

SKF Wire Race and inserted raceway bearings for weight savings and consistent friction torque



Benefits

Wire race and inserted raceway bearings were introduced by SKF in Europe and by Kaydon in the USA in the 1970s. In the decades since, these bearings have been proven effective in a variety of demanding applications. Only SKF Wire Race bearings are backed by the global reach, experience, and engineering expertise of Kaydon and the SKF Group.

When space and weight are at a premium and corrosion resistance is essential, SKF Wire Race bearings are the ideal solution. Wire Race bearings provide the load capacity of steel bearings with 60% less weight.

Unlike standard bearings, the rolling motion in the SKF Wire Race bearing occurs between the rollers and the wires (raceways) mounted in the surrounding bearing rings, rather than between the rolling elements and the bearing rings. The wires are free to move within their housings. Rings can conform to the deformations of the mounting structure while the rollers and raceways adjust their position to maintain the internal geometry desired, to allow for even, consistent friction torque.

Customizable and corrosion resistant

SKF Wire Race bearings are custom manufactured to fit each design and application, in shape and material combinations that aren't possible with conventional designs. Modular designs are highly configurable and based on standard capacity.

With stainless steel wire and rolling elements, SKF Wire Race bearings are very corrosion-resistant. A variety of materials can be used for the rings, including conventional steels, anodized aluminum, special steels of various kinds, lightweight alloys, and composites.

Easy to maintain

SKF Wire Race bearings are virtually maintenance-free. Operating on a light film of lubricant, they require only periodic lubrication, depending on the environment and operating conditions.

In the event of damage, the inserted wire raceways, rolling elements, and separating elements can be economically replaced. Reconditioned bearings work as well as new bearings.

SKF Wire Race benefits

- Accurate position control and reliability under extreme conditions and temperatures
- Low and uniform friction torque
- Low weight and space saving designs
- Tolerant of non-rigid or out-of-flat mounting structures
- Accommodate extended platform range and airborne conditions
- High elasticity in case of shock and sudden loads
- Capable of rapid acceleration and high speed
- Differential expansion capabilities
- Efficient sealing arrangement according to application

Materials and structure

Bearing (housing) ring material

- Anodized aluminum
- Composites
- Lightweight alloys
- Steel

Bearing (housing) ring coatings

- Anodized
- Electroless nickel
- Paint
- Phosphate
- Zinc

Rolling elements material

- Bearing steel
- Ceramic
- Polymer
- Stainless steel

Bearing raceway material

- Inserted thin section: bearing steel, stainless steel, Endurakote® plated
- Wires: hardened stainless steel

Separator material

- Polymer
- Reinforced polymer

Seal material

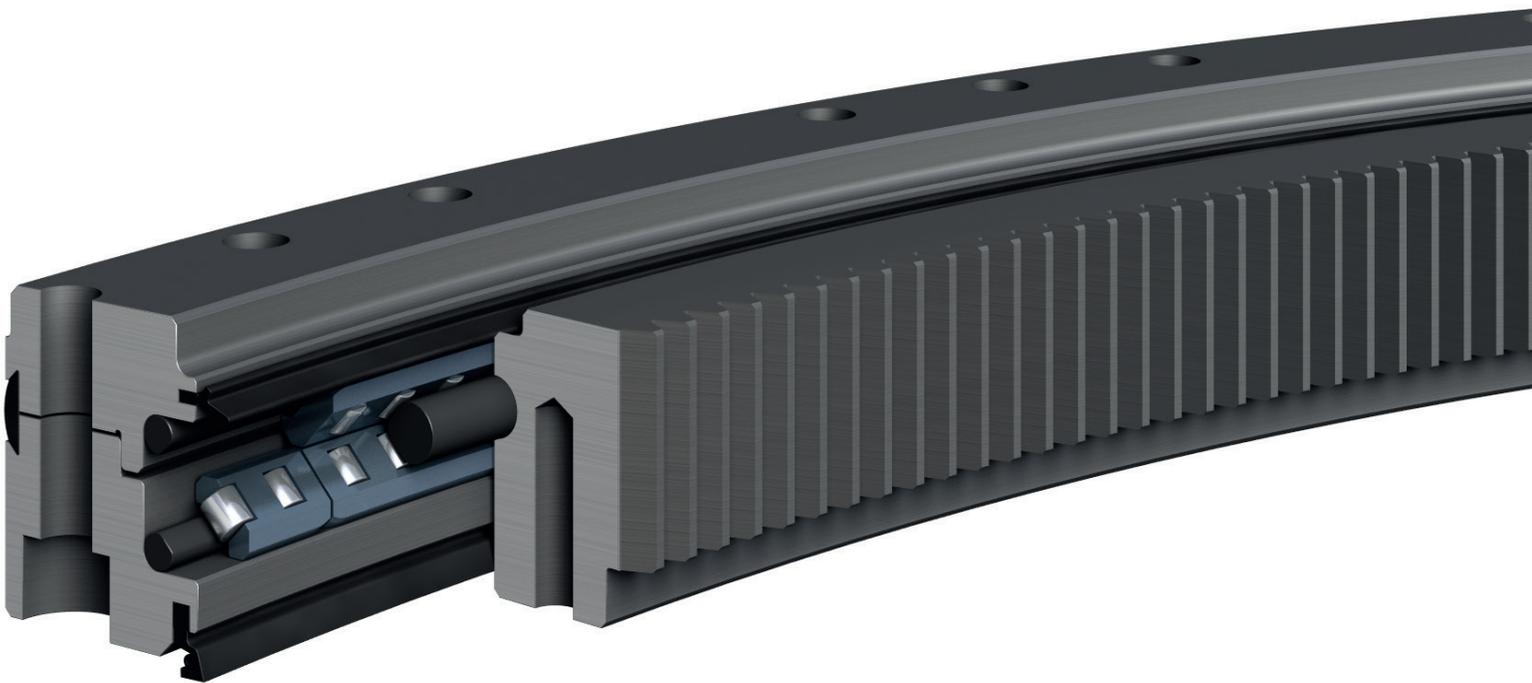
- EPDM
- Fluorocarbon
- Neoprene
- Nitrile
- Silicon

Seal style

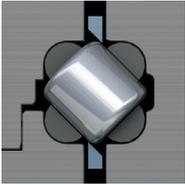
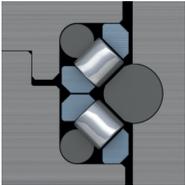
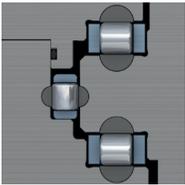
- Face-riding
- Spring energized dynamic

Grease and oil lubrication

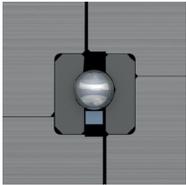
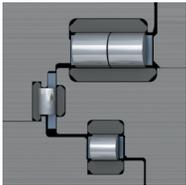
- Mineral-based
- Synthetic



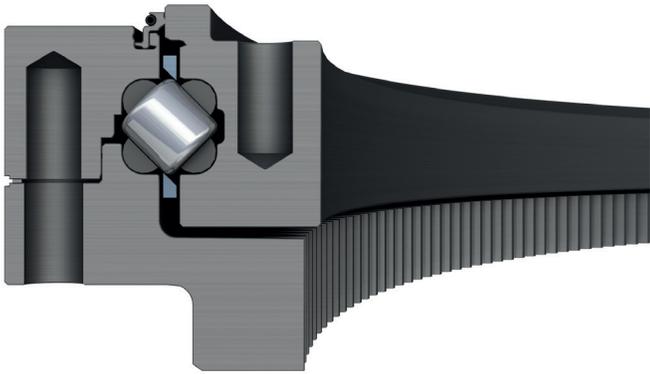
Configurations

Configuration	Description	Size range	Design benefit
Wire race cross roller 	Inserted race cross-roller with four wires forming the raceway. Available in one-to-one or two-to-one configurations for high thrust loads.	200mm to 4200mm	<ul style="list-style-type: none"> • Pre-loaded bearing design keeps low and uniform friction torque under severe operating conditions • The most compact design option
Wire race double row roller 	Inserted race two-row bearing with three wires forming the raceway	600mm to 4200mm	<ul style="list-style-type: none"> • Pre-loaded bearing design keeps low and uniform friction torque under severe operating conditions • High capacity
Wire race triple row roller 	Inserted race three-row bearing with two axial rows and one radial row of rollers	500mm to 4200mm	<ul style="list-style-type: none"> • High static and dynamic capacities • Withstands high shock on relatively small bearing size
Wire race single row ball 	Inserted race one-row bearing	100mm to 1900mm	<ul style="list-style-type: none"> • Low friction torque under light or medium loads • Adaptable for many applications • Slim design and high speed capability with high precision

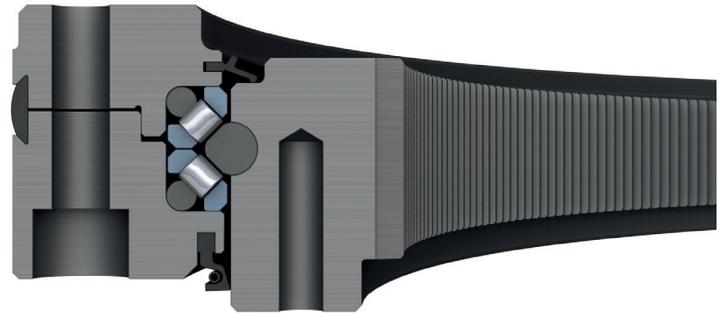
Configurations continued

Configuration	Description	Size range	Design benefit
<p>Thin section</p> 	<p>Inserted Kaydon Reali-Slim® thin section ball bearing</p>	<p>50mm to 1000mm</p>	<ul style="list-style-type: none"> • Catalog range allows scale/volume benefits
<p>Single row radial roller</p> 	<p>Inserted race one-row roller bearing</p>	<p>500mm to 4200mm</p>	<ul style="list-style-type: none"> • For radial loads only • Generally used in conjunction with other bearing handling axial loads • Simplified thermal expansion management
<p>Segmented bearings with inserts</p> 	<p>Inserted race segmented three-row roller bearing</p>	<p>Up to 14000mm</p>	<ul style="list-style-type: none"> • Very large size capability • For applications where traditional bearing designs cannot fit due to limited access or large structure size

Design examples



Wire race crossed roller bearing with internal gear



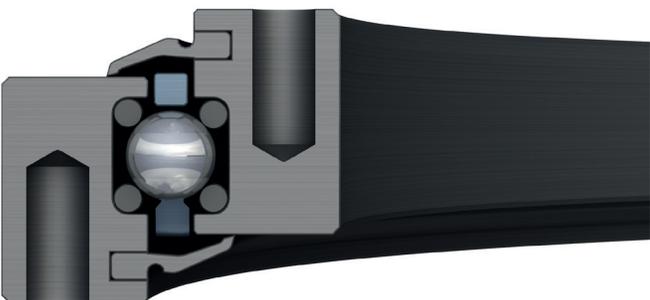
Wire race double row roller bearing with internal gear



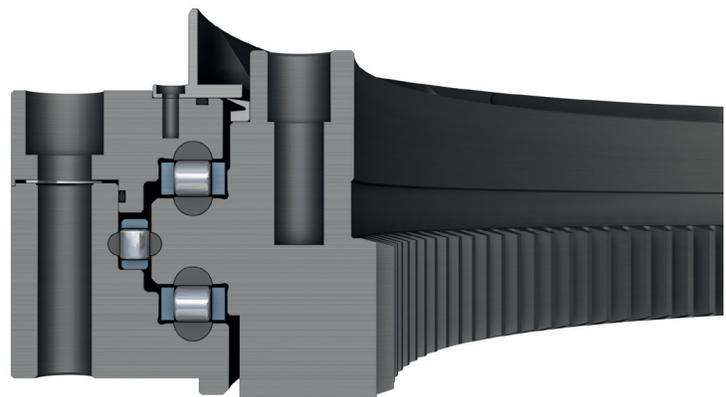
Inserted single row thin section



Inserted thin section double row



Wire race ball bearing without gear



Wire race triple row roller bearing with internal gear

Applications

SKF Wire Race bearings have been proven reliable in a wide range of applications around the globe:

- Camera mounts
- Gimbals
- Index and rotary tables
- Luggage security scanners
- Medical, tomography, X-ray
- Navigation, target acquisition pods
- Oil and gas
- Optical telescope
- Patient beds
- Radars (fixed and mobile)
- Robotics



Engineering, testing, and remanufacturing

State-of-the-art services around the globe

The SKF and Kaydon Bearings testing labs, located in North America, Europe, and Asia, help assure that every SKF Wire Race bearing meets the requirements of its given application. Condition monitoring and remanufacturing services are available worldwide.



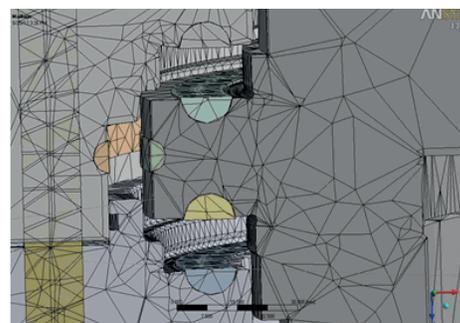
Comprehensive application testing

Application testing includes torque testing under tilting and load conditions, environmental test chamber, anechoic chamber for accurate noise evaluation, and CT scanner bearing assembly testing, plus speed, bearing life, motion, and vibration testing.



Leading modeling and simulation programs

SKF possesses one of the most comprehensive and powerful sets of modeling and simulation packages in the bearing industry. SimPro Expert, BEAST, and other programs enable SKF scientists to produce bearings with extended life, even under severe operating conditions.



A global remanufacturing network

SKF's bearing remanufacturing network is present in most parts of the world and is continuously expanding with new service centers. All centers

for remanufacturing have highly trained teams with special competencies. Operating as a global network, we share knowledge, specific parts procurement, and capability

development. As a result, we can offer the agility and flexibility of a small company, but with the capacity, core competencies, and peace of mind achieved through working with an industry leader.



SKF.com & KaydonBearings.com

©SKF is a registered trademark of the SKF Group.

©Reali-Slim, ©Enduracoat, and ©Kaydon are registered trademarks of Kaydon Corporation.

© SKF Group 2018

The contents of this publication are the copyright of the publisher and may not be reproduced (even extracts) unless prior written permission is granted. Every care has been taken to ensure the accuracy of the information contained in this publication but no liability

can be accepted for any loss or damage whether direct, indirect, or consequential arising out of the use of the information contained herein.

©2018 Kaydon Corporation
PDF only 18-01-15 Wire Race
Printed in USA