For rolling mill neck fitting practice, consult your Timken representative. For all other equipment associated with the rolling mill industry, the fitting practice suggestions in the tables that follow should be used.

In addition to all other axial tolerances and the overall bearing width tolerance, the width increase due to tight fits of the cone or cup, or both, must be considered when axial tolerance summation calculations are made. By knowing the fit range, the minimum and maximum bearing width increase can be determined to establish the initial design dimensions. For instance, all tolerances plus the bearing width increase range due to tight fits must be known in order to calculate the shim gap range that would occur on a cup adjusted, direct mounting design.

In a factory preset bearing or a SET-RIGHT™ mounting, where the bearing overall width is fixed and clamped, tight fits will cause cup expansion or cone contraction which will reduce the internal clearance (endplay) within the bearing.

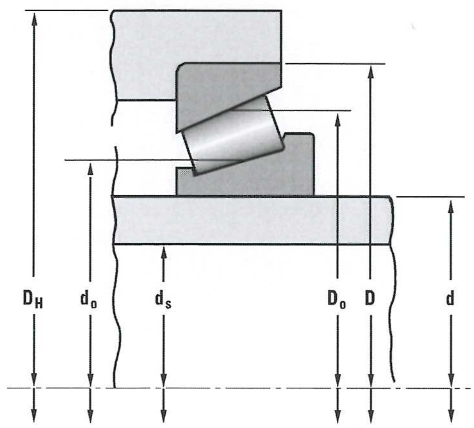
Endplay Removed for Single Cone

$$= 0.5 \left(\frac{K}{0.39}\right)\left(\frac{d}{d_o}\right) \delta_S$$

The following equations under Normal Sections and Thin Wall Sections can be used to calculate endplay removed in a similar manner.

where:

- K = Tapered Roller Bearing Radial-to-Axial Dynamic Load Rating Factor
- d = Bearing Bore Diameter
- d_o = Mean Inner Race Diameter
- D_o = Mean Outer Race Diameter
- d_S = Shaft Inside Diameter
- D = Bearing Outside Diameter
- D_H = Housing Outside Diameter
- δ_S = Interference Fit of Inner Race on Shaft
- δ_H = Interference Fit of Outer Race in Housing



BEARING DIAMETER

EFFECT OF TIGHT FITS ON BEARING WIDTH

Normal Sections

The interference fit of either the cone or the cup increases the overall bearing width. For solid steel shafts and heavy sectioned steel housings, the increased bearing width for a single-row bearing is as follows. (Refer to diagram to the left.)

Bearing Width Increase for Single Cone

$$= 0.5 \left(\frac{K}{0.39}\right)\left(\frac{d}{d_o}\right) \delta_S$$

1,45

Bearing Width Increase for Single Cup

$$= 0.5 \left(\frac{K}{0.39}\right)\left(\frac{D_o}{D}\right) \delta_H$$

ø125mm 0,058mm ≈ 0,09mm ø148mm

If the shaft or housing material is other than steel, consult your Timken representative.

Thin Wall Sections

Interference fits on thin-walled steel shafts and light-sectioned steel housings have a tendency to collapse the cone seat and stretch the cup seat, causing less change in bearing width than when used with solid shafts and heavy housings. The bearing width change due to tight fits on thin bearing seat sections is as follows. (Refer to diagram to the left.)

Bearing Width Increase for Single Cone

$$= 0.5 \left(\frac{K}{0.39}\right) \left\{ \frac{\left(\frac{d}{d_o}\right)\left[1 - \left(\frac{d_S}{d}\right)^2\right]}{1 - \left(\frac{d_S}{d_o}\right)^2} \right\} \delta_S$$

Bearing Width Increase for Single Cup

$$= 0.5 \left(\frac{K}{0.39}\right) \left\{ \frac{\left(\frac{D_o}{D}\right)\left[1 - \left(\frac{D}{D_H}\right)^2\right]}{1 - \left(\frac{D_o}{D_H}\right)^2} \right\} \delta_H$$

These equations apply only to steel shafts and housings.