

**EML 3005: Mechanical Design
Spring 2005**

**Mechanical & Aerospace Engineering
University of Florida
Solution to Homework 1: Journal Bearing Design Project**

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SUMMARY OF JOURNAL BEARING DESIGN INFORMATION

Room Temperature (80 °F) Design Dimensions

Radial Clearance, $C = 0.0016 - 0.0024 \text{ in}$
 $= 0.0020 \text{ +/- } 0.0004 \text{ in}$

Rad Clr at -40 °F $C_{-40F} = 0.0013 \text{ inch}$

Shaft Diameter, $D = 0.7503 - 0.7497 \text{ in}$
 $= 0.7500 \text{ +/- } 0.0003 \text{ in}$

Bearing Diameter, $D_b = 0.7545 - 0.7535 \text{ in}$
 $= 0.7540 \text{ +/- } 0.0005 \text{ in}$

Summary

| | Case 1 | Case 2 | Case 3 | Case 4 |
|------------------------------------|---------------------|---------------------|---------------------|----------------|
| ΔT (Max) | 8 °F | 3 °F | 6 °F | 3 °F |
| h_o (Min) | 190 μ - inch | 130 μ - inch | 120 μ - inch | 90 μ -inch |

Note: In all cases ΔT is less than 50 °F and h_o is greater than 80 μ -inch.