Six Inch Borewell Submersible Pump Sets

Troubleshooting Guide

Taro™ Pumps

Texmo Industries
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1. Basic troubleshooting

Warning

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

Read this Operation manual thoroughly before requesting repair. Contact the dealer from whom this equipment was purchased. Servicing and troubleshooting must be handled by qualified persons with proper tools and equipment. Common faults, root cause 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 local EB authorities
	Single phase preventer mounted in the starter 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.
	ELCB has tripped out	Reset the ELCB, If trips again check the insulation resistance of the motor.
	The starter is defective	Check the starter 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 pumpset or wait for water level to rise
	Leakage in pipes	Change pipes that 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 deposits	Clean the pipe and remove deposits
	Foreign bodies lodged in impellers	Lift the pump and clean the impellers
	The drawdown 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
	NRV of the pump is partly blocked	Pull out the pump and check/replace the valve
	Pump and the riser pipe are partly choked by impurities	Pull out the pump. Check and clean or replace pump if necessary. Clean pipes
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 voltage
	Defective rotor	Change rotor
	Defective motor winding	Change winding
	Damaged thrust bearing	Change 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 the 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 from whom this pump was purchased

2. Preventive maintenance checks

A definite schedule of preventive maintenance inspections should be established to avoid breakdown, serious damage, and / or extensive downtime. The schedule will depend on operating conditions and experience with similar equipment. Below checklist 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 certified electrician to carry out electrical measurements / checking the functioning of control panel

- Taro Submersible pumps do not require regular 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:
- Close the delivery valve and checking the shut-off head generated by pump
- Check the current 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 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 water level in submersible motor. If required, top up with clear and clean drinking water. Do not forget to replace water filling plugs after filling	Do not erect pumpset at the very bottom of the bore hole. Ensure at least 3 m clearance from bottom
Check direction of rotation of motor before coupling it to the pump	Do not operate with NRV and Strainer removed
Use proper size of cable from starter 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 submersible motor cable free end to reduce voltage drop
Connect pump to a starter with single-phase, dry run, and overload protectors	Do not operate pump at shut-off conditions as the temperature of water will rise resulting in overheating of components
Check for 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 loose of fasteners	Do not ground to a gas supply / water line
Check for leakages from motor	Do not lift / lower product using the cable
When the drop cable must be spliced or connected to the motor leads, ensure that the splice is water tight	Do not subject 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 set. Approach the dealer from whom the set was purchased
While coupling the pump and motor, ensure that the key is in place	Do not install pump without checking water level in the motor body
Ensure motor insulation resistance between phases and Earth is greater than 20MΩ	Do not operate pump with very low / intermittent discharge. In such cases throttle the discharge to avoid dry running

Do's	Don'ts
If a plastic well casing is used in your installation, ground the metal well cap or well seal	Do not perform frequent megger tests on the winding as the winding insulation can weaken
When not in use, run the pump at least a few minutes a day	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

- Submersible pumps are supplied from factory in proper packing in which they should remain until they are ready to be installed
- The product should be stored in a closed, dry, and well-ventilated room
- Do not store the products under direct sunlight
- Handle pumps with care and do not expose product to unnecessary impact and shock
- 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 rotating parts before use
 Caution	After a long period of storage, the pump should be inspected before it is put in operation. Ensure impeller can rotate freely
 Caution	The unit has water lubricated journal and thrust bearings and must never be run dry. Starting the pumpset 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

P.B.No. 5303,
Mettupalayam Road,
Coimbatore - 641 029, India

1800-102-8888
www.taropumps.com
info@taropumps.com

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Texmo Industries
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