



A bearing might look simple, but every part plays a precise role in reducing friction, supporting load, and ensuring performance. Understanding **The Anatomy of a Bearing** helps identify issues early and ensures the right part is chosen for the job.

LETS RECAP

Rolling elements name the bearing. Different types of bearings can share the same dimensions, but replacing a bearing with the wrong type, can be catastrophic.

Bearing Number	Bearing Type	Inside Diameter	Outside Diameter	Width
6209	Ball Bearing	45mm	85mm	19mm
7209	Angular Contact Ball Bearing	45mm	85mm	19mm
NU 209	Cylindrical Roller Bearing	45mm	85mm	19mm
30209	Taper Roller Bearing	45mm	85mm	19mm



LEARNING POINT 1:

A larger contact area allows greater load capacity and less surface stress.

A lady stepping on your toe with spike heels hurts more than with flat shoes.



Just like a spike heel hurts more than a flat shoe, a ball bearing's small contact area stresses the raceway more, while a roller's larger contact area spreads the load and handles more weight safely.

Two bearings may share the same size but perform differently. For example, a **6209 Ball Bearing** can carry a maximum dynamic load of **2.5 tons** and operate up to **8 000 RPM**, while the **NU 209 Roller Bearing** carries heavier loads (**4.1 tons**) at slightly lower speed of **7 500 RPM**. It's a trade-off between **speed and load capacity** - ball bearings excel in high-speed applications, while roller bearings are designed for heavier loads.

	Bearing Type	High Speed (Grease Lube)	Radial Load	Axial (Thrust) Load	Misalignment Capacity
	Ball	Excellent	Good	Poor	Limited to None
	Spherical Roller	Very Good	Excellent	Fair to Good	Excellent
	Cylindrical Roller	Excellent	Excellent	Poor to None	None
	Needle Roller	Good	Good	Poor to None	None
	Taper Roller	Good	Excellent	Very Good	None



LEARNING POINT 2

Replace bearings with the correct application type to avoid premature failure.