

Vertical Openwell Submersible Monoblocks

Instruction &
Operating Manual





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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 3043 Code of Practice for Earthing : Specification
IS 8034: Submersible pumpsets: Specification
IS 9283: Motors for Submersible pumpsets: Specification
IS13730: Specifications for particular types of winding wires
IS 14220: Openwell Submersible pumps: Specification

4. Contents of the packing box

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

5. Information about your pump

The discharge of a pump depends on the static suction lift. During summer, the static suction lift increases due to drop in water levels and this results in reduced discharge. This will require frequent lowering of the pump to reduce the static suction lift. During monsoons, water levels can significantly rise. Under such conditions, there is a possibility that the pump can get submerged, resulting in the motor getting damaged. Such issues are overcome by the use of an Openwell submersible pump as it operates submerged in water.

Taro Vertical Openwell Submersibles are manufactured using high quality raw materials and components using state-of-the-art manufacturing facilities and will give trouble-free performance if properly installed and maintained. The TVSM RC Series is a compact pumping system with the pump and motor mounted on a common shaft. As a coupling is not required, alignment of the pump and motor is assured. Installation is therefore quick and easy. An improved version, TVSM S Series, has also been introduced with separate shafts for the motor and pump for which the power is transmitted from the motor shaft to the pump shaft

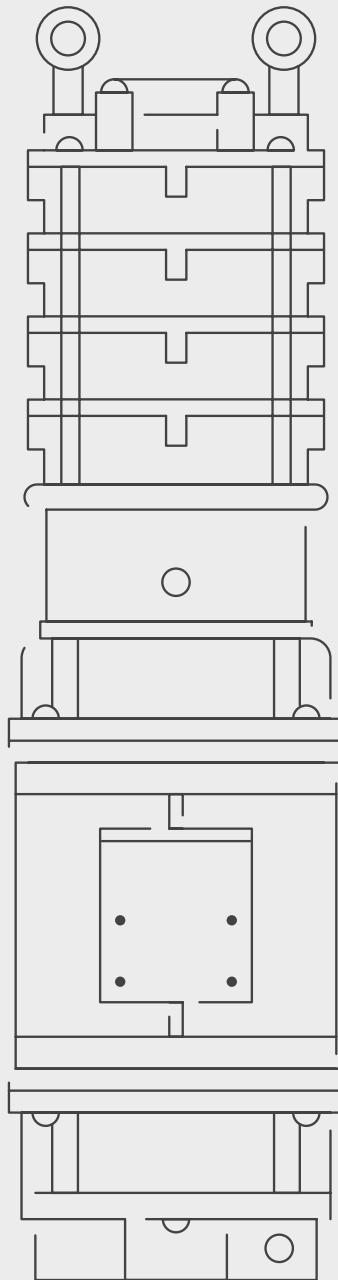
through a coupling. The Vertical Openwell Submersibles do not require frequent maintenance as the packing rope and grease-lubricated deep groove ball bearings, found in monoblocs, are replaced by oilseals and water-lubricated journal bearings respectively. Vertical Openwell Submersibles find application for Irrigation of farms, domestic water supply, cooling water circulating systems, fountains, dairies, water supply to high rise buildings, housing complexes, bungalows, cattle and poultry farms.

Prior to installation, read this manual thoroughly and follow the instructions for installation and maintenance of our Vertical Openwell Submersible to ensure reliable operation. The 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 Openwell Submersible Pump Set is shown below in Fig. 1:

Fig. 1 View of Openwell Submersible Pump Set



7. Key specifications & features

Standard specification of Openwell Submersible is shown below in TABLE 1:

Power	3.0 – 20.0 HP
Phase	3
Motor Type	Squirrel-cage Induction Motor – Wet type
Starting method	DOL: 3.0 – 7.5 HP
	SD: 10.0 – 15.0 HP
Operating Voltage	Premium: 350 - 440 V Power: 300 - 400 V
Frequency	50 Hz
Speed	2850 rpm
Duty	S1 Continuous
Max. Fluid Temperature	33°C
Impeller Type	Radial

Key features: Motor

- ✓ Designed for wide voltage operation
- ✓ Low watt loss stampings used in motors
- ✓ The stator winding is water cooled and is made from poly-wrapped copper wire
- ✓ The motor houses water-lubricated journal bearings to take up the radial loads
- ✓ A water-lubricated thrust bearing is provided to take up the thrust load generated by the rotating impeller

- ✓ A water-lubricated counter thrust bearing is provided to limit the movement of the shaft when the pumpset is switched OFF
- ✓ The copper rotors are dynamically balanced and induction brazed
- ✓ Motors fitted with copper rotor
- ✓ The water-filled motor is provided with two single-lip oilseals to prevent the pumped medium from entering the motor
- ✓ To prevent pumped medium from entering the seal chamber, a sand guard is provided

Key features: Pump

- ✓ The impellers are dynamically balanced
- ✓ A strainer fitted on the inlet bracket, prevents the entrance of large size debris / pebbles into the pump

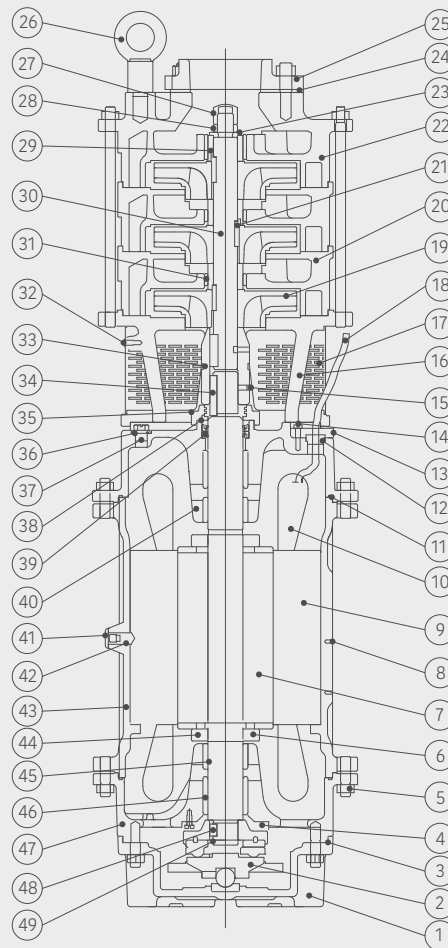
Electrical Connection

- ✓ Vertical Openwell Submersible to be connected to a direct online starter is provided with a single 3-core PVC flat cable
- ✓ Vertical Openwell Submersible to be connected to a Star-delta starter is provided with two separate 3-core PVC flat cables

8. Cross-section view

Cross-section view of a Three phase vertical openwell submersible (TVSM-S Series) is shown below in Fig. 2:

Fig. 2 Cross-section view of vertical openwell submersible ‘TVSM S’ series



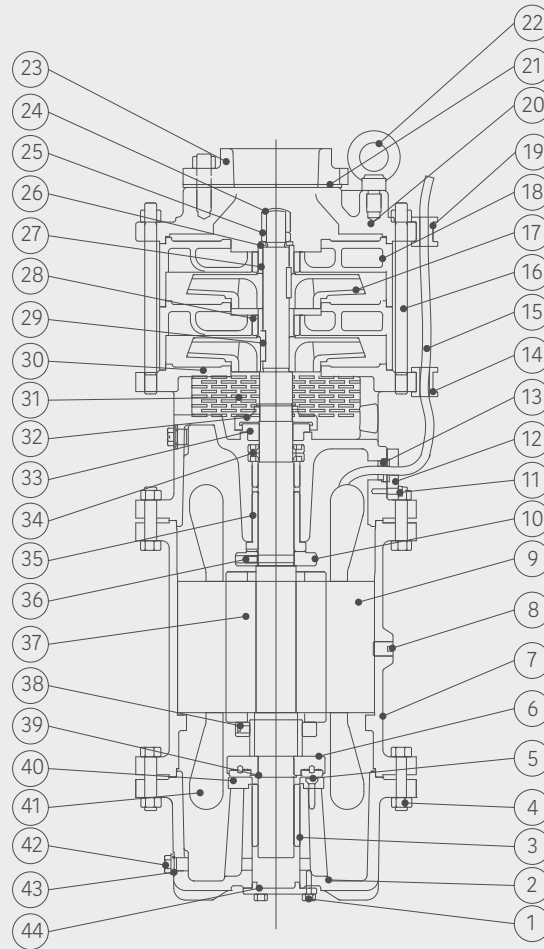
No.	PART NAME
1	Motor Base
2	Carbon Thrust Unit Assy
3	Gasket - Circular
4	Counter Thrust Ring
5	Stud & Hex. Nut
6	Rotor B.Collar
7	Rotor With Shaft
8	Hammer Drive Screw
9	Stator Stack
10	Coil
11	O-Ring
12	Cable Gland Bush
13	Cable Gland
14	C.H Screw
15	Hex.Socket Set Screw
16	Inlet Bracket
17	Strainer

No.	PART NAME
18	Pvc Insulated Cable
19	Impeller
20	Diffuser Housing
21	Parallel Key
22	Delivery Chamber With Integral Diffuser
23	Washer
24	Gasket-Profile
25	Flange-Profile
26	Eye Bolt
27	Hex. Dome Nut
28	Hex. Lock Nut
29	Sleeve
30	Pump Shaft
31	Bush
32	Screw Pan Philip Comb Washer Head

No.	PART NAME
33	Stepped Coupling
34	Parallel Key
35	Sand Guard (NBR + SS)
36	O-Ring
37	Drain Plug
38	Sand Guard (SS)
39	Oil Seal
40	Top Bush Housing
41	Cap
42	Hex.Socket Set Screw
43	Motor Body
44	Hex.Socket Set Screw
45	Sleeve
46	Bush
47	Bottom Bush Housing
48	Parallel Key
49	Circlip

Cross-section view of a Three Phase vertical openwell Submersible (TVSM-RC Series) is shown below in Fig. 3:

Fig. 3 Cross-section view of vertical openwell submersible ‘TVSM RC’ series



No.	PART NAME
1	Hexagon Head Bolt
2	Motor Base
3	Bush
4	Hex. Bolt & Nut
5	CSK Head Hex.Socket Screw
6	Thrust Collar
7	Motor Body
8	Hex.Socket Set Screw
9	Stator Stack
10	CT & BG Collar
11	C.H Screw
12	Cable Gland
13	Cable Gland Bush
14	Cable Protector
15	PVC Insulated Cable

No.	PART NAME
16	Stud
17	Impeller
18	Diffuser Housing Assy
19	Cable Clamp
20	Delivery Chamber
21	Gasket-Profile
22	Eye Bolt
23	Gasket-Profile
24	Hex. Dome Nut
25	Hex. Lock Nut
26	Washer
27	Sleeve
28	Bush
29	Parallel Key
30	Suction Chamber

No.	PART NAME
31	Strainer
32	Sand Guard (NBR)
33	Sand Guard (Arnite)
34	Oil Seal
35	Thrust Bush
36	Hexagon Socket Set Screw
37	Rotor With Shaft
38	Balancing Collar
39	Circlip
40	Thrust Pad
41	Coil
42	Drain Plug
43	O-Ring
44	Rear Cap

9. Pre-installation requirements



Arrangement for Installation

- ✓ Engage a professional and trained mechanic with experience in erecting Vertical Openwell Submersibles
- ✓ Ensure proper safety precautions during installation
- ✓ Ensure that a fairly level surface is available at the bottom of the well for mounting the pumpset
- ✓ While installing the pumpset, ensure that it is not subject to shock loads which can damage the parts
- ✓ Use the eye bolts for lifting / lowering the pumpset using appropriate lifting equipment
- ✓ Ensure the availability of Three-phase power

General Installation Precautions

- ✓ Open the packaging and note down the serial number and model for future reference
- ✓ Ensure all fasteners are tightened properly
- ✓ Use prescribed pipe sizes as mentioned on the product nameplate
- ✓ Use an check valve fitted on the delivery line when the pumpset has high static delivery heads
- ✓ Use a power cable, without joints, from the pumpset to the starter. It is not recommended to use a power cable with large number of joints as this can result in a significant voltage drop
- ✓ Ensure availability of a starter with inbuilt single-phase preventer, overload protection and high-voltage and low-voltage protection
- ✓ The motor is supplied dry. Fill with pure drinking water
- ✓ In case of rapid rise of water levels during the rainy season, provide a throttle valve in the delivery pipeline
- ✓ It is recommended to place the pumpset on a level base to prevent the pump and piping from getting stressed
- ✓ Check the level of silt at the bottom of the well. De-silt if necessary

 <p>Note</p>	<p>If you detect damage or discrepancy in the product, contact the dealer from whom the pump was purchased</p>
 <p>Warning</p>	<p>Do not use this pump for oil or toxic, acidic, corrosive, and flammable liquids. Pumping flammable liquids could cause explosion</p>
 <p>Caution</p>	<p>Use the eye bolt for lifting / lowering the pumpset. Ensure suitable precautions are taken while lifting and lowering the product</p>
 <p>Caution</p>	<p>Use trained professionals to install the pumpset</p>
 <p>Warning</p>	<p>Use a power supply cable that has sufficient rating. Factor in low-voltage operation</p>
 <p>Warning</p>	<p>Provide proper earthing. Improper earthing can cause electrical shock</p>
 <p>Caution</p>	<p>Use a Megger to verify the insulation of the motor. Insulation resistance should be 20MΩ minimum</p>
 <p>Caution</p>	<p>Do not run the pumpset dry as it contains water-lubricated bearings and oil seals</p>
 <p>Warning</p>	<p>Mount the pump with its axis vertical</p>
 <p>Note</p>	<p>It is recommended to use a starter.</p>



 <p>Note</p>	<p>Check the bottom of the well. In case there is mud accumulated at the well bottom, de-silt the well.</p>
 <p>Note</p>	<p>Periodically de-silt the bottom of the well so that the pumpset rests on the rocky bottom</p>

Operation Precautions

 <p>Warning</p>	<p>Switch OFF the power before working on electrical lines</p>
 <p>Caution</p>	<p>Do not use this pump for pumping liquid exceeding 33°C as this may lead to product failure</p>
 <p>Warning</p>	<p>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</p>
 <p>Caution</p>	<p>The pumpset has water-lubricated journal and thrust bearings and therefore shall not be run dry. Starting of the pumpset without water must be strictly avoided as it will cause damage to the bearings and oil seals</p>
 <p>Note</p>	<p>During monsoons, the pump will run with higher flooded suction resulting in the pump running with higher discharge. This results in increase in the current drawn being higher than that specified on the nameplate. Fit a gate valve in the delivery line to throttle the discharge till the current is lower than that specified on the nameplate</p>
 <p>Caution</p>	<p>Ensure proper direction of rotation of the pump on powering up</p>

10. Installation procedure

Please follow the below procedure to install the Vertical Openwell Submersible.

 Caution	<p>The supply voltage should be within the specified voltage range.</p> <p>Water temperature for operation of the pump should not exceed 33°C.</p> <p>Failure to observe the precautions given above could cause the pump to malfunction and may lead to current leakage or electrical shock</p>
 Warning	<p>If you find any abnormalities like vibration, noise, smell, etc. from the pumpset during trial operation, switch OFF the pumpset and contact the dealer from whom this pump was purchased.</p>

Installation:

The following steps are executed prior to installation:

- ✓ Open the filling plugs and fill the motor with pure drinking water
- ✓ Measure the insulation resistance using a megger of 500 VDC
- ✓ Ensure contact points are clean
- ✓ Check the direction of rotation
- ✓ 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
- ✓ Ensure a level surface for mounting the pumpset
- ✓ Use pipe size to match the flange mounted on the delivery chamber (detail also provided on nameplate)
- ✓ Refer Fig. 4, shown below, for installation of Vertical Openwell Submersible at the bottom of a well

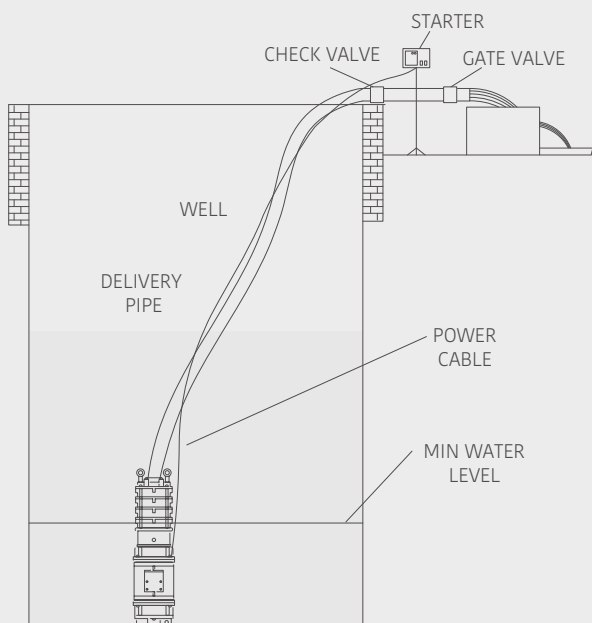
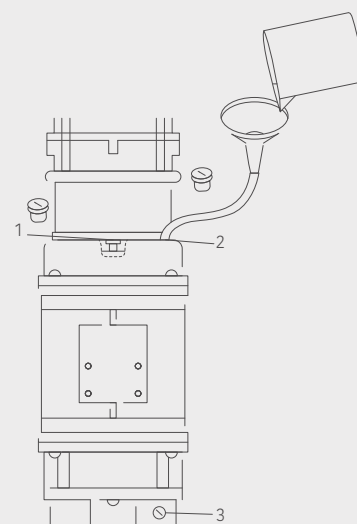


Fig. 4 Installation of vertical openwell submersible

Prior to installation, unscrew the Brass Plugs 1 and 2, fitted on the Top Bush Housing, as shown in Fig. 5 below. Fill the motor with pure drinking water, as illustrated below. Gently rock the motor to release air bubbles and further top up if necessary. Then replace the two plugs.

Fig. 5 Filling the motor of TVSM with pure drinking water

The Brass Plug 3, located on the motor base, is used for draining the water from within the motor. Ensure all three brass plugs are tightened to prevent leakage of water from within the motor. Check for leakages before lowering the pumpset.



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.



Direct online models are supplied with a single 3-core PVC-insulated flat cable, each 3 meters long



The free end of the 3-core cable of the motor needs to be connected to the supply cable from the starter

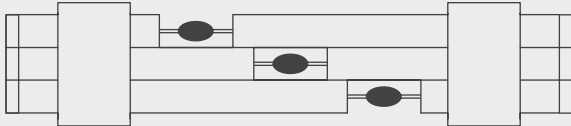


This cable needs to be connected to the cable from the starter. As such, this joint is always nearly submerged in water and so needs to be waterproof

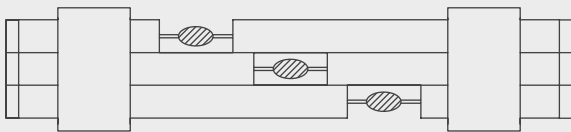
Refer the sequence shown in Fig. 6 below for insulating the cable joint for under water application:

Procedure for joining and insulating the 3 core conductors

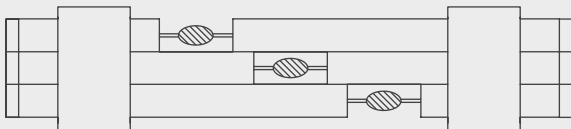
Step 1: Soldering / knot the copper strands



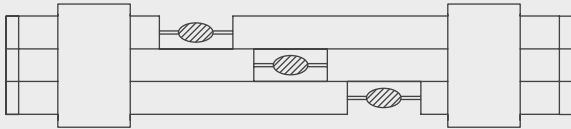
Step 2: Layer 1 - 1st layer of virgin rubber insulation



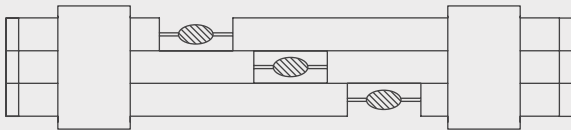
Step 3: Layer 2 - 1st layer of PVC insulation tape



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

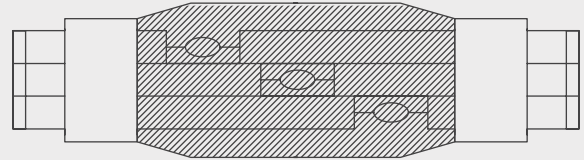


Step 5: Layer 4 - 2nd layer of PVC insulation tape

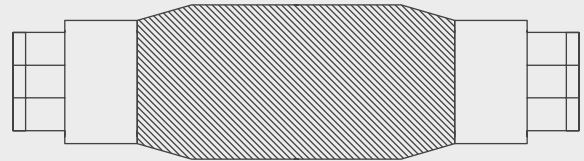


Proedure for joining and insulating the cable joint for under-water cable

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

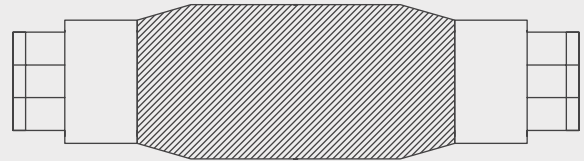


Fig. 6 Cable Joint for Under Water Application



Star-delta models are provided with two separate 3-core PVC-insulated flat cables, each 3 metres long



Repeat the procedure for both 3-core PVC flat cables from the motor to the two cables from the starter

Cable lead wire connection to starter

Direct online starter

Cable	Terminal
Red	U
Yellow	V
Blue	W

Star delta starter

Cable 1	Terminal
Red	U1
Yellow	V1
Blue	W1

Cable 2	Terminal
Red	U2
Yellow	V2
Blue	W2

Cable Selection

The pumpset is provided with a 3m long 3-core PVC-insulated flat cable emerging from the motor, one cable for DOL versions and two cables for SD versions. 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 = $(415 / \text{Actual voltage}) \times \text{Actual length}$
- 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

Checking direction of rotation of Vertical Openwell Submersible



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 and internal wiring codes.



Connect the pumpset to the starter, power up the pumpset and observe the discharge from the pump



Next interchange any two phase wires, power up the pumpset and observe the discharge from the pump



In case the discharge is more after interchanging any two phase wires, then the impeller is rotating in the correct direction



If the discharge after interchanging any two phase wires is lower, then the previous phase wire connection was correct. Now revert back to the old phase wire connection



Never run the pump dry

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



As far as possible, do not use multiple joints in the electrical cabling while connecting the starter to the pumpset



Ground the pumpset using the two earth screws provided on the delivery chamber



Ensure electrical joints, if any, are properly and adequately insulated



Connect the cable properly to the starter terminals to avoid loose connections



Factor in low-voltage operation while selecting cable size

Electrical Wiring Work



Warning

All electrical work must be performed by an authorised electrician in compliance with local electrical equipment standards and internal wiring codes. Improper wiring can lead to current leakage, electrical shock, or fire.

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

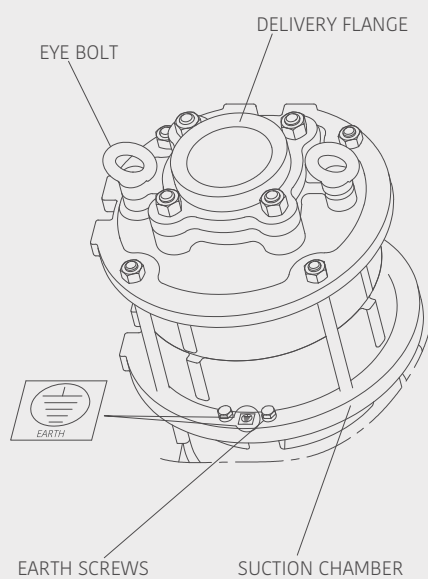


Caution

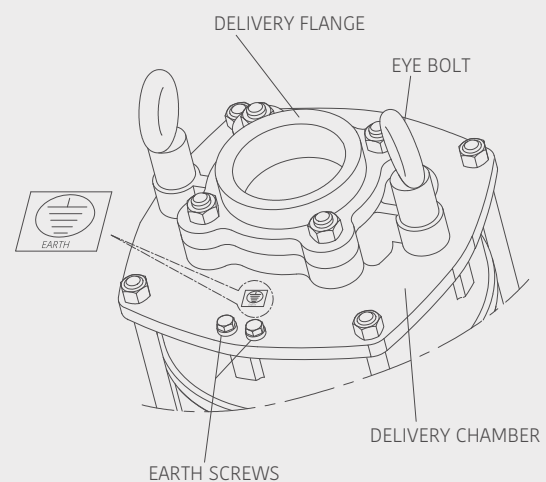
Do not connect the ground wire to a gas pipe, water pipe, lightning rod, or telephone ground wire. Improper grounding could cause electrical shock

Refer Fig. 7(a) and Fig. 7(b), shown below, for location of earth screws on the TVSM-RC and TVSM-S products:

Fig. 7 Location of earth screw






(a) TVSM-RC



(b) TVSM-S

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

11. Basic troubleshooting

Please follow the below procedure to install the Vertical Openwell Submersible.







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 3 below:

Fault	Possible causes	Suggested actions
Pump does not run	No power supply to the motor	Check for availability of power
	Motor coil burnt	Rewind the motor
	Low-voltage operation	Operate in the recommended voltage range
	Motor starter overload has tripped	Reset the motor starter overload. If it trips again, check the voltage
	Pump is jammed	Dismantle the pump and clear the jammed parts
	Blown fuse	Replace fuse
	Loose connections	Tighten the electrical connections
	Pump has been kept idle for a long time	Ensure free rotation of shaft by running the pump for a few minutes at least every alternate day
Less discharge from pump	Low-voltage operation	Check the supply voltage, Operate in the recommended voltage range
	Wrong direction of rotation	Interchange the supply connections of any two phases
	Increased delivery head	Ensure delivery head within specified value

Fault	Possible causes	Suggested actions
Less discharge from pump	Smaller pipe size used when compared to nameplate recommendations	Replace with suggested pipe size
	Discharge pipe internally coated with depositions	Clean the pipe
	Foreign bodies lodged in impellers	Check the impellers and remove the foreign bodies
	The valve in the discharge pipe is partly closed / blocked	Check and clean / replace the valves if necessary
	The check valve of the pump is partly blocked	Check and clean check valve. Replace if necessary
	Impeller is worn out	Check and replace
	Leakage in the pipework	Check and repair / replace piping
Total head developed is too low	Abrasive wear of pump hydraulics due to operation in water of higher sand content or corrosiveness	Change the worn-out pump parts
	Running at low-voltage	Wait for voltage to increase or contact local EB representative
Current consumption in excess	Damage of thrust bearing	Replace the worn out bearing
	Voltage too low	Check the voltage
	Defective rotor	Change the rotor
	Excessive wear and tear due to rubbing of parts	Service the pump replacing the worn out parts
	Low system head and therefore higher discharge	Throttle the discharge
	Defective thrust / journal bearings	Replace thrust / journal bearing

Fault	Possible causes	Suggested actions
Pump runs rough and noisy	Dry running of pump	Keep pump idle for sometime/reduce the discharge by throttling
	Excessive wear and tear	Service the pump replacing the worn out parts
	Rotor shaft is bent resulting in rotor rubbing against stator bore	Replace rotor shaft
Pump leaks excessively	Gaskets / O-rings damaged	Check and replace gaskets / O-rings
	Pipeline damaged	Check and replace piping
 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 the pumpset as it may lead to severe damage to the pump or injury to personnel. Contact the dealer from whom the pumpset was purchased	
 Caution	<p>If the pumpset runs with unusual noise, stop it immediately. Check</p> <p>(a) the journal bearings for wear</p> <p>(b) rotor outer diameter rubbing against stator inner diameter</p>	



12. Preventive maintenance checks

Precautions to be taken



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.

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. The below checklist does not represent an exhaustive survey of maintenance steps necessary to ensure safe operation of the pumpset.



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 starter

It is good practice to monitor the conditions and performance of the pumpset. Diagnosis may be carried out by checking the following:

- ✓ Close the delivery valve for a few seconds and check the shut-off head generated by the pump. Do not run at shut-off conditions for a prolonged period of time as the water in the pump will get hot.
- ✓ 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.
- ✓ Measure the insulation resistance of the winding to check the condition of the motor.
- ✓ Open the filling plugs and check the level of water inside the motor. Top up, if required, with pure drinking water.
- ✓ Check the level of silt at the bottom of the well and de-silt if necessary.
- ✓ Check the direction of rotation of the pumpset.
- ✓ Check all electrical connections are proper.

13. Do's and don'ts

Do's	Don'ts
Before installation, rotate the shaft to ensure that pump is not jammed	Do not use piping smaller than what is mentioned on the nameplate
Ensure proper earthing is provided	Do not place the pump at the bottom of the well as it can sink in the mud at the well bottom. Ensure the pump rests on a firm surface
Mount the pumpset with its axis vertical on a level surface	Do not have multiple joints on the cable. More the cable joints, more will be the voltage drop
Ensure the pump runs in the right direction	Do not operate the pumpset without strainer as debris can get sucked into the pump and jam it
Rubber gasket assembled on the pumpset does not have a central hole. Cut out the central hole and re-install	Do not use to pump corrosive and flammable liquids
Check all fasteners are tight	Do not earth to a water line or gas line
Use a starter with inbuilt Single-phase preventer, Overload protection and High-voltage and Low-voltage protection	Do not use undersized electric cables between Pump and Starter Panel. Factor in low-voltage usage
In case of high delivery head, use a check valve in the discharge line	Do not place the pump on the bottom of the well if it is not flat
Water levels rise significantly during monsoons. Under such conditions, pumps will operate with higher discharges and therefore higher current. It is advisable to install a flow control valve in the delivery pipeline and throttle the discharge until the current is less than that specified on the product nameplate	Do not use the power cable for lifting / lowering the pump. Use the eye bolts provided on the delivery chamber
In case of current exceeding the nameplate value, provide a throttling valve in the delivery line. Throttle the discharge to bring down the current	Do not keep the pump idle for a long time to prevent jamming of the rotating components. Run the pump for a few minutes every week
Check the drain and filling plugs for tightness before erection	Do not switch off pump while pumping sandy water. Continue to run until clear water flows
Use the two eye bolts provided on the delivery chamber for lifting / lowering the pumpset using appropriate equipment	Do not operate the pump at shut-off conditions to prevent the pumpset from getting overheated

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 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 products 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 the product is not subjected to shock loads



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 pumpset is stored, the shaft must be turned by hand at least once a month



Caution

If the pumpset has been stored for more than one year before installation, dismantle the pumpset and check the rotating parts before use. After re-assembly, ensure the impeller can rotate freely when turned by hand



Caution

Oilseals, in back to back configuration, are provided to prevent water from inside the motor from escaping. Do not attempt to run the pump dry. If used to lift water from bore wells, ensure the pump is primed and only then run it

16. Company contact information

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



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