



8 a.m. - 5 p.m. Sales Available
International: 1-919-443-0207
Toll Free: 1-888-551-3082



Visit Our Website
www.wakeindustrial.com



Email Us
sales@wakeindustrial.com

All Products from Wake Industrial, LLC, come with:

Sales and Repairs

We specialize in providing immediate product delivery when your system goes down. We have thousands of In-Stock automation products and offer a full range of repair options.

Fast Shipping

We ship worldwide, offering any type of shipping method with all the major logistic companies such as FedEx, UPS, DHL, USPS, and a variety of freight carriers.

Quality Guarantee

With standards like our 1 year warranty on ALL products, we can guarantee a better customer service experience than any other company within our industry.

Damage Free Delivery



All of our products are cleaned, go through quality control and are shipped using a custom military grade foam to ensure your product arrives undamaged. We have the capability to ship both small 1lb products and large 200lb+ automation parts regardless of your location.

Stay In Touch

Wake Industrial, LLC
1620 Old Apex Road
Cary, NC 27513

Wake Industrial is not affiliated with nor an authorized distributor or representative of any manufacturers, brands or products listed.

Call: 1-888-551-3082
International: 1-919-443-0207
Fax: 1-919-267-1705

Email: sales@wakeindustrial.com
Website: www.wakeindustrial.com

LTS350D/LTE350D

3 608 870 0D6

AB/12.2011
DE/EN/FR/IT/ES/PT

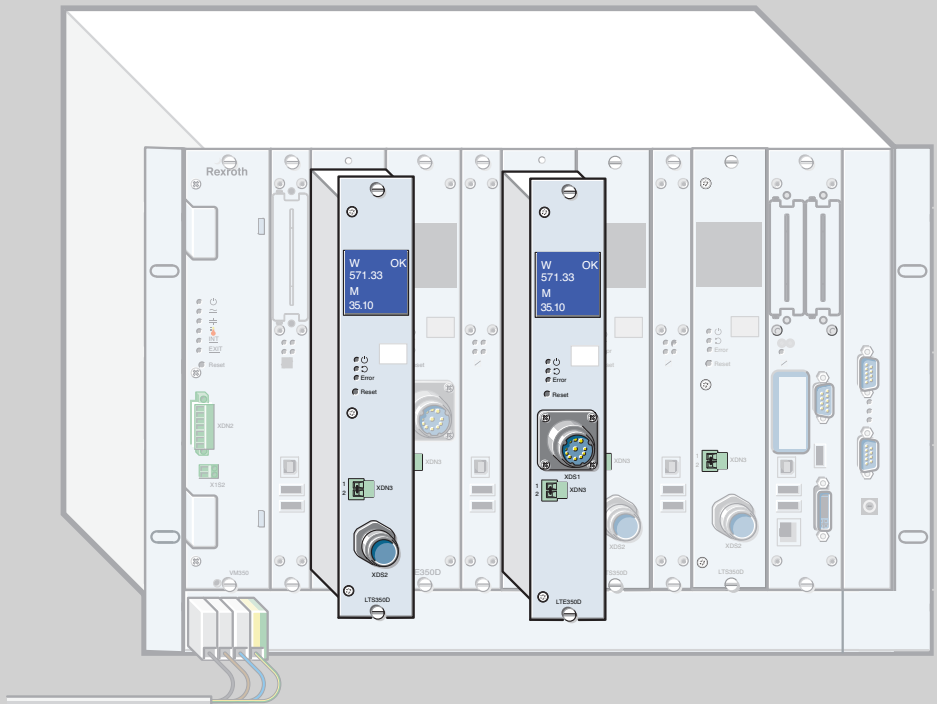


Table of Contents

About this document	18
General safety instructions	18
Delivery contents	20
Product description	21
Transport and storage	26
Assembly	26
Commissioning	27
Operation	27
Maintenance and repair	27
Decommissioning	27
Disassembly and replacement	28
Disposal	28
Extension and conversion	28
Troubleshooting	28
Technical data	29
Service and sales	30

The data specified above only serves to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.

© This document, as well as the data, specifications, and other information set forth in it, are the exclusive property of Bosch Rexroth AG. It may not be reproduced or given to third parties without its consent.

This document was written in German.

1 About this document

These instructions contain important information on the safe and appropriate assembly, transportation, commissioning, operation, maintenance, disassembly and simple troubleshooting of the LTS350D/LTE350D servo amplifiers.

Read these instructions completely, especially chapter "2 General safety instructions" on page 18, before working with the LTS350D/LTE350D servo amplifiers.

Related documents

The LTS350D/LTE350D servo amplifiers are system components.

Also observe the instructions for the other system components.

Also observe the generally applicable, legal or otherwise binding regulations of European or national legislation and the rules for the prevention of accidents and for environmental protection applicable in your country.

2 General safety instructions

The LTS350D/LTE350D servo amplifiers have been manufactured according to the accepted rules of current technology. There is, however, still a danger of personal injury or damage to equipment if the following general safety instructions and the warnings before the steps contained in these instructions are not complied with.

- Read these instructions completely and thoroughly before working with the LTS350D/LTE350D servo amplifiers.
- Keep these instructions in a location where they are accessible to all users at all times.

- Always include the operating instructions when you pass the LTS350D/LTE350D servo amplifiers on to third parties.

Intended use

The LTS350D/LTE350D servo amplifiers are components in terms of the Machinery Directive 98/37/EC and not ready-for-use machines. The products are exclusively intended for being integrated in a machine or system or for being assembled with other components to form a machine or system.

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

The LTS350D/LTE350D servo amplifiers are work appliance and not designed for private use.

Intended use includes having read and understood these instructions, especially the chapter "2 General safety instructions".

The LTS350D/LTE350D servo amplifiers are intended for installation in the BT356 card rack or the SB35x system box for connection of a tightening spindle or an ErgoSpin handheld nutrunner.

Improper use

Any use of the LTS350D/LTE350D servo amplifiers other than described in the chapter "Intended use" is considered as improper.

Personnel qualifications

Assembly, commissioning and operation, disassembly, service (including maintenance and repair) require basic electrical and mechanical knowledge, as well as knowledge of the appropriate technical terms. In order to ensure operating safety, these activities may therefore only be carried out by qualified technical personnel or an instructed person under the direction and supervision of qualified personnel.

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. Qualified personnel must observe the rules relevant to the subject area.


Safety instructions in this document


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


Safety instructions are set out as follows:

 SIGNAL WORD
Type of RISK!
Consequences
Precautions

- **Safety sign (warning triangle):** draws attention to the risk
- **Signal word:** identifies the degree of hazard
- **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

	<p>This warning symbol cautions against dangers to your health. Observe all the safety instructions that follow this symbol to avoid possible injuries or death.</p>
---	--

	<p>This warning symbol cautions against dangers to your health caused by electrical voltage or currents. Observe all the safety instructions that follow this symbol to avoid possible injuries or death.</p>
---	---

 CAUTION
<p>CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or damage to equipment.</p>



If this information is disregarded, the operating procedure may be impaired.

Adhere to the following instructions

General 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.

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

Exclusively use Rexroth products in good technical order and condition.

Check the product for visible defects, for example damage to the circuit board, components, housing, and plug connectors or missing screws.

Only use the product within the performance range provided in the technical data.

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

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.

During assembly

Make sure the relevant system component is not under pressure or voltage before assembling the product or when connecting and disconnecting plugs. Protect the system against being switched on.

Lay cables and lines so that they cannot be damaged, are in accordance with the bending radiuses, and no one can trip over them.

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.

During commissioning

Let the product acclimate itself for several hours before commissioning, otherwise water may condense in the housing.

Make sure that all electrical connections are either used or covered. Commission the product only if it is installed completely.

During cleaning

Cover all openings with the appropriate protective equipment in order to prevent detergents from penetrating the system.

Never use solvents or aggressive detergents. Only clean the product using a slightly damp, lint-free cloth. Only use water to do this and, if necessary, a mild detergent.

Disposal

Dispose of the product in accordance with the currently applicable national regulations in your country.

3 Delivery contents

The delivery contents include:

- 1 servo amplifier LTS350D or
1 servo amplifier LTE350D
- 1 operating instructions for the servo amplifier

4 Product description

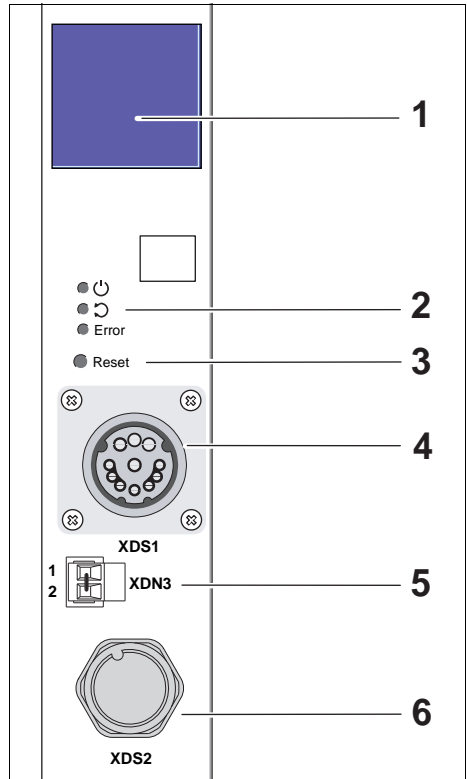
Device description

Performance description

The LTS350D/LTE350D servo amplifiers supply and control the EC motor. The speed and current are controlled in the servo amplifier.



Further information on the equipment variants can be found in the operating instructions for the BT356 card rack or SB35x system box.



**Fig. 1: Front view section of LTS350D/
LTE350D**

- 1 LC display
- 2 LED displays
- 3 Reset button
- 4 **LTE350D:** XDS1 interface for ErgoSpin hand-held nutrunner
- 5 XDN3 interface to interrupt the motor release
- 6 **LTS350D:** XDS2 interface for tightening spindle

Display

The graphic LC display (Figure 2) enables a display of the result values (torque, angle, gradient, time) and error codes. Texts are shown in 4 lines, each with 8 characters. The display is permanently backlit (LED).

The contrast can be adjusted in the BS350 operating system, if necessary.

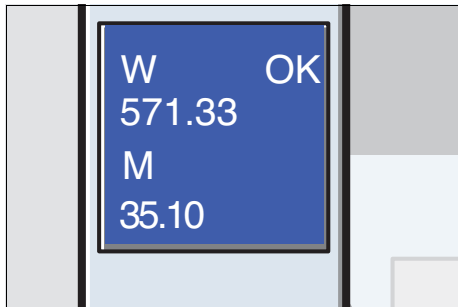


Fig. 2: LC display

Display

Tab. 1

Target function	Actual value
Upper torque	T
Lower torque	TI
Relative torque, upper	T&
Relative torque, lower	TI&
Angle	A
Input	IN
Time	t
Yield point	Yp
Gradient	G

Tab. 2

Monitoring function	Actual value
Torque	T
Relative torque	T&
Torque max. value	T>
Torque min. value	T<
Torque average value	TA
Torque range	TI[
Redundancy torque	TR
Tightening from above	TCh
Tightening from below	TCl
Angle	A
Total angle	AO
Redundancy angle	AR
Gradient	G
Gradient average value	GA
Time	t
Stick slip	STS
Yield point	Yp

Tab. 3

Function	Actual value	Displays Yes/No
Total time	to	Yes

Tab. 4

Event	Marking
Remove start signal	C(c)w → 0
System error	Fault

The inverse display shows:

- Error
- NOK.



Language packs

The language pack for the LTS350D/LTE350D servo amplifiers is uploaded to the controller using the BS350 operating program. This is done via the menu item "Configuration | HMI SE/CS" in the BS350.

LED display and reset button

There are three LEDs on the front panel of the servo amplifier to indicate the operating state.

Tab. 5

LED/button	Display	Diagnosis
 BTB	Off	No power supply or LTS/LTE is in download mode
	Green	Ready for operation
	Green, flashing	Not ready for operation, but no system error; Motor stop has been triggered
 FG	Off	No servo amplifier release
	Green	Servo amplifier release
Error	Red	System error
Reset		When pressed, a reset is performed to reinitialise the tightening channel

XDS1 interface for ErgoSpin hand-held nutrunner

The ErgoSpin hand-held nutrunner is connected to the servo amplifier via a spindle connection cable that is connected to the 11-pin connection socket. The power supply for the motor, logic supply, and transmission of interface signals is provided via this cable.

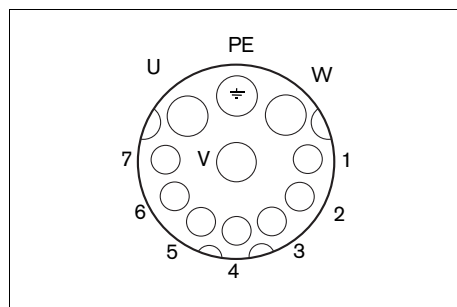


Fig. 3: Socket, view from front side

Table 6 XDS1

Pin	Signal assignment
1	CAN-L
2	CAN-H
3	24 V
4	GND
5	HS
6	SAMI-B
7	SAMI-A
U	Phase U
V	Phase V
A	Phase W
PE	Protective earth/shield

XDS2 interface for tightening spindle

The tightening spindle is connected to the servo amplifier via a spindle connecting cable that is connected to the 14-pin socket.

The power supply for the motor and the transmission of the interface signals is provided via this cable.

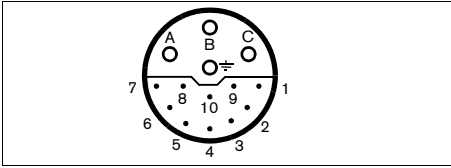


Fig. 4: Socket, view from the front side

Tab. 7 XDS2

Pin	Signal	Description/ function	Voltage/ current/ standard
\perp	PE	PE conductor (above)	
P	U	Motor phase U	230 V _{AC} / 12 A _{eff}
B	V	Motor phase V	230 V _{AC} / 12 A _{eff}
C	A	Motor phase W	230 V _{AC} / 12 A _{eff}
1	VTR	Driver power supply	12 V _{DC}
2	CANL	Serial spindle data CAN low	ISO 11898
3	CHB	Incremental en- coder channel 2	12 V _{DC}
4	GND	Reference po- tential logic	
5	INDX	Index impulse	12 V _{DC}
6	VEE	24 V spindle power supply	24 V _{DC}
7	MKTF	Motor identifier and motor tem- perature error	12 V _{DC}
8	HS	Auxiliary start switch for motor contactor (motor stop)	24 V _{DC}
9	CANH	Serial spindle data CAN high	ISO 11898
10	CHA	Incremental en- coder channel 1	12 V _{DC}

XDN3 interface to interrupt the motor release

With the XDN3 interface (Fig. 5), the motor release can be interrupted via an isolated normally closed contact.

Tab. 8 PIN assignment

PIN	Assignment
1	Motor stop OUT
2	Motor stop IN

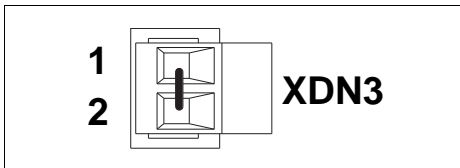


Fig. 5: XDN3 interface

PIN 1 and 2 are equipped with a jumper at the factory to ensure that the motor is ready for operation.



For additional information on the safe stop of the tightening spindle in accordance with DIN IEC 13849, please see the system documentation.

Switch S2

The switch S2 is on the board at top front in the installation position (Fig. 6).

Tab. 9 S2 positions

Position	Assignment
1	VM350 motor stop active
0	VM350 motor stop inactive

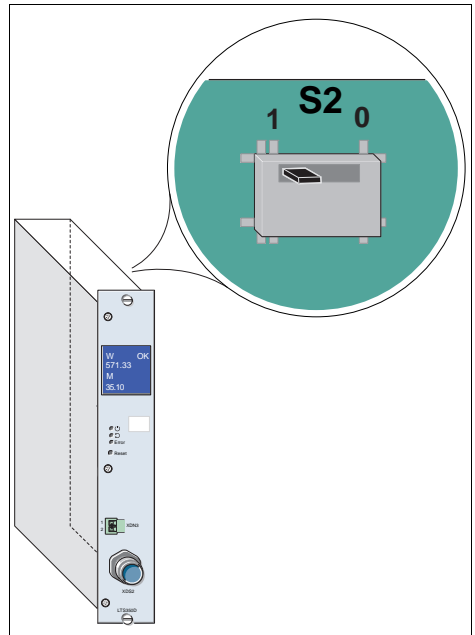


Fig. 6: Switch S2

LTS350D: The switch S2 **must be** in position 1 to ensure that the servo amplifier is ready for operation (delivery condition S2 = 1).

LTE350D: Switch S2 determines the function of the motor stop VM350 according to table 9. The selected setting of switch S2 must comply with the "Motor stop VM350" selection in the LTE350D channel configuration in order to guarantee operational readiness of the servo amplifier (delivery condition S2 = 0).

5 Transport and storage

For storing and transporting the product, always observe the ambient conditions specified in the technical data (see "Technical data" on page 29).

6 Assembly

When installing the product, always observe the ambient conditions specified in the technical data (see "Technical data" on page 29).

Required tools

- Screwdriver (size 0.8 x 4.5 mm)

Assembling the LTS350D/LTE350D servo amplifiers

CAUTION

Risk of damage to persons and property!

Assembly of the LTS350D/LTE350D servo amplifiers requires basic mechanical and electrical knowledge.

- ▶ Only qualified personnel (see "Personnel qualifications" on page 19) are authorized to assemble the LTS350D/LTE350D servo amplifiers.
- ▶ Measures to prevent electrostatic discharge (ESD protection) must be undertaken to protect the module and system components during all assembly work.

CAUTION

Risk of injuries when assembling under voltage!

If you do not switch off the power supply before assembling the LTS350D/LTE350D servo amplifiers, you may be injured or the device or system components may be damaged.

- ▶ Always switch off the power supply for the relevant system component before assembling the LTS350D/LTE350D servo amplifiers.

1. Switch off the power supply for the BT356 card rack or SB35x system box and allow for a discharging time of 10 seconds.
2. Completely insert the LTS350D/LTE350D servo amplifier into the respective slot in the BT356 card rack or SB35x system box.
3. Tighten the knurled bolts on the front. Make sure that the front panel is flush to the BT356 card rack or SB35x system box by tightening the knurled bolts.

7 Commissioning

CAUTION

Risk of damage to persons and property!

Commissioning of the LTS350D/LTE350D servo amplifiers requires basic mechanical and electrical knowledge.

- ▶ Only qualified personnel (see "Personnel qualifications" on page 19) are authorized to commission the system.
- ▶ Once the device has been switched off, it cannot be switched back on again until at least 30 seconds have elapsed.

If you use the components in an existing system as a replacement or an extension, you must install the firmware that is used in the system.

Before commissioning, check that all plug-in connections are firmly fitted.

CAUTION

Risk of damage to persons and property!

Electric shock during operation of the LTS350D/LTE350D servo amplifiers without tightening spindle! Voltage is applied to the XDS2 or XDS1 interface.

- ▶ Remove the LTS350D/LTE350D servo amplifiers to which no tightening spindle is connected from the BT356 card rack field or the SB35x system box.
- ▶ Close the unoccupied slots with a dummy panel.

8 Operation

Operation is not necessary while the system is running.

9 Maintenance and repair

Cleaning and care

CAUTION

Any dirt or liquids penetrating the device lead to malfunctions!

Safe function of the LTS350D/LTE350D servo amplifiers is no longer ensured.

- ▶ Always ensure absolute cleanliness when working on the LTS350D/LTE350D servo amplifiers.

Maintenance

The LTS350D/LTE350D servo amplifiers are maintenance-free if used as intended.

Spare parts

Please refer to the address directory under www.boschrexroth.com and in chapter "16 Service and sales" on page 30 for the addresses of our foreign subsidiaries.

10 Decommissioning

For details about how to disassemble or replace your LTS350D/LTE350D servo amplifiers please refer to chapter "11 Disassembly and replacement" on page 28.

11 Disassembly and replacement

Required tools

- Screwdriver (size 0.8 x 4.5 mm)

Disassembling



Removing the LTS350D/LTE350D servo amplifiers under voltage

Damage at the LTS350D/LTE350D servo amplifiers!

- ▶ Always switch off the power supply for the relevant system component before disassembling the LTS350D/LTE350D servo amplifiers.
- ▶ For safety reasons, the LTS350D/LTE350D servo amplifier may only be inserted or removed at the earliest 10 seconds after the power supply to the BT356 card rack or SB35x system box has been switched off.

Proceed as follows to disassemble the LTS350D/LTE350D servo amplifiers:

1. Switch off the power supply for the BT356 card rack or SB35x system box and allow for a discharging time of 10 seconds.
2. Loosen the knurled screws on the front panel and pull out the LTS350D/LTE350D servo amplifier.
3. If necessary, assemble a BP 351 dummy panel, order number 3 608 878 058.

12 Disposal

Environmental protection

Careless disposal of the LTS350D/LTE350D servo amplifiers could lead to pollution of the environment.

Therefore, dispose of the device in accordance with the currently applicable regulations in your country.

You can also send the device to Bosch Rexroth for disposal.

13 Extension and conversion

The LTS350D/LTE350D servo amplifiers must not be converted.

14 Troubleshooting

Malfunctions and information on errors are displayed:

- on the display (see section "Display" on page 22)
- by the LED on the front (see section "LED display and reset button" on page 22)
- in the tightening system via the BS350.

Should you be unable to remedy an occurring defect, please contact one of the addresses found under www.boschrexroth.com or in the address directory in chapter "16 Service and sales" on page 30.

15 Technical data

Tab. 10

Designation	LTS350D	LTE350D
Order number	0 608 750 125	0 608 750 126
Input voltages	From the supply module	
Intermediate circuit voltage	220 V _{DC} to 330 V _{DC}	
Control voltage	+ 24 V / - 24 V / 5 V	
Output voltage	3-phase, 0-230 V _{AC}	
Output frequency	0 Hz to 1000 Hz	
Rated current/peak current	Depending on the connected motor, max. 12 A / 50 A	
Maximum line length to motor	100 m	
Interference suppression	EN 55011 class A (industrial area)	
Interference immunity	IEC 1000-4 part 2 to part 6 severity level 4	
Permissible ambient temperature	0 to 55 °C with fan	
Admissible relative humidity during operation	20 % - 90 % non-condensing	
Admissible storage temperature	-20 °C to 70 °C	
Admissible relative storage humidity	20 - 95 %	
Protection class	Protection class I	
Protection type	IP20 (protection against accidental contacts) when installed	
Dimensions (W x H x D)	46 mm x 271 mm x 285 mm	
Weight	2.7 kg	

16 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 (0) 9352 40 50 60
- Of course you can also reach us via
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 in the Internet at:

www.boschrexroth.com/service-405060

Information preparation

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

Fornsbacher Str. 92 ■ D-71540 Murrhardt

Postfach 1161 ■ D-71534 Murrhardt

You can reach us:

- By telephone
+49 (0)71 92/22 208
- By fax
+49 (0)71 92/22 181
- By e-mail
schraubtechnik@boschrexroth.de

Internet

Information on Rexroth tightening technology can be found under 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 www.boschrexroth.com

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

Sommaire

Au sujet des présentes instructions	32
Consignes de sécurité fondamentales	32
Volume de livraison	34
Description du produit	35
Transport et stockage	40
Montage	40
Mise en service	41
Fonctionnement	41
Entretien et réparations	41
Mise hors service	41
Démontage et remplacement	42
Élimination	42
Élargissement et transformation	42
Recherche des erreurs et élimination des erreurs	42
Caractéristiques techniques	43
Service et distribution	44

Les indications données servent exclusivement à la description du produit. Il ne peut être déduit de nos indications aucune déclaration quant aux propriétés précises ou à l'adéquation du produit en vue d'une application précise. Ces indications ne dispensent pas l'utilisateur d'une appréciation et d'une vérification personnelle. Il convient de tenir compte du fait que nos produits sont soumis à un processus naturel d'usure et de vieillissement.

© Tous droits réservés par Bosch Rexroth AG, y compris en cas de dépôt d'une demande de droit de propriété industrielle. Tout pouvoir de disposition, tel que droit de reproduction et de transfert, détenu par Bosch Rexroth.

Les présentes instructions ont été rédigées en allemand.