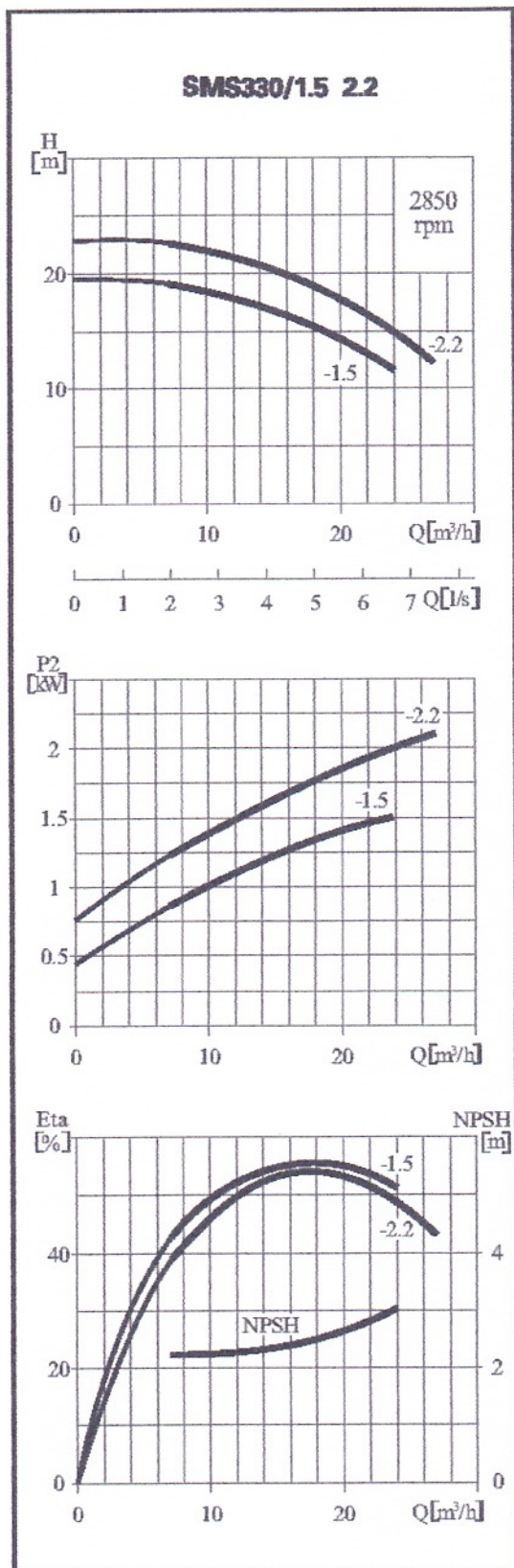
6. The mounting height of the pump shall not exceed its allowable suction height;

7. To avoid the distortion of the pump due to the action of the gravitation from the pipeline, suction pipeline and discharge pipeline shall have separate fixed device;

8. Pressure gauge shall be installed on the outlet of the pump to observe and control the operation of the pump;

9. In case suction liquid level is lower than the suction inlet of the pump, the bottom valve shall be installed;

10. The motor shall be taken grounding measures. Electric devices shall be ensured not to be damaged by phase shortage, unstable voltage and overload; The wiring diagram of the motor shall be inside the lid of the connection box of the motor.





## **X、Use & Operation**

### **1.Preparation before start-up**

- 1).Check whether the anchor bolt and each component are connected firmly;
- 2).Close the outlet valve and various meters, screw off the casing cap for filling and fill in the pump by working fluid then tighten the casing cap again.

### **2.Start & operation**

- 1).Start the motor and confirm that the turning direction of the motor is identical with the direction indicated by the arrow on the pump, then slowly open the outlet valve and adjust it to required working condition. The flow rate shall be controlled within the scope of overstriking curve of the capacity Curve;
- 2).Check the fluctuation of outlet pressure gauge and the vibration of the pump. When confirming that the liquid in the pump contains air, timely loosen the casing cap for filling on the pump to discharge the gas;
- 3).Observe whether there is noise during operation. In case of abnormal phenomenon, stop the pump and inspect it to timely remove it.

### **3.Stop**

Slowly close the outlet valve and various meters, then cut off the power.

## **XI、Maintenance**

- 1.It is the foreshadow of accident when pressure, voltage, vibration, noise, etc. has large difference with normal condition. Immediately stop operation and check it;
- 2.The allowable temperature to the bearing of the motor can not exceed 70℃;
- 3.Under normal condition, the leakage of mechanical seal shall not exceed 3ml per hour. After normal operation, in case water leakage exceeds this stipulation and increases gradually, please immediately stop the pump and inspect it;
- 4.In case the pressure of the pipeline on the pump is too large or foundation bolt is loose, intense vibration will generate during operation;
- 5.Strictly prohibit the operation without medium or not evacuating the air. Otherwise, it will result in the damage of mechanical seal;
- 6.Strictly prohibit the operation beyond the upper limit of stipulated flow rate (refer to capacity curve) to avoid the burnt of the motor;
- 7.The pump shall not be started frequently. Starting times per hour shall not exceed 40 times at best;
- 8.The pump shall not be operated closing the valve for a long time;
- 9.When power is off, the power supply shall be cut off to prevent the danger caused by sudden start of the pump when electrifying;
- 10.In case of freezing, after stopping the pump, the liquid in the pump shall be discharged;
- 11.Stand-by pump shall be operated periodically to make it available



for use at all times;

12. In case of maintenance, the power must be cut off.

## **XI、 Disassembly & Assembly**

When overhauling the pump, it shall be disassembled and assembled in the following sequences by the professional staff.

### **1. Disassembly**

1). Screw off 8 socket head cap screws connecting the pump and motor, take off the bracket, pump and seal ring; If necessary, take off the guide blade and seal ring of impeller ring from the pump;

2). Hold the pump shaft from the fan blade end using 2mm strap clamp, firstly loosen the jam nut of the impeller by socket wrench, then screw off the impeller (the impeller and pump shaft are also connected by screw thread and it is right hand thread) ;

3). Take off the traveling ring of mechanical seal and be careful not to damage it;

4). Take off the seal bed plate and stationary ring of mechanical seal. If necessary, disassemble the stationary ring of mechanical seal from the seal bed plate. Be careful not to scratch the friction surface of mechanical seal.

### **2. Assembly**

1). Clean the mounting hole of the seal stationary ring on the seal bed plate and press in the seal stationary ring by hand;

2). Shaft extension of the motor shall be upwards. Encase the pump shaft into the seal bed plate. Be careful not to make the pump shaft knock against the stationary ring of mechanical seal;

3). Encase the stationary ring of mechanical seal, and be careful to clean the friction surface firstly;

4). Hold the pump shaft by strap clamp, screw on the impeller and tighten it, then lock it by jam nut;

5). Mount the pump seal ring on the seal bed plate;

6). Mount the guide blade, seal ring of impeller ring on the pump and make the axial clearance of the seal ring of the impeller ring small as possible and move flexibly;

7). After adjusting the axial position of the seal ring of the impeller, mount the pump on the motor flange. Make the discharge port of the pump aligns with the connection box of the motor as well as ensure good match of the seal ring of impeller ring with the pump;

8). Fasten the pump and bracket by screws. Turn the impeller from the suction inlet by hand to ensure flexible running and without metal friction.

### XIII 、 Troubleshooting Guide

Phenomena	Possible causes	Corrective measures
Motor's failure to start	<ol style="list-style-type: none"> <li>1.Fault in power supply</li> <li>2.Overload of motor</li> <li>3.Fault in control circuit</li> <li>4.Obstruction of foreign matter in the pump</li> </ol>	<ol style="list-style-type: none"> <li>1.Check power supply</li> <li>2.Check system</li> <li>3.Check control circuit</li> <li>4.Take it apart and remove the foreign matter</li> </ol>
Insufficient flow rate of pump	<ol style="list-style-type: none"> <li>1.Reverse rotation of pump</li> <li>2.Excessive high suction elevation</li> <li>3.Existence of air in the pump or suction pipeline.</li> <li>4.Blockage of pipelines or air sac</li> <li>5.Abrasion of orifice ring</li> <li>6.Failure to turn on the valve or to the position</li> <li>7.Low revolution</li> <li>8.Improper pump type</li> </ol>	<ol style="list-style-type: none"> <li>1.Adjust the connection of motor</li> <li>2.Lower the installation height of the pump</li> <li>3.Exhaust air or fill in the water again</li> <li>4.Dispose of the pump or pipeline</li> <li>5.Replace orifice ring</li> <li>6.Turn on the valve</li> <li>7.Check whether the voltage is too low</li> <li>8.Select correct type</li> </ol>
Excessive power consumption of pump	<ol style="list-style-type: none"> <li>1.Excessive high flow rate</li> <li>2.Serious abrasion of motor bearings</li> </ol>	<ol style="list-style-type: none"> <li>1.Regulate flow rate</li> <li>2.Replace the bearing or motor</li> </ol>
Abnormal sound from pump and failure to discharge water	<ol style="list-style-type: none"> <li>1.Excessive high resistance in the suction pipeline</li> <li>2.Bad sealing of the suction pipe or air leakage due to insufficient immergence of the suction end</li> <li>3.Excessive high liquid temperature</li> </ol>	<ol style="list-style-type: none"> <li>1.Check suction pipeline</li> <li>2.Eliminate the leakage</li> <li>3.Reduce the suction height or liquid temperature</li> </ol>
Excessive high noise of the pump	<ol style="list-style-type: none"> <li>1.Damage of motor bearings</li> <li>2.Damage of internal parts of the pump</li> </ol>	<ol style="list-style-type: none"> <li>1.Replace the bearing</li> <li>2.Replace the parts</li> </ol>
Water leakage of the pump	<ol style="list-style-type: none"> <li>1.Wrong installation of mechanical seal</li> <li>2.Abrasion or damage of mechanical seal</li> </ol>	<ol style="list-style-type: none"> <li>1.Reinstall mechanical seal</li> <li>2.Replace mechanical seal</li> </ol>
Excessive high temperature of motor or smoking	<ol style="list-style-type: none"> <li>1.Operation under overload</li> <li>2.Unsuitable voltage</li> <li>3.Wrong connection (<math>\Delta</math>, Y)</li> <li>4.Loose contact of the electric</li> <li>5.Blockage of foreign matter in the fan blade</li> </ol>	<ol style="list-style-type: none"> <li>1.Adjust the discharge valve</li> <li>2.Rectify the voltage</li> <li>3.Make connection again</li> <li>4.Make connection again</li> <li>5.Remove foreign matter</li> </ol>