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## NTN NTN 6012

# NTN Bearing 6012 Single Row Deep Groove Radial Ball Bearing User Manual

Model: NTN 6012

## 1. PRODUCT OVERVIEW

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The NTN 6012 is a single row deep groove radial ball bearing. These bearings are widely used due to their ability to handle both radial loads and a combination of thrust and radial loads. Their design allows for precision tolerances, even during high-speed operation. This specific model is an open bearing, meaning it does not have shields or seals, and requires external lubrication.



**Figure 1:** NTN 6012 Deep Groove Radial Ball Bearing. This image shows the bearing from a slight angle, highlighting the inner and outer rings, the steel balls, and the cage that spaces them evenly.

## 2. KEY FEATURES

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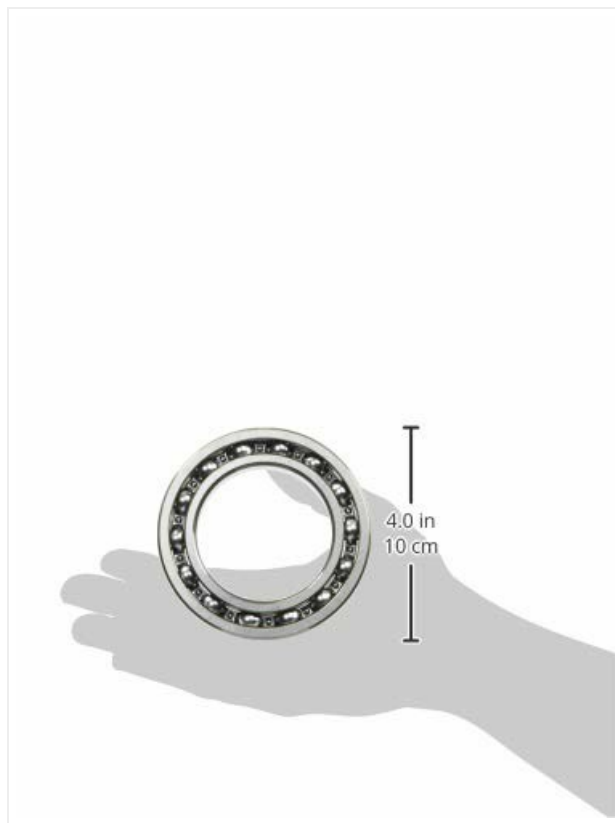
- **Deep Groove Geometry:** Engineered for high-speed applications.
- **Single Row Design:** Optimized for supporting radial loads efficiently.
- **Steel Cage:** Ensures even spacing of the balls, contributing to reduced friction, vibration, and noise during operation.
- **Open Bearing Configuration:** Designed for lubrication to be applied in place, allowing for flexibility in lubrication methods.
- **CN (Normal) Radial Internal Clearance:** Suitable for applications that do not involve significant thermal expansion or

require atypical precision.

### 3. TECHNICAL SPECIFICATIONS

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<b>Bearing Number</b>	6012
<b>Bearing Type</b>	Ball Bearing (Deep-Groove Radial)
<b>Bore ID</b>	60 mm
<b>Outer Diameter (OD)</b>	95 mm
<b>Width</b>	18 mm
<b>Material</b>	Carbon Chrome Steel
<b>Item Weight</b>	0.91 Pounds (approx. 412.77 grams)
<b>Radial Internal Clearance</b>	CN (Normal)



**Figure 2:** NTN 6012 Bearing with size reference. This image displays the bearing held in a hand, with a ruler indicating a dimension of 4.0 inches (10 cm) for scale, providing a visual representation of its physical size.

### 4. INSTALLATION GUIDELINES

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Proper installation is crucial for the longevity and performance of the NTN 6012 bearing. Incorrect installation can lead to premature failure, increased noise, and reduced efficiency.

#### 4.1. Preparation

- Ensure all mounting surfaces (shaft and housing) are clean, free from burrs, rust, and foreign particles.
- Verify that the shaft and housing tolerances are within the recommended specifications for the bearing.

- Gather necessary tools: bearing heater (if applicable), press, mounting sleeves, feeler gauges, and appropriate lubricant.

## 4.2. Mounting Methods

The NTN 6012 bearing can be mounted using mechanical, hydraulic, or thermal methods, depending on the application and available equipment.

- **Mechanical Mounting:** For small to medium-sized bearings, a press or mounting sleeves can be used. Apply force evenly to the ring being fitted (inner ring for shaft, outer ring for housing) to avoid damage. Never strike the outer ring when mounting onto a shaft, or the inner ring when mounting into a housing.
- **Thermal Mounting (Heating):** Heating the bearing allows for expansion, facilitating easier mounting onto a shaft. Use a bearing heater to warm the bearing to a maximum of 120°C (248°F). Do not use an open flame. Ensure the bearing is lubricated immediately after mounting and before it cools.

## 4.3. Lubrication

As an open bearing, the NTN 6012 requires external lubrication. Apply a suitable grease or oil immediately after installation and before operation. Refer to the equipment manufacturer's recommendations for lubricant type and quantity.

## 5. OPERATING CONDITIONS

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To ensure optimal performance and lifespan of the NTN 6012 bearing, adhere to the following operating guidelines:

- **Load Capacity:** Do not exceed the specified radial and axial load limits for the bearing. Overloading can lead to premature fatigue and failure.
- **Speed Limits:** Operate the bearing within its recommended speed limits. Excessive speeds can generate heat, degrade lubricant, and cause damage.
- **Temperature Range:** Maintain operating temperatures within the lubricant's specified range. High temperatures can reduce lubricant effectiveness and bearing life.
- **Vibration and Misalignment:** Minimize vibration and ensure proper alignment of shafts and housings. Excessive vibration or misalignment can induce additional stresses on the bearing.
- **Contamination Control:** Protect the bearing from contaminants such as dust, dirt, moisture, and corrosive substances. Contamination is a leading cause of bearing failure.

## 6. MAINTENANCE AND CARE

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Regular maintenance is essential for maximizing the service life of your NTN 6012 bearing.

### 6.1. Lubrication Schedule

As an open bearing, the NTN 6012 requires periodic relubrication. The frequency and amount of lubricant depend on operating conditions (speed, load, temperature, environment) and the type of lubricant used. Consult the equipment manufacturer's guidelines or a bearing lubrication chart for specific recommendations.

- Use only clean, compatible lubricants.
- Avoid over-lubrication, which can lead to excessive heat generation and seal damage (if seals are present in the assembly).
- Ensure lubrication points are clean before applying new lubricant.

### 6.2. Inspection

Periodically inspect the bearing and its surrounding components for signs of wear or damage.

- **Noise and Vibration:** Listen for unusual noises (grinding, squealing) or feel for excessive vibration, which can indicate bearing damage.

- **Temperature:** Monitor bearing temperature. An increase in temperature can signal lubrication issues or impending failure.
- **Visual Inspection:** Check for lubricant leakage, discoloration, corrosion, or physical damage to the bearing rings or cage.

## 7. TROUBLESHOOTING COMMON ISSUES

This section outlines common issues that may arise with deep groove ball bearings and potential causes and solutions.

Symptom	Possible Cause	Solution
Excessive Noise / Vibration	<ul style="list-style-type: none"> <li>◦ Insufficient or incorrect lubrication</li> <li>◦ Contamination (dirt, debris)</li> <li>◦ Improper installation (misalignment, excessive fit)</li> <li>◦ Bearing damage (pitting, spalling)</li> </ul>	<ul style="list-style-type: none"> <li>◦ Check and replenish lubricant; use correct type</li> <li>◦ Inspect for and remove contaminants</li> <li>◦ Re-install bearing correctly, check alignment</li> <li>◦ Replace damaged bearing</li> </ul>
Overheating	<ul style="list-style-type: none"> <li>◦ Over-lubrication or under-lubrication</li> <li>◦ Excessive speed or load</li> <li>◦ Tight internal clearance</li> <li>◦ Misalignment</li> </ul>	<ul style="list-style-type: none"> <li>◦ Adjust lubricant quantity</li> <li>◦ Reduce speed/load if possible</li> <li>◦ Verify correct bearing selection for application</li> <li>◦ Check and correct alignment</li> </ul>
Premature Failure	<ul style="list-style-type: none"> <li>◦ Improper installation</li> <li>◦ Contamination</li> <li>◦ Inadequate lubrication</li> <li>◦ Overload or excessive speed</li> <li>◦ Corrosion</li> </ul>	<ul style="list-style-type: none"> <li>◦ Review installation procedures</li> <li>◦ Improve sealing and cleanliness</li> <li>◦ Establish proper lubrication schedule</li> <li>◦ Verify operating parameters are within limits</li> <li>◦ Address environmental factors</li> </ul>

## 8. WARRANTY AND SUPPORT

NTN bearings are manufactured to high-quality standards. For specific warranty information, please refer to the official NTN website or contact your authorized NTN distributor. Warranty terms typically cover manufacturing defects under normal operating conditions and proper installation.

For technical support, product inquiries, or assistance with specific applications, please contact NTN customer service or your local NTN representative. You can find contact information on the official NTN website: [www.ntnamericas.com](http://www.ntnamericas.com)

