

Press Release

Schaeffler at EMO 2023, Hall 7, Booth A10

Schaeffler presents new super precision cylindrical roller bearings with expanded application range

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- Schaeffler showcases entire spindle bearing portfolio
- Super precision cylindrical roller bearings: New cage construction simplifies pneumatic oil lubrication and leads to a more uniform temperature behavior
- Hybrid cylindrical roller bearings for even longer spindle and machine life

The single row cylindrical roller bearing series N10 and double row cylindrical roller bearing series NN30 (ribs on the inner ring) and NNU49 (ribs on the outer ring) are an established part of Schaeffler's super precision range. They are used in applications where the highest precision is required under very high radial load. One typical area of application is providing radial support for the main spindle. In this application, the bearings facilitate bearing arrangements with very high precision, high radial rigidity, and very high load carrying capacity.

Favorable temperature behavior exhibited by the bearing courtesy of new cage design

Schaeffler is presenting series N10 complete with new internal geometry and new cage made from PEEK (suffix PVPA1-XL) at EMO 2023. The optimized cage – like its predecessor, which was also produced from PEEK – ensures particularly low friction, a low noise level, and less strain on the lubricant, making it the preferred material choice for use in high speed cylindrical roller bearings. Further benefits include a longer grease operating life and higher limiting speeds.

Unlike other cage designs on the market, the cage in the new N10 series is guided unilaterally on the outer ring, leading to a more rapid grease distribution cycle with lower maximum temperatures and to a lower bearing temperature level with smaller scatter. As a result, the non-locating bearing function is more reliable even in the highest speed ranges.

Advantages of pneumatic oil lubrication

The unilateral guidance of the cage allows excess oil to flow freely out of the bearing when pneumatic oil lubrication is used, giving a highly uniform temperature behavior of the bearing. The new cage is also designed in such a way that oil can be supplied both axially and at an angle, with the result that the position of

the oil spray nozzles does not have to be adjusted when switching from spindle bearings supplied by other manufacturers to the N10...PVPA1-XL version from Schaeffler. One consequence of the modified internal construction is the use of smaller cylindrical rollers, with the resulting positive effects on both rigidity and the maximum speed capabilities of the new bearings.

Hybrid cylindrical roller bearings with half the number of rollers

In hybrid cylindrical roller bearings of series N10, the rollers are made from a high performance ceramic. In addition, the number of rollers is halved. This bearing variant is characterized by even less friction and wear, significantly reduced strain on the lubricant, and considerably lower temperatures in the bearing. When these hybrid bearings are used, spindles and machinery achieve a considerably longer life and the systems are significantly more viable. Ceramic rollers also lead to increased rigidity in both static and dynamic terms, which has a positive effect on the final machining quality.

Maximum adaptability: Spindle bearing portfolio

A complete overview of Schaeffler's spindle bearing portfolio will be offered at EMO 2023 in Hanover. Trade visitors and other guests can learn all about the different variants, properties, applications, and other features of the spindle bearing series, which are available in three different ball element sizes, at booth A10 in hall 7. The main principle of the portfolio is also to provide full coverage for the wide range of existing spindle solutions with maximum adaptability from the modular system. There are also alternative rolling bearing steels, coatings, cage designs, and ceramic rolling elements to choose from, allowing exactly the right bearing configuration to be offered for practically every turning, milling, and grinding spindle.

Schaeffler Group – We pioneer motion The Schaeffler Group has been driving forward groundbreaking inventions and developments in the field of motion technology for over 75 years. With innovative technologies, products, and services for electric mobility, CO₂-efficient drives, chassis solutions, Industry 4.0, digitalization, and renewable energies, the company is a reliable partner for making motion more efficient, intelligent, and sustainable – over the entire life cycle. The Motion Technology Company manufactures high-precision components and systems for drive train and chassis applications as well as rolling and plain bearing solutions for a large number of industrial applications. The Schaeffler Group generated sales of EUR 16.3 billion in 2023. With around 83,400 employees, Schaeffler is one of the world's largest family-owned companies and one of Germany's most innovative companies.

Flexible in application: N10...PVPA-XL spindle bearing with smaller cylindrical rollers and optimized PEEK cage. With the new cage, lubricating oil can be supplied axially or at an angle. Photo: Schaeffler

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Hybrid cylindrical roller bearing N10 with half the number of rollers. Photo: Schaeffler

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