Glossary of Bearing Terms

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A.B.E.C.
Annular Bearing Engineering Committee. Used as prefix for tolerance grades of bearings as set up by this committee.

A.B.E.C. 1-3-5-7-9
Annular Bearing Engineers Committee classes or grades of ball bearing precision.

A.F.B.M.A.
The Anti-Friction Bearing Manufacturers Association. They have set up standards for the bearing industry.

Adapter Assembly
Assembly consisting of adapter sleeve, locknut and lockwasher.

Adapter Sleeve
Axially slotted sleeve with cylindrical bore, tapered outside surface and male screw thread at small end used with locknut and lockwasher for mounting of bearings with tapered bore on cylindrical outside surface of shaft. Also called pull-type sleeve.

Aircraft Bearing
A term applied generally to bearings used by the aircraft industry or the Air Force.

Airframe Bearing
A bearing designed for use in the control systems and surfaces of aircraft.

Angular Contact Bearing
A type of ball bearing whose internal clearances and ball race locations are such as to result in a definite contact angle between the races and the balls when the bearing is in use.

Annular Ball Bearing
A rolling element bearing designed primarily to support a load perpendicular to the shaft axis. *Also: Radial Type Bearing*.

Anti-friction Bearing
Commonly used term for rolling element bearing.

Axial
In the same direction as the axis of the shaft.

Axial Internal Clearance
In ball or roller bearing assembly, total maximum possible movement parallel to bearing axis of inner ring in relation to outer ring. Also called bearing end play.

Axial Load
Load exerted parallel to the axis of the shaft on which the bearing is mounted, also called thrust load.

Axis
An imaginary line running through the center of a shaft on which a bearing is mounted.

Ball
A spherical rolling element.

Ball Bearing
A bearing using balls as the rolling elements.

Ball Cage
A device which partly surrounds the balls and travels with them, the main purpose of which is to space the balls. *Also Separator: Retainer: Ball Spacer*.

Ball Complement
Number of balls used in a ball bearing.

Ball Contact
Area of contact between raceway and ball.

Ball Diameter
The dimension measured across the ball center.

Ball Pocket
A drilled, stamped, or molded receptacle that holds the ball in a cage.

Basic Dynamic Load Rating
Basic dynamic load rating, Cr, is the calculated constant radial load (thrust load for thrust bearings) which a group of identical bearings with stationary outer rings can theoretically endure for rating life of 1 million revolutions of inner ring.

Bore
The smallest internal dimension of inner or outer ring or separator. Also, the surface of the inner ring that fits against the shaft.

Boundary Dimensions
Dimensions for bore, width, outside diameter and corner radius.

Cage
See Ball Cage.

Cam Follower
See Track roller

Cartridge Bearing
An extra wide double shielded or sealed bearing designed to increase grease capacity of bearing.

Concentric
Having the same center.

Cone
Inner ring of tapered roller bearing.

Conrad
Standard single row deep-groove bearing named for the inventor of its assembly method, Joseph

Conrad.

Contact Angle
Formed by a line drawn between the areas of ball and ring contact and a line perpendicular to the bearing axis.

Counterbored Ball Bearing
Portion of one race shoulder turned and ground away to facilitate assembly with a greater number of balls. A non-separable ball bearing with one side of the raceway removed from either or both rings to facilitate manufacturing assembly. Normally the outer ring is counterbored.

Double Row Bearing
A bearing with two rows of rolling elements.

Double Row Maximum Capacity
A bearing that has a solid inner and outer with two raceways and filling notches to permit the maximum number of balls to be inserted.

Drawn Cup Needle Roller Bearing
Needle roller radial bearing with thin pressed steel outer ring (drawn cup), which may have one closed end or both ends open. Usually employed without inner ring.

Duplex Bearing
A duplex bearing is a bearing with controlled axial location of faces of inner and outer rings which makes this bearing suitable for mounting in various combinations with one or more bearings controlled in the same manner.

Dynamic Load
A load exerted on a bearing in motion.

Eccentric
Not having the same center.

End Play
The axial play of the outer ring in a bearing. The measured maximum possible movement parallel to bearing axis of the inner ring in relation to outer ring.

External Race
The ball path on an inner ring. *Also - Inner Raceway, Inner Ring Raceway.*

Face
The side surface of a bearing. *See also Thrust Face*.

Fillet Radius
The corner dimension in a bearing housing that the bearing external corner radius or chamfer must clear.

Filling Notch
A slot or notch cut in the shoulder of a ring to allow the loading of the maximum number of balls. *Also Filling Notch; Loading Groove*.

Finish

A term usually applied to the last machining operation on any surface of a bearing, such as "Finish O.D., " "Finish bore, " etc.

Fit
The amount of internal clearance in a bearing. Fit can also be used to describe shaft and housing size and how they relate to the bore or outside diameter.

Fixed Bearing
Bearing which positions shaft against axial movement in both directions.

Floating Bearing
Bearing designed or mounted so as to permit axial displacement between shaft and housing.

Full Complement Bearing
Rolling bearing without cage in which sum of clearances between rolling elements in each row is less than the diameter of rolling elements and small enough to give satisfactory function of bearing.

Hardening
Process of heating parts to a high temperature and then quenching in oil, water, air, or solution.

Heading Rivets
Process of hitting rivets in a press to form the heads.

Housing, Bearing
The opening in which a bearing is contained in a machine. The part of a machine that contains this opening.

Housing Fit
Amount of interference or clearance between bearing outside surface and housing bearing seat.

Hydraulic Nut
Collar temporarily fixed to shaft which incorporates hydraulic annular piston to transmit axial mounting or dismounting force to bearing inner ring.

ISO
International Standards Organization.

Inch Dimension Bearing
A bearing having boundary dimensions made to integral or/and fractional inch figures rather than metric figures.

Inner
See Inner Ring

Inner Ring
The inner part of a bearing that fits on a shaft and contains the external raceway for the rolling elements. Sometimes the shaft is stationary and the housing rotates.

Inner Ring Raceway
See External Race.

Internal Clearance

See Radial Clearance.

Internal Race
The ball or roller path on the bore of the outer ring. Outer Ring Raceway. Outer Raceway.

Land
Commonly called the O.D. of the inner and the I.D. of the outer.

Lapping
An abrading process for refining the surface finish and the geometrical accuracy of a surface.

Life
"Life" of individual rolling bearing is the number of revolutions (or hours at some given constant speed) which bearing runs before first evidence of fatigue develops in the material of either ring or washer or any of rolling elements.

Limits
Maximum and minimum allowable dimensions, resulting from the application of predetermined tolerances to a specified dimension.

Lock Nut
A nut used in combination with a lock washer to hold a bearing in place on a shaft.

Lock Washer
A washer with tongue and prongs to hold a lock nut in place.

Locking Collar, Concentric
Ring fitting over extended inner ring of insert bearing and having setscrews which pass through holes in inner ring to make contact with shaft.

Locking Collar, Self
Ring having recess on one side which is eccentric in relation to bore and fits over equally eccentric extension of inner ring insert bearing. Collar is turned in relation to inner ring until it locks and then secured to shaft by tightening of setscrews.

Loose Fit
A fit or fit up of inner ring, balls, and outer ring which results in the existence of appreciable radial clearance.

Maximum Capacity Bearing
A bearing with filling notches to allow the loading of the maximum number of balls.

Misalignment
Lack of parallelism between axis of rotating memeber and stationary member.

Needle Roller
Cylindrical roller of small diameter with large ration of length to diameter. Generally accepted that length is between three and ten times diameter which is usually less than 5 mm.

O.D.
Outer Diameter; Outside Diameter.

Outer
See Outer Ring.

Outer Raceway
See Internal Race.

Outer Ring
The outer part of a bearing that fits into the housing and contains the internal raceway for the rolling elements.

Outer Ring Raceway
See Internal Race.

Pocket
The portion of a cage shaped to hold the ball or roller. *Also Ball Pocket; Roller Pocket.*

Preload
An internal loading characteristic in a bearing which is independent of any external radial and/or axial load carried by the bearing.

Prelubricated Bearing
A shielded, sealed, or open bearing originally lubricated by the manufacturer.

RBEC-1, -5
Class or degree of precision of anti-friction roller bearings.

Raceway
The ball or roller path; cut in the inner and outer ring in which the balls or rollers ride. *Also Guide Path; Race; Ball Path; Roller Path.*

Raceway Diameter
Inner Ring -- the outer dimension across the diameter from raceway bottom to raceway bottom.
Outer Ring -- the inner dimension across the diameter from raceway bottom to raceway bottom.

Radial Clearance
The radial internal clearance of a single row radial contact ball bearing is the average outer ring race diameter, minus the average inner ring race diameter, minus twice the ball diameter.

Radial Load
A load exerted perpendicular to the axis.

Radial Play
See Radial Clearance.

Radial Type Bearing
In general, a rolling element bearing primarily designed to support load perpendicular to the axis. *Also: Annular Bearing.*

Rating Life
L10 of group of apparently identical bearings is the life in millions of revolutions that 90% of the group will complete or exceed.

Relieved End Roller
Roller with slight modification of diameter at ends of outside surface to reduce stress concentrationat contacts between rollers and raceways.

Retainer
See Ball Cage.

Riveted Type Ball Cage
A type of cage in which the two halves are riveted together around the balls after the balls have been assembled in the rings.

Runout, of Assembled Bearing
Displacement of surface of bearing relative to fixed point when one raceway is rotated with respect to other raceway.

Seal
A soft synthetic rubber washer with a steel core fixed in the outer ring (in the seal groove) in contact with the inner ring to retain lubricant and keep out contamination.

Self Aligning Ball Bearing
Spherical outside diameter ball bearing which can accommodate initial angular misalignment between the outer ring and its mating spherical aligning ring or housing seat.

Separable
A bearing that may be separated completely or partially into its component parts.

Separator
See Ball Cage.

Shaft Fit
Amount of interference or clearance between bearing inside diameter and shaft bearing seat outside diameter.

Shield
A metal formed washer attached to the outer ring and set so it rides close to, but not contacting, the inner ring, to retain lubricant and prevent contamination.

Shoulder
The side of a ball race, also a surface in a bearing application or shaft which axially positions a bearing and takes the thrust load.

Single Row
Bearing with one row of rolling elements.

Snap Ring
A removable ring used to axially position a bearing or outer ring in a housing. Also used as a means of fastening a shield or seal in a bearing.

Solid Cage
A solid ring type separator used in a radial or angular contact type bearings.

Spacer

Sleeve or sleeves serving to space different bearings on same shaft or different rows of rolling elements in multi-roll bearing.

Spherical Roller Bearing
Self-aligning, radial rolling bearing with convex rollers or concave rollers as rolling elements. With convex rollers outer ring has spherical raceway, with concave rollers inner ring has spherical raceway.

Standard Bearing
Bearing which conforms to the basic plan for boundary dimensions of metric or inch dimensions.

Static Load
A load exerted on a bearing not in motion.

Stay Rod
A flat elongated rivet used in the cages of maximum capacity bearings.

Stay Rod Type Ball Cage
Type cage in which the two halves are held together with special stay rod rivets.

Thrust Load
See Axial Load.

Thrust Bearing
A bearing designed primarily for thrust loads.

Thrust Face
Face of thrust bearing against which housing or shaft shoulder pushes.

Tolerance
The range between two limiting sizes as a means of specifying the degree of accuracy.
The amount a given bearing dimension may vary from specifications.
The difference between the upper and lower limits of a dimension or a specification.
A means of specifying the degree of accuracy.

Track Roller
Radial roller bearing with heavy section outer ring, intended to roll on track, a.k.a. cam follower.

Wide Inner Ring Bearing
Bearing with inner ring extended on one or both sides in order to achieve greter shaft support and permit addition of locking device and provide additional space for sealing devices.

Withdrawal Sleeve
Axial slotted sleeve with cylindrical bore, tapered outside surface and male screw thread at large end. Used for mounting and dismounting (by means of nut) of bearing with tapered bore on cylindrical outside surface of shaft. Also called push-type sleeve.