

**RKB SPHERICAL ROLLER BEARINGS:
NEW ROVSX CLASS
FOR VIBRATING MACHINERY**

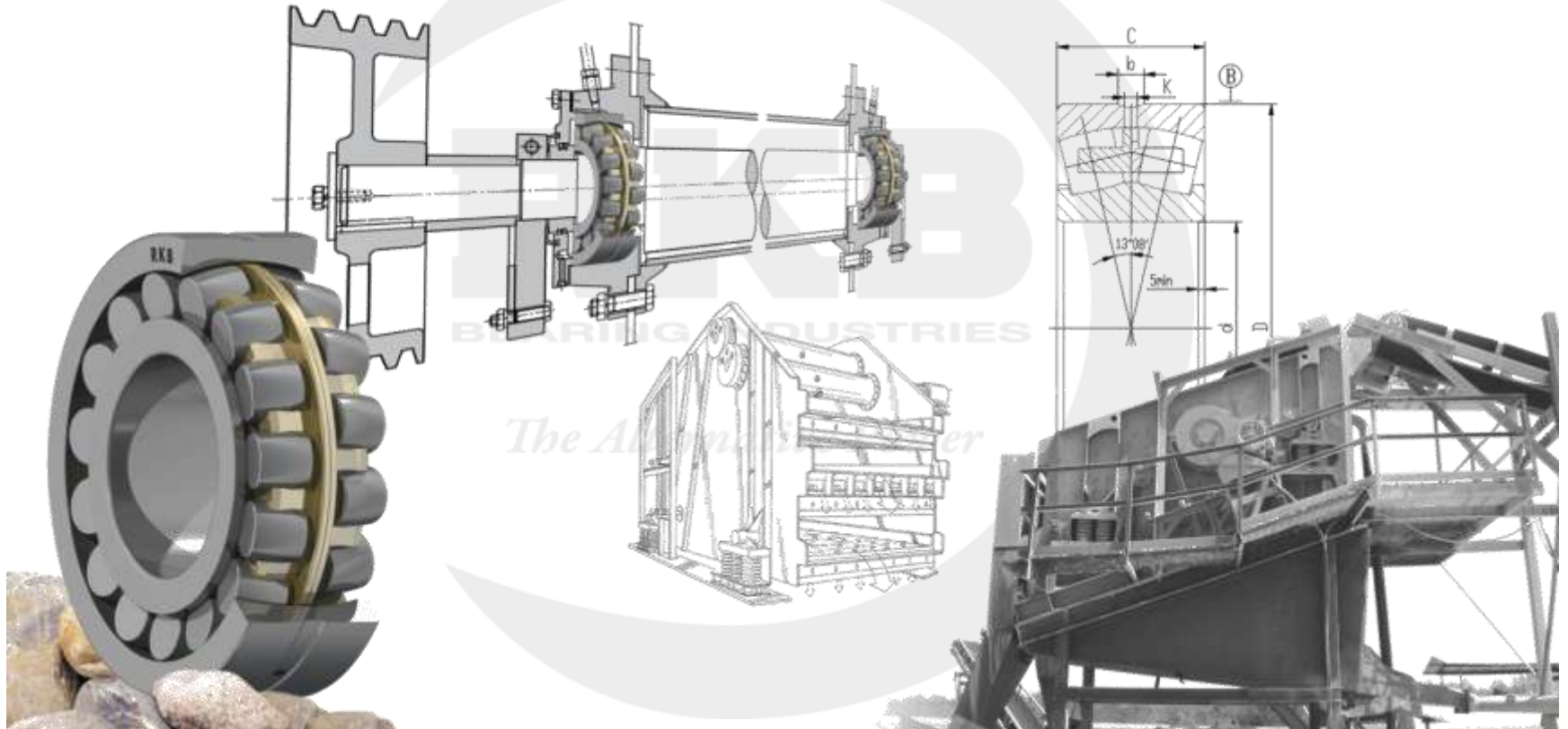
RKB
BEARING INDUSTRIES

RKB EXECUTIVE HEADQUARTERS AND
TECHNOLOGICAL CENTER - BALERNA (SWITZERLAND)



Engineered in Switzerland
Technological Bearings

RKB spherical roller bearings: new ROVSX class for vibrating machinery



RKB ROVSX spherical roller bearings: endowed with RKB's latest technology

RKB ROVS design



RKB ROVSX
new design

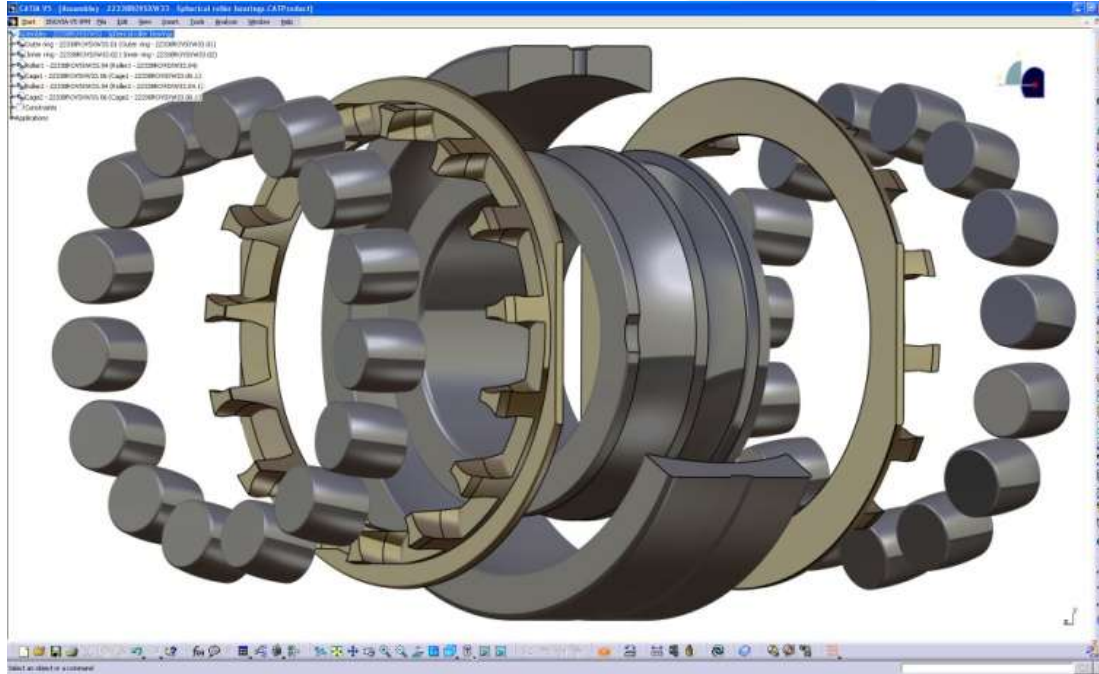


The Alternative Power

To produce the new ROVSX design, RKB utilizes all the latest technologies available:

- advanced calculation and simulation tools for continuous improvement of inner design and geometry
- special bearing steel for premium reliability
- bainite treatment for tougher resistance in harsh conditions
- higher precision of inner geometry and better topography parameters by means of the latest generation CNC super-finishing grinders

RKB ROVSX spherical roller bearings: design



One inner ring with retaining flanges, one outer ring and a two-piece machined brass cage guided on the outer ring

RKB ROVSX spherical roller bearings: main features available

The RKB ROVSX spherical roller bearings are produced with two different types of steel based on the heat treatments required and the thickness of the rings (for further information refer to the related educational video “RKB special bearing steel for premium reliability”).

		Rings thickness (mm)		Geometry				Heat treatments		
				Inner ring		Series				
		≤ 17	> 17	Straight	Tapered 1:12	ISO 223	Other*	HB1	S1	HB1+S1
Steel	SAE 52100	X		X	X	X	X	X	X	X
	SAE A485.RAV	X	X	XX	XX	XX	XX	XX	XX	XX

*Only special projects (RKB can produce other ISO series different from ISO 223, e.g. ISO 233 and ISO 222 series).

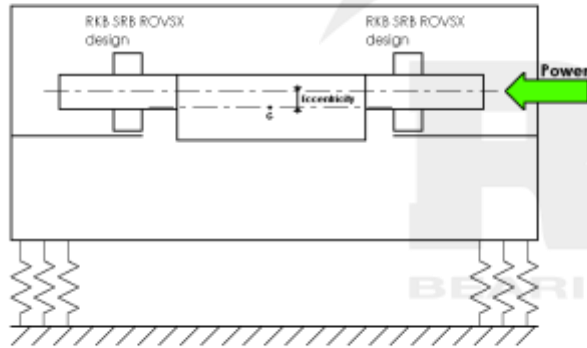
RKB ROVSX spherical roller bearings: applications



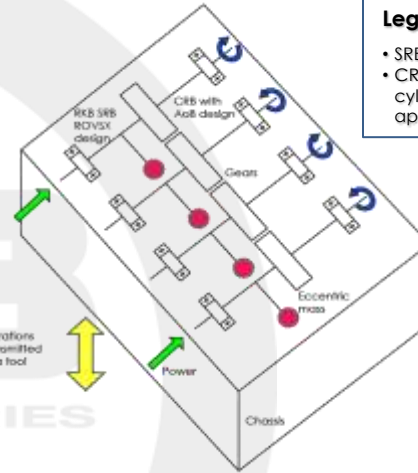
In many mechanical applications (e.g. vibrating screens, vibrating hammers etc.) the bearing is subjected to high speeds, high vibrations and heavy loads. Due to the high rotational accelerations, the centrifugal force represents the main load. When all these factors act together, the lubrication of the bearing is very difficult. In these severe conditions, RKB recommends using its spherical roller bearings ROVSX design.



RKB ROVSX spherical roller bearings: applications



Vibrating screen application



Vibrating hammer application

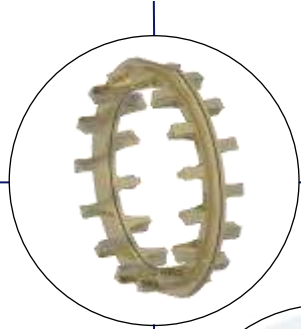
Legend

- SRB: spherical roller bearing
- CRB with AOB design: cylindrical roller bearing with application optimized design

The RKB ROVSX spherical roller bearings are frequently used in the vibrating screens. The vibrations are produced by the shaft due to the eccentricity between the axis of revolution and the center of mass. The vibrations are transmitted from the shaft to the machine through the bearings (a system of springs separates the machine from the ground).

The RKB ROVSX spherical roller bearings perfectly fit also vibrating hammer applications. The power is generated by two different sources and transmitted to all the shafts by couples of gears. The vibrations are generated by eccentric masses rotating with the shafts. Every shaft is supported by a special cylindrical roller bearing (CRB) and an RKB ROVSX spherical roller bearing (SRB ROVSX). The vibrations are finally transmitted from the chassis to a tool.

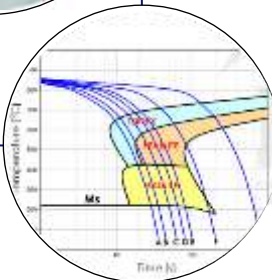
RKB ROVSX spherical roller bearings: main features



Improved cage design



Higher precision than standard class



RKB bainite treatment

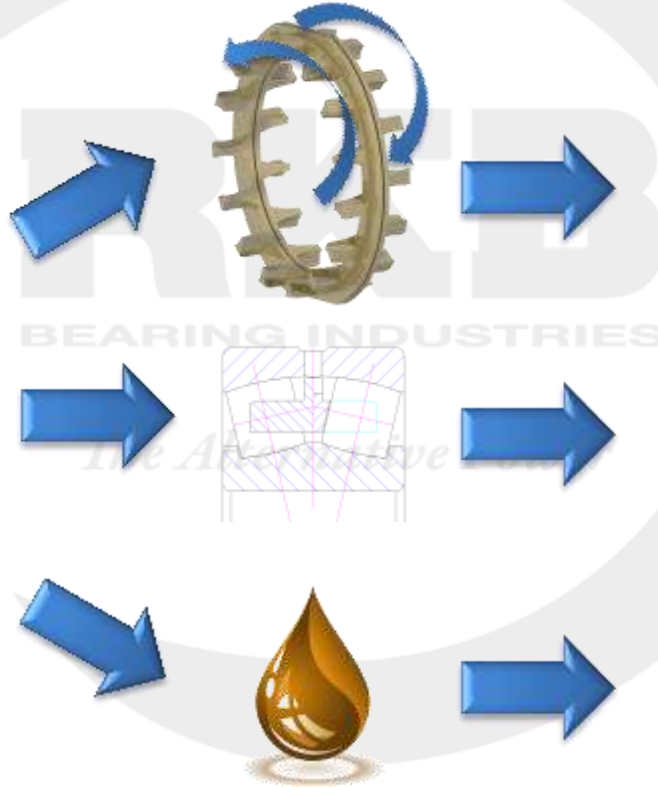
(available also with S1 stabilization treatment)



RKB ROVSX design main features: improved cage design



RKB ROVSX cage design

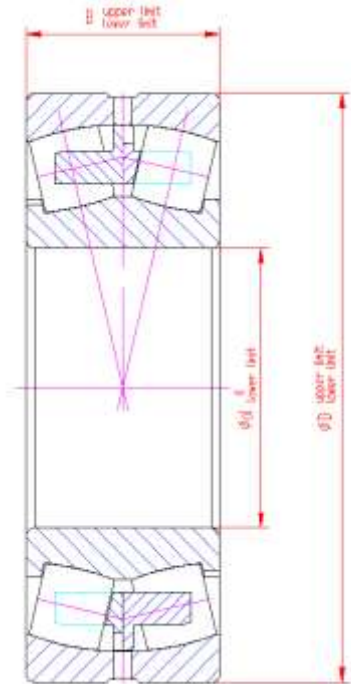


The cage is separated into two different pieces to allow possible sliding movements (due to revolving shaft deflections).

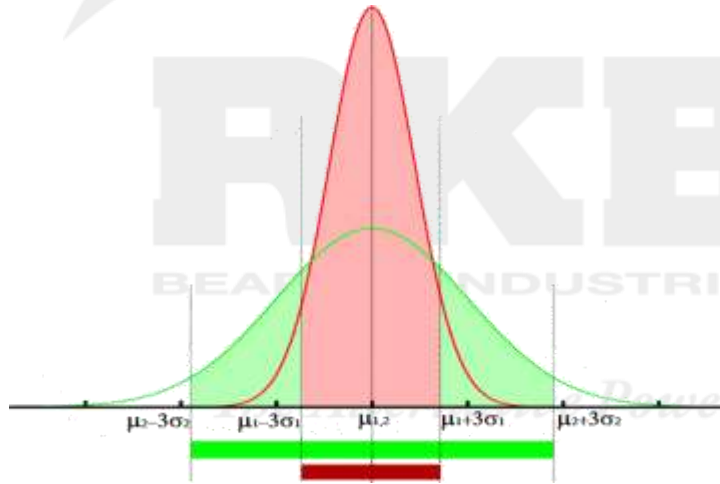
The machined brass cage, guided on outer ring, is thicker than the standard design to increase stiffness and resistance.

The cage is designed open-end to improve the lubrication of the rolling elements. Furthermore the brass enhances the damping of the vibrations.

RKB ROVSX design main features: higher precision than standard class



RKB ROVSX design
dimensional tolerances



-  SRB standard class
-  RKB SRB ROVSX class

The RKB ROVSX spherical roller bearings are designed with tighter dimensional tolerances than standard class. These tolerances are used for some of the dimensions that directly influence the radial internal clearance of the bearing:

- d, bore diameter
- D, outer diameter
- B, bearing width

The reduction of the tolerances leads to a better control of the radial internal clearance of the bearing. In addition this type of bearing is produced with a special radial internal clearance, with a restricted range, generally C4R (upper half of ISO C4 range).

RKB ROVSX design main features: bainite treatment



In order to improve bearing life in harsh working conditions, RKB typically applies the bainite treatment to its ROVSX spherical roller bearings. This ensures better impact, wear and fatigue resistance.



Aichelin furnaces for bainite treatment in RKB T3 Plant



- higher impact resistance
- higher wear resistance
- higher fatigue resistance

For further information refer to the related educational video “RKB special heat treatments for heavy duty applications”

RKB ROVSX spherical roller bearings: production range 1/2

Bore type		Main boundary dimensions (mm)			Radius _{1,2} min (mm)	e	W33	Mass (kg)
Straight bore	Tapered bore 1:12	d (mm)	D (mm)	B (mm)				
22312 ROVS/ROVSX	22312 KROVS/KROVSX	60	130	46	2,1	0,35	Yes	3,5
22313 ROVS/ROVSX	22313 KROVS/KROVSX	65	140	48	2,1	0,35	Yes	3,5
22314 ROVS/ROVSX	22314 KROVS/KROVSX	70	150	51	2,1	0,33	Yes	4,2
22315 ROVS/ROVSX	22315 KROVS/KROVSX	75	160	55	2,1	0,35	Yes	5,0
22316 ROVS/ROVSX	22316 KROVS/KROVSX	80	170	58	2,1	0,35	Yes	6,1
22317 ROVS/ROVSX	22317 KROVS/KROVSX	85	180	60	3,0	0,33	Yes	7,2
22318 ROVS/ROVSX	22318 KROVS/KROVSX	90	190	64	3,0	0,33	Yes	8,0
22319 ROVS/ROVSX	22319 KROVS/KROVSX	95	200	67	3,0	0,33	Yes	10,0
22320 ROVS/ROVSX	22320 KROVS/KROVSX	100	215	73	3,0	0,33	Yes	13,0
22322 ROVS/ROVSX	22322 KROVS/KROVSX	110	240	80	3,0	0,33	Yes	18,0

RKB ROVSX spherical roller bearings: production range 2/2

Straight bore	Tapered bore 1:12	d (mm)	D (mm)	B (mm)	Radius _{1,2} min (mm)	e	W33	Mass (kg)
22324 ROVS/ROVSX	22324 KROVS/KROVSX	120	260	86	3,0	0,35	Yes	23,0
22326 ROVS/ROVSX	22326 KROVS/KROVSX	130	280	93	4,0	0,35	Yes	29,0
22328 ROVS/ROVSX	22328 KROVS/KROVSX	140	300	102	4,0	0,35	Yes	35,5
22330 ROVS/ROVSX	22330 KROVS/KROVSX	150	320	108	4,0	0,35	Yes	43,0
22332 ROVS/ROVSX	22332 KROVS/KROVSX	160	340	114	4,0	0,35	Yes	51,0
22334 ROVS/ROVSX	22334 KROVS/KROVSX	170	360	120	4,0	0,33	Yes	62,0
22336 ROVS/ROVSX	22336 KROVS/KROVSX	180	380	126	4,0	0,35	Yes	70,5
22338 ROVS/ROVSX	22338 KROVS/KROVSX	190	400	132	5,0	0,35	Yes	82,0
22340 ROVS/ROVSX	22340 KROVS/KROVSX	200	420	138	5,0	0,33	Yes	93,5

Other ISO series or bigger sizes of ISO 223 series are available on request

RKB ROVSX spherical roller bearings: example of Technical Fiche

RKB Bearings Technical Fiche

AB 170311

Spherical roller bearings

22315 ROVSXW33

Main boundary dimensions (mm)	
d	75
D	160
B	55

Technical data			
Basic load ratings (kN)	C_1	385	
	C_2	455	
Mass (kg)		5,0	
Cage material		Brass	
Radius min (mm)	r_1	2,1	
	r_2	2,1	
	r_3	-	
	r_4	-	
Precision class		Special P0/P6	
α		0,36	
Radial clearance (mm)		Special C4 (upper half of range)	
Configuration/Design		223/ROVSXW33	

Technical notes

- Special execution for vibrating screen applications. New X generation
- RKB premium steel protocol for higher reliability and extended service life
- Annular groove and lubrication holes in outer ring (suffix W33)
- Machined brass cage in two pieces guided in outer ring
- Rings with bainite treatment for higher strength resistance
- Speed rating oil lubrication 3000 rpm
- For general industry purpose

Sketch scale is 1x.
Load ratings are principally based on ISO 281 and ISO 76, but not calculated according to the latest bearing design and execution. For further background ask for related calculations.
Single-sided imposed factors, formulae and tables are not taken into consideration.
Also refer to RKB A-Roles or Conformance (L-RA) for related compliance to International Standards.
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RKB ROVSX spherical roller bearings: comparison table

Spherical roller bearings for vibrating applications	
Main manufacturers	Suffix
RKB	ROVS/ROVSX
SKF	VA405/VA406
Schaeffler Group (FAG)	T41A/F80
NSK	VS
SNR/NTN	EF800

Every care has been taken to ensure the accuracy of the information in the present document, but no liability can be accepted for any errors or omissions contained herein. Because of continuous redesign and technological progress, this document cannot be considered exhaustive in terms of product range and executions. RKB Bearing Industries reserves the right of any amendment and change without prior notice.

Conclusions

RKB ROVSX SPHERICAL ROLLER BEARINGS ENSURE:

- HIGHER PRECISION THAN STANDARD CLASS
- HIGHER IMPACT, WEAR AND FATIGUE RESISTANCE
- BETTER BEHAVIOR IN CRITICAL APPLICATIONS



HIGHER RELIABILITY AND PERFORMANCE

The Alternative Power

APPLICATIONS:

- VIBRATING SCREENS
- VIBRATING HAMMERS
- CRUSHING AND CONSTRUCTION EQUIPMENT

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RKB
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FOR FURTHER DETAILS
DO NOT HESITATE TO CONTACT
RKB TECHNICAL DEPARTMENT



Engineered in Switzerland
Technological Bearings
