

Electric tightening systems: Process security for industrial applications





Process: secure Productivity: high

Increasing cost pressure, tighter regulations, and changing customer requirements create a need for a smart solution: Electric tightening systems from Rexroth. Our tools incorporate essential features which provide maximum process security for your production needs.

Process control and reliable quality

Process control, accuracy, and flexibility are critical components for every assembly line. It is important every bolt is tightened to its proper torque and angle specification reliably. Only once this is repeatable can a fastening process meet quality requirements for the final product. Automotive assembly requirements are clearly defined within VDI/VDE 2862. Similar requirements for safety critical and quality critical processes will be applied to other industries in the near future. With the high accuracy of the electric tightening system from Rexroth, your process is already secure. Furthermore, you have the ability to document every tightening process and to evaluate statistics for quality assurance.

Improved productivity and money saving energy efficiency

Why are electric tightening systems considered state-of-the-art in tightening technology? Simple: Electric handheld tools enable accurate and reliable manual assembly. Electric stationary spindles provide short cycle times with a high degree of automation.

Electric tightening systems are also extremely energy efficient. Compared to pneumatic tools, the electric tightening systems from Rexroth save up to 50% of operating costs and more than 90% of CO₂ emissions. As energy prices continue to rise, your investment will pay off in just a few years.

Maximum flexibility

Is your business becoming more complex? The number of product variants and the speed of development are increasing rapidly, requiring more frequent production changes. To accommodate these needs, the modular design and flexible programming make tightening systems from Rexroth the ideal solution. The modular construction and common platform of handheld tools and stationary spindles enable quick and efficient deployment to satisfy new challenges. Fast and easy tool exchange during production is just as easy as adding wireless data transmission or reprogramming via the flexible operating system.

Ergonomic

An ergonomically designed tool and efficient implementation are requirements for high production efficiency. The electric tightening systems from Rexroth succeed by incorporating an ergonomic and user friendly approach. All handheld tools are designed to provide a comfortable handle and trouble free operation. In addition, torque reaction is minimized through the use of software settings for start-up and shutdown behavior. Our operating system further simplifies feedback via an intuitive user interface.

In summary: With the tightening technology from Rexroth you can always achieve optimum results and maximize the performance of your workers.

Electric tightening systems: intelligent, flexible, secure

In a wide range of industrial applications, Rexroth offers accurate tightening technology for all major applications – from ergonomic handheld tools to fully automatic tightening systems.



Handheld tools

Powerful, ergonomic and easy to use

- ▶ High level of reliability through the accurate measurement of tightening parameters and digital result transmission
- ▶ Reduced operator fatigue through ergonomic design and light weight construction
- ▶ Easy operation via user friendly controls and indicators



Wireless battery tools

Intelligent tightening tools with a high degree of security and flexibility

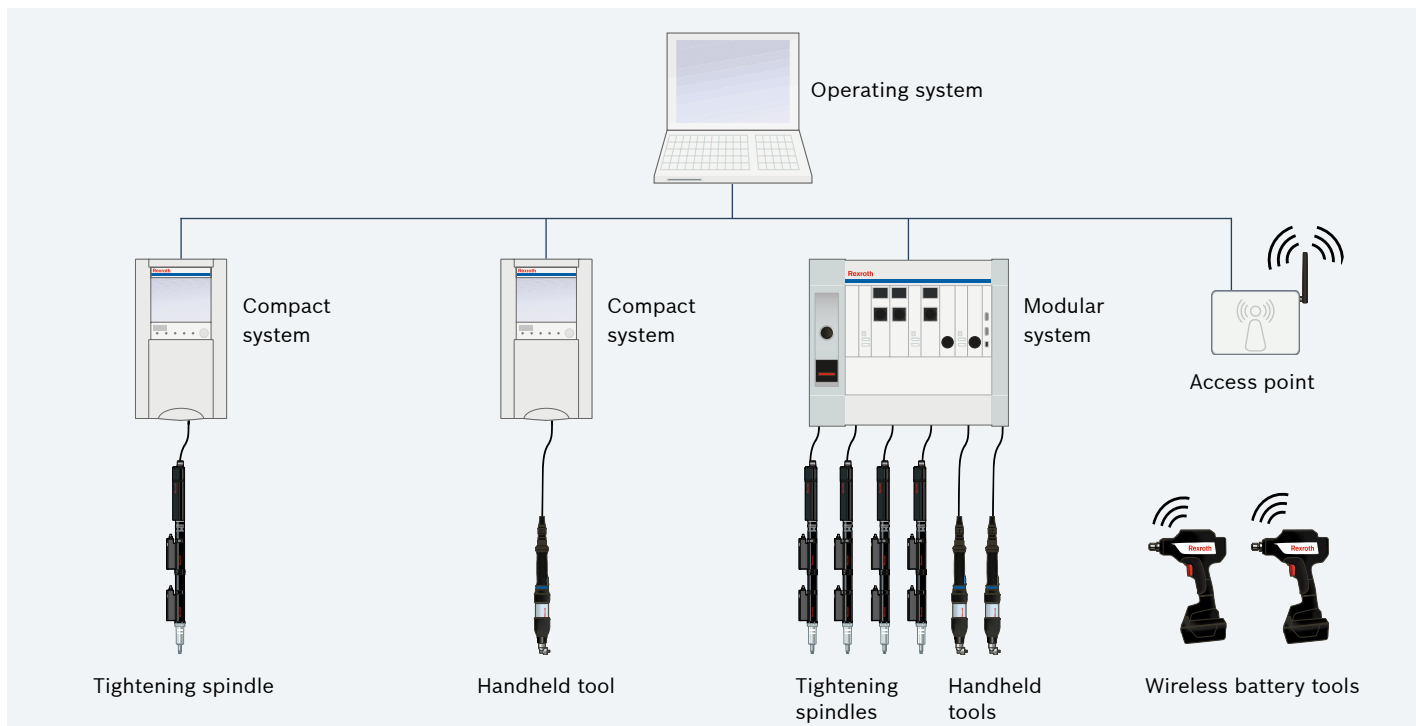
- ▶ The highest degree of process security due to transducerized measurement of torque and angle
- ▶ Process reliability via an integrated onboard controller and wireless buffered data transfer – works even in weak signal areas
- ▶ Easy assembly even in hard to reach applications
- ▶ Clear feedback to the operator via an integrated color display



Stationary tightening spindles

Modular construction provides flexible solution for a wide range of applications

- ▶ Redundant transducer technology meets the highest levels of reliability conforming to VDI standards
- ▶ High performance for the most demanding applications in either manual or automated assembly systems



Compact system

Reliable and easy to use controllers for single tool applications

- ▶ Available for both handheld tools and mounted spindles
- ▶ Clear feedback via HMI display and LEDs
- ▶ Simple programming via user friendly operating system
- ▶ Protection class IP54, EMC level IV



Modular system

Space saving and economical multi channel controller supporting up to six tools

- ▶ For handheld tightening tools, stationary spindles, and mixed operation
- ▶ Supports a wide range of communication protocols for flexible system integration
- ▶ Available as a stand alone system box (IP54) or as control rack for integration within control cabinets
- ▶ Systems with up to 40 tightening tools can be created by linking multiple system boxes



Operating system

Intuitive programming of tightening applications

- ▶ Easy to use icon based programming and intuitive interface is perfect for both engineers and operators
- ▶ Automatic detection of all electronic components
- ▶ Graphical representation of rundown characteristics, statistical information, and result curves

The right tightening system for every tightening application

Handheld, hand-guided, semi or fully automatic – electric tightening systems from Rexroth are the efficient and flexible solution for your production needs.



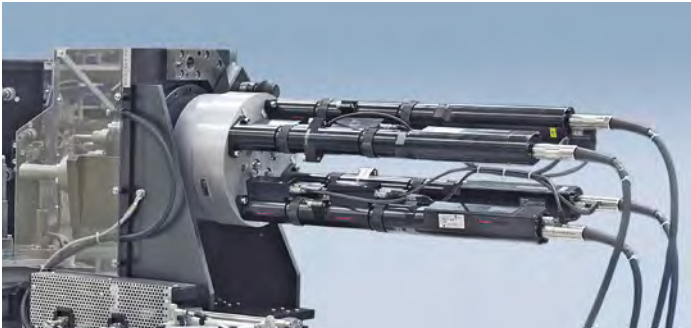
Handheld tightening tools

- ▶ Ideal solution for low throughput
- ▶ Highest level of flexibility, accommodating frequent product changes or allowing access to hard to reach applications
- ▶ Many motor/output options available, easily expandable



Hand-guided tightening tools

- ▶ Ideal for applications where automation is not feasible due to complexity
- ▶ Variety of handling equipment available to absorb torque reaction and improve ergonomics
- ▶ Options include multiple spindle integration – provides synchronized tightening or improved cycle rates



Semi automatic tightening station

- ▶ Optimal for complex multi spindle applications where a fully automatic approach is not appropriate
 - Manual part loading and operation
 - Fully automatic fastening
- ▶ Provides protection for workers via dual trigger start, guarding, or light curtains



Fully automatic tightening station

- ▶ Highest level of automation for high speed and high volume production
- ▶ Ideal for stations with automatic bolt feed and transfer, no operator needed
- ▶ Perfect for complex applications and capable of automatic rework

Prompt conversion, optimal deployment

To date, the requirements of VDI/VDE 2862 have applied only to tightening applications with the automotive industry. However, an extension of these higher safety regulations for machinery and plant construction is already in progress.

Electric tightening systems from Rexroth already meet these requirements, therefore you are prepared for the future.

Safety critical tightening applications

Failure of a safety critical joint could endanger health or cause loss of life. For this reason redundant monitoring and direct measurement of the tightening process is required. Every fastening cycle must be documented.

Function critical tightening applications

Failure of function critical joints result in product failure. In these cases direct measurement in combination with indirect measurement of monitoring and control is required. Every fastening cycle must be documented.

Non critical tightening applications

These applications are all cases not considered safety or function critical. Here it is permissible to use an indirect measurement of the fastening process.



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R999000191 (2012-10)
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