

Rexroth in the Medical Industry



The Future of Healthcare and Life Sciences



Medical industry manufacturers grapple with distinctive challenges concerning product variety, throughput demands, stringent quality benchmarks, and compliance with regulatory protocols. Regardless of whether a company is engrossed in crafting diagnostic apparatus for cancer detection, disposable instruments like syringes, or implantable devices such as cardiac stents, the manufacturing procedure must uphold flawless precision while ensuring elevated throughput rates. To harmonize these ostensibly conflicting objectives, corporations are directing increasing investments towards factory automation.

Diagnosics, Lab Automation, Scanning

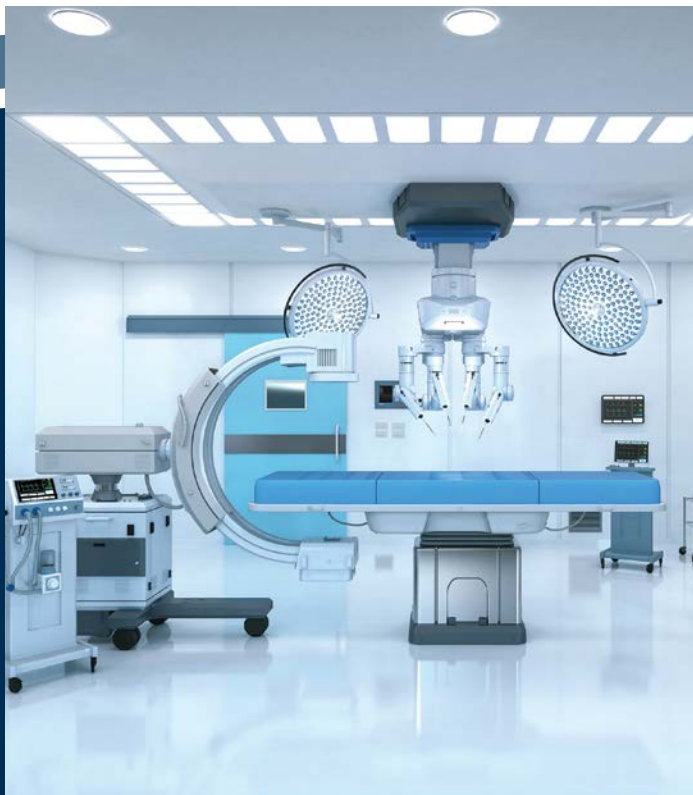
The term “turnaround time” is a key metric used in every business and in our daily lives. When physicians need to diagnose diseases in a timely manner or when high quantities of liquid sampling need to happen in a laboratory, Bosch Rexroth is there. These applications call for precise and smooth movement, repeatable and reliable performance along with low maintenance needs. Our best-in-class ball rails, ball screws, and actuators outshines in performance.

Sized to fit your needs

The additional requirements of footprint, weight, portability, and mechanical needs lead to additional resources needed for design and prototyping. That’s why majority of our customers opt for our tailored sub-assembly value added solutions led by our Mechatronics team. Our decades of experience allow for quick proof of concepts and allows for our customers to focus on other needed areas of their project. Reduction of design time and prototyping allows for a quicker time to market along with realized total cost of ownership savings.

Components

Healthcare Technology has to meet very high-quality standards nowadays. Yet, the funding of modern healthcare and laboratory equipment is getting increasingly difficult due to imminent tax hikes and regulatory reforms. Therefore, it is necessary to significantly reduce costs in the healthcare segment without compromising quality. Bosch Rexroth provides economically and ecologically efficient components to manufacturers of imaging and therapy systems and laboratory automation, to be able to realize their innovative and competitive products.



Surgical Robots –

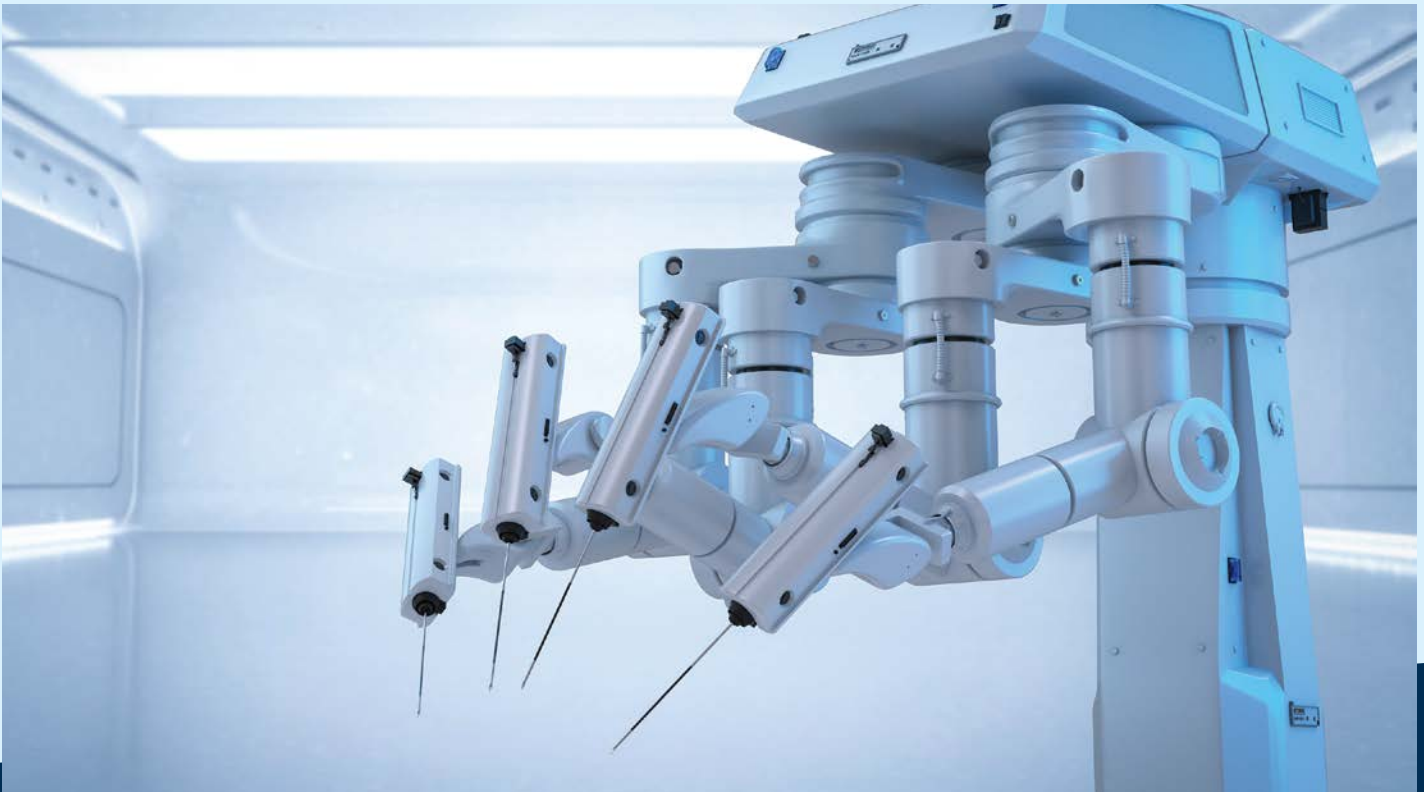
The future of minimally invasive surgery

The world is quickly advancing when it comes to robotics and automation. This is also the same when it comes to patient care where assisted robots and advanced technology aids medical staff for the best possible results.

How can Rexroth assist you

In the realm of manufacturing, ensuring not only safety but also achieving the highest levels of precision and accuracy is an absolute necessity. This critical aspect is where Bosch Rexroth truly shines, distinguishing itself by offering a comprehensive array of customized solutions. Our expertise lies in providing robust electromechanical

cylinders, linear actuators, ball rail systems, and meticulously crafted ball screws. These advanced components are tailored to meet the stringent demands of industry-leading medical device manufacturers, embodying our commitment to delivering excellence in precision engineering for the healthcare sector.



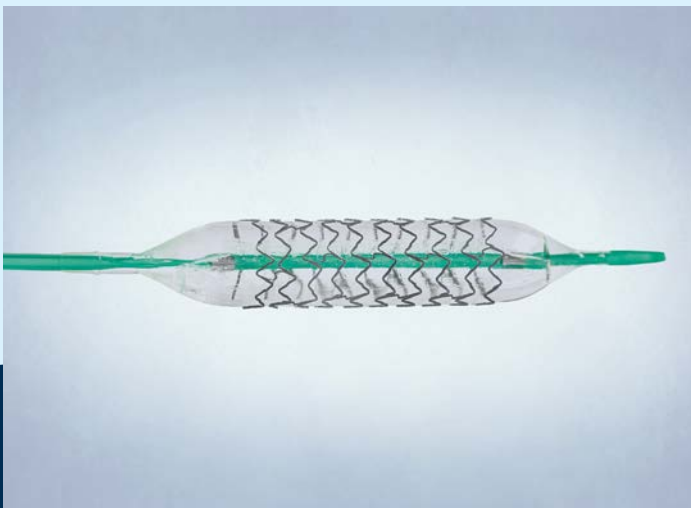
Medical Consumables

Endless possibilities for state-of-the-art medical device manufacturing

Medical companies face pressures of developing and producing innovative products in a much shorter time frame. Bosch Rexroth provides key building blocks in creating production cells and manufacturing lines. Whether you're producing sterilized instruments, catheters, syringes, IV bags, and more, Bosch Rexroth has you covered!

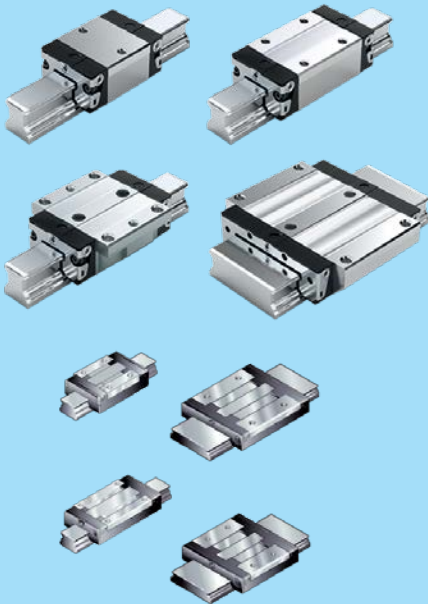
Turning your idea into reality

Bosch Rexroth offers an extensive range of aluminum profiles for constructing production systems. Typically, a transport or conveyance line is utilized within a production cell or to link multiple production cells. Bosch Rexroth presents a diverse array of conveyors, ranging from the VarioFlow *plus* line featuring plastic chains to modular, fine-meshed belt conveyor, VarioFlow belt. Enhancing flexibility, our TS 1 Transfer System and TS 2*plus* Transfer system can transport payloads as low as 3kg up to 240kg, for almost any medical application. Additionally, we offer Smart Mechatronix and multi-axis units, pre-configured subsystems designed for precise positioning movements within the production process.



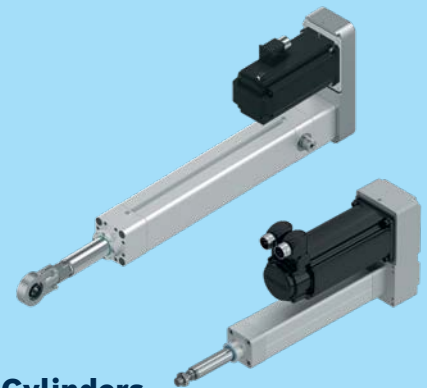
Automation Components and Hardware

Linear Motion Technologies



Ball & Roller Rail Systems

- Size range from miniature 7mm to 125mm
- Interchangeable rails & runner blocks across all six accuracy classes & preloads
- Low vibration
- Stainless steel & corrosion resistant plating options

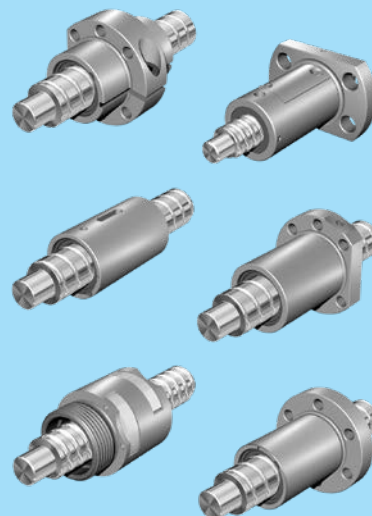
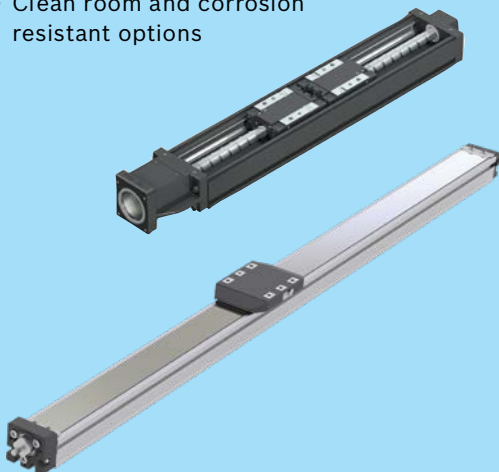


Electromechanical Cylinders

- Compact: less space required, easy to integrate
- Complete: tailored components from a single source
- Robust: durable and easily replaceable seals
- Flexible: versatile, many mounting options, length freely configurable
- Powerful: reliable continuous operation thanks to improved spindle cooling
- Economical: energy efficient, low operating costs, less downtime
- Low maintenance: longer relubrication intervals / Lubrication for life

Linear Module Systems

- Ball screw, belt, and linear motor driven
- Configurable to the application needs including lengths and precision class
- Clean room and corrosion resistant options



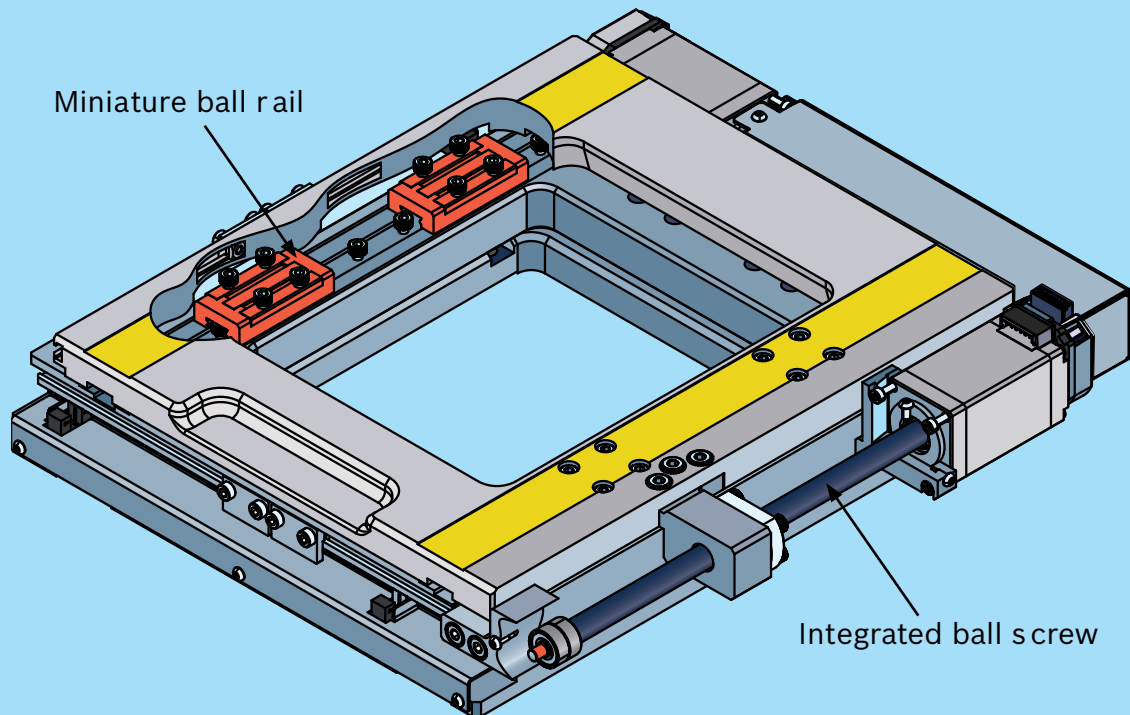
Ball & Roller Screw Assemblies

- Size range from 6mm to 80mm diameter
- Many different leads to choose from
- Precision classes from T3 (0.012/300mm) to T9
- High rigidity, low noise, high speed
- Corrosion resistant designs
- Customized or standard end machining available
- Full line of related accessories including end bearings, pillow blocks, and nut housings

Case Study –

Medical Subassembly

The client required the development of a high-performance compact XY stage but found that existing off-the-shelf options did not align with the project's specifications. Bosch Rexroth, along with our Center of Competence (CoC) designers in Pleasanton, CA, stepped in. By comprehending the project objectives, our seasoned design engineers swiftly crafted a design that met the specified requirements. Upon the approval of our proposal, the client could redirect their attention to other intricate aspects of the project, resulting in savings on engineering design time, product costs, and faster time-to-market delivery. The validation, prototype, and production phases were seamlessly handled by our team in Charlotte, ensuring a smooth transition from design to implementation.



Results



**ENGINEERING
TIME SAVING**



**PRODUCT
COST SAVINGS**



**EFFICIENT BOM
HANDLING**



**ENGINEERING
COST SAVINGS**



**FAST TIME
TO MARKET**

Automation Components and Hardware

Assembly Technologies

VarioFlow *plus* Conveyors

- Fast and efficient product transport within process stations and between machines
- Tight turn radius for minimized footprint
- Product can be transported on workpiece pallets or directly on conveyor media
- Chain width: 65, 90, 120, 160, 240, 320 mm
- Speeds up to 100 m/min



VarioFlow belt Conveyors

- Line lengths of up to 30 m with one motor
- 4KG payload per 1" of belt
- Conveying speeds of up to 40 m/min
- System widths: 420 mm / 622 mm
- Modular belt has a very fine-meshed, almost closed, and flat surface.
- Flexible layout design with s-curve capabilities.

Flexible Transport System (FTS)

Highly dynamic magnetically propelled transfer system for high throughput machines and assembly lines

- Synchronous and asynchronous bi-direction transfer
- Can be used with standard TS*plus* modules to create a complete loop or as a stand-alone section
- Acceleration max. 30 m/s²
- Speed max. 5 m/s



TS 2*plus* Transfer System

The TS 2*plus* transfer system is designed to transport small, lightweight products and assemblies up to 240kg, which require high positioning accuracy and repeatability. The TS 2*plus* is ideal for multi-component products such as hearing aids, implantable devices, and contact lens kits.

Aluminum Structural Framing

- More than 120 different profile cross sections
- Around 30 different connection types in more than 300 variants
- Wide range of accessories with around 1,000 products
- Lay out your design from the initial idea to implementation in the free MTpro design tool



In medical manufacturing, IoT applications are streamlining production processes by integrating smart devices and data analytics. Rexroth gives you access to customized solutions to meet your production needs today with maximum versatility for the future and provides production solutions that are future-proof with precise motion performance, reduced engineering time, and maximum reliability.

Electric Drives and Controls

ctrlX CORE

- Realtime-capable Linux-based operating system ctrlX OS
- Wide range of apps for scalability of the software functionality
- Multi-core CPU performance and option interfaces for hardware scalability
- High level of cybersecurity, CRA Ready
- Simplified and transparent device management thanks to remote administration via the ctrlX Device Portal
- Users benefit from a constantly growing range of solutions for hardware and especially for apps thanks to the partner network ctrlX World



ctrlX DRIVE

- ctrlX DRIVE offers simple single-axis applications and complex multi-axis machine systems
- System enables the rapid implementation of economical individual solutions that grow with the requirements
- The ctrlX DRIVE cabinet-free servo drives with protection class IP65 reduce space and cabling requirements by up to 90%.
- In combination with ctrlX SAFETY, ctrlX DRIVE becomes a system featuring the highest of safety standards.
- Power range: Drive 50w to 100Kw

Synchronous Servo Motors

- From 4 Nm to 692 Nm
- Synchronous servo motors for explosive environments (MKE) from 4 to 187 Nm
- The innovative single-cable connection technology of these motors simplifies installation
- Combines high dynamics with compact dimensions and best energy efficiency
- For intelligent solutions in the Industry 4.0 environment, these motors serve as data sources



ctrlX Safety

- High-speed, compact safety control (SIL3/PLe) critical for medical device manufacturing, automation, and robotics
- Rapid 5ms response time, graphical programming, and 3rd party integration support modular, secure, and compliant machinery, enabling safe human-machine collaboration in confined production spaces
- Scalable: from a drive-integrated solution to a complete safety control system



Bosch Rexroth –

Your Global Partner

\$ 7.0 billion

Total Sales

\$ 388 million

Total research and development

\$274 million

Investments

32,100

Total Associates

47

manufacturing locations

and customization sites in 21 countries

5

continents

work on research and development

Sales and service network throughout

80

countries

- Headquarters
- Production
- Sales
- Customer Innovation Center

Bosch Rexroth combines the ability to link global resources with local support – thanks to global product platforms, local added value, and the ability to coordinate projects spanning borders and to bundle the necessary resources. We are present in over 80 countries, guaranteeing competent advice and support, as well as, fast service anywhere in the world. Bosch Rexroth develops and produces locally adapted products based on global engineering teams in Europe, the Americas, and Asia.

With the services we offer, we work alongside machinery manufacturers and end users around the world and ensure the success of international projects.



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