

MBH[®] PUMPS

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

BORE WELL SUBMERSIBLE PUMPS



**ISO 9001
Certified Company**



A Mark of Quality

SECTION-1 GENERAL

RECEIVING THE MATERIAL

1. Check from the delivery note/invoice that all the packages are received and are intact.
2. Report discrepancies immediately, if any.
3. Do not open packing till you are ready for erection.
4. While opening the packages check the contents of each package and ensure that they are according to the packing list. Check also for damage during transit.

HANDLING

1. All parts are coated with a special anti-rust coat. If any part is found exposed, clean it and apply thick coating of greasing or only rust compound and then wrap it with wax paper to prevent further rusting.
2. Never drag any package or component for any reason.
3. Transportation should be free from jerks.

STORAGE

1. Packages/components should be kept in vertical position and should be suitably covered.
2. If the pumpset is removed from the well and is to be stored for a long period, then it is to be flushed and water from the motor should be drained.
3. Storing place should be free from dust, heat, moisture.

EQUIPMENTS AND TOOLS REQUIRED FOR INSTALLATION

1. A permanent derrick or tripod with chain pulley block of 1-tonne capacity for pumps up to 10 HP and of 2-tonnes beyond that chain length should be minimum 3 meters.
2. Two pairs of supporting clamps to suit discharge pipe.
3. Threading Compound - five parts of graphite with one part of red lead mixed with lubricating oil. Good quality threading compound available in the market will also serve the purpose.
4. Required length of G.I. discharge pipes both sides threaded with couplers.
 - a) It is recommended to have 10 ft. long discharge pipe pieces to facilitate easy erection.
 - b) Short length of pipe pieces approx 5 feet - 2 nos. One to be connected just immediately after the non-return valve/pump discharge case and the other one to be used near ground level to adjust the height of complete set.
5. Chain spanner-2 nos.
6. Megger-500 Volts.
7. Tools-screw driver-8", 12", insulating pliers, spanners etc.
8. Sluice-Valve and bend.
9. Suitable control panel.
10. Cable-jointing-kit.
11. Cable-Required-length.
12. Funnel-Rubber Hose.

SECTION-2 PRE-INSTALLATION

FILLING THE MOTOR

IMPORTANT NOTE : "MBH" SUBMERSIBLE MOTOR-PUMPSETS ARE WET-TYPE, WATER-COOLED, WATER LUBRICATED AND HENCE THEY MUST NOT RUN DRY IN ANY CASE. Submersible motors have to be filled with clear, cold non-acidic, oil free drinking water which should be non-distilled.

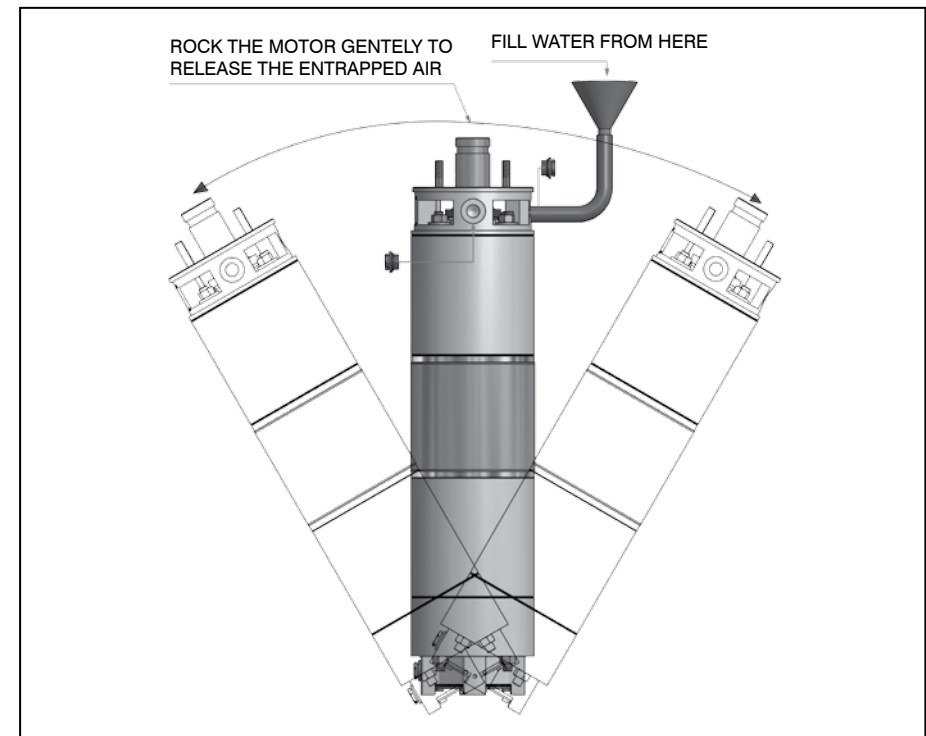
FLUSHING : Keep the motor in vertical position. Open out both drain plugs. Fix funnel on one opening and slowly start filling water.

In between give a few rotations to motor shaft. Also rock the motor gently. This is done to release the entrapped air. Repeat the process. Continue adding the water till it starts flowing from the other opening.

Now drain out the motor completely and repeat the process 2 - 3 times. This filling and draining is done to wash out dust and debris in water passages.

FINAL FILLING : Start filling the water as per above procedure and continue the process till water finally flows from the other opening. Now tighten both side plugs. Keep the motor in vertical position only.

FILL WATER FROM HERE



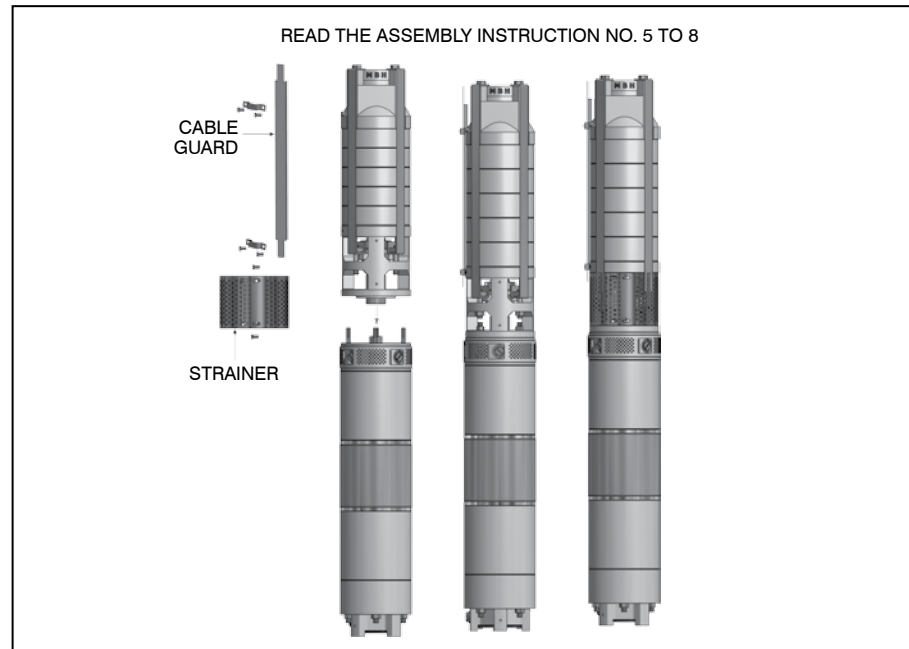
TESTS

CONTINUITY TEST : Connect the two wires of megger between the two phases of motor. It should show zero resistance. Take the test for all the phases.

INSULATION RESISTANCE TEST : Connect the wire megger to earth and the phase of the motor. It should show minimum 50 mega ohms resistance. Similarly check for all the phases.

ASSEMBLY INSTRUCTIONS

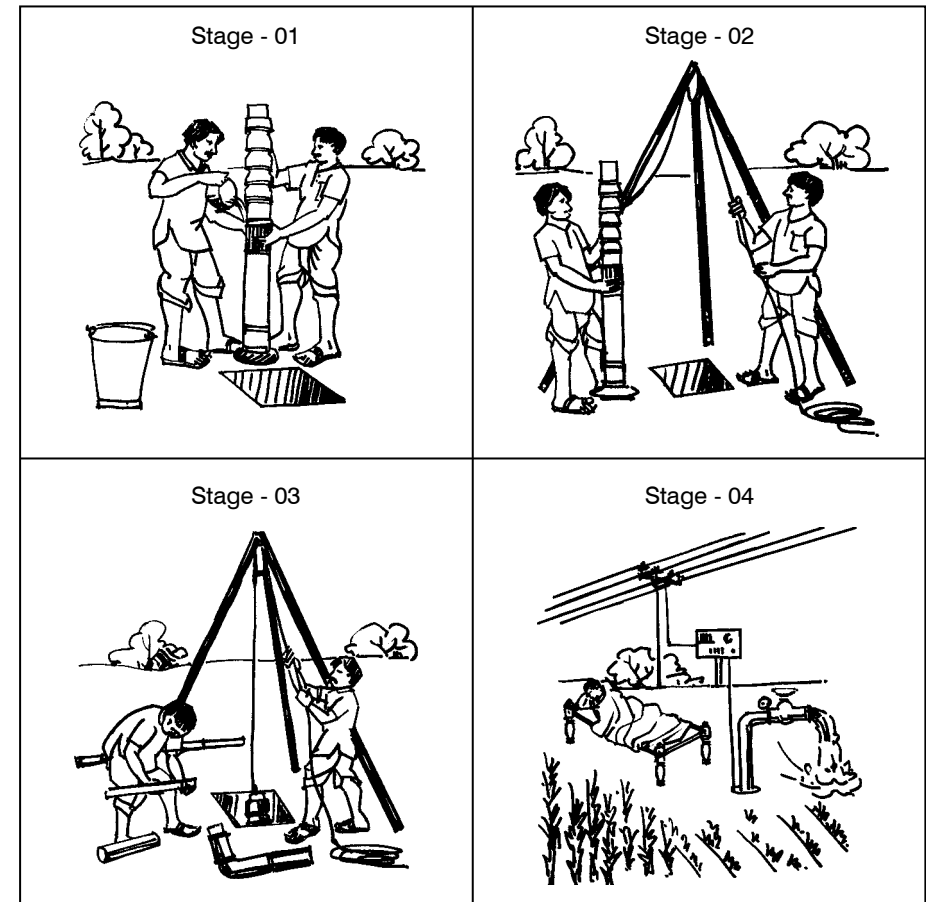
1. Erect the tripod and put the chain block.
2. Take out the pump from the package and short length of delivery pipe. Apply the threading compound liberally on all threaded portions of pump and pipe. Screw-up the pipe to the pump.
3. Fix up the supporting clamp to the delivery pipe, suspend the pump with the help of chain.
4. Ensure that key is locked in the sleeve coupling sand guard fitted on to the motor.
5. Slowly lower the pump till it settles down flatly on the top surface of the motor, matching key & groove for the same in the pump-shaft, ensuring matching or cable grooves.
6. Tighten all nuts uniformly.
7. **IMPORTANT :** Check the axial movement of the shaft assembly by inserting the screwdriver under sand guard and should lift by approx 2-1 mm.
8. Put the cable in the groove provided on the pump casing. Fix the cable guard in position suction strainer is to be fitted only after the cable guard is fixed.
9. Pour about 4-gallons of water through the pump discharge case so that pump bearings, impellers and guide vanes are washed.



SECTION-3 INSTALLATION AND OPERATION

A. INSTALLATION

1. Start lowering the pump in the bore till the supporting clamps rest on the casing pipe of the bore. Remove the chain from the clamp.
2. Fix another pair of supporting clamp to the second pipe at its upper portion. Suspend this pipes apply sufficient thread compound at threads and couple the two-pipes tightly. Make use of chain spanners.
3. Lift the pumpset slightly and remove the supporting clamp resting on the casing.
4. Lower the unit in the bore till upper clamps rest on the casing. The cable should run close with the pipe to avoid any damage during lowering.
5. Fix cable clamp at every 10 ft. of cable.
6. Lower the pumpset to the required depth, fix up sluice-valve, bend pressure-gauge etc.



B. OPERATION

A) BEFORE STARTING THE PUMP

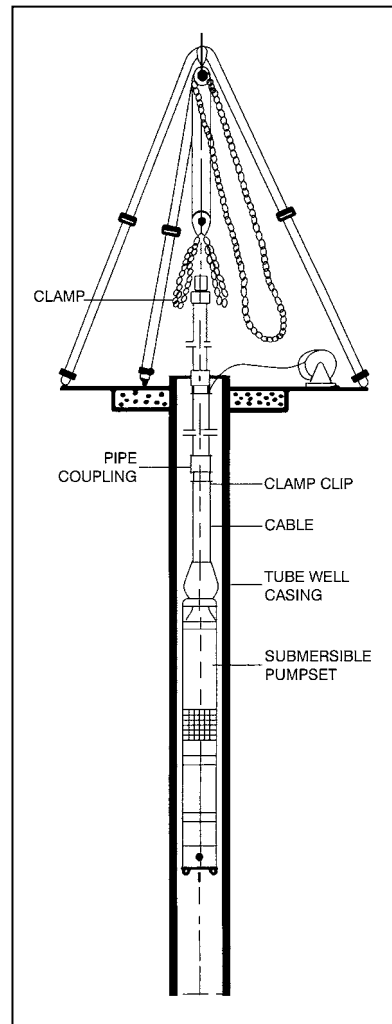
1. Final megger test to be taken before connecting the cable leads to the control panel. Cable should be connected to the control panel if final megger test is O.K.
2. Put the main switch to ON position. Check the voltage. Pump should not be started till rated voltage is obtained.
3. Observe the phase indicating lamps. Do not start the pump, if the glowing intensity of all the lamps is not the same.
4. Ensure perfect earthing by connecting the earthing wire to the delivery pipe.
5. Check the direction of rotation.

ADOPT FOLLOWING METHOD

- a) Close the sluice valve. Start the pump. Note the Pressure gauge reading. Interchange any two motor-cable leads and check the pressure gauge reading. Correct direction of rotation shows higher pressure gauge reading.
- b) In the absence of pressure gauge, observe the discharge at the outlet, Interchange the motor cable leads and observe the discharge again. Discharge is higher when direction of rotation is correct.

B) STARTING THE PUMP

1. Close the sluice valve leaving small gap for escape.
2. Start the pump. Let the motor pick-up full speed Open the delivery valve fully.
3. If the first discharge contains dirt or sand don't open the valve further till it becomes clear. Once clear water starts coming, open the valve slightly more. Wait till clear water flows. Never stop the pump till the clear water flows.
4. Check the following points during running :
 - i) Pump is running smooth(check vibration and noise)
 - ii) Power consumption is within limit (check voltage and current)
 - iii) Pressure gauge reading.



SECTION-4

PUMP TROUBLE AND THEIR REASONS

A. VIBRATION

1. Inadequate water level
2. Impeller or rotor in balance
3. Shafts bend
4. Improper alignment
5. Bearings worn out
6. Air or gas in the water

B. PUMP TAKES TOO MUCH POWER

1. Mechanical friction
2. Misalignment
3. High specific gravity
4. High speed
5. Duties different from the designed

C. LESS DISCHARGE

1. Higher total head
2. Inadequate water level
3. Partial choking of strainer / impeller
4. Gas in the water
5. Low speed
6. Leakage in delivery pipe
7. Wearing of hydraulic parts

D. NO DISCHARGE

1. Higher total head
2. Strainer / impeller choked
3. Coupling broken
4. Low speed
5. Lowest bowl not submerged in the water

E. JAMMING

1. Misfitting
2. Misalignment
3. Bend in shaft
4. Dry running of pump
5. Failure of bearings

F. RAPID WEAR OF PARTS

1. Misfitting / misalignment
2. Sand contents
3. Improper selection of material

G. PUMP DOES NOT START

1. Motor defective
2. Starting equipment defective
3. Overload relay tripped
4. Low voltage, motor
5. Motor Jamming
6. Fuses blown off

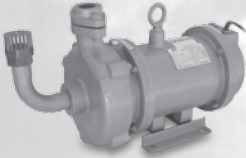
H. MANY A TIME APPARENT

Difference shown in pressure readings, current & voltage is due to defective measuring instruments. Hence measuring instruments are to be calibrated periodically.

CAPACITOR DETAIL FOR V4 SINGLE PHASE SUBMERSIBLE PUMPSET

H.P.	STARTING CAPACITOR	RUNNING CAPACITOR
0.5	100-120 MFD	36 MFD
0.75	100-120 MFD	36 MFD
1.0	120-150 MFD	36 MFD
1.5	150-200 MFD	36+36 MFD
2.0	200-250 MFD	36+36 MFD
3.0	200-250 MFD	36+36+36 MFD
4.0	200-250 MFD	36+36+36 MFD
5.0	200-250 MFD	36+36+36 MFD

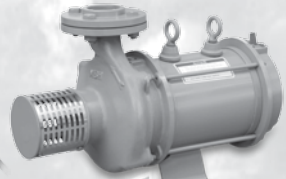
OTHER PRODUCTS



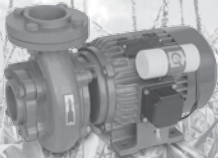
**Single Phase Monoset
Submersible Pumpset**



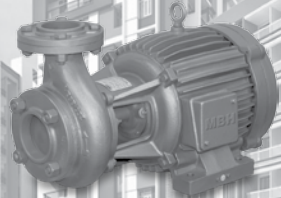
**Three Phase Monoset
Submersible Pumpset**



**Three Phase Monoset
Submersible Pumpset**



**Single Phase Centrifugal
Monoblock Pumpset**



**Three Phase Centrifugal
Monoblock Pumpset**



Self Priming Pumps (Single Phase)

Specifications and performance are subject to change without prior notice.



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Certified Company

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PUMPS

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