

SKF linear motion solutions for medical equipment





The way to care

In today's medical world, comfort and safety are key requirements. Hospital environments become more and more complex and expensive, therefore effectiveness, reliability and speed are crucial.

Doctors need to be precise in their diagnostics and also fast. They have to rely on their equipment during examination, surgery and treatment procedures.

Workflow and speed are equally significant for patient safety and ergonomic support. A focus on quality and reliability, coupled with supporting and monitoring services, can put a healthcare device manufacturer at the forefront of its industry.

Thanks to its deep knowledge of the medical industry, SKF has developed a unique range of products and services. Our advanced actuation and guiding systems, bearings and seals are manufactured to meet the industry's requirements and to comply with all specifications and regulations of the medical industry, such as those required by EN and UL standards.

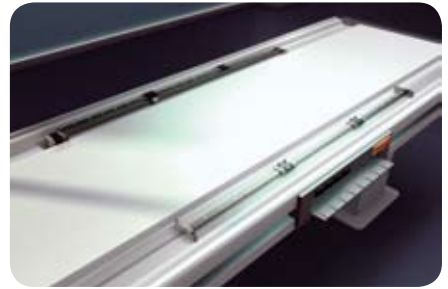
From concept to product launch, SKF strives to achieve maximum quality and safety.

SKF offers a full line of products especially designed for medical applications which provides:

- High performance and reliability
- Compact and robust designs
- Compliance with standards and regulations
- Extensive industry experience and knowledge
- Global presence and knowledge support

Business is not just about selling products; it is about providing solutions. SKF's goal is to build an innovative, creative and meaningful partnership with customers to improve their competitiveness and create added value. SKF's engineers provide solutions that optimize the performance of the equipment while helping medical design engineers achieve their goals of reliability, enhanced performance, and safety.





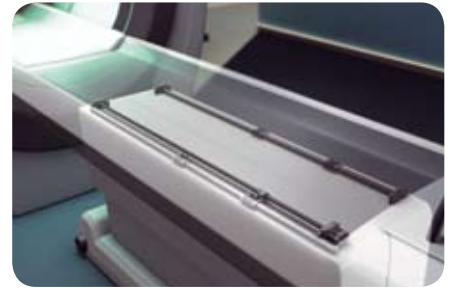
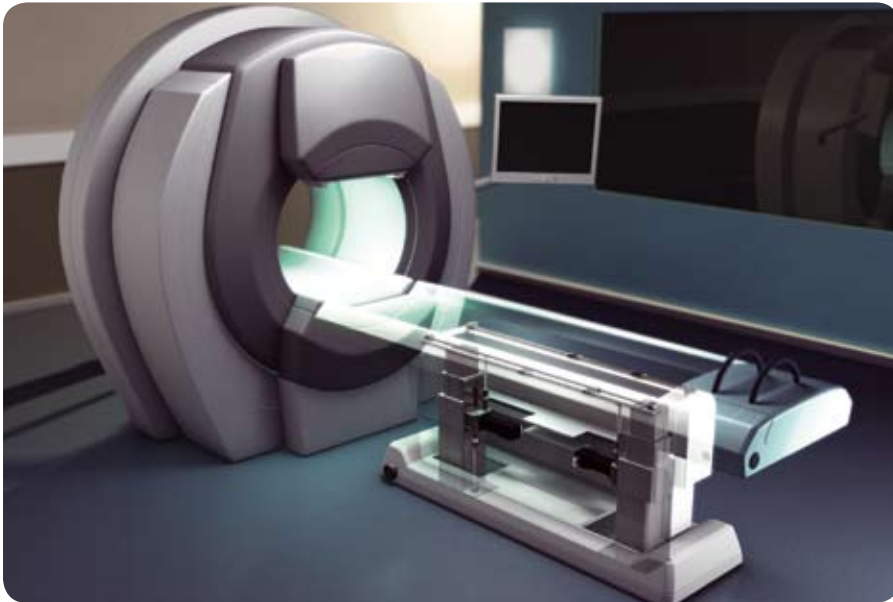
Bucky systems

SKF actuators, pillars and profile rail guides are specially designed for versatile and efficient radiographic procedures in order to increase patient comfort with reduced positioning time and efforts. They require minimum space for easy integration into the equipment and are conveniently controlled and adjusted. Thanks to SKF state-of-the-art products, table designs can be more open and more easily accessible, allowing better access for the patient.



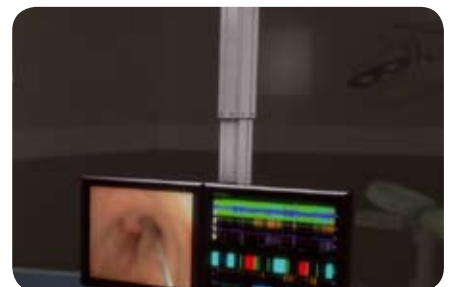
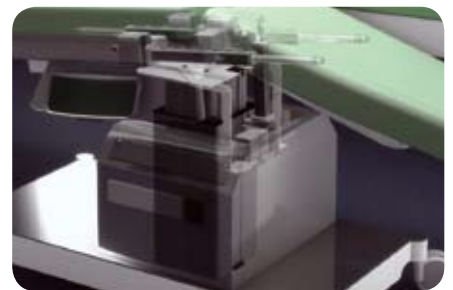
Mobile C-arm

By listening to our customers, employing cutting-edge motion technologies, and keeping constant vigilance on quality, SKF sets the trend for continuous technological advancement in surgical imaging. SKF Actuation System pillars and SKF profile rail guides help to reduce installation and maintenance costs and are designed to take large offset loads. In addition, the vertical movement solution provided by the pillars represents an attractive alternative to self-made guiding solutions. To identify your own solution and obtain the optimum in lift functions, see SKF's extensive actuator and linear guidance range.



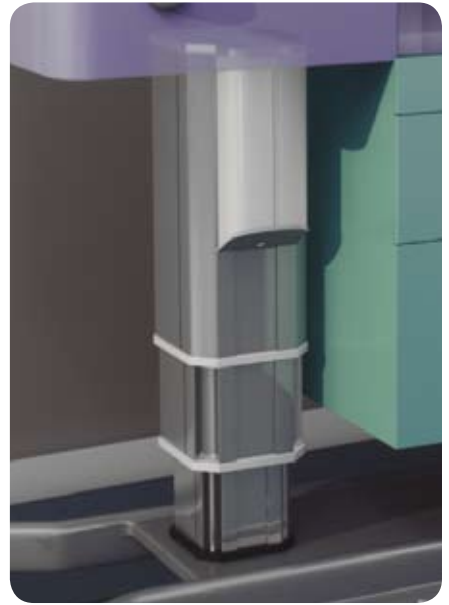
CT Scanner

Precise movement, stiffness, and reliability are some of the key factors when it comes to CT patient tables. Over years of partnership with customers, SKF has developed tailored solutions and gained a high level of expertise in the medical imaging field. Thanks to the precision of SKF pillars and profile rail guides, the image quality is improved and patients' stress is reduced to its minimum. Telescopic solutions provide easy and safe patient entry with maximum lift functionality.



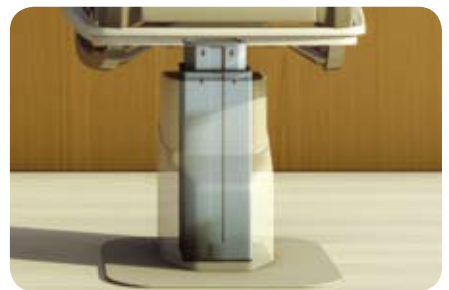
Surgery table/Ceiling system

Surgery tables requires products capable of handling high loads and very low retracted height for easier patient access. SKF offers a unique range of pillars and actuators for height adjustment, Trendelenburg and backrest movement. For a more complete solution, SKF also provides compact and single fault safe control units as well as operating switches. For ceiling applications, SKF recommends several combinations out of its large tubeset series, from 2 to 7 sections. All tube sets are nearly play free adjusted and virtually maintenance-free. Their modular designs allow flexibility and quick time to market. In combination with SKF's linear guiding, SKF is the partner to assist you in every variation of your application.



Incubator

Modern designs of incubators reduce the stress for babies and minimize the numbers of transfers from incubators to beds. Therefore, incubators require drive solutions with very smooth movement. Incubators require pillars with very smooth movement to help keep babies safe and comfortable. Thanks to its long experience with medical equipment, SKF has identified such needs and developed pillars to fulfil the exact needs and requirements of baby care, such as soft- start and stop, extreme quiet operation and virtually vibration free movements.



Ophthalmic equipment

SKF provides reliable and attractive solutions for ophthalmic chairs, tables and furnitures. The various compact and modern pillar designs, combined with high lifting loads, offer quiet and safe operations of patients and devices. Furthermore, the pillar range includes special add-ons, such as AC inlets and outlets, integrated control units or nice looking handsets, to fit perfectly into design requirements. SKF's high precision ground rail systems offer a unique smooth and soft movement in ophthalmic furniture with maximum stiffness.



IVD instruments

The dominant requirement in IVD instruments is to improve efficiency and consequently cut cost. Therefore, SKF offers guidance components for high speed and high precision positioning to achieve a better throughput in syringe dispensing of tiny volumes of fluids, automatic dispensing and sampling of chemicals, DNA processing or similar applications. As those different applications require specific solutions, a wide range of guidance components is available to meet those demands: miniature slides for short strokes, space-saving miniature profile rail guides for unlimited strokes, profile rail guides to accommodate high loads and precision rail guides when highest accuracy is required. Even more, SKF can support you by developing complete Mechatronic units, including motorization and linear measurement.



Dental equipment

To help adjust the height of dental chairs, and thus facilitate patient access, SKF offers a distinctive telescopic pillar, the Telemag TLT. Together with linear actuators and control units, SKF can provide the right motion solution for Trendelenburg and backrest functions. In addition, new features like "home" buttons and "walk away" functions help doctors reduce time between surgeries. For dental X-Ray wallstands, SKF's know-how makes it easy to use drive units which can be integrated into a customer's profile or implemented as a complete function.

Our dedicated pillar range for medical

Technical data	Unit	TLG/THG/TGC/THC/TLC
Push load	N	up to 4 000
Pull load	N	up to 4 000
Speed	mm/s	up to 25
Stroke	mm	100 to 700
Voltage	V	120/230 AC or 24 DC
Protection class	–	II/I
Operating temperature	°C	+10 to +40
Type of protection	IP	30

Benefits:

- Robust and powerful
- Safety factor 4*
- High bending load



Technical data	Unit	TFG series
Push load	N	2 500
Pull load	N	2 500
Speed	mm/s	up to 19
Stroke	mm	200 to 700
Voltage	V	120/230 AC or 24 DC
Protection class	–	SELV or I
Operating temperature	°C	+10 to +40
Type of protection	IP	30

Benefits:

- Fast movement
- Plug and play
- Safety factor 4*
- Integrated power supply



Technical data	Unit	TXG series
Push load	N	1 500
Pull load	N	0
Speed	mm/s	up to 23
Stroke	mm	200 to 600
Voltage	V	120/230 AC or 24 DC
Protection class	–	II/I
Operating temperature	°C	+10 to +40
Type of protection	IP	30

Benefits:

- Plug and play
- Powerful and fast lifting
- Cable feedthrough



* Restrictions apply. See operating manual or contact SKF for more information.

Technical data	Unit	TMS
Push load	N	4 000
Pull load	N	4 000
Speed	mm/s	N/A
Stroke	mm	250 to 700
Voltage	V	no motor
Protection class	–	N/A
Operating temperature	°C	+10 to +40
Type of protection	IP	N/A

Benefits:

- Safety factor 4*
- High bending load
- Motor interface



Technical data	Unit	FRE
Push load	N	on request
Pull load	N	on request
Speed	mm/s	N/A
Stroke	mm	up to 1 800
Voltage	V	no motor
Protection class	–	N/A
Operating temperature	°C	+10 to +40
Type of protection	IP	N/A

Note: tube set from 2 to 7 sections
Dimensions □ 76 to □ 163 mm

Benefits:

- Attractive design
- Stable
- Universal use



Technical data	Unit	CPV
Push load	N	4 000
Pull load	N	4 000
Speed	mm/s	depends on gear ratio
Stroke	mm	up to 700
Voltage	V	no motor
Protection class	–	N/A
Operating temperature	°C	+10 to +40
Type of protection	IP	00

Benefits:

- Low retracted height
- Back-up nut as standard
- Motor interface



* Restrictions apply. See operating manual or contact SKF for more information.

Our dedicated linear actuator range for

Technical data	Unit	MAX 1/3/6
Push load	N	up to 8 000
Pull load	N	up to 6 000
Speed	mm/s	up to 18
Stroke	mm	50 to 700
Voltage	V	120/230 AC or 12/24 DC
Duty cycle	%	10
Operating temperature	°C	0 to +40
Type of protection	IP	66S

Benefits:

- Safety factor 4*
- Synchronization possible
- Back-up nut as standard
- Silent operation



Technical data	Unit	RU series
Push load	N	up to 12 000
Pull load	N	up to 8 000
Speed	mm/s	up to 15
Stroke	mm	100 to 700
Voltage	V	24 DC
Duty cycle	%	10
Operating temperature	°C	+10 to +40
Type of protection	IP	×4/×6S

Benefits:

- Safety factor 4*
- High push/pull load
- Back-up nut as standard
- Silent operation



Technical data	Unit	Magdrive
Push load	N	6 000
Pull load	N	up to 6 000
Speed	mm/s	up to 15
Stroke	mm	50 to 700
Voltage	V	24 DC
Duty cycle	%	10
Operating temperature	°C	+10 to +40
Type of protection	IP	×4S/×0

Benefits:

- In-line actuator
- High push load
- Safety factor 4*



*Restrictions apply. See operating manual or contact SKF for more information.

medical systems

Technical data	Unit	ECO series
Push load	N	up to 6 000
Pull load	N	up to 6 000
Speed	mm/s	up to 13
Stroke	mm	50 to 300
Voltage	V	24 DC
Duty cycle	%	10
Operating temperature	°C	+10 to +40
Type of protection	IP	×45

Benefits:

- Silent operation
- Compact
- Control unit can be mounted to the actuator



Technical data	Unit	CAJA 30/35C/60
Push load	N	up to 6 000
Pull load	N	up to 4 000
Speed	mm/s	up to 7,8
Stroke	mm	30 to 300
Voltage	V	12/24 DC
Duty cycle	%	10
Operating temperature	°C	+10 to +40
Type of protection	IP	54

Benefits:

- Detachable cable for quick assembly and service
- Integrated brake to maintain self-locking and stability under maximum static load



Technical data	Unit	SJ series
Push load	N	up to 5 000
Pull load	N	up to 5 000
Speed	mm/s	up to 6,6
Stroke	mm	100 to 600
Voltage	V	120/230 AC
Duty cycle	%	17
Operating temperature	°C	+10 to +40
Type of protection	IP	52

Benefits:

- High load capacity in pull mode
- Self-locking for accurate positioning
- Cost effective



Our dedicated control units and access

Technical data	Unit	SCU/VCU
Motor ports	#	up to 6
Input voltage	V	120/230 AC or 24 DC
Output voltage	V DC	24
Ambient temperature	°C	+5 to +40
Humidity	%	5 to 85
Type of protection	IP	×4
Approvals	EN/UL	EN 60601-1 UL 60601-1

Benefits:

- Compact 5 or 6-channel actuator control unit
- Overload and over-temperature protection
- Detachable battery



Technical data	Unit	BCU
Motor ports	#	up to 3
Input voltage	V AC	120/230
Output voltage	V DC	24
Ambient temperature	°C	0 to +40
Humidity	%	5 to 85
Type of protection	IP	×4
Approvals	EN/UL	EN 60601-1 UL 60601-1

Benefits:

- Compact 3-channel actuator control unit
- Single fault safety
- Low stand-by current



Technical data	Unit	CAJC
Motor ports	#	up to 4
Input voltage	V AC	120/230
Output voltage	V DC	below 40
Ambient temperature	°C	+10 to +40
Humidity	%	80
Type of protection	IP	54/66
Approvals	EN/UL	IEC 60601-1 UL 60601-1

Benefits:

- Compact 4-channel actuator control unit
- Easy to clean



ories for medical systems

Technical data	Unit	EHA1/EHA3
Max. operating channels	n°	up to 5
Operating power	V DC/mA	12/50
Type of protection	IP	67
Color	–	Grey



Technical data	Unit	CAJH 1
Max. operating channels	n°	up to 4
Operating power	V DC/mA	12/50
Type of protection	IP	66
Color	–	Grey



Technical data	Unit	ST/CAJF 1
Max. operating channels	n°	up to 3
Operating power	V DC/mA	12/50
Type of protection	IP	×5
Color	–	Blue/anthracite



Our dedicated rail guides for medical

Benefits:

- Good sealing performance
- Stainless steel versions available
- Wide range of sizes, bearing-types, units and accessories



Technical data	Unit	Linear ball bearings and units
Acceleration	m/s ²	up to 100
Speed	m/s	up to 5
Accuracy $\mu\text{m}/1\,000$	mm	up to 50
Operating temperature	°C	-20 to +80
ISO series	-	1 and 3
Sizes	-	3 to 80
Shaft length in one piece	mm	up to 6 000
C	N	up to 37 500
C ₀	N	up to 32 00

Benefits:

- Compact design with high load carrying capacity
- All steel parts made from corrosion-resistant steel
- Special solutions possible



Technical data	Unit	Miniature profile slides
Acceleration	m/s ²	up to 80
Speed	m/s	3
Accuracy $\mu\text{m}/1\,000$	mm	up to 6
Operating temperature	°C	-20 to +80
Sizes	-	7 to 15
Shaft length in one piece	mm	up to 6 000
C per bearing	N	up to 7 300
C ₀ per bearing	N	up to 15 000

Benefits:

- Robust
- Powerful
- High bending load



Technical data	Unit	Miniature profile rail guides
Acceleration	m/s ²	up to 80
Speed	m/s	3
Accuracy $\mu\text{m}/1\,000$	mm	up to 6
Operating temperature	°C	-20 to +80
Sizes	-	7 to 15
Shaft length in one piece	mm	up to 2 000
C per carriage	N	5 830
C ₀ per carriage	N	10 600

Technical data	Unit	Profile rail guide
Speed	m/s	3
Operating temperature	°C	-20 to +80
Parallelism $\mu\text{m}/1\ 000$	m	10
Sizes	-	15 to 45
Shaft length in one piece	mm	4 000
C per carriage	N	90 000
C ₀ per carriage	N	128 500

Benefits:

- Fully sealed carriages for long service life
- High load carrying capacity in all four main directions
- Modular concept for customized solutions

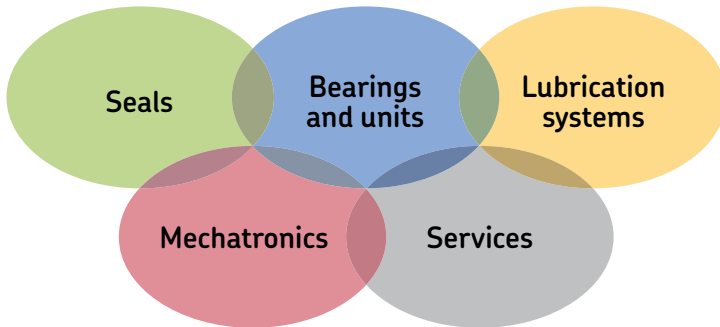


Technical data	Unit	Precision rail guides
Acceleration	g	16
Speed	m/s	3,2
Accuracy $\mu\text{m}/1\ 000$	mm	2
Operating temperature	°C	-20 to +80
Sizes	-	1 to 24
Shaft length in one piece	mm	1 000
C per carriage	N	64 500
C ₀ per carriage	N	195 000

Benefits:

- Compact design with high load carrying capacity
- Modular range with different guidance concepts
- Available with anti-creep-cage solution
- Corrosion resistant materials





The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management services. A global presence provides SKF customers uniform quality standards and worldwide product availability.

For more information, please visit our website
www.skf.com or contact us at actuators@skf.com

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