RULE OF THUMB - BEARINGS

By Neal Wikert

Bearings – Tilt Pad

A minimum bearing clearance should be the shaft diameter plus .001". Another way of determining bearing clearance would be .00125" per inch of shaft diameter.

Bearings are considered worn when it is 140% of maximum clearance.

To determine the actual clearance of a tilt pad bearing use the following formula:

Actual clearance = Bump check (x) .89

Bearings – Sleeve

The normal bearing clearance is .001" per inch of shaft diameter + .001", i.e. 5" shaft = .006" (5.006"). Alternately, the clearance should be .00125"/inch of shaft diameter.

Bore of normal babbitt bearings carries a 32 finish and is turned. No grinding is done on babbitt because it will clog the grinding wheel. Babbitt begins to melt at 450 degrees F, creeps at 275 degrees F.

Bearings - Thrust

Copper backed shoes and offset pivots can add 20% to typical load capability because of better heat transfer.

Thrust Float – Use .0015" (x) the bearing O.D. For example a 12" O.D. thrust bearing should have .018".

Lubrication

Most common oil is an ISO 32 (150 SSU at 100 degrees F.)

Oil is usually supplied at 110-120 degrees F. and 15-25 psig. Bearings are designed/orificed for specific oil supply temperatures and pressures. Off design supply conditions can starve the bearing and cause overheating.

Temperature Monitoring

Temperature detector placement should located 1/16th inch below the babbitt bond line – Avoid placing into the babbitt.

Alarm at 235 deg. F., shutdown at 250 deg. F.

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