

Bearing Definitions and Terms

Axial Clearance:

The total amount of free axial movement between the inner and outer race of a bearing. Bearings with internal clearance will contain both axial and radial clearance.

Axial Load:

Load applied to the bearing parallel with the bearing axis of rotation — also known as thrust load.

Capacity:

Dynamic capacity is the basic “C” rating which represents a load that the bearing can theoretically endure for 1 million revolutions. Static capacity is the approximate load the bearing can endure before permanent deformation occurs on the ball or raceway. Published capacities do not apply to hybrid series bearings P, X, and Y. Contact KAYDON product engineering.

Deflection:

The amount of movement associated with compression or stretching of bearing components when placed under load.

Diameter Tolerance:

The range in which the average diameter of a bore or O.D. may fall. REALI-SLIM® bearings are considered “non-rigid” rings and all diameters are averaged using multi-point gaging techniques per ABMA Std. 26.2.

Diametral Clearance:

The total free movement of the inner race relative to the outer race in a radial plane, also referred to as radial clearance. “X” and “C” type bearings are made with some internal clearance as a standard factory internal fit before mounting.

L₁₀ Life:

The theoretical life span of a bearing under a specific set of dynamic operating conditions associated with 90% reliability.

Moment Load:

Load such that when applied to a bearing system, tends to overturn or bend the axis of rotation in an angular direction.

Pitch Diameter:

The theoretical median diameter of a bearing, which passes through the center of the rolling elements. REALI-SLIM® pitch diameters are equivalent to: $(OD+Bore)/2$.

Preload:

The amount of load placed on the rolling elements before the application of any external loads. Preload can be created in “X” and “C” type bearings by controlling internal fits of the ball and the raceway at the factory. Preload in angular contact bearings is controlled by a “preload gap” between the duplexed races. Tight mounting conditions will increase the final bearing preload. Preload stiffens the bearing and eliminates axial and radial play, but the load on the balls increases friction and shortens L₁₀ life.

Radial Load:

Load applied perpendicular to the bearing axis of rotation.

Runout:

The maximum axial or radial race wall thickness variation of an inner or outer bearing race. Runout influences the repeatable location variation of rotating components.

Standard bearing nomenclature

