

Angular Contact Ball Bearing Specifications

Standard	5S	-	70	01	C	GD2 /GN	P4
Ceramic balls	←						
Series	←						
Bore Diameter	←						
Contact Angles	←						
Mounting Config.	←						
Preload	←						
Precision/Tolerance	←						

Contact Angles

No Suffix—30°
 Suffix B—40°
 Suffix C—15°

Mounting Configuration

G—Single universal flushground (can be mounted in any configuration)
 GD2—pair of universal

DB—duplex—back to back
 DF—duplex—face to face
 DT—duplex—tandem
 DBT, DFT, DTT—triplex set
 DBTT, DFTT, DTBT, DTFT—quad set

Cages

See Table 3 note 4 for standard cages that do not carry a suffix and special cages that do.

Preload

GL—Light } low preload
 GN—Normal } low load
 GM—Medium, moderate } high speed
 applications
 GH—Heavy, high rigidity and stiffness, high loads moderate speed

Precision/Tolerance Class

0—ISO class 0 (ABEC 1) (NTN standard, no suffix)
 P6—ISO class 6 (ABEC 3)
 P5—ISO class 5 (ABEC 5)
 P4—ISO class 4 (ABEC 7)
 P2—ISO class 2 (ABEC 9)

Ultra High Speed	5S	-	HSB	0	20	C	DB	GL	P2
Ceramic balls	←								
Series	←								
Dimension Series	←								
Bore Diameter	←								
Contact Angles	←								
Mounting Config.	←								
Preload	←								
Precision/Tolerance	←								

Contact Angles

Standard—30°
 B—40°
 C—15° BNT Standard

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 P5—ISO class 5 (ABEC 5)
 P4—ISO class 4 (ABEC 7)
 P2—ISO class 2 (ABEC 9)

Ask for NTN Angular Contact Bearings for your replacement needs!

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Angular Contact Ball Bearings



NTN offers the 7900, 7000, 7200, 7300, Angular Contact Ball Bearing Series (Consult NTN regarding the 7400 series)

Contact angle



NTN standard angular contact bearings have 30° or 40° contact angles. For normal loads, the 30° angle bearings (no P/N suffix) are usually used. For high axial load applications, 40° angle bearings are available (P/N suffix B). Both of these come with normal precision tolerances.

For high-speed applications, a 15° angle is usually used (P/N suffix C). These bearings have high precision tolerances, ISO class 5 or better, and a high speed molded resin cage. They come in standard angular contact configuration and also in special ultra high-speed BNT and HSB configurations with smaller balls and other features. For still higher speeds, these bearings are available with ceramic balls (P/N prefix 5S-)

Special versions of bearing with 30° and 40° angles are available with the same high precision tolerances and other features as the high speed bearings for use in moderately high speed applications with heavier axial loads or in applications having lower speed but requiring high rotational accuracy. The ultra high-speed HSB series is also available with a 30° angle for heavier axial load applications.

All of the above can carry radial loads as well as unidirectional axial load. When paired (mounted in duplex), the pair takes on new features. Placing them back to back (DB) or front to front (DF), increases the radial load rating and enables axial loads to be accommodated in either direction. The DB has much greater moment load capacity but the DF has much greater misalignment capability. Placing bearings in tandem (DT) increases the radial and axial capacity over that of one bearing but the axial loading must still be unidirectional.

All paired bearings must be flush ground on the faces between the bearings. By controlling the offset of the inner ring with respect to the outer ring, a specified clearance or preload can be achieved when the pair is compressed together with a nut or other means. High preload increases rigidity under load but also increases loads and running torque and reduces limiting speed.

Universal flush ground bearings or pairs have both sides flush ground and can be mounted in any configuration (DB, DF, DT) and the preload will be maintained so long as the identical codes are used for the bearings in the pair. All of the above also applies to larger sets such as triplex sets or quad sets.

NTN also provides other types of angular contact bearings that are available but are not included in this brochure:

5200 and 5300 series double row angular contact bearings are roughly equivalent to 30° DB pairs in a single unit. They carry loads in both directions and provide vibration and shock resistance but they have reduced speed and accuracy (runout) capability.

BST ball screw support bearings are made with an extra high contact angle of 60° for extreme axial rigidity.

QJ four point angular contact bearings have a 30° contact angle and split inner rings. This configuration allows a single narrow series bearing to carry high axial load in either direction. It also reduces the high axial clearance seen in deep groove ball bearings. This bearing requires a substantial axial load to maintain the typical two point contact desirable in angular contact bearings, with a very predominate radial load, the bearing runs with a four point contact and this is not desirable in most cases.

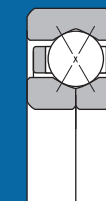
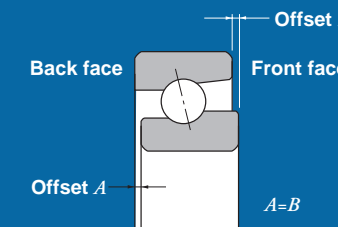


Table 1. Angular contact ball bearing types and characteristics

Table with 3 columns: Type, Design, Characteristics. Rows include Standard type, High speed use, and Ultra high speed use. Each row contains a diagram and a list of characteristics.

Table 2. Duplex angular contact ball bearing types and characteristics

Table with 2 columns: Duplex type, Characteristics. Rows include Back-to-back duplex (DB), Face-to-face duplex (DF), and Tandem duplex (DT). Each row contains a diagram and a list of characteristics.

Note: 1. Duplex bearings are manufactured in a set to specified clearance and preload values, therefore they must be assembled together with identically numbered bearings and not mixed with other arrangements. 2. Triplex arrangements of angular contact bearings are also available. Consult NTN for details.

Table 3. Standard cages for angular contact ball bearings

Table with 5 columns: Type, Series, Molded resin cage, Pressed cage, Machined cage. Rows include Standard, High speed use, Ultra high speed use, 4-point contact, and Double row.

Note: 1. Standard cages for 5S-BNT and 5S-HSB type bearings are the same as cages for BNT and HSB type bearings. 2. Due to the material characteristics of molded resin cages, use at application temperatures in excess of 120°C is not possible. 3. Standard pressed cages are generally steel. Standard machined cages are generally brass. 4. No suffixes are assigned to standard cages. Special cages are available in many sizes and do carry part number suffixes: (L1) brass, (T1) phenolic or (T2) molded resin (glass reinforced nylon).



Note for tables 4 and 5: For the purpose of preload comparisons, NTN's GL would be considered an extra light, GN would be considered a light, GM would be considered a medium, GH would be considered a heavy. Consult NTN engineering for exact details.

Table 4. Basic preload with duplex angular contact ball bearings (contact angles 30° or 40°)

Large table with 17 columns representing different bearing types and sizes (79, 70, 72, 73) and their corresponding load capacities in lb and kg.

Table 5. Basic preload with duplex angular contact ball bearings (contact angle 15°)

Large table with 21 columns representing different bearing types and sizes (78C, 79C, 70C, 72C, 73C) and their corresponding load capacities in lb and kg.