

An Overview of Indian Bearing Industry

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ABSTRACT

This paper gives an overview of the bearings industry in India, with an emphasis on sub-sectors such as ball and roller bearings. The report also covers the overall bearings sector's production, market value, segmentation by various characteristics, and distribution structure. It also examines the bearings industry's key growth drivers, trends, and major difficulties in India. The paper also profiles important bearing manufacturers such as SKF India, FAG India, Timken India, NRB India, NBC, ABC India Ltd, and TATA bearings.

I. INTRODUCTION

Bearings have played an important part in making objects rotate since the beginning of the industry. Bearings are necessary in practically every application that involves motion, and they assist reduce friction between mechanical components in a variety of industrial machinery and equipment, resulting in lower energy usage. This machine element is used in a variety of industries, including autos, household appliances, and aerospace, as well as industrial machinery, to make highly skilled gadgets employing machinery or similar motor-driven linkages. The bearing industry is booming in India and around the world, and it's only going to get bigger.

1.1 WHAT ARE BEARINGS?

Bearings are used to keep parts from rubbing against each other as they move around. Anti-friction or rolling element bearings and hydrodynamic journal bearings are the two main types used in equipment. A bearing's principal role is to transfer load between a rotor and the casing while minimising wear. This bearing function may be found in practically every aspect of daily life, from your wristwatch to the car you drive to your computer's disc drive. The purpose of this study is to

provide an overview of journal bearings and lubrication. Understanding journal bearings necessitates knowledge of lubrication technology, which is crucial to bearing design and application.

1.2 TYPES OF BEARING

Bearings come in a variety of shapes and sizes, each designed to carry specific sorts of stresses, such as thrust or radial loads.

Ball bearings, Tapered Roller Bearings, Ball Thrust Bearings, and Roller Thrust Bearings are the most common types of bearings.

A) Ball Bearing

The most prevalent form of bearing is the ball bearing. Everything from inline skates to hard drives contains them. These bearings can withstand both radial and thrust loads and are typically used in applications with low loads. The load is transferred from the outer race to the ball and from the ball to the inner race in a ball bearing.



B) Ball thrust bearing

Ball thrust bearings are typically employed in low-speed applications and cannot withstand significant radial loads. This sort of bearing is used in wheelchairs.



C) Roller bearing

Roller bearings are utilised in situations where strong radial loads must be supported, such as conveyer belt rollers. The roller in these bearings is a cylinder; therefore, the contact between the inner and outer races is a line rather than a point. As a result, the load gets distributed over a larger surface area, allowing the bearing to withstand much higher loads.



D) Roller Thrust Bearing

Large thrust loads can be supported by roller thrust bearings. They're commonly found between gears and between the housing and spinning shafts in gear sets like automotive transmissions. Most transmissions use helical gears with angled teeth, which creates a thrust load that must be supported by a bearing.



E) Tapered roller bearing

Large radial and thrust loads can be supported by tapered roller bearings. Tapered roller bearings are commonly found in automotive hubs, where they are positioned in pairs facing opposite directions to handle force in both directions.



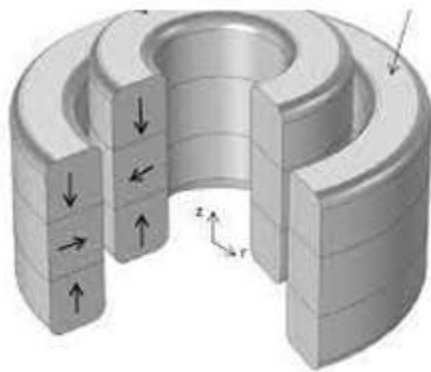
F) Cylindrical roller bearing

Inner race, outer race, cage, and rollers are the four fundamental roller bearing elements of cylindrical roller bearings. The cage, which guides their rotating action on the flat surface, keeps the cylinder-shaped rollers equally separated.



G) Magnet bearing

Magnetic bearings use magnetic levitation to keep the shaft in mid-flight. Magnetic bearings are zero-wear bearings since there is no physical contact. It also has no upper limit on the amount of relative speed it can handle. Magnetic bearings can also accept some shaft design imperfections.



II. INDIAN BEARING MARKET

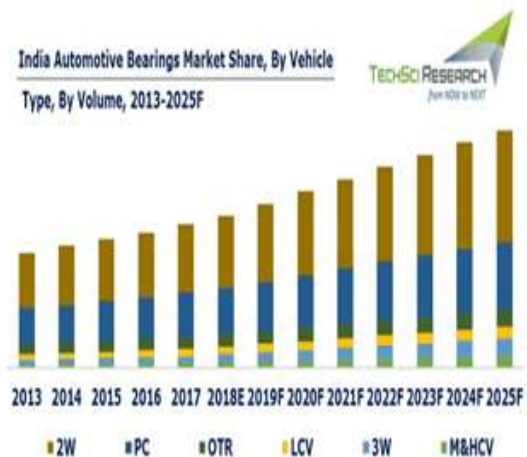
Because of the increasing demand from the automotive sector, the India bearings market is predicted to increase significantly during the forecasted period. Between 2020 and 2024, the Indian automotive bearing market is expected to grow at a CAGR (Compound Annual Growth Rate) of 18 percent, from INR 70 billion in 2019 to INR 156.8 billion in 2024. Furthermore, the bearings industry's growth is closely linked to the automotive and industrial sectors, as it primarily meets the needs of the replacement market. One of the primary drivers of the India bearings market is the industrial sector. The government's efforts to reinvigorate the bearing manufacturing process in India in order to shift consumer preferences toward domestic products have boosted the bearing market's growth. In addition, planned Metro Rail projects in key Indian cities such as Coimbatore, Delhi-Meerut, Agra, Kanpur, and a few others are attracting international investment for various machineries. Metro and light rail solutions require bearings to reduce mass, energy consumption, maintenance, and operating expenses.



Source: Industry, ICRA research, *includes ABC

2.1 INVESTMENT IN BEARING MARKET

Due to its large market size and favourable government regulations, India has seen rapid increase in FDI (Foreign Direct Investment) in recent years. Furthermore, the government's focus on the 'Make in India' project, which includes economic stimulus, tax and research and development incentives, and policy assistance for infrastructure, power, and oil and gas, among other sectors, would provide the market with a multitude of options. Furthermore, technology advances in office automation, medical equipment, and audio-visual equipment would boost bearing demand.



2.2 BEARING IN AUTOMOTIVE INDUSTRIES

The market is divided into groups based on product type, with ball and roller bearings being the most common, with applications in automotive, aerospace, industrial machinery, and other industries. Because of the growth of the automobile industry, the automotive portion has the largest share of the application category. The segment's growth will be aided by a growing focus on the manufacture of light-weight products. Bearings' ability to rotate at high speeds while maintaining precision and durability increases their demand in the automotive sector. Furthermore, manufacturers' increasing focus on providing end users with light-weight bearings through various technologies such as improved forging techniques, low tolerances, and light-weight alloys would boost the segment's market share.

SKF, for example, utilised titanium's strength and temperature resistant capabilities in the creation of bearing cages for gearbox applications.

(CAGR – Compound Annual Growth Rate)



2.3 GROWTH OF INDIAN BEARING INDUSTRIES



Ball bearing demand has increased dramatically as a result of rising industrialization in numerous parts of the world. As a result, existing businesses are focusing more on extending their enterprises by implementing international marketing strategies and establishing operations in new countries. Companies are implementing extraordinary business tactics in order to improve and expand their businesses. In recent years, the ball bearing business has profited from numerous mergers and acquisitions as well as company collaborations.

Growth in industrial production and demand from the automobile sector are projected to drive India's bearings industry forward in the next years. SKF India, the market leader, is likely to maintain its focus on Emerging Markets and strengthen novel products in order to compete with other industry players. Because wind and water turbines rely heavily on bearings to convert kinetic

energy into electricity, the growing focus on renewable energy will result in increased demand for bearings in India. The Indian government has remained largely silent in the establishment and growth of the country's bearings sector. However, since the Modi government took office and implemented policies such as the 'Make in India' initiative, tax advantages, R&D incentives, and others, bearings makers are anticipated to be encouraged as well as attract investments in the industry.

III. FACTORS AFFECTING THE PRICE

A) Raw Material Prices

Manufacturers' primary worry is the cost of raw materials. Bearings are significantly associated with global steel price movements since high-grade steel is the principal raw material utilised to manufacture them. The fluctuation in raw material prices makes it difficult for bearing producers to provide bearings that are both affordable and of excellent quality. Furthermore, the bearing industry's expansion is hampered by a variable supply and demand situation.

B) Digitalization

From design and manufacturing to purchasing and maintenance, digitalization is affecting every aspect of the value chain. Because the purpose of digitalization is to improve performance, bearing manufacturers are under a lot of pressure. However, not all parts of the industry are equally updated, and most businesses are sluggish to adopt new technology, limiting the bearings market's growth. A lack of awareness of crucial product and system design needs, as well as a skills scarcity, are common barriers to effective usage of new technology.

C) Increasing concern over counterfeit products

Counterfeit bearings have been a problem in recent years, and all markets are now vulnerable to accidentally obtaining these unreliable quality products from any brand. These counterfeit ball bearings can have a significant impact on equipment performance, resulting in production as well as other losses due to unplanned shutdowns and a decrease in revenue. While lost sales and a tarnished image are two of the most obvious repercussions, the entire financial damage caused by counterfeit goods is difficult to estimate. Since practically every major bearing manufacturer has been targeted by counterfeiters in recent years, the attention has shifted to educating customers about the necessity of purchasing genuine bearings.

IV. KEY MARKET PLAYERS IN THE INDIAN BEARING MARKET

Only a few companies manufacture industrial bearings in India, which accounts for less than 5% of the world bearing market. India imports industrial bearings mostly from Europe, Japan, and other countries. ISB Industries, Koyo, Luoyang Huigong Bearing Technology Co., Ltd., LYC Bearing Corporation, myonic GmbH, Nachi-Fujikoshi Corp., NTN Bearing Corporation, NSK Ltd., THB Bearings, The Timken Company, and others have been some of the key international manufacturers, while NRB Bearings, Schaeffler India, Ltd., SKF India, and TATA are some of the domestic manufacturers.

Companies

- SKF India
- FAG Bearings India Ltd
- NRB Bearings
- ABC Bearings
- Timken India Limited
- TATA Bearings
- Menon Bearings Ltd
- NBC Bearings/NEI Ltd

The ball bearing market is expected to increase significantly in the coming years, owing to the desire to improve energy efficiency. Bearings and energy conservation go hand in hand. This element's major goal is to save energy by minimising friction, whether it's during the rotation of transmission shafts or the wheel of a vehicle. Furthermore, increased demand for commercial cars is likely to boost demand from the global automotive sector.

The market is expected to expand rapidly due to technological advancements such as smart bearings, the development of cutting-edge materials and lubricants, and the integration of sensor units.

According to Fortune Business Insights, the global ball bearing market was valued at USD 19.08 billion in 2019 and is expected to grow to USD 21.90 billion by 2027. The market is expected to increase at a steady rate of 2.1 percent throughout the projected period (2020-2027).

From USD 39.46 billion in 2018, the global bearings market is predicted to reach USD 52.44 billion by 2026, representing a CAGR of 3.6 percent over the forecast period.

Increasing demand for precision bearings as a result of industrial automation is predicted to raise market revenue throughout the Fortune Business Insights report's forecast period. Precision bearings have become more popular as demand from numerous industries, such as aerospace and

machine tools, has increased. The market will also expand as the need for small bearings in industrial robots increases. In 2017, 2.1 million stand-alone industrial robots were installed around the world, according to secondary sources. Demand for micro bearings will be fueled by cutting-edge technologies in office automation, medical equipment, and audio-visual equipment.

Furthermore, manufacturers' increased focus on the development of micro bearings is projected to promote market growth. For example, SKF offers a variety of small ball bearings in stainless steel, as well as seals and shields for a variety of applications.

V. IMPACT OF CORONAVIRUS PANDEMIC ON INDIAN BEARING MARKET

The coronavirus pandemic seems to have had a minor influence on the Indian bearings market, as sales throughout vehicle segments and other industries have declined due to lower per capita income and economic stagnation, followed by restrictions due to the Covid-19 issue. The market's growth curve flattened as a result of a shortage of workers caused by increased concerns regarding personal safety.

The government's Make in India Initiative, on the other hand, promotes the local market in overcoming the impact of the crisis.

As the pandemic subsides and industrial and agricultural progressively picks up, things appear to be returning to normal to a certain extent. Industrial ball bearings are an essential component of contemporary machinery, and it comes as no surprise that as manufacturing activities expand, so will the demand for ball bearings. As a consequence, it's no surprise that market analysts anticipate the ball bearing market to increase considerably in size and revenue throughout the next five to seven years.



VI. CONCLUSION

While the pandemic had an impact on many businesses, it had a favourable impact on the bearings industry. The industry quickly evolved to meet the demands by speeding up value chain operations and developing future capabilities. There are numerous chances as the Indian motor industry continues to innovate. Similarly, rising applications in every industry, from medical and robotics to farm equipment and household appliances, as well as defence and aerospace, are likely to help bearings makers.

Additionally, manufacturers' increased emphasis on producing lighter bearings through the use of advanced technologies and lightweight alloys will propel the market forward.

Furthermore, the government's increasing emphasis on infrastructure development, particularly in the rural areas, as well as an expansion in industrial activity, will contribute to the region's bearing market expansion.

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