



**SHIMGE**®

## Submersible Pump

### User's Manual

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**Models: Q(D)X, Q(D)X-T(F), Q(D), QY, QS**

**SHIMGE PUMP INDUSTRY GROUP CO., LTD.**

**Thanks for choosing our company's products. Please read the user's manual carefully before operation.**

### **Warnings!**

**Before operation, make sure that the electric pump is properly grounded**

**Do not touch the electric pump while it is running.**

**Do not run the electric pump without water.**

### **Products Introduction**

Models Q(D)X, Q(D)X-T(F), Q(D), QY and QS submersible pumps (hereafter referred to as simply "electric pump") consist of water pump, seal and motor. Models Q(D)X, Q(D) adopt single phase, three phase asynchronous motors. Model Q(D)X use single impeller with volute casing, The pump body is at the bottom of the motor. It could pump the liquid and soft solid. Model Q(D) adopt multistage centrifugal impellers with radial guide vane, apply to a large range of head environment. The pump body is at the upper of the motor. Model QY use three phase submersible asynchronous motor. Model QS adopt three-phase and water-filled submersible asynchronous motor. Both pump body are on the upper part of the motor, have centrifugal, mixed and axial type impeller with diversion casing or radial guide vane . Because its motor is filled with water , Model QS enjoys excellent insulation feature. The stator winding of model QS adopts water-resistance electromagnetic wire, coats rust-resistance lacquer on the surface of stator and rotor. Filling clean water into motor chamber make good cooling effect and avoid pollution to the water. In between water pump and motor is double or single mechanical seal and O-rings are applied to all fixed joint as static seal.

Due to a variety of models and wide application, these serial electric pumps are apply to farm irrigation, garden watering and sprinkling, family use, drainage for industry, water supply or drainage for building construction and livestock breeding,etc.

### **Conditions for Use**

**The pump will work normally and continuously in the following conditions:**

1. Maximum medium temperature:+40℃;
2. Medium pH value: 6.5 ~ 8.5;
3. Maximum volumetric ratio of solid particle in medium: 0.1%; Maximum size of solid particle: 0.2mm;

4. The performance of electric pump must meet the requirements marked on the name plate
5. The power of electric pump must conform to values marked on the name plate.
6. Maximum submersible depth: 5m.

### **Installation and Warnings:**

1. Before installation, check whether the electric pump exist any damage during transit or storage e.g. cable, plug, etc. Insulation resistance shall exceeds  $50M \Omega$ . For model QS series water-filled submersible pump, the resistance should be higher than  $0.5M \Omega$  when it comes to close the normal operation temperature.

2. When wiring, it needs to install creep age protection device properly. For three phase electric pump, make sure that one yellow-green wire in cable terminal and plug are grounded available. For three electric pump which needs equip with overload protection device, choose matched one according to current or power marked on the name plate.

3. Conduct no load trail test (last no more than 10 seconds). Check the rotational direction of motor before submersion. If three phase electric pump rotates counterclockwise, firstly cut off power supply immediately, swap over two of the phase of the electric pump. For model QS series submersible pumps, disassemble screw fitted at inlet and outlet and fill the motor chamber with clean water. Don't screw on the screw fitted at inlet and outlet again until the motor chamber is full of water

4. Connect the hose to the outlet joint. Use the wire or clamp to fasten the soft hose and the welded flange for steel hose and then fasten it with a rope through the handle to carry.

5. Do not strike or press the cable and nor shall it be used as hoisting rope. Do not pull the cable while the pump is in motion to avoid damage for cable that may lead to electric shock.

6. The depth of the electric pump, when submersed, shall not exceed 5m and shall be over 0.5 m away from the water bottom.

Do not place the electric pump in the mud to avoid clogging by weed and other matter that would possibly put the pump out of action. Check the water level frequently, while in operation, to see whether it is lowering and the electric pump shall not be out of water while running.

7. If the electric pump is used far away from the power source, thicken the cable

according to distance (thicker than the pump cable).

8. While in operation, washing, swimming, bathing are forbidden nearby the working area to avoid accidents.

9. In normal operation, the built-in overload protection device shall not activate. If it starts and stops frequently, cut off the power to find problem. Only after resolving the trouble can it be used again.

10. For electric pump which set a limit to head, it is used within the range of head to avoid damage due to overload.

11. Do not fill the motor chamber with water or oil as the motor is of dry structure.

12. During operating, before removing the pump or touching it, firstly cut off the power to avoid accidents.

13. Do not allow cable wire or socket touch the water while in operation. In case if the cable need to be lengthened, cable lug should be sealed completely to avoid leakage.

14. After cutting off the power, don't remove the electric pump out of water until the motor turn cool to avoid explosion or accidents.

**15. The oil chamber (QS series' excluded, QY series' oil chamber and motor chamber) is filled with machine oil, which ensures the mechanical seal is effectively lubricated and cooled. The machine oil may possibly leak out if the pump is damaged or malfunctioned. When the pump applies to planting, animal breeding, potable water or food transportation and processing, the leakage of the mechanical oil may be harmful to plants growth and animals, or pollute potable water or food.**

16. If soft line damaged, the user must use the special soft line from factory or maintenance department to purchase special component for replacement.

## **Maintenance**

1. Regularly check the insulation resistance between the pump winding and the motor casing, making sure that the insulation resistance exceed  $1M\Omega$  when it comes to close the normal operation temperature. Otherwise, the corresponding measures must be taken. It could not allow to reused until it meet requirement. For the model QS series water-filled submersible pump, the insulation resistance should remain more than  $0.5M\Omega$  when it comes to close the normal operation temperature.

2. After 2500 hours of normal operation, maintenance job should be taken according to the following steps:

Dismantlement: Check all vulnerable parts, such as rolling bearing, mechanical seal,

and impeller,etc. Replacements should be arranged if damages exist. (Notice: Don't disassemble model QY series electric pump motor soon till temperature of motor casing turn normal. Before dismantlement, screw off the oil-filled screw slowly to avoid of pump explosion).

Pressure test: Pressure test shall be taken after the repair or replacement. The pressure shall remain 0.2MPa during the test period and it should last 3min till no leakage or sweat occurrence .

Change oil: For the motor with dry structure, remove the oil-filled screw, then inject 10# clean mechanical oil (up to 80%-90% capacity of the motor chamber) .

**3.**If the electric pump won't be used for a long period of time, it shall not be soaked in the water and shall run in clean water for several minutes to remove the hard sediments inside and outside of the electric pump, then dry it for rust-resistance treatment, finally place it in the draughty place. For the used electric pump, it should repaint with lacquer or rust-resistance paint again according to its erosion,

**4.**If the electric pump remain unused for a long period of time, open pump casing and move the impeller to avoid such components rust before motor start up.

## Troubleshooting

Trouble	Main reasons	Solution
Electric pump starts difficultly	<ol style="list-style-type: none"> <li>1. Power voltage too low.</li> <li>2. Pump phase lost.</li> <li>3. Impeller clogged.</li> <li>4. Big loss of cable voltage.</li> <li>5. Stator winding burnt.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust voltage to 0.9-1.1 times of the rated value.</li> <li>2. Check the switch, cable and terminal</li> <li>3. Adjust clogged part.</li> <li>4. Choose proper cable.</li> <li>5. Rewind and overhaul.</li> </ol>
Insufficient water	<ol style="list-style-type: none"> <li>1. Air exist in pump chamber</li> <li>2. Air leakage occurred in inlet pipe</li> <li>3. Foot valve doesn't open or clogged seriously, large resistance exist inside pipe, height of suction too much high</li> <li>4. Air leakage occurred inside electric pump.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill enough water to remove air.</li> <li>2. Check joints and pipeline to ensure seal completely.</li> <li>3. Check whether foot valve keep flexible, remove clogged material, shorten the inlet pipe.</li> <li>4. Adjust the submersible depth or replace airtight packing.</li> </ol>
Electric pump suddenly stops operation.	<ol style="list-style-type: none"> <li>1. Switch disconnected or fuse burnt.</li> <li>2. Impeller clogged.</li> <li>3. Stator winding burnt.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check whether the head in use or power voltage conform to requirements and adjust accordingly.</li> <li>2. Remove the foreign matter.</li> <li>3. Rewinding and overhaul.</li> </ol>
Stator winding burnt out	<ol style="list-style-type: none"> <li>1. Winding turn-to-turn short circuit or short circuit between phases due to mechanical seal leakage.</li> <li>2. Impeller clogged.</li> <li>3. Electric pump starts and stops frequently.</li> <li>4. Electric pump runs in overload.</li> </ol>	<p>Disassemble the electric pump winding , then rewind and bake in the insulation lacquer or send it to service agency for repair.</p>