SKF

Solutions for Machine Tool Builders and Users



SKF Precision Technologies

Your one-stop shop for all your production machinery needs

In this brochure you will find the SKF® product offerings for machine tool builders and users. In addition to a wide range of products, SKF also offers comprehensive services for selecting, maintaining, repairing and monitoring production equipment. SKF's technical specialists and dedicated sales teams, located worldwide, look forward to serving you.

Engineering Handbook on-line
Catalogs, budgetary prices and engineering data are available online for many of our slide and spindle offerings. Downloadable DWG and DXF files are available to place in your CAD drawing. Our "Idea Book" may already have solved your production problem.
For catalogs not listed please visit www.skfpt.com or contact your SKF sales representative.





SKF Precision Technologies

SKF Precision Technologies, a division of SKF USA Inc. is dedicated to the manufacturing and sales of high-precision products and services for the manufacturing industries.

The SKF group,
a worldwide corporation
SKF, an international industrial group operating in 130 countries, is a world leader in bearings. Founded in 1907, SKF now has 40,000 employees and 80 manufacturing facilities throughout the world. SKF's international sales network includes a large number of sales companies and approximately 20,000 distributors and retailers. Worldwide availability of SKF products is supported by a comprehensive advisory service.

SKF’s keys to your success



Aerospace



Automotive



Wood Working



Sawing



Automation



Milling



Grinding

Selection

Exposure to a wide variety of applications enables SKF to process a complete range of products and services to meet customers’ demands in high-precision bearings that provide the ultimate performance in accuracy; durability and reliability; complete motorized machine tool spindles; a broad assortment of linear products including precision ground ball screws, roll guides and sliders. Condition and spindle monitoring, as well as special sensors for machine tools, are products to optimize the performance of SKF systems. Complementary products such as measuring equipment and lubrication systems complete the offering.

Solutions

The experience gained in many industrial fields provides SKF Machine Tool & Precision Technologies with the essential knowledge and expertise to provide customers with the most advanced engineering solutions. SKF welcomes the opportunity to participate in the earliest stages of development to help define the optimum products, solutions, upgrades or reconditioning and repairs to meet your needs.

Innovation

SKF strives to be at the forefront in developing new solutions and products. Close cooperation with customers, combined with the expertise and competence of SKF’s research center in Holland, has led over the years to the development and introduction of new materials from ceramics to special steel; new designs, such as high-speed cylindrical roller bearings and innovative spindle concepts; as well as highly sophisticated measuring and modeling systems to predict application behavior.

Applications

Whenever accuracy, high-speed, high-precision or reliability of machine tool precision parts is required – from the aerospace to automotive industries, from machine tool to woodworking machinery applications, from glass and marble processing to turbochargers – SKF Precision Technologies can offer the right solution.

Machine tool bearings

Silicone nitride cylindrical roller bearings (SNCRB)

These bearings are some of the best and simplest solutions for high-speed spindles where the capability to withstand heavy radial loads, together with high rigidity, is required.

SNCRB have been specifically designed to achieve a running speed much higher than conventional cylindrical roller bearings through the adoption of advanced ceramic rolling elements and a high-speed, high-tech plastic cage.

Several features make this bearing the perfect solution for optimized spindle performance. Its tapered bore provides easy and precise preload tolerance adjustment. You have the ability to allow for axial shaft displacements without special bushings in the spindle back end, as well as the capability to achieve very compact and simple spindle designs.

Visit www.skfpt.com for more information.

Nitroalloy series

SKF's recent research and development activities in the field of materials have given birth to the Nitroalloy bearings series. The demand for nitrogen alloyed stainless steel bearings originated in aerospace, an industry where there is no compromise when it comes to performance and reliability.

In addition to the special steel properties that make these bearings particularly suitable for aggressive environments and severe application conditions (such as, contaminated lubrication or high speeds), this new bearing series is equipped with silicon nitrite rolling elements that improve dynamic performance.

Features that make the Nitroalloy series the SKF answer for ultimate performance include extended service life, optimal corrosion resistance, improved dimensional stability and higher reliability under poor lubrication conditions compared with standard chromium steel.

Visit www.skfpt.com for more information.

Magnetic

SKF's magnetic bearings are a non-contacting technology, which means they have negligible friction loss, no wear and higher reliability. This allows the bearings to reach previously unachievable surface speeds. Lubrication and wear particles are eliminated, so these bearings can be incorporated into clean environment processes that are sensitive to contamination, such as the vacuum chambers where many semiconductor manufacturing processes take place.

Magnetic bearings feature high reliability, the ability to perform in a clean environment (due to the elimination of lubrication and wear particles), higher speeds, improved position and vibration control and the ability to operate in extreme conditions involving temperature, corrosive fluids or pressurized environments.

Visit www.revolve.com for more information.







Machine tool bearings

Sealed high-precision angular contact ball bearings series

Polluted environments?
What causes bearing failure?
Analysis of the origins of bearing failures showed about 40% of total cases were caused by contamination, such as particles and fibers accessing the area where rolling contact takes place; lubrication problems like polluted lubricant or loss of lubricant; and corrosion due to inefficient bearing seals.

The new sealed high-precision angular contact ball bearings series is SKF's solution to these problems and permits end users to minimize machine downtime for maintenance operations. Low friction seals and correct grease quantity and type enable high-speed ratings, and at the same time act as a strong barrier to pollution and contamination agents, thereby extending the service life of the bearings.

Further benefits of sealed bearings are evident when it comes to mounting. The bearings are ready to mount, which means no risk of contamination during the greasing operation, easier handling and a reduction in assembly time.

Visit www.skfpt.com for more information.

KMT and KMTA locknuts

Accurate axial location of mechanical components
KMT and KMTA locknuts are precision-locking devices with a unique design. The three brass locking pins, which are equally spaced around the circumference allows effective locking and accurate adjustment to eliminate shaft runouts induced by the tightening torque.

KMT locknuts permit bearings and other components to be simply and reliably located in the axial direction on shafts. High-accuracy mounting and dismounting are also fast and easy. Moreover, KMT locknuts are reusable.

These high-precision components withstand high axial loads, accommodating the axial forces by the nut thread flanks and absorbing the same forces by the entire threaded length.

Visit www.skfpt.com for more information.





Spindles

Integral motor spindles

MECH-TRONIX:
Catalog No. 401
- Complete spindle systems
  – Chillers
  – Drives
  – Tool adapters
- 3 standard tool interfaces
- 4 bearing structures
- 11,800 RPM max.
- Up to 20 HP (SI duty)

High-speed milling and grinding spindles
- High-speed machining center spindles
- Economical solutions for non-ferrous applications
- SKF worldwide service with manufacturing facilities in U.S.A., Europe and Asia



GHS high-speed spindles:
Catalog No. 802
- Direct replacement for popular 60, 80 and 100 mm dia. cartridge spindles
- Spindle speeds up to 40,000 RPM and up to 6.8 kW

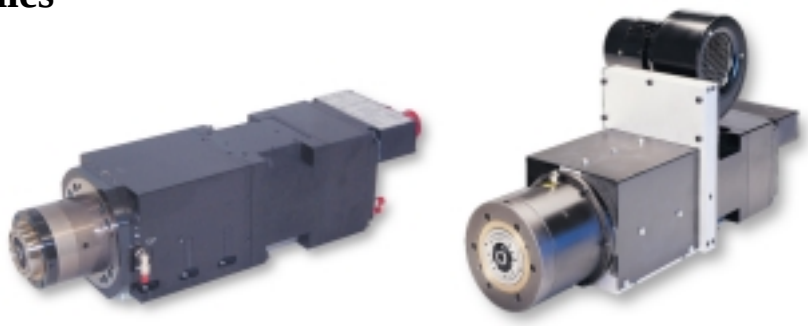
GNS grinding spindles:
Catalog No. 1002
- Larger cartridge spindles: 100, 120, 150 and 170 mm dia.
- Spindle speeds up to 105,000 RPM and up to 36.5 kW
- Special application configurations

Hyperspin magnetic bearing spindles:
- Non contacting - high reliability, very high speed
- Low vibration
- No contamination

Visit www.revolve.com for more information on magnetic bearing spindles.

Medium and high-speed integral motor routing and woodworking spindles

WOOD-CHUK: Catalog No. 702
- Low maintenance
- 7000 RPM 8 kW air-cooled, sealed, grease-lubricated steel bearings
- 18,000 RPM 8.5 kW air-cooled, sealed, grease-lubricated ceramic bearings
- 24,000 RPM 15 kW liquid-cooled, sealed, grease-lubricated ceramic bearings



Cartridge and block belt-driven spindles

Catalog No. 606
- Ten standard tool interface styles
- Multiple bearing setups
- 8 spindle sizes: 1.25" to 8" cartridge dia.
- 36 lb. thrust to 4700 lb. thrust
- Up to 15,800 RPM max.
- Up to 30 HP
- All components in stock



Lubrication and monitoring

Oil air lubrication system

The SKF oil air lubrication system is designed to meet the needs of the latest generation of high-speed machining centers where one of the drawbacks of grease lubrication is the requirement for frequent refilling.

The system can control oil delivery as accurately as 0.012 cc injections every few minutes for stable temperature in the spindle.

The controller series is designed for up to eight outlets, each of them independently controlled to fit the needs of a large variety of spindle designs.

Visit www.skfpt.com for more information.

Spindle monitoring and recording unit

Maintenance of spindles is costly because the running hours and operating conditions largely depend on the type of operation. It is difficult to know when the spindle is near the end of its life period.

The Spindle Monitoring and Recording Unit (SMRU) has been designed to register the temperatures, rotational speed and running hours. It is meant as a tool for maintenance planning and to record if the spindle has run outside the normal operating conditions.

The SMRU is a black box that can be either integrated into the spindle or bolted to it. Therefore, the SMRU can provide a means of identification of the Spindle. It can hold specific information about the Spindle as to its use, maintenance history and its identity. A fleet of SMRUs can be managed in a network.

Visit www.skfpt.com for more information.





Slides

Dovetail slides

ND (NEXTDAY) line:
Catalog No. 301
- Immediate delivery off-the-shelf product
- In widths of 4", 6", 8", 10"
- Saddle travels of 4", 6", 8", 10"
- Reversible screw drive end and gib side
- Includes holes for mounting and compounding
- Matching angle brackets





L & H tool slide line:
Catalog No. 400
- 2", 3", 4", 6", 8" widths
- Lead screw drives
- Off-the-shelf product



DC line:
Catalog No. 400
- 2" to 20" widths
- Length and travels built-to-order
- Several drive styles



Hardened steel way slides

Basic and drive equipped:
Catalog No. 707
- 5" through 32" widths
- Travel and slide lengths built-to-order
- Several drive styles
- Production cycle durability
- Good for heavy machining applications

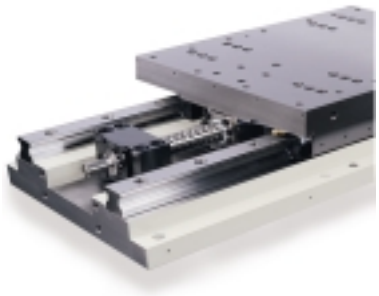




Linear slides and stages

Basic and drive equipped:
Catalog No. 201
- 9" to 24" widths
- Ball or roller styles
- Used for high-speed applications
- High-speed drives
- Pre-loaded bearings





Linear rails and shafting

Ball linear profile rails:
Catalog No. 5350E
- Linear ball bearings (inch and metric)
- Speedi-Roll
- Profile rail guides
- Miniature profile rail guides
- Precision rail guides

Roller linear profile rails



Round shaft bushings and other linear guidance styles



Precision rail guides:
Catalog No. 4183E

Linear ball bearings
(round shaft bushings):
Catalog No. 980-700E (inch series)
Catalog No. 4182E (metric series)

Multi-axis machining modules

MODULE-MATION® standard units:
Catalog No. 902
- 3 sizes
- 7.5 to 30 HP
- Pre-engineered 3-axis units
- Four spindles to select from:
  - Belt-driven
  - Integral motor
  - High-speed
  - Indexing heads



Custom modules
Full integration services:

- Plumbing
- Wiring
- Full CNC stations
- Custom 3-axis combinations



Custom products

- Slide/spindle combinations
- Custom machining
- Special designs and combinations
- Multi-spindle modules



Ball and roller screws

SKF has produced and sold high-precision ball screws for over 30 years. One important application for ball screws is providing the linear drive for machine tool axes. However, ball screws are also in many other applications requiring linear movement, such as measurement instruments, robotics, and material handling, just to name a few examples.

Our ball and roller screw offerings are also available as an assembly with support bearings at the ends, ready to bolt in place. This eliminates time consuming alignment procedures.

Ground ball screws:
Catalog No. 4621E

- Flanged or cylindrical nuts
- Single or double preloaded
- Standard range covers 16 to 125 mm diameter
- Loads from 2 to 50 Nm
- Lengths up to 18 meters
- Custom designs available



Planetary/roller screws:
Catalog No. 4351E

- Planetary, flanged or recirculating nuts
- Standard range covers 8 to 125 mm diameter
- Loads from 19 to 208 Nm
- Lengths up to 18 meters
- Built-in wipers available
- Backlash elimination with oversize rollers
- High rotational speed and long lead permit linear speeds up to 60 meters/minute
- Custom designs available



Ball screws:
Catalog No. 4141E

- Recirculating, rotating nuts
- Single or double preloaded
- Standard range covers 6 to 80 mm diameter
- Linear speeds up to 110 m/min.
- Inertia reduced from 6000 kgmm2 to 3800 kgmm2 for a screw shaft
- Fixed screw shaft allows for simplified mounting
- Custom designs available



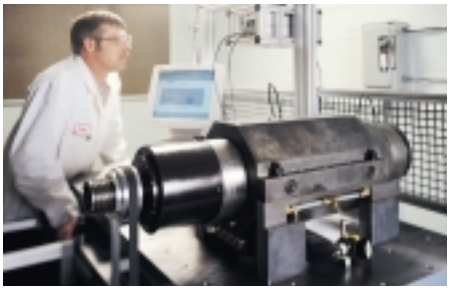
Support bearings and bearing units for screw drives

High-precision Single Direction Angular Contact Thrust Ball Bearings have been developed especially for the support of ball and roller screws in machine tools. They incorporate a large number of balls and have a special internal design with a contact angle of 60° to provide superior axial stiffness. These bearings also have high axial load ratings, high running accuracy together speed and acceleration capability and low frictional torque.



Visit www.skfpt.com for more information.

Service and repair



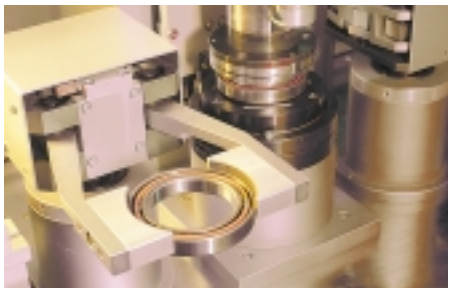
Spindle service and repair

Catalog No. 5352E
Supporting customers with post-sale services is more important than ever at SKF. Spindle downtime can be very costly, and an SKF Spindle Repair Center can help you dramatically reduce your downtime.

When a spindle arrives at an SKF Spindle Repair Center, it goes through a series of checks, operations and controls: demanding analysis of breakdown and causes, static balancing of rotating components, replacement or refurbishing of damaged components, assembling, complete testing and final check, and certification. If necessary, proposals for modification and optimization of spindle design can also be made.

Thousands of SKF spindles are installed in machines around the world. SKF Spindle Repair Centers can fix belt-driven, motorized and high-frequency spindles; hydraulic and hydrodynamic spindles; and any other spindle design or brand.

- Part of SKF worldwide service network
- Supporting all SKF spindle technology including Gamfior S.P.A.
- Factory warranty with documentation
- No-charge spindle analysis
  - All brands and model types
  - Spindle upgrades available
- Supported by SKF Bearing Service Center
- Spindle maintenance training available
- Preventative maintenance programs available



Spindle bearing service centers

Manufacturers and rebuilders are well aware of the long lead times sometimes needed to customize small lots of bearings to fill a particular design requirement or replace a hard to get bearing arrangement. This might increase downtime for rebuilders or delay production for OEMs.

SKF Bearing Service Centers can customize high-precision bearings in duplex, triplex and quadruplex sets; switch from full steel to hybrid ceramic bearings; arrange for special preload modifications; and pregrease bearings, with quick turn-around time.

Visit www.skfpt.com for more information.



Ball screw service and repair

As an industry leader, SKF has the technical expertise you've come to expect and depend on to keep your equipment running. Our dedicated service channel will address your ball screw repair needs in the most timely manner possible. All our new and repaired ball screws must pass a final inspection so that you receive the highest quality product possible.

- Free inspection and analysis
- Comprehensive failure analysis reporting
- Repair on all makes and models (inch and metric)
- Extensive library of over 35,000 prints
- Reverse engineering available when needed
- Extensive replacement ball nut inventory
- Plating available where required
- End journal repair and machining
- Ball screw support bearings
- Emergency service/quick turn-around upon request
- On-site field service upon request

Visit www.skfpt.com for more information.

Europe

Austria
SKF Österreich AG
Telephone: +43 7252 797 731
Fax: +43 7252 797-732
e-mail: spindelservice.at@skf.com

Italy
GAMFIOR S.p.A.
Telephone: +39 011 222111
Fax: +39 011 2620906
e-mail: spserv@gamfior.com

Germany
SKF GmbH
Telephone: +49 9721 56 3806
Fax: +49 9721 56 2013
e-mail: spindelservice.de@skf.com

Sweden
SKF Sverige AB
Telephone: +46 31 3371646
Fax: +46 31 3371113
e-mail: spindelservice.se@skf.com

United Kingdom
SKF UK Ltd - MTSR
Telephone: +44 1582 494674
Fax: +44 1582 494808
e-mail: spindleservice.uk@skf.com

North America

United States
SKF Precision Technologies,
a division of SKF USA Inc.
P.O. Box 5, Grafton, WI 53024-0005
Telephone: 800 445 6267 or 262 377 2434
Fax: 262 377 9438
e-mail: sales@skfpt.com

TCM, a division of SKF USA Inc.
69900 Powell Road, Armada, MI 48005
Telephone: 586 752 0060
Fax: 586 752 0755
e-mail: sales@skfpt.com

SKF Linear Motion
& Precision Technologies
1530 Valley Center Parkway
Bethlehem, PA 18017
Telephone: 800 221 8325
Fax: 610 861 3737
e-mail: sales@skfpt.com

Canada
SKF Canada Ltd.
40 Executive Court
Scarborough, ON, M1S 4N4, Canada
Telephone: 416 299 2802
Fax: 416 299 0501

Revolve Magnetic Bearings Inc.
928 - 72nd Avenue NE
Calgary, AB, T2E 8V9, Canada
Telephone: 403 232 9292
Fax: 403 232 9255
e-mail: magnetic.bearings@skf.com
web: www.revolve.com

http://www.skfpt.com

Asia

India
SKF Bearings India Ltd.
Telephone: +91 20 4112477
Fax: +91 20 7451266
e-mail: spindleservice.in@skf.com

Japan
SKF Japan Ltd.
Telephone: +81 266 79 5959
Fax: +81 266 79 5877
e-mail: spindleservice.jp@skf.com

South America

Brazil
SKF do Brasil Ltda
Telephone: +55 11 4448 8200
Fax: +55 11 4448 8652
e-mail: spindleservice.br@skf.com

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