



# **HB-HW**

## **INSTRUCTIONS**



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## General Description

Type HB and HW mixed flow pumps are horizontal, single stage, end suction, back pull out, centrifugal pumps. Pumps are suitable for agricultural irrigation and drainage or industrial water supply and drainage.

## Model Identification:

For example, model 12HBG40

12 - inlet and outlet diameter 12"

H - Mixed flow

B - Single stage, single suction

G - back pull out

For example, model 400HW7

400 - inlet and outlet diameter 400mm

HW - horizontal mixed flow pump

## Direction of Rotation:

as observed from the suction side of pump, the rotation of the impeller is anti-clockwise on all on all models EXCLUDING 26HB models which are clockwise rotation viewed from the suction side of pump.

## Construction:

- Type HB-HW mixed flow pumps are composed of pump casing, pump shroud, impeller, shaft, and bearing housing.
- The pump shroud is the part which connects the pump casing and suction pipe. There should be a certain gap between the shroud and impeller. If the gap is too small the impeller will contact the shroud and if the gap is too large will result in water returning from the high pressure side of the pump to the suction side of the impeller which will decrease the efficiency of the pump. The Gap can be adjusted by adding or changing the thickness of the gaskets. For optimum performance the gap should be between 0.3 to 0.7mm
- Models 6HBG35, 8HBG35, 10HBG30, 10HBG40 and 12HBG40 are all fitted with mechanical seals and should not be run dry. Models 400HW7, 400HW10, 500HW6, 26HBG are packed gland with shaft sleeve.
- Bearings on all mechanical seal fitted pumps are sealed for life and are not greaseable. Bearings on the 400HW and 500HW models are as follows. If the bearing housing has plugs where the grease nipples would normally be the bearings are sealed and are not greaseable, if the bearing housing has grease nipples the bearings are greaseable. On the 26HB models the bearings are greaseable.
- The Screw hole in the top of the pump casing is used to fill the casing with water or for connection a vacuum pump to evacuate air and draw up water.
- The outlet direction of the 6HB to the 12HB pumps are upward and the 400HW, 500HW and 26HB are horizontal

## Installation:

- The bearing case of the pump should be above the highest water level, and the lowest water level should be considered in such a way that the total head including friction loss in the inlet pipe should not exceed the allowable suction head.
- The pump set should be located as close as possible to the water source to reduce the length of the suction pipe and reduce friction loss in the pipe
- The whole pipe system should be as straight and as short as possible
- V-Belt drive. The belt pulleys of both drive and pump should be aligned. The pulleys and belts must be covered by a safety guard to prevent injury.
- Do not connect the elbow directly to the pump shroud. There should be a straight pipe between them so to ensure that the velocity distribution of the water into the pump is uniform.
- Between the flanges of all pipes and fitting a rubber gasket should be fitted to prevent leakage
- The suction pipe must be fitted into the water source. The submerged length should be 1 to 3 times the diameter of the suction pipe to the river bottom. 1.5 to 3 times the diameter of the suction pipe to the lowest water level. and 1 to 1.5 times the diameter of the suction pipe to the suction pool wall.
- The end of the suction pipe must be netted or caged to prevent objects entering into the impeller.
- All mixed flow pumps require foot valve or vacuum pump for priming

## Maintenance:

- Inspect oil and or grease regularly
- Do not over grease
- Check Impeller nut and bolts and nuts regularly for loosening from vibration or cavitation
- Check packing. Water must be kept flowing out from the gland drop by drop
- Check shaft connections for alignment and adjustment

## Maintenance Intervals:

- Replace the lubricating oil or grease after the pump has been used for the first 100 hours
- After the first 100 hours, replace lubrication oil or grease every 500 hours
- After the pump has been used for 1000 hours, dismount and inspect the quick wearing parts and replace if required.
- When pump will be idle for long periods, dismount all moving parts, dry and paint with preservative.
- Turn shaft regularly to keep bearings lubricated all over, as the oil will drain from the top of the bearings causing rust pitting between the ball or roller and the inner and outer rings

# TROUBLE SHOOTING

Troubles	Causes
No water discharged	<ul style="list-style-type: none"> <li>• Pump not fully primed</li> <li>• Air leakage in suction pipe</li> <li>• Suction head is too high</li> <li>• Total head is too high</li> <li>• Wrong pump rotation</li> </ul>
Pump runs normally for a few minutes then ceases to deliver water	<ul style="list-style-type: none"> <li>• Suction is whirlpooling and sucking air</li> <li>• Air in suction pipe</li> <li>• Leakage in suction line system</li> <li>• Impeller or pipe blockage</li> </ul>
Insufficient Discharge	<ul style="list-style-type: none"> <li>• Impeller or pipe blockage</li> <li>• Speed is too low or insufficient power</li> <li>• Head is too high</li> <li>• Impeller and shroud clearance is too large</li> <li>• Delivery valve not open enough</li> <li>• Check valve is clogged</li> <li>• Suction pipe not under water enough</li> </ul>
Power requirement is too large	<ul style="list-style-type: none"> <li>• Speed is too high</li> <li>• The Shaft is bent</li> <li>• The packing is too tight</li> <li>• Bearings are worn out</li> <li>• V-Belts too tight</li> </ul>
Noise and vibration	<ul style="list-style-type: none"> <li>• Shafts out of alignment</li> <li>• Shaft is bent and bearings failing</li> <li>• pump hold down bolts loose</li> <li>• Impeller is clogged</li> <li>• Cavitation within the pump</li> <li>• Something inside the pump</li> </ul>

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Bearings are overheating	<ul style="list-style-type: none"><li>• Lubrication oil or grease is insufficient</li><li>• To much oil or grease</li><li>• Lubrication is contaminated</li><li>• Shafts not in alignment</li><li>• V-Belts are to tight</li><li>• bearing worn out</li></ul>
Gland packing is over heating	<ul style="list-style-type: none"><li>• Packing is over tightened</li><li>• Packing is uneven</li></ul>
To much leakage in packing	<ul style="list-style-type: none"><li>• Packing is to loose</li><li>• position of joints in packing wrong</li><li>• Wrong size packing</li><li>• Shaft sleeve is worn</li></ul>



Please note that all information contained in this publication is a guide only

