

Versatility and precision in cleanroom environments, from Bosch Rexroth

The Drive & Control Company



The more critical the process, the more you need Bosch Rexroth

Today's assembly and handling requirements are incredibly demanding, and cleanroom conditions raise the bar even higher. For Bosch Rexroth customers, that's no problem. We help them manufacture everything from PCBs and PDAs to pacemakers and electric toothbrushes.

Bosch Rexroth linear motion and assembly products are known for their precision, quality and repeatability. Many have been

designed specifically for controlled environments, with special protection against dust and electrostatic discharge. They meet appropriate U.S. Federal Standard 209E and ISO 14644 requirements, as certified by the Fraunhofer Institute for Production Technology and Automation (IPA).

The Bosch Rexroth range of standard products for linear motion and assembly is the

widest available... and the most technologically advanced. So it's easy to tailor a solution to your production and budget needs:

- **Pick-and-Place** - SCARA robots, Linear Modules
- **Transfer and Assembly** - pallet-based conveyors, modular aluminum framing, VarioFlow™ flexible chain conveyors, ergonomic workstations
- **Linear Motion and Guides** - STAR Ball Rail® and Roller Rail systems, linear bushings and shafts, ball screw assemblies
- **Miniature Linear Motion Components** - miniature Ball Rail® and Ball Screw systems

Machine builders and assemblers worldwide depend on these high-performance products to shorten time to market, reduce costs, and increase profitability. The integration possibilities they offer are simply not available from any other single source.



Bosch Rexroth linear motion and assembly products help maximize productivity in cleanrooms around the world.



TS1 conveyors facilitate precise, high-volume assembly of disk drives and other sensitive products.



For example, Rexroth Linear Modules consistently position delicate semiconductor wafers, maintaining high quality at high yield levels. In applications requiring SCARA technology, our easy-to-program robots automate circuit board and automotive electronics assembly under Class 1 conditions.

Versatile aluminum structural framing components serve as building blocks for everything from cleanroom-compatible workstations with ESD protection to complete modular cleanrooms. And in virtually every industry, our standard-setting conveyors link and/or automate key operations.

Since Bosch Rexroth products are precision-engineered and designed to work together, you can integrate them into just the solution you need. Want a mini-environment with cleanroom-certified pick-and-place handling, or a test stand for



sensitive medical equipment? We'll provide all the components and help you use them most effectively.

Our automation specialists can help you determine the best approach for your operation, schedule and budget. They're part of a comprehensive technical support program that includes application engineering,

easy-to-use design software, training, and service.

With so many proven solutions, global support, and a commitment to pushing the technical envelope, Bosch Rexroth is uniquely qualified to make cleanroom operations succeed. Call us about your next project.

Aluminum structural framing lets you match cleanroom processes to your needs, space and budget.

Fast, consistent linear motion – in every axis, for any application

When every movement in every axis must be right on the money, count on Bosch Rexroth.

Our robots and Linear Modules routinely overcome difficult pick-and-place, transfer and shuttling challenges under cleanroom conditions.

Semiconductor wafers are consistently gripped within their tiny “dead zone,” saving thousands of dollars in scrap.

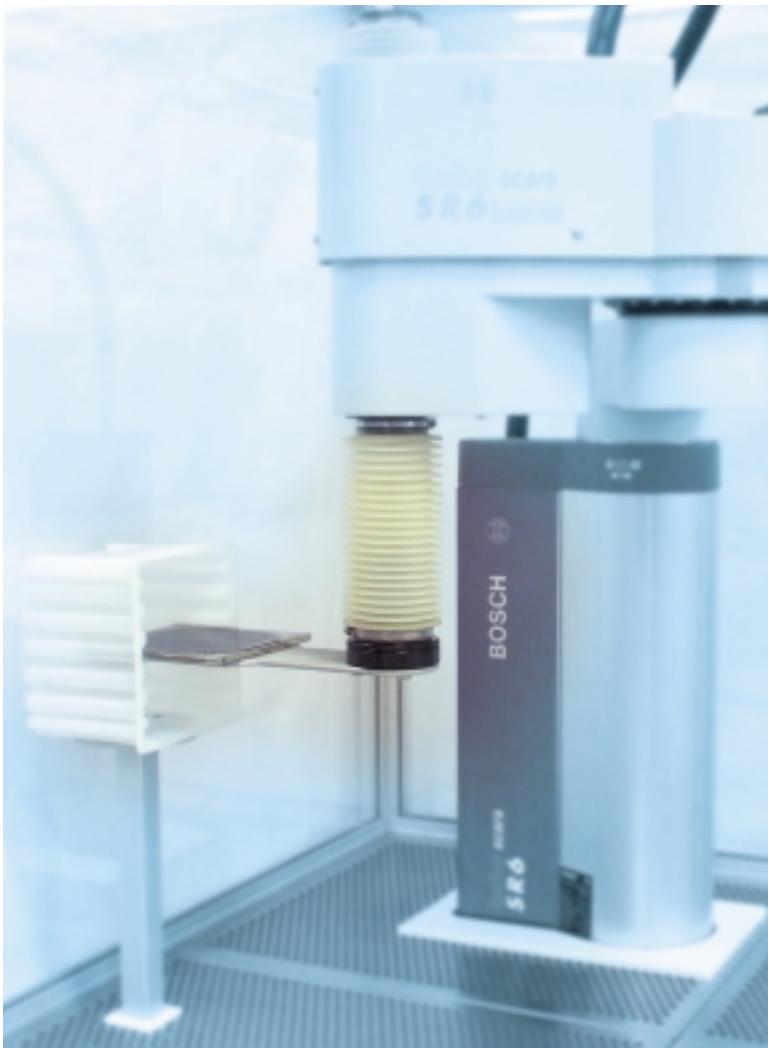
Personal care products are packaged automatically, without being touched.

Robotics for pick-and-place

With a cycle time of just 0.5 seconds and a payload of 8 kg, *turboscara* SR6 and SR8 robots are ideal for a variety of assembly tasks. They are user-friendly, exceptionally easy to program (using Windows®), and certified for Class 1 cleanrooms.

The *turboscara* SR6 has a reach of 600 mm, while the SR8 has a reach of 800 mm. They share a simple design that enhances reliability and simplifies maintenance, and accommodates even complex grippers. Sealed drives and cables keep potential contaminants contained, and internet-based data transfer eliminates any need to enter the controlled environment for program adjustments.

Turboscara robots are certified for Class 1 cleanrooms.



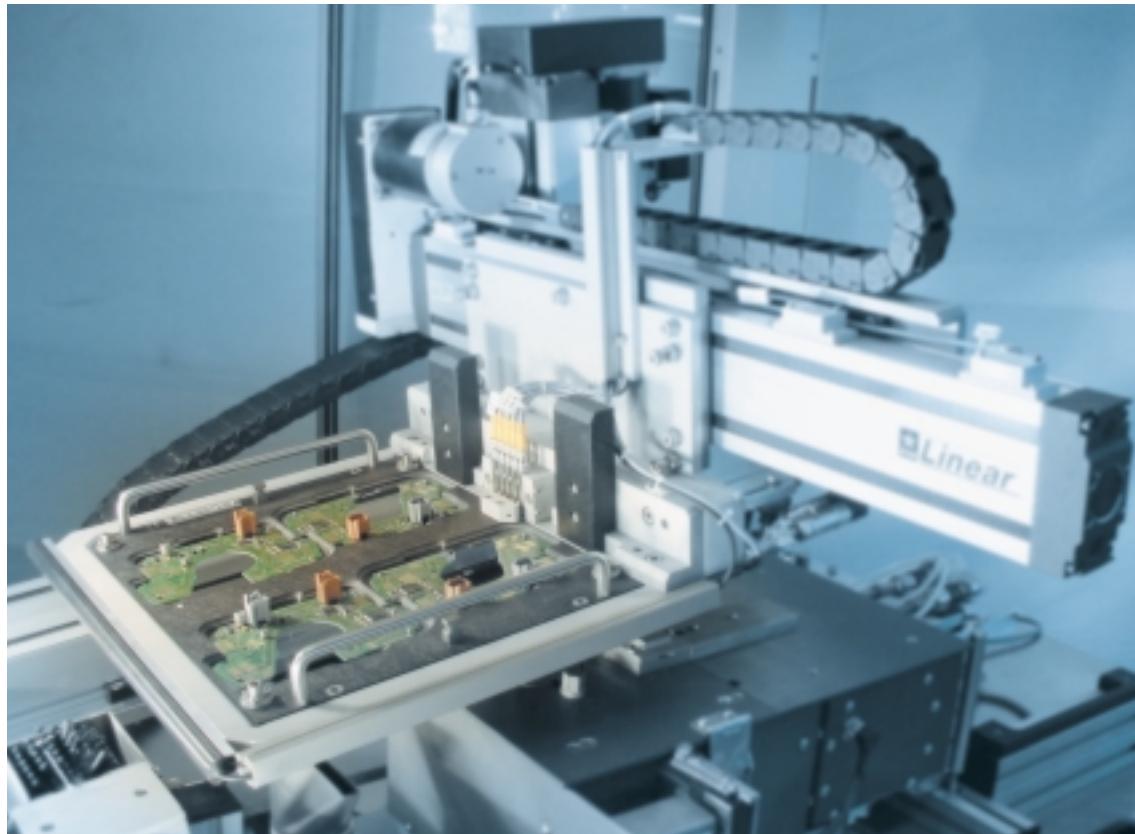
Our complete range of Linear Modules and miniature components provides precise motion for delicate operations.

Compact design, precise performance

Since many applications require custom solutions, Bosch Rexroth has designed a number of Linear Modules specifically for clean-room use. Their unique combination of smooth, fast motion, compact design and cleanroom-certified performance makes them ideal for medical, electronics and other uses.

Our PSK precision modules are 35% faster than other modules their size, with twice the positioning accuracy (10 microns). Certified for Class 10 operations, with repeatability of 5 microns, they assure you of virtually frictionless motion. PSK modules can raise, lower and position components to populate PCBs, and are often used in silicon wafer processing, where smooth, precise motion is critical at every stage.

For high load capacity in a compact, low-profile package (e.g., CMP machines, semiconductor inspection), specify CKK modules. Made primarily of lightweight, rugged aluminum extrusion, with polyurethane sealing strips, they are available in custom lengths of up to 1800 mm. Each features a precision ball screw assembly, with a dual Ball Rail® system for smooth, low-maintenance travel.



Miniature systems, big benefits

Built especially for semiconductor and medical applications, Miniature Ball Rail® (MBR) and Miniature Ball Screw (MBS) systems offer the same performance and advantages as the full-size models, in dimensions that meet industry standards. MBR systems provide excellent positioning accuracy, and have corrosion- and acid-resistant steel parts.

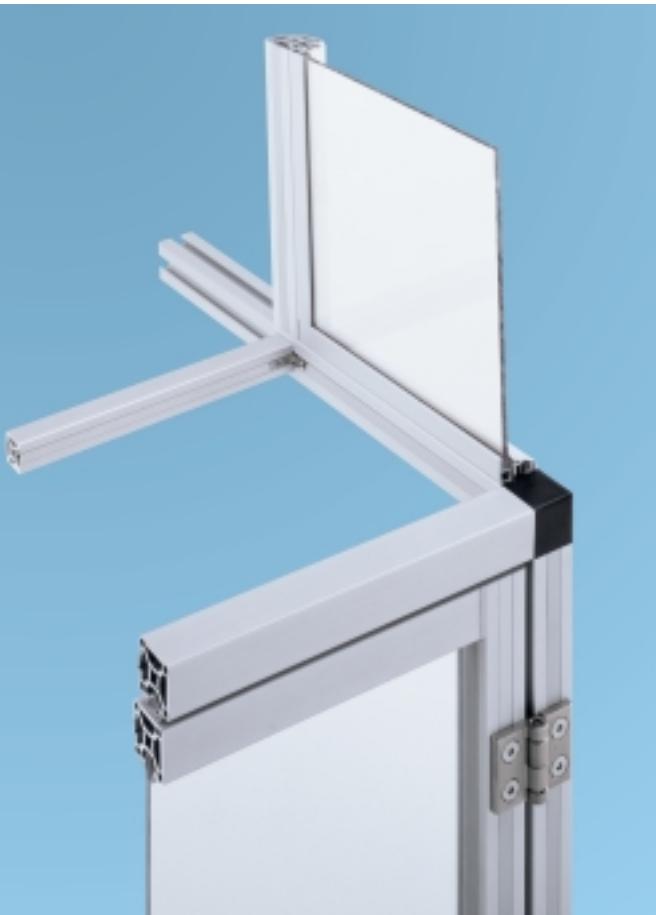
Several standard rail widths and three wide versions are available.

Built-in ball retention — an industry first in these sizes — simplifies mounting and installation. MBS systems have a surprising load capacity (as well as smooth, quiet operation), thanks to their unique ball recirculation method.

Choose from six sizes, from 6 x 1 to 12 x 5. All feature easy installation, very low maintenance and, like all Rexroth Linear Modules and components, are completely compatible with cleanroom greases.

Pick-and-place for PCB assembly and silicon wafer processing is made more efficient by PSK and CKK modules.

Customize your cleanroom, transfer sensitive products smoothly



Smooth-sided aluminum framing features nickel-plated hinges and non-outgassing sealing strips. All are designed, tested and certified for controlled environments.

Benches, carts, cabinets – even complete modular cleanrooms – are easily built to suit specific requirements.

Fast, flexible cleanroom solutions

Aluminum structural framing makes it easy and economical to build custom structures for your cleanroom. Everything from tables and benches to unidirectional airflow enclosures can be quickly built to suit your operation... and the available space. Should production demands change, it's easy to expand your cleanroom, move it to another location, or reconfigure it for another application. So your investment is never wasted.

Bosch Rexroth is the recognized leader in aluminum structural framing, which we pioneered 30 years ago. We also offer more

cleanroom-certified components than any other manufacturer. The T-slot design and bolt-together construction add flexibility to any project, and the rugged aluminum extrusions provide plenty of stability at a fraction of the cost of stainless steel.

Choose from many profile styles and dozens of cleanroom-certified accessories (including cover strips, latches, hinges, and wheels) to build exactly what you want. All feature smooth surfaces and flush mountings — but no exposed grooves — to avoid particle traps and minimize turbulence. And now you can order them on-line, through the e-commerce portal at www.boschrexroth-us.com. You can also download our 3-D design software, FMSsoft™, which works with AutoCAD®.



Delicate transport, even at high volumes

Moving products in a cleanroom — through a series of assembly or test stations, for example — is also a Bosch Rexroth specialty. Leading manufacturers of disk drives, cell phones, braking



Cleanroom stations can be expanded or reconfigured as necessary.

systems, and more choose our conveyors for efficiency and dependability, as well as the thoughtful details needed for specialized products and environments. ESD protection, cushioned stops and a variety of transport media are just a few of the transfer options in the industry's widest range.

It's no wonder that more products are assembled on Bosch Rexroth conveyors than on any other brand. These versatile units handle products as delicate as syringes and as rugged as automotive transmissions, and their modular design makes them ideal for integrating cleanroom operations with a plant-wide materials handling system.

This modular design lets you adapt our power-and-free conveyors to many products and environments, and change their layout at any time. Assemble several defibrillator models, for example, on the same line, and add more as they're developed. With our conveyors, you'll optimize both floor space and capital investment.

For back-end operations (e.g., bottle filling, packaging, material



Bosch Rexroth conveyors smoothly transport medical disposables, delicate electronics and more.

handling), VarioFlow™ flexible chain conveyors are equally adaptable and dependable. They feature the strongest single-strand flexible chain available, and a simple design with few moving parts.

Making cleanrooms more productive

There are many reasons to choose Bosch Rexroth conveyors... and our structural framing, robotics

and linear motion products. This innovative technology — tested and certified for medical and cleanroom environments — lets you tailor solutions you won't find anywhere else.

For unsurpassed precision and flexibility, talk to Bosch Rexroth. We'll help you get the most out of your manufacturing investment.

Bosch Rexroth Corporation
Linear Motion and
Assembly Technologies
816 E. Third Street
Buchanan, MI 49107
Telephone (616) 695-0151
Facsimile (616) 695-5363
www.boschrexroth-us.com

Bosch Rexroth Corporation
Linear Motion and
Assembly Technologies
14001 South Lakes Drive
Charlotte, NC 28273
Telephone (800) 438-5983
Facsimile (704) 583-0523

Bosch Rexroth Corporation
Corporate Headquarters
5150 Prairie Stone Parkway
Hoffman Estates, IL 60192-3707
Telephone (847) 645-3600
Facsimile (847) 645-6201

Bosch Rexroth Corporation
Industrial Hydraulics
2315 City Line Road
Bethlehem, PA 18017-2131
Telephone (610) 694-8300
Facsimile (610) 694-8467

Bosch Rexroth Corporation
Electric Drives and Controls
5150 Prairie Stone Parkway
Hoffman Estates, IL 60192-3707
Telephone (847) 645-3600
Facsimile (847) 645-6201

Bosch Rexroth Corporation
Pneumatics
1953 Mercer Road
Lexington, KY 40511-1021
Telephone (859) 254-8031
Facsimile (859) 281-3491

Bosch Rexroth Corporation
Mobile Hydraulics
1700 Old Mansfield Road
Wooster, OH 44691-0394
Telephone (330) 263-3300
Facsimile (330) 263-3333