



## What is a Ball Bearing?

### Part 1

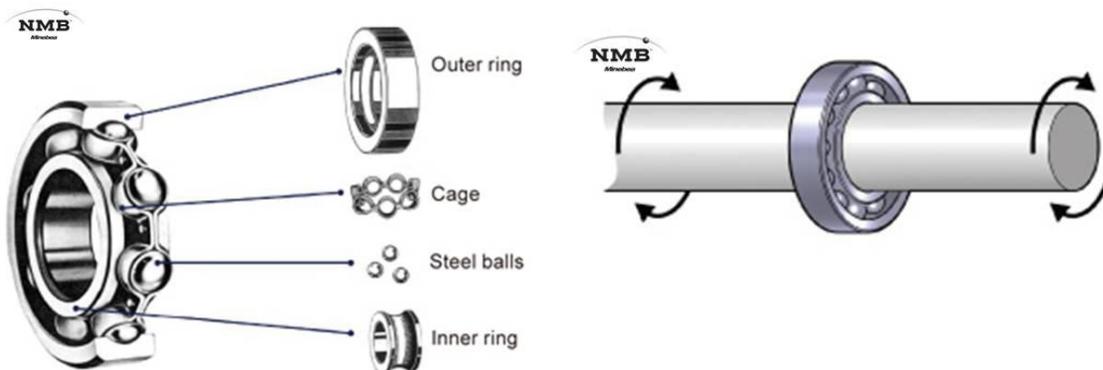
### The Function of Ball Bearings

From small and large motors to car axles to electric fans and hard disc drives (HDDs), ball bearings are used in a wide array of machines for rotary motion. Ball bearings support rotary parts and reduce friction to facilitate the smooth operation of machines. The size of ball bearings can range from [smaller than a grain of rice](#)—small enough to fit inside a wristwatch—to over one meter in diameter for factory and power plant applications. NMB, a Minebea Group Company, specializes in the manufacture of miniature and small-sized ball bearings with an outer diameter of 30mm or less.



### Ball Bearing Components

Ball bearings are comprised of four major parts: a large ring (outer ring), a small ring (inner ring), balls between the rings (steel balls), and a cage to prevent the balls from hitting each other. The modern structure dates back to around 1500, when Leonardo da Vinci invented ball bearings to reduce friction against the axles of horsedrawn carts. For more than 500 years, the ball bearing has been defined by this simple structure.





## **The Precision of a Ball Bearing**

The main function of a ball bearing is to reduce friction and facilitate smooth rotation of an axis. Modern ball bearings test the very limits of precision. As an example, one of the key elements to making an ultra-precise ball bearing is the degree to which the groove where the balls roll can be made into a perfect circle.

The most important performance measure in judging a ball bearing is the extent to which it reduces friction and facilitates smooth and easy rotation. Ball bearings may end up in aircraft, automobiles, precision medical equipment and many other end products, but no matter the [application](#), it is important to maintain smoothness and minimize friction. Changes in the times brings diversification and complexity in end products and machine types along with new performance requirements for ball bearings, including miniaturization, higher rotation speeds, durability and duration, as well as noise reduction.

*See Part 2 of What is a Ball Bearing? to discover how a stainless steel or chrome bar stock becomes a precision bearing.*

###

About NMB Technologies Corporation – NMB Technologies Corporation, a Minebea Group Company, is the world's largest manufacturer of [miniature precision ball bearings](#) and a volume leader in the design and manufacturing of precision electro-mechanical components, including [cooling fans and blowers](#), [precision small motors](#) and [mechanical bearing assemblies](#), as well as a total solutions supplier of backlight, and [LED programmable drivers](#). NMB products can be found in the personal computing, networking, telecommunications, home entertainment, home electronics, and automotive, medical and industrial markets. For more information on NMB Technologies Corporation visit: <http://www.nmbtc.com> or contact us directly.