Eight Inch Borewell Submersible Pump Sets

Instruction & Operating Manual

Taro™ Pumps

Texmo Industries
Est. 1956

OMBW006A

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Table of Contents

1. Introduction

Thank you for choosing a quality product manufactured by Texmo Industries. We request you to read this manual carefully to ensure that the system you have purchased will be operated correctly.

This manual is intended to provide you with information on your product and information on installation and operation. You will also find information on how you could contact Texmo Industries, should you need further information or help and support.

2. Warranty information

Please refer to your warranty card or visit **www.taropumps.com** for more information on your warranty.

3. Complying with standards

IS 694: Polyvinyl Chloride insulated unsheathed / sheathed cables / cords with rigid and flexible conductor for rated voltages up to 450/750 V
IS 3043: Code of Practice for earthing: Specifications
IS 8034: Submersible Pumpsets: Specifications
IS 9283: Motors for Submersible Pumpsets: Specifications

4. Contents of the packing box

Based on model you have purchased, your Borewell Submersible is packed along with instruction manual and warranty card in either a corrugated box or in a wooden crate.

5. Information about your pump

Taro Borewell Submersible pumpsets are manufactured using high quality raw materials and components using state-of-the-art manufacturing facilities. Taro Borewell Submersible pumpsets will give trouble-free performance if they are properly installed and maintained. Prior to installation, read this manual thoroughly and follow instructions for installation and maintenance of our submersible pumpset so as to ensure reliable operation.

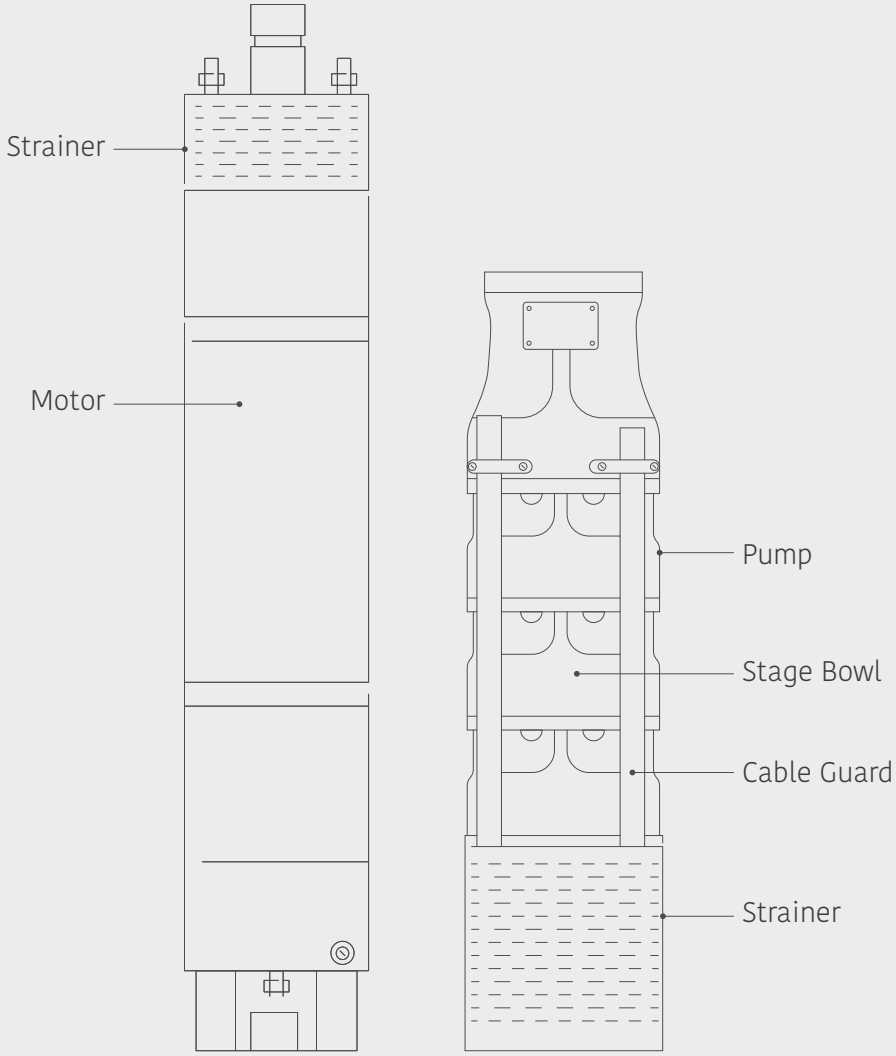
Applications include farm irrigation (Flood / Sprinkler / Drip), domestic, and community water supply, water supply to high-rise buildings, housing complexes, bungalows, industries, cattle and poultry farms, irrigation of farms, dairies, cooling water circulation systems, firefighting systems, and fountains.

The submersible pumpset should be installed by technically qualified personnel in compliance with national and local electrical codes and as per our instructions in order to avoid electrical shocks, unsatisfactory performance, and / or equipment failure.

6. Schematic drawing

View of a 8 inch Submersible Pump Set is shown below in Fig. 1:

Fig. 1 View of 8 inch Submersible Pump Set



7. Key specifications & features

Standard Specification of 8 inch Borewell Submersible and 8 inch pump with 6 inch submersible motors are shown below in TABLE 1:

Phase and Power	Three-Phase: 7.5 - 50 HP
Motor Type	Wet
Starting method	7.5HP: DOL Above 7.5HP: SD
Operating Voltage	350 – 440V
Frequency	50 Hz
Speed	2850 rpm
Duty	S1 Continuous
Max. Fluid Temperature	33^0C
Impeller Type	Radial / Mixed
Cable	3 Core PVC Insulated flat cable

Product Performance Specification

Texmo Industries has a wide variety of 8 inch Borewell Submersibles to meet your requirements. Please consult our sales team / your nearest dealer to meet your specific requirements.

Key features: Motor

- The motor houses water-lubricated journal and thrust bearings
- Motor is filled with a mixture of pure clean water mixed with anti-corrosive liquid for improved motor life
- The motor houses water-lubricated journal and thrust bearings
- Designed for wide voltage operation
- The stator winding is water cooled and is made from PVC-insulated copper wire for 8 inch pump with 6 inch motor, the stator winding made from poly-wrapped copper wire
- High grade carbon thrust bearing enables reliable operation
- Winding overhang protector provided to ensure coil life
- Oil seal and sand guard is provided to prevent sand entry
- For longer life, the stationary bush of the journal bearing is made from LTB-4/Carbon while the rotating sleeve is made from Stainless Steel
- Motors are fitted with copper rotors
- Easily re-windable squirrel-cage motor
- High quality seal rings and sand guard to protect motor from sand entry
- Equipped with rubber diaphragm to compensate thermal expansion of water

Key features: Pump

- Smooth surface finish achieved by advanced manufacturing practices resulting friction free flow inside the pump
- Dynamically balanced impellers for long life
- Special nitrile rubber bearing bushes for high wear resistance
- Built-in NRV with low head loss design

- Pumps fitted with cast steel impellers
- Bowl cast in C.I. FG 200 A for better resistance of sand erosion
- Stainless steel shafts

Strainer

- To prevent the ingress of pebbles into the intake during pumping, a Stainless Steel strainer is wrapped around the inlet bracket and cable box

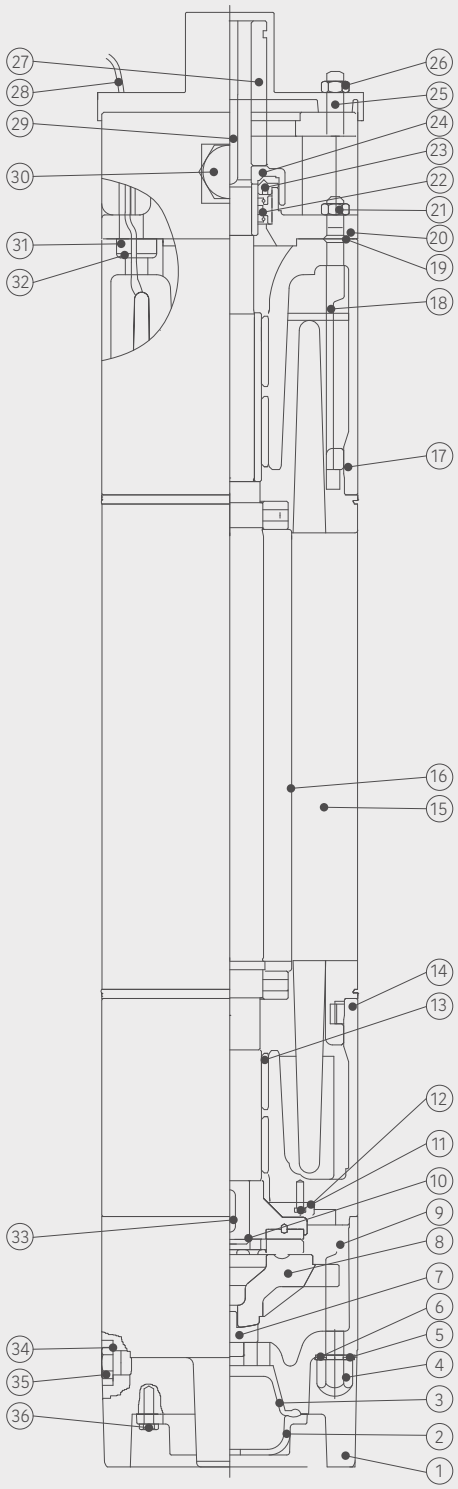
Key features: Wiring Harness

- All submersible motors are provided with 3-core PVC-insulated flat cable of length 3 metres

8. Cross-section view

Cross-section view of Three Phase 8 inch Submersible Motor is shown below in Fig. 2:

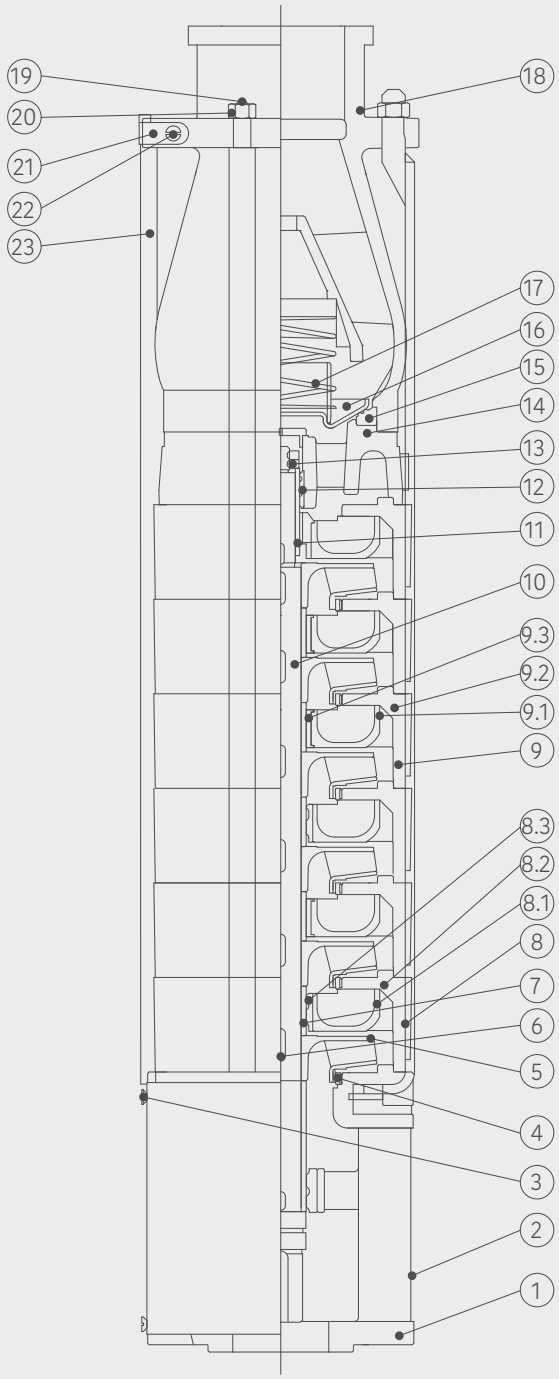
Fig. 2 Cross-section view of 8 inch three phase submersible motor



No.	PART NAME
1	Motor Base
2	Diaphragm cap
3	Diaphragm
4	Cap Nut
5	Washer (Fibre)
6	Washer (SS)
7	Locator
8	Thrust Bearing Assembly
9	"T" Bolt – Bottom
10	Circlip
11	Cheese Head Screw
12	Counter Thrust Bearing Ring
13	Journal Bush
14	Bottom Bearing Housing
15	Stator Housing Assembly
16	Rotor with Shaft
17	Top Bearing Housing
18	"T" Bolt – Top
19	"O" - Ring
20	Cable Box
21	Hexagonal Nut
22	Oil Seal
23	Sand Guard - Stationary
24	Sand Guard - Rotary
25	Stud
26	Hexagonal Nut
27	Coupling
28	3 Core PVC Insulated Cable
29	Coupling Key
30	Plug
31	Cable Gland
32	Oval Washer
33	Key
34	Washer
35	Drain Plug
36	Hex. Headed Bolt

Cross-section view of a Three Phase 8 inch Submersible Radial Flow Pump is shown below in Fig. 3:

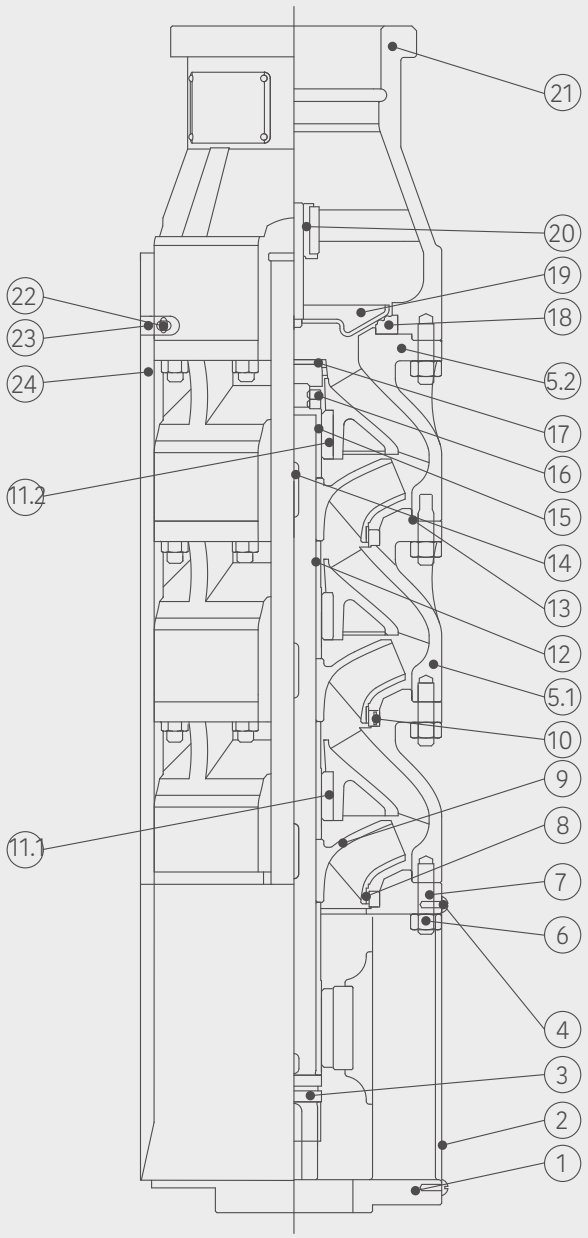
Fig. 3 Cross-section view of 8 inch radial flow submersible pump



No.	PART NAME
1	Inlet Bracket
2	Strainer
3	CSK Screw
4	Inlet Sealing Ring
5	Impeller
6	Key
7	Distance Sleeve
8	Diffuser Housing Assy - Intermediate
8.1	Diffuser
8.2	Diffuser Housing
8.3	Diffuser Bush – Intermediate
9	Diffuser Housing Assy - Stage
9.1	Diffuser
9.2	Diffuser Housing
9.3	Diffuser Bush - Stage
10	Shaft
11	Top Sleeve
12	Pump Bearing Bush / Top Bush
13	Lock Nut
14	Pump Bearing Housing
15	NRV Seat
16	Non-Return Valve
17	NRV Spring
18	Delivery Casing
19	"Tie" Bar
20	Hexagonal Nut
21	Cable Clamp
22	CSK Screw
23	Cable Guard

Cross-section view of a Three Phase 8 inch Submersible Mixed Flow Pump is shown below in Fig. 4:

Fig. 4 Cross-section view of 8 inch mixed flow submersible pump



No.	PART NAME
1	Inlet Bracket
2	Strainer
3	Pump Shaft
4	CSK Screw
5.1	Stage Bowl
5.2	Top Bowl
6	Hexagonal Nut
7	Stud
8	Impeller Wear Ring
9	Impeller
10	Bowl Ring
11.1	Stage Bowl Bush
11.2	Top Bowl Bush
12	Distance Sleeve
13	Stage 'O' Ring
14	Impeller Key
15	PumpTop Sleeve
16	Lock Nut
17	Sand Protective Cap
18	NRV Seat
19	Non-Return Valve
20	Bush-NRV Guide
21	Delivery Casing
22	CSK Screw
23	Cable Clamp
24	Cable Guard

9. Pre-installation requirements

Arrangement for Installation

- Use the services of professional and trained mechanics with experience in erecting borewell submersibles
- Ensure proper safety precautions during installation
- Ensure the availability of electrical power as indicated in TABLE 1

General Installation Precautions

- Open the packaging and note the Serial number and Model for future reference
- Inspect the purchased pump for damage / leakage
- Ensure all fasteners are tightened properly
- Check the inside diameter of the well casing to ensure that it is not smaller than the size of the submersible
- Check depth of borewell to determine the length of piping and power cable required

 Note	If you detect damage or discrepancy in the product, contact the dealer from whom the pump was purchased
 Warning	Do not use this pump for oil, toxic, acidic, corrosive, and / or flammable liquids. Pumping flammable liquids could cause explosion
 Caution	Do not use the pump cable for lifting / lowering the pump

 Caution	Use trained professionals to install the submersible pump. Improper fitment can cause the pump to fall into the bottom of the bore
 Warning	Use a power supply cable that has sufficient rating and has been exclusively provided for the pump
 Warning	Provide proper earthing as improper earthing can cause electrical shock
 Caution	Use a Megger to verify the insulation resistance of the motor. Insulation resistance should be 20MΩ minimum
 Caution	Do not place the submersible pump with its base resting at the bottom of the borewell. There is a possibility for the motor and pump to be buried in the silt which collects at the bottom of the borewell
 Warning	Mount the pump vertically. Never inclined or horizontal

Operation Precautions

 Caution	Do not run the pump dry. It could lead to product damage
 Warning	Switch OFF the power supply and ensure that the impeller completely stops before changing rotation or making any adjustments
 Caution	Do not use this pump for pumping liquid exceeding 33^0C as this may lead to product failure
 Warning	Do not switch ON the pump if there is any human contact with the pumped medium. If any electrical leakage occurs, this could be fatal
 Note	Recommended to use a starter with Single-Phase preventer, overload relay, and dry-run protection

10. Installation procedure

Please follow procedure given below to install the pump and motor.

Caution

The supply voltage should be within -15% to +6% of rated voltage. Water temperature for operation of the pump should not exceed 33^{0}C Failure to observe the precautions given above could cause the pump to malfunction which may lead to current leakage or electrical shock.

Installation:

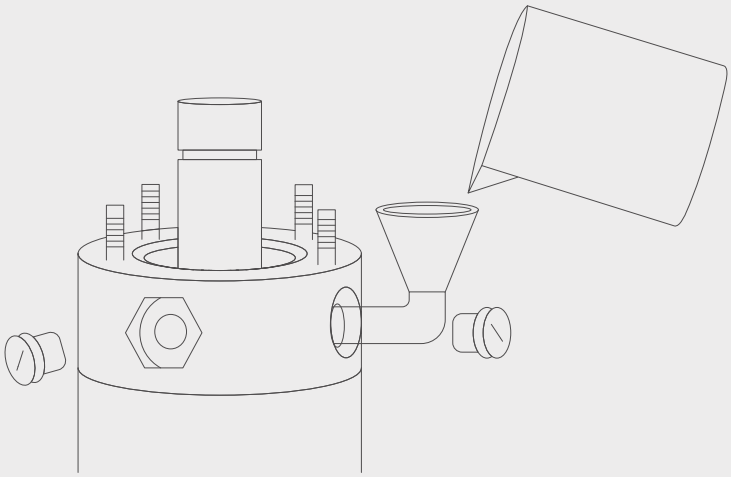
The submersible motor is supplied pre-filled with a mixture of clear cold drinking water and anti-corrosive liquid. The following steps are executed prior to installation:

- ✔ Position the motor vertically on its base.
- ✔ Check if all fasteners are tight. Tighten if required.
- ✔ Two threaded plugs provided on the circumference of the cable box are removed as shown in Fig. 5 below:

Ⓥ Fig. 5 Topping up Submersible Motor with Pure Drinking Water

Check water level in the motor and if required, top up with clear drinking water

Air bubbles, if any, are removed by gently rocking the motor to and fro.



- The two threaded plugs are then re-assembled, ensuring the motor is encapsulated.
- Dry the exterior of the motor and check thoroughly for water leakage.
- If there is no leakage, the motor is now ready for coupling with the pump and then installation.
- Place the motor key in the motor shaft keyway and then slide the coupling over the motor shaft until it rests on the sand guard.

Checking Insulation Resistance

- Before submerging the unit, measure the Insulation Resistance using a Megger of 500 VDC
- Ensure contact points are clean
- Connect the measuring cable to the ground conductor
- Connect the other measuring cable to every core of the motor cable in succession
- Ensure that the insulation resistance, as shown on the Megger, is a minimum of 20MΩ

Waterproofing the Submersible Motor Cable - Supply Cable Joint

Danger

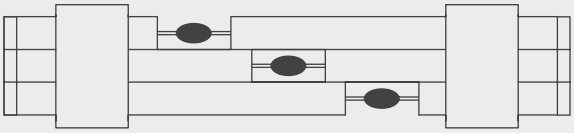
Hazardous voltage will cause death, serious injury, electrocution.
Disconnect all power before working on this equipment and that it cannot be accidentally switched ON.

- Submersible Motors are supplied with a 3-core PVC-insulated flat cable of length 3 meters
- The free end of the 3-core cable of the motor needs to be connected to the supply cable from the control panel
- As this joint is always nearly submerged in water, the joint needs to be waterproof.

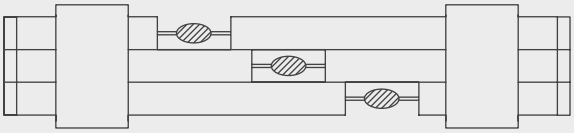
Refer the sequence shown in Fig. 6 below for insulating the cable joint for under water application:

Procedure for joining and insulating the 3 core conductors

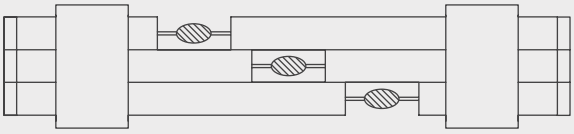
Step 1: Soldering / knot the copper strands



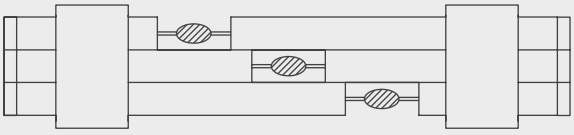
Step 2: Layer 1 - 1st layer of virgin rubber insulation



Step 3: Layer 2 - 1st layer of PVC insulation tape



Step 4: Layer 3 - 2nd layer of virgin rubber insulation



Step 5: Layer 4 - 2nd layer of PVC insulation tape

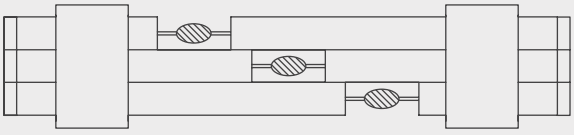
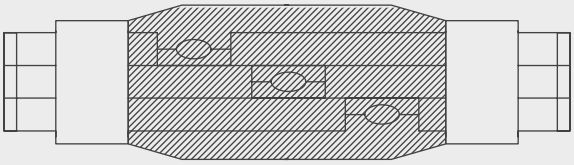


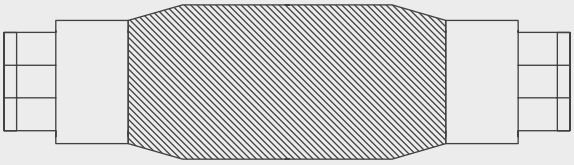
Fig. 6 Cable Joint for Under Water Application

Proedure for joining and insulating the cable joint for under-water cable

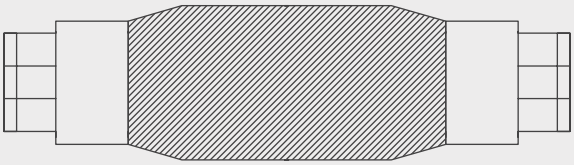
Step 6: Layer 1 - 1st layer of virgin rubber insulation



Step 7: Layer 2 - 1st layer of PVC insulation tape



Step 8: Layer 3 - 2nd layer of PVC insulation tape



Checking direction of rotation of Motor

Danger

Hazardous voltage will cause death, serious injury, electrocution.
All electrical work must be performed by an authorized electrician in compliance with local electrical equipment standards & internal wiring codes.

- After waterproofing the joint connecting the submersible motor cable and supply cable, check if the direction of rotation of the motor shaft matches the direction marked on the visible cable box top face.
- The direction of rotation is counter-clockwise from the motor shaft end.
- Connect free ends of the cable to starter and energize the motor for a second or two.
- For added protection, continuously pour clean water over the sand guard to remove heat generated.
- Check the direction of rotation of the motor shaft.
- If the direction of rotation is in the same direction as that marked on the cable box face, the connections are right.
- In case the direction of rotation of the motor shaft does not match the marking on the cable box, interchange any two lead wires at the starter and confirm as before.

Coupling submersible motor to pump

Danger

Hazardous voltage will cause death , serious injury, electrocution.
Disconnect all power before working on this equipment and that it cannot be accidentally switched ON.

To couple the submersible motor and pump, follow the following procedure:

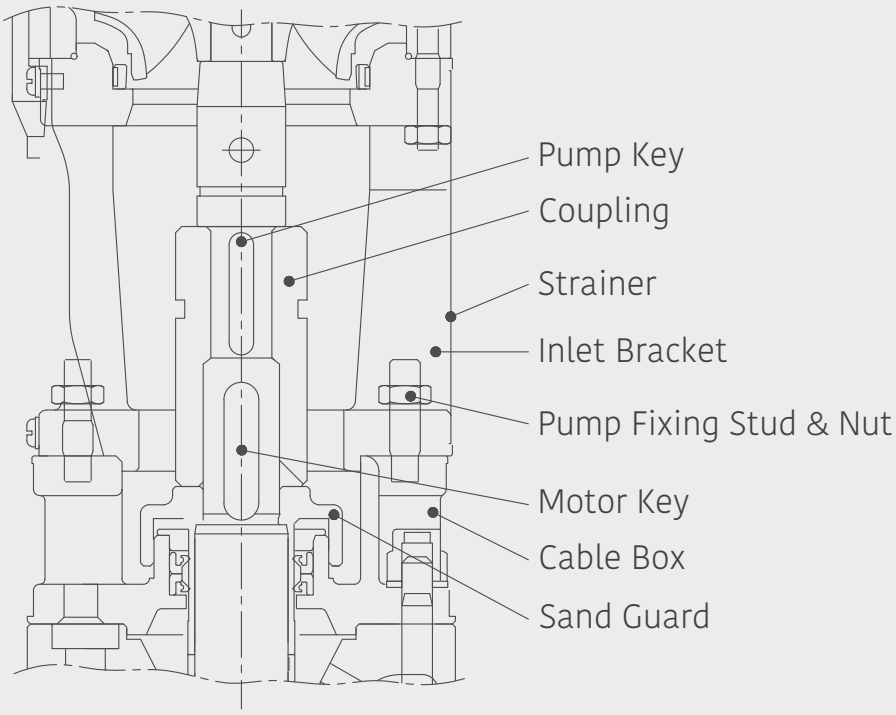
- Tripod with chain block is erected.
- Unpack submersible pump and remove the cable guard and strainer.
- Keep the submersible motor vertical.

- Apply threading compound to the internal thread on the delivery casing and the external threaded portion of the short length delivery pipe to be fitted to the delivery casing.
- Screw the short length of delivery pipe to the delivery casing.

Refer Fig. 7 below for coupling the submersible motor to the pump:

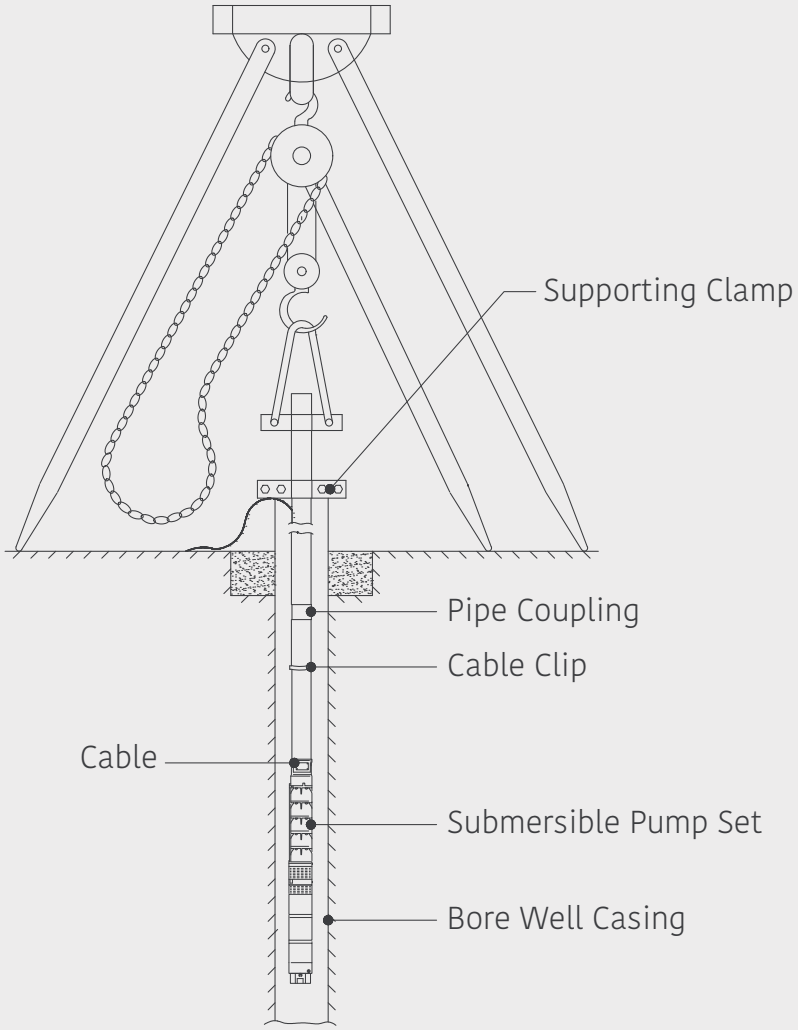
- Locate the pump key in pump shaft keyway.
- Carefully lower pump in such a way that the pump shaft is inserted into the coupling while ensuring that pump shaft key is aligned with keyway in the coupling.
- Ensure that studs on the motor should pass through the holes in the bottom portion of the inlet bracket and that the face of inlet bracket rests on top of the motor seating face.
- Using hexagonal nuts, tighten inlet bracket to cable box of the motor.
- Check the play by lifting the coupling with pump shaft.
- Now fit the cable guard and strainer back in position.

Ⓥ Fig. 7 Motor and Pump assembly with Coupling



Fit the supporting clamp to the delivery pipe and suspend the submersible pump from the chain block (Refer Fig. 8 below)

Fig. 8 Typical tripod stand for lowering/lifting submersible pump sets



Arrangement for installation

- Use the services of a professional and trained mechanic with experience in erecting borewell submersibles.
- While lowering the pumpset, ensure the cable does not get damaged.
- Use cable clips to keep the cable as close as possible to the pipe.
- Ensure that the suspended submersible pump has a secondary support to prevent the set from falling to the bottom of the borewell.

Electrical installation

- Check the power supply voltage and frequency and compare with the product requirements specified on the nameplate.
- Observe relevant EB regulations while providing power supply to the motor.
- Ground the Submersible Motor.
- Ensure the joint is waterproof as the cable joint is submerged in water.
- The cable must not be coiled if it is of extra length. Any excess should be cut off before the connections are made.
- Connect the cable properly to the starter terminals.

Starter

Warning

Failure to use correct starting equipment and overloads may damage your Submersible Motor. This damage may not be covered by warranty.

It is recommended that the Starter shall incorporate the following:

- Contactors of sufficient current ratings with overload relay.
- Over voltage and under voltage protection.
- Phase failure protection.
- Dry-run preventer.
- Ammeter and Voltmeter to display the current and voltage.

Cable Lead Wire Connection to Starter

Star delta starter

Cable 1	Terminal	Cable 2	Terminal
Red	U1	Red	U2
Yellow	V1	Yellow	V2
Blue	W1	Blue	W2

Direct online starter

Cable	Terminal
Red	U
Yellow	V
Blue	W

Cable Selection

Refer TABLE 2 for the selection of cables from Starter to Submersible Motor:

Submersible Cable Selection Chart (For 415 V, 50 Hz Ac power supply)

FL Current (Amps)	Motor Rating		Cable size in Sq.mm								
			1.5	2.5	4.0	6.0	10.0	16.0	25.0	35.0	50.0
	KW	HP	Maximum Length of Cable in Metres								
2.75	0.75	1	262	437	705						
3.25	1.1	1.5	222	370	596	895					
4.5	1.5	2	160	267	430	646					
6.5	2.2	3	111	185	298	447	773				
8.5	3	4	84	141	228	342	590	933			
10	3.7	5	72	120	193	290	502	793			
12	4.5	6	60	100	161	242	426	661			
14.5	5.5	7.5 DOL		82	133	200	346	547			
14.5	5.5	7.5 SD	86	143	231	347	600	947			
18	6.7	9	89	115	186	279	483	763			
19.5	7.5	10	69	106	172	258	446	704			
25	9.3	12.5	64	83	134	201	348	549	852		
29	11	15		71	155	173	300	473	735		
34	13	17.5			98	148	256	404	626	822	
39	15	20			87	129	223	352	546	769	
43	18.5	25			78	117	202	319	495	697	
52	22.5	30				96	167	264	409	577	828
60	26	35					145	229	355	500	717
65	30	40					133	211	327	461	662

Notes:

- Table shows maximum allowable length of submersible cable for the given full load current where site voltage is normal ie 415 V
- For other voltages, the cable size is to be selected for the length which is calculated as follows
- Calculated length = (415 / Actual voltage) x Actual length
- 7.5 HP and above are SD motors. For these motors, the actual current is $1/\sqrt{3}$ the FL current
- The cable size and maximum allowable length are arrived at accordingly

Electrical wiring work

 Warning	All electrical work must be performed by an authorized electrician in compliance with local electrical equipment standards and internal wiring codes. Improper wiring can lead to current leakage, electrical shock, or fire. Provide a dedicated earth leakage circuit breaker, Single Phase preventer, dry-run preventer, and overload preventer for the submersible pump. Failure to follow this warning can cause electrical shock.

Operate well within the capacity of the power supply and wiring.

Earthing

 Warning	Be sure to install the ground wire securely. Failure to observe this precaution could damage the pump and cause current leakage, which may lead to electrical shock.
 Caution	Do not connect the ground wire to a gas pipe, water pipe, lightning rod, or telephone ground wire. Improper grounding could cause electrical shock.

Connecting the power supply

 Caution	Observe relevant Electricity Board regulations while powering up the pumpset.
 Warning	Before inserting the power plug or connecting the wires to the terminal board, make sure the power supply is properly disconnected. Failure to do so may lead to electrical shock, short or injury caused by the unintended starting of the pump.
 Caution	Do not use damaged cables, power plugs, or loose power outlets. Failure to observe this precaution could lead to electrical shock, short circuit, or fire.

Precautions during installation

 Warning	When installing the pump assembly, ensure that it is suspended properly from the tripod stand or else the pump will fall into the bottom of the bore and which is difficult to retrieve. Provide backup suspension while lowering the pump
 Caution	When installing or moving the pump, never suspend the pump by the cable. Doing so will damage the cable, which may cause current leakage, electrical shock, or fire.

Start-up

- When the pump has been connected correctly, direction of rotation confirmed, and is submerged under water, it should be started with the gate valve closed off to approximately 1/3 of its maximum volume of water.
- If there are impurities in the water, the valve should be opened gradually as the water becomes clearer.
- The pump should not be stopped until the water is clean, as otherwise the pump parts and the non-return valve may choke up.
- As the valve is being opened, the drawdown of the water level should be checked to ensure that the pump always remains submerged.
- The dynamic water level should always be above the inlet bracket.
- If the borewell yield is less than the discharge of the pump it is recommended to have a dry run protection device
- If the water level approaches the inlet bracket, there is likelihood of air being drawn into the pump along with water. This can reduce the life of hydraulic components and damage the pump

 Warning	If you find any abnormalities like vibration, noise, smell, etc. from the pump during trial operation, switch OFF the pump and contact the dealer from whom this pump was purchased.

11. 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 technicians with proper tools and equipment. Common faults, root causes for these, and suggested actions are provided in TABLE 3 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 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 over load relay
	ELCB has tripped out	Reset the ELCB, If trips again check the insulation resistance of the motor

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	Interchange the supply connections of any two phases
	Increase in drawdown	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, bearing 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 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 valves 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
	The pump is defective	Repair/Replace 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 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 and oil 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.

12. 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	Utilize the services of certified electrician to carry out electrical measurements/ checking the functioning of 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 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 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.

13. Do’s and don’ts

Do’s	Dont’s
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 pumpset at the very bottom of the bore hole. Keep at least 3 meters of 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 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 the submersible motor cable free end to reduce voltage drop.
Connect the pump to a starter with single-phase, 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 watertight.	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.
While coupling the pump and motor, ensure the key is in place.	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	Dont’s
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.

14. 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.

15. 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 under 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 while handling the pump to ensure that misalignment does not occur due to bending.

 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 before use.
 Caution	After a long period of storage, the pump should be inspected before it is put in to operation. Ensure the 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.

16. Company contact information

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

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

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

Taro™ Pumps

Texmo Industries
Est. 1956