July/2017-18/L5/1000 | VC : 700277 | SAP NO. 2900000812

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SHAKTI PUMPS (I) LTD.

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SHAKTI
PUMPING LIFE

INSTALLATION & OPERATING INSTRUCTIONS

SJP SERIES

CE

EC DECLARATION OF CONFORMITY
IN ACCORDANCE WITH LV & EC MACHINERY DIRECTIVES UNDER SELF DECLARATION

Product Designation : Horizontal Pressure Booster pump set
Model Reference : SJP 5 (Max. ¡V 1.0 HP)
Intended End Use : Horizontal Pressure Booster Pump set for domestic water supply Or booster system

Conforming to the requirement of following European Directives:

a) Low Voltage Directive : 2006/95/EC
b) EC Machinery Directive : 2006/42/EC

Applicable Harmonized Standards :

EN ISO 12100-2010, EN 809: 1998+A1:2009, EN 60335-1, EN 60335-2-41

We hereby declare that Horizontal Pressure Booster Pump set is indented to be incorporated into or assembled with other machinery to constitute relevant machinery to comply with the essential Health and Safety requirement of the mentioned directives.

This machinery, its components and sub assemblies shall not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provision of the applicable directives.

The criteria for selection, safety requirement of other associated equipment and installation guideline are detailed in the instruction manual.

- Date of Manufacturer & First CE marking : 05 Jan 2017
- Place of Manufacturer : Shakti Pumps India Ltd. ,Pithampur

Issued at: SHAKTI PUMPS (I) LTD. , Pithampur

Marking: CE

The above pump set must not put into service /usage for other than specified in the instruction Manual

Date: 05 Jan 2017

Sanjay Bhatnagar
(Deputy General Manager QA)

SHAKTI
PUMPING LIFE

CONTENTS **PAGE NO.**

Before beginning installation procedures, these installation and operating instructions should be studied carefully. The installation and operation should also be in accordance with local regulations and accepted codes of good practice.

Warning
Prior to installation, read these installation & operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.

Warning
The use of this product requires experience with and knowledge of the product. Persons with reduced physical, sensory or mental capabilities must not use this product, unless they are under supervision or have been instructed in the use of the product by a person responsible for their safety. Children must not use or play with this product.

1. General Information

The Shakti pressure booster sets, types SJP are Horizontal, self-priming centrifugal pumps designed for pumping water and other thin, non aggressive liquids, not containing solid particles or fibres.
If the pump has been used for dirty liquids,e.g. pool water, it must be flushed through with clean water immediately after use.

2. Applications

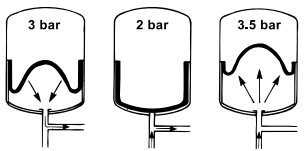
The Shakti pressure booster sets, types SH and SJP, are mainly used for domestic water supply or booster systems.

Warning
The pump must not be used for the transfer of inflammable liquids such as diesel oil, petrol or similar liquids

3. Function

The booster set cuts in and out by means of the pressure switch. When water is tapped from the system, it will at first be tapped from the diaphragm tank, fig. 1.

Fig. 1



4. Technical data & operating conditions

Supply voltage:

SJP 5:
- 1 x 220-230 V – 50 Hz, 60 Hz
- 1 x 230-240 V – 50 Hz, 60 Hz
- 1 x 110-115 V – 60 Hz

Enclosure class:

SJP: IP 44

Sound pressure level:
The sound pressure level of the pumps is lower than the limiting values stated in the EC Council Directive 98/37/EC relating to machinery.

Maximum operating pressure:
Diaphragm tank: See nameplate.
SJP pumps: 6 bar.

Maximum liquid temperature:
Diaphragm tank: See nameplate.
SJP pumps: +40°C.

Ambient temperature:
Maximum +55°C.

5. Installation

The pump must be installed horizontally. When the suction pipe is longer than 10 metres or the suction lift is greater than 4 metres, the diameter of the suction pipe must be larger than that of the pump suction port (S). If there is a suction lift, it is recommended to fit a non-return valve to the suction pipe.
If a hose is used as suction line, it must be of a noncollapsible type.
To prevent solids from entering the pump, a filter can be fitted to the suction pipe. When installing the pipes, it must be ensured that the pump is not stressed by the pipework. Connect the discharge pipe to the pump discharge port (T). See fig. 2. H = maximum 8 metres.

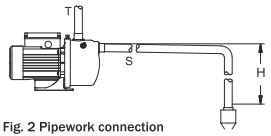


Fig. 2 Pipework connection

Then the pressure falls to the preset cut-in pressure, and the pump will cut in.

When the water consumption drops, the discharge pressure increases, and the pump cuts out when the pressure reaches the preset cut-out pressure of the pressure switch.

5.1 Location

The booster set should be located and connected in accordance with local regulations.
The motor of the booster set must not be covered as an adequate supply of cool air must reach the motor cooling fan.

5.2 Pipework

The pipes connected to the booster set must be of adequate size.
Note: If the booster set has no non-return valve, a non-return/foot valve must be fitted in the suction pipe of the pump.

5.3 Adjustment

Sets which are ready-mounted on delivery have the following presettings:

Type	P_{tank}	$P_{cut\text{-}in}$	$P_{cut\text{-}out}$
SJP	1.9 bar	2.2 bar	3.3 bar

5.4 Calculation of cut-in/cut-out pressures

The cut-in pressure is the sum of:
- minimum pressure required at the highest tap,
- delivery head from the pump to the highest tap,
- pressure loss in the pipes.

Recommended cut-out pressure:
cut-in pressure + 1.0-1.5 bar.

5.5 Adjustment of tank precharge pressure

When the pump cut-in pressure has been determined, the required precharge pressure of the diaphragm tank can be calculated. The precharge pressure must be adjusted to a value of 90% of the cut-in pressure.
When adjusting/reading the precharge pressure, be certain that there is no water pressure on the diaphragm tank from the pipework.

Note: An adjustment of the pressure switch setting also requires an adjustment of the precharge pressure of the diaphragm tank.

5.6 Setting of pressure switch

Because of shock hazard, the booster set must be off circuit when the cover of the pressure switch is removed.

Warning
When the pressure switch has reached the cut-out pressure, the input terminals of the pressure switch are still live. To avoid this situation, the electricity supply must be switched off.

Under no circumstances must the cut-out pressure be higher than the maximum operating pressure of the pump and tank.

6. Electrical connection

The electrical connection and protection must be carried out in accordance with local regulations.

Warning
Never make any connections in the pump terminal box unless the power supply has been switched off.

Single-phase motors incorporate a thermal switch and require no additional motor protection. Three-phase motors must be connected to an external mains switch and a motor starter. Do not start the pump until it has been filled with water.
Carry out the electrical connection as shown in the diagram on the inside of the terminal box cover.

The operating voltage and frequency are marked on the nameplate. Please make sure that the motor is suitable for the electricity supply on which it will be used.

Single-phase motors, 1 x 110/220 V, 60 Hz, **do not** incorporate overload protection and must be connected to an approved motor starter.

Other single-phase motors do incorporate overload protection and consequently require no additional motor protection.

Three-phase motors must be connected to an approved motor starter.

If other pumps than Shakti pumps SH or SJP are used, it must be ensured that the nominal current of the motor does not exceed the nominal current of the pressure switch.

6.1 Checking the direction of rotation (three-phase motors)

Arrows on the motor fan cover indicate the correct direction of rotation.
If the direction of rotation is wrong, switch off the power supply, and interchange any two of the incoming supply wires.

The electrical connections should be in accordance with the diagrams on pages 8.

Warning
If the booster set has a supply cable without a plug, the set must **either** be equipped with a supply cable with a plug **or** be connected to the installation by means of a mains switch with a minimum contact cap of 3 mm in **all** poles.
The switch must be suitable for frequent operation.

7. Start-up

Caution: The SJP pump is not allowed to run without delivering water for more than 5 minutes.

Do not start the pump until it has been filled with water.
1. Remove the plug (P).
2. Fill the pump with water.
3. Refit the plug, and tighten it using fingers only. The pump can now be started.

If there is a suction lift, up to 4 minutes may pass from the moment the pump is started until it delivers water. This period depends on the length and diameter of the suction pipe. If the pump has been used for dirty liquids, it must be flushed through with clean water immediately after use.

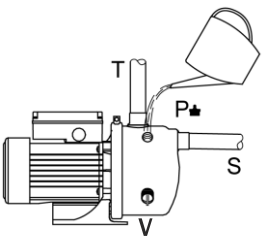


Fig. 3 Filling the pump with water

8 Operation and maintenance

Before start-up, the system must be flushed through with clean water and drained to remove possible impurities in the system.

Warning
If the liquid temperature exceeds +68°C, the booster set must cool before any maintenance work is carried out.

Care should be taken to ensure that persons cannot come into contact with the booster set during operation, e.g. by installing a guard.

8.1 Checking the tank precharge pressure

To ensure reliable and correct operation, including the frequency of stop/starts, the precharge pressure of the diaphragm tank should be checked regularly (at least once a year). The precharge pressure can be measured with, e.g. a tyre gauge.

8.2 Frost Protection

Pumps which are not used during periods of frost should be drained to avoid damage.
To drain the pump remove the plug(P) and (V).
see fig. 4.0

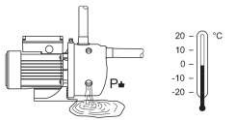


Fig. 4. draining the pump

Refit the pulg, and tighten them using fingers only.

9. Pump Cleaning

Before starting work on the pump, make sure that the power supply has been switched off. It must be ensured that the power supply cannot be

9.1 Disassembly

The position numbers mentioned in the following sections refer to fig.
1. Drain the pump by removing the plug (pos. 25)
   Note: - The escaping water may be hot.
2. Remove the screw (pos. 30) and the clamp (pos.92) holding the pump sleeve (pos 11)
3. Push the pump sleeve (pos.11) free of the motor stool with a screw driver, and take it off.
4. Clean the pump sleeve using a brush or water jet.
5. Check that thr impeller (pos.49) is not dirty.
   If that is the case, remove the impeller.
   To prevent the motor shaft from rotating , hold the fan blades.Remove the nut from the motor shaft.
6. Clean the impeller using a brush or a water jet
   Carefully clean the shaft seal space under the impeller.

9.2 Assembly

The external hexagon of the shaft must engage

1 . Screw the impeller (pos.4 9) onto the motor shaft with the internal hexagon of the impeller.Fit the nut (pos.67) to the motor shaft and tighten.
2. Moisten the O-ring (pos. 13) with soapy water,and fit into the recess of the suction port of the enjector
3. Fit the ejector into the pump sleeve (pos 11)
   Check that the O-ring (pos13) is positioned correctly (pos.14) on the collar of the suction port of the sleeve.
4. Moisten the O-ring (pos.31) with soapy water, and place it on the ejector.
5. Moisten the seal ring (pos.91) with soapy water, fir it into the recess of the ejector, and turn it against the stop.
6. Fit the pump sleeve with the ejector to the motor stool. Check that the O-ring (pos.31a) is positioned correctly.
   Note : - The pump illustrated in Fig. 5 may differ from the actual version.
7. Place the clamp (pos.92) on the pump sleeve, and refit the screw and nut and tighten securely Fig.4 E xploded view of pump
8. Refit the plug(pos.25) or the ejector valve
   Check that the ejector valve is in pos. Tighten the plug or ejector valve using fingers only.
   I n order for spare parts, please mention the position number in fig. and the pump data marked on the pump nameplate.

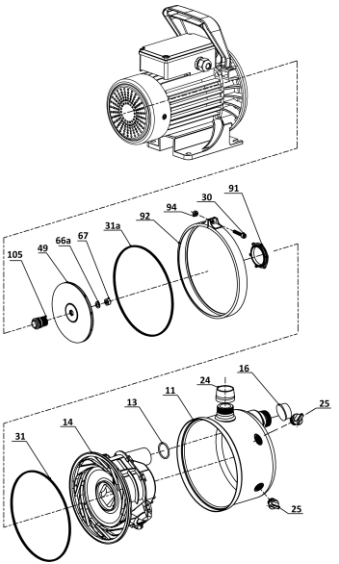


Fig 5. Exploded View For Assembly

10. Fault finding chart

Warning
Before starting work on the pump, make sure that the power supply has been switched off. It must be ensured that the power supply cannot be accidentally switched on.

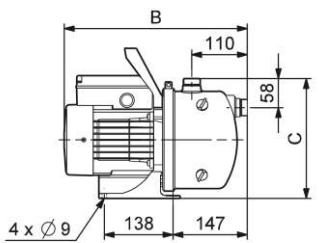
Fault	Cause
1. The pump runs, but gives no water or delivers a reduced quantity of water and pressure. 1. The pump does not start. a) Supply failure. b) Pump blocked by impurities. c) Motor defective.	a) Pump not filled with water. b) Suction or discharge pipe blocked by impurities. c) Pump blocked by impurities. d) Suction lift too high (over 8 metres). e) Suction pipe too long. f) Diameter of suction pipe too small. g) Suction pipe inlet not covered by water. h) Suction pipe leaking. I) Ejector valve setting incorrect (only pumps with ejector valve). j) Direction of rotation incorrect (three-phase pumps).
2. The motor cuts out during	a) Single-phase motors: operation Thermal switch in motor cuts out due to overheating. b) Three-phase motors: External motor protection cuts out.

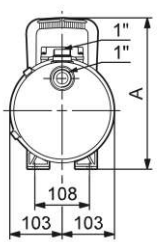
11. Disposal

Disposal of this product or parts of it must be carried out according to the following guidelines:

1. Use the local public or private waste collection service.
2. In case such waste collection service does not exist or cannot handle the materials used in the product, please deliverthe product or any haz-ardous materials from it to your nearest Shakti company or service workshop.

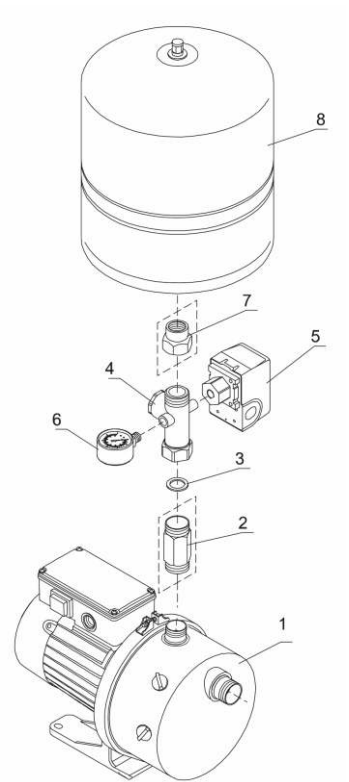
12. Dimension Layout





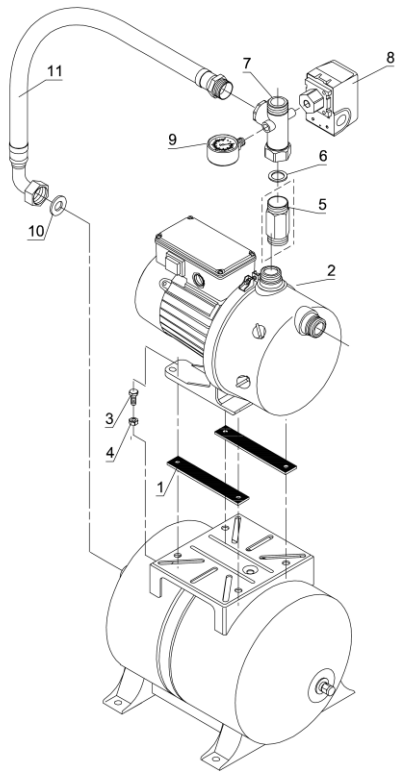
Pump Type	Dimension (mm)		
	A	B	C
SJP 5	298	412	234

13. SJP Booster with Vertical Tank Arrangement



NOTE : As above item no 2, 3, 4, 5, 6, 7, 8 available on request

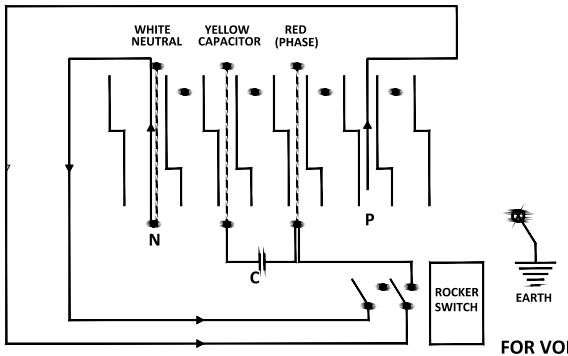
14. SJP Booster with Horizontal Tank Arrangement



NOTE : As above item no 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 available on request

SHAKTI PUMPING LIFE

15. Single Phase Circuit Diagram



SINGLE PHASE CIRCUIT DIAGRAM
0.5 H.P TO 1.5 H.P

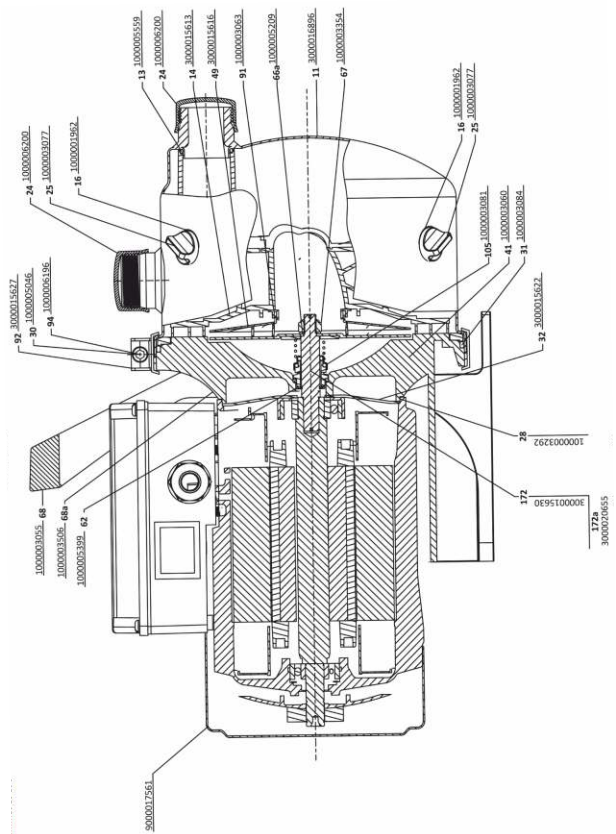
FOR VOLTAGE

1x220-230 V 50 Hz , 60 Hz
1x230-240 V 50 Hz , 60 Hz
1x110-115 V 60 Hz

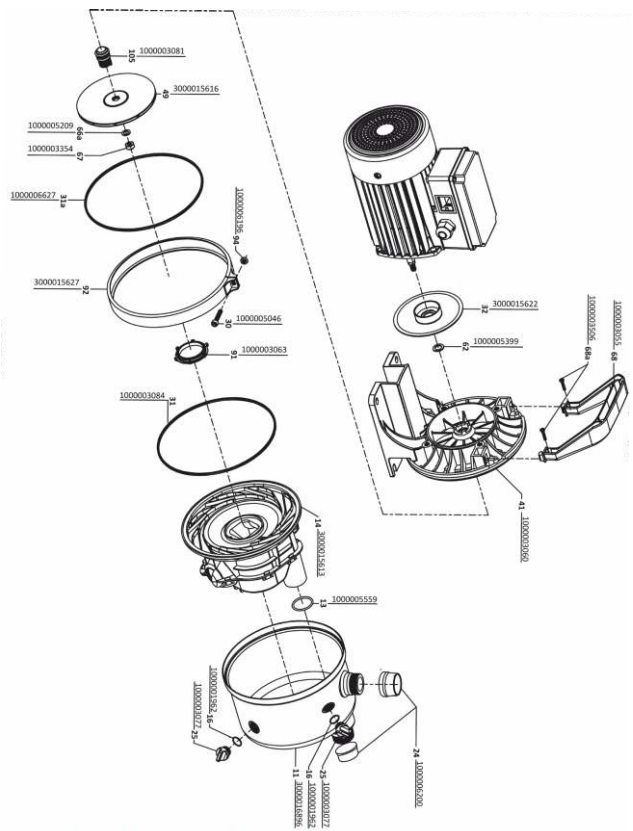
16. Part List

POS NO	MATERIAL CODE	DESCRIPTION	MATERIAL
51	9000017561	MOTOR ASSEMBLY.SMG-80(SJP)	NA
11	3000016896	PUMP SLEEVE ASSEMBLY	SS AISI 304
13	1000005559	RUBBER RING Ø30IDX1.5 THK	NBR
14	3000015613	INJECTOR ASSEMBLY	5% G/F ABS NATRUAL
25	1000003077	DRAIN PLUG	NYLON BLACK (PLANE)
24	1000006200	THREAD PLUG FOR PACKING	NYLON BLACK (PLANE)
30	1000005046	ALLEN BOLT M6 X 50	STD
31	1000003084	O-RING ID Ø190x2.5x4THK.	NBR
31a	1000006627	O-RING Ø190x4THK.	NBR
49	3000015616	IMPELLER ASSEMBLY	SS AISI 304
66a	1000005209	PLAIN WASHER	STD
67	1000003354	LOCK NUT M8	STD
91	1000003063	NECKRING	NYLON BLACK(PLANE)
92	3000015627	PUMP SLEEVE ASSEMBLY	SS AISI 304
94	1000006196	NUT M6	STD
105	1000003081	MECHANICAL SEAL	NA
16	1000001962	O RING ID 16.3x2mm	NBR
32	3000015622	BEARING COVER PLATE ASSLY	SS AISI 304
62	1000005339	DIVERTING DISC	NBR
68	1000003055	PUMP HANDLE	BLACK(PLANE)
68a	1000003506	SELF THREAD SCREW M4 X 10	STD
41	1000003060	MOTOR STOOL	20% GLASS FIELD NYLON

17. SJP Sectional View



18. SJP Exploded View



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.
No warranty will be provided on mechanical seal, rubber parts, fasteners, cables in pump, motor / pump sets. 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

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.
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Pithampur - 454774, Dist.- Dhar (M.P.) - INDIA
Tel: +91-7292 410500, Fax: +91-7292 410645
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