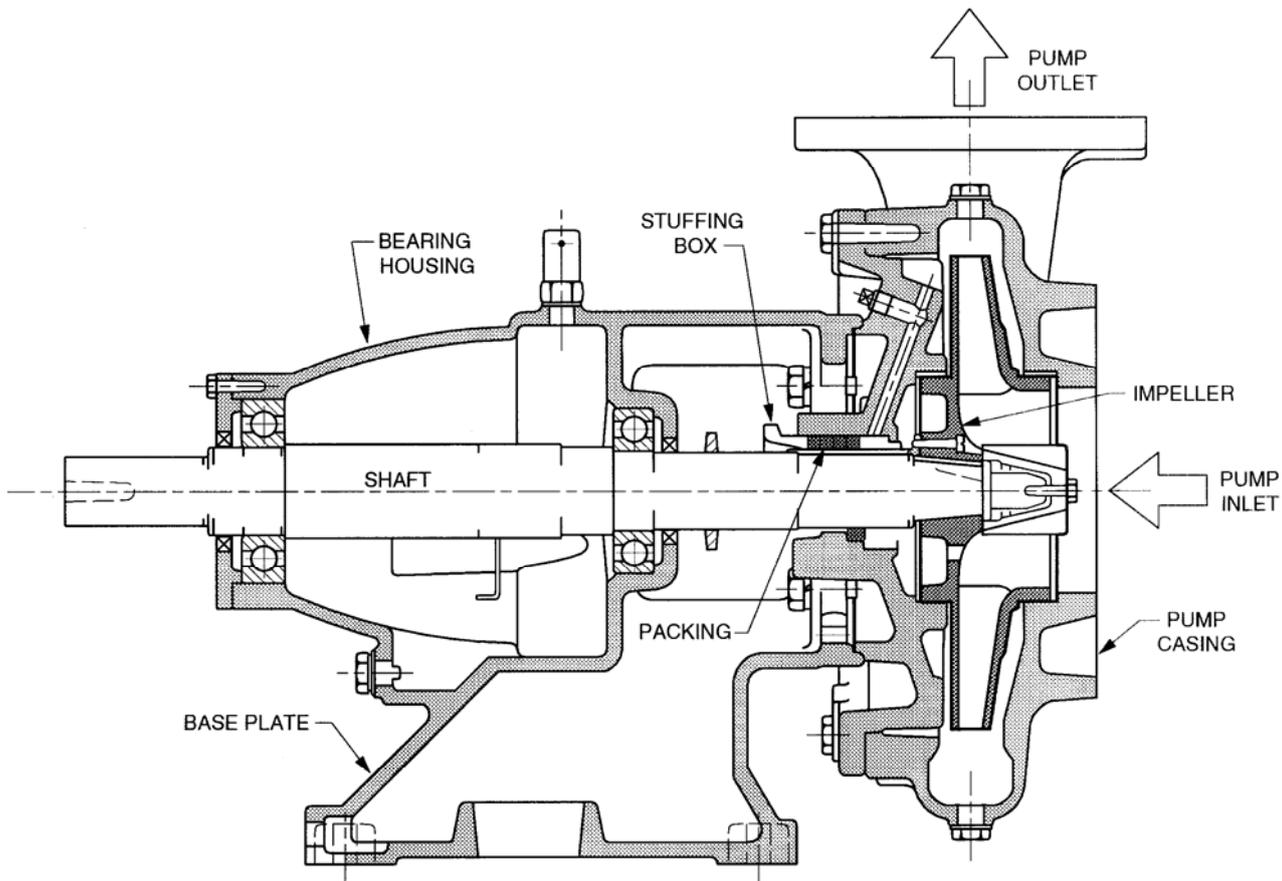




Pump troubleshooting—centrifugal pumps



Problems with pumping equipment on the farm are not only an inconvenience, but can also contribute to loss of production.

An efficient farming operation depends upon trouble-free pumping. By keeping pumping equipment in good working order, savings in time and energy costs can be made.

This fact sheet deals with centrifugal pumps, and outlines on page 2, common pumping malfunctions with probable causes and procedures for checking and correcting possible faults.

Centrifugal type irrigation pumps are very common and generally give reliable service.

Investigations show that most troubles with centrifugal pumps result from faulty conditions on the suction side.

Except for mechanical trouble, nine times out of ten this is where to look for the cause.

Most pump troubles can be rectified on the farm by the farmer or manager. However, at times, there will be problems or failures which you may not be able to fix. If you cannot identify the problem within this fact sheet, you should consult your supplier or the pump manufacturer.

No water delivered

- Priming-casing and suction pipe not completely filled with liquid
- Speed too slow
- Discharge head too high – check lift and friction loss



- Suction lift too high or suction pipe too small or too long, causing excessive friction loss – check with gauge
- Impeller or suction pipe or suction entry completely plugged
- Wrong direction of rotation
- Air pocket in suction line
- Stuffing box packing worn or water seal plugged, allowing leakage of air into pump casing
- Air leak in suction line.

Not enough water delivered

- Priming-casing and suction pipe not completely filled with water
- Speed too low
- Discharge head higher than anticipated – check, particularly friction loss
- Suction lift too high or suction pipe too small or too long, causing excessive friction loss – check with gauge
- Impeller or suction pipe or opening partially plugged
- Wrong direction of rotation
- Air pocket in suction line, perhaps because of sharp vertical bend or concentric reducer in suction line
- Stuffing box packing worn or water seal plugged, allowing leakage of air into pump casing
- Air leak in suction line
- Foot valve too small
- Foot valve not immersed deep enough
- Mechanical defects – wear rings worn, impeller damaged, casing packing defective.

Not enough pressure

- Speed too low
- Air in water
- Impeller diameter too small
- Mechanical defects – wear rings worn, impeller damaged, casing packing defective
- Wrong direction of rotation
- Pressure measured at incorrect point – measure pressure at top of pump case.

Pump works for a while then quits

- Leakage in suction line

- Stuffing box packing worn or water seal plugged, allowing leakage of air into pump casing
- Air pocket in suction line
- Not enough suction head for hot water or volatile liquids – check carefully as this is a frequent cause of trouble with hot water, etc
- Air or gases in liquid
- Suction lift too high.

Pump takes too much power

- Speed too high
- Head lower than rating, pumps too much water
- Mechanical defects – shaft bent, rotating element binds, stuffing boxes too tight, pump and driving unit misaligned
- Wrong direction of rotation.

Pump leaks excessively at the stuffing box

- Packing worn or not properly lubricated
- Packing incorrectly installed or not properly run in
- Packing type incorrect for liquid handled
- Shaft scored.

Pump is too noisy

- Hydraulic noise (cavitation) – suction lift too high – check with gauge
- Mechanical defects – shaft bent; rotating parts bind, are loose or broken; bearings worn out; pump and driving unit misaligned.

Further information

Should you require assistance or advice on pumps or pumping generally, please contact your local pump manufacturer or retailer.

Fact sheets on water and other topics are available from Natural Resources and Water (NRW) offices and service centres or can be downloaded at www.nrw.qld.gov.au/factsheets.

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For further information phone 13 13 04