



VE SERIES SPHERICAL ROLLER BEARINGS

LONG-LIFE PERFORMANCE IN VIBRATING MACHINERY AND EQUIPMENT

Punishing Loads. Misalignment. Mechanical shock. Grit and contamination and marginal lubrication. For spherical roller bearings used in vibrating screens and feeders, a host of operating challenges come together in a relentless perfect storm.

NSK's long-life VE series spherical roller bearings are engineered specifically - and ideally - to contend with high speeds, shock loads, misalignment and frequent vibration to deliver robust, smooth running, long-life performance.



PROVEN OPERATING ADVANTAGES

- ➔ As much as twice the service life of conventional bearings in applications subject to frequent vibration
- ➔ High resistance to heavy loads and shock loads
- ➔ Smooth running with superior roller guidance and lubricant distribution from machined cage
- ➔ High-speed performance with low operating temperature rise
- ➔ Reduced bearing damage from slippage, surface fatigue and flaking
- ➔ Higher operational reliability with reduced incidents and maintenance costs

HIGH PERFORMANCE FACTORS

SUPERIOR MACHINED BRASS CAGE DESIGN

The punishment dealt in vibrating machinery applications in particular often presents far too great a challenge for pressed steel cages, resulting in problems ranging from bearing damage caused by excessive cage wear to catastrophic bearing failure due to outright cage fracture.

For these reasons, NSK VE series spherical roller bearings are designed exclusively with a heavy-duty, wear resistant machined brass cage that offers considerable advantages above and beyond its durability.



- ➔ **Cage pocket geometry** and finger length provide superior roller guidance and controlled roller skew
- ➔ **Precision-machined contours** optimize lubricant flow to rolling contact surfaces
- ➔ **Roller centered design** is unaffected by thermal expansion of shaft and inner ring

OPTIMIZED INTERNAL DESIGN

NSK's VE series spherical roller bearings are designed specifically to endure high speeds, shock loads, misalignment and constant vibration.

- ➔ **Special dimensional tolerances** minimize vibration during operation
- ➔ **Special internal radial clearance** reduces heat generation, improving lubricant life
- ➔ **Advanced raceway surface finish** minimizes sliding contact in high load zones and facilitates better lubricant film

HIGH-PERFORMANCE FACTORS

LONG-LIFE TOUGH STEEL MATERIAL OPTION

For severely contaminated service conditions, NSK offers VE series spherical roller bearings with Hi-TF and Super-TF long-life material options.

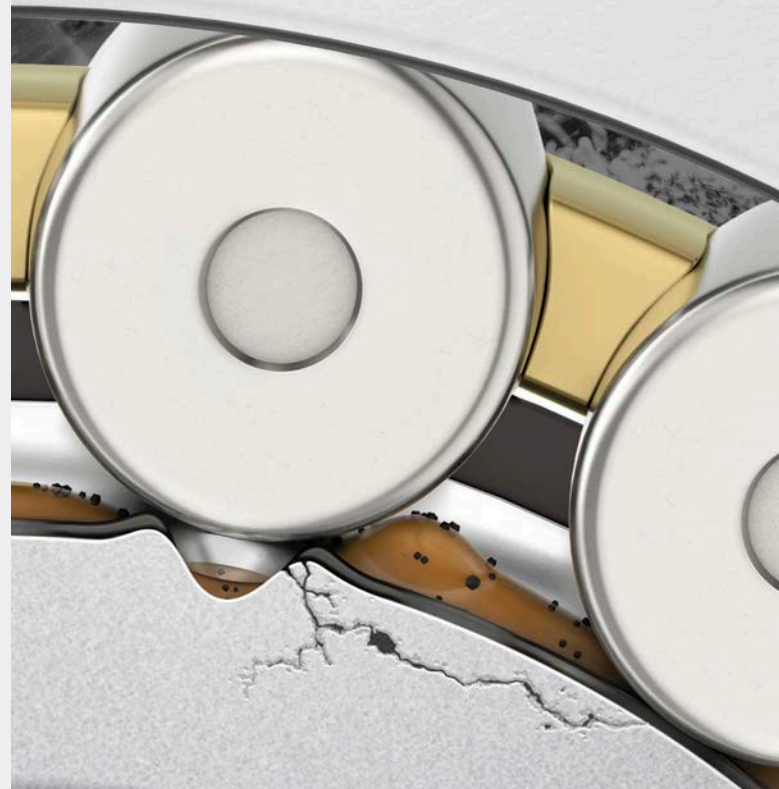
Our proprietary material composition contains appropriate levels of chrome and molybdenum. Coupled with an advanced carbonitriding heat treatment process, the result is a resilient, long-life steel that achieves both greater hardness and higher toughness and delivers longer bearing life in severe operating conditions with:

- ➔ **Superior wear resistance:** less than 1/3 the rate of wear of standard bearing steel
- ➔ **Greater seizure resistance:** as much as a 40% improvement
- ➔ **High heat resistance:** up to four times the service life at 160°C

Under contaminated lubrication conditions that can be the source of progressive bearing damage and failure, NSK Tough Steel bearings deliver as much as 10 times longer operating life than general carburized steel alternatives.

Life test: Result under foreign contamination

1	Catalogue life
0.2	General carburized steel
1.4	Hi-TF steel
2	Super-TF steel



Above: Particle contamination in bearing lubricant can lead to inner ring raceway denting, crack progression and ultimately bearing failure from flaking damage.

CASE STUDY

APPLICATION

VIBRATING SCREEN

COST SAVINGS

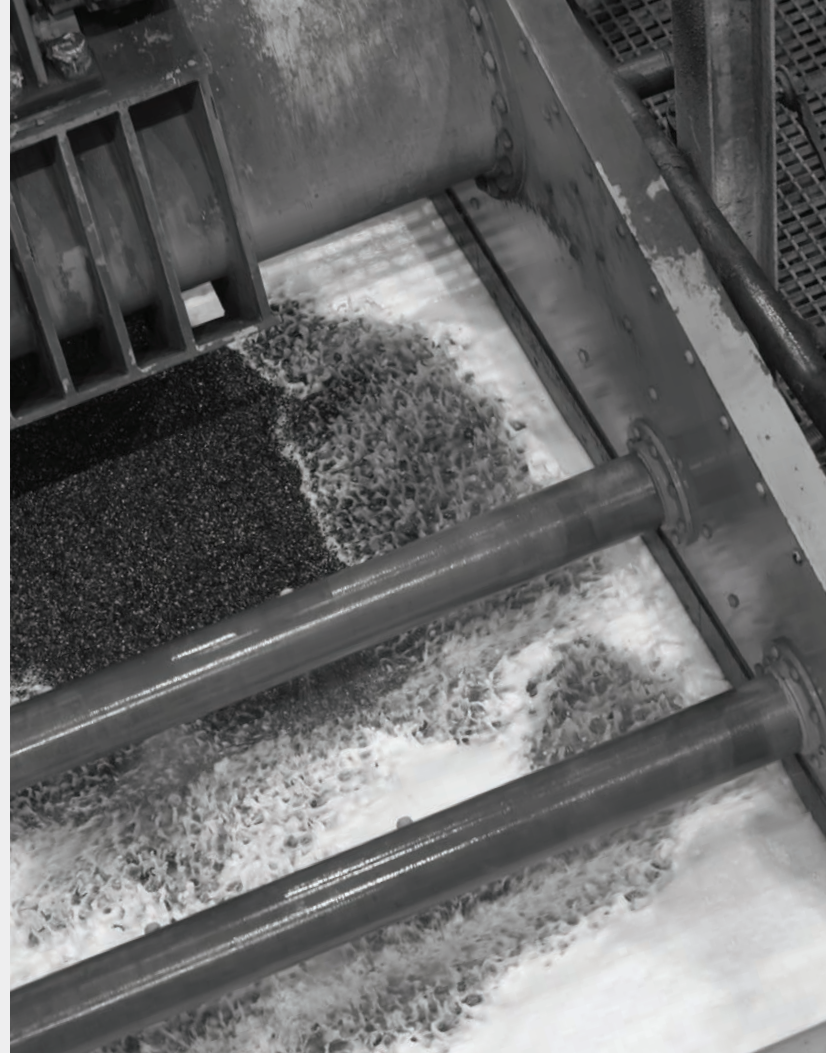
\$61,340

A quarrying customer in Central America appealed to NSK experts to improve the operating life of vibrating screen bearings, failing at 6 month intervals and imposing 24 hours of maintenance downtime due to the remote access.

The combination of punishing loads and severe contamination inherent to this application presented the challenge for which NSK's VE bearings with H-TF steel are ideally suited. As anticipated, significant benefits were achieved by the customer with:

- ➔ **Longer operating life**, in this case 3 times longer than the original bearings installed
- ➔ **Reduced production losses** incurred as a result of machine maintenance downtime

[DOWNLOAD THE COMPLETE CASE STUDY ▶](#)



YOUR PARTNER FOR MACHINE OPTIMIZATION

Our AIP Added Value Program is based around a simple proposition: 'improvement pays'. By working with you throughout the AIP Value Cycle, we will help you achieve improvements in machine reliability, productivity and performance, all of which carry a tangible and measurable cost benefit – and we have the tools to prove it! That's what we mean by **improvement pays**.



For the machinery and equipment used to extract, transport and process - interdependent in their purpose - access can be remote or restricted. The unexpected failure of a single component can bring an entire site to a standstill - at a significant cost.

Unexpected machine and equipment downtime is intolerable.

NSK VE series spherical roller bearings are designed and manufactured to run harder, to run faster, to run longer. And to improve performance - mitigating maintenance and operating costs, improving throughput and profitability.

They are unshakable in their reliability.

Learn more about NSK bearing products and services for optimizing machine performance in the mining, quarrying and construction industries.

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