High Precision and Increased Axial Stiffness

Semiconductor processing requires accurate and reliable robotics. The high-speed, repetitive motions of robotic joints demand bearings that maximize the machine’s speed and agility. Timken® angular contact ball bearings keep the line moving, while offering increased accuracy due to higher-precision tolerances.

The need of a radar antenna to move smoothly is critical. Just as important is minimizing maintenance investment. Limited or difficult access can drive the need for greater reliability. Timken angular contact bearings in duplex arrangements manage these issues – offering bi-directional stiffness with precision movement, and dependable performance to help reduce service visits.

Timken angular contact ball bearings maximize the ball complement to increase axial stiffness and thrust capacity. They are available in pre-loaded duplex sets to lower torque and increase stiffness. Numerous size, material and separator options are available to match specific customer needs.

Timken’s advanced thin-section bearing technology gives designers of precision equipment robust solutions for compact space requirements and similar challenges.

Thin-Section Features

**Precision tolerances** – meet ABEC 5 or 7 (ISO P5 or P4) standards for better fit with high running accuracy and consistent operation.

**Material selection** – performance options of 440C stainless steel or 52100 chrome steel offer corrosion resistance in challenging environments.

**Superfinished raceways** – provide a smooth surface finish of < 0.08 μm (3 μin) Ra to reduce internal friction and vibration.

**High-quality ball complement** – delivers smooth rolling performance with Grade 5 or better balls optimized for minimum non-repeatable runout and low torque.

**Broad size range** – provides unique thin-section designs and superior performance up to 300 mm (12 in.) outside diameter in standard product.

**Compact size** – saves weight and space for both bearing and mating components, helping to reduce overall envelope dimensions.

**Duplexing capability** – preloaded pairs further increase capacity and stiffness.

**Low torque design** – minimizes friction and helps to reduce energy input requirements.

**Superior Timken quality** – More than a century of bearing expertise and continual technological advances.

Typical Applications

- **Precision Robotics**
- **Guidance Systems**
- **Aerospace Systems**
- **Instrument Gimbals**

Also Available – Thin-Section Deep-Groove Ball Bearings

- Potential weight savings over angular contact bearings
- Average speed and moderate loads in any direction
### Angular Contact Bearings

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**Materials**
- 440C stainless steel
- 52100 chrome steel  

**Separators**
- One-piece snap type phenolic retainer (up to chassis size 80-96)
- PTFE spacers

**Tolerances**
- ABEC 5 (ISO P5)
- ABEC 7 (ISO P4)

**Preload**
- Multiple preloads available

**Mountings/Sets**
- Back-to-Back
- Face-to-Face
- Tandem

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**Standard thin-section angular contact bearings**

**To learn about additional custom options, contact your Timken sales representative.**

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**TIMKEN**

The Timken team applies their know-how to improve the reliability and performance of machinery in diverse markets worldwide. The company designs, makes and markets high-performance mechanical components, including bearings, gears, belts, chain and related mechanical power transmission products and services.