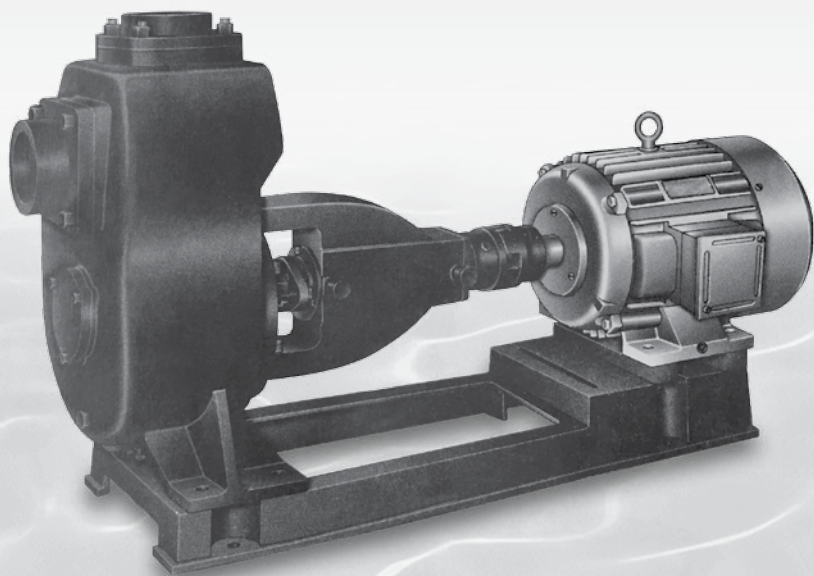


MBH[®] PUMPS

**Instruction, Installation, Operation
and Maintenance Manual**

SELF PRIMING MUD PUMP



ISO 9001
Certified Company

A Mark of Quality

1. INTRODUCTION

MBH SP type pumps are centrifugal pumps with an added feature of self priming mechanism. The pump casing is to be filled initially with the pumping liquid after its installation. The design of SP type pump allows pumping out certain amount of mud, dirt and suspended solids. These pumps are suitable for handling water and non-Corrosive liquids ambient temperature.

Pumps when properly installed and given proper care in operation and maintenance should operate satisfactorily for a long period.

When pump is revived some time before actual use of pump, it should be inspected out-side in a dry place. The shaft should be rotated freely before use.

2. PRINCIPAL OF OPERATION

The self priming action of the pump works on diffusion principal. Initially the complete pump casing is filled with the pumping liquid which is retained by its flap valve assembly. When the pump starts, due to centrifugal action, flap assembly opens and the air from suction branch mixes with liquid. The mixture of air and liquid which is transferred into large casing outside the pumping chamber and air escaped through delivery branch. De-aired liquid again diffuses with the impeller and carries off more air from suction branch. No sooner all the air is eliminated, diffusion of the liquid stops and the pump works as a centrifugal pump with its full efficiency.

3. OPERATION & MAINTENANCE

3.1. OPERATION PROCEDURE

Install pumpset on foundation. Operate the pump as per following instructions.

- (i) Fill the pump casing with clear water/pumping liquid through the priming plug provided on top of the body. Close the plug after filling.
- (ii) Turn the lantern ring grease cup 2 to 3 turns. This should be carried out as per need.
- (iii) Do not run the pump dry.
- (iv) If the pump is idle for some time due to dirt/dust collected, the impeller sticks. Give jerk at the free end of the shaft to ensure free rotation.
- (v) If the pump is used to handle water containing solids and silt, it is necessary to wash out the same with clean water, before restarting. Restarting of pump should be done after filling clean water.
- (vi) The bearings should be lubricated regularly.

3.2 WARNING:

- (i) When dirty water is handled by the pump of diesel engine set the same water should not be used for engine cooling. In such a case radiator cooling is recommended or use air cooled diesel engine.
- (ii) Use correct grade grease in grease cups. Servo Gem-2 (Indian Oil Make) or equivalent is recommended.

3.3 MAINTENANCE TIME TABLE :

- | | |
|--------------------------------|---------------------------------|
| (1) DAILY CHECK | (2) PERIODICAL |
| (i) Priming Time | (i) Pressure gauge reading |
| (ii) All pipe connections | (ii) Bearing Temperature |
| (ii) Suction strainer (if any) | (iii) Leak through stuffing box |
| | (iv) Noise and vibration |
| | (v) Voltage and current. |

Open the pump, check and clean interior parts.

- (i) Remove impeller, replace of vanes are worn seriously.
- (ii) Replace shaft sleeve if worn out.
- (iii) Replace gland packing of worn out.
- (iv) Replace worn out parts.
- (v) Replace wear plates of worn out.

3.4 PUMP MAINTENANCE PROCEDURE

(A) Dismantling Procedure

- a) Remove the suction and the Delivery Pipe connection. Drain the pump Remove the grease Cups. Pipe Nipples etc. Separate the Pump from Engine/Motor and Base Plate.
- b) Remove Suction Flange and Delivery Flange. Remove Suction Cover with Flap Valve assembly from Delivery Casing.
- c) Dismantle the Driving Unit (i.e. Assemble of Stuffing Box Housing, Bearing Housing, Shaft, Ball Bearing, Impeller etc.) by loosening the nuts from Delivery Casing.
- d) Loosen Impeller Nut, Tighten the release bolts in the tapping of Impeller, and take out the impeller. Ensure removal without damage to vanes.
- e) Loosen the Gland and remove Stuffing Box, Packing Lantern Rings and washer for Stuffing Box Packing.
- f) Take out the pump Coupling by unscrewing the Grub Screw, Remove Coupling Key, Bearing Nut and Driving End Bearing Cover.
- g) Remove Shaft Sleeve, Pull the Shaft by using Press or Puller. Bearing should not be removed by hammering.
- h) Remove N.D.E. Wearing Plate from Delivery Casing by loosening Countersunk Head Screw. Remove D. E. Side Wearing Plate from Stuffing Box Housing by loosening Countersunk Head Screw on applicable models.
- i) After dismantling all the parts, it is necessary to clean and inspect them. The following parts are to be checked for wear and damage and are to be replaced, if necessary.
 - Impeller • Pump Shaft • Ball Bearing • Gland • Lantern Rings
 - Water Deflector • Wearing Plates • Stuffing Box Packing • Rubber Flap
 - Keys • Shaft Sleeve • Flat Gasket for Shaft Sleeve

(B) Reassembly Procedure :

- a) Apply a thin layer of grease to all surfaces which have to be air tight.
- b) Clean Recirculating Port in Delivery Casing.
- c) Complete the Flap - Valve Assembly. If it is dismantled with Suction Cover and wearing plates.
- d) Mount Bearings on the Shaft so that Bearing rest against the steps provided on the Shaft. Apply grease between the two faces of the Bearings. Ball Bearings should be press-fitted. If it is not possible then hammer gradually the inner race of the Ball Bearings by putting suitable spacer on it.
- e) Insert the Shaft into the Bearing Housing from driving end.
- f) Insert the Bearing Cover, (Bearing Cap, Water Deflector, Gland and Washer for stuffing Box Packing) on the Shaft from Non driving End Side Applicable models.
- g) Fit sub-assembly of stuffing Box Housing on Bearing Housing as applicable.
- h) Put Flat Gasket for Shaft Sleeve on the Shaft Sleeve Slot / Keyway Matches with Shaft - Keyway.
- i) Fit the Bearing Cover D. E. to the Bearing Housing (as per the Model)
- j) Insert the Impeller Key into the Shaft and Shaft Sleeve and mount the Impeller on the Shaft. Lock it by Impeller Nut along with its washer. Tighten the Bearing Nut on the Shaft. Check clearance between Impeller and Wearing Plate D.E. it should be 0.15 to 0.60mm
- k) Fit the Driving Unit (i.e. assembly of Stuffing Box Housing, Bearing Housing, Bearing Shaft, Impeller etc.) to the delivery Casing and tighten it with the help of Nuts. The clearance between impeller and wearing Plate N.D.E. should be 0.25 to 0.35mm. This should be adjusted by inserting required thickness of paper packing, between stuffing Box Housing and Delivery Casing. After fitting the Driving Unit, see that impeller rotates freely.
- l) Insert two Stuffing Box Packings, Lantern Ring duly filled with grease and again two Stuffing Box Packings. The joints of the Stuffing Box Packings should be 180 to each other. Tighten the Gland by nuts.
- m) Insert Coupling Key on the Shaft and mount the Pump Couplings on the Shaft and tighten it by Grub Screw.
- n) Fix up grease Cups for Bearing D.E., N.D.E. and Stuffing Box.
- o) Tighten Sub-assembly of Suction Cover and Flap Valve with Delivery Casing and then tighten the Delivery Flange and Suction Flange. Tighten this to Delivery Casing with its washer.

3.5 COUPLING DETAILS FOR BARE SHAFT PUMPS FOR MOTOR DRIVE LOVE JOY MAKE.

Sr. No.	Pump	Recommended Motor Rating (H.P./ Kw)	Recommended Coupling Model Loverjoy / Equivalent)
I	MBH SP-7	1 / 0.75 2900 RPM	L - 095
II	MBH SP-9	2 / 1.50 2900 RPM	L - 095
III	MBH SP-11	3 / 2.20 2900 RPM	L - 095
IV	MBH SP-16	5 / 3.70 1450 RPM	L - 100
V	MBH SP-23	10 / 7.50 1450 RPM	L - 100

4.0 GLAND PACKING CHART

Sr. No.	Pump Type	No of Packings	Size in MM (Height x Width)	Length of Packing / Set (MM)	Material
I	MBH SP-7	4	8 x 8	116.5	Graphited Cotton
II	MBH SP-9	4	8 x 8	116.5	--- Do --
III	MBH SP-11	4	9 x 9	143.0	--- Do --
IV	MBH SP-16	4	8 x 8	157.0	--- Do --
V	MBH SP-23	4	8 x 8	157.0	--- Do --

4.1 BEARING DETAILS

Sr. No.	Pump Type	Bearing at Driving End (SKF / Equivalent)	Bearing at Non Driving End (SKF / Equivalent)
I	MBH SP-7	6305	6205
II	MBH SP-9	6305	6205
III	MBH SP-11	6305	6205
IV	MBH SP-16	6306	6206
V	MBH SP-23	6306	6206

4.2 TYPE OF IMPELLER AND WEARING PLATE DETAILS

Sr. No.	Pump Model Bare Shaft / Mono Version	Type of Impeller	Wearing Plate Details Non Driving End	Wearing Plate Details Non Driving End
I	MBH SP-7	SEMI-OPEN	No	No
II	MBH SP-9	SEMI OPEN	Yes	No
III	MBH SP-11	SEMI OPEN	Yes	No
IV	MBH SP-16	SEMI OPEN	No	No
V	MBH SP-23	OPEN	Yes	Yes

4.3 WATER FILLING CAPACITY

Sr. No.	Pump Type	Water Filling Capacity (Liters)
I	MBH SP-7	5.1
II	MBH SP-9	6.1
III	MBH SP-11	10.0
IV	MBH SP-16	14.0
V	MBH SP-23	37.2

TROUBLE SHOOTING CHART

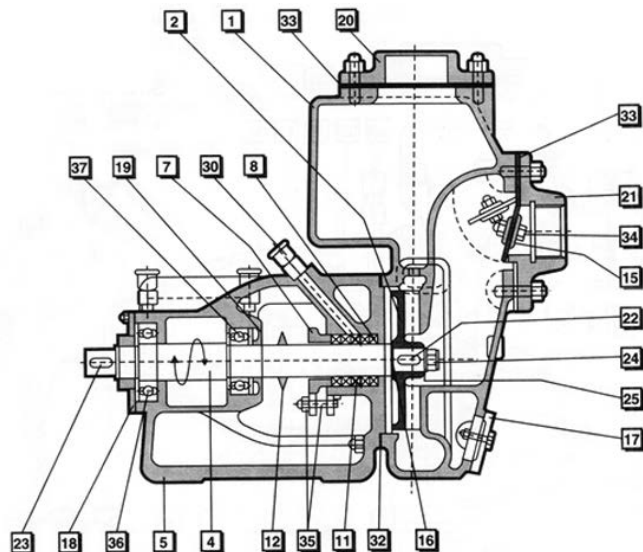
Sr. No.	Defects	Causes	Remedy
1.	Priming takes long time	1) Insufficient quantity of water / water not filled in pump casing 2) Suction Pipe and Strainer (if any) clogged partially or fully 3) Pump Speed too low 4) Suction Lift too high 5) Leakage in Suction Pipe. 6) Too warm liquid in pump Casing 7) More clearance between Impeller & Wearing plate N.D.E. 8) Shaft Sleeve & Gland Packing worn and air leaks 9) Recirculating ports in Delivery Casing clogged partially or fully	1) Fill up pump casing with clear water or liquid be pumped 2) Clean Suction branch 3) Check up speed of prime mover and adjust 4) Reduce Suction Lift 5) Prevent leakage in Suction Pipe 6) Replace liquid by cold liquid 7) Measure the clearance and adjust by using proper packing 8) Replace Shaft Sleeve and Gland Packing with Sleeve Gasket 9) Clean recirculating ports of Delivery Casing
2.	Water Delivery inadequate	1) Speed too low. 2) Leakage in Suction side fitting and piping 3) Discharge Head too high 4) Pump Casing empty 5) Rubber Flap Valve clogged 6) Shaft Sleeve / Gland Packing worn and air leaks 7) More clearance between Impeller and wearing Plate 8) Suction Lift too high or Suction Pipe too long	1) Check the speed of prime mover and adjust 2) Prevent leakage in suction pipe and fitting 3) Check up vertical head and frictional losses 4) Fill up the pump casing 5) Check up rubber Flap assembly & leakage from pump casing 6) Replace the Shaft Sleeve/ Gland Packing. 7) Measure the clearance and adjust by using Proper packing 8) Avoid High Suction lift and Suction Piping

TROUBLE SHOOTING CHART

Sr. No.	Defects	Causes	Remedy
3.	Pump Consumes more power	1) Speed too high 2) Head less than specified range 3) Shaft bent 4) Misalignment of the set	1) Check and correct the speed. 2) Provide minimum specified head 3) Check and replace the shaft 4) Correct the alignment between pump and prime mover
4.	Low Pressure	1) Prime mover running below rated speed 2) Leakage through Gland Packing 3) Too much clearance between Impeller and wearing Plate	1) Check the Speed of prime mover and correct it 2) Replace Gland Packing 3) Measure the clearance and adjust by using proper packings
5.	Pump Vibrates and makes noise	1) Pump Casing not filled with water / liquid (it is possible only priming time) 2) Suction Lift too high 3) Misalignment 4) Foundation not rigid 5) Shaft Bent 6) Bearing worn out 7) Lack of Lubrication 8) Pump operates at very low capacity	1) Fill up the pump Casing 2) Reduce the Suction lift 3) Correct the alignment between pump and Prime mover 4) Provide rigid foundation, tighten the bolts 5) Replace the shaft 6) Check and replace Bearing 7) Lubricate the Bearing properly 8) Reduce Total Head
6.	Shorter Bearing life	1) Misalignment 2) Shaft Bent 3) Excessive Grease or inadequate grease 4) Dirty water getting into bearings	1) Correct the alignment of Pump and Prime Movers 2) Check the Shaft condition and replace, if necessary 3) Check up lubrication 4) Protect bearing neatly replace water deflector

CROSS SECTION DRAWING

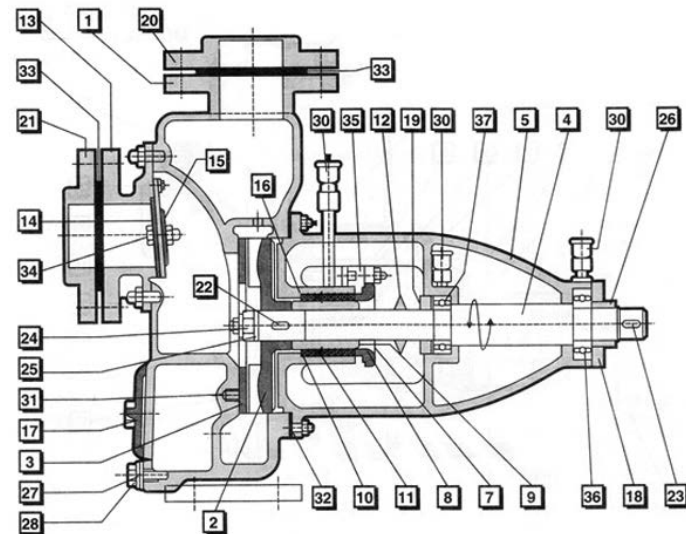
MODEL :
MBH SP-7



No.	DESCRIPTION	No.	DESCRIPTION
1	PUMP BODY	20	FLANGE-DELIVERY SIDE
2	IMPELLER (C.I.)	21	FLANGE-SUCTION SIDE
4	PUMP SHAFT	22	KEY FOR IMPELLER
5	BEARING HOUSING	23	KEY FOR COUPLING
7	GLAND BUSH	24	IMPELLER NUT
8	GLAND PACKING SET	25	WASHER FOR IMPELLER NUT
11	LANTERN RING	30	GREASE CUP
12	WATER DEFLECTOR	32	PACKING FOR BEARING HOUSING (PAPER)
15	WEIGHT FOR FLAP VALVE	33	RUBBER PACKING FOR DEL+SUC. FLANGE
16	GASKET (SHIM-BRASS)	34	NUT, BOLT & WASHER FOR FLAP VALVE
17	INSR WINDOW COVER	35	T-BOLT WITH NUT FOR GLAND-BUSH
18	BEARING COVER COUPLING SIDE	36	BEARING AT DRIVE END
19	BEARING COVER (NON-DRIVE END)	37	BEARING AT NON-DRIVE END

CROSS SECTION DRAWING

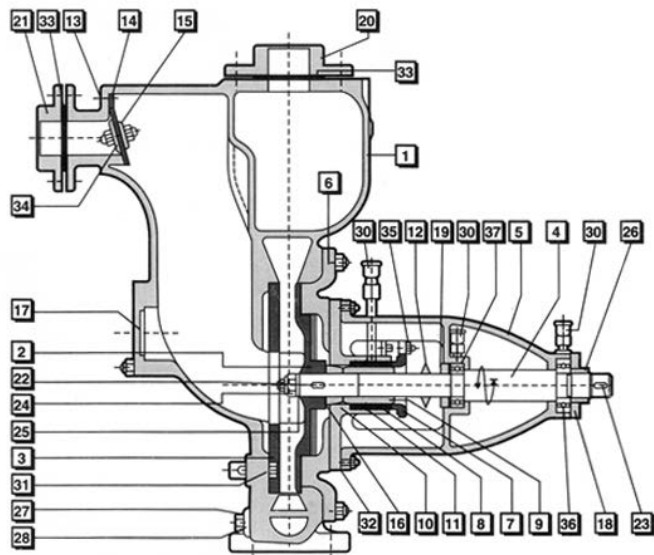
MODEL :
MBH SP-9
MBH SP-11
MBH SP-16



No.	DESCRIPTION	No.	DESCRIPTION
1	PUMP BODY	20	FLANGE-DELIVERY SIDE
2	IMPELLER (C.I.)	21	FLANGE-SUCTION SIDE
3	WEARING PLATE	22	KEY FOR IMPELLER
4	PUMP SHAFT	23	KEY FOR COUPLING
5	BEARING HOUSING	24	IMPELLER NUT
6	STUFFING HOUSING	25	WASHER FOR IMPELLER NUT
7	GLAND BUSH	26	BEARING LOCK NUT
8	GLAND PACKING SET	27	DRAIN PLUG
9	SHAFT SLEEVE (S.S.)	28	DRAIN PLUG WASHER
10	WASHER FOR STUFFING BOX PACKING	29	WATER PLUG (PRIMING HOLE)
11	LANTERN RING	30	GREASE CUP
12	WATER DEFLECTOR	31	COUNTER SUNK SCREW FOR WEAR PLATE
13	SUCTION HOUSING	33	PACKING FOR BEARING HOUSING (PAPER)
14	FLAP VALVE (RUBBER)	34	RUBBER PACKING FOR DEL. +SUC. FLANGE
15	WEIGHT FOR FLAP VALVE	35	NUT, BOLT & WASHER FOR FLAP VALVE
16	GASKET (SHIM-BRASS)	36	T-BOLT WITH NUT FOR GLAND-BUSH
17	INSP. WINDOW COVER	37	BEARING AT DRIVE END
18	BEARING COVER COUPLING SIDE	38	BEARING AT NON-DRIVE END
19	BEARING COVER (NON-DRIVE END)		

CROSS SECTION DRAWING

MODEL :
MBH SP-23



No.	DESCRIPTION	No.	DESCRIPTION
1	PUMP BODY	20	FLANGE-DELIVERY SIDE
2	IMPELLER (C.I.)	21	FLANGE-SUCTION SIDE
3	WEARING PLATE	22	KEY FOR IMPELLER
4	PUMP SHAFT	23	KEY FOR COUPLING
5	BEARING HOUSING	24	IMPELLER NUT
6	STUFFING HOUSING	25	WASHER FOR IMPELLER NUT
7	GLAND BUSH	26	BEARING LOCK NUT
8	GLAND PACKING SET	27	DRAIN PLUG
9	SHAFT SLEEVE (S.S.)	28	DRAIN PLUG WASHER
10	WASHER FOR STUFFING BOX PACKING	29	WATER PLUG (PRIMING HOLE)
11	LANTERN RING	30	GREASE CUP
12	WATER DEFLECTOR	31	COUNTER SUNK SCREW FOR WEAR PLATE
13	SUCTION HOUSING	33	PACKING FOR BEARING HOUSING (PAPER)
14	FLAP VALVE (RUBBER)	34	RUBBER PACKING FOR DEL. + SUC. FLANGE
15	WEIGHT FOR FLAP VALVE	35	NUT, BOLT & WASHER FOR FLAP VALVE
16	GASKET (SHIM-BRASS)	36	T-BOLT WITH NUT FOR GLAND-BUSH
17	INSP. WINDOW COVER	37	BEARING AT DRIVE END
18	BEARING COVER COUPLING SIDE	38	BEARING AT NON-DRIVE END
19	BEARING COVER (NON-DRIVE END)		

MBH[®] PUMPS

WARRANTY

SELF PRIMING MUD PUMP

The pump is warranty against defects in material and workmanship under normal use and service for the period of 15 months from the date of purchase or 12 months from the date of commissioning, whichever is less.

The General terms and conditions for above guarantee are :

1. This warranty is valid only if the pump is operated strictly as per the Instructions given in the user guide attached herewith.
2. Our obligation shall be limited to rectifying; repairing or replacing defective items, ex-works/service station/Authorized Service Center, provided the purchaser has given immediate written notice. The equipment for repairs should be returned to us duly packed, on prepaid freight basis.

Model : _____ Pump Sr. No. _____

Customer Name : _____

Address : _____

Date of Purchase / Bill No.: _____

Dealers Name : _____

Signature : _____ Date : _____

mbh pumps (gujarat) pvt. ltd.

14, G.I.D.C. Naroda Indl. Estate, Ahmedabad-382 330, India.

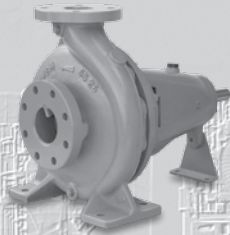
Phone : 079-2282 3066 / 2282 1018

E-mail : marketing@mbhpumps.com

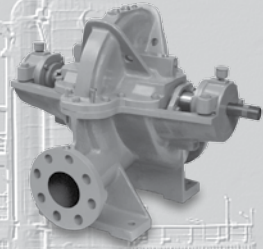
exports@mbhpumps.com

Website : www.mbhumps.com

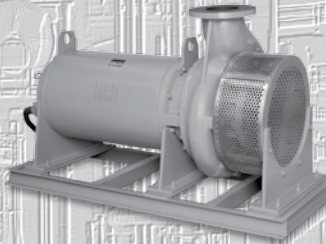
OTHER PRODUCTS



**CENTRIFUGAL
BACKPULL OUT PUMP**



**HORIZONTAL
SPLIT CASING PUMP**



**SUBMERGED
CENTRIFUGAL PUMP**



**SUBMERSIBLE
SEWAGE PUMP**



**PORTABLE
SUBMERSIBLE PUMP**



**DEWATERING
PUMP**



**POLDER
PUMP**

Specifications and performance are subject to change without prior notice.



ISO 9001
Certified Company

MBH[®] **PUMPS**

mbh pumps (gujarat) pvt. ltd.

14, G.I.D.C. Naroda Indl. Estate, Ahmedabad-382 330, India.

Phone : 079-2282 3066 / 2282 1018

E-mail : marketing@mbhpumps.com

exports@mbhpumps.com

Website : www.mbhumps.com

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