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SHAKTI
PUMPING LIFE

INSTALLATION & OPERATING INSTRUCTIONS

6-8 INCH PREMIUM MOTOR

CE

SHAKTI
PUMPING LIFE

EC DECLARATION OF CONFORMITY

Product Nomenclature : Encapsulated Submersible Motors 6" & 8" Bore Diameter

Model Reference : PREMIUM 150, PREMIUM 200

Intended End Use : For submersible motor to be used for clean water lifting application Conforming to the requirement of the following Europian Directive:

a) Low Voltage Directive - 2006/95/EC

b) EMC Directive - 2004/108/EC

Standards used : EN 60 335-1 and EN 60 335-2- 5

Applied harmonized standard: EN ISO 12100-12-2003

Date of Manufacturer & First CE marking : 10 DEC 2007

Place of Manufacturer : Shakti Pumps India Ltd, Pithampur

Issued at : SHAKTI PUMPS (I) LTD
Pithampur

Marking : CE

The above motor must not be put into service/usuage for other than specified in the instruction Manual on date : 10 Dec 2007

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INSTALLATION AND OPERATING INSTRUCTIONS

SHAKTI PUMPING LIFE

1 ABOUT THIS DOCUMENT

The assembly and operating instructions form an integral part of the encapsulated submersible motor and Describe its safe, intended use in all operating phases.

DOCUMENT RETENTION

⇨ Keep the assembly and operating instructions in the immediate vicinity of the motor

⇨ Hand the assembly and operating Instructions over to every subsequent user of the motor

APPLICATION

• The assembly and operating instructions only apply to the motors described in this booklet

1.1 INSTRUCTIONS AND HIGHLIGHTS

In the assembly and operating instructions we use the following symbols and highlights, for improved Legibility and uniform identification.

• Insulation measuring unit
(this indicates a listing)

• Instructions observed,...
(this indicates a condition)

⇨ Switch off the motor
(This indicates an instruction to take action)

• Motor has stopped
(This indicates the result of the action)

• Immediately switch off the Motor....
(You can see a highlight in bold here)

⚠ **NOTE**

Specifically important information is given here. You should observe this information to ensure correct and safe operation of the motor.

2 SAFETY

This section describes the safety rules which must be observed for the safe use of submersible motors.

Possible sources of danger and the relevant safety measures are listed here.

2.1 INTENDED USE

Shakti submersible motors are only intended for integration with a submersible pump in order to drive the relevant pump under water. They must only be put into use if the machine fulfils the provisions of the applicable directives and statutory provisions.

The submersible motors must only be used in clean, highly fluid media, such as drinking or process water.

The following media are not allowed: air, highly flammable, explosive media and wastewater.

Loss of guarantee and exclusion of liability

Shakti Pumps shall not be liable for the damage resulting from any further, non-intended use. The risk of such use rests solely with the user.

2.2 TARGET GROUP

The electrical system must only be installed by professional staff (qualified electrical engineers or electrical machine technicians).

2.3 GENERAL SAFETY INSTRUCTIONS

The following safety measures must be observed prior to putting the motor into use.

• Do not carry out any other work on the motor other than described in these instructions

• Only use the motor under water (the motor and the short motor cable must be fully submersed)

• Do not implement any changes or conversions to the motor or its electrical connections

• Never open the motor

• Never use the motor in combination with damaged pump units or parts

• Only work on the motor when it is switched off. No work or checks require the motor to be running

• Switch off the power supply to the motor before carrying out any work on it

• Make sure that nobody can switch on the voltage unexpectedly while work is being carried out on the motor

• Never work on electrical systems during a thunderstorm

- Make sure immediately after ending the work that all protective and safety devices have been fitted again and are operational.
- Before switching on the motor, make sure that all electrical connections and safety devices have been checked and that all fuses and safeties have been set correctly
- Make sure that no danger zones are freely accessible (e.g. rotating parts, suction locations, pressure output locations, electrical connections)
- Observe the pump manufacturer's commissioning instructions.
- If motors or pump units have been used in contaminated media they must be marked as such before handing them over to a third party (e.g. when submitting them for repair). Pay attention to possible residues in "dead spaces" (diaphragm cover)
- Contaminated motors or pump units must be marked as such before handing them over to a third party (e.g. when submitting them for repair)
- Repairs must only be carried out by authorized professional workshops. Use only original Shakti Electric spare parts

3 STORAGE, TRANSPORT, DISPOSAL

STORAGE

⇨ Store the motor in its original packaging until the time of installing it

⇨ If the motor is stored standing up, make sure that it cannot topple over (shaft always pointing up!)

⇨ Do not store the motor in direct sunlight or within the reach of other heat sources

⇨ Observe the storage temperature (–15° to +60 °C, see technical specifications).

TRANSPORT

⚠ **DANGER**

Falling loads may cause lethal injuries or may crush parts of the body!

⇨ Nobody is allowed to be located under suspended loads

⇨ Only use approved hoisting gear

⇨ Select the hoisting gear on the basis of the total weight to be transported

UNPACKING

⇨ After unpacking the motor check it for possible damage, e.g. damage to the diaphragm cover, housing, end bell, connection and motor cable

⇨ Immediately inform the supplier of any damage found

⚠ **DANGER**

⇨ Danger to life due to electrocution if the motor cable is damaged

⇨ Do not install the motor and do not put it into operation

DISPOSAL

In order to avoid environmental damage :

- Avoid contamination by lubricants, detergents etc
- Dispose of the motor and the packaging material in a proper, environmentally sound manner
- Observe local regulations

SHAKTI PUMPING LIFE

4 TECHNICAL SPECIFICATIONS

Description	Value		
Performance/model number	6 Inch : 4 - 45 kW		
	8 Inch : 30 - 150 kW		
Voltage range	220 V ... 460 V, 3Ø, 50/60		
Frequency tolerance	± 2%		
Voltage tolerance (on the motor terminals)	50Hz : –10/+6% of UN, i.e. at a nominal voltage of 380-415V: 380V –10 % = 342V / 415V + 6 % = 440 V 60Hz : +/- 10% of UN		
Speed	Appx. 2900 at 50 Hz		
Start alternatives	Direct starting, Star-delta-starting		
Switching frequency	Max. 20 switching actions per hour with a minimum off time of 90 s		
Protection	IP 68		
Insulation class	F		
Submersion depth	Max. 350 m		
Installation location	Vertical (shaft up) to horizontal (only allowed if the pump size is identical to the motor size, e.g. 6 Inch motor with 6 Inch pump). The pump has to sufficient “Down Thrust” transmit to the motor. No general warranty when built-in in booster systems.		
Operating temperature	≥ – 3 °C		
Sound pressure level	≤ 70 dB(A)		
Maximum axial thrust towards the motor	6 Inch :	4 - 22 kW	15500 N
		30 kW	27500 N
		37 / 45 kW	45000 N
	8 Inch :	all motors	45000 N
Maximum axial thrust away from the motor (only for a short-time load of max. 3 minutes; independent of performance rating)	6 Inch :	1400 N	
	8 Inch :	30 - 75 kW	1400 N
		93 - 150 kW	3400 N
Material	The person placing the order is responsible for selecting the correct material, specifically as regards its resistance in the medium to be transported. SS AISI 304/Cast Iron Version: Stator SS AISI 304, powder-coated castings SS AISI 304 : Stator and castings in SS AISI 304 SS AISI 316 : Stator and castings in SS AISI 316		

Description	Value
Motor fluid	Glycol (water-based emulsion) Filling Fluid replacement on request
Weight	Technical data sheets (see appendix)
Storage temperature	−15 °C to +60 °C
Motor cable	Short motor cables are included in the delivery 6 Inch : Motor cable 4.0 m length 8 Inch : Motor cable 8.0 m length
Connection flange	6 Inch, 8 Inch : NEMA flange
Temperature monitoring	PT100 temperature sensor for retrofitting PTC temperature sensor (only for 6 Inch 4 - 30 kW, sensor with cable)
Coolant flow speed (is the speed of the medium flowing along the motor casing during normal operation)	Nominal 0.15 m/sec In the event of higher media temperatures operation is only allowed if you reduce the performance (De-Rating) increase the coolant flow speed

5 PRE-OPERATION CHECKS

5.1 CHECK THE MOTOR PRIOR TO INSTALLATION

If a leak is visible or if the motor is more than one year old (e.g. in the event of re-use or after long storage):

⇨ Check the fluid level in the motor prior to installing it.

TOOLS

You need the following tools for assembly and inspection work :

- Insulation measuring unit : As Per testing
- Filling Kit

⇨ Determine the age of the motor by checking the Name plate (see Figure 5-1).

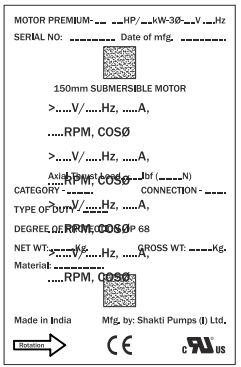

Figure 5-1 Name Plate with date of mfg.

5.1.1 CHECKING THE MOTOR FLUID

⚠ CAUTION

Motor damage due to being insufficiently filled!

⇨ Fill the motor with sufficient motor fluid

⇨ Wear safety goggles and gloves when filling and draining the motor.

⇨ Top up using original motor fluid from Shakti Pumps 5-liter container or clean drinking water Never use distilled water!

Filling volumes

- 6 Inch : approx. 1.5 liters
- 8 Inch : approx. 3.5 liters

VENTING THE MOTOR

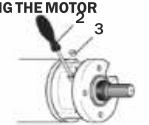

Figure 5-2 : Venting the motor

⇨ Place the motor horizontally so that the filling valve is located at the highest position.

⇨ Remove the plug (3) from the filling valve

⇨ Carefully push the test pin (2) into the filling valve until air and some fluid escape from it.

CHECKING THE MOTOR

⇨ Feed the test pin (2) through the opening (1) in the diaphragm housing until you can feel resistance.

⇨ Measure the actual diaphragm distance to the side of the opening in the diaphragm cover.

If the measured result is not identical to the target value :

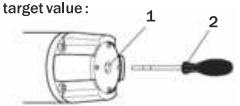

Figure 5-3 : Checking the motor fluid

59 mm±2 mm (6 Inch - motor-Cast iron/SS 304 /4-30kW)

44 mm±2 mm (6 Inch - 45kN Version)

37 mm±2 mm (8 Inch - motor all)

⇨ Top up or drain motor fluid.

⇨ Apply the filling syringe (4) to the filling valve.

⇨ Top up the motor filling fluid until the value of the diaphragm position is lower than the target value.

TOPPING UP THE MOTOR

⇨ Top up or drain motor fluid.

⇨ Apply the filling syringe (4) to the filling valve.

⇨ Top up the motor filling fluid until the value of the diaphragm position is lower than the target value. See Figure (5-4)

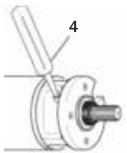

Figure 5-4: Topping up the motor fluid

ADJUSTING THE MOTOR

⇨ Adjust the diaphragm position by draining (see Venting) or topping up motor fluid until the target value is reached.

⇨ Fit the plug (3) again

5.2 ASSEMBLING THE MOTOR & PUMP

⚠ **NOTE**

These assembly & operating instructions only describe action steps related to the motor. You should also observe the pump unit manufacturer's instructions in all events.

PREPARATION

- Shaft protector removed
- Motor shaft rotated manually before assembly – runs freely after overcoming static friction
- Surfaces of parts to be connected are free from dust and dirt
- Coupling attached to the pump shaft, slides on the motor shaft
-

ASSEMBLY

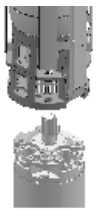

Figure 5-5: Pump assembly

⇨ Apply water-resistant, acid-free grease to the inner part of the coupling to the pump unit.

⇨ Make sure that the splined section is encased by an O-ring when the motor and the pump unit are assembled together.

⇨ Align the pump unit and motor shaft to each other, connect the pump unit and the motor.

⇨ Screw the motor to the pump unit, tighten the fixing screws crosswise as instructed.

6 Inch : M12

8 Inch : Bore Ø 17.5 mm

⇨ Protect the coupling location against contact.

5.3 CONNECTING THE DROP CABLE

⚠ **CAUTION**

Motor damage due to damaged motor cable!

⇨ Make sure that the motor cable is not in contact with any sharp edges

⇨ Protect the cable against damage using the cable guard

5.3.1 CONNECTING THE SHORT MOTOR CABLE

⚠ **NOTE**

⇨ Always a new cable must be used

TOOL AND TORQUES

You need to use the following tools and torques for assembly and inspection work:

⇨ 6 Inch Motors (all Ratings) 60N/m ± 60N/m; Wrench 1 3/16" (30, 2 mm)

⇨ 8 Inch Motors (30 - 93kW) 74N/m ± 7N/m; Wrench 1 3/16" (30, 2 mm) order 1 5/8" (42mm)

PREPARATION

- Remove the scaling plug (1)
- Clean and dry the surface of the plug (2) and the socket (3)

ASSEMBLY

Figure 5-5: Connection of the short motor cable

⇨ Pull back the jam nut (4) until the plug (2) is free

⇨ Apply silicone paste or vaseline to the rubber casing surfaces

⇨ Apply acid-free grease to the thread of the union nut

⇨ Insert the plug (4) in the socket (3)

⇨ Protect the cable against damage using the cable guard

5.3.2 EXTENDING THE MOTOR CABLE

- The unit manufacturer's instructions regarding the cable connection have been observed
- Only extension cable and insulating material used with are suitable for the specific use (specifically drinking water) and switch are approved for the temperatures occurring in the relevant medium
- Cable cross-sections:The table in the appendix only save as recommended suggestions. The fitter is responsible for the correct selection & dimensioning of the cable

⇨ Lay the cable along the pump

⇨ Connect the ground conductor correctly (motors or integrated ground conductors are prepared for external grounding)

⇨ Protect the cable connection location against water penetration (shrink hoses, compounds or ready cable sets)

⇨ Make sure that the short motor cable is always fully surrounded by transport medium for proper cooling during operation

5.4 MEASURING THE INSULATION RESISTANCE

This measurement is to be carried out using an insulation measuring unit (500 VDC) before and while submersing the fully assembled unit at the place of use.

⇨ Before submersing the unit, connect a measuring cable to the ground conductor

⇨ Make sure that the contact points are clean

⇨ Connect the other measuring cable to every core of the connected motor cable in succession. The insulation resistance is shown on the insulation measuring unit.

Minimum insulation resistance with extension cable :

- For a new motor > 4 MΩ
- For a used motor > 1 MΩ

FOR YOUR INFORMATION

Minimum insulation resistance without extension cable :

- For a new motor > 400 MΩ
- For a used motor > 20 MΩ

5.5 POWERING THE MOTOR

DANGER

DANGER TO LIFE DUE TO ELECTROCUTION!

- ⇨ Prior to making the electrical motor connection make sure that there is no more voltage on the entire plant and that nobody can accidentally switch on the voltage again while the work is being carried out.
- ⇨ Observe the instructions on the motor type plate and dimension the electrical system accordingly. The connection examples in this chapter concern the actual motor and do not serve as recommendation for the upstream control elements.
- ⇨ All action steps of the previous chapter have been carried out properly

ENERGY SUPPLY BY GENERATOR

NOTE

We urgently recommend that you discuss the plant dimensions with the generator manufacturer.

The voltage tolerance –10 % to +6 % (on the motor terminals) and the deviation of a motor current from the mean value of all three currents must not be more than 5 %.

- Generator selected on the basis of the motor start behaviour, i.e. starting current with a mean cos Ø 0,5
- Sufficient continuous generator power available
- Starting voltage at least 55 % of the nominal voltage

- ⇨ You must follow the following switch-on sequences unconditionally:

First switch on the generator and then the motor.

First switch off the motor and then the generator.

FUSING AND MOTOR PROTECTION

- ⇨ Provide an external mains switch (1) enabling the voltage to be removed from the system
- ⇨ Provide fuses (2) for every single phase on site
- ⇨ Provide a motor starting & protection switch (3) (see connection alternatives)
- ⇨ Provide an emergency stop system, if required for your specific application
- ⇨ Ground the motor (4) (exterior grounding possible with all motors)
- ⇨

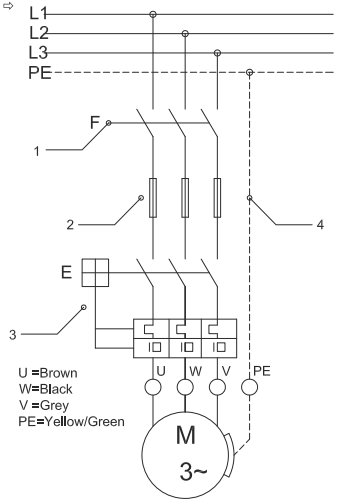

Figure 5-10: Fusing and motor protection

OVERLOAD PROTECTOR

- ⇨ Integrate an overload protector in accordance with IEC 60099 in the power supply (lightning safety (5).

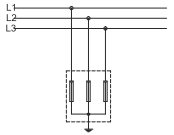

Figure 5-12: Overload protector

CONNECTION ALTERNATIVES

The motors can be used for anti clockwise rotation.

The connection example shows the usual circuit with a right-hand field and an anti-clockwise direction of rotation:

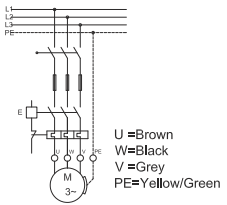

Figure 5-13: Direct starting

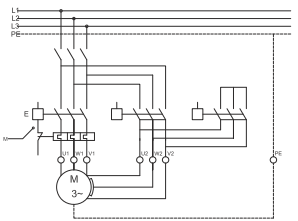

Figure 5-14: Star Delta-starting

MOTOR SAFETY SWITCH

A motor safety switch (overload relay) is absolutely necessary!

Only use thermal trips of tripping categories 10A or 10, with

- ⇨ Tripping time <10 s at 500 % I_N (nominal current)
- ⇨ Phase sensitivity
- ⇨ Temperature compensation
- ⇨ Set the motor protection unit to the value of the operating current measured without exceeding the rated motor current I_N (as indicated on the type plate);recommendation: 90 % of the nominal motor current.

6 MOTOR OPERATION

6.1 PROPER MOTOR COOLING

⚠ CAUTION

Damage to the motor and the motor cable due to overheating

- ⇨ Make sure that the coolant flow speed along the motor is sufficient
- ⇨ Make sure that the short motor cable is always fully surrounded by transport medium for proper cooling

Figure 6-1: Cooling tube

If the required minimum coolant flow speed cannot be reached (e.g. if the inlet opening of the well is located above the motor or if using large-diameter wells):

- ⇨ Fit a cooling tube (see figure 6-1)
- ⇨ Make sure that the cooling tube encases the entire motor and the pump water inlet opening. The motor is force-cooled

6.2 PROVIDING A CHECK VALVE & LEVEL SENSOR

- ⇨ Provide at least one spring-loaded check valve in the production tube in case no such check valve has been fitted in the pump
- ⇨ Ensure that the first check valve is no further than 7 meters away from the pump
- ⇨ Further install check valves at mutual distances of 50 meters
- ⇨ Install a level sensor for wells with a highly varying water inflow

6.3 SWITCHING ON THE MOTOR

• All action steps of the previous page have been carried out properly

⇨ Switch on the motor using the mains switch in the control cabinet.

Measure the following values after switching on:

- ⇨ Motor operating current in every phase
- • Mains voltage when motor is running
- • Level of the medium to be transported
- ⇨ Immediately switch off the motor if:
- • The nominal current as specified on the type plate is exceeded
- • Voltage tolerances of more than –10 % / +6 % relative to the nominal voltage are measured on the motor
- • There is a risk of the motor running dry
- • Motor current deviates from the mean value of all three currents by more than 5 %

6.4 MOTOR OPERATION WITH FREQUENCY CONVERTER

⚠ NOTE

When operating a motor with a frequency converter, the relevant operating manual must be observed!

- ⇨ Make sure that the motor current in all operating levels of the regulating range does not exceed the nominal motor current indicated on the Name plate
- ⇨ Adjust the frequency converter so that the limit values for the nominal motor frequency of min. 30 Hz and max. the value of the nominal motor frequency (50 or 60 Hz) are observed
- ⇨ Limit any voltage peaks on the motor when using a frequency converter to the following values : max. voltage rise 500 V/µs, max. voltage peak 1000 V
- ⇨ Make sure that the running up time from 0 to 30 Hz and the deceleration time from 30 to 0 Hz is maximum one second
- ⇨ Dimension the cable such that power loss due to additional filters is taken into consideration
- ⇨ Make sure that the required coolant flow speed along the motor is also observed with frequency converter operation

6.5 MOTOR OPERATION WITH SOFT STARTER

⚠ NOTE

When operating a motor with a soft starter, the relevant operating manual must be observed!

Set the starting voltage of the soft starter to 55 % of the nominal voltage and set the running up and delay times to max. three seconds.

Bridge the soft starter after running up, using a contractor.

7 MAINTENANCE AND SERVICE

The motor is maintenance-free, no maintenance or service activities are necessary.

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8 TROUBLESHOOTING

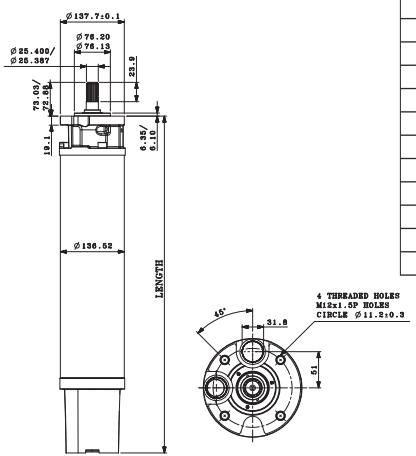
FAULT	REMEDY
Unusual noises, problems with the proper running of the pump or the pump switching on and off too frequently.	⇨ Try to find the cause of the fault on the pump unit.
The pump repeatedly switches off	⇨ Have the insulation resistance checked by a professional Service Personal ⇨ If no cause can be found in the motor or the motor cable: Have the electrical system checked.

9 SERVICE

Repairs must only be carried out by authorised professional workshops (only use original Shakti Pumps spare parts).

If you have any questions or problems, please contact your dealer or contact Shakti Pumps mail to info@shaktipumps.com, ho@shaktipumps.com

6 INCH ENCAPSULATED PREMIUM 150



P_N [kW]	P_N [HP]	L (mm)	Motor Weigth (kg)
4.0	5.5	582	42
5.5	7.5	615	45
7.5	10.0	647	49
9.3	12.5	679	51
11.0	15.0	712	54
15.0	20.0	777	60
18.5	25.0	842	66
22.0	30.0	907	72
30.0	40.0	1037	88
37.0	50.0	1477	140
45.0	60.0	1630	160

SUBMERSIBLE CABLE SELECTION CHART

FOR 415V, 50Hz AC POWER SUPPLY

CABLE DIMENSIONS AT 3X415 VOLT, 50 HZ

VOLTAGE DROP - 3 %											
HP	KW	I	CABLE SIZE SQUARE MILLIMETERS								
			1.5	2.5	4	6	10	16	25	35	50
			LENGTH IN METERS								
0.50	0.37	1.20	543	879	1396						
0.75	0.55	1.70	383	621	985						
1	0.75	2.20	296	480	761						
1.50	1.10	3.10	210	340	540	819					
2	1.50	4.10	159	257	409	620			889		
3	2.20	6.30	103	167	266	403	659		589	786	
4	3	8.20	79	129	204	310	506	799	337	449	673
5	3.70	9.40	69	112	178	270	441	697			
5.50	4	10.30	63	102	163	247	403	636			
7.50 DOL	5.50	14.20	46	74	118	179	292	461			
7.50 S/D	5.50	14.20	80	129	204	310	506	799			
10 S/D	7.50	17.40	65	105	167	253	413	652			
15 S/D	10	20		91	145	220	359	567	869		
17.50 S/D	13	29.70			98	148	242	382	585	797	
20 S/D	15	33			88	133	218	344	527	718	
25 S/D	18.50	42.50			68	104	169	267	409	558	
30 S/D	22	49.60				89	145	229	351	479	660
35 S/D	26	57.30					125	198	303	414	572
40 S/D	30	67.50					106	168	258	352	485

NOTE:- Table Showing maximum allowable length of submersible cable for the given full load current where site for other voltage, 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 $1/\sqrt{3}$ times the FL Current. The Cable size and maximum allowable length are arrived at accordingly.

INSTALLATION AND OPERATING INSTRUCTIONS

SHAKTI PUMPING LIFE

NOTES

WARRANTY CERTIFICATE

Dear Customer,
Congratulation, for purchasing our product.

Pump and Motor are warranted against defects in workmanship and material under normal use, service & specified duty conditions. We provide one time warranty service for twelve months from the date of purchase by the first user.
Shakti Pumps (I) Ltd warrants this product to be free from damage/ defects in material and workmanship under normal use and service for Twelve Months from the date of purchase by the first user. The user shall produce valid and original copy of invoice for availing warranty. The user shall carry defective pump set to nearest authorized service center

This warranty does not cover any loss or damage/ defect of any nature resulting from wrong product selection/ improper installation or installation by unauthorized/ untrained person/ sandy condition/ dry running and improper use of the pump sets.
The warranty also does not cover consequential losses/ damages arising due to failure of pump/ motor.
Our obligation is limited t to recycling or repairing or replacing product/ parts ex-factory. Equipment for repairs should be returned free of cost to us.
The forgoing is subject to the provision that the user does not open the unit and make any change or repair without prior approval of authorized service center during the warranty period.
This warranty excludes every condition whether statutory or otherwise, whatsoever not herein expressly set out.

Customer name: .....Customer's phone:.....

Customer Address: .....

Invoice number: .....Invoice date:.....

Model Name: .....Model Serial Number:.....

Dealer's Name: .....Dealer's phone:.....

Dealer's Address:.....

APPROVED BY: DATE OF ISSUE

DEVENDRA SULE 17-05-2016

INSTALLATION AND OPERATING INSTRUCTIONS

SHAKTI PUMPING LIFE

INSTALLATION REPORT

Customer's Name: - _____

Customer's Address: - _____

Customer's Ph. No.: _____

Dealer's Name: - _____

Dealer's Address: _____

Dealer's Ph. No. _____

Pump Model:- _____ S.L.No: _____

Project/Application: _____

Pressure In Kg:- _____ Flow in m^3/hr: _____

Liquid:- _____ Temp.: _____

Voltage:- _____ Current: _____

Packing Condition:- _____

Remarks: _____

_____

_____

Date:- _____

_____

Customer's Signature

BOOK-POST

Stamp

To,
Shakti Pumps (I) Ltd.
Regd. Office & Works : Plot No. 401, Sector - 3,
Pithampur - 454774, Dist.- Dhar (M.P.) - INDIA
Tel: +91-7292 410500, Fax: +91-7292 410519,
E-mail : info@shaktipumps.com, sales@shaktipumps.com
Visit us at : www.shaktipumps.com