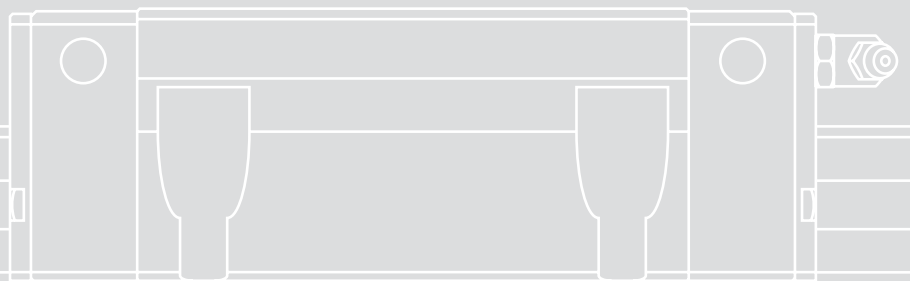
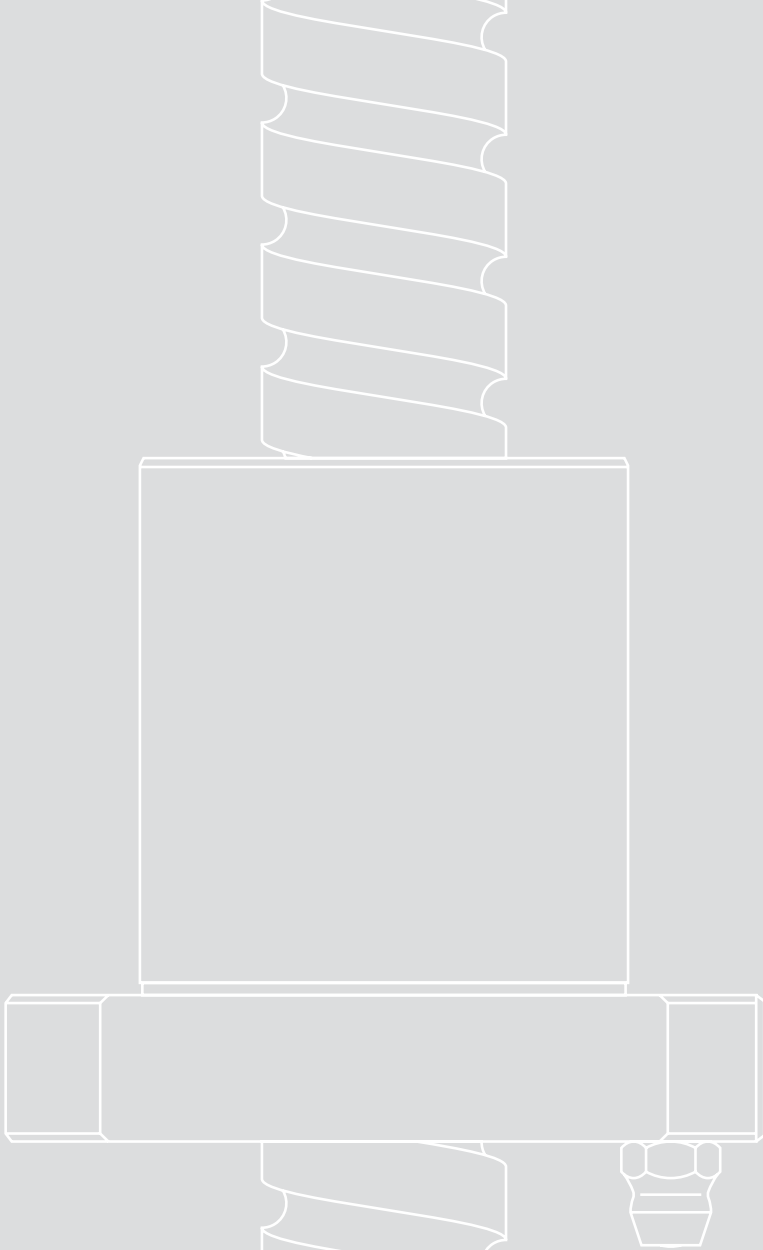
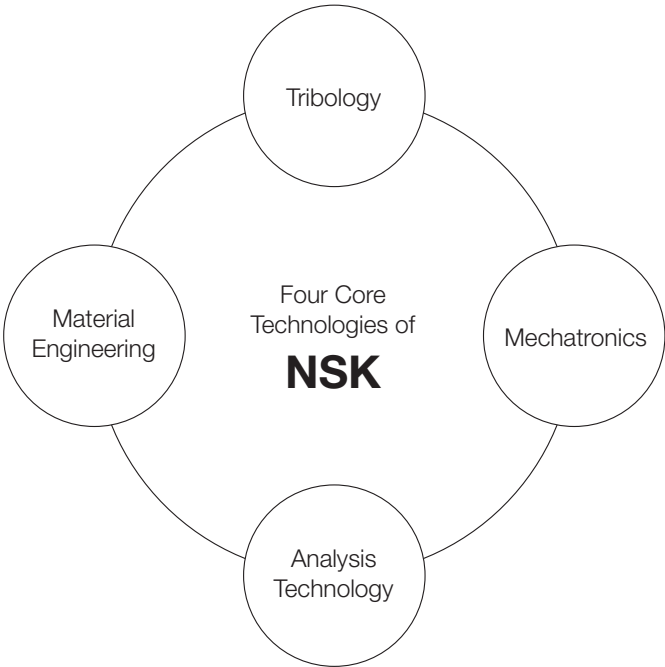


Precision Products



Advanced Technology Leading the World



GLOBAL No.1

NSK is contributing to the growth of the manufacturing industry on a global scale by providing the world's No.1 ball screws.

NSK's ball screws—the fruit of the most advanced tribology (friction control technology)—are produced in greater numbers than those of any other maker based on the strength of the renowned production technology and quality control of NSK, widely recognized as the world's leading brand.

Every NSK ball screw product benefits from industry-leading production technology and therefore reflects the world's highest level of quality with unmatched adaptability for a wide variety of applications, including machine tools, injection molding machinery as well as semiconductor and liquid crystal production equipment.

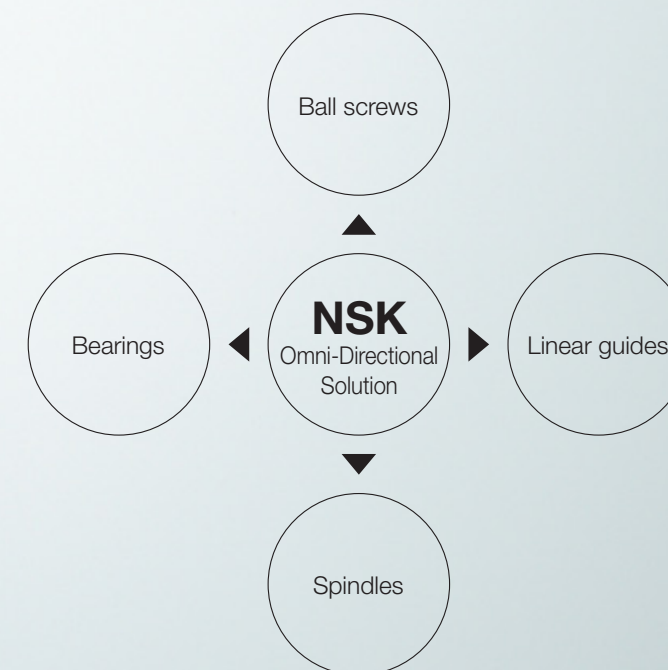
The exceptional reliability of NSK's ball screws has earned them a solid reputation in the global precision machinery industry.





NSK TOTAL SOLUTION

NSK is the only maker that comprehensively develops and provides a full range of precision products.



Ball screws, incorporating leading-edge technologies and recognized as No.1 in the world;

Linear guides, manufactured through a production technology that ensures high accuracy and premier quality;

Spindles, renowned for their high-speed rotation capability and acknowledged as the best in class; and

Bearings, reflecting the essence of NSK technological superiority and exhibiting unparalleled capabilities in extensive applications across the world.

NSK's full range of precision products respond to sophisticated customer requirements and ensures the smooth operation of precision machinery as well as total optimization.

NSK Technology for Machine Tools

- NSK Roller Guides—RA Series
- Ball Screws for High-Speed Machine Tools—HMC Series
- High-Speed and Low-Noise Ball Screws—BSS Series
- High-Accuracy and High-Rigidity NSK Linear Guides—High-Accuracy Series
- Precision Bearings for Machine Tools—Robust Series
- Grease Replenishing System—Fine-Lub II
- High-Speed Integrated Motor Spindles—B1 Series
- Ball Screw Support Bearings—TAC Series

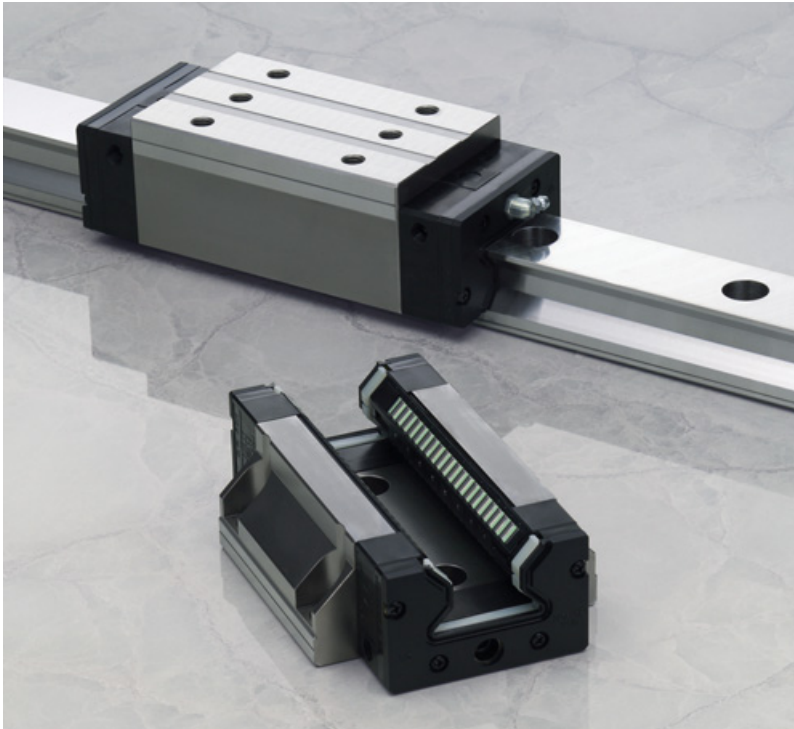


Japan has long been the world's leader in the production of high-accuracy machine tools, and NSK's ball screws, linear guides and precision bearings have significantly contributed to the development and evolution of high-accuracy machine tools made in Japan. NSK has enjoyed a substantial share of the global market for precision products, a testament to its high reliability, while satisfying customer requirements for exceptional accuracy, outstanding rigidity, and high speed.

NSK Roller Guides

RA Series

>> CAT. No.E3328



The most advanced roller guides, the culmination of NSK's advanced craftsmanship, especially in analysis technology and tribology. Featuring high-load capacity, high rigidity and a complete lineup, the RA Series is appropriate for a wide range of applications.

NSK developed RA Series roller guides, the world leader in super high rigidity and high-load capacity, to switch the sliding guides of machine tools to roller guides. Specifically designed retaining pieces and roller circulation components ensure outstanding motion accuracy.

1. Long operating life

High-load capacity

The world's premier high-load capacity, taking full advantage of NSK's analysis technology, ensures long operating life.

Maintenance free

Reliability of lubrication is improved through the use of NSK K1™ for long-term maintenance-free operation.

Highly dust-resistant specification

A high performance seal, provided as standard, prevents the entry of foreign matter and maintains the original level of sound performance for extended periods of time.

2. High accuracy and high rigidity

High rigidity

The optimum size of the roller used as a rolling element ensures high rigidity and supports more compact machinery.

High-motion accuracy

Vibrations generated by roller passage are substantially reduced by NSK's unique design method, thereby improving machining quality.

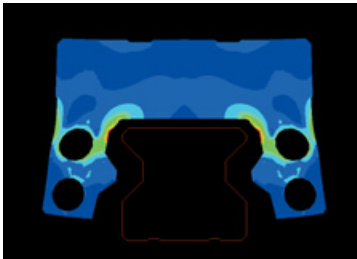
3. A wide range of applications

A complete lineup

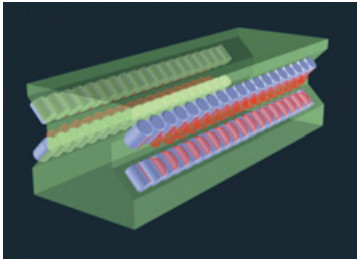
A full lineup, from small and large options to low-profile units. A variety of products are available to choose from, according to the customer's specific application. (RA15, RA20, RA25, RA30, RA35, RA45, RA55 and RA65)

Mounting dimensions compatibility

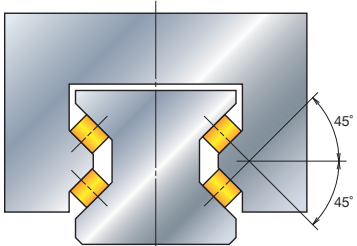
RA Series dimensions are based on global standards allowing replacement without altering equipment design.



Example of bearing deformation analysis



Example of analysis of pressure distribution on the roller contact surface

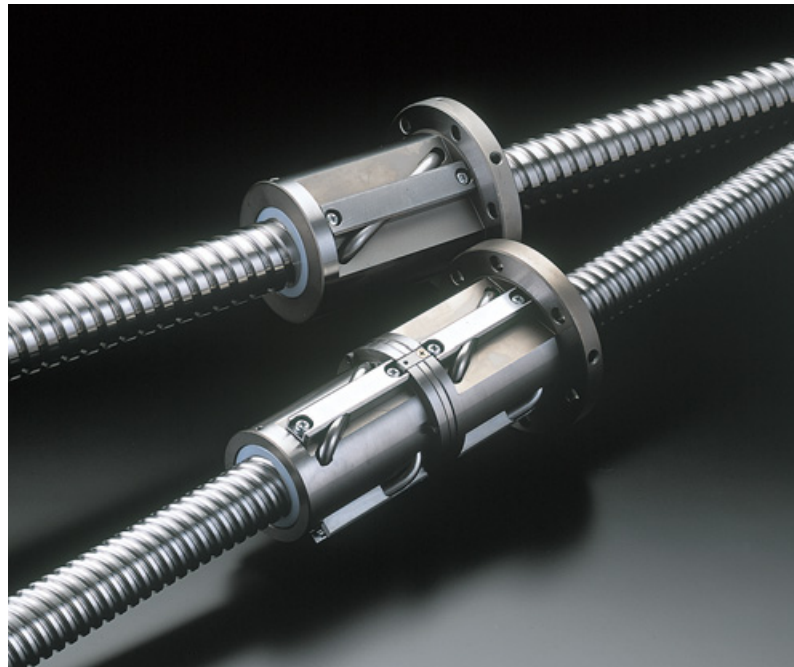


Cross-sectional view

Ball Screws for High-Speed Machine Tools

HMC Series

>> CAT. No.E3219



Satisfying the high speed, high rigidity and high-load capacity requirements of the machine tool industry. Low-vibration ball screws specifically developed for machining centers.

HMC Series are the best-selling ball screws, the standard for machining centers. The series satisfies the high-speed operation requirements of machining centers, which continually demand higher performance.

1. High speed

Strengthened ball circulation components and optimized ball-groove profile facilitate operation at a high speed of 120 m/min, the world's fastest level for ball screws used in machine tools.

2. High rigidity and high-load capacity

Increased effective number of turns and optimized ball-groove profile afford tripled rigidity and doubled load capacity compared with conventional models. Use of NSK K1™ significantly improves lubrication life.

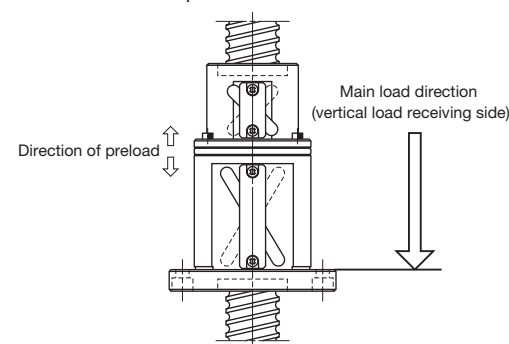
3. Vertical axis type (option)

HMC Series can accommodate compact, high-load capacity units in which the effective number of turns is increased only in the main load direction.

4. Hollow shaft type (option)

HMC Series can accommodate a hollow shaft unit for the forced cooling of the shaft center to handle ball screw heat and thermal expansion.

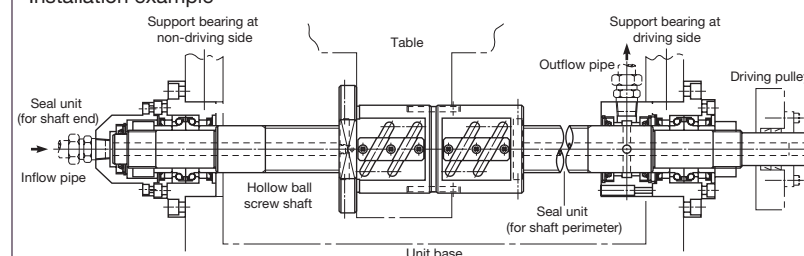
Vertical shaft example



Seal unit for hollow shaft

A special joint for hollow shaft coolant is included as standard.
For shaft end: shaft outer diameter $\phi 20$, $\phi 25$, $\phi 32$
For shaft perimeter: $\phi 32$, $\phi 40$, $\phi 50$

Installation example



High-Speed and Low-Noise Ball Screws

BSS Series

>> CAT. No.E3229



The ideal next-generation ball screws for light-load machine tools achieving high speed, low noise and compact size.

Redesigned ball circulation mechanism meets demand for even higher speeds than the HMC Series; BSS Series offers outstanding low-noise performance in machine tools and other machinery incorporating ball screws.

1. Low noise

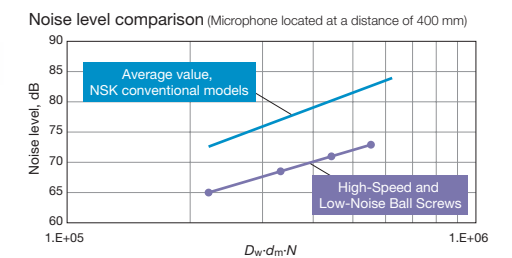
New ball circulation method ensures low-noise performance by reducing noise level by 6 dB, corresponding to an approximately 50% reduction in audible noise.

2. High speed

BSS Series ball screws can operate at super high speeds of 200 m/min, outstanding performance compared to other ball screws.

3. Compact design

Ball nut outer diameter is 30% smaller than NSK's conventional models. Compact body allows low-profile table driving.



High-Accuracy and High-Rigidity NSK Linear Guides

High-Accuracy Series

>> CAT. No.E3329



Optimally designed ball circulation mechanism reduces vibration generated by the passage of steel balls to 1/3. Ball guides specifically designed for super high-speed machine tools or measuring equipment.

NSK's High-Accuracy Series linear guides was developed to provide rolling guides with motion accuracy equal to or better than that achieved by hydrostatic guides and sliding guides currently in vogue for high-speed machine tools. High motion accuracy and rigidity are realized by providing an extra long bearing to improve machinery motion accuracy.

1. High-accuracy rail

Pitch of mounting holes is 1/2 that of conventional models to reduce rail deformation and NSK's ingenuity is evident in mounting holes that prevent rail deformation.

2. High rigidity

Rigidity is further improved by increasing the number of steel balls while maintaining low friction.

3. Compact design

Downsizing of machine tools and equipment can be realized while maintaining high-load capacity. Further downsizing is made possible by combining with BSS Series ball screws.

Precision Bearings for Machine Tools

Robust Series

>> CAT. No.E1257

The Robust Series represents the epitome of NSK's art, especially in material, assessment and analysis technologies and consistently supports high-performance machine tools.

This high-performance series was developed specifically for increasingly sophisticated machine tool spindles.

1. Complete lineup with a wide range of products

A variety of products is available, including units that satisfy the high accuracy and high-speed rotation required by machining centers, and products which provide the high rigidity required by lathes. (Angular contact ball bearings, cylindrical roller bearings, angular contact ball bearings with seals)

2. High accuracy

More accurate ring roundness and the most advanced engineered polymer technology used for cages make rotation smoother.

3. High speed

Combination of small-diameter balls and specifically designed grooves boost speed by 20% over standard angular contact ball bearings. In addition, a light-weight ceramic rolling element for effective high-speed rotation provides a 1.5 times increase in speed.

4. Material technology

Super high-speed bearings use highly seizure-resistant SHX materials independently developed by NSK. The combination of SHX materials and lubrication technology has resulted in the Spin Shot Series of angular contact ball bearings and the RX Series of cylindrical roller bearings. RX Series achieve a speed of 3 million $d_m n$. (#40 spindle: 30 000 min^{-1})



Super high-speed angular contact ball bearings (BNR Series) offer high-speed rotation while maintaining low heat generation.



Super high-speed single-row cylindrical roller bearings (RX Series) achieve a speed of 3 million $d_m n$.

Grease Replenishing System

Fine-Lub II

>> CAT. No.E1273

Enhanced eco-friendly performance; grease lubrication ensures energy-efficient, quiet and environmentally sound operation.

Spindle is automatically replenished with grease at high-speed rotation, a function that was previously thought impossible. System increases the longevity of a grease-lubricated, high-speed spindle.

1. Provides small quantities of grease

Feeding grease in at small quantities of 0.01 cc per shot every six hours enables steady operation at 20 000 min^{-1} with no increase in heat generation during replenishment.

2. Maintenance free

Energy-efficient, quiet replenishing system delivers 20 000 continuous hours of maintenance-free performance at 20 000 min^{-1} .



High-Speed Integrated Motor Spindles

B1 Series

>> CAT. No.E2204

Energy-efficient, quiet performance achieved with grease lubrication. The world's highest-level, high-performance integrated motor spindle.

Outstanding in speed, cutting capability and reliability, that are at the top level in the world, the B1 Series was specifically developed for #40 machining centers. B1 Series use Robust Series precision bearings (ceramic ball specification).

1. Low noise, less environmental burden, maintenance-free operation

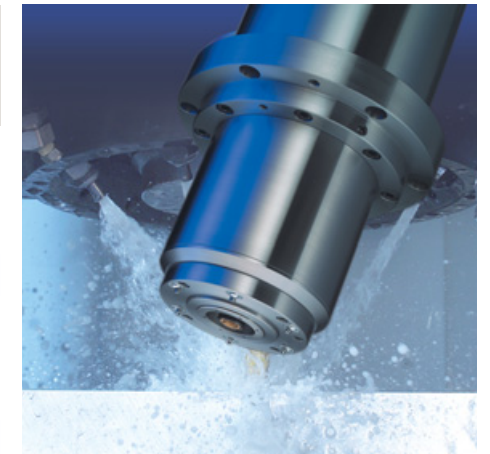
With a newly developed grease-replenishing lubrication method, B1 Series is quiet, exerts less impact on the environment and offers 20 000 hours of maintenance-free performance.

2. High rigidity

Combination of a highly heat-resistant precision bearing—the epitome of NSK's expertise—with a FANUC motor provides a wide range of cutting performance.

3. All-in-one unit

Tool specification complies with BT and HSK. The unclamp mechanism is durable enough to withstand 2 million rotations. Through-coolant capability (7 Mpa) is available as an option.



Ball Screw Support Bearings

TAC Series

>> CAT. No.E1254

High-rigidity, long-life angular contact thrust ball bearings developed specifically for machine tools.

TAC Series bearings are widely used worldwide thanks to their high rigidity, long life and ease-of-use. TAC Series features all the functions required of a ball screw support bearing.

1. High rigidity

High rigidity achieved by setting contact angle at 60° and using a larger number of small-diameter balls.

2. Long life

Long operating life is achieved by using durable EP Steel as standard material.

3. Ease-of-use

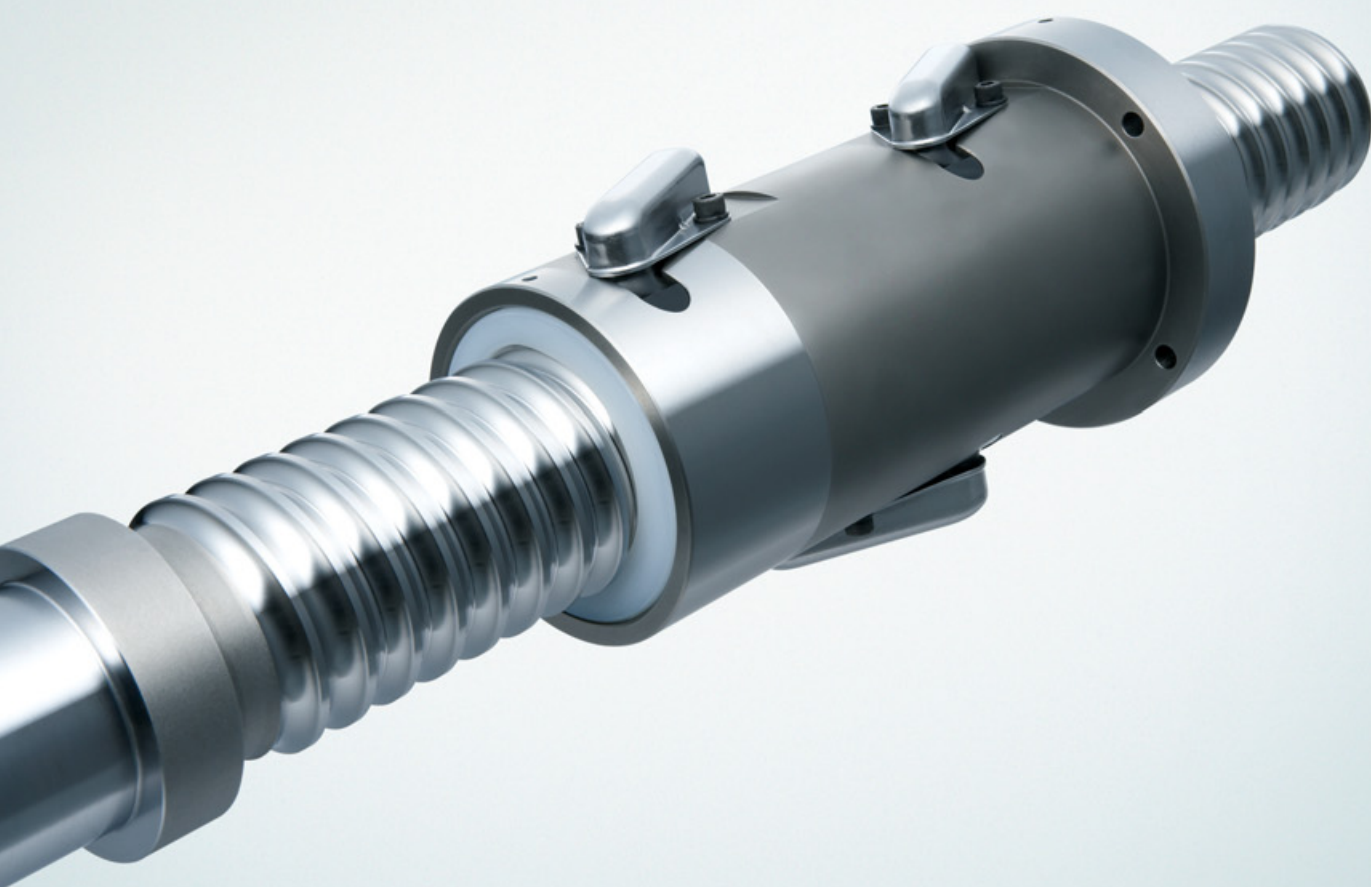
Bearings for universal combination are available for any type of combination to meet load conditions.



Support unit for high-load machine tools
A support unit comprising several TAC Series units is also available as a standard product. (Bearing inner diameter: $\phi 17$ to $\phi 40$)

NSK Technology for Injection Molding Machines

- Ball Screws for High Speed and Heavy Load—HTF-SRC Series
- Ball Screws for Heavy Load—HTF Series
- Ball Screws for Mold Clamping System in Injection Molding Machinery—HTF-Large Lead Series
- Ball Screw Support Bearings for Heavy Load—TAC 03 Series
- NSK Roller Guides—RA Series



Injection molding machinery driven by the electric servo is progressing to produce highly accurate plastic products and machinery components that must withstand hostile environments and operate with exceptional reliability.

From this point of view, NSK's high-load capacity components should be considered essential for every drive mechanism.

They are well suited not only for injection molding machines, but also press machines, die casting machines and other high-load applications.

Ball Screws for High Speed and High Load

HTF-SRC Series

>> CAT. No.ESP-050922



Next-generation ball screws for heavy load applications, evolved from the best-selling HTF Series of high-load ball screws.

Innovative ball recirculation method has been developed in the quest to meet the recent demands for high-speed rotation and noise reduction required by injection molding machinery.

1. Specifically designed for high load

High-load capacity is achieved by inheriting all the features of the HTF Series, which were developed to handle severe load conditions.

2. High-speed rotation

Feed speed is more than 2 times faster than conventional models as a result of optimizing ball recirculation paths.

3. Quiet

Noise level is reduced to a maximum of half of conventional models by adopting a newly developed ball recirculation method (SRC).

4. A wide variety

A wide variety of shaft diameters (50 to 120 mm) and leads (16 to 25 mm) are available.

5. Various shaft-end forms

Various types of shaft-end forms are available to ensure the perfect transmission of high torque from a drive motor.

Combination of shaft diameter and lead, and maximum feed speed

Shaft \ Lead	16 mm (dn160 000)	20 mm (dn140 000)	25 mm (dn140 000)
ø50	860 mm/s	—	—
ø63	680 mm/s	740 mm/s	—
ø80	540 mm/s	590 mm/s	—
ø100	—	470 mm/s	590 mm/s

Note: d: outer diameter of screw shaft (mm); n: number of rotations (min⁻¹)

Ball Screws for Heavy Load

HTF Series

>> CAT. No.E3218

High-load capacity is achieved through high load-specific design. Smaller nuts are used for adapting to heavy load driving machinery, such as injection molding machines.

Development of a ball screw for heavy load started in the first half of the 1980s, when injection molding machinery was motor driven. The HTF Series, which was released in 1996, has established its position as the industry standard for heavy load ball screws.

1. Design dedicated to extremely heavy load

Ball diameter has been increased to the maximum. Rated load was extensively improved over the standard series by optimizing the configuration of recirculation paths and the use of ball grooves specially designed for heavy load.

2. Wide variety

A wide variety of shaft diameters (45 to 200 mm) and leads (10 to 25 mm) are available.

3. Various shaft-end forms

Various types of shaft-end forms are available to ensure the perfect transmission of high torque from a drive motor.



Ball Screws for Mold Clamping System in Injection Molding Machinery

HTF-Large Lead Series

>> CAT. No.JSP-061102

Added to the HTF Series as a large-lead series—Employs new recirculation method that was proven in the BSS Series to allow even higher speeds for ball screws under heavy loads.

Developed to meet the demand for a larger lead than the HTF Series. High feed speeds over 100 m/min are possible.

1. High load-specific design

Rated load is improved by employing the same innovative ball groove design for high-load capacity used in the HTF Series.

2. Quiet and compact design

Noise level is reduced by up to half by employing the same new recirculation method used in the BSS Series. Outer diameter of nuts has been made smaller for compact design, and a protruding portion was removed.

3. Wide variety

A wide variety of shaft diameters (50 to 80 mm) and leads (40 to 50 mm) are available. Six to eight effective turns are also available.



Ball Screw Support Bearings for Heavy Load

TAC 03 Series

>> CAT. No.1248

A series of high-load capacity, angular contact thrust ball bearings that support ball screws for heavy load under optimum conditions.

TAC 03 Series bearings offer high load-bearing capacity to support ball screws for heavy load. Use larger diameter steel balls than the TAC Series for machine tools, thereby reducing the number of combined rows.

1. Downsizing due to high-load capacity

High-load capacity facilitates compact design.

2. Improved reliability

Operating lifetime is 5 times longer than standard TAC Series.

3. Ease-of-use

Dramatically improved ease-of-use compared with tapered roller bearings or thrust self-aligning roller bearings. Required rigidity can be obtained by changing the number of rows thanks to its universal combination capability, which contributes to achieving longer operation life.

4. Reduction in torque through optimal ball bearing design

Torque is substantially reduced through optimal ball bearing design.



NSK Roller Guides

RA Series

>> CAT. No.E3328

RA Series incorporates NSK's leading-edge technology for high load-bearing capacity, high rigidity and environmentally friendly operation.

Capable of meeting the demand for roller guides used in mold-clamping system with no gap to prevent damage to the mold. RA Series roller guides offer the high load-bearing capacity required by injection molding machinery.

1. High load-bearing capacity

World's premier level high load-bearing capacity and long operating lifetime are achieved by the full application of analytic technology.

2. High rigidity

Optimum size rollers are used as rolling elements for high rigidity, which facilitates compact equipment design.

3. Highly dust-resistant

Standard highly dust-resistant seal prevents the entry of foreign matter and ensures original sound performance is maintained for a long time.



NSK Technology for Semiconductor or Liquid Crystal Production Equipment (Special Environments)

- Monocarriers—MCM Series / MCH Series
- NSK Linear Guides—Miniature—PU Series / PE Series
- Thin-Film Lubrication for Vacuum Environments—Ball Screws and NSK Linear Guides with E-DFO for Vacuum Environments
- Surface Treatment for Special Environments—Ball Screws and NSK Linear Guides for Special Environments
- NSK Clean Grease—LG2 / LGU



Meeting cleanliness and anti-corrosion requirements in special environments for semiconductor and liquid crystal production equipment, in addition to offering short-term delivery through standard inventory. NSK's precision products contribute to the advance of precision machinery and respond to next-generation needs.

Monocarriers

MCM Series / MCH Series

Short-term delivery available

>> CAT. No.JSP-060920, 060921



MCM Series support small-size transfer systems by making full use of their light weight, space-saving design and high accuracy. MCH Series delivers high rigidity with a rail that can be used as a beam.

NSK developed these carriers ahead of other manufacturers to contribute to the compact design of carrier equipment and reduce the time required for design and equipment manufacturing. Suitable for a wide range of applications thanks to an all-in-one structure of linear motion components.

1. Light weight and compact design

Integration of components achieves minimal cross-sectional dimensions and light weight; far superior to conventional models.

2. All-in-one structure

Ball screw, linear guide and bearing are integrated in an all-in-one structure, thereby reducing work during design and assembly.

3. Excellent rust resistance

Low-temperature chromium plating is applied to prevent rust and handle other tough operating conditions.

4. Long-term, maintenance-free performance

Smooth lubrication performance can be maintained for a long time with the use of NSK K1™ lubrication unit.

MCM Series

Wide variety

A wide variety of rail widths (6 types: 28 to 100 mm) and leads (1 to 20 mm) are available.

High accuracy, high rigidity and light weight

The concave base-body is lightweight and resists bending. Rolling structure ensures less friction and high accuracy.

MCH Series

Improved rail rigidity

Rigidity of rail was improved to the extent it can also be used as a beam. MCH Series offers superior rigidity; 3 times more rigidity than the MCM Series.

Compact design

Compact design based on industry standard dimensions.

NSK Linear Guides—Miniature

PU Series / PE Series

Short-term
delivery available,
Interchangeable parts

>> CAT. No.E3327

Excellent ease-of-use, light weight and compact design
NSK miniature linear guides ensure smooth movement.

Lighter-weight operating section is highly sought after to keep pace with the trend toward downsizing semiconductor manufacturing equipment. Use of resin materials for the bearing achieves light weight and softens the sound of operation.

1. Motion performance

Newly designed ball recirculation component facilitates smooth circulation of steel balls. A special cage is positioned for trouble-free removal of bearings.

2. Light weight

Bearing is about 20% lighter than conventional models as a portion of its body is made with resin material.

3. Highly corrosion resistant

Incorporates highly corrosion-resistant martensite stainless steel as a standard feature to provide outstanding resistance to corrosion.

4. Low dust emission

Entire structure including bearing section is designed to prevent dust emission.

5. Short-term delivery

Interchangeable types for freely matching rails and bearings are also available.



Thin-Film Lubrication for Vacuum Environments

Ball Screws and NSK Linear Guides with E-DFO for Vacuum Environments

>> CAT. No.ESP-051209

Further advanced DFO thin-film lubrication technology ensures significantly longer life and lower outgassing in vacuum environments.

Fluorine grease used for vacuum lubrication has the disadvantages of a short lifetime and produces significant friction resistance in proportion to the level of outgassing and rotational speed. DFO thin-film lubrication technology was developed to solve these technical problems, and E-DFO was developed to extend longevity.

1. Long life

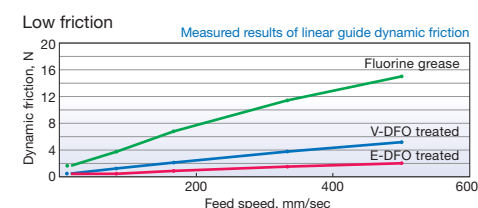
Operating lifetime up to twenty times longer than conventional types, thereby lengthening maintenance service intervals.

2. Low outgassing

Outgassing is suppressed under vacuum environments.

3. Low friction

Friction is significantly reduced compared with conventional models. Motor load reduced and equipment efficiency is enhanced.



Operating environments

Maximum vacuum environment at room temperature	Recommended operating temperature range	Maximum instantaneous operating temperature (less than 10 hours)
10 ⁻⁴ Pa	-40 to 125°C	200°C

NSK Clean Grease

LG2 / LGU

>> CAT. No.3314

With excellent low dust emission and low torque, LG2 proves its worth in clean rooms—LGU can be used in a wide range of temperatures and offers superior durability.

In the past, grease could not be utilized in clean rooms, and fluorine grease was used in vacuum environments requiring superior low-dust performance. NSK Clean Grease was developed for improved rust resistance and lower friction than fluorine grease.

1. Low dust emission

NSK Clean Grease is superior to fluorine grease in reliably ensuring low-dust emission for long periods of time.

2. Torque characteristics

NSK Clean Grease features stable torque characteristics which reduce load on the motor at high speeds.

3. Long operating lifetime

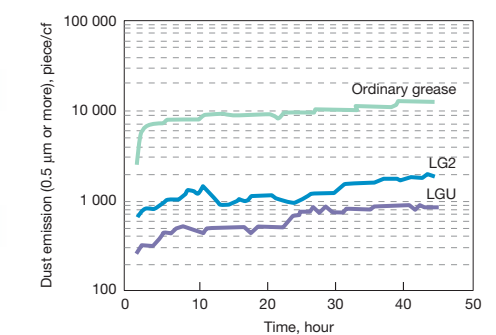
Operating lifetime is more than 10 times longer than fluorine grease, thereby extending maintenance service intervals.

4. Ease-of-use

NSK Clean Grease in a bellows-type tube (80g) can be attached to an NSK grease pump in a single motion.



Excellent low dust emission characteristics



	Operating temperatures	Puffing agent
LG2	-20 to 70°C	Lithium soap
LGU	-30 to 120°C	Theurea

LG2

Rust resistance

Contains the same high level of rust resistance capability as ordinary grease.

LGU

Metal elements

Contains an extremely small amount of metal elements.

NSK Technology for General Machinery

- NSK Ball Screws for Standard Stock—Compact FA Series
- Lubrication Unit—NSK K1™
- For Light Load and Small Equipment—Support Units
- NSK Standard Linear Guides—LH Series / LS Series
- Megatorque Motors—PS Series
- NSK Low-Noise Linear Guides—NSK S1 Series
- New Type of Rolling Element Linear Motion Bearing—Translide
- Highly Dust-Resistant Ball Screws and NSK Linear Guides—V1 Series



Ball screws and NSK linear guides include many standard inventory products that are ready for short-term delivery. Lubrication unit for maintenance-free operation and highly dust-resistant seals suitable for contaminated environments are also available to respond to the needs of machinery users.

NSK Ball Screws for Standard Stock

Compact FA Series

Short-term delivery available

>> CAT. No.E3230



Standard stock series for immediate delivery—next-generation compact ball screws offer quiet, high-speed operating performance.

Renowned for high-speed, low-noise performance, the BSS Series are maintained in standard inventory with pre-processed ball screw shaft ends available for immediate shipment. Many types of products are in stock for immediate use by customers. In addition, a low-profile support unit facilitates compact equipment design.

1. Compact design (low-profile type)

Outer diameter of the ball nut is reduced by up to 30% compared with NSK's conventional products, thereby contributing to compact equipment design.

2. Quiet

Noise level of ball screws has been reduced by 6 dB, nearly half of the level that can be sensed by the human ear. Ball screws subsequently produce quieter, gentle sounds.

3. High speed

Ball screws offer 1.6 times faster permissible rotational speed than conventional models. This capability dramatically expands the range of service conditions.

4. Innovative contact seal

Innovative high-performance seals minimize grease dispersion and helps maintain clean work environments.

Low-profile support unit

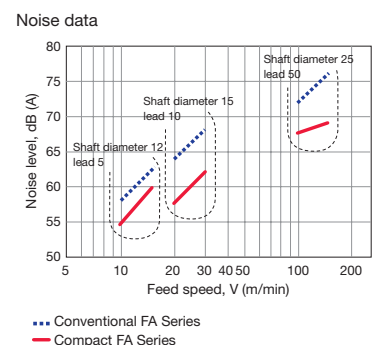
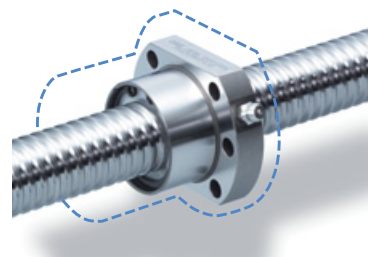
Support units, when combined with Compact FA Series, enable low-profile design.



Conventional support unit

Low-profile support unit

Ball nut downsized by up to 30%



Lubrication Units (Installed in Ball Screws, NSK Linear Guides and Monocarriers)

NSK K1™

>> CAT. No.9009



NSK K1™ ensures long-term, maintenance-free operation and the long lifetime of components working under tough lubrication environments. Clean lubrication method exerts less impact on the environment.

Grease lubrication requires frequent and periodical replenishment. NSK led the way to solve this problem by developing NSK K1™. Oil is fed from the resin-constructed NSK K1™ for more than 100 000 hours.

1. Long-term, maintenance-free operation

NSK K1™ eliminates the need for adding a lubricant for 5 years or 10 000 km. Long-term, maintenance-free operation saves lubricant costs.

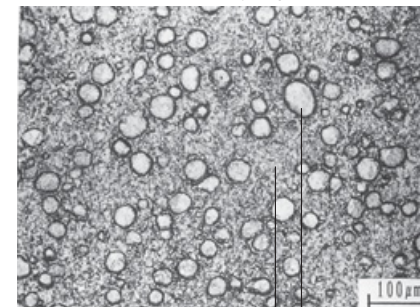
2. Long operating lifetime

NSK K1™ substantially extends the operating lifetime of components exposed to contaminated environments or other tough lubrication environments.

3. High safety

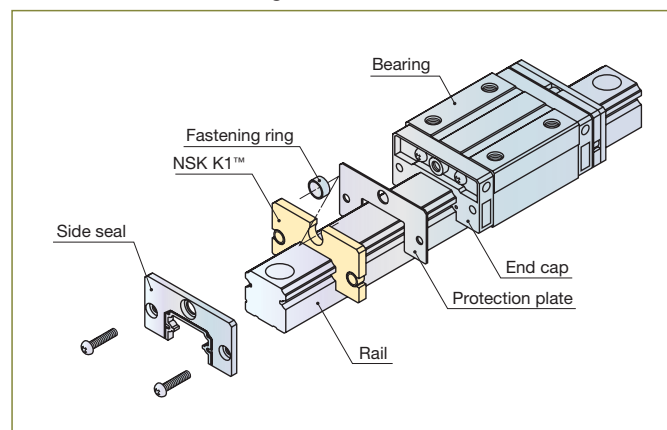
NSK K1™ for food processing or medical equipment is also available. Specifications comply with FDA standards for food processing and medical equipment, ensuring high safety.

Composition of NSK K1™ Lubrication Unit
Lubrication oil constitutes 70% by weight

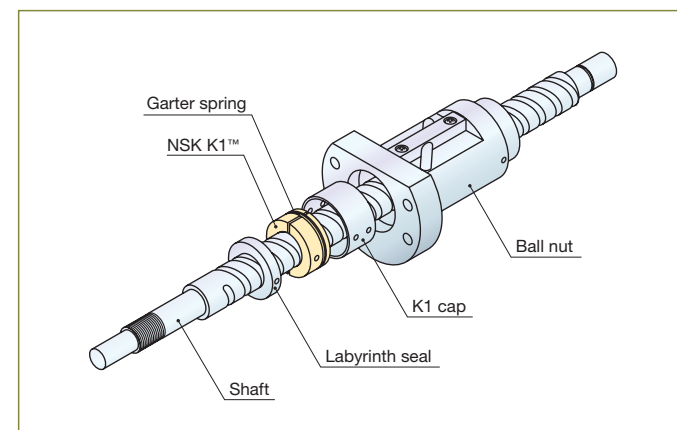


Portion containing additional lubrication oil
Portion containing additional polyolefin

Placement on NSK linear guide



Placement on ball screw



For Light Load and Small Equipment

Support Units

Short-term delivery available

>> CAT. No.E3281

Ball screw support unit is available as a standard product. Support unit for clean operation is also available to provide excellent low dust emission, low torque and rust resistance.

Support unit for ball screw is designed independently and required components are incorporated into a single unit. Today, support units are used worldwide as standard products. Support units with special features for clean operation, such as low dust emission, are also available.



1. Quick delivery

All support units are standard stock items.

2. Wide variety

A wide variety of internal diameters of support bearing diameters (4 to 25 mm) are available. Support units can be conveniently used with NSK's ball screws as standard stock.

Support units for clean operation

1. Low dust emission

Reduces dust emission to 1/10 that of general support units.

2. Low torque

Features low torque characteristics—50% lower than general support units—by using special angular contact ball bearings.

3. High rust resistance

High rust resistance is achieved by applying low-temperature chromium plating and using stainless steel parts.

NSK Standard Linear Guides

LH Series / LS Series

Short-term delivery available, interchangeable parts

>> CAT. No.3161

LH and LS Series afford outstanding impact-load resistance, self-aligning capability and high accuracy. These linear guides are designed for superior safety and ease-of-use.

Using internationally standard dimensions, this series is NSK's standard linear guide product.

1. Easy installation

Acceptable margin of error in mounting increases because of self-aligning capability.

2. Impact-load resistance

Non-contact areas also bear part of the impact load when high load acts on a linear guide from above.

3. Wide variety of types and sizes

A wide variety of types and sizes are available to respond to a wide range of applications. Long stainless products are included in the standard LS Series products (the maximum length: 3 500 mm). Products specifically designed for high-temperature or high-speed conditions are also available.



LH Series	#15 – #65
LS Series	#15 – #35

Megatorque Motors

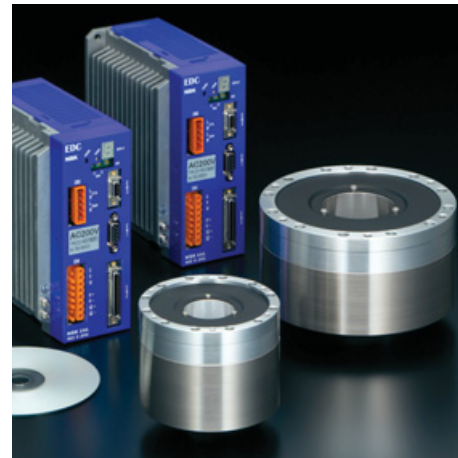
PS Series

Short-term delivery available

>> CAT. No.E3510

Direct drive motors deliver both high-speed and high-resolution performance. Megatorque Motors contribute to reducing weight, saving space and improving productivity.

Megatorque Motors are high-output, compact, direct drive motors equipped with newly developed bearings and a high-resolution position sensor, enabling high-speed, high-accuracy positioning through innovative servo control; thereby improving the productivity of machinery or equipment.



1. Shorter positioning time

Innovative servo algorithm shortens positioning time by up to 1/5 compared with conventional motors.

2. Compact motor

Optimal magnetic-field design delivers twice the force density of conventional motors.

3. Highly accurate position sensor

PS Series incorporates an absolute position sensor with positioning accuracy of 90 seconds.

4. Compact drive unit

Combined with a special module, drive unit body is 65% smaller than conventional units.

NSK Low-Noise Linear Guides

NSK S1 Series

Short-term delivery available, Interchangeable parts

>> CAT. No.E3320

NSK S1 Series feature quiet, non-obtrusive sound and low dust emission, for smooth operation.

Based on the LH/LS Series, this series incorporates retaining pieces to improve the quality of motion and suppress noise. It also reduces friction variation at fixed-speed driving.



1. Quiet and non-obtrusive sound

Placement of retaining pieces and newly designed ball recirculation paths reduce noise by 5 dB compared with conventional models.

2. Smooth motion

Improves dynamic friction characteristics and allows smooth, stable motion even at low-speed driving.

3. Low dust emission

Superior to conventional models in low dust emission.

4. Wide variety

A wide variety of types (SH Series: #15 to #55; SS Series: #15 to #35) and interchangeable types of rails and ball slides are available.

New Type of Rolling Element Linear Motion Bearing

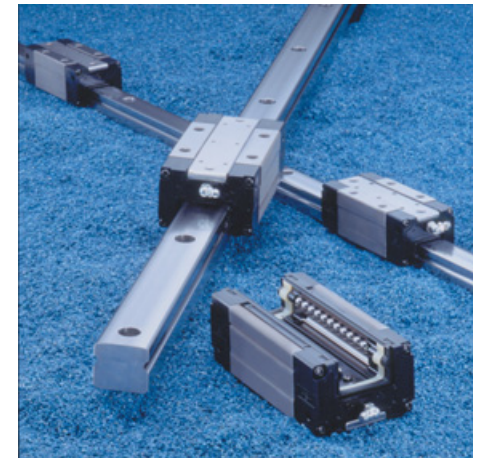
Translide

Short-term delivery available, Interchangeable parts

>> CAT. No.E3324

Translide features high dust-resistance and long-term, maintenance-free operation. Maximum ball diameter facilitates the transport of heavy load.

Translide is a new roller guide specifically developed to fulfill transfer system requirements, including high-load capacity, high dust-resistance and maintenance-free performance.



1. High dust-resistance and long operating lifetime

NSK K1™ and highly dust-resistant seals are featured as standard to ensure the long operating lifetime and high dust-resistance required for transfer systems.

2. High-load capacity

Ball diameter has been increased to the maximum size to enable the transport of heavy loads.

3. Interchangeability

Interchangeable types of rails and sliders are available for freely combining components.

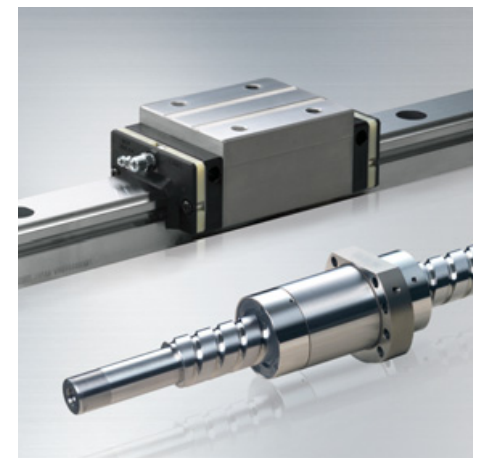
Highly Dust-Resistant Ball Screws and NSK Linear Guides

V1 Series

>> CAT. No.E3233, E3330

NSK's most advanced high-performance seals deliver more than 4 times longer service life under contaminated environments than conventional models.

These high-performance seals were developed to cope with contaminated or adverse environments in which, for example, a woodworking machine or graphite processing machine produces dust that can shorten equipment operating life. Highly dust-resistant seal features a special lip structure that dramatically enhances sealing performance.



1. High dust-resistance

- (1) Ball screws
Specially profiled screw shaft grooves and high-performance seals prevent the entry of fine contaminants, reducing particle penetration rate by up to 1/5 compared with conventional standard models.
- (2) NSK linear guides
End seals with a multi-stage lip structure reduce particle penetration by up to 1/10 compared with conventional standard models.

2. Long life

Thanks to their high dust-resistance, ball screws and NSK linear guides provide longer operating lifetimes even under contaminated environments.

3. Option

- (1) Ball screws: protector (against high-temperatures and foreign matter)
- (2) NSK linear guides: protector (against high-temperatures and foreign matter); a type with tapped mounting holes on the backside of a rail is also available.

Worldwide Sales Offices and Manufacturing Plants

NSK LTD.-HEADQUARTERS, TOKYO, JAPAN www.nsk.com
Nissei Bldg., 1-4-3, OHSAKI SHINAGAWA-KU, TOKYO 141-8560, JAPAN
INDUSTRIAL MACHINERY BEARINGS DIVISION-HEADQUARTERS
P: 03-3779-7227 F: 03-3779-7644 C: 81
AFTERMARKET BUSINESS DIVISION-HEADQUARTERS
P: 03-3779-8893 F: 03-3779-7644 C: 81
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P: 03-3779-7163 F: 03-3779-7644 C: 81

Africa
South Africa:
NSK SOUTH AFRICA (PTY) LTD.
JOHANNESBURG 25 Galaxy Avenue, Linbro Business Park, Sandton, Gauteng, P.O. Box 1157, Kelvin, 2054 South Africa
P: 011-458-3600 F: 011-458-3608 C: 27

Asia and Oceania
Australia:
NSK AUSTRALIA PTY. LTD. www.au.nsk.com
MELBOURNE 11 Dalmore Drive, Scoresby, Victoria 3179, Australia
P: 03-9764-8302 F: 03-9764-8304 C: 61
SYDNEY Unit 1, Riverside Centre, 24-28 River Road West, Parramatta, New South Wales, 2150, Australia
P: 02-9893-8322 F: 02-9893-8406 C: 61
BRISBANE 1/69 Selhurst Street, Coopers Plains, 4108, Australia
P: 07-3345-5027 F: 07-3345-5376 C: 61
PERTH Unit 1, 71 Tacoma Circuit, Canning Vale, Perth, Western Australia 6155, Australia
P: 08-9256-5000 F: 08-9256-1044 C: 61

China:
NSK HONG KONG LTD.
HONG KONG Room 814, World Commerce Centre, Harbour City, T.S.T. KLN, Hong Kong
P: 2739-9933 F: 2739-9323 C: 852

KUNSHAN NSK CO., LTD.
KUNSHAN PLANT 258 South Huang Pu Jiang Rd., Kunshan Economic & Technology Development Zone, Jiang Su, China (215335)
P: 0512-5671-5854 F: 0512-5771-5689 C: 86

CHANGSHU NSK NEEDLE BEARING CO., LTD.
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NSK CHINA TECHNOLOGY CENTER
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P: 021-6235-0198 F: 021-6235-1033 C: 86

NSK REPRESENTATIVE OFFICES
BEIJING Room 1201, Beijing Fortune Bldg., 5 Dong san Huan Bei Lu, Chao Yang District, Beijing, China (100004)
P: 010-6590-8161 F: 010-6590-8166 C: 86
GUANGZHOU Room 2009-11, Guangdong Telecom Plaza, 18 Zhongshan Er Road, Guangzhou, China (510080)
P: 020-3786-4833 F: 020-3786-4501 C: 86
ANSHUN Donggiao, Anshun, Guizhou, China (561000)
P: 0853-3522522 F: 0853-3522552 C: 86
CHENGDU Room 1901, Green Land Hotel, No.99 Zhongnagci Xi Street, Chengdu, China (610016)
P: 028-8661-4200 F: 028-8661-4343 C: 86
SHENZHEN Room 8508-09, Jueshi Tower, Jiabing Road, Luohu, Shenzhen, China (518001)
P: 0755-25904896 F: 0755-25904893 C: 86
CHANGCHUN Room 1001, Building A, Zhongyin Building, 727 Xian Road, Changchun, Jilin Province, China (130061)
P: 0431-8898682 F: 0431-88986670 C: 86

NSK (CHINA) INVESTMENT CO., LTD www.nsk.com.cn
SHANGHAI 10th Fl. Building No. A, Shanghai Far East International Plaza, 319 Xian Xia Road, Shanghai, China (200051)
P: 021-6235-0198 F: 021-6235-1033 C: 86

India:
RANE NSK STEERING SYSTEMS LTD.
CHENNAI 14, Rajagopalan Salai, Vallancherry, Guduvancherry, Pin-603 202, India
P: 044-274-6602 F: 044-274-66001 C: 91

NSK LTD. INDIA BRANCH OFFICE
CHENNAI Giriguja Enclave, 4th Floor, 56, First Avenue, Shastri Nagar, Chennai 600 020, India
P: 044-2446-6862 F: 044-2446-6861 C: 91
GURGAON 311, JMD Pacific Square, Sector 15 (II), 2nd Milestone, National Highway-8, Gurgaon, Haryana - 122 001 India
P: 0124-4104530 F: 0124-5104532 C: 91

Indonesia:
PT NSK BEARINGS MANUFACTURING INDONESIA
JAKARTA PLANT Blok M-4, Kawasan Berikat, MM2100, Industrial Town, Cikarang Barat, Bekasi 17520, Jawa Barat, Indonesia
P: 021-898-0155 F: 021-898-0156, 021-898-0183 C: 62

PT. NSK INDONESIA
JAKARTA Summits II 6th Fl., Jl. Jend. Sudirman Kav. 61-62, Jakarta 12190 Indonesia
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Korea:
NSK KOREA CO., LTD. www.kr.nsk.com
SEOUL 9F (West Wing) Posco Center 892, Deachi 4 Dong Kangnam-Ku, Seoul, Korea
P: 02-3287-0300 F: 02-3287-0345, 0445 C: 82
CHANGWON 60, Seongsan-Dong, Seongsan, Kyungsangnam-Do, Korea
P: 055-287-6001 F: 055-285-9982 C: 82

Malaysia:
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P: 03-7803-8659 F: 03-7806-5982, 03-7803-1570 C: 60
PENANG 10, Lengkok Kikik 1, Taman Inderawasih, 13600 Prai, Penang, Malaysia
P: 04-3902275 F: 04-3991830 C: 60
JOHOR BAHRU 88 Jalan Ros Merah 2/17, Taman Johor Jaya, 81100 Johor Bahru, Johor, Malaysia
P: 07-3546290 F: 07-3546291 C: 60
KOTA KINABALU Lot 10, Ling Kuma 4, Likas Ind. Centre, 51/2 Miles, Jalan Tuaran, 88450 Inanam Sabah, Malaysia
P: 088-421260 F: 088-421261 C: 60
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New Zealand:
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AUCKLAND 3 Te Apunga Place Mt. Wellington, Auckland, New Zealand
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Philippines:
NSK REPRESENTATIVE OFFICE
MANILA Unit 910 Philippine AXA Life Centre, 1286 Sen. Gil Puyat Avenue, Makati City 1200, Metro Manila, Philippines
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Singapore:
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Taiwan:
TAIWAN NSK PRECISION CO., LTD.
TAIPEI 11F., 87, Song Jiang Rd. Taipei 104 Taiwan R.O.C
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P: 04-2311-7978 F: 04-2311-2627 C: 886
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P: 06-589-2703 F: 06-589-2719 C: 886

TAIWAN NSK TECHNOLOGY CO., LTD.
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Vietnam:
NSK REPRESENTATIVE OFFICE
HANOI Unit 802, 8th Floor, Hanoi Tung Shing Square, No. 2 Ngo Ouyen, Hoan Kiem District, Hanoi, Vietnam
P: 04-935-1269 F: 04-935-1268 C: 84
HO CHI MINH CITY The Metropolitan, Suite 807, 235 Dong Khoi Street, District 1, HCMC, Vietnam
P: 08-822-7907 F: 08-822-7910 C: 84

Europe
NSK EUROPE LTD. (EUROPEAN HEADQUARTERS) www.eu.nsk.com
MAIDENHEAD, U.K. Belmont Place, Belmont Road, Maidenhead, Berkshire SL6 6TB U.K.
P: 01628-509800 F: 01628-509808 C: 44

France:
NSK FRANCE S.A.S
PARIS Quartier de l'Europe, 2 Rue Georges Guynemer, 78283 Guyancourt Cedex, France
P: 01-30-57-39-39 F: 01-30-57-00-01 C: 33

Germany:
NSK DEUTSCHLAND GMBH
DUSSELDORF Harkortstrasse 15, 40880 Ratingen, Germany
P: 02102-481-0 F: 02102-481-2290 C: 49
STUTTGART Stielminger Str. 65, 70771 Leinfelden-Echterdingen, Germany
P: 0711-79082-0 F: 0711-79082-289 C: 49
LEIPZIG 04129 Leipzig, Germany
P: 0341-5204937 F: 0341-5204938 C: 49
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DUSSELDORF Harkortstrasse 15, 40880 Ratingen, Germany
P: 02102-481-0 F: 02102-481-2290 C: 49

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NEUWEG FERTIGUNG GMBH
CORPORATE Ehinger Strasse 5, D-89587 Munderkingen, Germany
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Italy:
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NSK Steering Systems Europe (Polska) Sp.zo.o
CORPORATE UL. M.Jachimowicza 17, 58-306 Walbrzych Poland
OFFICE/PLANT P: 074-664-4101 F: 074-664-4104 C: 48

Spain:
NSK SPAIN S.A.
BARCELONA C/Tarragona, 161 Cuerdo Bajo, 2a planta, 08014 Barcelona, Spain
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P: 0216-355-0398 F: 0216-355-0399 C: 90

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PLANT P: 0191-586-6111 F: 0191-586-3482 C: 44
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PLANT P: 0191-518-0777 F: 0191-518-0303 C: 44
NEWARK Northern Road, Newark, Nottinghamshire, NG24 2JF U.K.
PLANT P: 01636-605123 F: 01636-643072 C: 44

NSK EUROPEAN TECHNOLOGY CENTRE
NEWARK, U.K. Northern Road, Newark, Nottinghamshire, NG24 2JF U.K.
P: 01636-605123 F: 01636-643241 C: 44

NSK UK LTD.
NEWARK Northern Road, Newark, Nottinghamshire, NG24 2JF U.K.
P: 01636-605123 F: 01636-643050 C: 44

NSK PRECISION UK LTD.
NEWARK Northern Road, Newark, Nottinghamshire, NG24 2JF, U.K.
P: 01636-605123 F: 01636-613559 C: 44

NSK STEERING SYSTEMS EUROPE LTD.
CORPORATE Gallopier Business Park, Rowley's Green, Coventry, Warwickshire, CV6 6PA, U.K.
OFFICE P: 024-76-588588 F: 024-76-588599 C: 44

PETERLEE
67 Dofxford Drive, South West Industrial Estate, Peterlee, Co. Durham, SR8 2RL U.K.
PLANT P: 0191-518-6400 F: 0191-518-6421 C: 44

North and South America
NSK AMERICAS, INC. (AMERICAN HEADQUARTERS)
ANN ARBOR 4200 Goss Road, Ann Arbor, Michigan 48105-2779, U.S.A.
P: 734-913-7500 F: 734-913-7511 C: 1

Argentina:
BUEN ARGENTINA SRL
BUENOS AIRES Garcia del Rio 2477 Piso 7 Oficina "A" (1429) Buenos Aires-Argentina
P: 11-4704-5100 F: 11-4704-0033 C: 54

Brazil:
NSK BRASIL LTDA. www.br.nsk.com
SAO PAULO Rua 13 de Maio 1633-14° Andar-Bela Vista-CEP 01327-905 Sao Paulo, SP, Brazil
P: 011-3269-4700 F: 011-3269-4720 C: 55
SUZANO PLANT Av. Veredas, 66, Batista Filipe-000, Vila Maluf, Suzano, SP, Brazil
P: 011-4741-4090 F: 011-4748-2355 C: 55
BELO HORIZONTE Rua Ceara 1431-4° andar-sala 405-Funcionarios Belo Horizonte-MG, Brazil 30150-311
P: 031-3274-2477 F: 031-3273-4408 C: 55
JOINVILLE Rua Blumenau, 178-sala 910-Centro Joinville-SC, Brazil 89204-250
P: 047-3422-5445/3433-3627 F: 047-3422-2817 C: 55
PORTO ALEGRE Av. Cristovao Colombo, 1694-sala 202-Floresta Porto Alegre-RS, Brazil 90560 001
P: 051-3222-1324/3346-7851 F: 051-3222-2599 C: 55
RECIFE Av. Conselheiro Aguiar, 2733° andar-conj. 604-Boa Viagem Recife-PE, Brazil 51020-020
P: 081-3326-3781 F: 081-3326-5047 C: 55

Canada:
NSK CANADA INC. www.ca.nsk.com
HEAD OFFICE 5585 McAdam Road, Mississauga, Ontario, Canada L4Z 1N4
P: 905-890-0740 F: 905-890-0488 C: 1
MONTREAL 2150-32E Avenue, Lachine, Quebec, Canada H8T 3H7
P: 514-634-1220 F: 514-633-8164 C: 1
TORONTO 5585 McAdam Road, Mississauga, Ontario, Canada L4Z 1N4
P: 905-890-0561 F: 905-890-1938 C: 1
VANCOUVER 3353 Wayburne Drive, Burnaby, British Columbia, Canada V5G 4L4
P: 604-294-1151 F: 604-294-1407 C: 1

Mexico:
NSK RODAMIENTOS MEXICANA, S.A. DE C.V. www.mx.nsk.com
MEXICO CITY Av. Presidente Lopez No. 2007 Torit 0520 Col San Jeronimo Tepetlaco, Tlalnepantla, Estado de Mexico, C.P. 54090, Mexico
P: 55-5390-4312 F: 55-5390-8175 C: 52

United States of America:
NSK CORPORATION www.us.nsk.com
[CORPORATE OFFICE]
ANN ARBOR 4200 Goss Road, Ann Arbor, Michigan 48108-9754, U.S.A.
P: 734-913-7500 F: 734-913-7511 C: 1

[NSK AMERICAN TECHNOLOGY CENTER]
ANN ARBOR 4200 Goss Road, Ann Arbor, Michigan 48105-2799, U.S.A.
P: 734-913-7500 F: 734-913-7852 C: 1

[BRANCHES and DISTRIBUTION CENTERS]
SANTA FE SPRINGS 12839 Florence Avenue, Santa Fe Springs, California 90670-4501, U.S.A.
P: 562-968-1000 F: 562-968-1023 C: 1

PLAINFIELD 1581 South Perry Road, Plainfield, Indiana 46168-7602, U.S.A.
P: 317-837-8879 F: 317-837-7207 C: 1
FRANKLIN 3400 Bearing Drive, Franklin, Indiana 46131-9660, U.S.A.
P: 317-738-5000 F: 317-738-4310 C: 1

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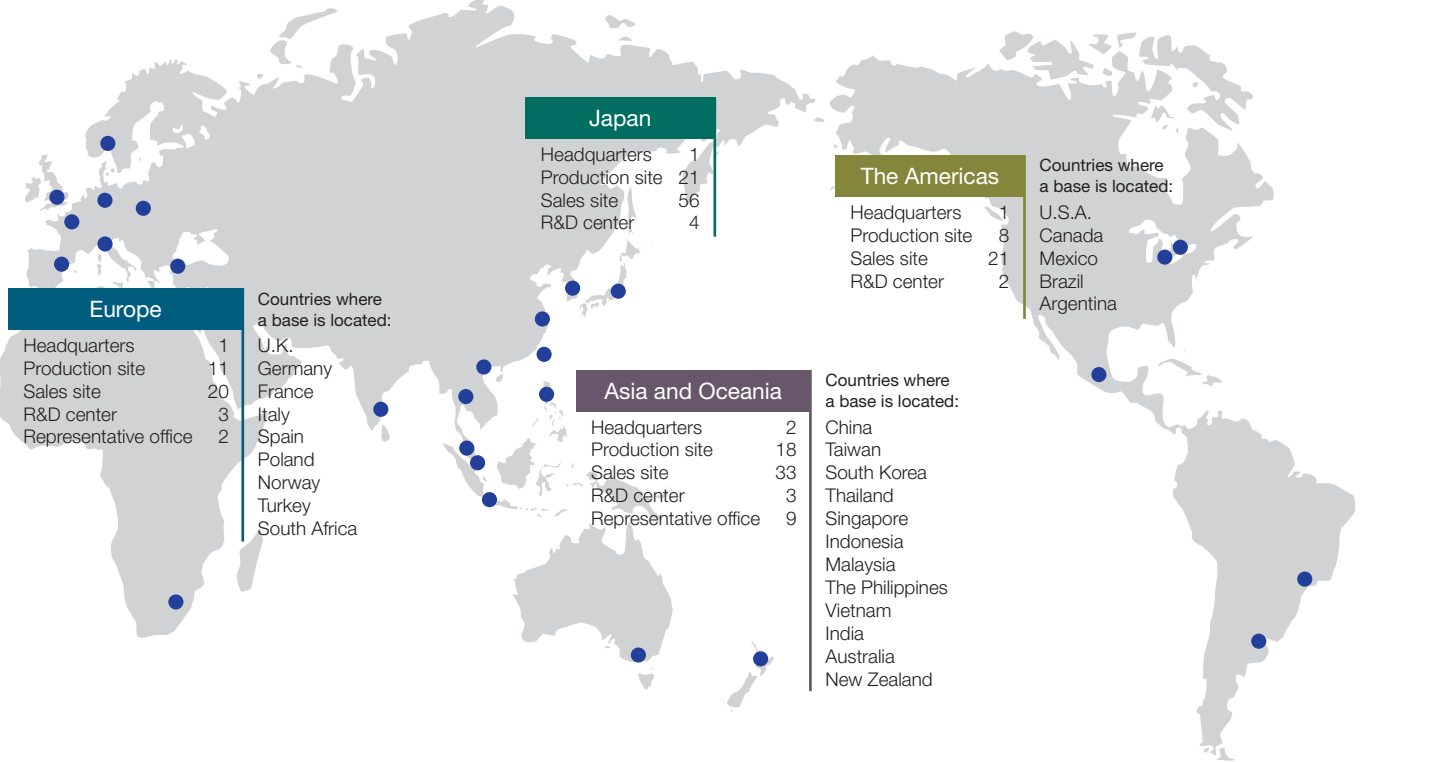
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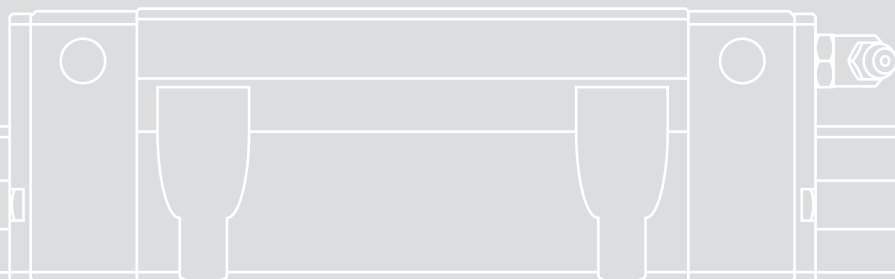
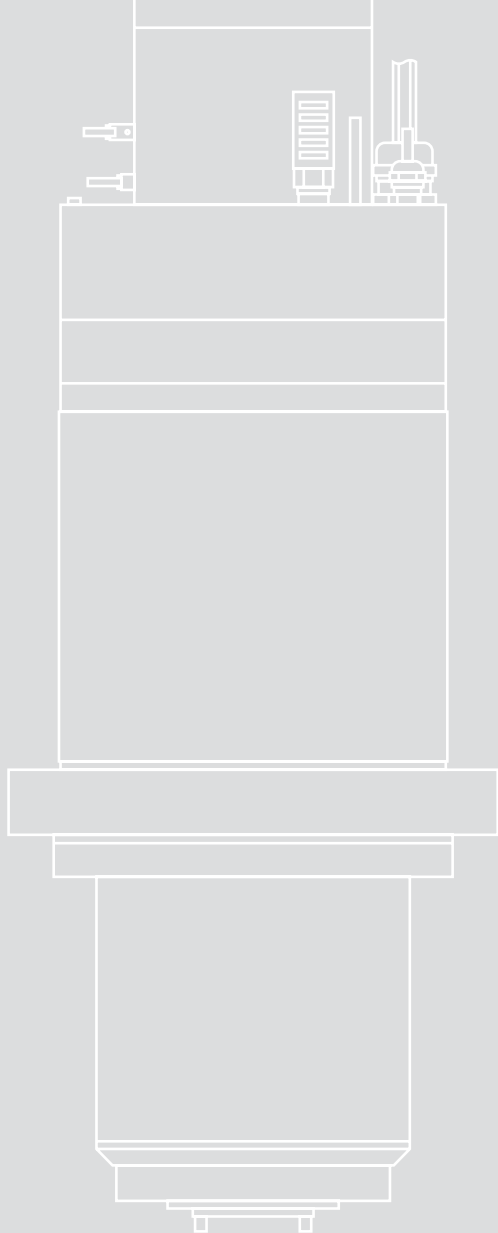
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