

SHIMGE[®]
----- *for better life*

SERVICE MANUAL

Mini-type Clean-water Electric Jet Pump

Models: JET, SGJW, PJ, PTB

SHIMGE PUMP INDUSTRY GROUP CO., LTD.

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 Thank you very much for choosing our products, and please read over the Operating Manual and keep it properly before the installation and use. The improper usage may lead to personal injuries and property damages.

There are such symbols as “Danger”, “Notice”, and “Warning” in this Operating Manual, aiming to guarantee the correct use of the products involved and prevent hazards and damages. Please strictly follow them.


-  **Danger:** Failure to observe the relevant rules will cause an electric shock.
-  **Warning:** Failure to observe the relevant rules will cause serious personal injuries.
-  **Notice:** Failure to observe the relevant rules will cause damage to the relevant product.
-  It means that touch is prohibited.
-  It means the relevant rules shall be observed.
-  It means the prohibited actions.
-  It is a symbol of ground wire in case of an electric shock.

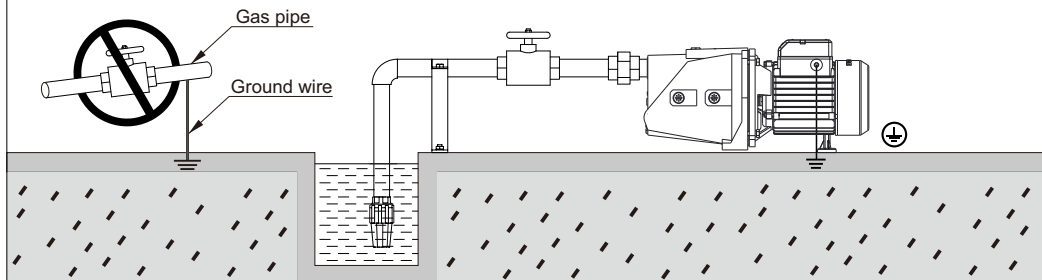
Statement: Any hazard or loss generated by any of the following circumstances where the content hereof is not observed shall not belong to the scope of the Company's quality warranty:

- Any disassembly or repair by any unqualified person or any usage of any water pump hereunder independent of its operating conditions makes the water pump unable to normally operate;
- Any loss is caused by voltage or machinery or a chemical reason; or
- Any environmental pollution caused by the use of any dangerous medium.

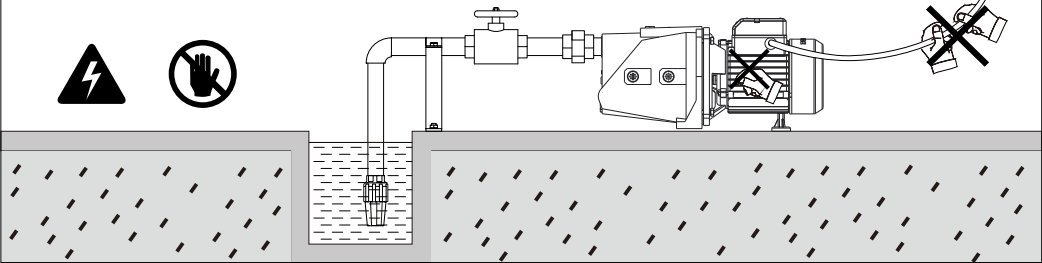
I. Safety Precautions

An Electric Pump involved hereunder shall be equipped with an electrical leakage protection device properly and reliable grounding shall be provided at the place where the grounding sign of the Electric Pump or the cable lies (the grounding conductor shall be connected to the terminal mark) and the connected power socket shall be reliably grounded as well. As shown in the below figure, the ground wire shall not be connected to a gas pipe, for it may result in an explosive; and the plug shall not be wet and the power socket shall be located at a place which will not be affected by moisture.

 **Electrical connection shall be done by a holder of an electrician license in accordance with the relevant local code and safety standard.**



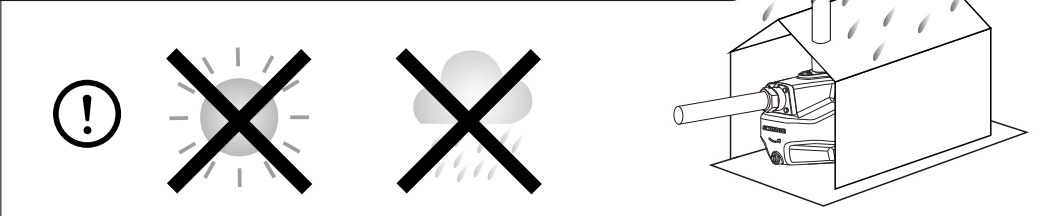
1. When an Electric Pump involved hereunder is working, please cut off the power supply before the Electric Pump is to be relocated or touched; no washing, swimming, or pasturing near the working face of the Electric Pump, so as to avoid any accident.
2. During the transportation or installation of an Electric Pump involved, do not grasp the cable to lift the Electric Pump so as to prevent the cable from any damage that may cause electrical leakage or electric shock.
3. Based on the principle of safety, repair or maintenance in any form shall be carried out after the related water pump is turned off.



An Electric Pump involved shall only used to deliver clean water and other liquids whose property is similar to that of water and shall not be used to transport any flammable, easily-gasified or explosive liquid, like petroleum or ethyl alcohol, which is very dangerous.



An Electric Pump hereunder shall be installed at a cool and dry place. If it is necessary to arrange such a pump outdoors, please do not expose it to direct sunlight as exposure to direct sunlight may easily cause accelerated aging and electrical leakage of the water pump. Do not place the Electric Pump horizontally or submerge the Electric Pump in water. Do not spray or splash water or make high-flow water spray on the Electric Pump so as to prevent the winding insulation of the Electric Pump from being damaged by moisture, for a damaged winding insulation may cause electrical leakage.



In winter, when anti-freezing measures are taken for a water pump hereunder, no flammable materials shall be used to cover the pump or its motor for freeze-proofing, so as to prevent any fire accident. Do not cover the motor with any thermal insulation materials, for such a material will result in bad ventilation and thermal dissipation and even a fire easily.



II. Product Introduction

Mini-type Clean-water Electric Jet Pumps (hereinafter referred to as the “Electric Pump”) cover series of JET, SGJW, PJ, and PTB. The Electric Pump is composed of such three parts as the motor, the water pump, and the seal. The motor is an asynchronous motor. The pump adopts the unique structure of centrifugal-type impeller-radial guide vane-jet pipe, whose principle is that the pressure water firstly goes through the nozzle to form vacuum and then the liquid at a low water level is absorbed to the inlet of the pump and discharged through the pressurization by the pump, featured by deep suction stroke, high lift, short self-priming time, and stable operation.

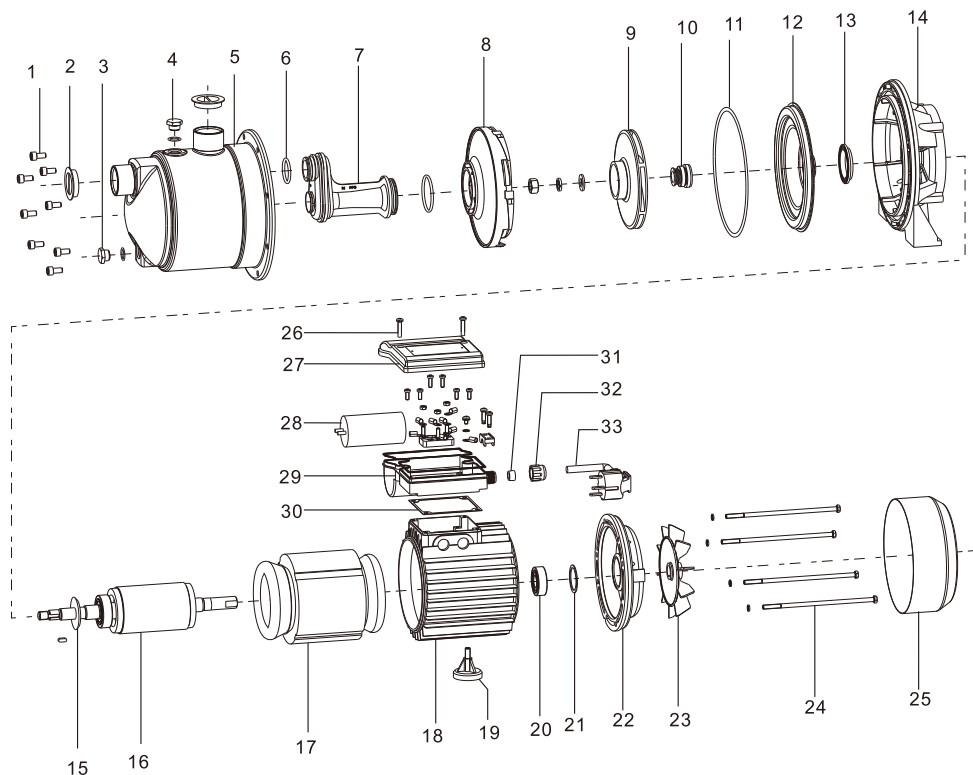
The Electric Pumps of the models hereunder, with advantages such as small volume, light weight, compact structure, and easy installation, can be widely applied to lifting of water from wells, pipe pressurization, agricultural irrigation, water supply to vegetables greenhouses, supply of domestic water, and breeding industry.

III. Operating Conditions

The Electric Pump shall be able to operate continuously and normally in the following operating conditions:

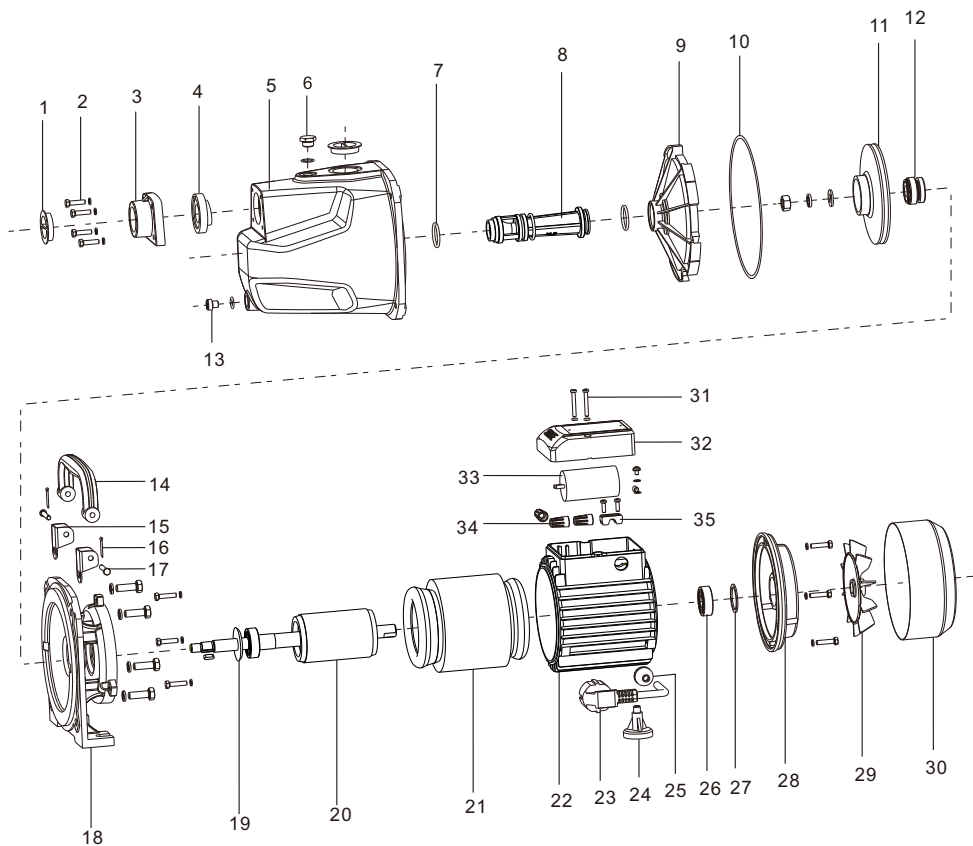
1. The ambient temperature does not exceed +40°C;
2. The temperature of the medium ranges from 0 to +40°C;
3. The pH value of the medium is 6.5~8.5;
4. The mass ratio of the solid impurities contained in the medium is not higher than 0.1% and the particle size is not more than 0.2mm;
5. The voltage and the frequency of the power supply meet the requirements in the nameplate of the Electric Pump, relating to the nominal voltage and frequency and the scope of the fluctuation of voltage is $\pm 10\%$ of the nominal value.

IV. Explosive View



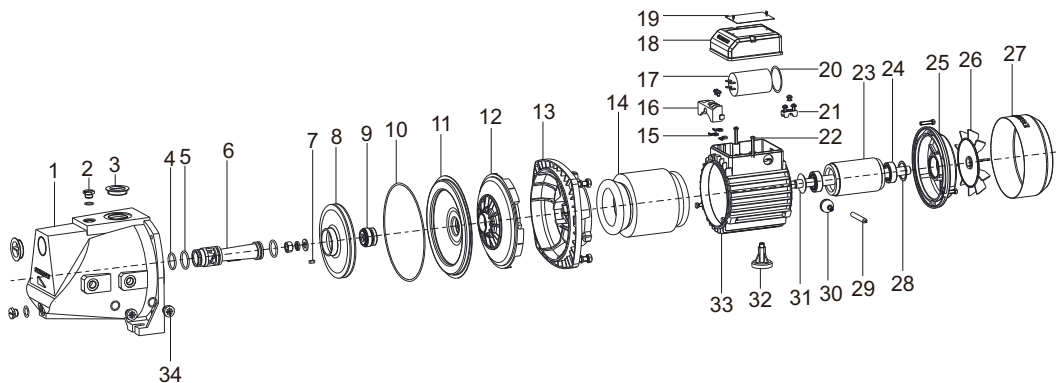
JET-G1

- | | | | | | |
|----|--------------------------|----|--------------------------|----|--|
| 1 | Hexagon socket cap screw | 12 | Pump cover | 12 | Fan |
| 2 | Dust cover | 13 | Rubber washer | 13 | Hexagon bolt |
| 3 | Water faucet | 14 | Coupling | 14 | Fan cover |
| 4 | Air faucet | 15 | Waterproof ring | 15 | Cross-recessed pan-headed self-tapping screw |
| 5 | Pump body | 16 | Rotor | 16 | Terminal box cover |
| 6 | O-shaped seal ring | 17 | Stator | 17 | Capacitor |
| 7 | Injection | 18 | Motor case | 18 | Terminal box |
| 8 | Guide vane | 19 | Foot | 19 | Rubber washer |
| 9 | Impeller | 20 | Deep groove ball bearing | 20 | Cable sheath |
| 10 | Mechanical seal | 21 | Waved spring | 21 | Nut of the terminal box |
| 11 | O ring | 22 | End cover | 22 | Cable |



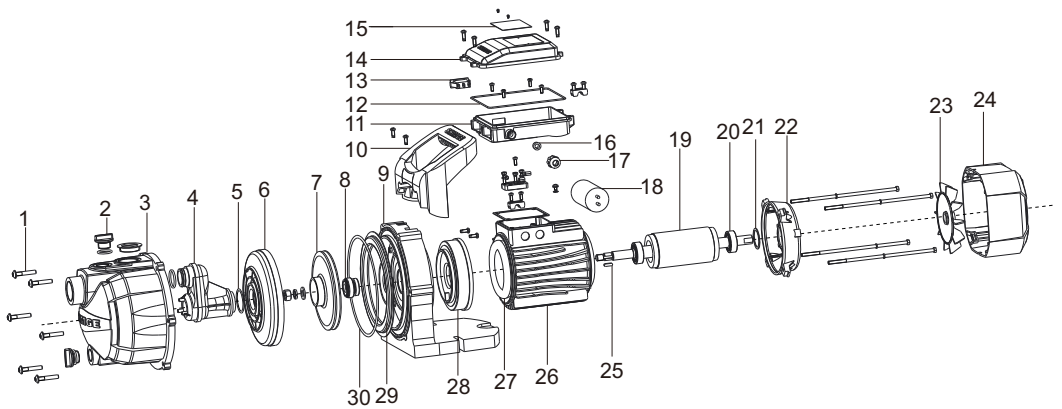
JET-A

1	Dust cover	13	Water Faucet	25	Cable sheath
2	Hexagon bolt	14	Lifting yoke	26	Deep groove ball bearing
3	Inlet	15	Support	27	Waved spring
4	Inlet valve	16	Pin	28	End cover
5	Pump body	17	Pin roll	29	Fan
6	Air faucet	18	Coupling	30	Fan cover
7	O ring	19	Waterproof ring	31	Cross-recessed pan head screw
8	Injection	20	Rotor	32	Terminal box cover
9	Guide vane	21	Stator	33	Capacitor
10	O-ring	22	Motor Case	34	Terminal cap
11	Impeller	23	Cable	35	Press plate for the cable
12	Mechanical seal	24	Foot		



SGJW

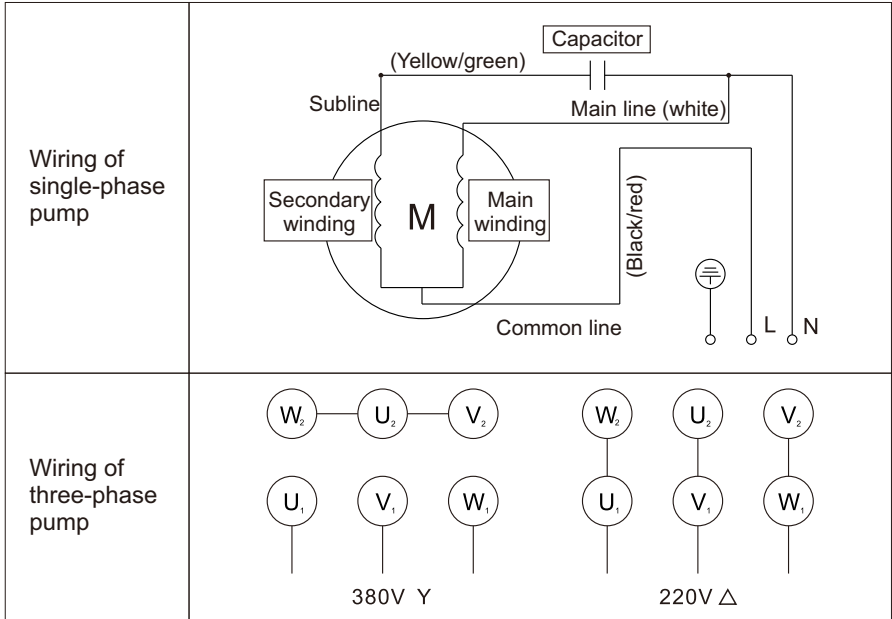
1	Pump body	13	Coupling	24	Deep groove ball bearing
2	Air faucet	14	Stator	25	End cover
3	Dust cover	15	Insert-type spring	26	Fan
4	O ring	16	Wire holder	27	Fan cover
5	O ring	17	Operating capacitor	28	Waved spring
6	Injection pipe	18	Terminal box	29	Cable
7	Common flat key	19	Nameplate	30	Cable sheath
8	Impeller	20	O ring	31	Waterproof ring
9	Mechanical seal	21	Press plate for the cable	32	Foot
10	O ring	22	Cross-recessed pan head screw	33	Motor case
11	Pump cover	23	Rotor	34	Air relief cock



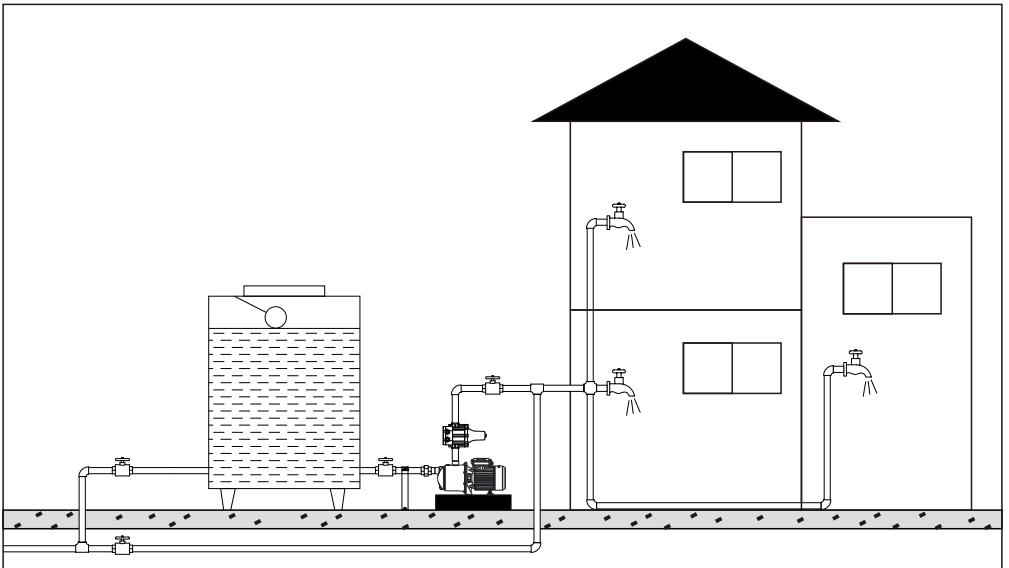
PTB

1	Hexagon socket cap self-tapping screw	11	Lower lid of the terminal box	21	Waved spring
2	Air faucet	12	Rubber washer	22	End cover
3	Pump body	13	Power switch	23	Fan
4	Injection	14	Terminal box cover	24	Fan cover
5	O ring	15	Nameplate	25	Key
6	Guide vane	16	Cable sheath	26	Motor case
7	Impeller	17	Nut of the terminal box	27	Stator
8	Mechanical seal	18	Capacitor	28	Front end cap
9	Coupling	19	Rotor	29	Pump cover
10	Lifting yoke	20	Bearing	30	O ring

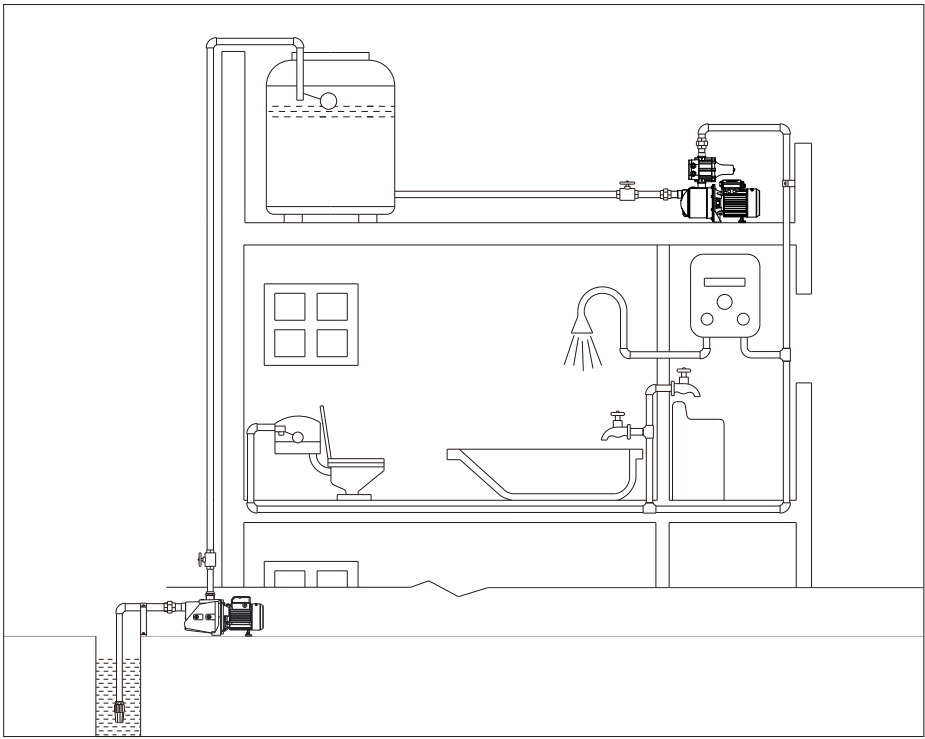
V. Pump Wiring Diagram



VI. Installation Diagram



Indirectly-pressurized Supply of Tap Water



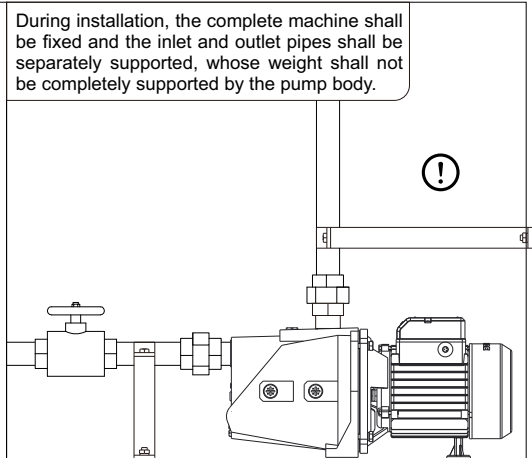
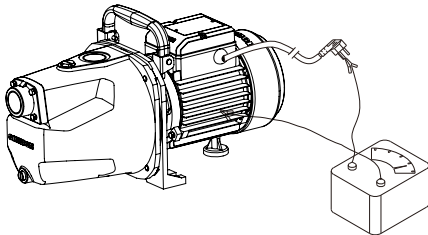
Pumping Water from Well and Making Pressurization Downstairs

VII. Instructions for Installation

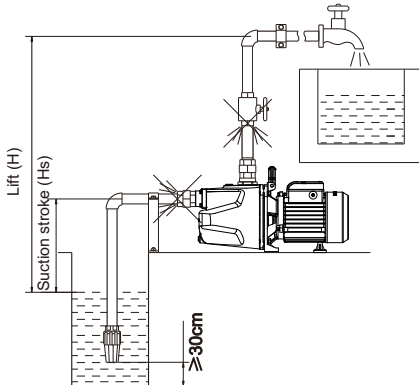
Prior to installation and use, please fully check whether the Electric Pump is damaged during transportation or storage, for example, whether any cable or outgoing line or plug (if provided) is in a perfect condition. In case of any damage, please have a specialized person make replacement or repair. The insulation resistance shall be greater than 50MΩ



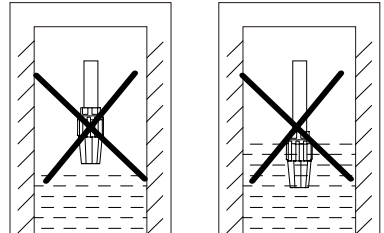
During installation, the complete machine shall be fixed and the inlet and outlet pipes shall be separately supported, whose weight shall not be completely supported by the pump body.



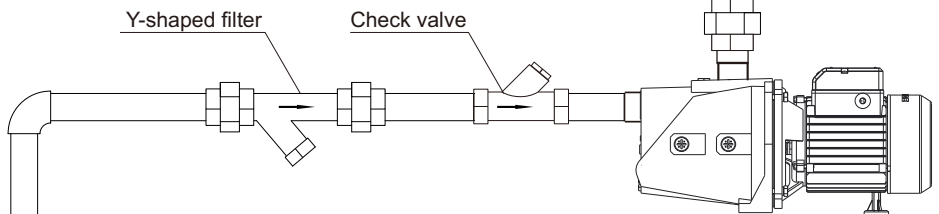
1. Use a steel or rubber pipe (which shall not be too soft so as to avoid becoming flat in case of absorption) to connect the bottom valve and the inlet end of the Electric Pump. Please make sure that the inlet pipeline and its connections are sealed and present no air leakage.
2. Connect the outlet pipe firmly to prevent water from splashing on the motor, thus causing electrical leakage of the Electric Pump. When a rubber pipe is used, pay attention to its temperature resistance limit to ensure that the pipe will not be deformed by heat, for such deformation might make the pipe become broken, causing water leakage.
3. After connecting the upper end of the inlet pipe and the inlet end of the Electric Pump, please make sure that the end of the inlet pipe, where the bottom valve and the strainer lie, is submerged in water. To guarantee the reliable use of the Electric Pump, please arrange an effective strainer which, together with the bottom valve, shall keep more than 30cm away from the water bottom, for the purpose of preventing sludge or impurities from being absorbed to the pump chamber and hence affecting the operation of the pump.
4. Make a pipe as short as possible to reduce connections. The drawing-up height shall not exceed the suction lift.
5. During use, please pay attention to the decrease of the water level and do not let the bottom valve or the lower end of the inlet pipe come out of water.



NOTICE

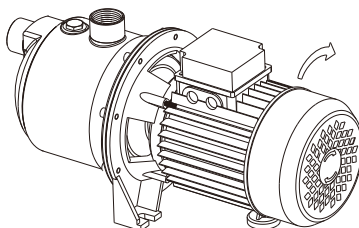


1. Prior to the initial use, please fill the chamber of the Electric Pump with water and then turn on it so as to avoid dry running.
2. A self-priming pump will start only when its pump body is filled with water and it is unnecessary to fill the inlet pipe with water; in case of a non-self-priming pump, both its body and inlet pipe shall be filled with water and air shall be drained completely.
3. In an area with high sand content, it is recommended that a Y-shaped filter should be installed at the inlet pipe to prevent sand from entering the pump chamber and hence causing a worn or blocked impeller.



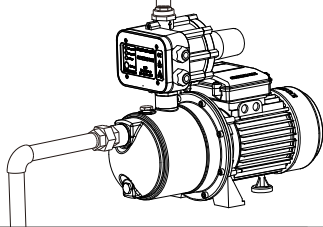
Prior to the use of the Electric Pump, please carry out a test run of which the duration shall not exceed 10s, as long-time dry running will damage the mechanical seal. In case of a three-phase pump, please check whether the rotational direction is the same as the rotation mark. When finding the reverse rotation of the Electric Pump, immediately cut off the power supply and exchange any two phases of the three-phase pump

≤10s

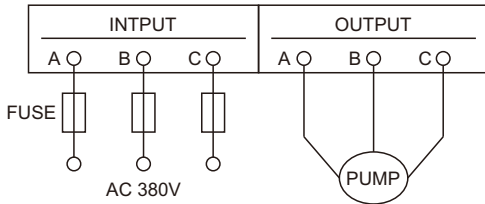


NOTICE

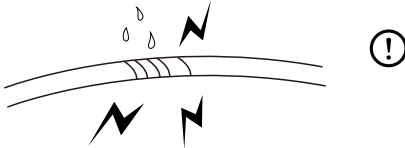
If the user wants to make the Electric Pump do automatic control, a proper pressure control device shall be arranged on the outlet pipe only.



To equip a three-phase electric pump with an overload protection device, a suitable overload protection device shall be selected on the basis of current or power.

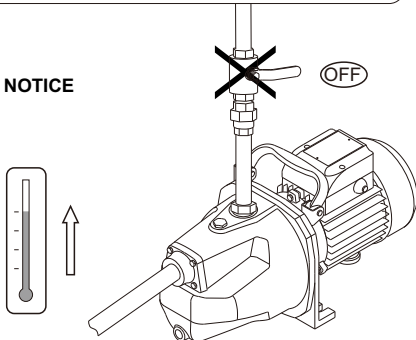


To add a wire for the plug or replace the wire, please use a wire whose specifications are the same or higher than those of the original wire and pay attention to making firm connections, water-proofing and insulation.

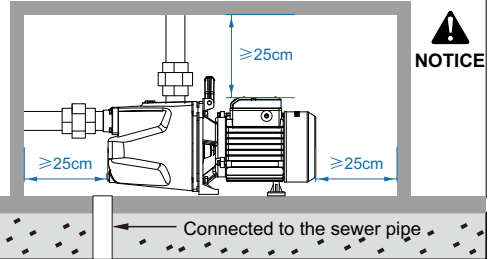


With the valve closed at the outlet, the Electric Pump shall not operate for over 5 minutes. When the Electric Pump operates with no water flow change inside the pump body, it shall lead to the rise of the temperature and the pressure of the liquid in the pump body, and may cause an electrical leakage or damage the pump or pipeline.

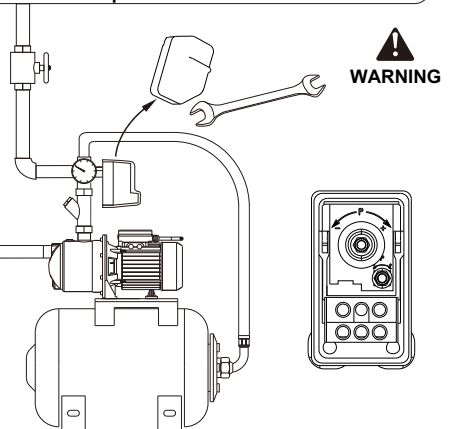
NOTICE



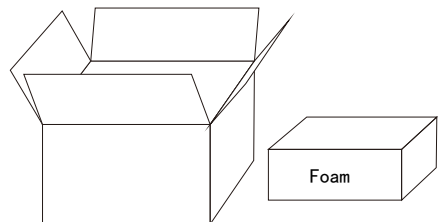
1. Install the Electric Pump as a dry and well-ventilated place where repair and inspection can be carried out easily. To install the Electric Pump at a narrow place, please follow the following diagram and keep the fan cover more than 25cm away from the wall, in case of heat dissipation..
2. Arrange a drainage ditch around the Electric Pump to form natural drainage and prevent water leakage and loss during the usage, repair, or replacement of the Electric Pump (especially at a basement, kitchen, or stairway).



To adjust the pressure switch, open the housing of the pressure switch by using a slot-type screwdriver or wrench to rotate the pressure adjusting screw toward "+". **A non-specialized person shall adjust the switch under the condition of power-off and a specialized person shall take safety protection measures in case of operation under power-on.**



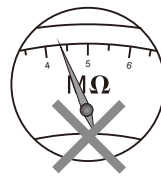
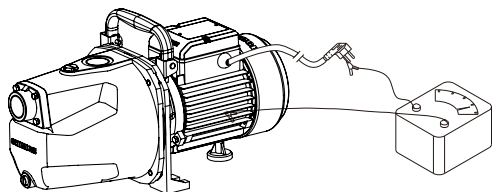
The packing materials removed after installation and use shall be disposed in accordance with the concerned local law.



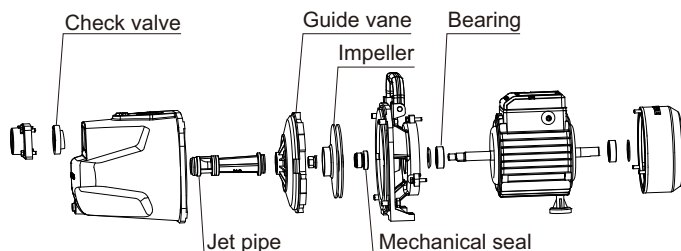
VIII. Maintenance

1. Regularly inspect the insulation resistance between the enclosure and the winding of the Electric Pump, which shall be no less than $5M\Omega$ when the operating temperature is nearly achieved, or otherwise usage shall not be allowed until the corresponding measures are taken and the relevant requirements are met.
2. Prior to any repair or maintenance operation, please cut off the power supply and make sure that the motor will not be turned on for operation due to a casual operation.

 **WARNING**



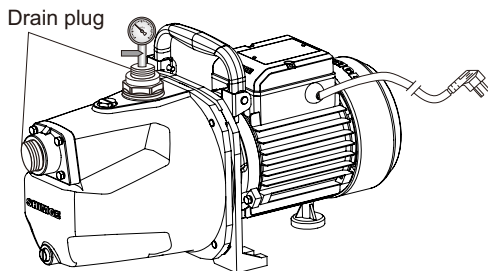
After the 2000-hour normal usage of the Electric Pump, the Electric Pump shall be delivered to a qualified repair station for maintenance and repair as per the steps below: dismantle the pump and inspect various quick-wear parts such as the bearing, mechanical seal, impeller, guide vane, check valve, bottom valve and jet pipe. Please immediately replace those damaged ones



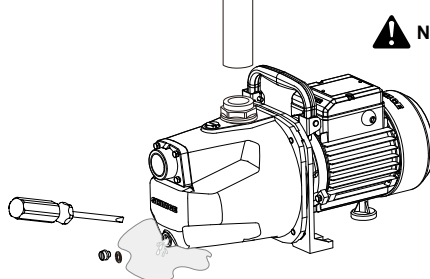
Air tight test: After the pump is disassembled for the repair or replacement of any seal, the bearers and the complete pump shall go through water (air) pressure tests on the basis of the maximum operating pressure and such a test shall last for 3 minutes and there shall be no phenomenon of leakage or sweating.

1. When the ambient temperature is lower than 4°C , please completely drain the water accumulated in the pump chamber to avoid frost-cracking the pump body. Before starting the Electric Pump again, inspect whether the pump spindle rotates flexibly and fill the pump chamber with water.
2. In the event that the Electric Pump has not been used for a long time, please disassemble the piping, drain the water accumulated in the pump, clean the main parts and components, carry out rust-proof treatment, and keep it properly at a dry and well-ventilated place.

 **NOTICE**



 **NOTICE**



- The recycling of the Electric Pump shall comply with the local laws and regulations concerning recycling.

IX. Common Faults and Troubleshooting

Fault	Cause	Remedy
The motor does not revolve	<ol style="list-style-type: none"> 1. The cable of the Electric Pump is contacted badly or broken. 2. The impeller is blocked. 3. The stator winding is burnt. 4. The voltage is low. 5. The voltage of the cable drops too much. 6. The capacitor is damaged. 	<ol style="list-style-type: none"> 1. Inspect the terminal or replace the cable. 2. Correct the blocked part or remove sundries. 3. Re-insert the winding or carry out overhaul. 4. Adjust the supply voltage to a value within the range of 0.9-1.1 times the rating. 5. Thicken the cable as required. 6. Replace the damaged capacitor with another one of the same capacity.
The motor operates but the water pump has no water flow	<ol style="list-style-type: none"> 1. There is air leakage at the inlet pipe. 2. The bottom valve or check valve is not opened or is blocked. 3. Air gets in through the seal. 4. The water level is lower than the suction lift limit of the Electric Pump. 5. The water pump is not filled with water. 6. The impeller is damaged. 7. There is a high pipe resistance and an ill-suited pump model 	<ol style="list-style-type: none"> 1. Check whether the sealing at the inlet pipe or any connection is perfect and ensure that the sealing is reliable. 2. Inspect the flexibility of the bottom valve and the check valve and remove obstacles. 3. Adjust or replace the seal. 4. Check the water level and adjust the installation height of the Electric Pump. 5. Again fill the pump body with water. 6. Replace the impeller. 7. Reduce the bends of the pipeline and re-select a model.
The flow is insufficient	<ol style="list-style-type: none"> 1. The pipeline is too long or bent too much, or the lift is too high. 2. Lack of water resource and the bottom valve and check valve are blocked. 3. The impeller is damaged 4. The nozzle, jet pipe or impeller is blocked. 5. The motor revolves reversely. 6. The water level is low and close to the suction lift limit of the Electric Pump. 	<ol style="list-style-type: none"> 1. Shorten the pipeline, use the Electric Pump within its range of lift or make the bending of the pipeline gentle. 2. Check the source of water; Clear away sundries. 3. Replace the impeller. 4. Clear away sundries of nozzle, jet pipe, and impeller 5. Exchange any two phases of the three-phase power supply. 6. Reduce the installation height of the Electric Pump.
The Electric Pump stops running suddenly under normal operation	<ol style="list-style-type: none"> 1. The switch is disconnected or the fuse is burnt. 2. The impeller is blocked. 3. The stator winding is burnt. 4. The motor is overloaded and the thermal protector trips. 	<ol style="list-style-type: none"> 1. Inspect whether the lift or supply voltage used complies with the relevant provisions and make an adjustment accordingly. 2. Clear away sundries. 3. Re-insert the winding or carry out overhaul. 4. Make automatic resetting of the protector after the temperature declines, inspect the cause of overload and eliminate the relevant errors.
The stator winding is burnt.	<ol style="list-style-type: none"> 1. The supply voltage is too low. 2. Water gets into the motor, which leads to coil short circuit 3. The impeller is blocked. 4. The Electric Pump starts frequently. 5. The Electric Pump makes overload operation. 	Do troubleshooting, disassemble the winding and re-insert the winding as per the concerned technical requirements as well as immerse and dry the insulating varnish or deliver the winding to the repair station for repair.

Fault	Cause	Remedy
Big noise of the Electric Pump	<ol style="list-style-type: none"> 1. The impeller and the pump body rub each other or there are sundries in the pump body. 2. The bearing is damaged. 3. Cavitation occurs to the water pump. 	<ol style="list-style-type: none"> 1. Replace the impeller and the guide vane or remove the sundries in the pump body. 2. Replace the bearing. 3. Adjust the outlet valve or reduce the self-priming height.

Notes:

1. All the diagrams in this Operating Manual are only for reference and the Electric Pump you purchased and its accessories may be different from those indicated in this Operating Manual. Your understanding is really appreciated.
2. The products involved hereinbefore are subject to continuous improvements and changes(including its appearance and color) without further notice, please in kind prevail.