Super Precision Sealed Angular Contact Ball Bearings

- Prepacked with grease for easier handling and mounting.
- Standard stock of universal arrangement (single-row) bearings with interchangeable matching.
- Provide customers with the ultimate maintenance free solution for bearings used in machine tool spindles.
Super Precision Sealed Angular Contact Ball Bearings

Immediate cost savings due to factory-filled grease

Features of Super Precision Sealed Angular Contact Ball Bearings

- **Time savings**
  Prepacked bearing eliminates the need to pack grease into the bearing when the main spindle is assembled, thus avoiding any chance of contamination or incorrect grease packing.

- **Flexibility for arrangement**
  Standard stock of interchangeable universal arrangement (SU) bearings.

- **Improved cleanliness**
  Grease leakage is reduced thus keeping working environment clean and safe with no impact on the environment.

- **Exclusive seal design**
  High-speed operations achieved with a non-contact seal. Nitrile rubber ensures superior oil resistance, wear resistance, and enhanced mechanical properties.
  TAC series uses contact seals, which provide superior water resistance and dust resistance.

- **Optimum cage design**
  **Features of outer ring guided phenolic resin cages**
  Types T and TR offer high-speed capability. Outer ring guided phenolic resin cage offers superior stability at high-speed.
  **Features of ball guided polyamide resin cage**
  NSK’s original design
  Type TYN (applied for bearing types BNR10 and BER10)
  - Reduced cage noise
  - Reduced bearing wear at low speeds
  - Enhanced grease life

Limiting speeds

Space for grease
List of Super Precision Sealed Angular Contact Ball Bearing Series

**Ultra high-speed Robust series**

Example of bearing number: 60BNR10XTV1VSUEL3P3 MTSX

- **Nominal bore diameter:** 60
- **Bearing type symbol:** BNR: 18º contact angle, BER: 25º contact angle
- **Dimension symbol:** T
- **Material symbol:** Rings: Bearing steel (SUJ2), Cage: Ceramic (Si3N4)
- **Accuracy symbol:** P3
- **Seal symbol:** TR
- **Grease brand symbol:** MTSX

**Standard series**

Example of bearing number: 7010CTRV1VSULP3 MTSX

- **Nominal bore diameter:** 70
- **Bearing type symbol:** BNR: 18º contact angle, BER: 25º contact angle
- **Dimension symbol:** L
- **Material symbol:** Rings: Bearing steel (SUJ2), Cage: Ceramic (Si3N4)
- **Accuracy symbol:** P3
- **Seal symbol:** TR
- **Grease brand symbol:** MTSX

**TAC series for ball screw support**

Example of bearing number: 30TAC62BDDGSUC10PN7B WPHL

- **Nominal bore diameter:** 30
- **Bearing type symbol:** TAC
- **Dimension symbol:** DDG
- **Material symbol:** Rings: Bearing steel (SUJ2), Cage: Ceramic (Si3N4)
- **Accuracy symbol:** P3
- **Seal symbol:** TR
- **Grease brand symbol:** WPHL

WPH grease is used as a standard.

**Bearings available with seal**

<table>
<thead>
<tr>
<th>Dimension series</th>
<th>Bearing bore</th>
</tr>
</thead>
<tbody>
<tr>
<td>BNR10, BNR19, 70, 79</td>
<td>φ30~φ100</td>
</tr>
<tr>
<td>BER10, BER19</td>
<td></td>
</tr>
</tbody>
</table>

**Notes**

1. Additional arrangements, preloads, and accuracy classes are available. Consult with your NSK sales office.
2. MTS and MTE are the standard grease products for ultra high-speed Robust series and Standard series bearings.
3. Open bearings: X=15% L=30%
4. Sealed bearings: X=20% L=40%
5. For more information on other sizes, consult your NSK Sales Engineer.
SU arrangement: universal arrangement (single-row) bearings with interchangeable matching

**Features of SU arrangement**

Preload offset has been specifically controlled on both bearing faces (f=b).

Designated preload can be set for any combination of bearings. A “V” mark is used on the outer diameter to identify the proper orientation of assembly and thereby avoiding assembly errors. The “V” is marked as shown. Arrange “V” marks to make the shape shown in the following examples for your desired arrangement.

**Example of matching of angular contact ball bearings**

Offset of outer and inner ring face arrangements allow for a variety of matching combinations.

**Sealed spacer**

**Features of sealed spacer**

- This seal reduces the leakage of grease.
- In grease lubrication, this spacer provides superior resistance against intrusion of foreign particles and coolant, thus ensuring greater reliability.
MTS, MTE, and ENS are specially developed grease products sold exclusively by NSK. Our super precision sealed angular contact ball bearings come prepacked with MTS and MTE grease.

### Applications and features of grease

#### ● Heat-resistant MTS grease
- **Applications:** Ultra high-speed machining centers
- **Features:** Urea thickener provides superior heat resistance.

#### ● High-load MTE grease
- **Applications:** Lathe operated under high loads
- **Features:** Superior load resistance

#### ● High-temperature resistant ENS grease
- **Applications:** High-speed motors
- **Features:** Environmentally friendly biodegradable grease

### Grease properties

<table>
<thead>
<tr>
<th>Items</th>
<th>Test condition</th>
<th>MTS</th>
<th>MTE</th>
<th>ENS</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickener</td>
<td>—</td>
<td>Urea</td>
<td>Barium complex</td>
<td>Urea</td>
<td>—</td>
</tr>
<tr>
<td>Base oil</td>
<td>—</td>
<td>Ester oil</td>
<td>Ester oil</td>
<td>Ester oil</td>
<td>—</td>
</tr>
<tr>
<td>Kinematic viscosity of base oil (mm²/s)</td>
<td>40</td>
<td>22</td>
<td>20</td>
<td>32</td>
<td>JIS K2220 5.19</td>
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<tr>
<td>Consistency</td>
<td>25°C, 60W</td>
<td>No. 2 to 3</td>
<td>No. 2</td>
<td>No. 2</td>
<td>JIS K2220 5.3</td>
</tr>
<tr>
<td>Dropping point (°C)</td>
<td>—</td>
<td>&gt; 220</td>
<td>&gt; 200</td>
<td>&gt; 260</td>
<td>JIS K2220 5.4</td>
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<tr>
<td>Evaporation (mass%)</td>
<td>99°C×22H</td>
<td>0.3</td>
<td>0.4</td>
<td>0.4</td>
<td>JIS K2220 5.6B</td>
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<tr>
<td>Oil separation (mass%)</td>
<td>100°C×24H</td>
<td>0.4</td>
<td>1.0</td>
<td>1.1</td>
<td>JIS K2220 5.7</td>
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### Sales of grease volumes

<table>
<thead>
<tr>
<th>Volume</th>
<th>Container</th>
<th>MTS</th>
<th>MTE</th>
<th>ENS</th>
</tr>
</thead>
<tbody>
<tr>
<td>100g</td>
<td>Tube</td>
<td>□</td>
<td>□</td>
<td>—</td>
</tr>
<tr>
<td>1kg</td>
<td>Can</td>
<td>□</td>
<td>□</td>
<td>—</td>
</tr>
<tr>
<td>2.5kg</td>
<td>Can</td>
<td>—</td>
<td>—</td>
<td>□</td>
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