

Pneumatic Solutions from Rexroth Keep the Automotive Industry Moving at Top Speed

From foundry to final assembly



Pneumatics— Essential at every production level in the automotive industry

Controlling, moving, sensing, and testing. From processing the basic raw materials to automated final assembly and function testing, high performance pneumatic solutions from Rexroth ensure that processes are precisely controlled.



Metal-cutting: Clamping of workpieces and tools, part present sensing, and cleaning

Powertrain



Powertrain assembly: Material handling, positioning, and testing

They carry the metal panels, control weld tip force and position with very high accuracy and repeatability and finish off with perfect paint spray control. Pneumatic components from Rexroth provide you with top quality manufacturing capability.



Metal fabrication: Mold and tool control, material handling, fixing, and transporting

Car body fabrication and assembly



Body and assembly: Force and position control of weld tips, material clamping, locating, and conveying

Available and innovative—worldwide. Rexroth has extensive experience in developing high performance pneumatic and electro-pneumatic solutions. Rexroth has the right combination of “best-in-class” components plus application-specific solutions for optimal integration.



Testing: Part present sensing, component feeding and precision locating



Final assembly: Closed loop weight balancing, sealant dispensing, and non-marking material handling

Pneumatic systems from Rexroth are a recognized benchmark for cutting-edge assembly technology. They manipulate and orient parts to be installed and reduce the force required for manual operations by assisting with lifting and adjusting. Sensitive yet strong.

Final assembly



Painting technology: Extremely repeatable paint spray pattern shaping, fast response cleaning and color changing, and highly accurate paint flow management

Perfect pneumatic solutions for the powertrain sector

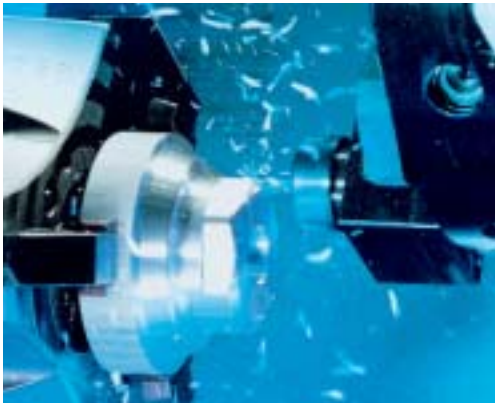


Metal-cutting

In this discipline, Rexroth pneumatics completes all spindle cleaning and workpiece handling tasks reliably in the toughest of environments. Rexroth has developed application specific systems including tool magazine control, counter balancing cylinders and part present sensors. All components are designed to perform under tough conditions where exposure to metal chips, coolants and lubricants is prevalent.



Reliability and Maintainability (R & M). Uninterrupted production is the goal of all vehicle manufacturers. Reliable production systems are achieved by using reliable components on the machining centers and assembly lines. Our pneumatic solutions meet the highest industry standards.



Assembly

Rexroth handling systems and drives play a key part in ensuring that mating parts are perfectly assembled. The high expectations of the automotive customers are met and exceeded. Our customers value our extensive range of modular components which gives them the flexibility to adapt to future tooling changes.

Testing

In the final inspection phase for engines and transmissions, Rexroth pneumatic components are used for part present sensing as well as exact locating and clamping of the assembly. They also assure test integrity by properly interfacing measuring equipment with the test piece.



MS01 pneumatic part present sensing system

A highly integrated plug & play solution based on the CD01 valve manifold (ISO 15407) for sensing and conformance verification of tools and workpieces. Optimization of adjustment is easy and tamper resistant.



Heavy-duty RexMover

Applications that require high load carrying capability with high precision are satisfied with this combination of the RexMover shuttle cylinder and new integrated heavy-duty guide.



Air preparation system

A complete modular family of high flow air preparation components with flow rates up to 25,000 NL/min. All options required for high volume automobile production are included.

Sophisticated automation technology with pneumatic components for metal fabrication and car body

Innovative developments, interdisciplinary knowledge, focus on the customer—there are many ingredients for our worldwide product and industrial competence in automation technology. The list of these ingredients grows every day. That's experience.



Car body technology

Pneumatic solutions from Rexroth are the guarantee for reliable and effective processes from the raw material to the finished car body. The steps in the process extend from press automation in handling the sheet metal, to locating and clamping panels for spot welding. The tough environments of high volume car body production facilities demand the most durable pneumatic components. Satisfying these demands successfully is our specialty.

Pneumatic solutions that are complemented by hydraulic, electronic, and linear motion control—all with the top pedigree: Rexroth.



Our pneumatic program specially developed for the automotive industry optimally meets demanding production process requirements and, of course, fulfills all industry-specific standards and specifications.

- Resistant to magnetic fields
- Light weight for installation on robot arms
- Fast response with high flow rate in a compact streamlined package

prehensive range of valve manifold families. Individual valves can be changed in a few minutes without interfering with the pneumatic tubing. Fast assembly and expansion



- Resistant to welding sparks
- Highly repeatable direct-acting proportional pressure control

ISO/VDMA cylinders

Our complete line of ISO/VDMA and NFPA standard cylinders are available with different configurations, both in robust extruded profile and tie rod models.

Centering cylinder

Our unique centering cylinder is the ideal solution to position and hold parts for welding.

Valve systems

The ideal valve manifold configuration for any task or environment can be selected from our com-

prehensive range of valve manifold families. Individual valves can be changed in a few minutes without interfering with the pneumatic tubing. Fast assembly and expansion is assured through plug & play electrical and pneumatic interfaces. Our valve systems support all standard bus protocols as well as state-of-the-art fiber optic transmissions. We offer a broad range of ISO interface valves with M12 connections (DESINA) that comply with the European and North American automotive industry standards.

Weld gun control

Our three leading solutions for spot weld tip control consist of a fast response stand alone proportional valve with high flow rate and extremely repeatable tip force control for excellent weld quality

and high cycle rates; an integrated Weld Control system to control welding tip position and force based on ISO 5599 valve interchangeability standards; a pneumatic Servo Gun control system for infinite position and tip force control.

High performance pneumatic systems regulate precise flow rate and spray form for painting technology

Bad paint finish makes even a good car unsellable. That's why cutting-edge painting technology doesn't compromise when it effects our customer's bottom line. Pneumatics from Rexroth create quality and high value on all sides.



Paint application technology

One of the most important tasks that pneumatic components are uniquely suited to is paint flow control and spray form shaping. High performance, fast response, and direct closed loop control are prerequisites for achieving optimal results.

Shutting down turbines by means of a reverse compressed air thrust is as much a part of the job for our products as functional control in changing paint color. The components used must deliver results in extremely tight controlled processes. Absolute purity for processes requires



Pneumatics are the key to perfect paint application in modern automobile production

Rexroth pressure regulation products have been specifically developed for high quality paint application and fast safe cleaning and color changing.

components with the highest levels of precision in dynamic turbine speed control and consistent quality.

A sophisticated product program for painting systems with total solutions for all pneumatic tasks is the result of the experience gained from close co-operation with OEMs and end users.



E/P pressure regulator

During the painting process electromagnetic pressure regulators (E/Ps) take on the central tasks of precisely controlling the flow and atomizing the paint. The E/Ps assure a perfect application of paint with the best quality and efficiency thanks to an advanced closed loop non-linear response algorithm. They are used in paint shops across the globe to regulate paint flow, turbine speed, and paint spray shape. In addition to analog control, the E/Ps interface directly to all main industrial field bus protocols.



ISO CD01 and V15 valve

The ISO CD01 and V15 valves are used to control the special air bearings that enable turbines to rotate at extremely high speeds as well as the turbine brake. In addition, they supply the system with the right amount of purging/cleaning air.



HF04 and Cube Line 10 valve block systems

The HF04 and Cube Line 10 control the paint color changers with up to 32 different color choices all in one compact block with a single serial link connection. Special mechanical and electrical

“cascade interlocks” integrated in the valve block guarantee that only one color can be selected at a time. This eliminates the risk of contamination or mixing of colors in the paint spray.

The right pneumatic solutions—so everything fits together



When the resources of the powertrain and metal fabrication sectors blend together to produce a car, pneumatics is the key at every stage along the way until the vehicle goes to the showroom. Pneumatics is the essential Drive and Control medium for professional assembly.

Rexroth pneumatics are the best choice throughout the assembly process—from putting the chassis and body together, installing interior and electrical fittings, to the final inspection.

They control fully automated parts handling and assist manual assembly with special pneumatic systems. Moving and fitting even the heaviest sub assemblies is made easier by means of special pneumatic balancing systems with closed loop load sensing. Vacuum technology is widely used in this

sector because of its unique ability to carefully handle glass window panes and painted panels without deforming or marking them. Perfect control of the adhesive dispensing processes by means of electro-pneumatic pressure regulation is another Rexroth pneumatic specialty.

Modern production lines are comprised of complex and often completely independent machining and assembly centers.

Rexroth modular architecture is the answer to the need for flexible solutions. Tooling changes and expansions are a fact of life in successful automobile production. Rexroth modularity ensures that future expansion and reconfiguration can be accomplished inexpensively and quickly while being the perfect solution for today's needs.



Components and systems for final assembly

Compact cylinders

Pneumatic components in modern assembly must be suitable for installation in extremely tight spaces. High performance with compact dimensions is called for. Our extensive range of compact cylinders is unbeatable in this situation.



Balancers

Fitting doors, mounting wheels, putting entire interior components into place—all with a single system. Without our balancer systems with integrated load sensing, the car assembler's job would not only be much more difficult, they would be virtually impossible.



Vacuum technology

There is no feasible alternative to vacuum technology for handling parts with sensitive surfaces as it provides a powerful, yet sensitive and non-marking grip for transporting parts.

Rexroth offers a full range of vacuum generators, suction gripper systems, and valve solutions for applications that require vacuum technology.



- Compact ejectors
- Suction gripper systems in a large variety of sizes, shapes, and materials
- Valve block systems with integrated vacuum ejectors, filters, silencers, and vacuum level sensors



E/P ND 5 pressure regulator valve

The electromagnetic pressure regulator valve converts an electric signal (analog or through serial link) into a corresponding pneumatic pressure output that can be precisely adjusted to give maximum control independent of external influences.

Bosch Rexroth AG
Bartweg 13
D - 30453 Hannover
Phone +49 - 5 11 - 21 36 - 0
Fax +49 - 5 11 - 21 36 - 269
sales-pneumatics@boschrexroth.de
www.boschrexroth.com/pneumatics

Your contact:

UK

Bosch Rexroth Ltd.
Pneumatics
Broadway Lane
South Cerney
Cirencester
Gloucestershire, GL7 5UH
Phone + 44 - 12 85 - 86 30 00
Fax + 44 - 12 85 86 30 30

US

Bosch Rexroth Corporation,
Pneumatics
P.O. Box 13597
1953 Mercer Road
Lexington, KY 40511-1021
Phone + 1 - 8 59 - 2 54 80 31
Fax + 1 - 8 59 - 2 54 41 88

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