

# MBH<sup>®</sup> PUMPS

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

## **CENTRIFUGAL BACKPULL OUT PUMP**



**ISO 9001**  
*Certified Company*



*A Mark of Quality*

## OPERATION MANUAL

**Product : BACK PULL OUT PUMPS**

**Model :** \_\_\_\_\_

**Sr. No.:** \_\_\_\_\_

### INSTRUCTION:

We have tried maximum to explain you the working of this machine with its extreme limits and defined residual hazards. Please read the manual carefully before starting the machine.

We are not responsible for any accidents or health aspects if:

1. The machine instructions and safety warnings specified in this manual are not followed,
2. The machine is operated for the other material other than specified or with specifications outside the extreme limits of the machine;
3. If units of other makes are fixed on our machine without our consent.

## WARRANTY

**mbh pumps (gujarat) pvt. ltd.**  
**14, G.I.D.C., Naroda Indl. Estate,**  
**Naroda, Ahmedabad - 382 330, India.**

We warrant that the pump supplied from us is free from defective material and faulty workmanship. This warranty holds good for a period of 12 months from the date of commissioning the equipment or 18 months from the date of dispatch from our factory, whichever is earlier. Our liability in respect of any complaint is limited to replacing part/parts free of charge ex-works or repairs of the defective part/parts only to the extent that such replacement / repairs are attributable or arise solely from faulty workmanship or defective material.

This warranty holds good only for the products manufactured by us.

**For, MBH Pumps (Gujarat) Pvt. Ltd.**

## INDEX

NO.	DESCRIPTION	PAGE NO.
01	WELCOME	4
02	ORGANIZATION INTRODUCTION	4
03	GENERAL PRODUCT SPECIFICATION - AS ORDERED	5
04	GENERAL SAFETY INSTRUCTION	6
05	GENERAL SAFETY AND ACCIDENT PREVENTION TERMS	7
06	ABNORMAL CONDITIONS	8
07	QUALIFIED OPERATORS	9
08	PRODUCT INTRODUCTION	9
	Intended + Unintended use	10
	Application - Specific to this Equipment	10
	Limitations of this Equipment	10
09	CUSTOMER HAS TO ARRANGE FOR:	10
	Fire Protection	10
	Working Environment	11
10	RECEIPT FROM TRANSPORT	11
	Unpacking	11
	Lifting and shifting	11
	Safety Precautions	12
11	INSTALLATION	13
	Installation plan - anchoring	13
	Space Layout Considering Ergonomics	16
	Foundation	16
	Levelling + Alignment	16
	Electrical Connection & Safety Protection	17
12	FIRST START UP	18
	Materials and Products	18
	Equipment Description	18
	Equipment Operation	18
13	MAINTENANCE	19
	Regular Maintenance	19
	Internal Lubrication and Greasing Points	20
	Trouble Shooting Chart	21
	Spare Parts List	22
14	EQUIPMENT ECOLOGICAL PROFILE	23
15	DISABLING THE EQUIPMENT WHEN NOT IN USE	23
16	STORAGE PRECAUTIONS	23
17	EQUIPMENT DISPOSAL METHOD (SCRAP)	23

## 01. WELCOME TO CUSTOMER

Congratulations on your purchase and welcome to MBH Pumps. To fully benefit from the support that MBH offers, register your product with Sr no. on [www.mbhumps.com](http://www.mbhumps.com)

## 02. ORGANIZATION INTRODUCTION

**Way back in 1969**, Shri Bhogibhai Patel had a dream - to manufacture good quality agricultural pumps at most approvable rates. Shri Bhogibhai's vision backed by his dauntless and dedicated hard work soon converted this small company - MBH Pumps (Gujarat) Pvt. Ltd. Into a multi-dimensional and multi-crore company manufacturing various types of agricultural pumps and industrial pumps. Over the years, MBH group of companies with a team professionally managed by Dhiren Kamania and young director Parth Kamania and has emerged as the true friend of the Indian Farming community and Industrial growth.

**MBH PUMPS (GUJARAT) PVT. LTD. With its IS - ISO-9001** helps their customers by timely delivery of high-quality standard pump sets at most affordable prices, where as efficient pumps have helped a lot of industries to save energy. From a humble beginning, MBH Pumps (Gujarat) Pvt. Ltd. has proudly boosted to a group turnover of more than 20.00 crores.

The young Director Shri Dhiren Kamania has rapidly diversified into manufacturing of special utility INDUSTRIAL PUMPS. Sewage and Dewatering Pumps, Back pullout process pumps, Chemical Pumps, Stainless Steel Pumps etc. and MBH Pumps (Gujarat) Pvt Ltd. has come a long way since its inception in 1969. God willing with the continued support and co-operation of all the customers the channel partners and the staff members the management is confidently looking forward to attaining greater heights, especially, with the company's commitment to its quality policy - "a planned approach to continuous quality improvement through employee involvement"

In our manufacturing unit we have successfully implemented modern Japanese Management techniques like: KAIZEN (regular and continuous minor improvements to facilitate mass-production at a faster rate), Kan-ban (two-bin system for no stock-out position), JIT (Just-In-Time to reduce inventory cost), and many more. Further, we also impart advanced training to our engineers and technical staff in the field of energy conservation.

**Name** : MBH Pumps (Gujarat) Pvt. Ltd.  
**Regd. Office & Factory** : 14, G.I.D.C., Naroda Indl. Estate,  
Naroda, Ahmedabad - 382 330, India.  
**Phone** : (079) 2282 3066 / 2282 1018  
**Fax** : (079) 2282 1511  
**E-mail** : [marketing@mbhumps.com](mailto:marketing@mbhumps.com)  
**Web site** : [www.mbhumps.com](http://www.mbhumps.com)

## PRODUCT : IS - ISO 9001:2008

Sewage and Effluent Sub. Pump : 1.5 to 250 HP  
Dewatering / Polder Pump : 1.5 to 350 HP  
Submerged centrifugal pump : up to 300 HP  
Back Pullout Centrifugal Pump : Head 2 mtrs. to 100 mtrs.  
Borewell Submersible Pump : 1.5 to 125 HP (IS : 8034-1989)  
Submersible Monoset : 0.5 to 50 HP (IS : 14220-1994)  
Self priming Mud Pump : Head 6 mtrs. to 34 mtrs.  
Horizontal Split Casing Pump : 10 Mtrs. to 120 Mtrs.

## QUALITY POLICY

We at MBH PUMPS are committed to customer satisfaction by providing quality and cost effective product, timely delivery and service.

To achieve this objective, our policy is to monitor our progress towards achieving our goals.

We will review and revise our targets as we progress one mile stone to another.

Will create team work by involving our employees at various levels.

## 03. GENERAL / PRODUCT SPECIFICATION

1. MBH make backpullout centrifugal pumps are used for handling various types of chemical liquids like acids, alkalies, oil, alcohol and water. These pumps are manufactured to close tolerance and are of rigid construction. However, proper installation, operation and maintenance are equally important to ensure trouble free service. This booklet covers important guidelines and instructions for installation, operation and maintenance for MBH brand backpullout centrifugal pumps. These instructions should be followed carefully for satisfactory performance of the pumping unit. Only mechanical aspects are dealt within this booklet.

2. This booklet covers instructions for "MBH" brand horizontal backpullout centrifugal pumps of following models:-

UNIT	SHAFT DIA.	MODELS			
I	24	32/13	32/16	32/20	32/26
		40/13	40/16	40/20	40/26
		50/13	50/16	50/20	50/26
		65/13	65/16	65/20	80/16
II	32	65/26	65/32	80/20	80/26
		80/32	100/26	100/26	100/32
		125/26	50/32	--	--
III	42	100/40	125/32	125/40	150/32
		150/40	200/40	--	--

## 04. GENERAL SAFETY INSTRUCTIONS

### 1. General Information

Before performing any actions detailed within this instruction, the Site Health and Safety instructions shall be read and fully understood. The instructions in this document shall also be read and fully understood.

Whenever the equipment is operated, maintained or used in any way, the procedures detailed within these instructions shall be followed. The pump supplied by MBH Pumps (Gujarat) Pvt. Ltd. has been designed with safety in mind; where hazards cannot be eliminated, the risk has been minimized by the use of guards and other design features. Some hazards cannot be guarded against and the instructions below **MUST BE COMPLIED WITH** for safe operation. These instructions cannot cover all circumstances. It is the responsibility of the user of the equipment for maintaining safe working practices at all times. The pumps are supplied with stickers for hazard, caution and safety wherever these are applicable.

In this manual you can find instructions and information about:

- Safety instructions for operator, Equipment and environment;
- Equipment introduction with intended uses;
- Correct installation of the Equipment;
- Description of each part at the Equipment;
- Set-up and start-up adjustments;
- Correct standard and scheduled maintenance;
- Simple safety regulations and accident prevention.

Therefore, as far as the user's safety is concerned, in this handbook the possible risks connected with Equipment operation are pointed out.

2. Within the manual, safety instructions are marked with safety symbols.

Hazard.  This symbol refers to general mechanical aspects of safety.

Hazard.  This symbol refers to electrical safety.

**CAUTION** This symbol is used to introduce safety instructions whose non-Observance may lead to damage to the machine and its functions.

3. MBH products are designed for installation in designated areas, which are to be kept clean and free of obstructions that may restrict safe access to the controls and maintenance access points. Pump nameplate is fitted to each unit and must not be removed. Loss of this plate could make identification impossible. This in turn could affect safety and cause difficulty in obtaining spare parts. Should accidental loss or damage occur, contact MBH immediately.

4. Access to the equipment should be restricted to the personnel responsible for installation, operation and maintenance and they must be trained, adequately qualified and supplied with the appropriate tools for their respective tasks.

5. MBH firmly insists that all personnel responsible for installation, operation and maintenance of the equipment must read the manual before any work is done.

**We recommend to keep always the Handbook within Operator's reach, and to preserve it in its integral form.**

6. Ear defenders should be worn where the specified equipment noise level exceeds locally defined safe levels. Safety glasses or goggles should be worn where working with pressurized systems and hazardous substances. Other personal protection equipment must be worn where local rules apply.

7. **CAUTION DO NOT** wear loose or frayed clothing or jewellery, which could catch on the controls or becomes trapped in the equipment.

8. Operation of the equipment for the application other than for which it is supplied can increase the risk from hazards. Please consult MBH before making such change in the application of the equipment.

9. Improper installation, operation and maintenance of the product supplied by MBH could result in injury or death.

10. **CAUTION** in case of backpullout centrifugal pumps which are handling acidic fluid, oil, the operator should avoid touching the pump in running condition. Use safety equipments like hand gloves and safety shoes while operating them.

 **CAUTION**

## 05. GENERAL SAFETY AND ACCIDENT PREVENTION TERMS

- The Equipment is provided with necessary covers to protect from rotating parts.
- The Equipment is controlled by means of pushbuttons and control levers. During operation the specified safety distances must always be observed.
- The Equipment should be used by the trained and authorized person only.
- No other persons except for the Operator are allowed within the operation area of the Equipment.
- The different activities concerning the Equipment operation must to be entrusted to competent persons, as specified in the following chapter; and must always be observed
- Any damaged or defective connections to the different energy supplies must be replaced.
- All interventions concerning installation, start-up, change of equipment, use, change to the use and the operation, regular maintenance, inspection and periodical maintenance can be performed only after disabling the Equipment according to relevant chapter of this manual.
- This Instruction Handbook must always be within Operator's reach; for a prompt consulting in order to check correct operation cycle in case of doubts.
- For any intervention necessary to change the Equipment or its use, please contact MBH Pumps and ask for written approval. Without written approval MBH Pumps will not assume any responsibility for possible troubles caused by the improper use or change of the Equipment.

 **CAUTION**

**06. ABNORMAL CONDITIONS**

The Equipment can be used only in the conditions specified within this operation and maintenance manual. No tempering with the Equipment or its safety devices is allowed, and the use must be limited to normal working conditions.

In order to avoid unusual working conditions, in the following several recommendations to the operator are listed. However, any condition, which is not mentioned within this handbook, should be avoided.

- Load and unload the liquid according to the instructions of the handbook, and in compliance to the standards for the movement of goods.
- Never wear loose garments which may be entangled with the Equipment parts (as aprons, wide sleeves, loose belts, long loose hair, neck laces, rings, etc.)  
Never process liquids differing from the given specifications.
- If the Customer wants to install on the Equipment a piece of equipment which has not been supplied by MBH Pumps (Gujarat) Pvt. Ltd., the compliance with the safety conditions specified in the Equipments Standards has to be checked.
- If the Customer wants to install on the Equipment a piece of equipment which has not been supplied by MBH Pumps (Gujarat) Pvt. Ltd., Ahmedabad won't bear any responsibility on defects caused by the use of this part.
- The Equipment should not be installed and used in corrosive or explosive environments.
- The Equipment must be operated by one Operator only, who must be always present.
- This is Indoor Equipment. It Can be operated in any weather, but not in direct sunlight.
- Unintended behavior of the operator or reasonably foreseeable misuse of the Equipment.

Examples includes

- Reflex behavior of a person in case of malfunction, incident or failure during the use of the Equipment,
- Behavior resulting from lack of concentration or carelessness,
- Behavior resulting from taking the "line of least resistance" in carrying out a task,
- Behavior resulting from pressures to keep the Equipment running in all circumstances, and
- Protective measures include work organization, correct behavior, attention, application of personal protective equipment (PPE), skill or training,

 **WARNING**

- Never run the Equipment without safe devices.
- Don't climb on the Equipment.

**07. QUALIFIED OPERATORS**

Further to having received all instructions described in the present manual, any intervention on the Equipment is allowed only to following personnel:

**OPERATOR:** The Operator of the pump equipment must have attended a specific training on a similar Equipment under the supervision of expert personnel. He's allowed to perform only the specific interventions as stated in the present manual, in compliance with the mentioned instructions. In any case, the use of the Equipment by unskilled personnel has to be prevented.

Operator must be healthy adult Male or Female.

He/she can be handicapped (dumb, but not deaf & blind, )

**MECHANICAL**

**MAINTENANCE ENGINEER:** The mechanical maintenance engineer will have a general experience in mechanics, and a specific knowledge of the pump equipment or similar equipments.

He's allowed to perform only specific interventions as stated in the present manual in compliance with the mentioned instructions.

**ELECTRICAL**

**MAINTENANCE ENGINEER:** The electrical maintenance engineer will have a general experience on electric boards and a specific knowledge of the electric components of the winding Equipment or of similar Equipments. He is allowed to perform only specific interventions as stated in the present manual, in compliance with the mentioned instructions.

**RESPONSIBLE FOR THE SAFETY:** The person for the safety is responsible for the accident prevention within the Company, according to the European Standards 89/39 CEE (Work Safety).

The safety responsible will control that all persons operating on the Equipment have been instructed according to the specification at the present handbook, including the initial installation and start-up interventions.

**08. PRODUCT INTRODUCTION**

This Equipment is for Industrial application.

**Model :** \_\_\_\_\_

**Serial no. of the Equipment under study :** \_\_\_\_\_

**Material Combination Code :** \_\_\_\_\_

Code	Pump Casing, Stuffing Box & Back Cover	Impeller	Shaft	Shaft Sleeve
01	CI	CI	EN 9	SS 410
02	CI	CI	SS 410	SS 410
03	CI	SS 316	SS 410	SS 410
04	SS 304	SS 304	SS 304	SS 304
05	SS 316 / SS 316 L	SS 316 / SS 316 L	SS 316	SS 316

## INPUT ENERGY

Diesel Engine : \_\_\_\_\_ hp \_\_\_\_\_ rpm

Electric \_\_\_\_\_ kw / hp, \_\_\_\_\_ Volts, \_\_\_\_\_ Hz, 3 phase with stabilizer (capacity) \_\_\_\_\_ rpm

## APPLICATION OF THE PRODUCT

### Intended uses

Pumping Liquid	Construction of Pump Wet Parts	Operating Temperature	Sealing Arrangement
Water	CI	10° C to 60° C	Gland Packing/ Mechanical Seal
Oil / Alcohol	SS 304		Mechanical Seal
Acids, Hazardous or Corrosive Chemicals	SS 316 / SS 316L		According to Pumped Liquid

### PROBABLE UNINTENDED USES

(which may cause safety problems to operator or environment)

- Liquids with dirt, solid contain, viscous liquid beyond 1.3 centipoise and other liquid beyond the temperature as mention in the table above.

### LIMITATIONS

- Don't operate beyond head range as mention in name plate
- Don't use motor of kw / rpm other than mention in name plate
- No starving of pump - this will damage glands / mechanical seals
- Water temp out of 10-60 deg C

### LIFE OF THE EQUIPMENT: 5 YEARS

(under defined working and maintenance conditions)

Parts to replace (because of wear & tear)

- Bearing, neck ring, gland, seals

## 09. CUSTOMER HAS TO ARRANGE FOR

- Electrical connections:
- Proper lighting arrangement.
- Proper air circulation.
- Trained industrial work force.
- Forklift of capacity: tone: 1 ton minimum
- Personal protective equipments: Hand Gloves, Helmate, Safety Shoes
- Pipe connections
- Clean, soft water at ambient temp - within 10 - 50 deg C

### SELECTION OF FIRE EXTINGUISHERS

#### Basics types of fire extinguishers:

1. **Class-A Fire:** Fire involving combustible materials of organic nature, such as wood, paper, cotton, rubber, and many plastics. Where the cooling effect of water is essential for extinguish of fire.
2. **Class-B Fire:** Fire involving flammable liquids, petroleum products or the likes, where a blanketing effect is essential.

3. **Class-c fire:** Fires involving flammable gases under pressure including liquefied gases where it is necessary to inhibit. The burning gas at fast rate with an inert gas powder for extinguishing.
4. **Class-D Fire:** Fire involving combustible metals such as Mg, Al, Zn, Na, These metals are reactive to water and water containing agents. So CO2 and ordinary dry powder is used for extinguishing fire.
5. **Class-E Fire:** Where the electrical equipment is involved in the fire, the non-conductivity of extinguishing media (dry chemical powder) is required.

### WORKING ENVIRONMENT

- Ambient temperature: +5° to 40° C
- Humidity: Maximum 50% at maximum temperature 40° C. Higher relative humidity may be permitted at lower temperature.
- Altitude: Not more than 1000 m above mean sea level.
- Contaminants: Free of dust.
- Ionizing and non-ionizing: Not subjected to any radiations (microwave, ultraviolet, X- rays)
- Free of vibration, shocks and bumps.
- Adequate light should be there. If required, fit electric lamps.
- Maintain proper air circulation to maintain room temperature between 30° to 35°C.
- Avoid dust and insects to enter in Equipment area. Fit mosquito nets on windows.

### HOUSEKEEPING

- Keep floor clean of obstacles – free movement for operator.
- Remove scrap material at regular time frequency.
- Let there be safe, unobstructed exit path. Door for exit should open outside.
- Floor should be non-slippery. Avoid spillage of water or oil on the floor.

## 10. RECEIPT FROM TRANSPORT

Before preparing the Equipment for installation and start-up, an accurate visual control is required in order to detect any possible damages occurred during Equipment transport and handling phases.

If one or several parts have been damaged, the installation of the Equipment has to be suspended. Supplier has to be informed of the event and any following intervention must be mutually agreed upon.

### UNPACKING

The Equipment is delivered in one piece only, when it is “standard’ model having the attached control desk. The package is a waterproof plastic cover and the control desk is packed with cartoon or wooden box.



### WARNING

Put scrap wooden boards away. Ensure nails are taken out and not projecting on wooden boards.

Wear safety shoes and hand gloves to avoid mechanical injury.

### LIFTING & SHIFTING

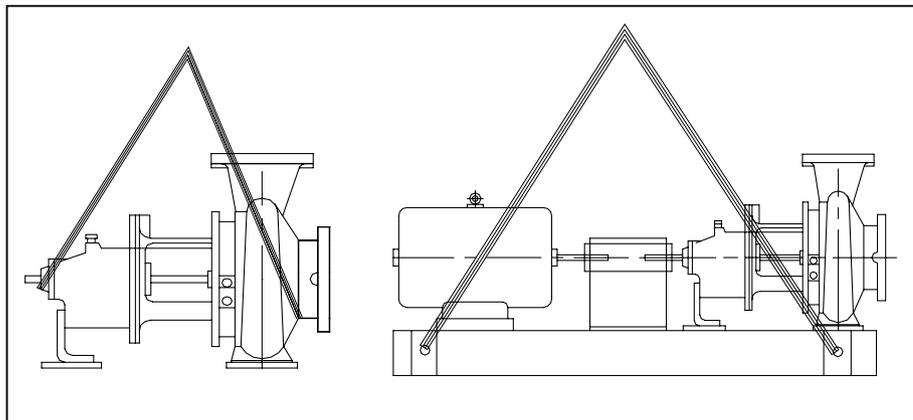
Read marking on the packing cases before lifting & shifting.

Whenever the Equipment is packed in wooden case, it is anchored to a support plane having shim for handling (both for cranes or fork lifts).

Both lifting and handling may be carried out without any difficulty, anyway it is necessary to consider two different ways of handling:

A. Lifting by means of crane with its capacity suitable for the weight of the Equipment (see technical data).

B. Use of a fork lift.



**! WARNING**

**SAFETY PRECAUTIONS**

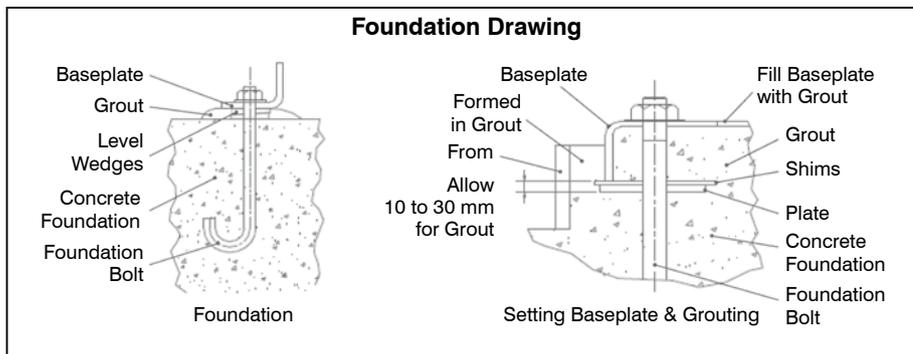
It is important that the lifting and handling operations are carried out by skilled persons such as crane operator, etc.

Ensure that Equipment is lifted in balanced condition. It is not becoming unstable while tilting by 10° in any direction.

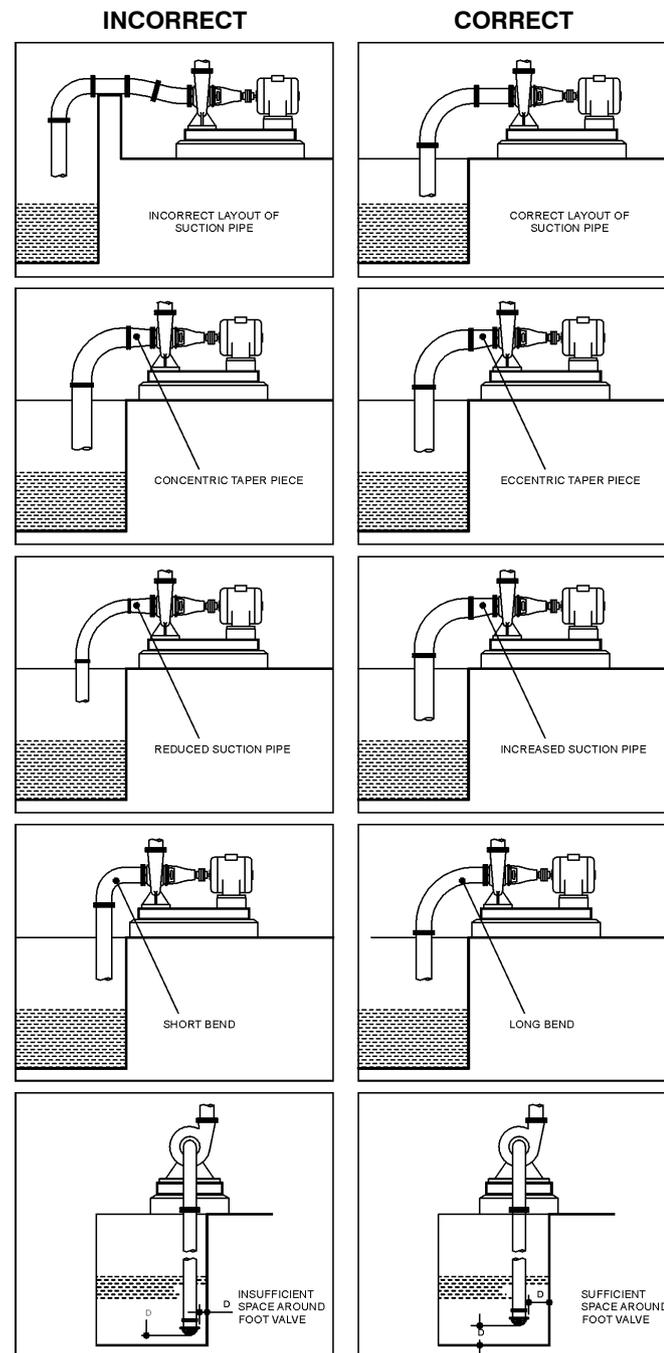
Don't lift Equipment 500 mm above ground level for safety.

It is necessary to use means, hooks/slings of right strength which have large safety margins, considering the weight of the Equipment to be lifted/ shifted. They have to be in efficient conditions and must be used taking into consideration all the precautions given by the regulations in force.

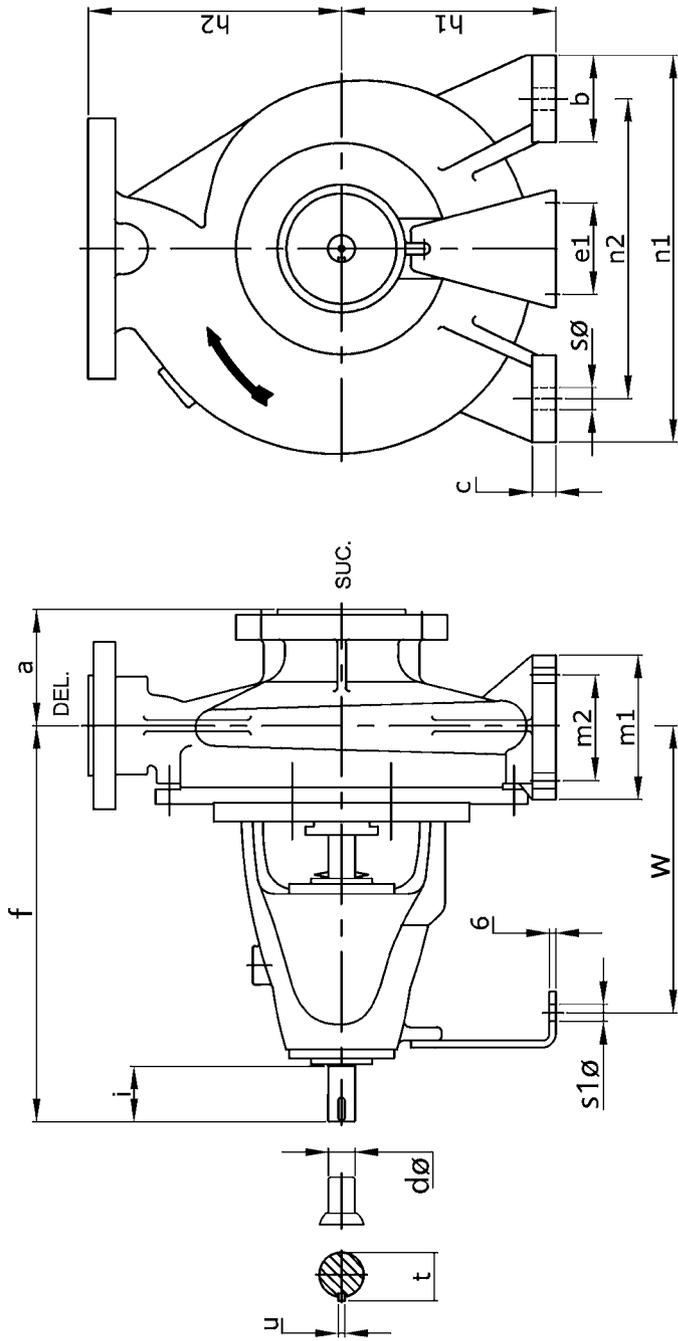
Wear safety shoes and hand gloves to avoid mechanical injury.



**11. INSTALLATION PLAN - ANCHORING**



## GENERAL DIMENSIONS / MOUNTING DETAILS



Pump Model	Unit No.	Suc.	Del.	Pump Mounting Dimensions														Shaft End				Wt. Kg.		
				a	f	h1	h2	b	c	m1	m2	n1	n2	sØ	e1	s1Ø	w	dØ	l	t	u			
32/13	1	50	32	80	360	112	140	50	14	100	70	190	140	14	100	14	100	14	267	24	50	27	8	30
32/16	1	50	32	80	360	132	160	50	14	100	70	240	190	14	100	14	100	14	267	24	50	27	8	37
32/20	1	50	32	80	360	160	180	50	14	100	70	240	190	14	100	14	110	14	267	24	50	27	8	47
32/26	1	50	32	100	360	180	225	65	14	125	95	320	250	14	110	14	110	14	267	24	50	27	8	56
40/13	1	65	40	80	360	112	140	50	14	100	70	210	160	14	100	14	100	14	267	24	50	27	8	31
40/16	1	65	40	80	360	132	160	50	14	100	70	240	190	14	100	14	100	14	267	24	50	27	8	38
40/20	1	65	40	100	360	160	180	50	14	100	70	265	212	14	110	14	110	14	267	24	50	27	8	49
40/26	1	65	40	100	360	180	225	65	14	125	95	320	250	14	110	14	110	14	267	24	50	27	8	65
50/13	1	65	50	100	360	132	160	50	14	100	70	240	190	14	100	14	110	14	267	24	50	27	8	36
50/16	1	65	50	100	360	160	180	50	14	100	70	265	212	14	110	14	110	14	267	24	50	27	8	44
50/20	1	65	50	100	360	160	200	50	14	100	70	265	212	14	110	14	110	14	267	24	50	27	8	53
50/26	1	65	50	100	360	180	225	65	14	125	95	320	250	14	110	14	110	14	267	24	50	27	8	62
65/13	1	80	65	100	360	160	180	65	14	125	95	280	212	14	110	14	110	14	267	24	50	27	8	44
65/16	1	80	65	100	360	160	200	65	14	125	95	280	212	14	110	14	110	14	267	24	50	27	8	51
65/20	1	80	65	100	360	180	225	65	14	125	95	320	250	14	110	14	110	14	267	24	50	27	8	58
65/26	2	80	65	100	470	200	250	80	16	160	120	360	280	18	110	14	110	14	342	32	80	35	10	90
65/32	2	80	65	125	470	225	280	80	16	160	120	400	315	18	110	14	110	14	342	32	80	35	10	105
80/16	1	100	80	125	360	180	225	65	14	125	95	320	250	65	110	14	110	14	267	24	50	27	8	60
80/20	2	100	80	125	470	180	250	65	14	125	95	345	260	14	110	14	110	14	342	32	80	35	10	81
80/26	2	100	80	125	470	200	280	80	16	160	120	400	315	18	110	14	110	14	342	32	80	35	10	98
80/32	2	100	80	125	470	250	315	80	16	160	120	400	315	18	110	14	110	14	342	32	80	35	10	122
100/20	2	125	100	125	470	200	280	80	16	160	120	360	280	18	110	14	110	14	342	32	80	35	10	98
100/26	2	125	100	140	470	225	280	80	16	160	120	400	315	18	110	14	110	14	342	32	80	35	10	110
100/32	2	125	100	140	470	250	315	80	16	160	120	400	315	18	110	14	110	14	342	32	80	35	10	126
100/40	3	125	100	140	530	280	355	100	18	200	150	500	400	23	110	14	110	14	370	42	110	45	12	190
125/26	2	150	125	140	470	250	355	80	16	160	120	400	315	18	110	14	110	14	342	32	80	35	10	122
125/32	3	150	125	140	530	280	355	100	18	200	150	500	400	23	110	14	110	14	370	42	110	45	12	165
125//40	3	150	125	140	530	315	400	100	18	200	150	500	400	23	110	14	110	14	370	42	110	45	12	165
150/32	3	200	150	160	530	280	400	100	18	200	150	550	450	23	110	14	110	14	370	42	110	45	12	182
150/40	3	200	150	160	530	315	450	100	18	200	150	550	450	23	110	14	110	14	370	42	110	45	12	220

**! CAUTION**

**SPACE LAYOUT CONSIDERING ERGONOMICS**

1. Keep at least 500 mm open space for a man to walk between the wall and extreme end of the Equipment.
2. Ensure that any control, which operator has to operate, are within the height of 0.6 m to 1.7 m to minimize operator strain.
3. Ensure Equipment is having minimum vibration - properly leveled and fixed.
4. Keep high vibrating Equipments (e.g. compressor, D.G. set, shearing Equipment,) away from this Equipment.

**FOUNDATION**

Solid, leveled floor is required to maintain proper position and level of the Equipment for a long time.

Refer foundation drawing from HSCF.

**LEVELING / ALIGNING**

**1. Mounting and Alignment**

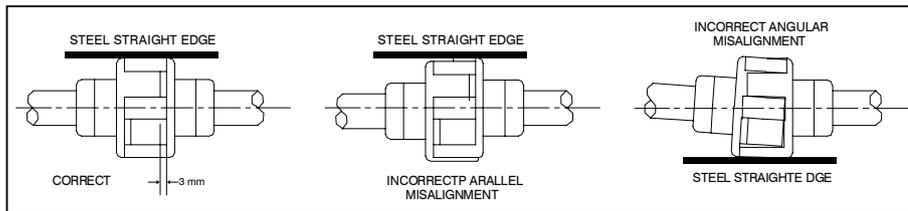
A spacer type flexible coupling is used to connect pump shaft to the driver. By using spacer type of coupling, the complete rotating unit can be removed from the volute without removing pump casing or rotor and without disconnecting piping connections. This also avoids any realignment of pump and motor after re-assembly of rotating unit. However other types of coupling can be supplied against request.

**2. Alignment**

ALWAYS REMEMBER "A FLEXIBLE COUPLING IS NOT A UNIVERSAL JOINT" Correct alignment is essential for the smooth operation of the pump. There are two types of misalignment between the pump shaft and the drive shaft, which are:

- 1) Angular misalignment - shaft with axis concentric, but not parallel. Maximum allowable misalignment is 1°

**Figure 1**



- 2) Parallel misalignment - shaft with axis parallel, but not concentric. Maximum allowable misalignment is 0.2 mm. This misalignment is checked by using a straight edge as shown in figure 1 given above.
- 3) Before commissioning the pump set, please ensure:
  - A) The pipe connections are flushed and tightened properly.
  - B) Alignment is proper.

**ELECTRICAL CONNECTION**

The cable used by the user shall be connected to a suitable pin, to the electric current socket of the User's mains network.

Check that the voltage and the power supply frequency of the electric motors of the Equipment correspond to the network voltage available at the User's factory.

The values are shown on the name plate of the Equipment.

**! CAUTION**

It is suggested to protect the main electric line from possible overloads by means of (magneto-thermal) safety switches.

- Ensure proper earthing is arranged.
- Keep 5 mm thick rubber mat in front of main switch electrical panel to insulate operator.
- Manual control devices shall be designed and located according to the relevant ergonomic principles
- A stop control device shall be placed near each start control device. Where the start/stop function is performed by means of a hold-to-run control
- Manual controls shall be located out of reach of the danger zones
- Whenever possible, control devices and control positions shall be located so that the operator is able to observe the working area or hazard zone.

**i NOTE**

- The Manufacturer declines any responsibility for damages due to the non-observance of the above specifications.

**CHECK THE ELECTRIC MOTOR ROTATION**

After the connection, carefully check the directions of rotation of the electric motor.

With a short start check if the fan is turning in and make sure that the fan turns in shown by the arrow placed on the pump.

Should the fan turn on the contrary direction, it is necessary to invert two of the three phase wires and to repeat the check operation.

This operation is very important in order to avoid damages of the system.

**CLEANING**

Clean the Equipment with clean cloth, removing any dust and foreign materials which may have been stored during transport.

**i NOTE**

Remove the protection materials (paper, plastics), clean them removing the grease with a cloth sodden with diluent. Remove any residues before starting the processing of a new kind of sheet, for example paper, plastics.

**! CAUTION**

The thorough cleaning of the equipment is absolutely necessary.

## 12. FIRST START-UP

### MATERIALS AND PRODUCTS

The Equipment is constructed mainly steel, Rubber, Cables and electric components comply with EEC standards. The Equipment is not designed for handling inflammable or detrimental products.

It's duty of the BUYER to check if the processed materials respond to these requirements.

It's duty of the BUYER to check if the processed materials can be dangerous for the Operator working nearby. Only the products (oils) mentioned in the Handbook can be used.

The BUYER is also in charge with the disposal of liquid products in compliance with the law in force in the Country by of installation of the Equipment.

### EQUIPMENT DESCRIPTION

Backpullout centrifugal pump from MBH manufactured which dimensionally conforms to DIN 24256 / ISO 2858. The mechanical assembly comprises a rigid shaft, supported by a pair of bearings with a double shrouded impeller mounted in a removable bearing housing assembly. This is attached to an end suction volute casing fitted with wear rings. The bearing housing, shaft and impeller assembly can be withdrawn from the volute for maintenance without disconnection of pipe work.

The discharge branch is positioned vertically upwards while suction branch is horizontal and is at 90° to discharge nozzle. An additional mounting foot is fitted at the outer bearing position for stability.

The complete assembly is of rigid construction, being intended for mounting on suitable base plate with electric motor / internal combustion engine. A suitable coupling is provided to transmit the rotational drive between pump and motor. A spacer coupling most suitable to use, because it allows the removal of the pump rotating assembly without disconnecting suction pipe, discharge pipe and motor.

Gland packing or mechanical seal is used to seal the leakage of pumped liquid across the shaft.

### EQUIPMENT OPERATION

#### Before starting the pump check the following:

- 1) The pump rotates freely by hand.
- 2) The level of the oil in the constant level oiler is up to the mark if provided.
- 3) The sealing liquid and cooling water connections are properly tightened and adjusted if provide.
- 4) The direction of rotation of driver. It should correspond to the direction of rotation of pump.
- 5) The pump casing and the suction pipeline is fully primed with the liquid.
- 6) Valve on delivery side is closed.
- 7) The cock for pressure gauge connection is closed.

#### Starting the pump:

- 1) Start the pump. Let the prime mover pickup its full speed.
- 2) Open the valve on delivery line gradually.
- 3) Regulate the required flow by adjusting the delivery valve.
- 4) Open the cock for pressure gauge connection.

#### During running the pump, check the following things and regulate if needed:

- 1) The pump is running smooth.
- 2) The flow of sealing liquid and cooling / heating water is uninterrupted. If necessary, provide sight glass in the piping.
- 3) The bearings are not getting abnormally hot.
- 4) Head and capacity developed by the pump is as specified.
- 5) Power consumption is within limit.
- 6) Ensure that there is no mechanical friction in the pipe.
- 7) Stop the pump immediately, if any, defects are detected. Do not start the pump unless the defects are rectified. Report immediately to the supplier, if it is not possible to rectify the defects.

#### During stopping the pump:

- 1) Close the valve on the delivery line.
- 2) Stop the motor/engine.
- 3) Close the cooling water and sealing liquid connections.
- 4) If the pump is not required to be operated for a long time, drain the casing completely. If the pump is required to be stored for a long time, the bearing housing should be dried internally with hot air and should be flushed with moisture free protective such as light oil or kerosene.

## 13. MAINTENANCE

Before attempting any maintenance on a pump, particularly if it has been handling any form of hazardous liquid; ensure that the unit is safe to work on. The pump must be flushed thoroughly with suitable cleanser to purge away any of the product left in the pump components. The plant operator should carry this out and a certificate of cleanliness obtained before starting work. To avoid any risk to health it is also advisable to wear protective clothing as recommended by the site safety officer, especially when removing old packing that may be contaminated.

#### Electric shock and accidental starting hazard:

Isolate the equipment before any maintenance work is done. Switch off the mains supply, remove fuses, apply lockouts where applicable and affix suitable isolation warning signs to prevent inadvertent re-connection.

In order to avoid the possibility of maintenance personnel inhaling dangerous fumes or vapors, it is recommended that maintenance work be carried out away from the pump location by removal of the rotating unit assembly to a suitable maintenance area.

#### REGULAR MAINTENANCE

A suitable maintenance is determining for the life of the Equipment in optima! working conditions and for its efficiency.

The general safely standards described in the introduction to this handbook are valid.

The regular maintenance interventions can be performed only by the MECHANICAL ENGINEER, suitably trained and authorized by the SAFETY RESPONSIBLE.

In case of defects or for interventions, which are not expressly mentioned in this handbook, please refer to Supplier.

Regular and scheduled maintenance interventions cannot be performed by running Equipment. The main switch must be turned to “0” and locked in position with a padlock (the key will remain with the MAINTENANCE ENGINEER’S hands), in order to prevent any unintentional start.

**CAUTION**

Besides, a warning signal telling “**DO NOT ACTIVATE- EQUIPMENT IN MAINTENANCE**” must be clearly visible on the control desk.

Interventions on motors or any other electrical parts can be performed only by the ELECTRICAL MAINTENANCE ENGINEER, suitably trained and authorized by the SAFETY RESPONSIBLE. After each regular or scheduled maintenance intervention, the SAFETY RESPONSIBLE is required to verify the safety conditions of the Equipment and of its protections.

Any processing system, which may endanger the Equipment safety, must be avoided.

**WARNING**

It is absolutely forbidden to remove and disable any safety device. For safety reasons any arbitrary adaptation or change to the Equipment is prohibited.

**INTERNAL LUBRICATION AND GREASING POINTS**

Authorized personnel : MECHANICAL MAINTENANCE ENGINEER

- Turn off the Equipment moving the main switch on the electric board on
- Lock it in this position using a pad lock in order to prevent any unintentional start.

Using an oil feeder add oil referring to the table of the “Enclosed Documentation.

- Disassemble the panels and the protections, and perform the interventions.
- Alter the lubrication, assemble again the panels and the protections.
- Restart the Equipment according to the start procedure, and check if there are any anomalies due to faults or unintentional tampering during maintenance.

**SCHEDULED MAINTENANCE**

After the first two weeks/or 100 working hours:

- Check the good functioning of the hydraulic system.
- Check that there are no leaking points in the hydraulic system

Every week / or 50 working hours:

Every month or 500 working hours:

Every year/or 2000 working hours:

**CAUTION**

For replacement of oil, use a funnel with a filter in order to avoid that impurities enter into the hydraulic system and damage the good functioning of the Equipment.

**TROUBLE SHOOTING CHART**

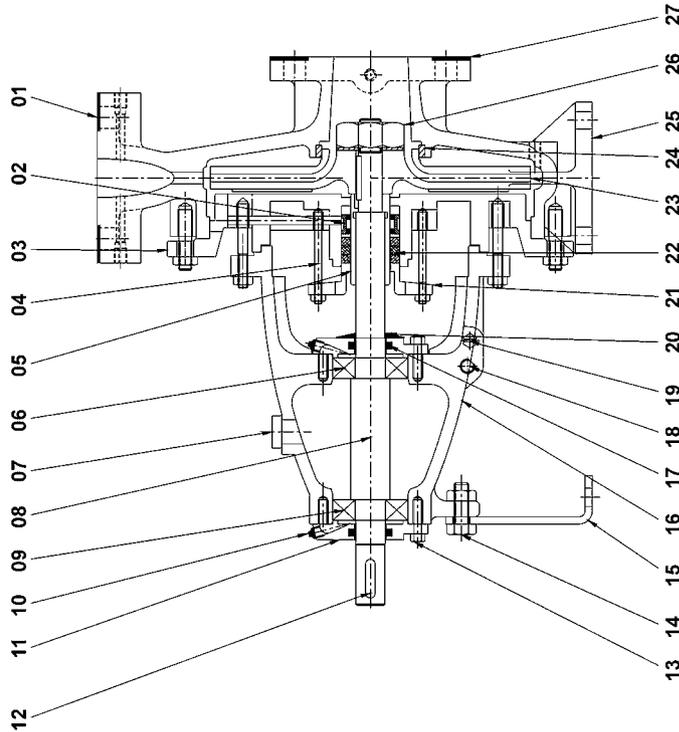
Failure to Delivery liquid	Pump does not deliver rated capacity	Pump does not develop rated pressure	Pump loses liquid after starting	Pump over load drives	Vibration	Stuffing box over heats	Bearing Over heat	Bearing wear rapidly	Motor heating up	Irregular delivery	Pump does not prime	Noise	
													Wrong direction of rotation
													Pump not primed / Filled with liquid
													Air or Vapour pocket in suction line
													Inlet of suction pipe insufficient submergence
													NPSH available too low
													Pump not up to rated speed
													Total head greater than design
													Air leakage in suction line or stuffing box
													Suction line too small
													Suction line clogged
													Viscosity / Sp. Gravity greater than rated
													Impeller damaged
													Wrong direction of rotation
													Internal leakage
													Gas & Vapour in liquid
													Low head (If not designed tor)
													Liquid seal to lantern ring plugged
													Starved suction
													Misalignment
													Worn or loose bearing
													Bent shaft
													Foundation not rigid
													Packing too tight
													Packing not lubricated
													Wrong gland packing
													Insufficient cooling water
													Wrong grade of oil / grease
													Dirt in bearing
													Moisture in oil / grease
													Failure of oil / grease
													Bearing too tight
													Too much grease in bearing
													Bearing badly installed
													Speed too high
													Voltage may be low, check voltage while pump is running, increase wire size if necessary
													Bearing of motor may have been worn out or damaged
													Loose connection of wiring
													Check free rotation of pump
													Lack of lubrication
													Stuffing box badly leakage
													Fitment of coupling is not proper

## SPARE PARTS LIST

No.	DESCRIPTION	MATERIAL
01	FLANGE GASKET (DELIVERY)	NITRILE RUBBER
02	LANTERN RING	PLASTIC
03	STUFFING BOX COVER	*
04	STUD WITH NUT FOR GLAND COVER	M.S.
05	SHAFT SLEEVE	S.S. AISI 410
06	BALL BEARING (D.E.)	STD.
07	1/4" BSP PLUG	BRASS
08	PUMP SHAFT	*
09	BALL BEARING (N.I.E.)	STD.
10	1/8" BSP GREASE NIPPLE	S.S.
11	BEARING COVER	C.I. IS-210-FG260
12	COUPLING KEY	S.S.
13	HEX BOLT FOR BBC	M.S.
14	HEX BOLT FOR SUPPORT FOOT	M.S.
15	SUPPORT FOOT	M.S.
16	BEARING HOUSING	C.I. IS-210-FG260
17	OIL SEAL FOR BBC	NEOPRENE RUBBER
18	1/4" BSP CAP	PLASTIC
19	1/2" BSP CAP	PLASTIC
20	RUBBER DEFLECTOR	NITRILE RUBBER
21	GLAND COVER	*
22	GLAND PACKING	GREPHITED ASBESTOS
23	IMPELLER	*
24	NECK RING	*
25	VOLUTE	*
26	IMPELLER NUT	S.S.
27	FLANGE GASKET (SUCTION)	NITRILE RUBBER

\* Indicates: The parts can be provided in any ferrous MOC as per the application stated before.

## CROSS SECTION DRAWING



## 14. ECOLOGICAL PROFILE OF THE PRODUCT

Life Cycle Activity	Discharge to			Hazardous Materials Used	Use of Natural Resource
	Air	Water	Land		
Packaging	--	--	--	--	Wood
Transportation	x	--	--	Diesel	Diesel
Installation	--	--	--	Oil	--
Use	--	--	--	Oil	Electricity/Diesel
Maintenance	--	--	--	Oil	Electricity
Disposal	--	--	--	--	Steel

Environmental Aspects	Consumption Per Shift	Control (Reuse, Recycling and Recovery)
Electricity		
Compressed Air	Nil	--
Noise	60db to 110 db	Enclosure, ear plug
Vibration	normal	--
Heat	nil	--
Material Consumed - Consumables	nil	--
Emission to Air	nil	--
Discharge to Water	nil	--
Discharge to Land (Normal Waste)	nil	--
Use of Hazardous Materials	nil	--
Disposal of Hazardous Waste	nil	--

## 15. WHEN NOT IN USE FOR LONG TIME

### Disabling:

- Disconnect electrical power
- Keep Equipment in upright position

## 16. STORAGE

- Keep Equipment in idle condition
- Set Equipment in upright position
- Cover the equipment from prevent dust, moisture

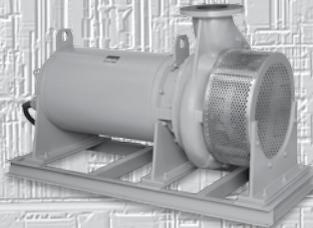
## 17. EQUIPMENT DISPOSAL METHOD

When Equipment life is over (after 5 years)

- Disconnect power
- Send all metallic parts for scrap - there are no hazardous materials
- Send all electrical parts to respective supplier in line with WEEE directive

As improvements are made in design from time to time, specifications and performance are subject to change without prior notice.

# OTHER PRODUCTS



**ISO 9001**  
*Certified Company*

**MBH<sup>®</sup>**  
**PUMPS**

**mbh pumps (gujarat) pvt. ltd.**

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

Phone : 079-2282 3066 / 2282 1018

Fax : 079-2282 1511

E-mail : [marketing@mbhpumps.com](mailto:marketing@mbhpumps.com)

Website : [www.mbhumps.com](http://www.mbhumps.com)

*A Mark of Quality*