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E20081201

State High-tech Enterprise

SZ Fluorin Plastic Centrifugal Pump Operation Manual

Hangzhou Nanfang Special Pump Industry Co., Ltd.

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Read this manual carefully before install, start the pump.

Standard:JB/T8688 (Fluorin plastic centrifugal pump)

I、Introduction

SZ Fluorin plastic centrifugal pump adopts excellent hydraulic structure. It is made by mature processing technology. The wet part is made of Fluorin plastic(F46 or F26). It is made by adding metal core and pressed and burned to a whole in one time. The product has the following benefit, small volume, running reliable, high efficiency, energy saving, easy to install and operate. Wide range of duty points for choosing. It can transfer strongly corrosive liquid such as sulfuric acid, royal water, alkali of any concentration. It has the following advantages, anti-corrosive, high and low temperature resistance, advanced mechanical seal, little hole when pressing welding, high efficiency, long service time, etc.

II. Application

- Thin liquid without fibre and grain
- Petrol, chemical industry.
- Pharmacy, pesticide, acid cleaning, dying industry.
- Painting
- Smelting, paper making, galvanization;
- Suitable for strongly corrosive liquid such as hydrochloric acid, nitric acid, sulfuric acid, choric acid, phosphoric acid, royal water, alkali, brine, strong oxidant, organic solution, etc of any concentration.

III. Operation Conditions

- Liquid temperature: -20 ℃+120 ℃,
- Flow range: 2~60m^3/h
- Max head: 54m
- Max medium density: 1.35×10^3kg/m^3
- Ambient temperature: Max +40 ℃
- Altitude:Max.1,000m;
- Pressure: Max 10 bar

⚠ When the specific gravity and density of the pumped liquid is bigger, the shaft power will be increased, must use the appropriate motor.

IV. Structure Feature

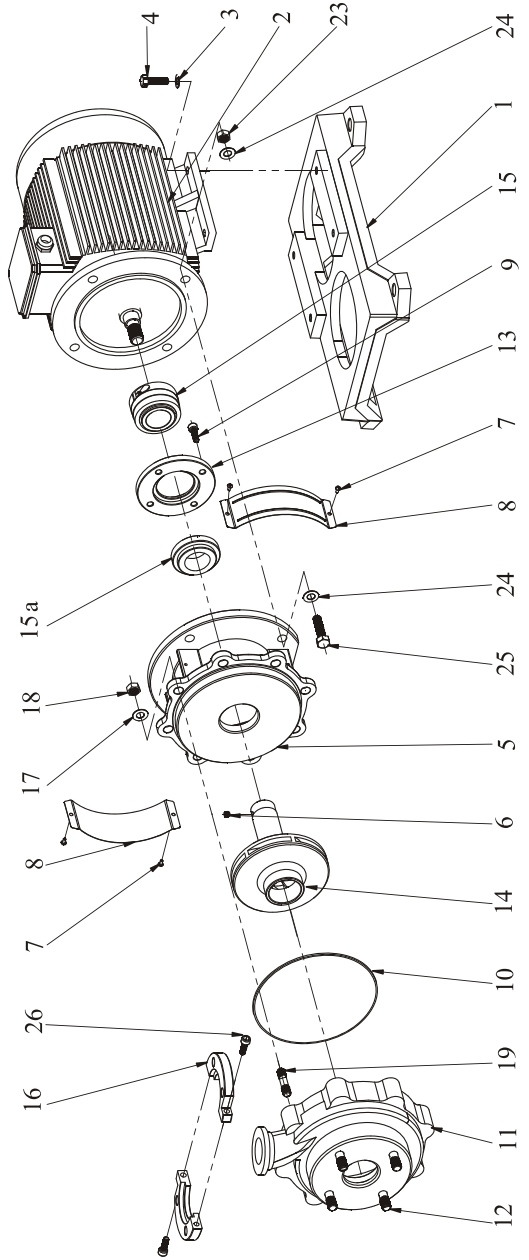
- SZ pump is single impeller centrifugal pump, axial suction and radical discharge.
- Simple structure, shaft is directly connected with impeller.
- Easy for pipe works, inlet and outlet are connected by standard flanges.

V. Model Definition

SZ 50 — 32 — 160 S F46

- F46: Pump material
- S: Three phase(≤3kW is 220/380V; >3kW is 380V) D: Single phase 220V
- 160: Nominal diameter (mm) of impeller
- 32: Discharge diameter(mm)
- 50: Suction diameter(mm)
- SZ: Fluorin plastic centrifugal pump

VI. Structure



1、Base
2、Motor
3、Washer
4、Screw
5、Pump head
6、Fastening screw
7、Screw
8、Guard
9、Screw
10、O ring
11、Casing
12、Double end studs
13、Seal cover
14、Impeller
15、Mechanical seal
15a、Mechanical seal (Stationary part)
16、Outlet flange
17、Washer
18、Nut
19、Double end studs
23、Nut
24、Washer
25、Bolt
26、Screw

SZ-080701

VII. Installation

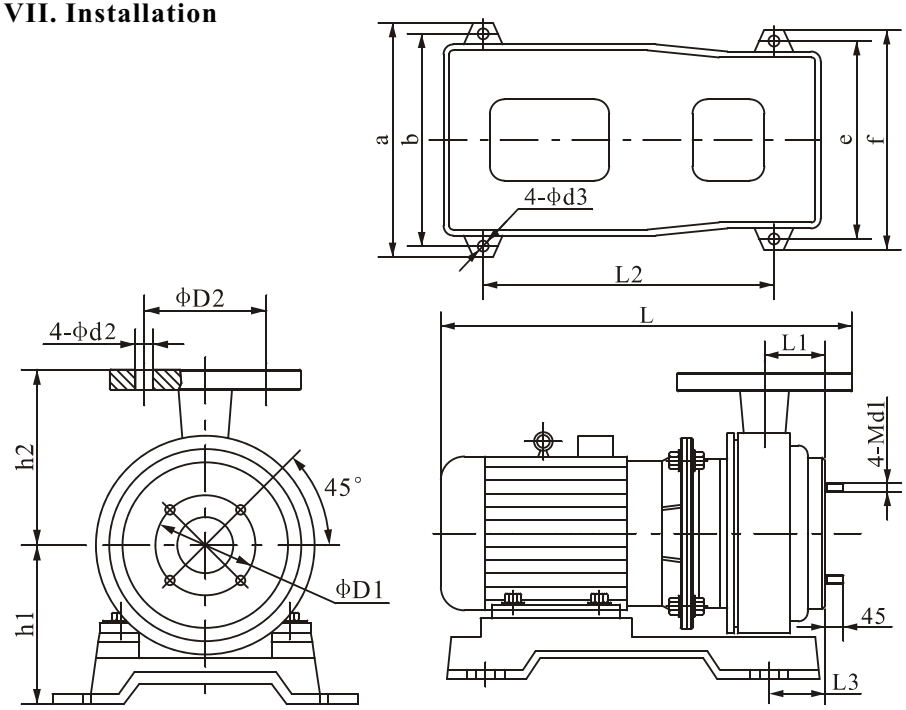


Figure 2 Pump installation and dimensions figure

Table 1 SZ pump dimensions

Model	Size (mm)																	Weight (kg)
	L	L1	L2	L3	D1	Inlet flange	d1	h1	h2	D2	outlet flange	d2	a	b	d3	e	f	
SZ25-25-125	457	37	300	64	75	DN25/PN6	10	164	120	100	DN32/PN10	14	265	230	15	230	265	45
SZ40-25-125	461	37	300	72	100	DN40/PN6	10	165	120	100		14	265	230	15	230	265	48
SZ50-32-125	531	43	370	79	125	DN50/PN10	14	175	140	100		14	275	235	17	235	275	74
SZ50-32-160	553	53	370	103	125		14	191	159	100		14	315	270	17	270	315	78
SZ65-50-125	563	50	370	95	145	DN65/PN10	14	175	147	125	DN50/PN10	18	315	270	17	270	315	79
SZ65-50-160	618	51	400	88	145		14	219	165	125		18	370	330	17	290	335	113
SZ65-40-200	727	55	440	96	145		14	255	180	110	DN40/PN10	18	425	380	19	320	365	181
SZ80-65-160	750	57	440	97	160	DN80/PN10	14	255	186	145	DN65/PN10	18	425	380	19	320	365	183
SZ80-50-200	797	57	440	110	160		14	255	195	125	DN50/PN10	18	425	380	19	320	365	205

SZ fluorin centrifugal pump is installed horizontally. Inlet and outlet is connected by standard flanges inlet and outlet pipelines should be supported separately. The weight of inlet and outlet must not be born by pump itself.

When lifting or moving the pump, do not work it on the casing. You can tight the motor rings or use steel string to tight the base to lift or move the pump.

The installation height of the pump should be done according to the requirement of NPSH, in order to prevent from cavitation corrosion (Normally, the installation height should not be 3.5m higher than the liquid.)

If the position of the pump is higher than the liquid, a foot valve should be installed in the suction, and fit screw hole and valve at the place of 0.3m to 0.5m near the outlet for pouring liquid.

The pump installation should ensure that pump will not affected by pipes force when operation.

Pump should be fixed stably on the base.

In order to ensure motor run well, pump should be installed at well-ventilated and anti-frozen place.

2. Electrical connection

Before run pump, cables should be connected well, check voltage and frequency.

Motor should be connected with a quick and efficient motor starter, to ensure the motor will not be damaged by phase lack, unstable voltage and overload.

VIII. Start and Operation

1.When the pump position is lower or same as the liquid level, before start, open the valve at the suction pipeline to make the pump fully filled with liquid, vent the air in the pump. If the position is higher than liquid level, before start pull liquid to the pump from screw hole, to fill with the pump fully and vent the air completely.

2.The outlet of the liquid should ensure the pump run continuously.

3.Check pump rotation direction.

Pump direction is indicated on the arrow on the pump, that is, viewing from pump inlet, it is anti-clockwise.

Close outlet valve, start and stop the motor quickly, the direction can be check from the rotating of the motor fan or coupling. After ensure the

rotation direction, start the pump. Then open the outlet valve slowly to the required position. Attention: Pump can't work longer than two minutes when the outlet valve is closed.

4.It is suggested that shut off the power when the outlet flow is 1/10 of the rated flow. Shut off the connected electrical meters and protective devices. If the ambient temperature is lower than the frozen point of pumped liquid, vent the liquid completely to prevent pump from frozen.

⚠ Pump is prohibited to run without liquid

IX. Pump Starting Times

In order to make the pump run well, it is suggested that, if the motor power is equal or less than 4kW, the start times should less than 20 times in an hour, if the motor power is bigger than 4kW, the start times should be less than 10 times.

If the pump is not used for a long time, run pump at least twice in a year. Before start, shut off power, use hand to rotate the coupling, ensure it runs well. Then start the pump. The working time should not less than 0.2 hours.

X. Maintenance and Service

Mechanical seal is an important part of the pump, it is used in the liquid that is clean and no floating grain. If it is new pipelines, clean the pipelines. If the liquid maybe crystallize the mechanical seal, pump chamber should be cleaned at least one time one day. If the pump is malfunction or need to be check, please do as follows.

1.Normal check

Shut off power

Check inlet of the pump, to see if it is blocked by fibers. Check if inlet is cracked or blocked.

Check pump outline to see if it is damaged, check if motor case is corrosive, check if cable is disconnected.

Unscrew the screw of one coupling guard, take out the coupling guard, use hand to rotate the pump shaft or pump coupling, to ensure it turns freely without rubbing noise.

2.Pump dissemble and check :

Unscrew coupling guard, take out the coupling guard.

Unscrew the tighten screw near 10mm from the impeller, turn 3 to 4 circles, unscrew the 2 socket hex screws at the side of the mechanical seal,

turn 1 to 2 circles.

Unscrew the screws connecting motor and the base.

Unscrew the nut connecting casing and pump head, use a straight screwdriver to open the casing slightly.

Unscrew the motor fan cover , take out the fans, use a key loc the shaft at the motor side, and use a wrench unscrew the impeller, turn 2 circles.

Unscrew the screws connecting the motor and pump head.

Unscrew the impeller, take out the pump head, take out the rotating part of mechanical seal(do not unscrew the screws on the face of mechanical seal), separate impeller and pump head, unscrew the seal cover of n the pump head, take out the seal cover, take out the stationary part of mechanical seal.

3.When installation the pump, clean every parts, especially the touching faces, reverse above steps to assemble a pump.

Clean the mechanical seal, put some PTFE washers, put it in the pump head.

Note: The rubbing part is out, cover with seal cover, but do not screw it very tighten to prevent from damaging the stationary part of mechanical seal.

Put on impeller, pump on rotating part of mechanical seal(The faces of mechanical seal should be cleaned and be lubricated with machine oil. Screw the pump head and impeller on the motor, fasten them. When fastening the nuts, pump head should be lifted a little to prevent from extended part of motor shaft is not forced by pump head).

Fasten the screws connecting motor and pump head, fasten impeller loc nuts, fit motor fan, cir-clip, fit motor fan cover.

Put on casing(put O ring in the casing in advance. If O ring is twisted, broken, replace it with a new one and stick it with a silicon glue), put on casing, tighten the nut, when tighten the nut, the casing should be laced evenly.

Screw the screws for motor and base, tighten it.

Use two small round rod at the left and right to press the rotating part of mechanical seal, press appr. 1mm at the left and right, (make the spring of mechanical seal compressed), then loc the screws at the both sides of the mechanical seal. After locked, check the clearance of both sides of mechanical seal should be nearly same

Use hand to rotate motor shaft and impeller, ensure it is free, not blocked. Fit the coupling guards.

XI. Trouble and Trouble Shooting

Faults	Possible reason	Solutions	Remark
Pump can't be started	1.Power supply broken. 2.Fuse defected. 3.Motor switches off for overload. 4.Controlling circuit is broken or parts broken.	1.Check power supply. 2.Replace fuse, if fuse is down again, open the pump to check. 3.Check power voltage, restart it again. 4.Check controlling device.	
Cost too much power when running	1.Pump parts are rubbing. 2.The density of pumping liquid is not suitable the pump. 3.Too big flow	1.Check parts. 2.Recalculate and replace with a suitable motor. 3.Operate the pump in the flow range.	For first case, user should not service by himself without permission.
Overload device trip out occasionally.	1.Too low sets for the overload device. 2.Power supply failed periodically. 3.Low voltage when power supply is consumed in the high way.	1.Reset the overload device. 2.Check power supply. 3.Add a voltage stabilization device.	
There is noise in the pump and pump is vibrated abnormally.	1.Base is not strong. 2.Pump turns reversely. 3.Pump parts are rubbing. 4.The suction height is too high or not enough liquid filled. 5.Pump part is loose or damaged.	1.Stable the base. 2.Check the rotation direction of the pump. 3.Check pump. 4.Lower the location of the pump or refill the pump to vent the air in the pump. 5.Take out the loosing part, replace damaged parts.	For case 3 and case 5, user should not service by himself without permission.
The liquid do not flow evenly.	1.There is not enough liquid at suction. 2.Liquid level is too low. 3.Suction is blocked by impurities.	1.Improve system, add liquid. 2.Higher the liquid level. 3.Check and get rid of impurities.	
Insufficient flow	1.Impeller is damaged. 2.Pump runs reversely. 3.Suction is blocked by impurities. 4.Pipes are blocked or there is leakage 5.Choose the wrong model.	1.Replace with a new impeller. 2.Check rotation direction. 3.Clean suction. 4.Check and repair pipes. 5.Re-choose the model	

Pump runs with no water.	1.Suction is blocked by impurities. 2.Discharge valve is closed completely.	1.Check and clean. 2.Open valve.	
Device trips out or start load is too much.	1.Fuse is down. 2.There is something wrong with contact of overload device. 3.Power supply cable is loose or power supply defected. 4.Motor windings are defected. 5.Pump parts are blocked. 6.Haven't closed the discharge valve when start.	1.Replace fuse. 2.Check starter. 3.Check cables and power supply. 4.Replace motor 5.Check pump. 6.Close valve and re-start.	For case 4 and case 5, user should not service by himself without permission.
Pumps no water	1.Discharge valve is closed. 2.No water sucked or liquid level is too low. 3.Not fill liquid or not filled enough liquid. 4.Suction blocked. 5.Pump damaged.	1.Open discharge valve. 2.Adjust pump location. 3.Refill the liquid and vent the air in the liquid. 4.Clean suction. 5.Repair of replace	For case 5, user should not service by himself without permission.
There is noise in the pump and no water out	1.Too big flow. 2. Too much resistance on suction. 3. Suction height is too high. 4. The is air coming in the suction.	1.Close the discharge valve a little. 2. Check suction pipes and suction valve. 3. Lower the suction height. 4. Check suction pipes or suction flange connections.	

XII. 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 the damage if they dissemble the pumps by themselves in guaranteed period.