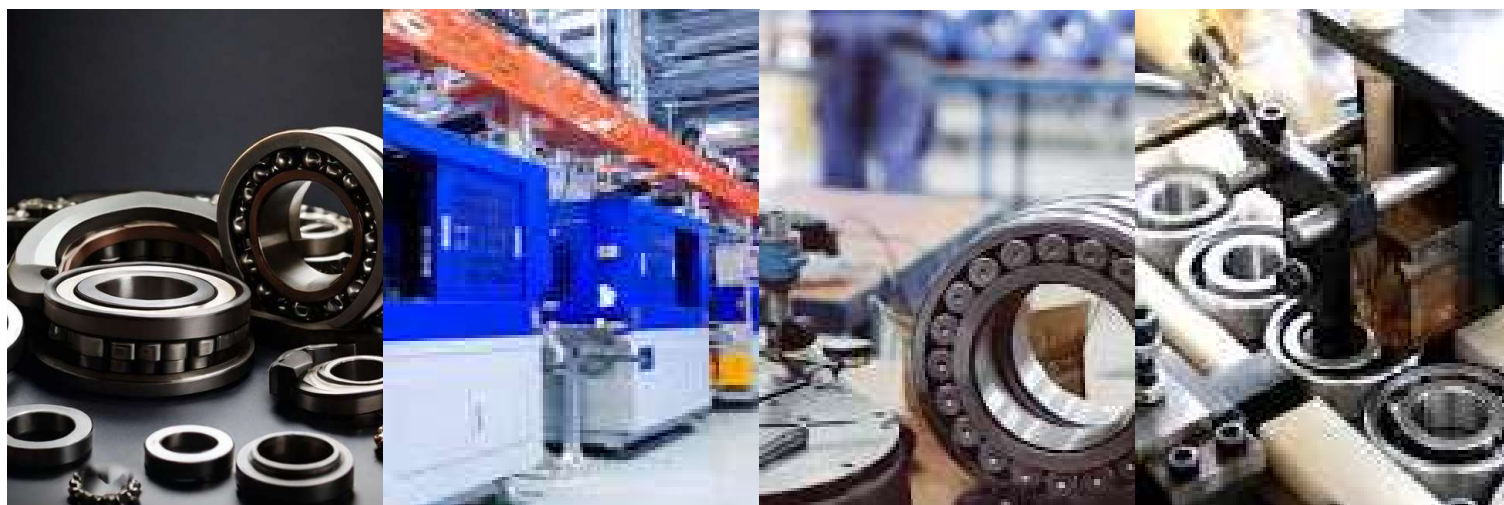

Ball Bearing in Pump Motor



A ball bearing is a kind of rolling-element bearingⁱ that makes use of balls to maintain the separation between the bearing races.

The Ball Bearing Serves the Purpose of reducing rotational friction and also supports the radial and axial loads. It accomplishes this by using at least two races to contain the balls and transmit the loads through the balls. In most applications, one race is stationary and the other is attached to the rotating assembly (e.g., a hub or shaft). As one of the bearing races rotates it causes the balls to rotate as well. Because the balls are rolling, they have a much lower coefficient of friction than if two flat surfaces were sliding against each other.

Ways To Construct a Ball Bearing

Conrad:

The Conrad-style Ball Bearing is named after Rober Conradⁱⁱ Who was the inventor of this method. This Method was British Patented 12,206 in 1903 and U.S Patent 822,723 in 1906. These bearings are assembled by placing the inner ring into an unusual position relative to the outer ring, with the two rings in contact at one point, resulting in a large gap opposite the point of contact. The



balls are inserted through the gap and then evenly distributed around the bearing assembly, causing the rings to become concentric. The assembling of ball bearing is completed by fitting a cage to the balls to maintain their positions relative to each other. Without the cage, the balls would eventually drift out of position during operation, causing the bearing to fail. The cage carries no load and serves only to maintain ball position. Conrad bearings have the advantage that they are able to withstand both radial and axial loads, but have the disadvantage of lower load capacity due to the limited number of balls that can be loaded into the bearing assembly. Probably the most familiar industrial ball bearing is the deep-groove Conrad style. The bearing is used in most of the mechanical industries.

Slot-fill:

In a slot-fill radial bearing style, the inner and outer races are notched on one face so that when the notches are aligned, balls can be slipped in the resulting slot to assemble the bearing. A slot-fill bearing has the advantage that more balls can be assembled (even allowing a full complement design), resulting in a higher radial load capacity than a Conrad bearing of the same dimensions and material type. However, a slot-fill bearing cannot carry a significant axial load, and the slots cause a discontinuity in the races that can have a small but adverse effect on strength.

There are 8+ other ways in which Ball bearings are Manufactured. The History of Ball Bearing has made its way through evolution, finding its use in plenty places and being versatile. Ball Bearings are Used in places where Aerospace bearings is required, or things like fan which is a day-to-day use product. And also, other products like skateboard, yo-yos, Fidget spinner, centrifugal pumps.



Centrifugal pumps

Centrifugal pumps also widely known as Submersible Pumps are used to transport fluids by the conversion of kinetic energy generated from the rotational energy which comes from the engine or electric motor. They are a sub-class of dynamic axisymmetric work-absorbing turbomachinery. The Fluid enters the pump impeller which is near the axis, does the work of accelerating the flow and causing an outward stream into a diffuser or volute chamber, from which it exits. Common uses include water, sewage, agriculture, petroleum, and petrochemical pumping. Centrifugal pumps are often chosen for their high flow rate capabilities, abrasive solution compatibility, mixing potential, as well as their relatively simple engineering.

The Ball Bearings play a very crucial role in the centrifugal pumps because they perform three important functions:

- **Reduce Friction:** The Ball Bearing Reduce friction between the machine's rotary and fixed parts
- **Support loads:** The Ball Bearing Can support radial and axial loads like supporting the weight of impeller and shafts and also the hydraulic loads on the impeller.
- **Locate the shaft:** Ball bearings locate the rotating shafts.



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ⁱ In mechanical engineering, a rolling-element bearing, also known as a rolling bearing,[1] is a bearing which carries a load by placing rolling elements (such as balls or rollers) between two concentric, grooved rings called races.

ⁱⁱ [https://en.wikipedia.org/wiki/Robert_Conrad_\(inventor\)](https://en.wikipedia.org/wiki/Robert_Conrad_(inventor))