

Safety Instructions for Rexroth Tightening Systems

3 608 870 2EN

AA/01.2010
EN

Safety regulation



The data specified above serves to describe the product. If information is also provided regarding the use, it only constitutes application examples and suggestions. Catalog specifications are no warranted properties. The information given does not release the user from the obligation of own judgment and verification. Our products are subject to a natural process of wear and aging.

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The title page shows an exemplary configuration. The supplied product may therefore vary from the illustration.

The original operating manual was written in German.

Contents**Contents**

1	About this documentation	5
1.1	Validity of the documentation	5
1.2	Required and supplementary documentation	5
1.3	Display of information	6
1.3.1	Safety instructions	6
1.3.2	Symbols	8
1.3.3	Designations	8
1.3.4	Abbreviations	8
2	Safety instructions	9
2.1	About this chapter	9
2.1.1	Using and communicating the safety instructions	9
2.1.2	Instructions for use	9
2.1.3	Operating instructions	11
2.1.4	Cleaning instructions	12
2.1.5	Maintenance and repair instructions	12
2.1.6	Disposal instructions	12
2.2	Intended use	12
2.2.1	Introduction	13
2.2.2	Application areas	14
2.3	Improper use	14
2.4	Personnel qualifications	15
2.5	General safety instructions	15
2.6	Product- and technology-dependent safety instructions	17
2.6.1	General product-dependent instructions	17
2.6.2	Protection against the accidental contact with electric parts	17
2.6.3	Protective extra-low voltage for protection against electric shock ...	20
2.6.4	Protection against dangerous movements	20
2.6.5	Protection against magnetic and electromagnetic fields during operation and assembly	22
2.6.6	Protection against the improper handling of the hand-held nutrunner	23
2.6.7	Protection against accidental contact with hot parts	23
2.6.8	Protection during handling and assembly	24
2.6.9	Protection when handling batteries	24
3	Scope of delivery	25
4	Disposal	26
4.1	Environmental protection	26
5	Troubleshooting	27
6	Appendix	27

Contents

6.1	Complaints and repairs	27
6.2	Warranty	27
6.3	Service and sales	28

About this documentation

1 About this documentation

NOTE

Outdated documentation!

If you use an outdated version of the present as well as the required and supplementary documentation, this may lead to an incorrect assembly and operation of the product.

- Make sure that you always have and use the current version of any documentation. The current version of the documentation of Bosch Rexroth can be found in the media directory:
<http://www.boschrexroth.com/media-verzeichnis>

This chapter contains general information on the present instructions.

1.1 Validity of the documentation

This documentation applies to Rexroth tightening systems.


This documentation aims at persons commissioned with the assembly, commissioning, maintenance, troubleshooting and disassembly of Rexroth tightening systems and their components.

This documentation contains important information on the safe and appropriate assembly, transportation, commissioning, maintenance, disassembly and simple troubleshooting of components.





- Read this documentation completely and particularly the chapter "Safety instructions", before working with the product.

1.2 Required and supplementary documentation

Rexroth tightening systems are system components.





- Only commission the product if the documentation marked with the  book symbol is available to you and you have understood and observed it.

Tab.1: Required and supplementary documentation

	Title	Document number	Document type
	Rexroth tightening system 310	3 609 929 910 to 3 609 929 918; 3 609 929 A27	Project planning
	Rexroth tightening system 350	3 608 878 302	Project planning
	Rexroth tightening spindle	3 608 870 0...	Installation instructions
	Ergo Spin	3 608 870 1...	Installation instructions

About this documentation

Tab. 1: Required and supplementary documentation

	Title	Document number	Document type
	Documentation of the machine or system manufacturer		
	Instructions for the other system components		
	Generally applicable, legal and other binding regulations of European and national legislation		
	Provisions for accident prevention and environmental protection applicable in your country		



Additional information on the project planning can be found in the project planning manual of the Rexroth tightening system. Notes on the commissioning can be found in the online help for the operating system.

1.3 Display of information


In order to enable you to work with your product in a fast and safe way, uniform safety instructions, symbols, terms and abbreviations are used. For a better understanding, they are explained in the following sections.

1.3.1 Safety instructions

In this documentation, there are safety instructions before the sequence whenever there is a risk of personal injury or damage to equipment. The measures described to avoid these hazards must be observed.

About this documentation

Safety instructions are set out as follows:

 **SIGNAL WORD**

Type of risk




What occurs when the safety instructions are not complied with

► Hazard avoidance

- **Safety sign:** draws attention to the risk

- **Signal word:** identifies the degree of hazard, see tab. 2 on page 7
- **Type of risk:** identifies the type or source of the hazard
- **Consequences:** describes what occurs when the safety instructions are not complied with
- **Precautions:** states how the hazard can be avoided

Tab.2: Types of risk according to ANSI Z535.6-2006



Safety sign, signal word	Meaning
 DANGER	Identifies a dangerous situation that will result in death or serious injuries if it is not avoided.
 WARNING	Identifies a dangerous situation that may result in death or serious injuries if it is not avoided.
 CAUTION	Identifies a dangerous situation that may result in minor to moderate injuries if it is not avoided.
NOTE	Damage to property: The product or the environment may be damaged.

About this documentation

1.3.2 Symbols

The following symbols mark notes that are not safety-relevant but increase the understanding of the documentation.

Tab.3: Meaning of the symbols

Symbol	Meaning
	If this information is disregarded, the product cannot be used and/or operated to the optimum extent.
	Single, independent step
Note	This information refers to possible limitations with regard to the product.

1.3.3 Designations

This documentation uses the following designations:

Tab.4: Designations

Designation	Meaning
BS	Operating program of the tightening system (e.g. BS300/BS350)
CS351 S...	Compact system of the tightening system 350 for the connection of tightening spindles
CS351 E...	Compact system of the tightening system 350 for the connection of ErgoSpin hand-held nutrunners.
ESA	Right-angle nutrunner
ESM	Pistol grip nutrunner
ESV	Right-angle nutrunner without output drive with zero-play spur gearing

1.3.4 Abbreviations

This documentation uses the following abbreviations:

Tab.5: Abbreviations

Abbreviation	Meaning
DIN	Deutsches Institut für Normung (German Standards Institution)
EMC	Electromagnetic Compatibility
EN	Europäische Norm (European standard)
ISO	International Organization for Standardization
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
PELV	Protective Extra Low Voltage

Safety instructions

2 Safety instructions

This chapter describes the general safety requirements and important information on the safe assembly of the product.



Safety instructions regarding the Rexroth tightening systems and more information on the troubleshooting can be found in the software, i. e. the operating system (BS350 or BS300).

2.1 About this chapter

The product has been manufactured according to the accepted rules of current technology. There is, however, still a danger of personal injury or damage to equipment if this chapter and the safety instructions in this documentation are not complied with.

- ▶ Read this documentation completely and thoroughly before working with the product.
- ▶ Keep this documentation in a location where it is accessible to all users at all times.
- ▶ Always include the required documentation when you pass the product on to third parties.

2.1.1 Using and communicating the safety instructions

Read all supplied documents carefully before installing any components or commissioning the Rexroth tightening system.

Read these safety instructions and all other user information each time before working with the Rexroth tightening system. If you do not have a copy of the user information for the Rexroth tightening system and components, please contact your Bosch Rexroth sales representative. Request that docu-

ments be immediately sent to the person responsible for safe operation of the Rexroth tightening system.

If the Rexroth tightening system and its components are sold, lent, or otherwise passed on within the European Union (EU), these safety instructions must also be included in the language of one country of the European Union.



WARNING

Improper handling of the Rexroth tightening system and its components!

Damage to property, injury, electric shock and/or in extreme cases death is possible!

- ▶ Observe the specified warning and safety instructions in the documentation and on the products.
- ▶ Refrain from improper interventions in the safety equipment!

2.1.2 Instructions for use

To prevent injury and/or damage to equipment, read the following instructions before commissioning the Rexroth tightening system and components. These safety instructions must be observed at all times.

- Bosch Rexroth AG does not assume any liability for damage resulting from non-compliance with the safety warnings in this documentation and in the documentation of all the Rexroth tightening system components.
- Read the operating, maintenance, and safety instructions prior to commissioning. If the documentation in the available language is not clearly understood, please contact the supplier and inform him of this.

Safety instructions

- The prerequisites for correct, safe operation of the Rexroth tightening system are: proper transportation, storage, assembly, and installation, as well as careful operation and maintenance.
 - Check the product for visible defects, for example cracks in the housing or missing screws and seals.
 - Before commissioning, make sure that all the connection gaskets and plugs are installed correctly to ensure that they are leakproof and fluids and foreign bodies are prevented from penetrating the product.
 - Make sure that all electrical connections are either used or covered. Commission the product only if it is installed completely.
 - Only use Rexroth products within the performance range specified in the respective technical data.
 - Do not expose Rexroth products to any mechanical loads under any circumstances. Never use Rexroth products as a handle or step. Do not place any objects on Rexroth products.
- Only use accessories and spare parts that are approved by the manufacturer.
- Observe the safety regulations of the country in which the Rexroth tightening system and components are used.
- Tightening system components are designed for installation in machines used in industrial applications.
- Always observe the ambient conditions specified in the product documentation of the respective component.
 - Let new components acclimate for several hours before commissioning. Otherwise, water may condense, e.g. in the control housings.
 - Make sure that all electrical connections are either used or covered. Commission the component only if it is installed completely.
- Safety-relevant applications are only permitted if they are clearly and explicitly stated in the planning documents. If this is not the case, they are excluded. Safety-relevant applications are all applications that may result in injury to personnel or damage to equipment.
- In the respective product documentation, information is provided regarding the use of the supplied components. These are application examples and suggestions only.

The machine manufacturer and system installer must check that

 - the supplied components and specifications made in the respective documentation are suitable for the application on hand, and that they
 - correspond to the safety regulations and standards valid for that application. The machine manufacturer and system installer must implement the required measures, modifications, and expansions.
- Commissioning of the supplied components is prohibited until it has been determined that the machine or system in which they are installed corresponds to country-specific provisions, safety regulations, and standards for the specific application.
- Operation is only permitted in accordance with the national EMC regulations for the respective application.
- For instructions on EMC installations, refer to the documentation for the respective component.
- The manufacturer of the system or machine is responsible for maintaining the

Safety instructions

limit values required by national regulations.

- The technical data, connection conditions, and installation conditions can be found in the corresponding product documentation and must be complied with at all times.

Country-specific regulations that the user must observe

- European countries:
 - Corresponding EN European standards
- United States of America (USA):
 - National Electrical Code (NEC),
 - National Electrical Manufacturers Association (NEMA), as well as regional building codes
- Canada
 - Canadian Standards Association (CSA)
- Other countries:
 - International Organization for Standardization (ISO)
 - International Electrotechnical Commission (IEC)

2.1.3 Operating instructions

Observe the regulations for accident prevention and environmental protection for the country where the product is used and at the workplace.

Only allow persons who are authorized by the operator to access the system's direct operating area. This is also valid when the system is standing still.

In case of an emergency, fault or any other anomalies, switch the system off and protect it against being switched on again.

Only operate the control and power electronics for Rexroth tightening technology in a grounded network. Operation in non-grounded networks (IT network) is not permitted, as clearance and creepage distances in the system may be overloaded. Here, protective grounding is the permissible protective measure in accordance with EN 50178. The inlet cables to the control and power electronics must be equipped with a protective conductor (PE).

Make sure that there is potential equalization between the workpiece and nutrunner, as well as its carrier plate, so that potential equalization is ensured for all system components.

Protect the system from short circuits in the connector cables with a fuse provided by the customer.

Safety instructions

2.1.4 Cleaning instructions

Observe the following instructions in order to guarantee the IP protection classes of the components (IP 54 in assembled conditions):

- ▶ Cover all openings in Rexroth tightening system components with the appropriate protective equipment in order to prevent detergents from penetrating the system.
- ▶ Never use solvents or aggressive detergents.
- ▶ Do not use a high-pressure cleaner for cleaning.



Also observe the cleaning instructions in the operating instructions for the respective system component.

2.1.5 Maintenance and repair instructions

Perform the prescribed maintenance work at the intervals specified in the operating instructions for the respective system component.

Make sure that no lines, connectors or components are disconnected as long as the system is under pressure and voltage. After the system is switched off, protect it from being switched on again.

2.1.6 Disposal instructions

Dispose of Rexroth products in accordance with the currently applicable regulations in your country, see "Disposal" on page 26.

2.2 Intended use

The Rexroth tightening spindle or the ErgoSpin hand-held nutrunner is partly completed machinery in the sense of the Machinery Directive 2006/42/EC.

You may use the product as follows:

- for installation in partly completed machinery or in a machine and/or system
- for performing tightenings requiring a continuous course of the torque



This product is not suitable for tightening processes requiring a stepwise tightening of the connection elements, e.g. impact wrenches.

The product is intended for industrial use and not for private use.

The product may be commissioned only if it is integrated in the machine/system for which it is designed and the machine/system fully complies with the EC Machinery Directive. Observe the operating conditions and performance limits specified in the technical data.

Operation of the hand-held nutrunner is only permitted in accordance with the national regulations on the electromagnetic compatibility (EMC) for the respective application.



For instructions on EMC installations, refer to the documentation for the respective component.

Safety instructions

Only accessories and add-on units that have been approved for use in Rexroth tightening systems may be used therein. Non-approved components may neither be added nor connected to the system. The same applies to cables and lines which belong to the Rexroth tightening system. Otherwise, functional and system safety is jeopardized.

Intended use includes having read and understood this documentation and especially the chapter "Safety instructions".

2.2.1 Introduction

Bosch Rexroth products are developed and manufactured in accordance with the latest state of technology. They are checked for safe function before delivery.

The products may only be used as intended. If they are not used as intended, this may result in situations that cause injuries and damage to equipment.



As the manufacturer, Bosch Rexroth does not grant any warranty, assume any liability, or provide compensation for damage caused by improper use of the products. The user is solely responsible for risks caused by improper use of the products.

Before using any product from Bosch Rexroth, the following prerequisites must be fulfilled to ensure intended use:

- Anyone who deals with our products in any manner must read and understand the appropriate safety instructions and information on intended use.
- If dealing with hardware products, they must be kept in their original state, i.e. no modifications must be made to them. Software products must not be decompiled and the source code must not be changed.
- Damaged or faulty products must not be installed or commissioned.
- Before commissioning, ensure that the current firmware version (release or SP) is installed on the controllers.
- Make sure that the products have been installed in accordance with the specifications listed in the respective documentation.

Safety instructions

2.2.2 Application areas

The Rexroth tightening system is a system used to perform, document, and analyze tightenings in accordance with freely programmable sequences.



See the associated documentation for information on the application areas for the respective components.



As the manufacturer, Bosch Rexroth does not grant any warranty, assume any liability, or provide compensation for damage caused by improper programming or configuration of the tightening system. The user is solely responsible for risks caused by programming and configuration of the tightening system.



Only accessories and add-on units that have been approved for use in Rexroth tightening systems may be used therein. Non-approved components must neither be added nor connected to the system. The same applies to cables and lines which belong to the Rexroth tightening system. Otherwise, functional and system safety is jeopardized.

Bosch Rexroth AG will not accept any liability for damage caused by the unintended use. The risks in case of unintended use are exclusively borne by the user.

The unintended use of the product and its components (if available) includes:

- that it is subjected to operating conditions that do not fulfill the specified ambient conditions. Operation is forbidden e.g. under water, with extreme air humidity, under extreme temperature fluctuations, or under extreme maximum temperatures.
- that it is used in applications that have not been explicitly approved by Bosch Rexroth AG. Always observe the safety instructions in the respective documentation.
- the structural change destroying the original state.

2.3 Improper use

Any other use

- than that described in the intended use and
- than that described in the respective documentation

is regarded as unintended use and is therefore inadmissible.

Safety instructions

- the improper programming or configuration of the tightening system.
The user is solely responsible for risks caused by programming and configuration of the tightening system.

2.4 Personnel qualifications

Assembly, commissioning, maintenance, troubleshooting and disassembly of this Rexroth product and the handling of the product require basic electrical and mechanical knowledge, as well as knowledge of the appropriate technical terms. Handling of the product includes e.g. completion of a Rexroth tightening spindle from the components and the installation of a Rexroth tightening spindle into a system.

In order to ensure safe use, the specified activities may therefore only be carried out by qualified technical personnel or an instructed person under the direction and supervision of qualified personnel.

In other words, only appropriately trained and qualified personnel are permitted to work with or near the product during the assembly, commissioning, maintenance, troubleshooting and disassembly.

Qualified personnel

- are those who can recognize possible hazards and institute the appropriate safety measures due to their professional training, knowledge, and experience as well as their understanding of the relevant conditions pertaining to the work to be done.
- must observe the rules relevant to the subject area.
- must be trained, instructed, and authorized to switch electrical circuits and devices on and off in accordance with the accepted rules of safety and current tech-

nology, ground them, and mark them according to the job requirements.

- must be sufficiently familiar with all warnings and precautions according to this documentation and the documentation of the respective component and understand their content.
- must have appropriate safety equipment and be trained in first aid.

Persons who assemble, operate, disassemble, or maintain products from Bosch Rexroth AG must not consume any alcohol, drugs, or pharmaceuticals that may affect their ability to respond.

2.5 General safety instructions

This chapter describes general safety instructions for accident prevention. These safety instructions warn of general dangers that may e.g. result from the use or disposal of the product (or components thereof).



DANGER

High voltage and high operating current! Danger to life or risk of serious injury due to electric shock!



DANGER

Dangerous movements! Danger to life, risk of serious injury, or damage to equipment due to unintended motor movements!

Safety instructions



WARNING

High voltage due to improper connection! Danger to life or risk of serious injury due to electric shock!



WARNING

Health risk for persons with pacemakers, metal implants, and hearing aids in the immediate vicinity of electrical equipment!



CAUTION

Hot surfaces possible on device housing! Risk of injury! Risk of burns!



CAUTION

Risk of injury due to improper handling! Injury due to crushing, shearing, cutting, impact, or improper handling of pressurized lines!

Furthermore, you must observe the following notes:

- Observe the accident prevention and environmental protection regulations applicable to your country.
- Observe the safety regulations of the country in which the product is used/operated.
- Use Rexroth products only when they are in good technical order and condition.
- Observe all notes on the product.
- Persons who assemble, operate, disassemble or maintain Rexroth products must not consume any alcohol, drugs or

pharmaceuticals that may affect their ability to respond.

- Only use accessories and spare parts that are approved by the manufacturer.
- Observe the technical data and ambient conditions specified in the product documentation.
- Don't work with the product in explosive atmospheres where there are combustible liquids, gases or dusts.
- If unsuitable products are installed or used in safety applications, uncontrolled operating statuses may occur in the application that may cause physical injuries and/or damage to property.
Therefore only use a product in safety applications if this use is explicitly specified and permitted in the product documentation.
- You may only commission the product if it has been determined that the end product (e.g. machinery or a system) into which the Rexroth products are installed complies with the country-specific provisions, safety regulations and standards of the application.

Safety instructions

2.6 Product- and technology-dependent safety instructions

In this chapter, general safety instructions are listed that depend on the technology used in the product.

2.6.1 General product-dependent instructions

- The warranty only applies to the delivered configuration.
- The warranty will not apply if the product is incorrectly assembled or handled or not used as intended.
- Do not expose the product to any mechanical loads under any circumstances. Never use the product as a handle or step. Do not place any objects on it.

2.6.2 Protection against the accidental contact with electric parts



This section only applies to devices and components with voltages above 50 V.

Contacting parts with voltages greater than 50 V can be dangerous to persons and lead to electric shock. When electrical devices are operated, specific parts of these devices are under a dangerous voltage.

Safety instructions



DANGER

High voltage!

Danger to life, risk of injury due to electric shock, or risk of serious injury!

- ▶ Before using the system or starting service/maintenance works, make sure you read and understand these operating instructions.
- ▶ This device may only be operated, maintained and/or repaired by personnel trained and qualified to work on/with electrical devices.
- ▶ Observe the general construction and safety regulations for working with high-voltage systems.
- ▶ Firmly connect the protective conductor to all electrical devices according to the connection diagram before switching the system on.
- ▶ Operation, even briefly for measuring or testing purposes, is only permitted if the protective conductor is firmly connected to the components at the intended points.
- ▶ Disconnect the device from the mains or voltage source before accessing electrical parts with voltages greater than 50 V. Protect it against accidental switch-on.
- ▶ After switching off the power supply, wait 10 seconds for the system to discharge before opening the housing or starting repair/maintenance works.
- ▶ For electrical drive and filter components:
After switching off, take the specified discharging time for the respective components into account before accessing the devices. To eliminate the risks caused by contact, measure the voltage of the condensers before starting work.
- ▶ Do not touch the electrical connection points of the components when the device is switched on.
- ▶ Before switching on, attach the provided covers and protective devices (protection against accidental contact) to the devices. Also, before switching on, securely cover and protect live parts to prevent accidental contact.
- ▶ Do not touch the electrical connection points of the components when the device is switched on.
- ▶ A residual-current-operated protective device (RCD) cannot be used for multi-channel tightening systems! Protection against accidental contact must be ensured by other means, for example by an overload protection device corresponding to the relevant standards.
- ▶ Prevent accidental contact with electrical parts in installed devices by means of an external housing such as a switch cabinet.

European countries: Corresponding to EN 50178/1998, paragraph 5.3.2.3.

USA: See National Electrical Code (NEC), National Electrical Manufacturers Association (NEMA), as well as regional building codes.

The operator must comply with all of the above listed points at all times.

Safety instructions

For electrical drive and filter components:

**DANGER****High housing voltage and high leakage current!**

Danger to life, risk of injury due to electric shock!

- ▶ Before switching on, connect the electrical equipment and the housings of all electric devices and motors to the protective conductor at the grounding points, or ground them. Even prior to quick tests.
- ▶ Before commissioning, even for testing purposes, always connect the protective conductor or connect with ground wire. Otherwise, high voltages can occur on the housing that may cause an electric shock.
- ▶ Always connect the protective conductor for the electrical equipment to the power supply permanently. The leakage current is greater than 3.5 mA.
- ▶ Use a copper wire diameter of 10 mm² or greater for the entire protective conductor!

Safety warning sticker

Safety warning stickers on the tightening system indicate the risk of electric shock.

**WARNING****Dangerous voltage inside device!**

Danger to life, risk of injury due to electric shock!

- ▶ Switch the device off.
- ▶ Disconnect the device from the mains supply.
- ▶ Before opening the device or starting maintenance works, wait at least 90 seconds for the device to discharge.
- ▶ Before starting maintenance works, make sure you read and understand these operating instructions.

Safety instructions

2.6.3 Protective extra-low voltage for protection against electric shock

Voltages from 0 to 50 Volt applied to Rexroth products are protective extra-low voltages. All connections and terminals with voltages of 5 to 50 V on Rexroth products are thus designed to be safe to touch in accordance with the product standards.



WARNING

High voltage due to improper connection!

Danger to life, risk of injury due to electric shock!

- ▶ Only devices, electrical components, and cables with protective extra-low voltage (PELV) may be connected to connections and terminals with voltages of 0 to 50 V.
- ▶ Only connect voltages and electric circuits that are safely isolated from dangerous voltages. Safe isolation is obtained by means of isolating transformers, safe opto-couplers, or battery operation disconnected from the mains.

2.6.4 Protection against dangerous movements

Dangerous movements can be caused by improper actuation of connected motors. Causes can be any of the following:

- Careless or improper wiring
- Errors while operating the components
- Incorrect input of parameters prior to commissioning
- Error in the measurement transducer or signal transducer
- Defective components
- Software errors

These errors can occur immediately after the system has been switched on or after an indefinite operating time.

The monitoring devices in the drive components almost completely eliminate malfunctions in the connected drives. However, in view of personal safety, especially that involving risk of injury and/or damage to equipment, this alone is not sufficient. Until the installed monitoring devices reach full effectivity, faulty drive movements, faulty drive movements the magnitude of which on the controller type and the operating condition, must be anticipated.

Safety instructions

**DANGER****Dangerous movements!**

Danger to life, risk of serious injury or damage to equipment!

- ▶ Ensure personal safety, either by means of monitoring devices or by superior measures directly on the system.
- ▶ The measures depend on the specific system conditions and are determined based on a risk and error analysis. The safety regulations applicable to the system must be taken into consideration. Unintended machine movements or other malfunctions may occur when the safety equipment is switched off, bypassed, or not activated.
- ▶ Avoid operating high-frequency, remotely controlled, or radio devices in the vicinity of the device electronics and cables. If this cannot be avoided, check the device and the system for malfunctions in all working positions. In some cases, a special EMC inspection of the entire system may be necessary.
- ▶ Use a torque support if tightenings with higher torques are to be performed with a hand-held tightening spindle or an ErgoSpin.
- ▶ In the following cases, install a torque support at the ErgoSpin hand-held nutrunner: ESM from 10 Nm, ESA or ESV from 40 Nm.

Preventing accidents, injury, and/or damage to equipment on stationary systems:

- ▶ Do not enter the machine's and machine parts' range of movement. Possible measures to prevent unauthorized entry of persons include e.g. protective barriers, protective enclosures, protective cover or photocells.
- ▶ Barriers and covers must be rigid enough to withstand the maximum possible momentum.
- ▶ The emergency OFF switch must be easily accessible within immediate vicinity. Check the function of the emergency OFF system before commissioning. If the emergency OFF switch malfunctions, do not operate the device.
- ▶ Protection against unintended start-up by means of an emergency OFF circuit.
- ▶ Safely bring the drives to a standstill before accessing or entering the danger zone.
- ▶ Additionally secure vertical axes from falling or dropping after the motor is switched off by mechanical locking of the vertical axis, external braking/catching/clamping devices and sufficient weight compensation of the axis.
- ▶ Switch electrical equipment to a de-energized state at the mains and protect it against unintentional switch-on during maintenance and repair works, cleaning works as well as long interruptions.

Safety instructions

2.6.5 Protection against magnetic and electromagnetic fields during operation and assembly

Magnetic and electromagnetic fields that surround live conductors and the permanent magnets of motors can pose a serious risk to persons with pacemakers, metal implants, or hearing aids.



DANGER

Health risk for persons with pacemakers, metal implants, and hearing aids in the immediate vicinity of electrical equipment!

Magnetic and electromagnetic fields may interfere with and impair the function of pacemakers or hearing aids as well as that of metal implants. This may lead to a health risk for the persons concerned.

- ▶ Persons with pacemakers and metal implants are prohibited from entering areas in which electrical devices and parts are assembled, operated, or commissioned or in which motor parts with permanent magnets are stored, repaired, or assembled
- ▶ If persons with pacemakers need to enter these types of areas, a physician must first be consulted. The interference resistance of current or future pacemaker versions varies greatly. For this reason, no generally applicable rules exist.
- ▶ Persons with metal implants, metal shrapnel in the body, or hearing aids must consult a physician before entering these types of areas, as adverse health effects must be expected in these areas.

Safety instructions

2.6.6 Protection against the improper handling of the hand-held nutrunner



CAUTION

No torque support for the hand-held ErgoSpin!

Damage to persons/property!

- ▶ Install torque support in the following cases:
 - ESM from 10 Nm
 - ESA or ESV from 40 Nm

- Keep the hand-held nutrunner away from rain and moisture. Water penetrating the hand-held nutrunner will increase the risk of electric shocks.
- Do not use the hand-held nutrunner outdoors.
- Do not misuse the cable for carrying and hanging up the hand-held nutrunner or for pulling out the plug from the socket. Keep the cable away from heat, oil, sharp edges or moving parts of the unit.
- Remove adjustment tools or wrenches before switching on the hand-held nutrunner.
- Do not overestimate yourself. Make sure to stand safely and keep your balance.
- Do not overload the hand-held nutrunner. Use the hand-held nutrunner provided for your task.
- Do not use hand-held nutrunners with defective switches.

2.6.7 Protection against accidental contact with hot parts



CAUTION

Hot surfaces possible on motor housings and gearboxes!

Risk of injury! Risk of burns!

- ▶ Do not touch device housing surfaces at heat sources! Risk of burns!
- ▶ Do not touch housing surfaces of motors and gearboxes! Risk of burns!
- ▶ Depending on the operating conditions, temperatures during or after operation may exceed 60 °C (140 °F).
- ▶ After switching off the motors, allow them to cool down sufficiently before accessing them.
- ▶ Wear protective gloves or do not work near hot surfaces.
- ▶ For specific applications, the manufacturer must undertake measures on the end product, the machine, or the system to prevent burn injuries during the end use. These measures must be in accordance with the safety regulations. Examples of possible measures are: safety warnings, a separating safety device (shielding or locking), and technical documentation.

Safety instructions

2.6.8 Protection during handling and assembly

Under unfavorable conditions, handling or assembling specific parts in an unsuitable manner could cause injuries.



CAUTION

Risk of injury due to improper handling!

Injury due to crushing, shearing, cutting, impact!

- ▶ Observe the general construction and safety regulations for handling and assembly.
- ▶ Use suitable assembly and transport equipment.
- ▶ Prevent trapping and crushing injuries by taking suitable precautions.
- ▶ Only use suitable tools. Use special tools if stipulated.
- ▶ Use lifting equipment and tools properly.
- ▶ If necessary, use suitable protective equipment (for example, protective goggles, safety shoes, protective gloves).
- ▶ Do not stand under suspended loads.
- ▶ Any fluids that have leaked onto the floor must be wiped up immediately to prevent slip hazards.
- ▶ Lay cables and lines in accordance with the permissible bending radiuses so that they cannot be damaged and no one can trip over them.

2.6.9 Protection when handling batteries

Batteries consist of active chemicals surrounded by a rigid housing. Improper handling can thus result in injuries or damage to equipment.



CAUTION

Risk of injury due to improper handling!

The improper handling of batteries may lead to chemical burns or explosions that can again lead to injuries.

- ▶ Never attempt to reactivate dead batteries by heating or other methods (risk of explosion and chemical burns)!
- ▶ The batteries must never be re-charged, as this could cause them to leak or explode.
- ▶ Do not incinerate batteries.
- ▶ Do not take batteries apart.
- ▶ Do not damage the electrical components installed in the devices.



Environmental protection and disposal: In the context of legal regulations, the batteries contained in this product are to be considered hazardous materials when transported on land, by sea, or by air (risk of explosion). Dispose of used batteries separately from other waste. Observe the national regulations of the country where the product is installed.

Batteries must not be disposed in the general waste but the end user is obliged by law to return used batteries. Used batteries may contain contaminants which might be

Scope of delivery

harmful for the environment or for your personal health if not correctly stored or disposed of. Batteries, however, consist of different resources and must be separately collected and recycled.

Our batteries can be returned after use either

- at commercial waste management companies for used batteries
- at treatment facilities for used devices according to the electric and electronics device act
- or free of charge at our distribution agencies or at the Murrhardt site

The symbol with the crossed out waste container means that batteries must not be disposed of in the general waste but must be collected and recycled separately.

3 Scope of delivery

The scope of delivery of the product includes the present documentation (Safety regulation).

Disposal

4 Disposal

The device must not be disposed of with the municipal waste (domestic waste). To return your old appliance, please use the return and collection systems available to you. Careless disposal of the product could lead to pollution of the environment.

Therefore, dispose of the device in accordance with the currently applicable regulations in your country. Devices manufactured by us can moreover be returned free-of-charge for disposal. However, one prerequisite is that there are no objectionable films such as oil, grease or other contamination on the device. Further, no improper foreign substances or foreign components may be included in the return.

Please send the products carriage paid to the following address:

Bosch Rexroth AG
Electric Drives and Controls
Fornsbacher Str. 92
D-71540 Murrhardt
Germany

4.1 Environmental protection

Manufacturing process

The products are produced using manufacturing processes that are energy- and raw material-optimized and simultaneously allow for reuse and recycling of the occurring waste. We regularly try to replace polluted raw, auxiliary and operating materials with environmentally friendly alternatives.

Prohibited substances

We guarantee that our products do not contain any substances contained in the Chemicals Prohibition Ordinance. We moreover declare that are products are free from mercury, asbestos, PCB and chlorinated hydrocarbons.

No release of hazardous substances

Our products do not contain hazardous substances that could be released during the intended use. Normally, you therefore don't have to fear negative consequences for the environment.

Material components

Tab. 6 on page 26 shows the components that are basically contained in our products.

Tab.6: Main components of the products

Spindle components	Motors
Steel	Steel
Aluminum	Aluminum
Copper	Copper
Plastics	Brass
Electronic components and assemblies	Magnetic materials
	Electronic components and assemblies

Troubleshooting

5 Troubleshooting

Malfunctions and information on errors are displayed in the tightening system and/or in its operating program, e.g. the BS350.

- If you are not able to remedy an occurring defect, please contact one of the addresses that you can either find at <http://www.boschrexroth.com> or in section "Service and sales".

6 Appendix

This chapter contains information on the following topics:

- Complaints and repairs
- Warranty
- Service and sales

6.1 Complaints and repairs

For complaints and repairs that require disassembly of the tightening spindle, please send the **fully assembled** tightening spindle to the supplier or our customer service workshop in Murrhardt, Germany.

Complaints and repairs cannot be accepted if this procedure is not followed.

6.2 Warranty

For Rexroth devices, we grant a guarantee of 1 year (proof by means of invoice or delivery note).

Damage attributable to natural wear, overload or improper handling remains excluded from the warranty.

Appendix

6.3 Service and sales

Service

We are always the right partner when it comes to system know-how.

For any problem: Service from Rexroth

- You can reach us around the clock at:
+49 9352 40 50 60
- Or contact us by e-mail:
service.svc@boschrexroth.de

Worldwide service

Our global service network can be reached at any time in over 40 countries. You can find detailed information on our service locations in Germany and worldwide on the Internet at:

[http://www.boschrexroth.com/
service-405060](http://www.boschrexroth.com/service-405060)

Information preparation

We will be able to help you quickly and efficiently if you have the following information at the ready:

- Detailed description of the malfunction and conditions
- Information on the name plate of the affected product, particularly the material and serial numbers
- Telephone/fax numbers and e-mail address where we can reach you if we have any questions.

Sales

Bosch Rexroth AG
Electric Drives and Controls
Schraub- und Einpress-Systeme
Postfach 1161, 71534 Murrhardt
Fornsbacher Str. 92, 71540 Murrhardt
Germany

You can reach us

- By telephone +49 71 92 22 208
- By fax +49 71 92 22 181
- Per e-mail
schraubtechnik@boschrexroth.de

Internet

Information on Rexroth's tightening technology can be found on the Internet at

[http://www.boschrexroth.com/
schraubtechnik](http://www.boschrexroth.com/schraubtechnik)

Additional information on service, repairs, and training, as well as the current addresses of our sales offices, can be found at

<http://www.boschrexroth.com>

If you are located outside of Germany, please contact your nearest Rexroth partner.

Appendix

Bosch Rexroth AG
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