

# Inspection and Installation Procedures for Reali-Slim Thin Section Bearings

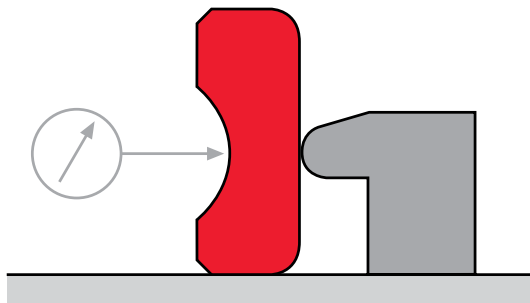
## Inspection

The unique proportions of Reali-Slim bearings make some of the usual gaging practices impractical. Since very light pressure is sufficient to deflect the thin rings, conventional two-point measurement of bearing bore and outside diameter must not be used. Air gages of the open jet type, or other proximity devices, must be used to hold error from distortion to an acceptable level. Measurements must be made at enough points to yield a true average size, which may not be the mean of the maximum and minimum measurement. A Reali-Slim bearing may be out-of-round in the free state<sup>①</sup> more than the ABMA tolerance for its precision class. This presents no problem since the races will conform readily to a round shaft diameter and housing bore.

To determine the true runout of each race, by excluding the effect of out of roundness, measurement is made of variation in individual wall thickness. This is schematically illustrated in Figure 5-14. The indicator must contact the raceway at the ball or roller contact, and must be properly positioned for the particular runout (axial or radial) being checked.

## Measurement of Radial Runout of Type C Inner Race

Figure 5-14



Diametral clearance of Reali-Slim bearings is controlled by selective assembly of races and balls following measurement with gages specially designed for this purpose.

Standard inspection and quality control procedures at Kaydon meet the requirements of government procurement agencies and major aerospace industries. However, a certificate of compliance to specifications can be furnished if required.

## Installation

To realize the potential accuracy and long life of a Reali-Slim bearing, it is important that the installation be properly done in a clean environment. Cleanliness is vital to satisfactory bearing performance. Work surfaces and tools must be free of dirt, chips, and burrs. Disposable wipers or clean, lint-free cloths should be used.

Under no circumstances should a bearing be used as a gage during grinding or machining of mating parts. Just a few grains of grinding grit or chips of metal (soft as well as hard) can seriously damage the precise geometry and finishes of bearing raceways and rolling elements, and are nearly impossible to remove from an assembled bearing.

The shaft and housing should be thoroughly cleaned, special attention being given to holes and crevices which could hold dirt, chips, and cutting oil. Unfinished surfaces of castings should be painted or otherwise sealed. The mounting surfaces for the bearing must be carefully checked, cleaned, and lightly oiled to ease fitting and minimize danger of scoring. Housing bore, shaft diameter, shoulder squareness, and fillet sizes should all be verified.

The bearing should not be removed from its protective package until this preparation is complete and it is time for installation.

<sup>①</sup> As explained in ABMA Standard 26.2

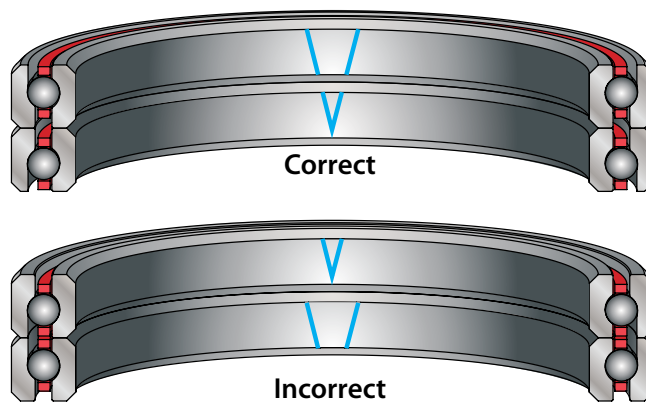
## Inspection and Installation Procedures for Reali-Slim Thin Section Bearings (continued)

Interference fitting any bearing to the shaft or housing must be carefully done to avoid damage to the bearing. For Reali-Slim bearings, the use of temperature difference to expand the outer member is recommended to minimize or eliminate the installation force necessary. To calculate the differential required, use a coefficient of expansion of .000007 inch per inch per degree F for AISI 52100 steel races and .0000056 for AISI 440C races. For a Kaydon Precision Class 1 bearing of 2" bore to be fitted to a steel shaft, the differential required to eliminate all interference between a maximum diameter shaft and minimum diameter bearing is 90°F; for a 4" bore it is 60°F. Either dry heat or hot oil may be used. Electrical resistance tape is convenient for the large bearings. Care must be taken to avoid overheating the bearing. Do not exceed 250°F.

If pressure is necessary, an arbor press should be used with a suitable pusher to apply the force to the full face of the ring being press fitted — never through the bearing, as damage will be done to the balls and raceways.

All duplexed bearings are marked with a single "V" on the bores and outside diameters to indicate the proper relative circumferential position of inner and outer races. This "V" is located at the high points of race eccentricity so that these may be placed at the low points of shaft and housing eccentricity for the canceling effect.

**Figure 5-15**



After mounting, the bearings must be given continued protection from contamination until the assembly is closed. Adherence to these procedures will assure a successful installation.

If it is necessary to return a bearing to Kaydon, it should be coated with protective oil and wrapped the same as when shipped from the factory to prevent damage during transit. If bearings are being returned after use for a failure analysis, they should be returned in the as removed condition, since the condition of the part (cleanliness, lubricated condition, etc.) will provide important data for failure analysis.

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