

Four Inch Borewell Submersible Pump Sets

Troubleshooting
Guide



**Texmo
Industries**
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1. Basic troubleshooting



Warning

To prevent serious accidents, disconnect the power supply before inspecting the pump.

Read this Operation Manual thoroughly before requesting repair. Contact the dealer from whom the pump was purchased. Servicing and troubleshooting must be handled by qualified persons with proper tools and equipment. Common faults, root causes for these, and suggested actions are provided in TABLE 1 below:

Fault	Possible causes	Suggested actions
The pump does not run	No electricity supply	Check the line. Contact the local EB authorities
	Single phase preventer mounted in the control panel switches OFF due to absence of one phase / phase reversal	Check the line and wait for electricity to be restored. If phase has been reversed, interchange any two power cables
	Blown fuse	Check and replace / rectify the fuse
	Defective motor winding	Rewind the motor
	The motor starter device is defective	Repair / replace the starter device
	Damaged coupling	Take out the pump set to check for coupling damage, replace coupling if necessary
	The dry run protector has cut-off the electricity supply to the pump, due to low water level	Check the borewell yield, if the yield is less, reduce the discharge using a gate valve or wait for the water level to rise
	Faults in cable joints / Loose connections	Check the connections and make proper joints
	The motor starter overload has tripped	Reset the motor starter overload. If it trips again, check the voltage. If the voltage is OK, replace overload relay
	The ELCB has tripped out	Reset the ELCB, If trips again check the insulation resistance of the motor
The control panel defective	Check the control panel and replace if necessary	

Fault	Possible causes	Suggested actions
Less discharge from pump	Available voltage is less	Check for loose connections or contact EB authorities. If needed, replace the cable
	Wrong direction of rotation	For three phase, Interchange the supply connections of any two phases
	Increase in draw-down	Lower the pump set or wait for water level to rise
	Leakage in pipes	Change the pipes which have leakages
	Excessive wear of pump components mainly Impeller, wearing ring, etc. due to high sand content and prolonged operation	Replace the worn-out parts
	Discharge pipe coated with depositions	Clean the pipe and remove depositions
	Foreign bodies lodged in impellers	Lift the pump and clean the impellers
	The draw down is larger than anticipated	Lower the pump if specification meet the required head. If not, change the pump as per the required head
	The valve in the discharge pipe is partly closed / blocked	Check and clean / replace the valves, if necessary
	The discharge pipe is partly choked by impurities	Check / replace the discharge pipe
	The NRV of the pump is partly blocked	Pull out the pump and check / replace the valve
	The pump and the riser pipe are partly choked by impurities	Pull out the pump Check and clean or replace the pump, if necessary. Clean the pipes
The pump is defective	Repair / replace the pump	
Total head developed is too low	Excessive wear of pump components mainly Impeller, wearing ring, etc. due to high sand content and prolonged operation	Replace the worn-out pump parts
	Discharge pipe coated with deposits	Clean the pipe and remove the deposits

Fault	Possible causes	Suggested actions
Current consumption in excess	Single phasing	Check line fuses / availability of three phase supply
	Voltage too low	Check the voltage
	Defective rotor	Change the rotor
	Defective motor winding	Change the winding
	Damaged thrust bearing	Change the worn-out bearings
The pump runs but no discharge	The discharge valve is closed	Open the valve
	No water or too low water level in the borehole	Lower the pump if head is within the specification
	The NRV is stuck in its shut position	Pull out then pump and clean / replace the valve
	The inlet strainer is choked up	Pull out the pump and clean the strainer
	The pump is defective	Repair/replace the pump



Note

Conduct trial operation after maintenance



Note

Dispose replaced components with appropriate care so as to protect the environment



Warning

Do not try to solve unspecified troubles of pump as it may lead to severe damage to the pump or injury to personnel. Contact the dealer where this pump was purchased



Caution

If the pumpset runs with unusual noise, stop it immediately. Check

- (a) the journal bearings for wear
- (b) rotor outer diameter rubbing against stator inner diameter

2. Preventive maintenance checks

A definite schedule of preventive maintenance inspections should be established to avoid breakdown, serious damage and extensive downtime. The schedule will depend on operating conditions and experience with similar equipment. Below check list does not represent an exhaustive survey of maintenance steps necessary to ensure safe operation of the submersible pump.



Warning

The pump must not be operated with the delivery valve shut-off for more than a few seconds; otherwise the motor will overheat, possibly causing permanent damage



Warning

Utilise the services of an electrician to carry out electrical measurements / checking the functioning of the control panel



Taro Submersible Pumps do not require frequent maintenance



However, it is good practice to monitor the conditions and performance of the pump and motor

Diagnosis may be carried out by checking the following:



Closing the delivery valve and checking the shut-off head generated by the pump



Checking the electricity drawn by the pump at the duty flow rate



Both these data should be compared to corresponding data recorded when the unit was initially installed



Any reduction in shut-off head may indicate wear of the pump hydraulics



Any increase in motor current at duty flow rate indicates a possible overload condition



Under running conditions, intentionally disconnect any one phase and check if Single Phase Preventer works

Maintenance precaution



Warning

Disconnect the power supply before starting maintenance or inspection of the pump to avoid electrical shock



Note

If you find any damages or abnormalities, switch OFF the pump and report the problem to the dealer from whom the set was purchased

NOTE: The manufacturer assumes no responsibility for damage or injury due to disassembly in the field.

3. Do's and don'ts

Do's	Don'ts
Prior to installation, check the water level in the submersible motor. If required, top up with clear and clean drinking water. Do not forget to replace the water filling plugs after filling	Do not erect the pump set at the very bottom of the bore hole. Keep at least 3m bottom clearance
Check the direction of rotation of motor before coupling to the pump	Do not operate with the NRV and Strainer removed
Use proper size of cable from control panel to motor. Factor in operation at lower voltages	Do not permit use of multiple joints for making up the length of cable. Instead use a single cable from control panel to the submersible motor cable free end to reduce voltage drop
Connect the pump to a control panel with dry run and overload protectors	Do not operate the pump at shut-off conditions as the temperature of water will rise resulting in overheating of the components
Check the play and freeness of rotation of pump-motor shaft before installation	Do not test the pump outside the bore in dry condition as the seals and bearings will get damaged
Check for looseness of fasteners	Do not ground to a gas supply / water line
Check for leakages from motor	Do not lift / lower the product using the cable harness
When the drop cable must be spliced or connected to the motor leads, ensure that the splice is water tight	Do not subject the product to shock loads
All wiring, electrical connections and system grounding must comply with local Electricity Board regulations. It is essential to ground the unit to prevent electrical shock. Provide earthing through the screws provided on the motor body	Do not attempt to repair the set. Approach the dealer from whom the set was purchased
For motors provided with a key, ensure the key is in place while coupling the pump and motor	Do not install the pump without checking the water level in the motor body
Ensure motor insulation resistance between phases and earth is greater than 20MΩ	Do not operate the pump with very low / intermittent discharge. In such cases throttle the discharge to avoid dry running

Do's

If a plastic well casing is used in your installation, ground the metal well cap or well seal

When not in use, run the pump at least a few minutes a day.

Don'ts

Do not perform frequent megger tests on the winding as the winding insulation can weaken

Do not use oversized fuse wires as this can cause the motor winding to be damaged due to starter failure / short circuiting

4. Important safety instructions

Only qualified personnel should be involved for inspection, maintenance and repairs. The successful and safe operation of such a product depends on proper handling, installation and maintenance. It is suggested that in case of non-functioning of the product, the customer is requested to contact the dealer through whom the purchase was made.



Danger

Hazardous voltage will cause death, serious injury, electrocution.
Disconnect all power before working on this equipment.
Maintenance should be performed by only qualified personnel.

5. Storage & handling

- ✓ The submersible pumps are supplied from the factory in proper packing in which they should remain until they are to be installed
- ✓ The product should be stored in a closed, dry and well ventilated room
- ✓ Do not store the products in direct sunlight
- ✓ Handle the pumps with care and do not expose the product to unnecessary impact and shocks
- ✓ During unpacking and prior to installation, care must be taken when handling the pump to ensure that misalignment does not occur due to bending
- ✓ If the product has been stored for a very long period, check the condition of the rubber gaskets, free rotation of the shaft, and level of water inside the motor



Caution

If the motors are stored, the shaft must be turned by hand at least once a month



Caution

If the motor has been stored for more than one year before installation, dismantle the motor and check the rotating parts and rubber components before use



Caution

After a long period of storage, the pump should be inspected before it is put in operation. Ensure the pump shafts rotate freely



Caution

The unit has water lubricated journal and thrust bearings and must never be run dry. Starting the pump set for a short period without water must be avoided entirely as operation under such conditions will damage the bearings

6. Company contact information

For most up to date information on Texmo Industries, please visit www.taropumps.com

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