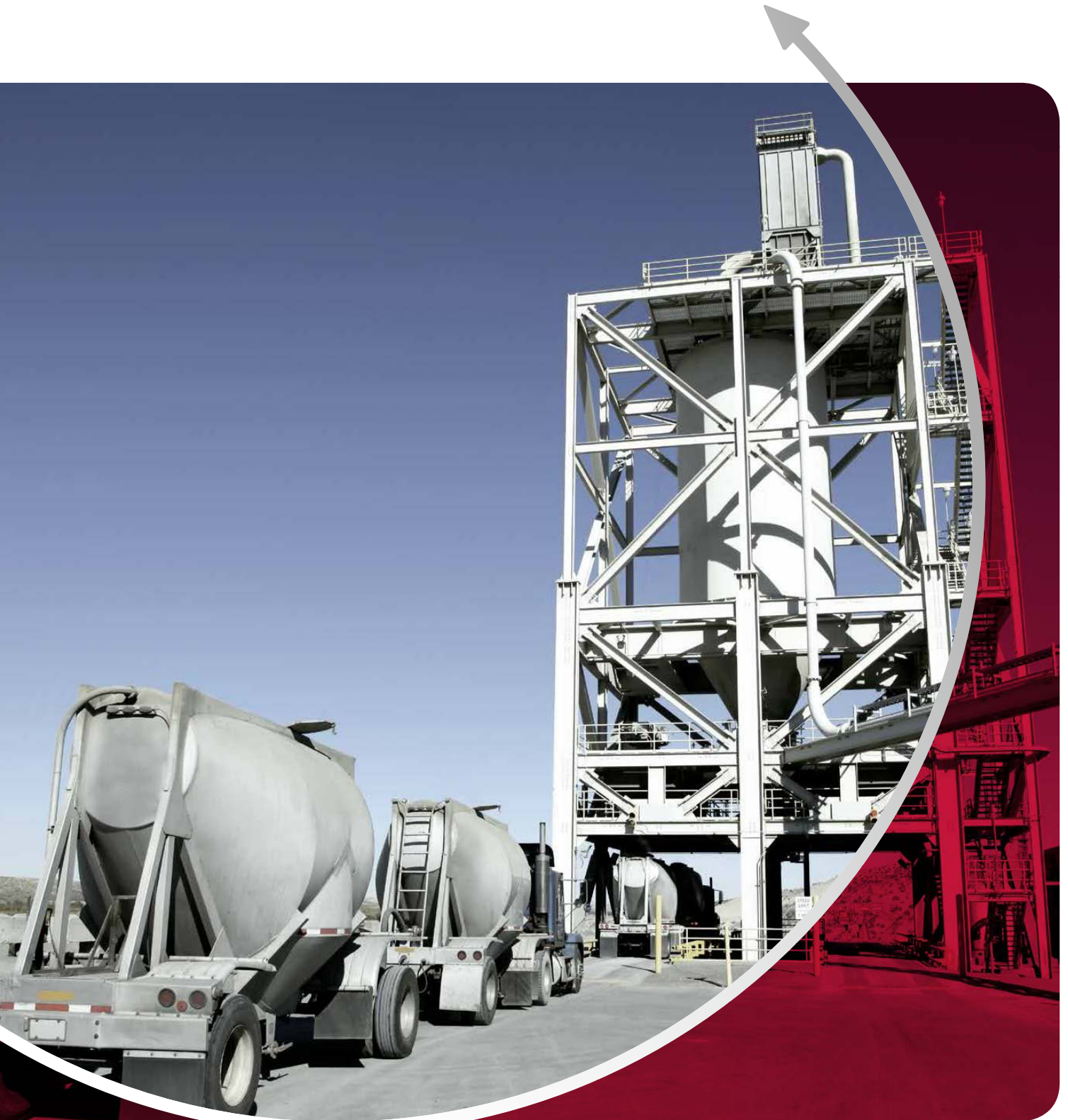



BEARINGS FOR THE CEMENT INDUSTRY



Cement Industry





Leaders in our field, we are not content simply to supply a range of products to meet the needs of today. At NSK we go much further: constantly challenging accepted thinking, exploring new and better methods of design and manufacture and, above all, looking beyond the needs of today to meet customers' requirements in the future.

Cement is one of the world's most important building materials – and its production one of the most severe processing environments, and so demands outstanding performance. NSK bearings provide the cement and related industries with the reliability, sustainability and toughness required to withstand the critical processing factors of water, dust and grit, extreme temperatures, vibration and huge loads. Like other extreme processing and extraction industries, Cement machinery must continuously operate under these challenging conditions. NSK understands your production environments and maintenance issues, and that the solution to sustainable productivity lies in new technology.

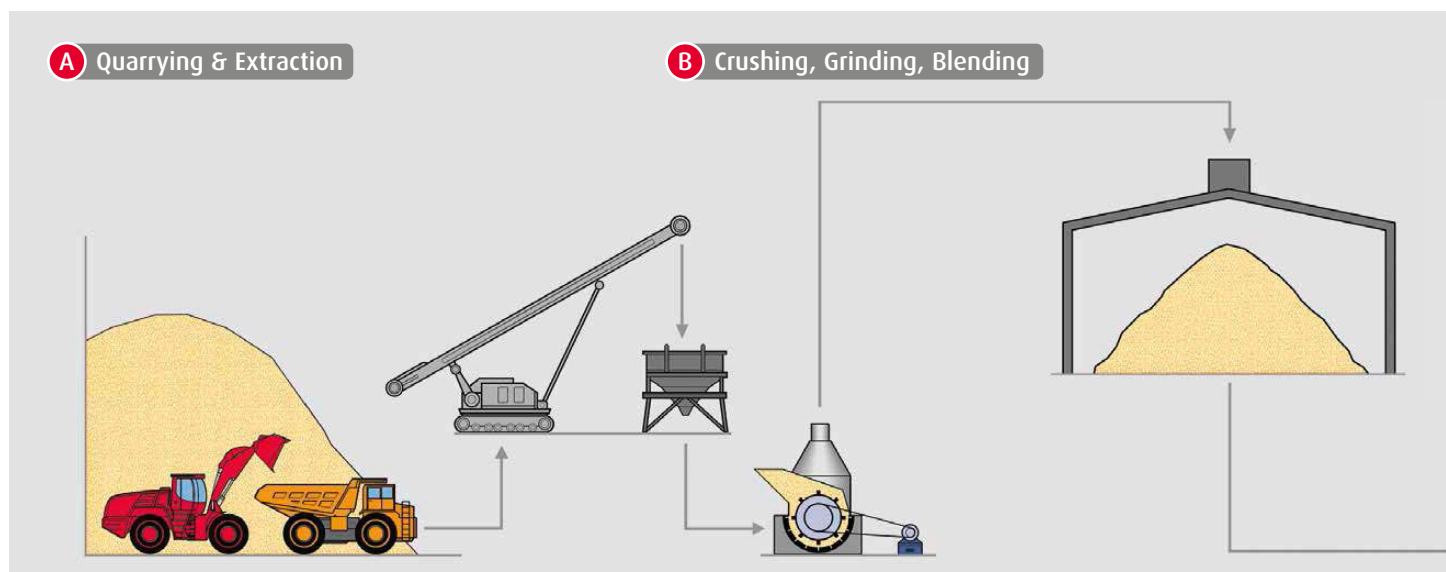
As such our bearings are based on proprietary state-of-the-art technology, combined with the experience and knowledge from working with industry leaders. We have designed bearings to ensure your processes continue to run smoothly. NSK bearings exceed the limits of conventional bearings in terms of long operating life and high limiting speed to give you the toughness you require.

NSK reliability helping you maintain your production momentum

NSK bearings offer the cement industry plant operators and equipment manufacturers longer service life under some of the most challenging operating conditions. Maximizing uptime and reducing maintenance costs for improved productivity at cement plants. Durability and reliability are of paramount importance where failure of a single component can impact the entire cement manufacturing process. Our superior bearings offer high performance with robust design, helping you improve profitability and productivity.

We continue to deliver the reliability required by cement plants around the world.

Cement Industry Process



A Quarrying & Extraction



Spherical Roller Bearings – EVB Series



Spherical Roller Bearings – HPS™ Series



Spherical Roller Bearings – CAM Series



Long-life VS Spherical Roller Bearings



Angular Contact Ball Bearings – HPS™ Series



Sealed Deep Groove Ball Bearings

B Crushing, Grinding, Blending



Cylindrical Roller Bearings – EW and EM Series



Tapered Roller Bearings



Single Row Deep Groove Ball Bearings – HR Series



Angular Contact Ball Bearings – HPS™ Series



TF Series



Needle Roller Bearings



Molded-Oil™ Bearings



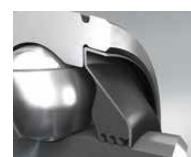
Sealed Deep Groove Ball Bearings



Self-Lube® Units



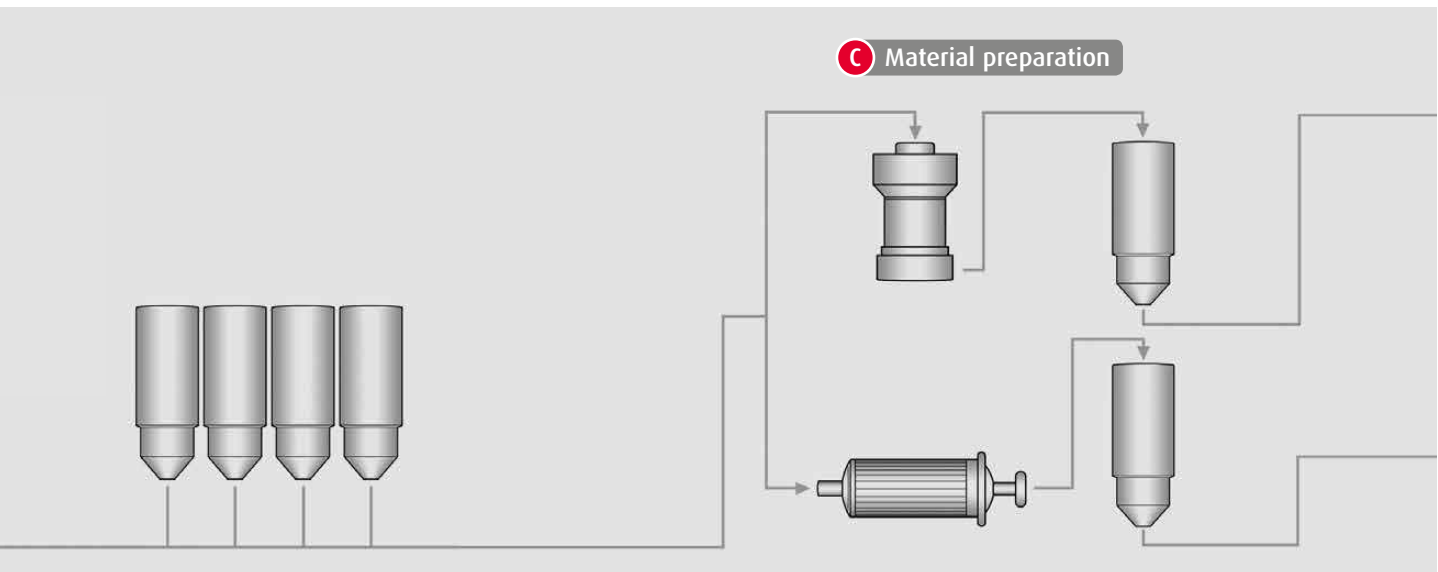
Mounted units



Triple Lip sealed



Long-life Pinion Shaft with Cage & Roller Assembly



C Material preparation



Spherical Roller Bearings - HPS™ Series



Single Row Deep Groove Ball Bearings - HR Series



Spherical Roller Bearings - HPS™ Series



Long-life VS Spherical Roller Bearings



Double Row Angular Contact Ball Bearings



Cylindrical Roller Bearings - EW and EM Series



Integrated Bearing Assemblies



Cylindrical Roller Bearings - EW and EM Series

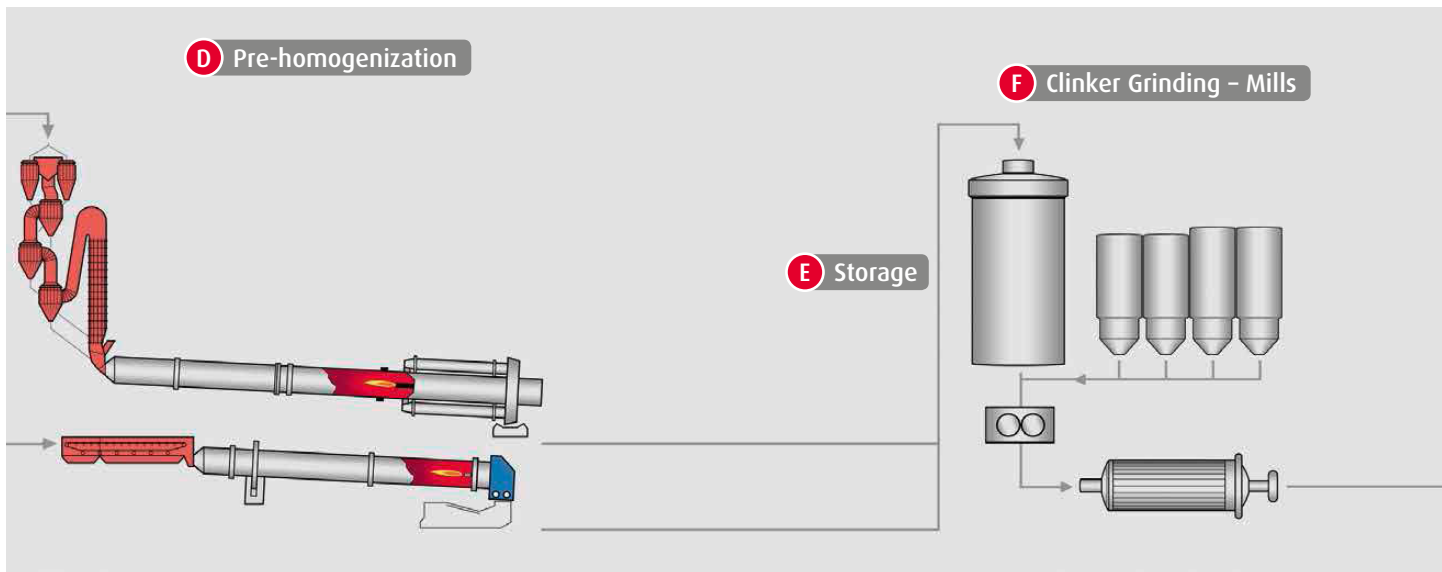


Tapered Roller Bearings



TF Series

D Pre-homogenization



E Storage



Self-Lube® Units



Plummer Block Housings



Spherical Roller Bearings - HPS™ Series

F Clinker Grinding - Mills



Spherical Roller Bearings - HPS™ Series



Long-life VS Spherical Roller Bearings



Spherical Roller Bearings - CAM Series



Cylindrical Roller Bearings - EW and EM Series



Double-Row Tapered Roller Bearings



TF Series



Double Row Angular Contact Ball Bearings

G Conveying



Spherical Roller Bearings - HPS™ Series

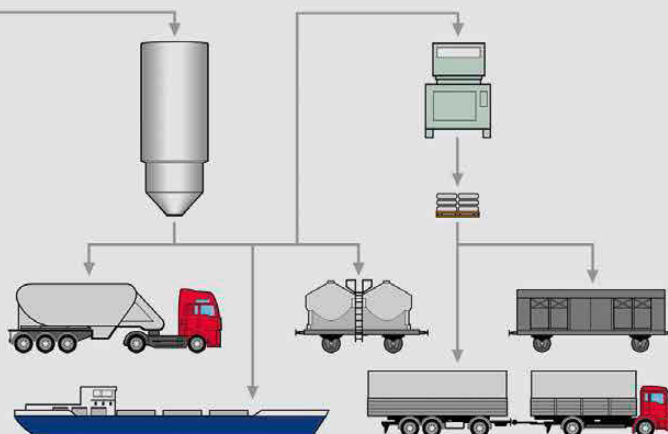


Spherical Roller Bearings - CAM Series



G Conveying

H Packing & shipping



Self-Lube® Units



Tapered Roller Bearings



TF Series



Mounted units



TF Series



Sealed Deep Groove Ball Bearings



HLT Inserts



Self-Lube® Units



Single Row Deep Groove Ball Bearings - HR Series

H Packing & shipping



HLT Inserts



Angular Contact Ball Bearings - HPS™ Series



Spherical Roller Bearings - HPS™ Series



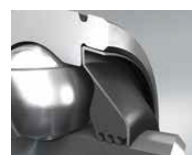
Mounted units



Cylindrical Roller Bearings - EW and EM Series



Molded-Oil™ Bearings



Triple Lip sealed

1. Features, Part Name, and Marking by Bearing Type



Spherical Roller Bearings – HPS™ Series

- › High load capacity
- › High limiting speed
- › High strength cage (steel or brass)
- › Low noise and vibration



Spherical Roller Bearings – CAM Series

- › Tough machined brass cage
- › Self-aligning ability with floating ring guide
- › Controlled roller skew
- › High dynamic and static load ratings
- › High speed performance – low operating temperature rise
- › High resistance to heavy & shock loading



Long-life VS Spherical Roller Bearings

- › Improved surface roughness on rollers, inner & outer ring
- › Specifically designed for vibrating screens
- › Load rating increased by 1.25 times
- › Dampened vibration
- › Better roller guidance & smooth running
- › Reduced bearing damage from slippage, surface fatigue, flaking



Spherical Roller Bearings – EVB Series

- › Extra capacity vibratory bearings
- › Heat stabilized up to 200°C
- › One-piece machined brass cage
- › Special ring tolerances to withstand vibration, shock loads & misalignment



Cylindrical Roller Bearings – EM Series

- › Extra capacity internal design
- › High strength brass cage – reduces wear and improves performance in vibrating equipment
- › Special cage pocket profiling improves oil / grease flow
- › 30% higher load rating than conventional bearings



Cylindrical Roller Bearings – EW Series

- › High radial load capacity
- › High speed applications
- › High strength pressed steel, machined brass or polyamide cage
- › Low noise & heat generation



Sealed Deep Groove Ball Bearings

- › Viton®* seals (black); Standard seals (brown)
- › High temperature Viton®* seals can run up to 200°C
- › Standard seals can run up to 120°C
- › Low noise level

* DuPont Performance Elastomers LLC



Single Row Deep Groove Ball Bearings – HR Series

- › Special internal design
- › Bigger rolling elements
- › Increased dynamic load rating
- › Increased life in operation
- › Interchangeable with the standard range
- › Extra clean Z steel as standard

Bearing Types



Self-Lube® Units

- › Range of diverse casting and pressed steel and thermoplastic housings
- › 3 main seal options – standard, triple lip, or flinger/standard
- › All cast housings supplied with re-greasing facility
- › Secure locking shaft for all speed, load and vibration conditions
- › Protector caps available



HLT inserts

- › Special internal geometry (cage & internal features) designed to operate at extreme temperatures
- › High performance Klüber grease operating at extreme temperatures (-40°C and +180°C)
- › Durable silicone rubber seals offer protection at extreme temperatures



Mounted Units

- › Sealed single-row ball bearing in a Pillow block or flanged housing
- › NSK units feature “flingers” that keep contaminants away
- › Housings available in ductile cast iron, cast steel or stainless steel
- › Variety of shaft locking mechanisms



Triple Lip Seal

- › Nitrile rubber triple lip seals
- › Longer life due to superior seal performance
- › Extended lubrication intervals – increases productivity of machines and reduces maintenance costs



Plummer Blocks

- › Split housing allows easy mounting and dis-mounting
- › Various sealing options available – V-ring seals, labyrinth or heavy duty taconite
- › Multi lubrication points



Integrated Bearing Assemblies

- › Bespoke Housings - High strength SG iron housing
- › Vibratory specification bearings:
50-60% vibration and noise reduction
- › Labyrinth & contact seals
- › Pre-greased & ready to fit – can be re-greased
- › Installation ease & benefits reduce in-house costs



Tapered Roller Bearings

- › Inch & metric sizes
- › Standard steel / carburised steel / HTF treatment
- › Custom-made sets with spacers



Double Row Taper Roller Bearings

- › Inch & metric sizes
- › Standard steel / carburized steel / HTF treatment
- › Also available with heavy-duty seals

Bearing Types



Molded-Oil™ Bearings

- › Grease-free property with no oil refilling
- › Operating life more than twice as long as grease lubrication (in water/dust contaminated environments)
- › Extended maintenance-free performance



TF Series

- › Innovative materials
- › Special heat treatment technology
- › Up to 10 times service life in contaminated lubrication
- › Up to 4 times service life at 160°C
- › 40% improvement on seizure resistance



Angular Contact Ball Bearings – HPS™ Series

- › Optimized internal design
- › High strength ball guided cage – available in brass, polyamide or L-PPS
- › High running accuracy P5 (ISO Class 5)
- › High load ratings
- › Universal facing as standard
- › 40 degree Contact Angle



Double Row Angular Contact Ball Bearings

- › High quality – Ultra clean steel
- › Steel or polyamide cage
- › Super finished raceways, minimizes noise and improves lubricant distribution
- › Open or Shielded (ZZ or 2Z)
- › Sealed DDU or 2RS



Long-life Pinion shaft with cage & roller assembly

- › Compact & Lightweight
- › Special heat treatment to shaft & rollers
- › Mirror smooth finish on shaft & rollers ensures adequate oil film thickness
- › Reduces fatigue flaking and increased contamination resistance
- › Improves time between maintenance intervals



Needle Roller Bearings

- › Resin (Nylon 46) M type cage & roller assemblies
- › High durability even under heavy loads & misaligning operating conditions
- › Higher load capacity than conventional machined cages
- › Maintains inner cage strength at higher oil temperatures

Increasing efficiency – with AIP, the value-added program from NSK

Incorrectly applied or selected bearings can lead to anything from a reduction in machine performance to failure of an entire system. We support you in solving these technical problems. The value-added program AIP incorporates a comprehensive service package which enables you to design both productive operation and maintenance processes with increased efficiency and consequently better profitability. With AIP, you reduce your costs at every value-added stage.

Concentrated knowledge, many years of experience

Thanks to their in-depth technical knowledge and industry know-how, the experienced NSK application engineers are able to identify profitability potential and recommend appropriate measures. Our experts work according to a procedure which has been tested in practice and standardized – the value cycle. The ideally coordinated solution for your application is developed in close cooperation with them.

AIP services made to measure

The comprehensive range of AIP services is purposely designed to enhance efficiency and competitiveness. Your NSK expert will advise you about which measures can be derived from the examination results and will support you in implementing them.



AIP NSK Solutions

Example success stories show how profitability and reliability can be increased using tried and tested practices.



- › Stores Survey
- › Workshop Survey
- › Process Map
- › Bearing Cross Referencing



- › Application Reviews
- › Machine Design Support
- › OEM Part Conversion
- › Diagnostics



- › Product Training
- › Application of NSK Bearings
- › AIP Training
- › Industry Specific Training



- › Bearing Condition Analysis
- › Failed Bearing Analysis
- › Lubrication Analysis
- › Material & Dimensional Analysis

Discover how you can increase your profitability with the help of our value-added AIP programme and our high-quality products.



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