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## **Bearings for Screw Drives in X-life Quality**

Longer life, higher speeds

**X-life**

**SCHAEFFLER**

## Bearings for screw drives in X-life quality

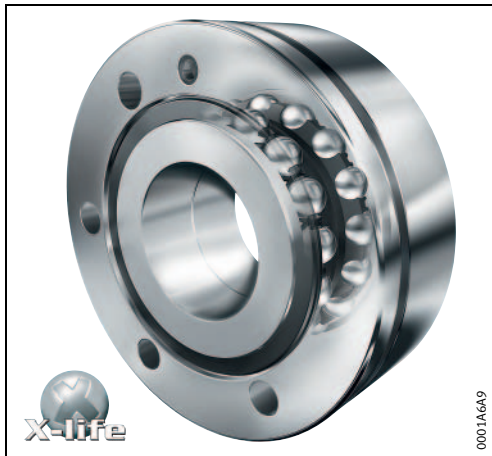


Figure 1: Axial angular contact ball bearing ZKLF in X-life design, suitable for screw mounting, sealed on both sides

The highly dynamic operating conditions associated with screw drives call for accurate, rigid and low-friction bearing arrangements with a high radial and axial load carrying capacity. For some time, our ready-to-fit, maintenance-free or low-maintenance double row axial angular contact ball bearing series ZKLN and ZKLF have been used here. Due to the 60° contact angle, these high precision bearings in an O arrangement with high tilting rigidity can support high axial forces as well as radial forces.

Lip seals or minimal gap seals on both sides of the bearings protect the rolling system reliably against contamination. For the majority of applications, the initial grease application is sufficient for the whole operating life of the bearing.

Series ZKLF is available with fixing holes in the outer ring to facilitate screw mounting on the adjacent construction. This solution is particularly economical since there is no need for the locating bore otherwise required for the bearing outer ring or for the bearing cover with the associated matching work.

### New X-life design

Schaeffler has now improved these proven bearings even further, *Figure 2*. Through the use of state-of-the-art production technologies, the entire contact face between the rolling elements and raceway has been optimised. As a result of the increased raceway accuracy and raceway quality, there is a significant reduction in the stress conditions present on the rolling elements and raceway under the same load. The improved quality gives reduced friction in the bearing and lower bearing temperatures, running

resistance is lower, less strain is placed on the lubricant and the grease operating life and, where applicable, necessary relubrication intervals are extended. As a result of the lower frictional power, there is a simultaneous increase in the energy efficiency of the bearing arrangement and energy consumption and operating costs are reduced.

### Improved price/performance ratio

As the bearing price remains unchanged but the performance of the bearing has significantly improved, the good price/performance ratio increases the overall cost-effectiveness of the bearing arrangement significantly.

### Higher basic load ratings C, longer rating life L<sub>10</sub>

Thanks to the technical changes, the basic dynamic load ratings C are now also around 10% higher than for

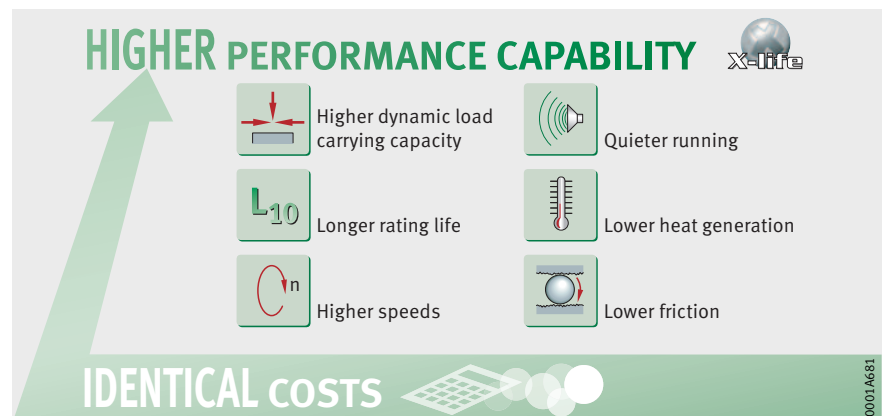


Figure 2: Axial angular contact ball bearings ZKLN, ZKLF in X-life design: increased customer benefits for the same product price

the previous bearing designs, *Figure 3*. This also has the effect of increasing the basic rating life  $L_{10}$  by up to 33%. As a result, the operating life of the bearings is extended under identical operating conditions. Alternatively, if the rating life values are maintained, higher loads can be applied to the bearing arrangement. This gives the designer additional degrees of freedom and design possibilities for the design of the bearing arrangement.

Depending on requirements, he can now choose between a longer rating life or a higher load.

### Optimised heat treatment

In addition to the improvement to the surfaces, the material used for the bearing rings is also subjected to special heat treatment. As a result, the raceways of the inner and outer rings are now more resistant to solid particles and under mixed friction. This in turn

extends the grease operating life, as less strain is placed on the lubricant. In short, this heat treatment measure leads to a significant increase in bearing rating life in the X-life design compared to standard and competitor bearings.

### Higher limiting speeds

The lower bearing friction and associated reduction in heat generation in the bearing permit significantly higher limiting speeds  $n_{G \text{ grease}}$  than before. In comparison with standard and competitor bearings and depending on the permissible heat generation associated with the application, up to 60% higher speeds can be achieved with the new X-life bearings than before, *Figure 4*. This will also allow axial angular contact ball bearings to be used in applications with significantly higher speed requirements in future.

### Delivery dates

The current range of ZKLN and ZKLF catalogue products will be available as X-life versions from early 2014. To obtain exact delivery dates for the individual sizes, please contact Schaeffler.

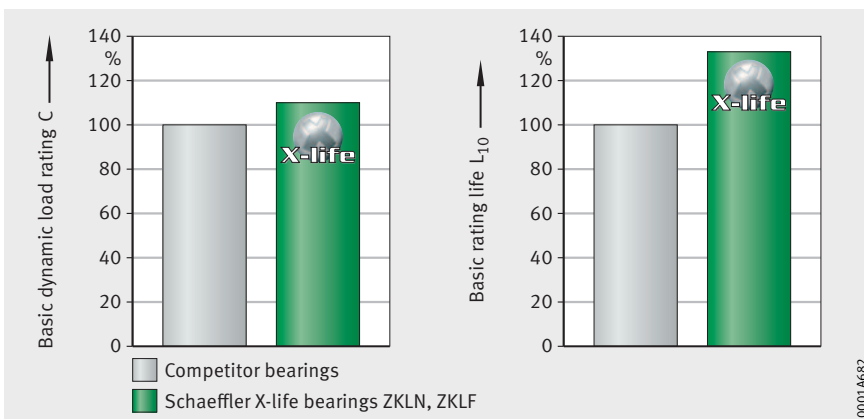


Figure 3: Increase in basic rating life due to higher basic dynamic load ratings – Comparison with competitor bearings

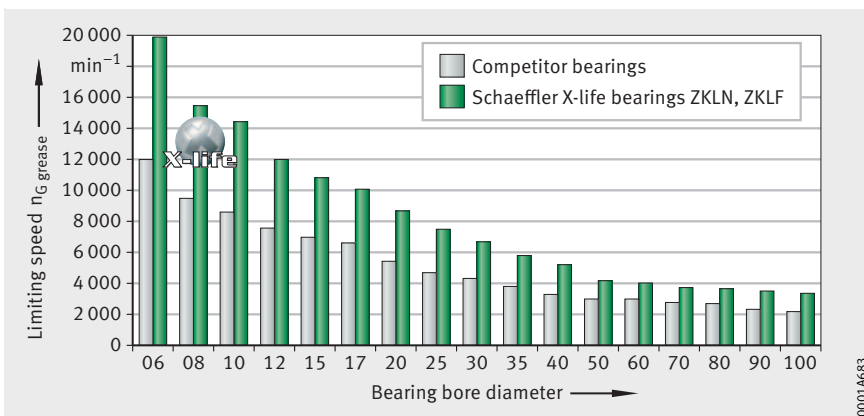


Figure 4: Higher limiting speeds due to X-life quality – Comparison with competitor bearings



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