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Koyo develops new hybrid ceramic bearing with excellent properties for skateboard application

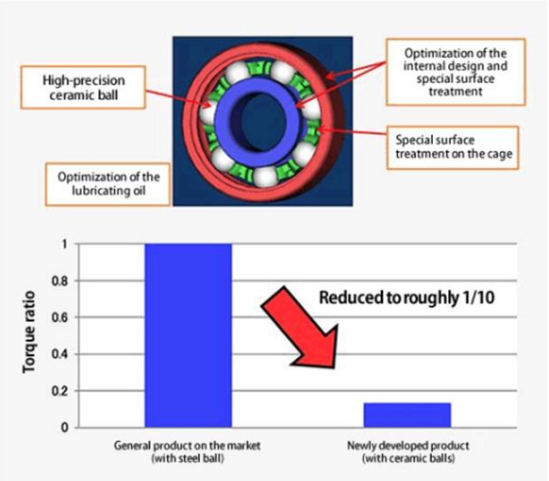
Koyo Bearings, a division of JTEKT Corporation, specialized in design and engineering of a wide range of rolling bearings for numerous applications, ranging from automotive- and windmill applications to aerospace and tunnel drilling equipment, has now developed a special hybrid ceramic bearing for skateboard application. “Hybrid” in this case stands for the combination of steel and ceramic materials used for this specific bearing.

Background of the development

Very specific technical requirements are needed for bearings for skateboards to satisfy the needs of the fanatic skater. Skaters are seeking ways to increase the comfort of the ride, as well as speed & heights of their jumps to be able to impress the public with ever more spectacular acrobatic acts in the air. One of the ultimate acts is the “Backside Heel Flip Indy” (YouTube courtesy - https://www.youtube.com/watch?v=dOaUwftBVBg)

Features of the new product

Key of success for bearings for skateboards is to reduce rolling resistance (to avoid losing speed due to friction, during skating) while at the same time maintaining sufficient durability (to minimize deterioration of the performance during multiple use)



Reducing friction *and* maintaining bearing life – so how did Koyo get this done?

The main challenge was to reduce the contact area of the rolling elements with the raceways and the cage, without

losing the robustness of the design required for durability.
In technical terms this means:
1) by optimizing the internal race way design, the rolling resistance is reduced
2) high-precision ceramic balls with high sphericity and very low surface roughness are used
3) special surface treatments on the inner and outer rings, and the cage are applied:
    a) by performing special heat treatment on the inner and outer rings a “hard skin” is created, leading to an improved seizure- and indentation resistance.
    b) by performing surface treatment on the cage, the sliding friction between the cage and the balls is reduced
4) ABEC 7 standard (equivalent to ISO/DIN/JIS Class 4) is applied for the bearing precision.
5) the lubrication grease is optimized for this specific application.

Final results of this development

“Smooth and easy rotation” and “the skater’s sensitivity and feeling” are what is required of bearings for skateboards, but it was very difficult to convey that “feeling” into the specification of bearings. Thanks to the lower bearing friction torque, we succeeded in developing a bearing that can contribute to better speed, higher jumps, and more effective pulling off of tricks, including the famous *backside heel flip indy*...

Availability of this product.

These hybrid ceramic bearings are in serial production and are available for the AM and for (small) OEM customers. Please do not hesitate to contact your regular Koyo contact for more information about applicability and availability of this special Koyo bearing type.

Please do not hesitate to contact us, or your official Koyo distributor in case you would like to have more general information about Koyo products and services.

Get to know our bearings at www.koyo.eu