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Medical applications
with solutions from SKF

SKF

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Confidence in technical equipment is a key factor in today's medical world

In today's medical world safety, reliability, precision and speed are crucial for both patients and medical personnel.

As hospital environments become more and more complex and turbulent, doctors have to rely on their equipment during surgery, examinations and treatment procedures.

Knowing the needs

SKF has a comprehensive knowledge of the medical world and has developed a unique range of products and solutions for the medical industry.

Our advanced guiding, actuation, bearing and sealing systems are manufactured to meet your requirements, and comply with all major specifications and regulations of the medical industry, such as EN and UL approvals.

From concept to product launch, SKF is geared towards safety and quality. SKF products are integrated into customer prototype runs and we provide thorough testing support before the system is approved for volume production.

Setting new standards

With its global presence, SKF supports the medical industry's continuous need for enhanced functionality. SKF is committed to providing the latest developments for integration into new products and to setting new standards for innovation. State-of-the-art equipment monitors SKF products throughout the production process to comply fully with customer requirements and our own quality standards.

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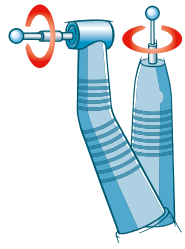
SKF ... your medical partner

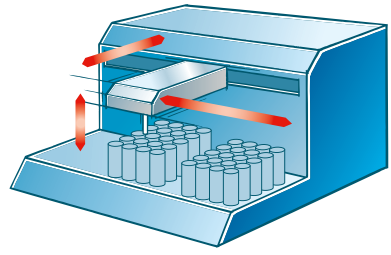
Having the solutions
Our business is not just about selling products, it is about providing solutions. Our goal is to build an innovative, creative and meaningful partnership with our customers, in order to improve their competitiveness and to create added value.

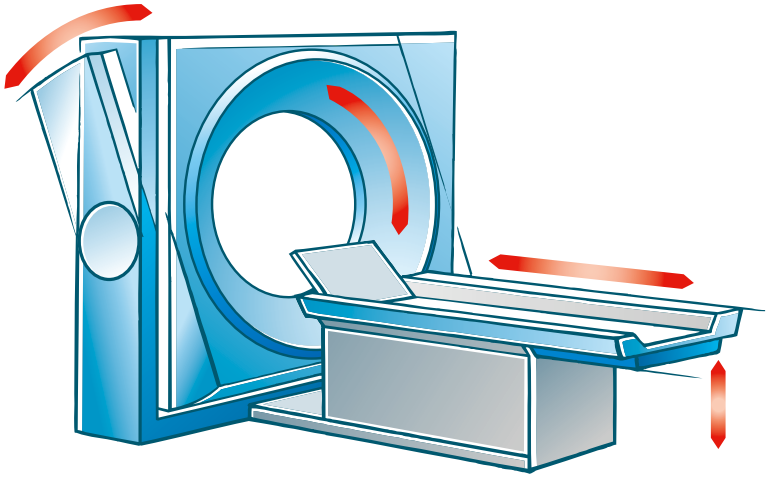
As a full system supplier in the medical field, SKF offers joint development and engineering in addition to a large and complete range of products.

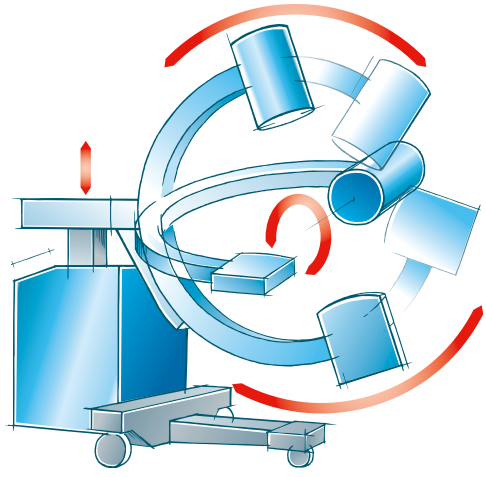
The vital ingredients are our design philosophy, engineering skills and QFD (Quality Function Deployment), 3D-CAD (Computer-Aided Design) and PDM (Product Data Management) tools.

SKF has the knowledge, the skills and the experience to develop a perfect customized solution for you.









Features/Benefits:
This full line of SKF products has been designed specifically for medical applications where reliability, safety and patient comfort are important design considerations. They feature durable components for reliable, quiet operation with minimal vibration even when under heavy load. In addition, these products, which are EN and UL approved for medical applications, are designed for easy cleaning and maintenance.

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Medical actuator range & systems

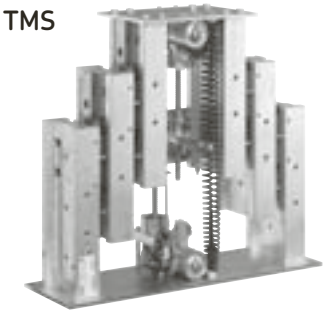
A comprehensive range of actuators and actuation systems is an integral part of our product range for medical applications. The products are designed and selected to meet the highly functional and aesthetic demands needed for medical equipment in hospitals as well as in other medical environments, where safety, quality and reliability are the key factors.

Telemag

The TELEMAG series features the best combination of minimum retracted length and large stroke length. They are used wherever durable and safe guiding systems are needed. Control units, which allow a flexible and application focused system control, complement the line of Telemag

- Max. load 4 000 N
- Max. speed 42 mm/s
- Supply voltage 24/120/230 V
- Max. ampere 6,5 A
- Protection class IP30/40

TMS



The TMS is a strong telescopic pillar with an optimal stroke/retracted length ratio for the lift of heavy eccentric loads. The TMS is fast, silent and able to lift 400 kg centric load or 150 kg eccentric load in a 2 m distance away from the pillar.

- Max. load 4 000 N
- Max. speed 28 mm/s
- Supply voltage 24 V
- Max. ampere 2x6 A
- Protection class SELV

CAR(R/L)

The CAR(R/L) series offers a unique standard of performance, durability, and reliability. The compact design incorporates an SKF high-efficiency ball screw, a sturdy gearbox assembly, and high-quality DC or AC motor, all to give the best performance possible with longer operational life.

- Max. load 6 000 N
- Max. speed 60 mm/s
- Supply voltage 12/24/110/220 V
- Max. ampere 16 A
- Protection class IP44/54

Runner

The RUNNER is a very compact, high-performance actuator combining the capability to move large loads at high speeds.The system includes a single fault safe control unit for up to 3 actuators as well as corresponding accessories.

The RUNNER system is compatible with the DC-Telemag series.

- Max. load 12 000 N
- Max. speed 7,5 mm/s
- Supply voltage 24 V DC
- Max. ampere 7 A
- Protection class IPx4/x6

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magnetic

CAT(R/L)

CAT(R/L) is a modular design concept that makes it easy to interchange components such as motors, gears, screws, attachments etc.

Custom built actuators are easily and efficiently built from standard parts. The flexibility of CAT range makes it suitable for an infinite number of applications.

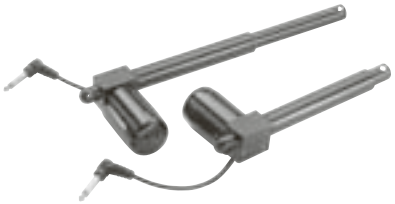
- Max. load 4 000 N
- Max. speed 67 mm/s
- Supply voltage 12/24/110/230/380 V
- Max. ampere 4 A
- Protection class IPx4/66

Matrix

The MATRIX series includes powerful AC and DC actuators. They run very quietly, take up little space and can be installed at virtually any angle in vertical or horizontal position. The Matrix series is complimented by the KOM control units, which allow a flexible and application-focused system control.

- Max. load 8 000 N
- Max. speed 18 mm/s
- Supply voltage 24/120/230 V
- Max ampere 5,2 A
- Protection class IP66

CAT (R/L) 21



The CAT 21B actuator is a small, highly efficient DC actuator. Its compact design makes it ideal for applications where high operating reliability and durability are required in limited space. The actuator is built around a SKF high efficiency ball screw and a compact worm gearbox.

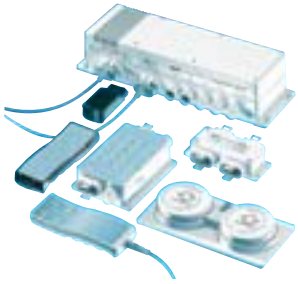
- Max. load 600 N
- Max. speed 10 mm/s
- Supply voltage 12/24 V
- Max. ampere 2 A
- Protection class IPX4

Magforce

The ASM and PSX actuators out of the MAGFORCE range offer strong, fast and silent movements with an excellent safety and long duty cycle. The drives are available in several different motor versions and include many interface options such as hall encoder, end switch, outstanding shaft etc.

- Max. load 10 000 N
- Max. speed 50 mm/s
- Supply voltage 12/24/230 V
- Max. ampere 16 A
- Protection class IP40/44

Control Units & Accessories



The KOM control units are designed for MATRIX DC linear actuators and TELEMAG DC telescopic pillars.

A large variety of KOM control units allows the connection of up to five actuators and several external options. In addition to the different control units, SKF offers a large variety of accessories such as hand and foot switches, locking devices, distributor boxes etc.

- Types "basic" or "encoder processing"
- Motor connections, max. 5
- Supply voltage 120/230 V
- Max. ampere 2x6 A

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Medical range - linear guides & screws

Essential features such as reliability, repeatability, precision and high quality are required to satisfy medical demands. SKF offers a wide range of components and systems for driving and guiding applications

Linear ball bearings

Linear ball bearings with re-circulating ball tracks which provide low friction movement and the possibility of unlimited stroke length. With our range of shafts and linear ball bearings, plain bearings and accessories it is possible to design and construct simple, economical linear guiding systems, to suit a wide range of applications.

- ISO Series 1 from ∅=3 to 50 mm
- ISO Series 3 from ∅=5 to 80 mm
- Dynamic load capacities from 60 to 37 500 N

Miniature profile rail guides

SKF has extended its product range with a stainless miniature profile rail guide. Miniature profile rails have universal applications and are particularly suitable for use in laboratory equipment, electronics production and precision mechanics.

- Sizes 7 to 15 mm (also available in long and wide versions)
- Dynamic load capacities from 860 to 5 830 N

Miniature slides

LZM miniature slides provide the ideal solution for precise and short stroke lengths in compact frame dimensions for use in medical, measurement and micro mechanics applications.

Smooth motion and a running accuracy of 2 µm over a 100 mm stroke length are possible.

- Sizes from 7 to 15 mm (also available in wide versions)
- Dynamic load capacities from 1 000 to 8 400 N

Profile rail guides

Profile rail guides are used to build linear guiding systems with unlimited travel. The rectangular configuration of the raceways provides a guidance system with excellent rigidity, capable of withstanding torque loads in all directions. The load carrying capacity is equal in all four directions. As standard, they are equipped with grease nipple and seals on all sides for ease of maintenance.

- Sizes from 15 to 45 mm
- Dynamic load capacities from 7 280 to 90 400 N
- Ball retension

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Precison rail guides

Precision rail guides are suitable for applications with limited stroke lengths requiring a high level of rigidity and accurate positioning. The compact design helps to reduce the size of any application where vibration-free, silent operation is essential.

- Sizes from 4 to 55 mm
- Dynamic load capacities up to 13 900 N
- Up to 1 000 mm length
- ACS (Anti Creep System)
- Precision class P10, P5 and P2

Miniature ball screws

A wide range of miniature ball screws offering optimum performance in a compact design, accurate positioning, excellent reliability, smooth running and good repeatability.

- Diameter from 6 to 16 mm
- Lead from 2 to 12,7 mm
- Basic dynamic load up to 7 600 N
- Preloaded versions
- Stainless steel versions
- Back-up nut (optional)
- Non reflecting surface

Ball screws

The high-efficiency screw displaces loads by transforming rotary motion into linear motion. It has balls as the rolling element between the nut and the screw shaft. Several recirculating systems are available. To improve positioning accuracy, backlash can be reduced or eliminated

- Diameter from 16 to 63 mm
- Lead from 5 to 50 mm
- Basic dynamic load up to 95 000 N
- One piece nut with integral flange for preloaded, as well as DIN versions.

Roller screws

For outstanding reliability, threaded or grooved rollers transfer the load from the nut to the screw shaft. This provides a much higher load carrying capacity and a much longer service life than for ball screws of similar size. Non-recirculating rollers provide high speed and acceleration capabilities, exceptional reliability and resistance to adverse environments. The fine thread lead enables accurate positioning, repeatability and rigidity.

- Diameter from 8 to 210 mm
- Lead from 1 to 42 mm
- Basic dynamic load up to 2 235 kN
- Two non-competing designs

Positioning systems

Positioning systems are compact and economical complete solutions. The range covers everything from compact slides with no drives, through to highly dynamic, multi-axis systems with linear motor drive.

- Precision class P10-P1
- Dynamic load capacities up to 46 500 N
- Up to 2 860 mm length

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Medical bearing range, components & systems

SKF as a leading global supplier, offers one of the broadest ranges of products, services and customer solutions to the medical industry. SKF has developed a wide range of rolling bearing, service and seal solutions to meet the demanding needs of medical applications.

Whatever your requirements, SKF can meet your beaing, and seal, needs while working to the highest standards worldwide, by providing tailored and application optimized bearings as

- High precision bearings
- Hybrid bearings
- Ceramic / All-ceramic bearings
- Specialized coating
- Coated bearings
- Slewing bearings
- Miniature bearings
- Sensorized bearings
- Magnetic bearings
- Polymer bearings
- Plain bearings

SKF offers an outstanding variety of standard and tailored solutions for the specialized requirements of the medical market. These solutions bring greater productivity and competitiveness to our customers not only with breakthrough application specific products, but also through leading edge design simulations and consultancy services.

SKF Rotary Actuation System

The SKF Rotary Actuation Systems are mechatronic components applicable for various medical applications and equipment, providing an integration of bearings, actuators, seals, and sensors to an adaptable solution. These enable improved ergonomics, increased performance, user friendliness and total production cost reductions.

- Brake
- Manual motion
- Absolute positioning
- Drive motor
- Load support
- Mechanical interfaces
- Hollow shaft
- Integrated Unit

- Safety brake
- Drive motor
- Absolute positioning
- Backlash free integrated servo gear
- Load support
- Mechanical interfaces
- Integrated unit

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SKF Magnetic Bearings

SKF has raised the standards of performance for rotating equipment by providing durable, cost effective, easy to implement magnetic bearing solutions — adding measurable value to the bottom line. These bearings are non-contact, lubrication- and contamination-free, and operate efficiently at high rotational speeds.

Mechatronic components
- bearings and sensors in components

SKF sensor bearing units can be used to monitor or control operation sequences, motion or steering systems. They are compact, durable, easy-to-mount and cost saving elements for a wide range of applications in open-loop and closed-loop control engineering.

- Save space, weight and cost
- Maintenance free
- Insensitive to environmental influences
- Optimized signal generation and transmission
- Are robust and give output reliable output signals

SKF CT-Bearing Solution
- silent precision bearing for CT-scanners

- Adaptable mechanical interface.
- Minimum space requirements
- High load capacity
- Excellent damping capability and noise absorbing
- High radial run out precision
- High circumferential velocity
- Integrated seals

SKF Goblin, a customized mini-spindle solution
Tailor-made mini-spindle with a holistic concept combining seal, sensor and housing features to suit your nees

- Shaft diameters 1-10 mm
- Different housing materials
- Low friction and high accuracy
- Controlled noise
- Long life / maintenance free
- Extreme accelerations
- Speeds up to 200 000 rpm
- Integrated sensor

Sensorized ROTOSTAT™seal

SKF has a strong capability in providing customized sealing solutions. A good example of this is the sensorized ROTOSTAT™ seal design which integrates a speed sensor and PTFE seal in a custom designed metal frame to form a single, integrated assembly. SKF has extensive experience in providing all types of radial shaft seals, as well as a unique capability in bonding elastomerics and metal.

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Medical applications

Typical applications:
C-Arms
Radiography
CT-Scanners
Mammography
Surgery tables
Nuclear imaging
Magnetic Resonance Imaging (MRI)
Positron Emission Tomography (PET)
Blood analysers
Centrifuges
Incubators
Ophthalmic tables
Dental drills

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