

Small sealed SKF Explorer spherical roller bearings with improved performance

Longer service life and greater reliability for elevators



Elevating performance

At work in some of the world's most advanced gearless traction machines for several years, sealed SKF Explorer spherical roller bearings have been meeting industry demand for high-speed, space- and energy-saving solutions. Combining long term effective sealing with a reduction of total bearing friction by as much as 20%, the new small sealed SKF Explorer spherical roller bearings with improved performance reduce energy use, resulting in energy savings with operating temperatures that are up to 20° C lower (36° F). As a result limiting speed ratings have been doubled and relubrication intervals are extended; or in many applications, the bearings can be considered relubrication free.

Benefits:

- Twice the limiting speed rating through reduced friction
- Significantly increased uptime
- Lower operating temperatures through reduced friction
- Extended relubrication intervals – up to twice as long
- Relubrication-free in many applications
- Reduced grease use and disposal costs
- Less environmental impact

Applications:

- Gearless traction machines
- Pulleys and sheaves



Small sealed SKF spherical roller bearings with improved performance are part of the SKF BeyondZero portfolio. See back cover for more information.

Half the seal friction, twice the limiting speed

Lower friction, lower operating temperatures

With a new design that results in up to 50% less seal friction and 20% less total bearing friction, small sealed SKF Explorer spherical roller bearings with improved performance run with operating temperatures reduced by as much as 20 °C (36 °F) (→ **diagram 1**).

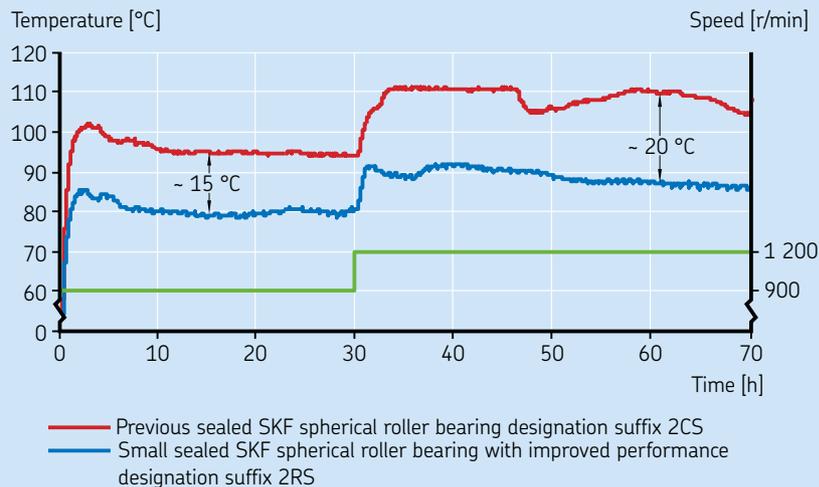
This results in significantly longer grease life – up to twice as long as previous SKF bearings – reducing maintenance costs by extending relubrication intervals or eliminating the need for relubrication altogether in some applications. Costs for the purchase and disposal of grease can also be reduced significantly.

Compact and built for speed

New small sealed SKF Explorer spherical roller bearings with improved performance (designation suffix 2RS), represented by the blue fields in the chart on the back cover (→ **diagram 2**), have twice the limiting speed rating of previous sealed SKF spherical roller bearings, making them highly suitable for today's gearless traction machines and machine room-less designs, as well as pulleys and sheaves.

Diagram 1

Sealed SKF spherical roller bearing operating temperature



Test conditions:

Bearings: 23022-2CS/VT143 and
23022-2RS/VT143

Load: $C/P = 10$, pure radial load

Speed: 900 r/min and 1 200 r/min

Temperature measured on outer ring

The reduced seal friction of the bearings with improved performance (designation suffix RS) results in lower operating temperature, enabling extended relubrication intervals.



Up to four times the rating life of open bearings

In a typically contaminated environment, a sealed bearing has a rating life of up to four times that of an open bearing.

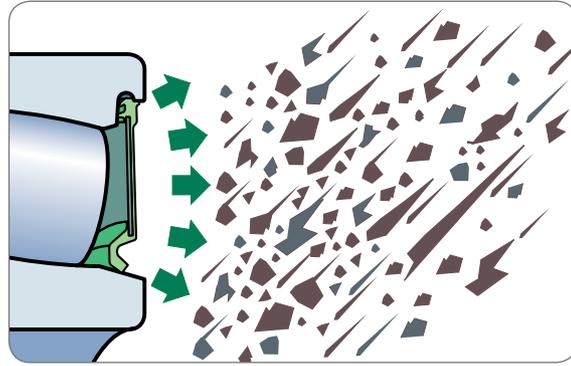
Engineered for robust functionality

New small sealed SKF Explorer spherical roller bearings with improved performance are pre-lubricated with a specially formulated grease and sealed with highly effective contact seals. The seals retain lubricant in the bearing while resisting the ingress of contaminants that might otherwise cause premature bearing failure.

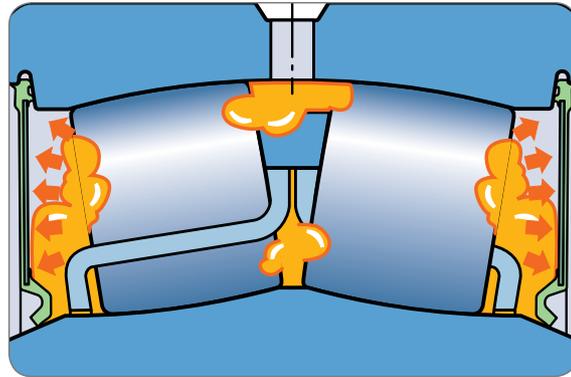
These bearings can handle very high radial and axial loads, while their self-aligning capabilities can accommodate misalignment and shaft deflection. Bearing rings feature a combination of high quality, ultra-clean steel and an improved heat treatment resulting in high surface hardness that further supports robust performance. Sealed SKF Explorer spherical roller bearings also offer high running accuracy and excellent control of roller skewing, helping to minimize noise, vibration and friction levels.

Less maintenance, longer service life

Longer lubricant life means that the new small sealed SKF Explorer spherical roller bearings with improved performance can be considered relubrication free in many more applications. Thanks to their optimized materials and design, these bearings can deliver robust, reliable performance for the life of an elevator's drive system, depending on operating conditions.

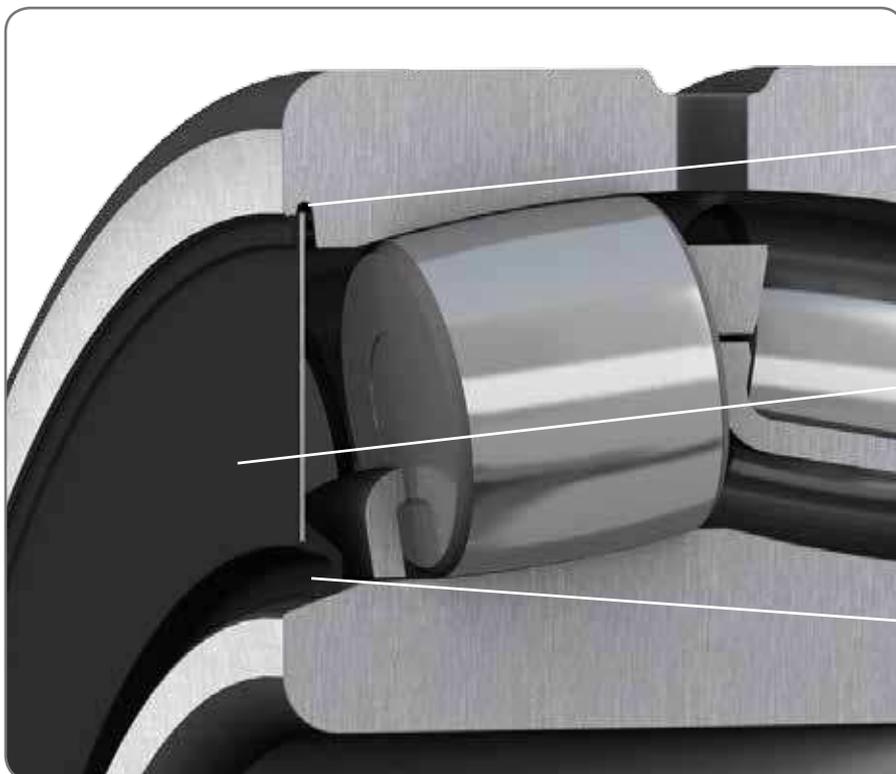


The highly effective new low-friction contact seals resist the ingress of contamination.



The new low friction seals provide effective grease retention in the bearing.

Optimized design features



New seal groove design to improve seal anchorage for reliable seal and secure retention

Rubberized side face, more resistant to scratches and corrosion

New seal lip with optimized contact pressure – reducing seal friction by up to 50%

SKF EnCompass Field Performance Programme: theory meets reality

One might think that two bearings of the same size with the same dynamic load rating should perform equally well in a given application. In reality, they often do not. The reason?

Bearing performance under actual operating conditions is impacted by not only the dynamic load rating (C), but far more by the bearing's inherent design and quality: everything from the surface finish of the raceways to the effectiveness of sealing and lubrication.

The SKF EnCompass Field Performance Programme addresses this issue. By focusing on bearing design optimization and more detailed analysis of the factors influencing bearing service life, the programme will help to meet real-world application conditions.

At the heart of SKF EnCompass are new, more inclusive bearing life models, including the SKF Generalized Bearing Life Model, which separates sub-surface and surface failure modes. New advanced calculation tools – SimPro Quick and SimPro Expert – allow engineers to consider the shaft, housing, bearings, external forces and gear loads.



By encompassing more of the factors that impact bearing service life, this model and new software tools provide new insight into the calculation of bearing rating life. The result is a significantly improved guide for selecting bearings for optimum reliability and productivity in the field.

As part of the SKF EnCompass programme, small sealed SKF spherical roller bearings for use in gearless traction machines and elevator pulleys have been optimized to give you a field advantage.

Sealed SKF spherical roller bearing range

d [mm]	Series	213	222	223	230	231	232	239	240	241	Size
25		↔									05
30		↔									06
35		↔									07
40		↔	↔								08
45		↔	↔								09
50		↔	↔								10
55		↔	↔								11
60		↔	↔								12
65		↔	↔								13
70		↔	↔								14
75		↔	↔								15
80		↔	↔								16
85		↔									17
90		↔	↔								18
95		↔									19
100		↔									20
110		↔									22
120		↔									24
130		↔									26
140											28
150											30
160											32
170											34
180											36
190											38
200											40
220											44
240											48
260											52
280											56
300											60
320											64
340											68
360											72
380											76
400											80
420											84
440											88
460											92

Light green = Open spherical roller bearings available

Dark green = Open and sealed spherical roller bearings available, designation suffix 2CS

Blue = Open and sealed spherical roller bearings available, designation suffix 2RS

↔ Sealed bearing is slightly wider than open bearing

¹⁾ Can be delivered with some restrictions, please contact your sales representative.

Available sizes for new small sealed SKF Explorer spherical roller bearings (designation suffix 2RS) are indicated in blue on the range chart above.

Additional benefits:

- Total bearing friction reduced by as much as 20%
- Relubrication intervals can be up to twice as long
- Grease usage can be reduced significantly
- In many applications the bearing can be considered relubrication-free for the life of the bearing, reducing maintenance costs

The Power of Knowledge Engineering

Combining products, people, and application-specific knowledge, SKF delivers innovative solutions to equipment manufacturers and production facilities in every major industry worldwide. Having expertise in multiple competence areas supports SKF Life Cycle Management, a proven approach to improving equipment reliability, optimizing operational and energy efficiency and reducing total cost of ownership.

These competence areas include bearings and units, seals, lubrication systems, mechatronics, and a wide range of services, from 3-D computer modelling to cloud-based condition monitoring and asset management services.

SKF's global footprint provides SKF customers with uniform quality standards and worldwide product availability. Our local presence provides direct access to the experience, knowledge and ingenuity of SKF people.



SKF BeyondZero

SKF BeyondZero is more than our climate strategy for a sustainable environment: it is our mantra; a way of thinking, innovating and acting.

For us, SKF BeyondZero means that we will reduce the negative environmental impact from our own operations and at the same time, increase the positive environmental contribution by offering our customers the SKF BeyondZero portfolio of

products and services with enhanced environmental performance characteristics.

For inclusion in the SKF BeyondZero portfolio, a product, service or solution must deliver significant environmental benefits without serious environmental trade-offs.

Small sealed SKF Explorer spherical roller bearings with improved performance reduce negative environmental impact because extended relubrication intervals result in less grease use and lower CO₂ emissions.



For more information about small sealed SKF Explorer spherical roller bearings, see your SKF representative or visit skf.com/elevators

skf.com

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