

SUBMERSIBLE SAND PUMP



WQS SUBMERSIBLE SAND PUMP

SUBMERSIBLE SILT AND SAND PUMP

The **WQS** submersible sand pump is hydraulic machinery that submerges into the medium with coaxial motor and water pump. Flow passage component of the pump is made of wearable high-chromium alloy material with good wear-resisting pulp, coal pulp and coarse sand etc.

This series of product is designed and manufactured with absorption of advanced foreign technologies. Besides the main impeller, there is one set of mixing impeller installed at the pump bottom to transform the device. The unique sealing device ensures pressure balance in-and-out of the oil chamber effectively to protect the reliability of the mechanical sealing to the uttermost. The motor can, according to client's demand, employ several protective measures including over-heating protection and water-intake inspect protection etc. to ensure long and safe pump operation under abominable working conditions.

This type of pump is suitable for extraction of construction sand, silty sand, sludge, mine tailing pulp, mine sand, iron ore, sediment of sewage treatment plant and sediment of orifices for pile foundation of railways and bridge etc.



Meaning of the model

WQS 200 - 15 - 22
Flow rate (m³/hr) Head of delivery (m) Power (kw)

Working Condition

Temperature of the medium should not exceed 60°C and without content of combustible or explosive gas.

Maximum Weight Concentration of Solid Particles inside the Medium: 45% for lime-ash and 60% for tailings pulp (subject to not exceeding the rated electric current of the motor).

Submerging depth of the pump set: no exceed 20m and minimum depth should ensure full submerge of the motor.

The operating position of pump sets vertical when it operates in the medium and its operative mode is continuous.



THONG FATT JAYA MACHINERY HARDWARE SDN. BHD.

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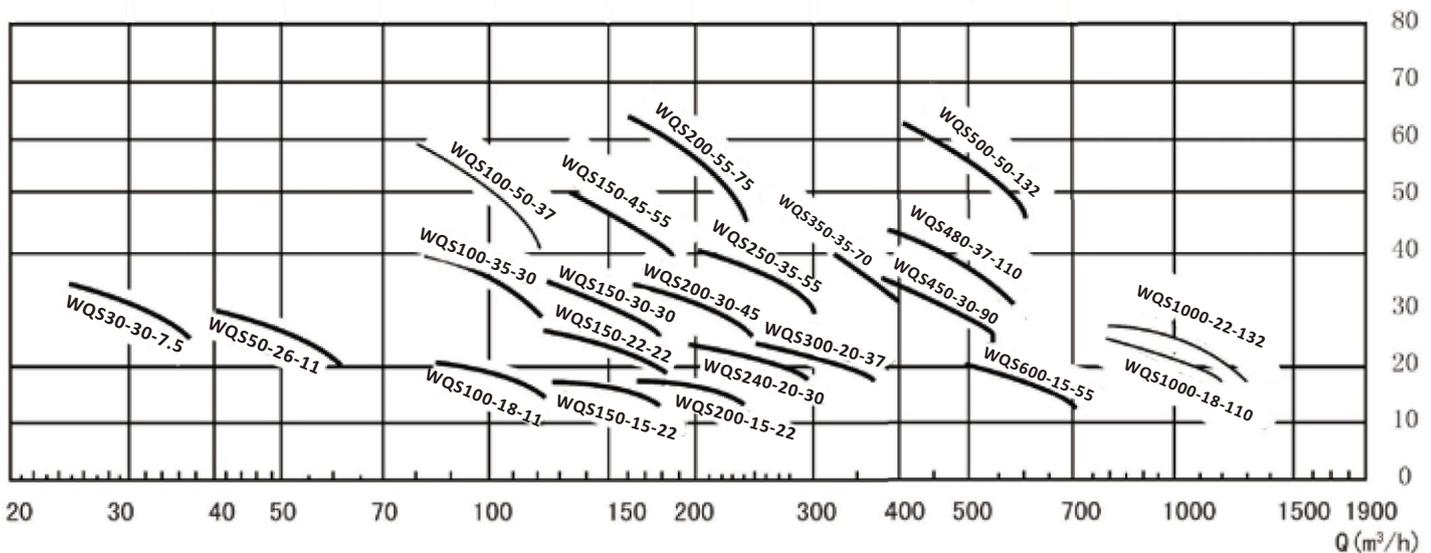
Structure Feature

The entire pump is dry-type with its motor be sealed by oil chamber and inside-arranged mechanical seals that can effectively prevent the high pressurized water and impurities from entering into the inner chamber of the motor.

There is mixing impeller installed besides the main impeller so that the sediment sludge can be transformed into turbulent flow and extracted out. Flow passage components for impeller and the mixing impeller are made of high-chromic cast steel of high hardness, making the components wear resistant and corrosion-resistant and enabling it strong capacity to discharge big solid particles.

The motor submerges under water so that its operation is not restricted by suction head, realizing high dreg suction ratio and more thorough dredging. The entire equipment is simplified without auxiliary mixing equipment or injecting device, making the operation more convenient and the total investment lower. The mixing impeller approaches the sediment surface directly and the density is controlled by submerged depth of the pump. In case of medium with high specific gravity, an auxiliary device can be installed to increase medium density.

Performance Curve



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Precautions for Installation and Usage

1. Preparation before installation

- 1) Before starting the electric pump, check carefully to find out whether there is deformation or damage to the pump and whether the fasteners become loose fall off.
- 2) Check whether the power cable is damaged or ruptures. If any, the power cable should be replaced to avoid electric leakage.
- 3) Check whether the power supply unit is safe and reliable. Rate power voltage must comply with the nameplate.
- 4) Check with a mega-meter and make sure that the ground insulation resistance of the stator winding is over 50 meg-ohm under a cold state.
- 5) Check whether the oil quantity inside the oil chamber suits, when the pump set is in vertical position, the oil level should be in a straight line with the oil filling port.
- 6) When starting a submerged pump with cooling cover, it must be ensured that clean and cool water is injected continuously and that the water out-let is smooth. The cooling water is to inflow in the bottom side and out flow in the other side at the top.

2. Notice

When the pump is normal operation, power voltage, working current, pump flow rate and pump vibration should be observed at any time. In case of any of the following, the pump set should be shut down for inspection.

- 1) Work current exceeds rates current.
- 2) Flow rate drops by 20% under rated head of delivery or water outflows discontinuously.
- 3) Supply voltage becomes abnormal high or low
- 4) There is obvious vibration or noise with the pump.

3. Safety precautions

- 1) Electric Wiring: Electric wiring should be conducted according to the circuit diagram by full-time electricians. The insulation resistance should be checked always during the installation process. Once the installation ends, in insulation resistance of the motor should not be less than 5 meg-ohm. Life the pump and check its rotation direction. The pump should be rotating clockwise if observed downwards from the motor direction. If not, change any 2 wires of the 3-phase power supply.
- 2) Use of the pump power cable as installation or lifting rope is strictly forbidden to avoid danger.
- 3) The water pump should submerge into water vertically. Horizontal placement is not allowed. Once the pump is to be moved, power supply must be shut down.

4. Precautions for storage

- 1) If used for multi times, the pump, before being stored, must operate in clean water for several minutes to avoid residual sediments inside and make sure that it is clean.
- 2) If the pump is to be out of use for a long time, it should be pulled out of water to reduce the chance for the stator winding gets damp and prolong its service life.
- 3) The electric pump should be maintained and serviced after one-year operation under normal working conditions. Consumable parts should be replaced and the fasteners checked. Lubricating grease for the bearing and the insulation oil inside the oil chamber should be replenished or replaced to ensure smooth operation of the pump.



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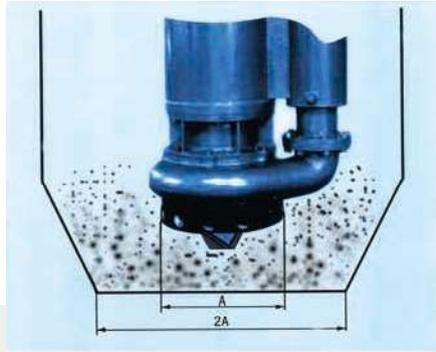
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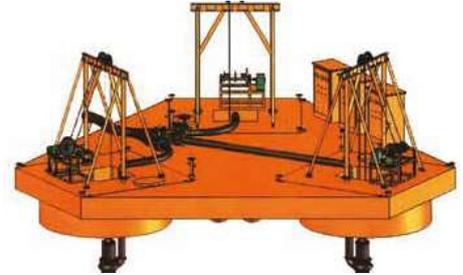
Schematic diagram for operation



Stirring in water.



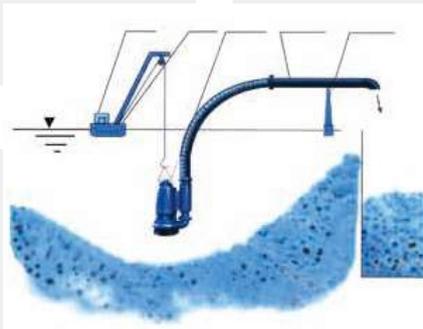
Safety stirring range with mixing impeller.



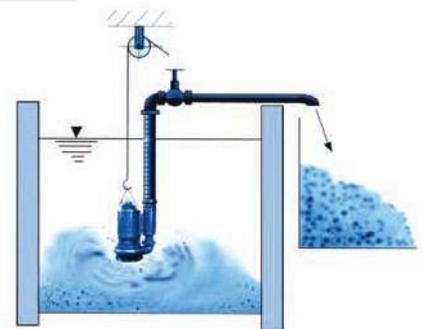
DPB model platform for parallel-type dredging equipment.



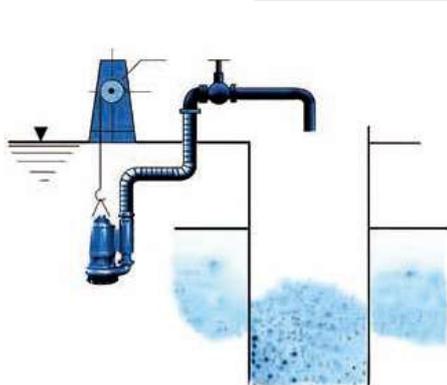
Silt-dredging project at the rivers.



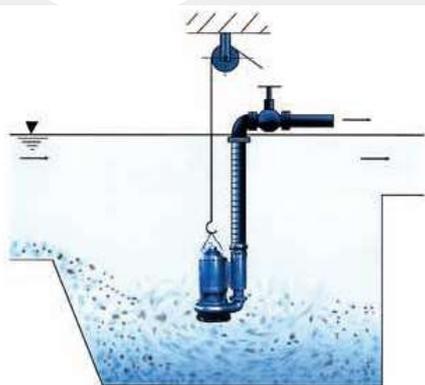
Clearing of mud and silts of rivers, lakes, ponds and diversion projects and silt-dredging in navigation channel.



Pollutants-discharging and silt-dredging of deep wells of large diameter.



Sand piling projects in rivers.



Discharging and removing of slag slurry in settling ponds at steel plants, power plants or mines and the mud and gravels produced by various excavation engineering.



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Failure cause & solutions

Failure Phenomenon	Possible Causes	Solution
High electric current exceeding the rated current	1. Rotor Locked	1. Clean foreign matter if there is any.
	2. Extreme low head of delivery with the dive while pump operates in bigger flow rate.	2. Use the valve to control flow rate or replace a new pump with appropriate head of delivery.
	3. Bearing Damage.	3. Replace bearing
	4. Concentration or viscosity of the medium transported is too high.	4. Adjust concentration or viscosity of the medium transported.
Failure of motor rotation when started but with drone sound	1. Electric voltage is too low.	1. Adjust electric power to rated level.
	2. Single-phase motor rotation.	2. Check wireline and get the break line connected.
	3. Pump gets blocked by foreign matters.	3. Clear foreign matters if there is any.
	4. Impeller fricts with internal pump cover or absorbent board.	4. Adjust the impeller clearance to the normal level.
No water yielding or little water yielding	1. Reversed motor rotation.	1. Adjust any two of the 3-phase wire.
	2. Water strainer gets blocked.	2. Clear the blockage.
	3. The water-intake port emerges from water.	3. Lower the pump to have the water-intake port submerge in water.
	4. Water pipe leaks or gets blocked.	4. Replace with new water pipe or clear blockage inside the pipe.
	5. Actual head of delivery is too high.	5. Select a new pump with appropriate head of delivery.
Insulation resistance dropping to less than 0.5MΩ	1. Cable joints get damaged.	1. Re-handle the cable joints.
	2. Insulation of the stator winding damaged.	2. Replace the stator winding.
	3. Water intrusion into motor chamber	3. Discharge water and dry the stator winding.
	4. Cable damaged.	4. Repair the cable.
Unstable operation severe vibration	1. Impeller severely worn-out.	1. Replace the impeller.
	2. Rotation components get bogged by sundries.	2. Clear the sundries.
	3. Bearing damaged.	3. Replace the bearing.



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