MOTION & CONTROL
NSK

Bearings for the Beverage Industry

The NSK brand, recognized around the world

From home appliances, automobiles, and capital equipment to the aerospace industry – NSK bearings are used in an extensive range of fields. NSK established its global-scale enterprise on technology that has met the exact requirements of Global industry.

We have also established R&D systems and support services to meet the diverse needs of our customers throughout the world. As a brand recognised around the world NSK continues to lead the industry with its technical prowess.

NSK is on the move, across the globe

HEADQUARTERS

America (North and South)
· Ann Arbor

Asia
· Shanghai
· Singapore

Europe
· Maidenhead

Japan
· Tokyo

TECHNICAL OFFICES

America (North and South)
· Ann Arbor

Asia
· Kunshan

Europe
· Newark
· Kielce

Japan
· Fujisawa
· Maebashi

PLANTS

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· Ann Arbor
· Clarinda
· Franklin
· Liberty
· Bennington

America (South)
· Suzano

Asia
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· Anshun
· Dongguan
· Zhangjiagang
· Suzhou
· Changshu
· Chennal
· Jakarta
· Changwon
· Balakong
· Chonburi
· Chachoengsao

Europe
· Peterlee
· Newark
· Kielce
· Munderkingen
· Torino

Japan
· Fujisawa
· Hanyu
· Otsu
· Konan
· Takasaki
· Haruna
· Maebashi
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SALES OFFICES

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· Johannesburg

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· Los Angeles
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· Belo Horizonte
· Joinville
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· Recife
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· Chennai
· Jakarta
· Manila
· Bangkok
· Kuala Lumpur
· Prai
· Johor Bahru
· Kota Kinabalu
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· Stuttgart
· Leipzig
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· Barcelona
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Japan
· Tokyo
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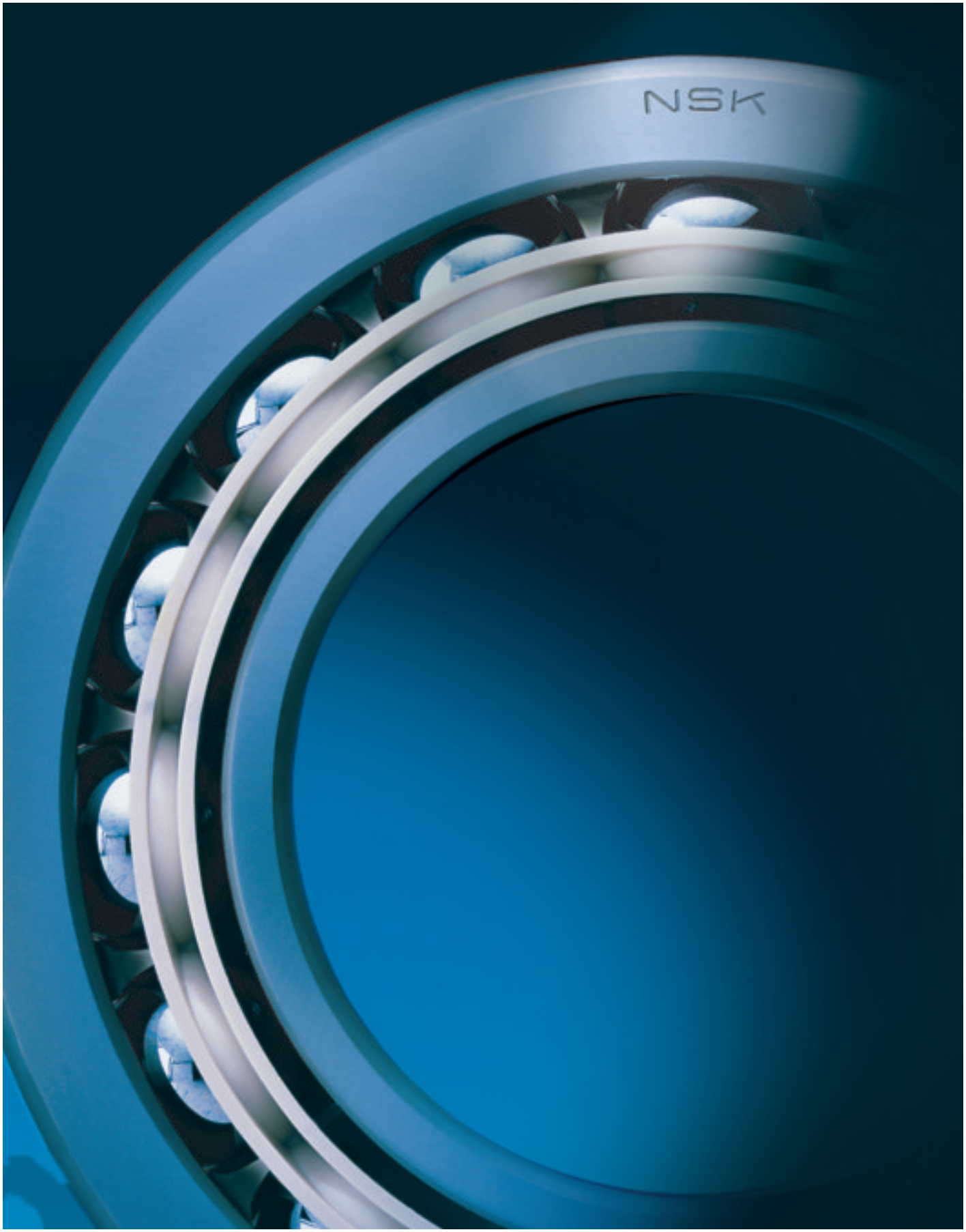
Oceania
· Melbourne
· Sydney
· Brisbane
· Adelaide
· Perth
· Auckland

Osaka
· 27 other offices


NSK

Blowing

As a global supplier to World leading food and beverage manufacturing companies NSK has the experience and understanding of helping its customers to manage their costs and improve production efficiencies. We also appreciate the need for high speed, maintenance free and high reliability products and as a result have developed an unrivalled range of products suitable for the Beverage Industry and these innovative products are featured in detail in this brochure.

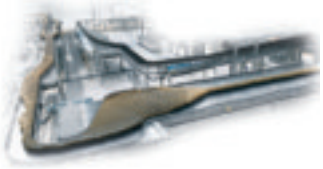
Our research and development teams around the World continue to develop the next generation of “Problem Solving Products” by understanding the unique requirements of our customers and their operating markets so that we can help our customers to continuously improve into the future.

We have the technical knowledge, capability and products to provide solutions to your problems and you have the local knowledge and understanding of the plant and equipment and its performance, so by combining our respective knowledge, together we can potentially make a difference!

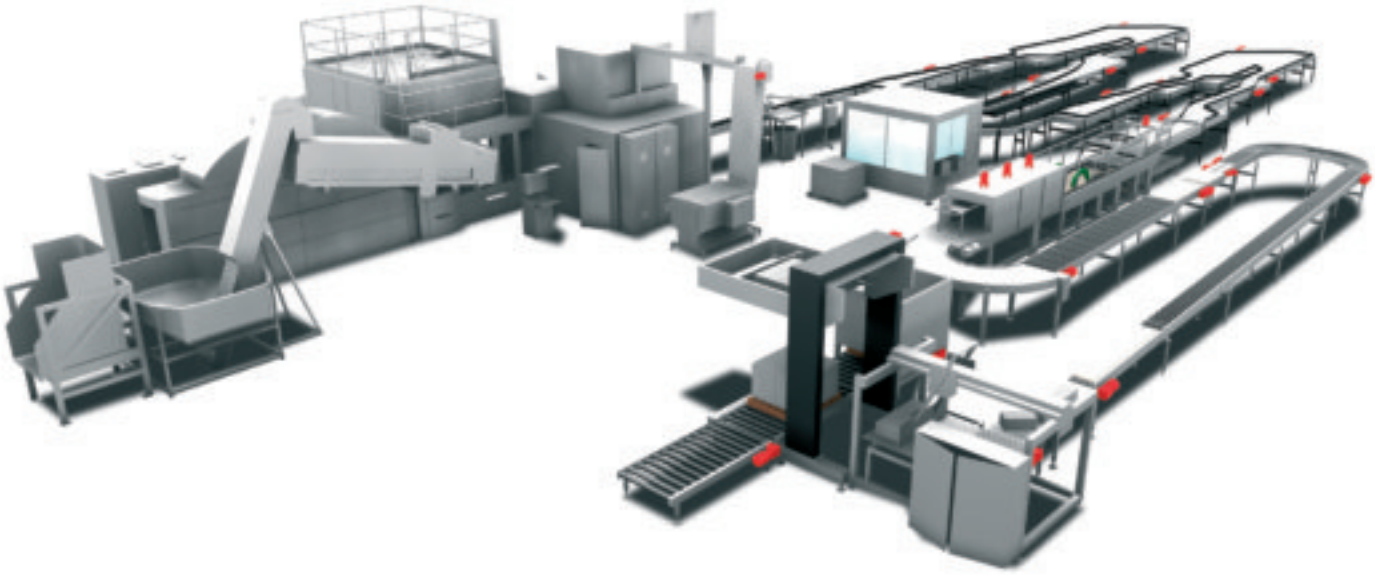
Increasing Health and Safety legislation has also helped us to recognise the need for “safer products” and as a result NSK has developed a range of bearings suitable for applications where incidental contact with the product may happen and these are also detailed within this brochure.

Please take time to have a look through our unique range of innovative problem solving products and if you have an interest in any of these in particular simply contact your local authorised NSK Distributor.

From packaging design to line engineering, preparation machines to related services, Sidel provides complete solutions for three categories of liquid food packaging: glass bottles, plastic and cans.

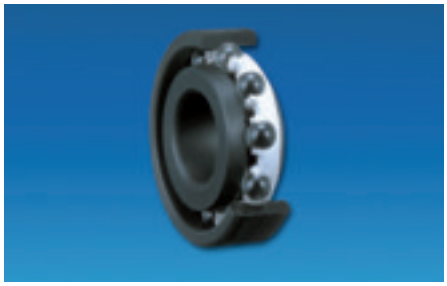


Filling-Capping | **Labeling** | **Conveying-Palletising**



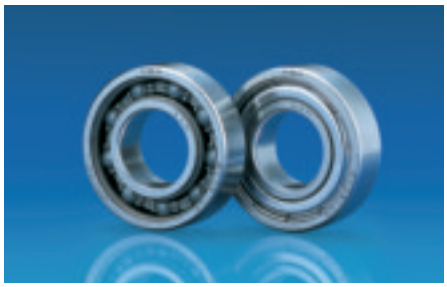
Sidel

Sidel is one of the world's leaders in solutions for packaging liquid foods including water, soft drinks, milk, sensitive beverages, edible oil, beer and alcoholic beverages.



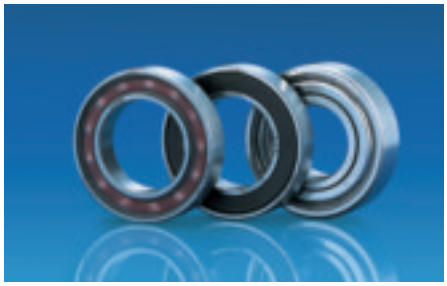
Aqua Bearings – SPACEA™

NSK Aqua-bearings™ feature a special fluororesin for both inner/outer ring and cages. These bearings are well equipped to meet the demands of a broad range of applications requiring them to operate in conditions involving, water, alkali and strong acids and eliminate the need for traditional lubrication such as grease or oil.



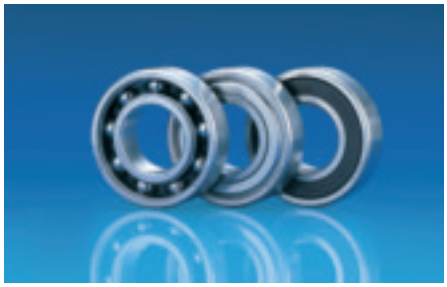
Nickel Alloy Coated Bearings – SPACEA™

Nickel alloy coated bearings are resistant to chemical wash processes and offer a lower cost alternative to all-ceramic bearings. Optimum performance in extreme conditions. Suitable for alkali or weak acid environments. And also suitable for total immersion in water. These bearings offer higher corrosion resistance than martensitic stainless steel or hard chrome plated bearings.



Molded-Oil™ Bearings – SPACEA™

Designed to be Maintenance free, NSK Molded-Oil™ bearings provide excellent performance in water and dust contaminated environments as the lubricant is resistant to both water and dust – bearing life under these contamination conditions is extended. NSK Molded-Oil™ bearings are also environmentally friendly. As oil seeping from the Molded-Oil™ inside the bearing provides sufficient lubrication, there is no need for any re-lubrication. This eliminates the risk of oil spillages or potential product contamination.



Stainless Steel Bearings – SPACEA™

Our stainless steel bearings have a higher corrosion resistance than those manufactured from standard bearing steel, and are therefore better suited to wet/high humidity conditions. Offering significantly longer service life than standard bearings they are available in open, shielded and sealed configurations and are totally interchangeable with standard bearings.

Silver-Lube® Bearings

The RHP Silver-Lube® series is a range of corrosion resistant bearing units specifically for use in industries where frequent thorough wash-downs are necessary, optimum hygiene standards are required and good chemical resistance is important over a wide temperature range. The units are available in Pillow Block, Two-bolt flange, Four-bolt flange and Take-up unit configurations.

Stainless Steel Ball Bearing Units

Our range of stainless steel housed bearing units are lubricated by our own oil-impregnated material Molded-Oil™. They are suited to applications where cleanliness and high resistance to corrosion are priorities. The Housings are interchangeable with current NSK units and other ISO standard units and are available in pillow block, Two-bolt flange, Four-bolt flange and Take-up unit configurations.

Ball Bearing Units

With more than 50 years manufacturing experience and continuous technical innovation, NSK offers a choice of Cast Iron or Pressed Steel housings. Available as either Pillow Block, 2 or 4 bolt flanged or Take-up units to suit either metric or imperial shafts. Sealing arrangements include: standard or special seals for arduous environments and applications.

Single Row Deep Groove Ball Bearings

NSK are are the World leader in the manufacture of Deep Groove Ball Bearings. These are the most common type of rolling element bearing and can be used in a wide variety of applications. Primarily designed to accomodate radial loads. They also have the capability to tolerate moderate axial loads in either direction an due to their low torque characteristic, they are also suitable for applications where high speed and low power loss is a key requirement.

Single Row Angular contact Ball Bearings

The NSK range of Angular Contact Ball Bearings has been designed to meet the increasingly demanding requirements of original equipment Pump Manufacturers. Available in a range of Polyamide, Steel or Brass cages assemblies, NSK offers one of the most comprehensive ranges of Angular Contact Ball Bearings available.

The AIP Value Cycle

asset improvement programme

Step 1

Situational Analysis

An assessment to understand your problems – what is the problem, how often, what are the implications of the problem to your business, what is the cost of the problem?

From this assessment, NSK then goes away and considers how we can solve the problem(s).

Step 2

Value Proposition

Having understood the extent of the problem, this is where we present our solution to you, including the costs and other associated issues (lead times, redesign etc).

This is your opportunity to ask any questions or raise any other issues regarding our value proposition.

Step 3

Value Implementation

Once you have accepted our value proposition we work with you as necessary, to create a mutually agreed implementation plan, taking into account any deadlines, key milestones and who is likely to be affected by our proposition. The correct implementation of our value proposition is key in order that you achieve the forecasted savings.

Step 4

Measuring Value

Once the NSK proposition has been implemented we work with your own personnel to ensure that the forecasted savings are actually realised, through best practice maintenance of the implemented proposition.

Step 5

Share Best Practice

Once the NSK value proposition has proven its worth, we discuss with you any other departments or factories that may be having similar problems to those just resolved by our value proposition, and could therefore potentially benefit from hearing about how we did it!



NSK Service Spectrum

TECHNICAL SUPPORT & CONSULTANCY	TRAINING COURSES	ANALYTICAL SERVICES	VALUE ADDED SERVICES
Application Reviews	Introduction to Bearing Technology Parts 1 & 2	Failure Mode Analysis	NSK Cost Down Approach
Engineering Support	Best Practice Fitting & Removal of Bearings Sections 1 & 2	Material Analysis	Maintenance Schedules
Machine Design Consultancy	Bearing Diagnostics	OEM Part Conversion	Site Surveys
Bearing Surveys	Application of Bearings	Standardisation & Rationalisation	Maintenance Tool Audits
Diagnostic & Vibration Analysis	Sector Specific: Food & Beverage, Pumps & Compressors, Quarry, Mining & Construction; Paper, Metals & Steel, Machine Tool, Railways	On-site Inspection Service	Super Precision Service Package

Bottom line improvements

AIP is an Asset Improvement Programme that can help your company achieve significant improvements in profitability.

Today, the savings generated by utilising NSK's AIP programme are both significant and varied, in terms of their nature and in the industries where they have been implemented.

We firmly believe that it in addition to providing high quality products, it is also our duty, working with our authorised distributors, to make your business more profitable through the provision of a range of Technical, Consultancy, Analytical and Commercial Value Adding Services.

Finding ways to improve machine reliability, increasing the working knowledge of your engineering and maintenance personnel and reducing your working capital are all central to our AIP programme, and the successful delivery of each and everyone of these will improve your profitability, helping to keep you competitive in your marketplace.

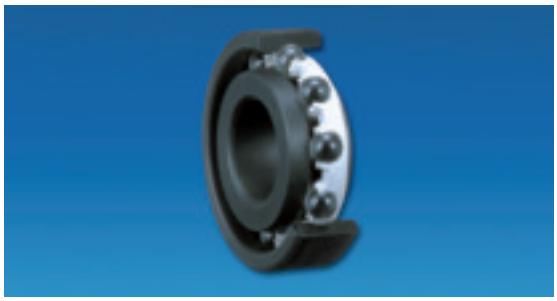
We help you to see the potential savings available by progressively working with you at every stage of the AIP Value Cycle, culminating in a documented cost saving – confirming that together we achieved what we said we would achieve.

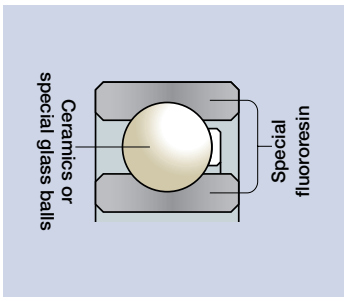
For more information on this powerful Asset Improvement Programme, contact NSK or your local NSK Authorised Distributor.

Aqua-Bearing™ – High Corrosion-Resistant Resin Bearings

Aqua-Bearing™ features a special fluororesin for outer/inner rings and cages equipped to meet a broad range of applications in water, alkali and strong acid environments. Aqua-Bearing™ is suitable for corrosive environments exclusively in normal atmosphere.

Product Specifications



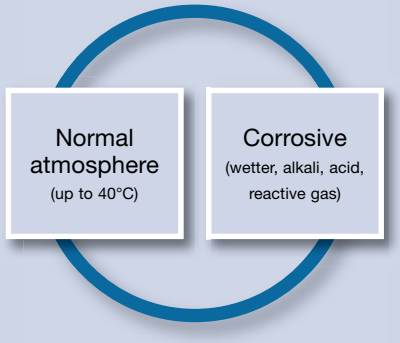


Bearing number for inquiry — Basic bearing number L-PT3 (QT3) — P: Ceramics, Q: Special glass balls

Structure	Open Type only	
Specifications	Outer/Inner rings	Special fluororesin
	Balls	Ceramics or special glass balls
	Cage	Fluororesin
	Lubricant	Fluorine solid lubricant

Applications: Cleaning equipment for semiconductors/liquid crystals/hard disks, metal plating equipment, etching equipment, food processing machinery

Operating environments



Operating Instructions and Notes

- Tolerances for bore and outside diameters and the internal clearance of the bearings deviate from specifications for standard bearings. (Refer to the Bearing Dimension Table on P28 in CAT. N° E1258 for more detail).
- For bearings used in hydrofluoric acid or organic solvent environments, deterioration may occur. Please contact NSK.
- It is possible to use at temperatures higher than 40˚C, but the linear expansion coefficient of special fluorocarbon resin is large (α=1.7 × 10^{-4}/˚C), so it is necessary to pay attention to fitting.
- For use in normal atmosphere only.
- The scope of applications is shown in the table below.

Operating environment	Operating temperature	Limiting rotational speed	Limiting load
Water, alkali, strong acid, reactive gas	Up to 40˚C	$d_m n$ = 20 000	1% of the stainless steel bearing load rating C_H

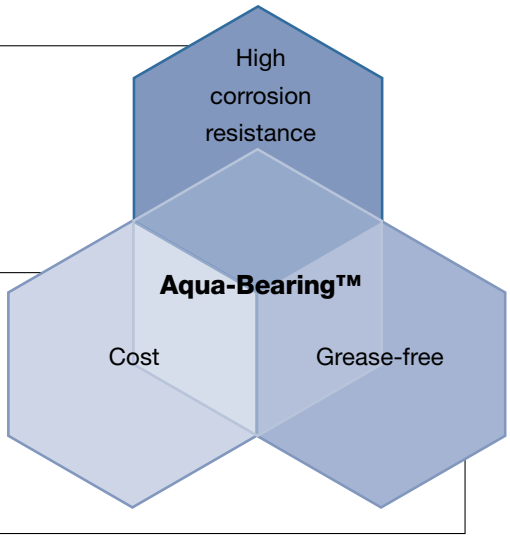
Remarks
1. $d_m n$ = (Bearing bore diameter, mm + Bearing outside diameter, mm) ÷ 2 × Rotational speed, rpm
2. The limiting load is calculated based on a bearing life of 10^7 rotations.
3. See the SPACEA™ Bearing Dimension Table on P24–27 in CAT. N° E1258 for load rating C_H for stainless steel bearings.

Features

- High corrosion resistance equivalent to that of ceramic bearings
- Excellent durability in acid solvents: over 1000 times more resistant than SUS440C stainless bearings and over five times more resistant than conventional resin (PE) bearings
- Special self-lubricating fluororesin makes grease or oil unnecessary

- Equivalent to that of ceramic bearings
- More than five times that of conventional PE bearings in strong acid environments

- Corrosion resistance equal to that of ceramics, at a lower cost



- Special self-lubricating fluororesin material adopted in the outer/inner rings and cage

Performance

- Comparison of corrosion resistance
  Corrosion resistance equals that of all-ceramic bearings (oxide-base)

	Open Type only	PE	All-ceramic bearings (Oxide based)
5% Sulfuric acid	△	X	△
8% Hydrochloric acid	△	X	◎
Aqua regalis	◎	X	X
15% Acetic acid	◎	△	△
70% Aqua fortis	△	X	X
70% Phasphoric acid	◎	△	△
40% Hydrogen peroxide solution	◎	△	◎

Corrosion resistance evaluation

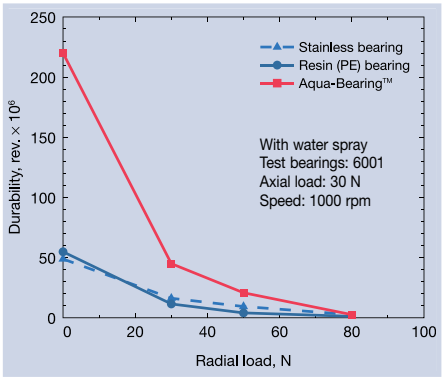
◎ Not corroded

△ Partially corroded

X Corroded

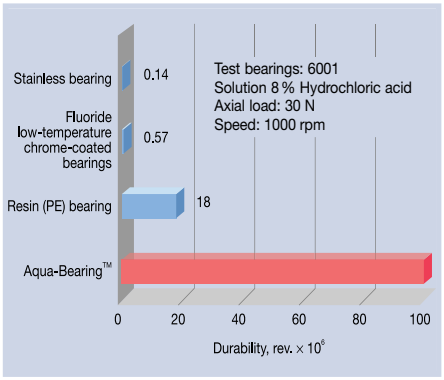
Results of water-spray durability tests

Remarkable durability can be observed under light-load conditions. Application recommended is under 1 % of the stainless steel bearing's load rating C_H or less.



Results of durability tests in strong acid solution

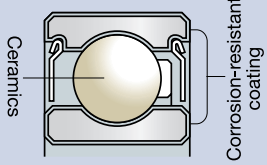
Durability is higher than that of SUS440C bearings and conventional resin bearings by, respectively, more than 1000 times and five times.



Corrosion-Resistant Coated Bearings (Nickel coating)

Corrosion-resistant coated bearings (Nickel coating) are coated with a nickel coating on the outer and inner rings to enhance corrosion resistance and durability, and are suitable for corrosive environments such as normal atmosphere or high temperature.

Product Specifications

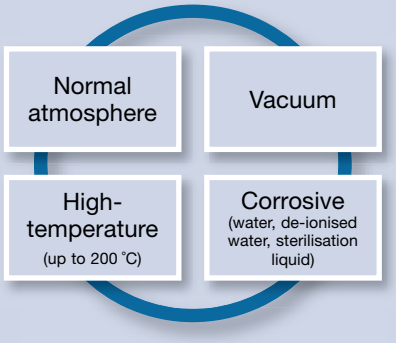


Bearing number for inquiry Basic bearing number LZZCG-YNIT3

Structure	Shielded Type	
Specifications	Outer/Inner rings	Martenside stainless steel and nickel coating
	Balls	Silicon nitride ceramics
	Cage	Fluororesin
	Lubricant	Fluorine solid lubricant
	Shields	Austenite stainless steel

Applications: Semiconductor/FPD/HD cleaning equipment, etching equipment, food processing machinery, various conveyor lines

Operating environments



Operating Instructions and Notes

- Corrosion-resistant coated bearings (Nickel coating) should be used with a light load range to protect the coating.
- The dimensional tolerance of the bore and outside diameter for corrosion-resistant coated bearings may deviate from the JIS0 standard for coating thickness (maximum 5 µm in diameter).
- The standard of radial internal clearance CG is as follows; Normal size ball bearings: Lower limit of CN to upper limit of C3, Extra-small ball bearings: Lower limit of MC3 to upper limit of MC6.
- The scope of applications is shown in the table below.

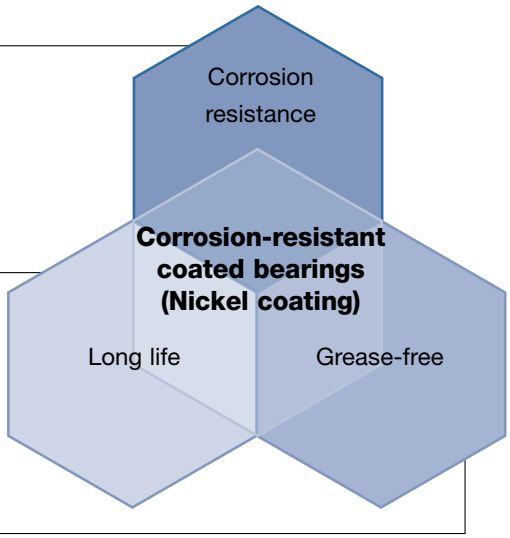
Operating environment	Operating temperature	Limiting rotational speed	Limiting load
Water, de-ionized water, sterilization liquid	Up to 200 ℃	$d_m n$ = 20 000	2% of the stainless steel bearing load rating C_H

Remarks
1. $d_m n$ = (Bearing bore diameter, mm + Bearing outside diameter, mm) ÷ 2 × Rotational speed, rpm
2. The limiting load is calculated based on a bearing life of 10^7 rotations.
3. See the SPACEA™ Bearing Dimension Table on P24–27 in CAT. N° E1258 for load rating C_H for stainless steel bearings.

Features

- Grease-free, fluorine solid lubricant
- Higher corrosion-resistance and longer life than stainless steel bearings or hybrid bearings
- Resistant to sterilization liquids such as hydrogen peroxide and oxonia
- Applicable from normal atmosphere up to 10^{-6} Pa

- Higher corrosion resistance than stainless steel bearings
- Longer operating life than hybrid bearings and stainless steel bearings, in acid solutions
- Fluorine solid lubrication



Performance

Immersed in a sodium hypochlorite solution Concentration: 150 ppm

After 10 hours

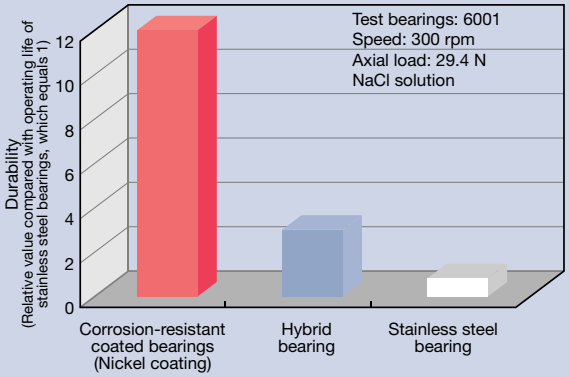
Stainless steel bearing SUS440C

After 72 hours

Corrosion-resistant coated bearings (Nickel coating)

Comparison of corrosion resistance

While stainless steel bearings rusted in 10 hours, corrosion-resistant coated bearings (Nickel coating) did not rust, even after 72 hours.



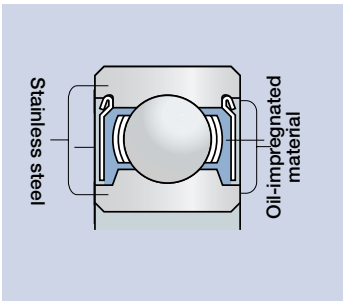
Durability in NaCl solution

In NaCl solution, corrosion-resistant coated bearings (Nickel coating) have an operating life more than four times as long as that of hybrid bearings, and more than 12 times as long as that of stainless steel bearings.

Molded-Oil™ Bearings

Molded-Oil™ bearings, made of stainless steel, are lubricated with NSK's original oil-impregnated material, Molded-Oil™, and are suitable for corrosive and dust-contaminated environments in normal atmosphere.

Product Specifications



Bearing number for inquiry Basic bearing number L11-H-20

Structure	Open Type only	
Specifications	Outer/Inner rings	Martensite stainless steel
	Balls	Martensite stainless steel
	Cage	Corrugated stainless steel
	Lubricant	Molded-Oil™
	Shields	Austenite stainless steel
	Seals	Nitrile rubber

Applications: Semiconductor cleaning equipment, liquid-crystal bases, hard-disk cleaning equipment, food processing machinery, various conveyor lines

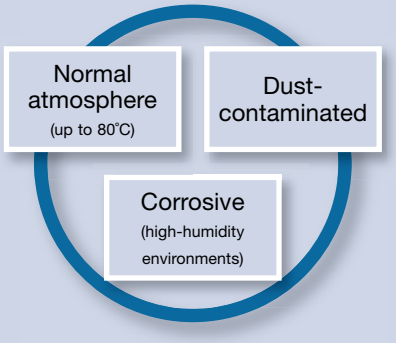
Operating Instructions and Notes

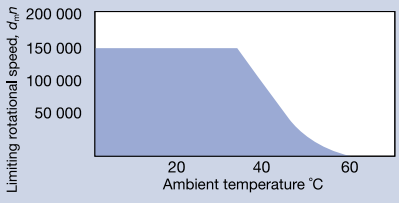
- Molded-Oil™ bearings should not be exposed to degreasing liquids such as organic solvents.
- Molded-Oil™ melts at a temperature of 120 °C. The bearings must not be heated over 100 °C, especially during shrink fitting.
- A radial load is required for the bearings to properly rotate. The minimum radial load recommended for maintaining proper rotation is at least 1 % of the basic dynamic load rating.
- For use in normal atmosphere only.
- The scope of applications is shown in the table below.

Operating environment	Operating temperature	Limiting rotational speed	Limiting load
Water spray, water immersion	Refer to the figure on the right side		Between 1% and 5%, inclusive, of the stainless steel bearing load rating C_H

Remarks
1. $d_m n$ = (Bearing bore diameter, mm + Bearing outside diameter, mm) ÷ 2 × Rotational speed, rpm
2. The limiting load is calculated based on a bearing life of 10^7 rotations.
3. See the SPACEA™ Bearing Dimension Table on P24–27 in CAT. N° E1258 for load rating C_H for stainless steel bearings.

Operating environments



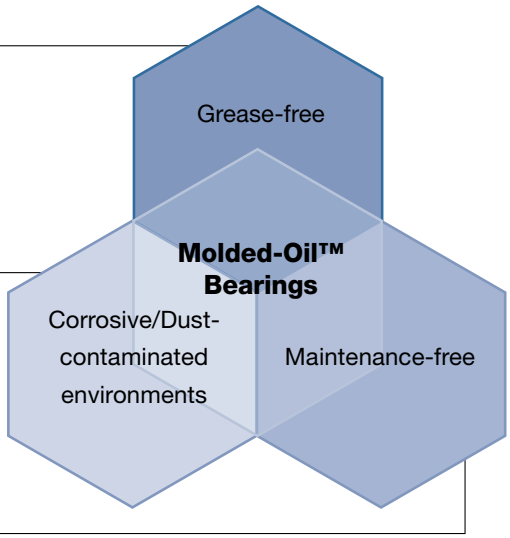


Features

- Molded-Oil™—provides continuous supply of lubrication oil
- Grease-free property with no oil refilling keeps operating environments clean
- Operating life more than twice as long as grease lubrication, in water or dust-contaminated environments
- Contact-seal Type available in standard inventory

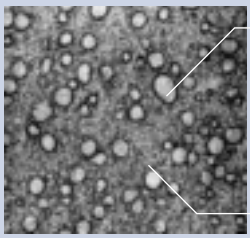
- Lubricated by Molded-Oil™
- Operating environments are kept free of grease

- Operating life is more than twice as long as that of grease lubrication, in water or dust-contaminated environments



- Continuous supply of lubricating oil by Molded-Oil™
- No need to refill oil

Performance



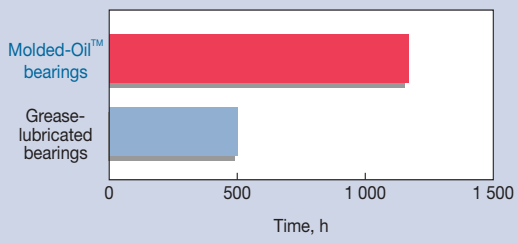
Portion containing high proportion of polyolefin

Polyolefin is used for packaging food in supermarkets, replacing dioxin-generating vinyl chloride.

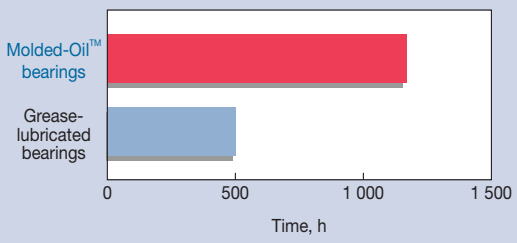
Portion containing high proportion of lubricating oil

The lubricating oil is mineral oil-based.

Test bearings: 6000
Speed: 1 000 rpm
Radial load: 79.4 N
Axial load: 29.4 N
Water exposure: 0.8 cm³/min



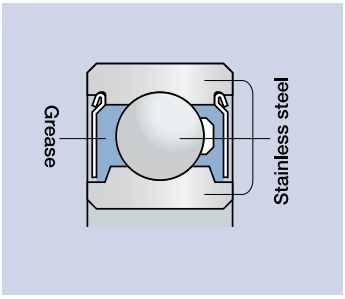
Test bearings: 6000
Speed: 1 000 rpm
Radial load: 79.4 N
Axial load: 29.4 N



Stainless Steel Bearings

Stainless steel bearings, the standard products of the NSK SPACEA™ Series for special environments, are suitable for high-humidity environments.

Product Specifications



Bearing number for inquiry Basic bearing number -H-…*MA

Structure	Open Type, Shielded Type, Sealed Type	
Specifications	Outer/Inner rings	Martensite stainless steel
	Balls	Martensite stainless steel
	Cage	Polyamide resin or corrugated stainless steel
	Lubricant	Lithium-based grease (Open Type bearings do not come with packed grease.)
	Shields	Austenite stainless steel
	Seals	Nitrile rubber

Applications: Equipment used in high-humidity environments: food processing, cleaning, chemical processing, fishery equipment

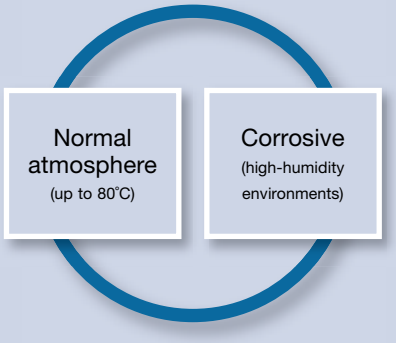
Operating Instructions and Notes

- Lubrication grease for standard inventory bearings is NS7 (lithium-based grease).
- For use in normal atmosphere only.
- Water-resistant grease-packed bearings are available.
- The scope of applications is shown in the table below.

Operating environment	Operating temperature	Limiting rotational speed	Limiting load
High-humidity environments	Up to 80 °C	$d_m n$ = 150 000	5% of the stainless steel bearing load rating C_H

Remarks 1. $d_m n$ = (Bearing bore diameter, mm + Bearing outside diameter, mm) ÷ 2 × Rotational speed, rpm
2. The limiting load is calculated based on a bearing life of 10^7 rotations.
3. See the SPACEA™ Bearing Dimension Table on P24–27 in CAT. N° E1258 for load rating C_H for stainless steel bearings.

Operating environments



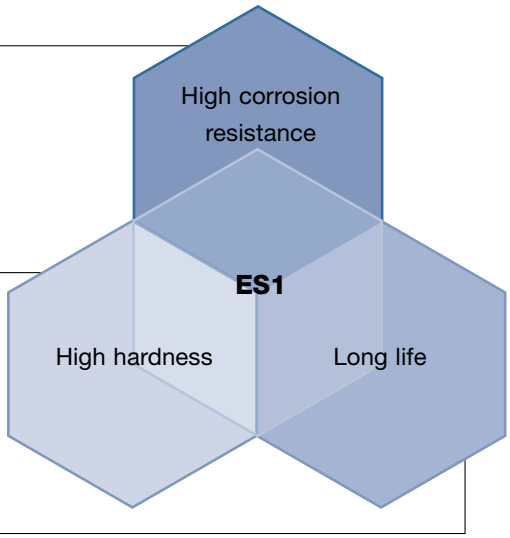
NSK High Corrosion-Resistant Stainless Steel ES1

NSK high corrosion-resistant stainless steel ES1 is expanding to use for stainless steel bearings.

Features

- For use in normal atmosphere only, grease lubrication
- Higher corrosion resistance than bearing steel
- Open Type, Shielded Type, and Contact-seal Type are available

- Outperforms SUS440C bearings
- Equivalent with SUS440C bearings
- Outperforms SUS440C bearings



Performance

Material	Hardness, HRC	Corrosion resistance	Features
NSK high corrosion-resistant stainless steel ES1	58–62	○	NSK-developed steel
Martensite stainless steel SUS440C	58–62	△	Ordinary stainless steel
Bearing steel SUJ2	60–64	X	Ordinary steel for bearings

Corrosion resistance of ES1

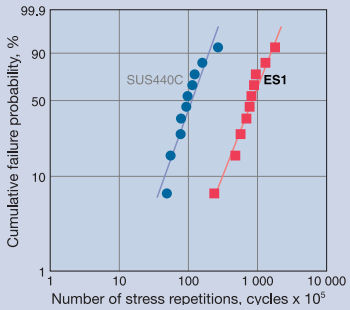
Outperforms SUS440C in corrosion resistance

Test sample: ∅ 18 × 10 mm
(#800 emery paper, passivated)
Test solution: 5 % NaCl solution
Immersion time: 8 hours (room temperature)

Salt spray test (JISZ2371)
Test solution: 5% NaCl solution
Test time: 1 hour
Temperature: 35°C

Immersion rolling fatigue life

Outperforms SUS440C in durability



Test bearings: 51305
Balls: Ceramics
Speed: 1 000 rpm
Load: 980N

Stainless Steel Ball Bearing Units

Our range of stainless steel housed bearing units are lubricated by our own oil-impregnated material Molded-Oil™. They are suited to applications where cleanliness and a high resistance to corrosion are priorities e.g. fryers, meat processing conveyors and fish processing plants.

Features

- Stainless steel housings & inserts
- Housings interchangeable with current NSK units and other ISO standard units
- Nitrile rubber seals and stainless flingers
- Grease nipple option
- USDA H1 compliant grease optional
- Molded-Oil™ lubrication
- Available in pillow block, two-bolt flange, four-bolt flange and take-up unit configurations

Our Stainless Steel Bearings have a higher corrosion resistance than those manufactured from standard bearing steel and are suited to high humidity applications

Benefits

- Will not contaminate process
  - No leakage from Molded-Oil™
  - Optional food grade grease
  - No corrosion
  - No peeling paint
- Long life/low cost of ownership
  - Superior resistance to regular washdowns
  - Resists failure due to chemical attack
  - Simple to retrofit

Recommended operating temperature and allowable speed

Molded-Oil™ Bearings are recommended to operate under –15 to +80 °C. However, operating temperature should be below +60 °C when the bearing is operating under continuous use.

dn value: 12 x 104 max (dn = bore diameter in mm x speed in rpm)

Remarks: This recommended operating temperature range and allowable speed is applied to all bearings with Molded-Oil™ Bearings. Contact NSK when your application exceeds these recommendations.

Anti-Corrosion

NSK recommends rating of ◎ to ○ for optimum corrosion

Excellent ◎ ○ △ ▲ X Poor

Materials / Condition	Atmosphere		Water		Acid		
	Dry	Wet	Natural	Sodium	Nitric	Sulfuric	Hydrochloric
Martensite stainless stell JIS.SUS440C, JIS.SUS410	○	△	△	▲	▲		
Austenite stainless stell JIS.SUS304, JIC.SCS13	◎	◎	◎	○	◎	○	△
High carbon stell JIS.SUJ2	△	▲	▲	X	X	X	X
Carbon steel, Cast iron	▲	X	X	X	X	X	X

Remarks: This data is obtained by observation of the surface conditions of materials. Note that these anti-corrosion capabilities are altered by anti-corrosion surface treatment. Not recommended for use in liquid.

Applications

Molded-Oil™ Bearings are suitable in applications requiring a clean operating environment such as: food processing and packaging machinery, chemical processing machines, etc.

Option

The stainless series can also be filled with special grease, i. e., food processing grade, high temperature grease, etc. Also, a grease nipple can be applied upon request. Contact NSK for additional information.

Materials

	Parts	Materials
Bearing	Raceways	Martensite steel (equivalent to SUS440C)
	Rolling elements	Martensite stainless steel (SUS440C)
	Slinger, Retainer	Austenite stainless steel (SUS304)
	Rubber seal	Nitryl rubber
	Set screw (W shape screw head)	Martensite stainless steel (SUS410)
Bearing housing		Austenite stainless steel casting (SCS13)

Silver-Lube® Bearings

The RHP Silver-Lube® series is a range of corrosion resistant bearing units specifically for use in industries where frequent thorough washdowns are necessary, optimum hygiene standards are required and good chemical resistance is important over a wide temperature range. The units are available in pillow block, two-bolt flange, four-bolt flange and take-up unit configurations.

Features

- Martensitic stainless steel bearing-rings
- Martensitic stainless steel balls
- Austenitic stainless steel bearing cage
- Nitrile rubber seals and Austenitic stainless steel slingers
- Austenitic stainless steel grease nipple and grub screws
- Thermoplastic polyester resin housing (Valox ▲20)
- Bearings are factory filled with a wide temperature USDA H1 food grade grease

Benefits

- Will not contaminate process
  - Food grade grease
  - No corrosion
  - No peeling paint
- Long life/low cost of ownership
  - Superior resistance to regular washdowns
  - Resist failure due to chemical attack
  - Simple to retrofit

Ball Bearing Units

With more than 50 years manufacturing experience and continuous technical innovation, NSK offers a choice of Cast Iron or Pressed Steel housings. Available as either Pillow Block, 2 or 4 bolt flanged or Take Up units to suit either metric or imperial shafts. Sealing arrangements include: standard or special seals for arduous environments and applications.

Triple-Lip Sealed Inserts

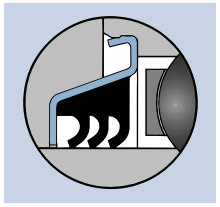
Triple-Lip Seals can be used as replacements for standard design ball bearing inserts in applications where bearings are exposed to heavy dust and water contamination e.g. vegetable washing plants, fish processing plants.

Features

- Nitrile rubber, three lipped seal bonded to pressed steel diaphragm
- Available for both setscrew and eccentric locking collar insert options
- Large size range offered 12-90mm bore including imperial options
- Inserts interchangeable with standard items

Benefits

- Lower cost of ownership
  - Longer bearing life through superior seal performance
  - Extended relubrication intevals
  - Greater reliability
  - Simple implementation



Triple-Lip Seals

Recommended where a high degree of contamination is present and consists of one piece nitrile mouldind with three sealing lips bonded to a steel pressing. When secured in the outer ring, it makes a highly efficient sealing arrangement. There is a restricted speed rating with this seal type.

HLT Inserts

HLT Inserts are replacements for Self-Lube® bearing inserts providing opportunities to reduce maintenance, downtime and replacement cost in high/low temperature environments.

Features

- Steel cage
- Special internal geometry
- Wide temperature range grease
- Silicone rubber seals
- Interchangeable with standard Self-Lube® inserts
- Wide operating temperature range -40°C to180°C

Benefits

- Lower cost of ownership
  - Superior service life at high and low temperatures
  - Extended relubrication intervals at high temperatures (lower maintenance costs)
  - Simple implementation

Pumps & Electric Motors: Keep the Control

Single Row Cylindrical Roller Bearings with Brass Cage, Steel Cage or Polyamide Cage

- High load capacity
- Low noise
- Low heat generation
- Increased service life
- APPLICATIONS: Pumps, compressors, electric motors...

Single Row Angular Contact Ball Bearings. APPLICATIONS: Pumps, compressors

Polyamide cage 7200 – 7300 B | EA | T85 | SU | N | Series

- 40° contact angle
- High load capacity
- Polyamide 4–6 cage (temp Max 150 °C)
- Universally faced
- Preload or axial clearance following application

Steel cage 7200 – 7300 B | W | G | Series

- 40° contact angle
- Steel cage
- Universally faced

Brass cage 7200 – 7300 B | SU | Axx | P6 | Series

- 40° contact angle
  High load capacity
- Universally faced
- Brass cage
- Precision class P6
  – Specific axial clearance
  – According API610 standard

Double Row Angular Contact Ball Bearings

Available ranges: 3200 - 3300 / 5200 - 5300 Series

- Steel or polyamide cage
- Open
- Shielded ZZ or 2Z
- Sealed DDU or 2RS
- APPLICATIONS : Centrifugal pumps, compressors…

Single Row Radial Ball Bearings

Available ranges: 600, 6800, 6900, 16000, 16100, 6000, 6200, 6300, 6400 Series

- Standard and special applications
- Steel, brass or polyamide cage
- Low noise
- Full sealing options
- Large choice of grease
- Standard or special steel

Specification Inquiry

To request a specification inquiry, please fill out the following form and contact your NSK office.

Name of company		Name	
Department		Phone	

Nominal bearing number Dimensions	NSK bearing N° Other company's model N° Dimensions	Bore diameter x Outside diameter x Width (∅ x ∅ x mm)		
Application	Type of machine	1. New design 2. Experience in use with similar equipment 3. Maintenance		
Problems/Issues	Current bearing	1. Manufacturer unknown 2. Other company's model N° (Name of manufacturer:)		
	Specifications	1. Material		
		2. Lubricant		
	Bearing durability	( ) hours of month	1. Poor lubrication 2. Particle emissions/outgassing 3. Rusting 4. Contamination with foreign particles 5. Lubricant leakage 6. Fracture 7. Abnormal noise 8. Poor rotation	
	Required operating life	( ) hours of month		
	Details of problems/issues			
Operating environment	Normal atmosphere, vacuum	1. Normal atmosphere 2. From normal atmosphere up to vacuum (degree of vacuum = Pa) 3. Vacuum (degree of vacuum = Pa)		
	Corrosion resistance	1. Water environment	1. High-humidity 2. Water-spray 3. Water-immersed 4. De-ionised water 5. Other ( )	
		2. Corrosive liquids	Acid ( ) Alcali ( ) Other ( )	
		3. Corrosive gases	1. High-humidity 2. Water-spray 3. Water-immersed 4. De-ionised water 5. Other ( )	
	Cleanliness	1. Particle emission (Class:) 2. Outgassing ( ) 3. Grease free 4. No grease leakage 5. Other ( )		
	High temperature	Bearing temperature (°C) Ambient temperature (°C)		
	Non-magnetism	1. Non-magnetic (relative permeability 1.01 or less) 2. Completely non-magnetic (relative permeability 1.001 or less)		
Operating conditions	Speed	Normal ( ) rpm Max ( ) rpm		
	Bearing load	Radial (N) Axial (N) Other load information ( )		
Comments				

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