Mounting and Coding

Design of Mating Equipment

A bearing which is fitted too tightly or too loosely, or is damaged during assembly due to excessive force or shock loading, may cause your device to perform in a substandard manner. This possibility can be greatly reduced by following some general guidelines during the design of mating parts (see Table of Recommended Fits on page 53), and by observing the following four cautions during the assembly process.

Caution 1. When establishing shaft or housing sizes, the effect of differential thermal expansion must be accounted for. If thermal gradients are present or dissimilar materials are used, room temperature fits must be adjusted accordingly. Approximate thermal coefficients for common materials are available from NHBB.

Caution 2. When miniature and instrument bearings are interference fitted (either intentionally or as a result of thermal gradients) the bearing radial play is reduced by an amount equal to approximately 80% of the actual diametral interference fit.

Caution 3. If the outer ring or inner ring face is to be clamped or abutted against a shoulder, make sure the shoulder configuration provides a good mounting surface:

- The shoulder face must be perpendicular to the bearing mounting diameter within .0002 inches/per inch.
- The corner between the mounting diameter and the face must have either an undercut or a fillet radius, no larger than that shown on the table pages under the column "r".
- The shoulder diameter must conform to the table on page 53.

Caution 4. It is relatively easy to damage a miniature and instrument bearing during assembly simply by exceeding its load capacity. Adequate fixturing must be provided for handling and assembling precision bearings to ensure that:

- When assembling the bearing to the shaft, force is applied only to the inner ring.
- When assembling into the housing, force is applied only to the outer ring.
- Any movement or shock loads which would be transmitted through the bearing are eliminated.

Coding Classification of Bore and Outside Diameter

When required for selective assembly or for other reasons, bores and/or outside diameters may be classified into coded size groupings within the tolerance ranges specified in this chart. Methods of measuring and determining classification size are specified in ABMA Standard, Section #12.1 and 12.2.

Complete code designation consists of the bore code as the first digit or letter, and the outside diameter code as the second digit or letter. When one dimension only is classified, the other is denoted by 0.

Size Tolerance* (from maximum)	.00005 Calib.	.0001 Calib.
maximum to –.00005	A	1
–.00005 to –.00010	B	
–.00010 to –.00015	C	2
–.00015 to –.00020	D	

*Measurement in inches.

EXAMPLES:

"C12"	Bore Falls Between	0.0000 & -0.0001
	O.D. Falls Between	-0.0001 & -0.0002
"CAB"	Bore Falls Between	0.00000 & -0.00005
	O.D. Falls Between	-0.00005 & -0.00010
"C10"	Bore Falls Between	0.0000 & -0.0001
	O.D. Is Not Coded	