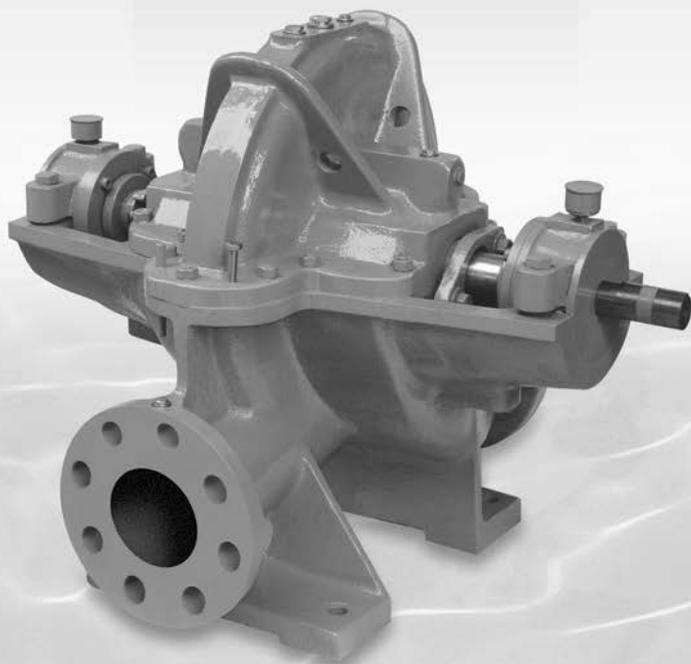




**OPERATION &
MAINTENANCE MANUAL**

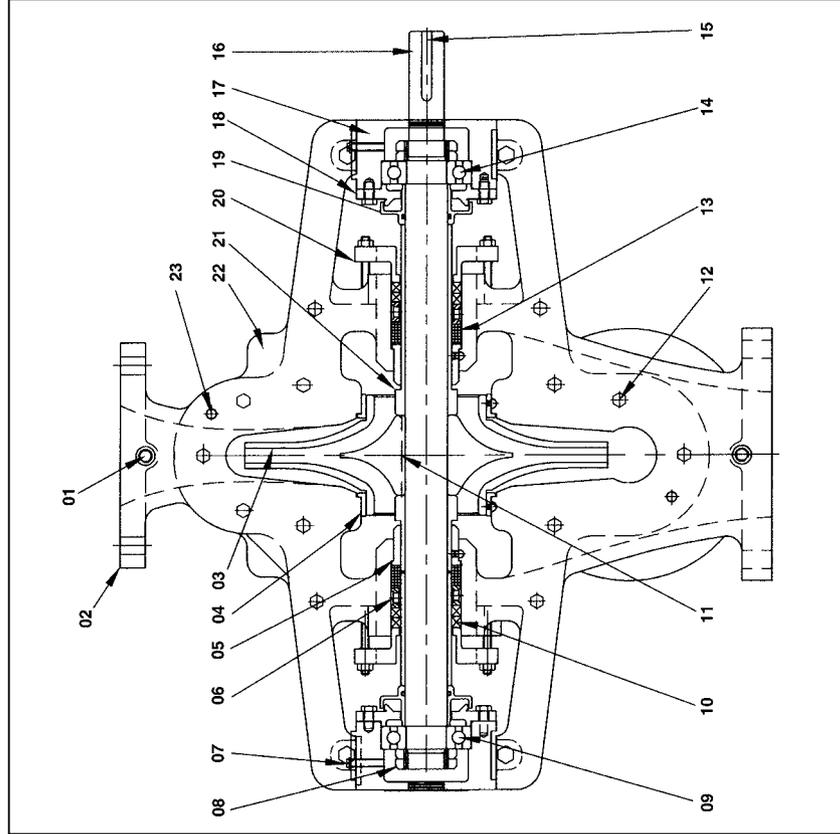
HORIZONTAL SPLIT CASING PUMP



**MBH
PUMPS**

A Mark of Quality

CROSS SECTION DRAWING



No.	DESCRIPTION	MATERIAL
01	1/4" BSP PLUG	BRASS
02	LOWER HOUSING	C. I. IS-210, FG260
03	IMPELLER	C. I. / G. M. / S. S.
04	NECK RING	C. I. / G. M.
05	PUMP BUSH	C. I.
06	LENTREN RING	PLASTIC
07	RING NUT	M. S.
08	1/4" GREASE CUP / NIPPLE	BRASS
09	BALL BEARING (N.D.E.)	STD.
10	GLAND PACKING	STD.
11	IMPELLER KEY	EN-8
12	HARDWER	M.S.
13	FIBER RING	FIBER + WOOD
14	BALL BEARING (D.E.)	STD.
15	COUPLING KEY	EN-8
16	PUMP SHAFT	EN-8
17	BEARING HOUSHING	C. I. IS-210, FG260
18	BEARING COVER	C. I. IS-210, FG260
19	BEARING COLLAR	C. I. IS-210, FG260
20	GLAND COVER	C. I. IS-210, FG260
21	PUMP SLEEVE	C. I. / S.S. / G.M.
22	UPPER CASING	C. I. IS-210, FG260
23	TAPER PIN	S. S.

GENERAL

1. MBH make horizontal split casing type pumps with suction and discharge nozzles and their supporting feet integrally cast in the lower half casing. This construction allows removal of the rotating unit for inspection and repairs by just removing upper half casing, and without disturbing alignment, pipe connection or prime movers.
2. Pumps when properly installed and given due care in operation and maintenance should operate satisfactorily for a long period.
3. When the pump is received, before the actual use of the pump, it should be inspected and located in a dry place. The coupling should be rotated periodically to prevent pitting of bearing surfaces.
4. All split casing pump are designated by serial number, model number, size and type. This information is stamped on an identification plate which is mounted on the pumps.

INSTALLATION INSTRUCTION

1. The pump should be installed as near to the source of liquid as possible.
2. Make sure there is a suitable power source available for the pump driver. The motor driven electrical characteristics should be identical to those shown on motor data plate.
3. The foundation should be substantial to reduce vibration and rigid enough to avoid any twisting or misalignment.
4. The base frame of the pump must be bolted and ground to a rigid foundation of concrete block.
5. Shaft alignment must be checked again after the final position of the pump unit.
6. Maintain a gap of 2-3 mm between the drive and driven jaw of coupling.
7. Provide suitable earthing and tripping device for electrical equipments.

ALIGNMENT PROCEDURE

There are two forms of misalignment :

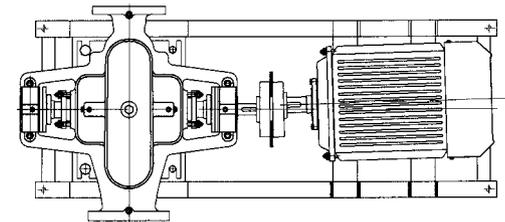
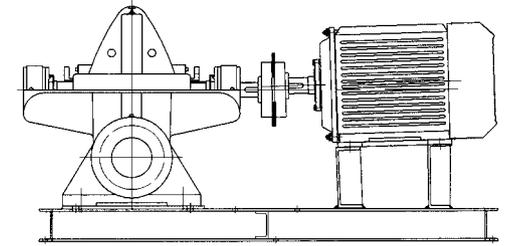
- a) Angular – Shaft with axes concentric but not parallel.
- b) Parallel – Shaft with axes parallel but not concentric.

To check for angular alignment insert a pair of inside calipers or taper gauge at four points at 30 degree intervals around the coupling. Angular alignment is achieved when the measurements show that all points around the coupling faces are within 0.05 mm of each other. (See Fig 1)

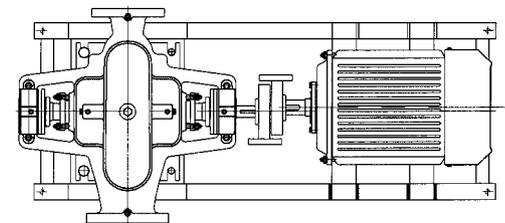
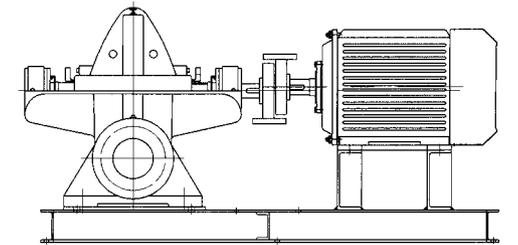
To check for parallel alignment, place a straight edge across both coupling rims at the bottom and at both sides (See Fig 1). Parallel alignment is achieved when the straight edge rests evenly on the coupling rim at all position. Alignment adjustments can be made by shimming under the driver mounting feet. After each adjustment, it is necessary to recheck all features of the alignment.

Figure-1

ANGULAR MISALIGNMENT



PARALLEL MISALIGNMENT



SUCTION AND DISCHARGE PIPING

When installing the pump piping, make sure that the following precautions are taken :

1. Piping should always be run to the pump. Do not move pump to pipe. This could make final alignment impossible.
2. Both suction and discharge piping should be supported independently and close to pump so that no strain is transmitted to the pump when flange bolts are tightened. Use pipe hangers or other supports at necessary intervals to provide support. When expansion joints are used in the piping system, they must be installed beyond the piping supports close to the pump.
3. It is advisable to increase the size of both suction and discharge pipes at the pump connection to decrease the loss of head from friction.
4. Install piping as straight as possible, avoid unnecessary bends. Where necessary, use 45 degree or long sweep 90 degree fitting to decrease friction losses.
5. Make sure that all piping joints are air tight. Provide pipe expansions below when hot fluid is to be pumped. Where reducers are used, eccentric reducers are to be fitted in suction lines and straight taper reducers in discharge and vertical lines (See Fig 2A, 2B, 2C). Misuse of reducers may cause the formation of air pocket in the pipe and thus preventing the correct operation of the pump.
6. The suction pipe should be as short and direct as possible. Where suction lift is not very high, it is advisable to use a foot valve. Horizontal suction line must have a gradual rise to the pump.
7. The discharge pipe is usually preceded by a non-return valve or check valve and a discharge gate valve (See Fig 2D). The check valve is to protect the pump from excessive back pressure and reverse rotation of the unit and to prevent back flow into the pump in case of stoppage or failure of the driver. The discharge valve is used in priming starting and shutting down the pump.

Figure-2(A) SUCTION PIPING

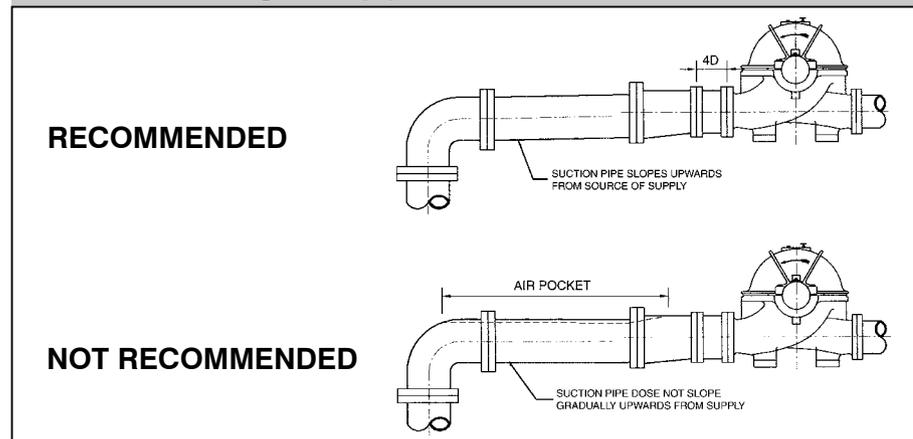


Figure-2(B) SUCTION PIPING

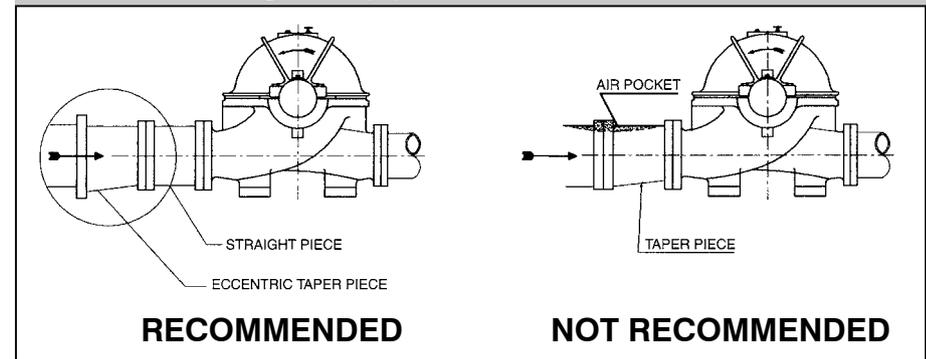


Figure-2(C)

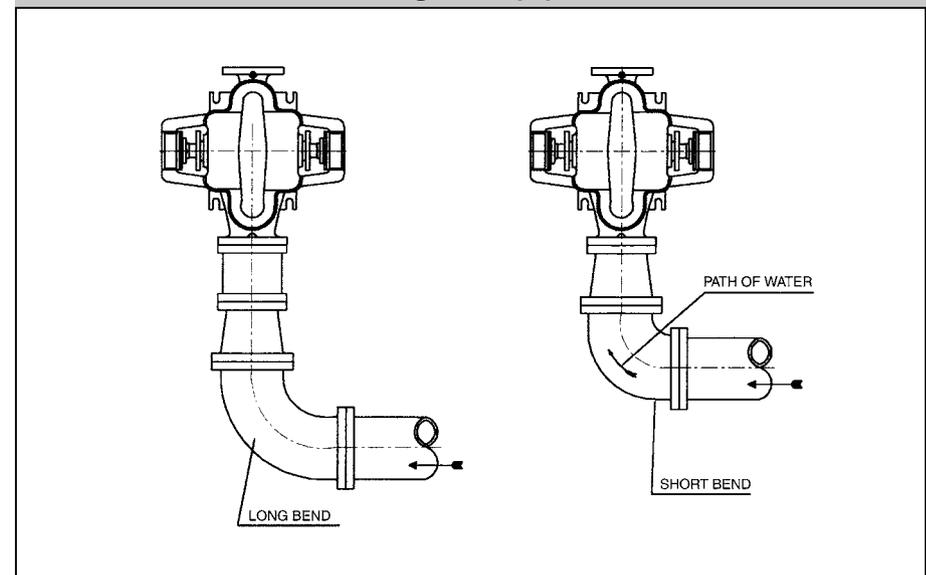
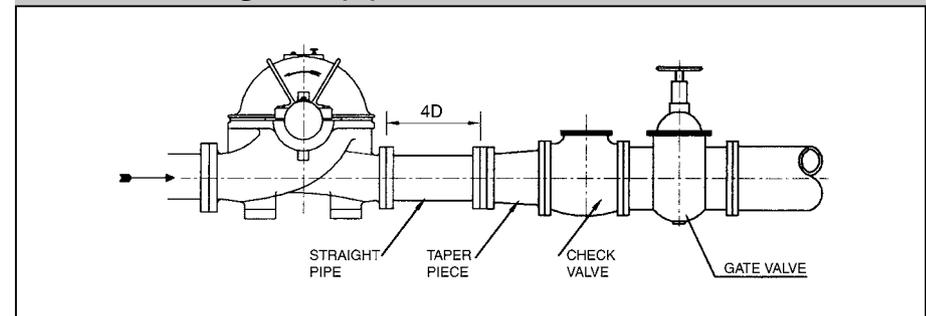


Figure-2(D) DISCHARGE PIPING



BEFORE STARTING INSTRUCTION

1. Check if the pump rotates freely by hand.
2. Check the alignment between pump and motor.
3. Fill the pump body and suction pipelines with liquid before starting.
4. Check the correct rotation as shown on the pump volute.
5. Check up grease in the grease lubrication or oil level for oil.
6. Valve on the delivery side should be closed.
7. The cock of pressure gauge should be closed.

STARTING INSTRUCTION

1. Open all valve in suction line fully.
2. Start the pump and let the prime mover pick up its full speed.
3. Open the valve on delivery side slowly.
4. Open the cock for pressure gauge connection.
5. Set the delivery valve at designed duty point. (As per name plate)

CHECK POINT DURING RUNNING

1. The flow of sealing liquid (if external liquid is provided for sealing purpose) should be uninterrupted.
2. In gland packing arrangement pumps, there should be constant drip of liquid from gland packed arrangement when the pump is running.
3. Head and capacity developed by the pump is as specified.
4. Power consumption is within limit.
5. There should be no mechanical friction in the pump.
6. Check the suction and discharge gauge reading.
7. Check the vibration and noise of the pump unit.

LUBRICATION DETAILS

In the regreasing period bearings should be repacked with a high quality, ball and roller bearing grease free from resin and acid, not liable to harden or crumble and possessing rust preventive properties. The regreasing interval depends upon the operating speed of the unit.

Pump Operating Speed	Regreasing Interval
1450 RPM	4000 Hours
2000 RPM	3000 Hours
Recommended Grease Specifications.	
For 1450 RPM	IOCL SERVOGEM - 3 or equivalent
For 2000 RPM	IOCL SERVOGEM - 2 or equivalent

TROUBLE SHOOTING CHART

No Liquid Delivered	Pump does not deliver rated capacity	Pump does not develop rated pressure	Pump loses liquid after starting	Pump operates for a short time, then stops	Pumps operate while hot too much power	Motor consumes	Vibration	Cavity formation - noise	Pump Bearing Overheat	
•				•						Pump not primed / lack of prime / incomplete priming
•		•								Loss of prime
•	•	•	•					•		Suction lift too high
•	•									Discharge head too high
•	•	•								Speed too low
•										Wrong direction of rotation
•	•									Impeller plugged up / Impeller partially plugged
	•	•	•	•				•		Air leak in suction
	•	•	•							Air leak in stuffing box
	•	•	•							Insufficient net inlet head
	•	•		•	•	•	•	•	•	Damage impeller & wrong size of impeller
	•	•		•						Defective packing
	•	•								Foot valve too small or partially obstructed
	•	•		•				•		Inlet pipe not submerged enough
	•	•								Impeller too small
		•								Obstruction in liquid passages
		•	•	•				•		Air or gas in liquid
					•					Head lower than rating
					•	•				Liquid heavier than rating
					•	•				Viscosity of liquid greater than rating
					•	•	•		•	Shaft bent
					•	•	•		•	Bearing worn off
					•	•	•		•	Misalignment of pump and driver
					•	•				Defects in motor
					•	•	•			Voltage and/or frequency lower than rating
						•				Rotor bearing worn out
						•		•		Speed too high
							•			Foundation not rigid
									•	Lubrication oil / grease dirty, contaminated



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MBH PUMPS

GUARANTEE

HORIZONTAL SPLIT CASING PUMP

The Pump is guaranteed 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. The guarantee is valid only if the pump is operated strictly as per the instructions given in the user guide attached herewith.
2. Our obligation is 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 pre-paid freight basis.

Model : _____ Pump Sr. No. _____

Customer Name : _____

Address : _____

Date of Purchase / Bill No.: _____

Dealers Name : _____

Signature : _____ Date : _____

mbh pumps (gujarat) pvt. ltd.

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