A-30 Single Phase Deep Well Submersible Pump

Operation and Installation Manual

The A-30 Stainless steel deep well submersible pump is a superior product, made with the latest technology and quality materials. The main part of the deep well submersible pump is made of stainless steel and copper alloy. The impeller is especially designed and restructured. The inducer casing is also modified by polycarbonate to strengthen its wear resistance. The inducer in each level requires an independent silicone rubber shaft bearing. The motor consists of the liquid-immersed structure which requires a radial thrust bearing with strong support force and is mechanically leak proof.
Advantages: wear resistance, long operation life, high efficiency with large water flow capacity, electricity saving and easy maintenance.

Important Notice

Do not start the motor without water.

Do not use the cable to lift the motor from the deep well / bore to the floor.

The pump should be installed at least 5 meters deep from the bottom and must have at least I meter of water covering the pump.

Incorrect electrical connection causing the pump to operate in reverse rotation should not be allowed to run for more that 1 minute.

If the pump is used for either a new or an old well, which has been shut down for a long time the sand or mud should be removed before pumping.

The automatic control box is required.

Preparing for Installation

Electricity supply:

- Three phase electric motor: 380V electric supply, 50HZ, voltage pulsation range 360-415V
- Single phase electric motor: 230V electric supply, 50HZ

The content of the solid materials should not be over 0.020% by weight.

The acid-balance of the water should be between 6.8 and 8.5 PH.

The deep well should be cleaned before installing the pump.

Electric Cable Connection

Splicing of electric cable should be done by a qualified person.

Use correct electric cable designed for submersible bore pumps.

Peel the coating at the end of the cable and lead line of the motor about 40mm to expose the copper wire.

Connect the bare wire about 20 mm long using a crimp link of the appropriate size. Each individual wire should be crimped and insulated individually. Use the waterproof adhesive tape for 3 to 5 layers to wrap the individual connections. The wires should then be bundled together and insulated again using adhesive tape again for 3 to 5 layers ensuring that it is totally waterproof.

Notice:

This method is to connect electric cable and leading of the pump and should comply with the requirement of the electric wire connection.

The waterproof adhesive tape should be elongated by pulling in 200% before wrapping it round the wire in spiral advantage method with half of the tape in each round being over-lapped. The shrinkage of the tape will fasten and waterproof the connected cable end better.

The bare copper wire and adhesive tape should be kept clean.

Automatic Control Box (Device)

Different size motor and power is required with different size automatic control box in order to protect the motor and guarantee the stable operation.

The automatic control box is to control the operation of the pump by transferring the water levels to the upper reservoir and inside the deep well.

The control box consists of the air-control circuit breaker, alternating-current contactor, thermostat, water level controller, etc.

The automatic control box is also to protect short circuit, overload, low voltage, no voltage, etc.

The control box is built with a pilot lamp and various meters to show the current and voltage parameters for easy operation.

Installation

Install the pump body together with the motor.

Make sure the earth wire for the motor is in the groove provided in the pump body so that when the pump body is attached it will not damage or expose bare wire.

Be sure that the motor rotates freely without problems.

Connect the pipe into the deep well according to the installation diagram.

Firmly attach the pump head with nylon cord or steel wire rope in the fixing hole for lifting up or lowering the pump down into the well. The length of the nylon cord or steel wire is determined by the depth of the well.

Connect the delivery pipe with the same diameter as the pump hole to the pump and fix the connection with a set of the clamping plate then put the pipe down into the well. Using the same method mentioned above, install the second pipe and clamping plate until the pipes extend to the depth needed.

Connect the elbow, valves, valve water pressure and flow meters.

Start the Operation

Connect the pump with the control box and electric network. Switch on the pump. It should be operational. If the pressure showing on the meter and the water flow is small, switch off the pump and wait for 1 minute, then restart the pump again. It should operate normally. If the water is mixed with sand or mud, it should be switched off and a special pump should be used to remove the dirty water before restarting the deep well submersible pump.

Possible working defects of the submersible pump and automatic control box

Type of defect	Main Causes	Correction
Does not start	1. Power cut-off or lack of phase. 2. Cable too long or too thin; pressure drop	1. Check mains supply and phase. 2. Replace with appropriate size cable;

	sharply or voltage too low. 3. Contactor damaged or thermostat tripped out (pilot lamp showing troubles is on). 4. The line inside the controller gets loose; changeover switch damaged or a poor contact. 5. The impeller in the pump body is blocked by something inside. 6. The motor is burned out.	increase the voltage. 3. Maintain or replace the contactor; reset the contactor manually as it cools down. 4. Check the line connectors and changeover switch inside the control box and make sure everything is OK and restart. 5. Remove the foreign materials. 6. Repair or replace the motor.
Water cannot be pumped up or water flow is too small. (Electric current is too strong or too weak).	1. Motor turns in reverse. 2. The inlet of the pump is blocked and water cannot flow in. 3. Inlet pipe has a leak. 4. The shaft coupling between the pump and motor wears badly and gets loose. 5. The impeller of the pump wears badly. 6. The check valve is jammed.	1. Change the two phase cables positions or adjust mains supply. 2. Remove the blocking materials. 3. Repair the pipe with leakage. 4. Replace the shaft coupling. 5. Maintain the pump and replace the impeller. 6. Replace the check valve.
Water flow becomes small or large frequently under normal mains supply.	1. The location of the pump does not reach properly into the well. 2. The moving water level is lower than the inlet of the pump. 3. The delivery water flow is too large.	1. Adjust the location of the pump to a proper depth. 2. Limit delivery water flow or adjust the depth of the pump into the bore / well. 3. Replace it with a proper size pump.
Manual operation is OK; but automatic operation is out of control.	1. Automatic water lever controlling poles contact badly or there is a breakage; the earth wire is incorrectly wired or there is a bad connection. 2. The automatic	1. Check the electric poles and earth wire. 2. Repair or replace the automatic control box.

	controlling poles are damaged.	
Pump can start but starts frequently.	1. The distance between the electric poles to control the upper and lower water level is to close. 2. The upper and lower water level controlling poles are dislocated.	1. Increase the distance between the upper and lower poles. 2. Change the upper and lower poles to a correct connecting position.
The thermostat operates normally but contactor trips off.	1. The electricity supply before coming into the control box is lacking a phase. 2. The leading lines of the motor or cable has poor contact or there is a breakage.	1. Check if it is a lack or phase and correct it. 2. Check the leading lines and cable and correct the faults.
The pump operation is OK but no voltage shows and the pilot lamp is off.	1. The voltage meter is poorly connected or is damaged. 2. The pilot lamp has a poor contact or is damaged.	1. Check the connection and correct errors or replace the meter. 2. Check the lamp or replace it.

Installation Diagram

1. Submersible motor
2. Submersible pump body
3. Controlling electric pole
4. Cable clamping plate
5. Water pipe
6. Pipe clamping plate
7. Pressure meter
8. Check valve
9. Gate valve
10. Automatic control box(device)
11. Main supply switch
12. Cable inside the well

A. Moving water level

B. The distance between moving water level and pump outlet should be at least one meter

C. The distance between the end of the motor and the well bottom should be at least five meters.