

RADIAL BALL BEARINGS

VS

ANGULAR CONTACT BALL BEARINGS

In modern mechanical engineering, the choice between radial and angular contact ball bearings is decisive. This article offers a concise but comprehensive comparison of both types, allowing professionals to make informed decisions to optimize the performance and durability of their systems.

By the end of this article, you will know:

1. How these precision bearings are different.
2. The machine requirements you need to know when selecting a precision bearing.
3. The advantages each type of precision bearing can offer to your application.



Radial “Deep Groove” Ball Bearings

A radial ball bearing is a type of precision bearing where the action of the load transmitted is radial to the axis of the shaft. They are the most popular and widely used in industrial machinery applications because of their versatility.

Radial ball bearings produce very little friction as they carry loads from rotating parts to the shaft and/or housing. They also have a small contact angle of (8°) that helps reduce the stress caused by the weight of the load they are supporting.

A distinct advantage of radial bearings is they can accept axial loads in both directions and don't need to be purchased in sets, unlike angular contact bearings.

Angular Contact Ball Bearings

Sometimes referred to as “spindle bearings,” angular contact bearings are used in machinery that requires high accuracy and durability, they have a much higher speed rating than radial bearings because of the nonstop contact of the balls to both rings.

Angular contact bearings can carry both radial and axial loads. The weight of the load is transferred from one ring to the other, through the balls, along a specific contact angle.

The contact angle is measured by two intersecting lines, one that’s formed at the point of contact between the ball and the ring and the other that’s formed from the axis of rotation to the bearing. 15° and 25° contact angles are the most common but other angles can be customized as needed.

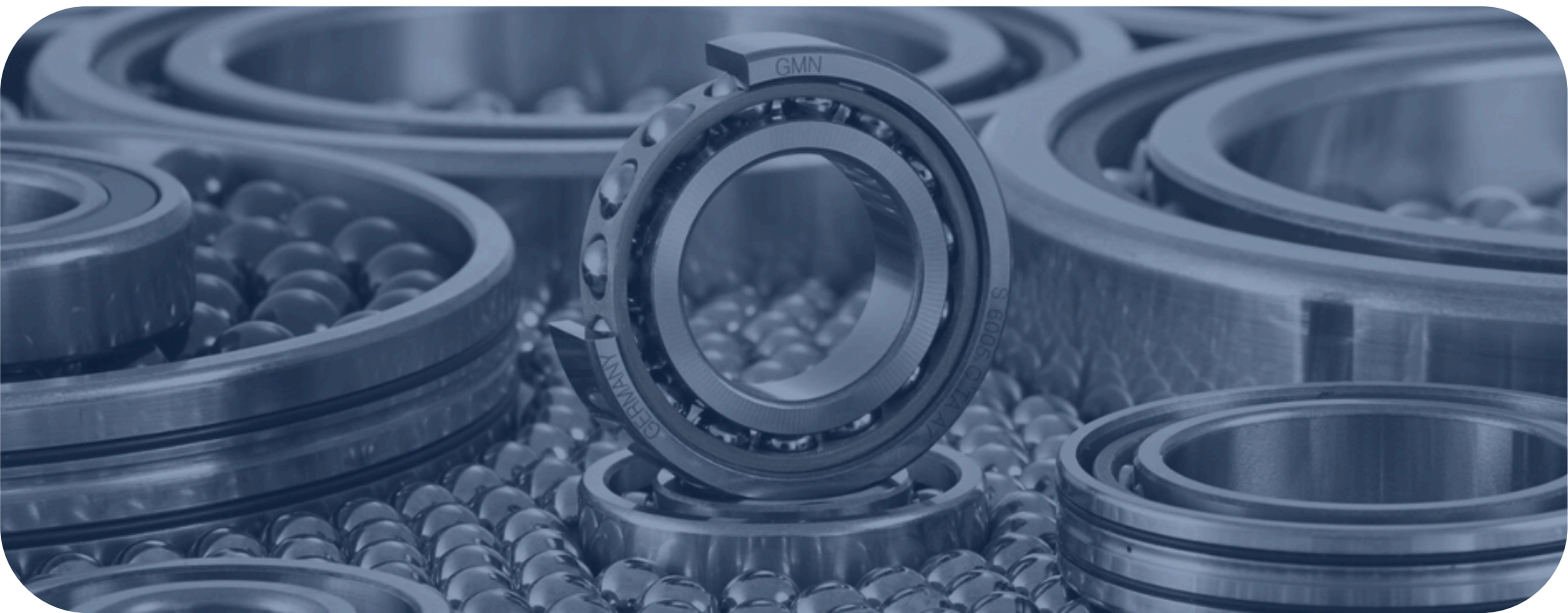
BALL BEARING TYPE	RADIAL	ANGULAR CONTACT
Advantages	<ul style="list-style-type: none">* Can accept axial load in both directions* Lower contact angle (8°)	<ul style="list-style-type: none">* Supports high operating speeds* Low maintenance & operation costs
Use When	<ul style="list-style-type: none">* Supports high operating speeds* Low maintenance & operation costs	<ul style="list-style-type: none">* High operational speed is required* Guidance for rotational parts is required* High rigidity & precision is required
Applications	<ul style="list-style-type: none">* Medical industry* Vacuum technology* Dry lubrication low outgassing* Electric Motors* Conveyors	<ul style="list-style-type: none">* Woodworking spindles* Machine tool spindles* Vacuum pumps* Semiconductor industry* Centrifuges





In summary, radial bearings offer versatility and low friction, while angular contact bearings stand out for their precision and high load capacity. By fully leveraging the qualities of radial and angular contact bearings, we can elevate the standard of excellence in mechanical engineering, driving innovation and progress across all industries.

May this comparison serve as a practical guide to optimize the performance of your future projects and may each bearing choice be a firm step towards success and efficiency.



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