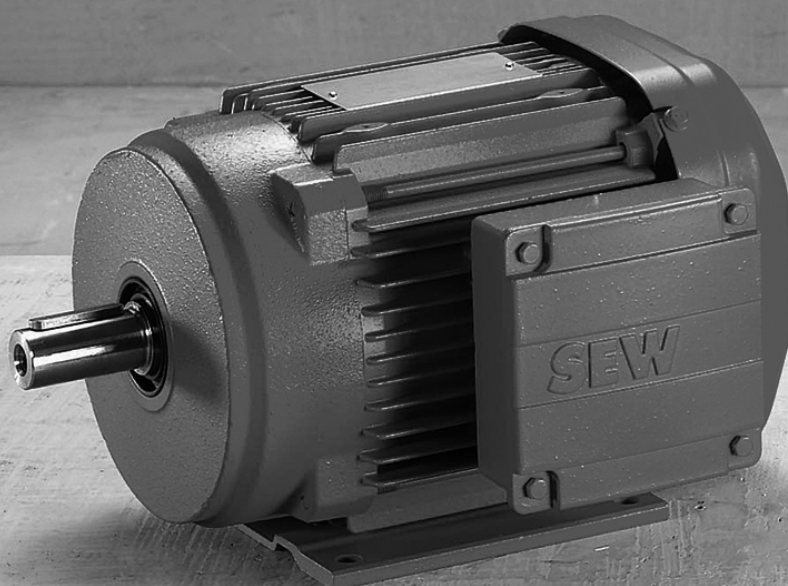




**SEW**  
**EURODRIVE**

# Operating instructions



Slewing gear motors

**DR2.112M, DR2.132S, DR2.132M, DR2.132L**

with BXM brake and third-party encoder



## Table of contents

|          |                                                               |           |
|----------|---------------------------------------------------------------|-----------|
| <b>1</b> | <b>General information .....</b>                              | <b>5</b>  |
| 1.1      | About this documentation .....                                | 5         |
| 1.2      | Structure of the safety notes .....                           | 5         |
| 1.3      | Rights to claim under limited warranty .....                  | 6         |
| 1.4      | Product names and trademarks .....                            | 6         |
| 1.5      | Copyright notice .....                                        | 6         |
| 1.6      | Other applicable documentation .....                          | 7         |
| <b>2</b> | <b>Safety notes .....</b>                                     | <b>8</b>  |
| 2.1      | Preliminary information .....                                 | 8         |
| 2.2      | Duties of the user .....                                      | 8         |
| 2.3      | Target group .....                                            | 8         |
| 2.4      | Designated use .....                                          | 9         |
| 2.5      | Creating a safe working environment .....                     | 9         |
| 2.6      | Transportation/storage .....                                  | 11        |
| 2.7      | Installation/assembly .....                                   | 11        |
| 2.8      | Startup/operation .....                                       | 12        |
| <b>3</b> | <b>Motor structure .....</b>                                  | <b>13</b> |
| 3.1      | Basic structure .....                                         | 13        |
| 3.2      | Nameplate and type designation .....                          | 14        |
| 3.3      | Designs and options .....                                     | 17        |
| <b>4</b> | <b>Mechanical installation .....</b>                          | <b>20</b> |
| 4.1      | Before you start .....                                        | 20        |
| 4.2      | Preliminary work after longer periods of storage .....        | 20        |
| 4.3      | Motor installation notes .....                                | 23        |
| 4.4      | Installation tolerances .....                                 | 24        |
| 4.5      | Encoder mounting adapter .....                                | 25        |
| 4.6      | Mounting the encoder .....                                    | 27        |
| <b>5</b> | <b>Electrical installation .....</b>                          | <b>29</b> |
| 5.1      | Before you start .....                                        | 29        |
| 5.2      | Wiring diagrams and terminal assignment diagrams .....        | 29        |
| 5.3      | Wiring notes .....                                            | 30        |
| 5.4      | Special aspects for operation with a frequency inverter ..... | 31        |
| 5.5      | Exterior grounding at the terminal box, LF grounding .....    | 33        |
| 5.6      | Improving the grounding (EMC), HF grounding .....             | 34        |
| 5.7      | Notes regarding the connection of the motor .....             | 35        |
| 5.8      | Connecting the motor via terminal block .....                 | 36        |
| 5.9      | Connecting the motor via terminal strip .....                 | 45        |
| 5.10     | Notes on the BXM brake .....                                  | 45        |
| 5.11     | Connecting a BXM brake .....                                  | 46        |
| 5.12     | Connecting the encoder .....                                  | 47        |
| 5.13     | Options .....                                                 | 48        |
| <b>6</b> | <b>Operation .....</b>                                        | <b>51</b> |
| 6.1      | Before you start .....                                        | 51        |

|           |                                                            |            |
|-----------|------------------------------------------------------------|------------|
| 6.2       | Manual brake release /HR .....                             | 52         |
| 6.3       | Retention device .....                                     | 53         |
| <b>7</b>  | <b>Inspection/maintenance .....</b>                        | <b>54</b>  |
| 7.1       | Before you start.....                                      | 54         |
| 7.2       | Inspection and maintenance intervals.....                  | 55         |
| 7.3       | Preliminary work .....                                     | 56         |
| 7.4       | Inspection and maintenance work .....                      | 60         |
| <b>8</b>  | <b>Technical data .....</b>                                | <b>63</b>  |
| 8.1       | Available braking torques.....                             | 63         |
| 8.2       | Motor/brake combinations.....                              | 63         |
| 8.3       | Permitted braking voltages .....                           | 63         |
| 8.4       | Manual brake release .....                                 | 64         |
| 8.5       | Permitted rolling bearings .....                           | 64         |
| 8.6       | Lubricant tables.....                                      | 65         |
| <b>9</b>  | <b>Malfunctions .....</b>                                  | <b>66</b>  |
| 9.1       | Before you start.....                                      | 66         |
| 9.2       | Motor malfunctions.....                                    | 67         |
| 9.3       | Brake malfunctions .....                                   | 69         |
| 9.4       | Malfunctions when operated with a frequency inverter ..... | 69         |
| 9.5       | Waste disposal.....                                        | 69         |
| 9.6       | Service .....                                              | 70         |
| <b>10</b> | <b>Appendix .....</b>                                      | <b>71</b>  |
| 10.1      | Wiring diagrams .....                                      | 71         |
| 10.2      | Encoder operating instructions; Baumer .....               | 73         |
| 10.3      | Brake operating instructions; Mayr .....                   | 110        |
| <b>11</b> | <b>Contacting SEW-EURODRIVE.....</b>                       | <b>127</b> |



# 1 General information

## 1.1 About this documentation

**The documentation at hand is the original.**

This documentation is an integral part of the product. The documentation is intended for all employees who perform work on the product.

Make sure this documentation is accessible and legible. Ensure that persons responsible for the systems and their operation as well as persons who work on the product independently have read through the documentation carefully and understood it. If you are unclear about any of the information in this documentation or if you require further information, contact SEW-EURODRIVE.

## 1.2 Structure of the safety notes

### 1.2.1 Meaning of signal words

The following table shows the graduation and meaning of the signal words in the safety notes.

| Signal word      | Meaning                      | Consequences if not observed             |
|------------------|------------------------------|------------------------------------------|
| <b>▲ DANGER</b>  | Imminent danger              | Death or severe injuries                 |
| <b>▲ WARNING</b> | Possibly dangerous situation | Death or severe injuries                 |
| <b>▲ CAUTION</b> | Possibly dangerous situation | Minor injuries                           |
| <b>NOTICE</b>    | Possible damage to property  | Damage to the product or its environment |

### 1.2.2 Structure of section-related safety notes

Section-related safety notes do not apply to a specific action but to several actions pertaining to one subject. The hazard symbols used either indicate a general hazard or a specific hazard.

This is the formal structure of a safety note for a specific section:



#### **SIGNAL WORD**

Type and source of hazard.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the hazard.

### 1.2.3 Meaning of the hazard symbols

The hazard symbols in the safety notes have the following meaning:

| Hazard symbol                                                                     | Meaning        |
|-----------------------------------------------------------------------------------|----------------|
|  | General hazard |

### 1.2.4 Structure of embedded safety notes

Embedded safety notes are directly integrated into the instructions just before the description of the dangerous step.

This is the formal structure of an embedded safety note:

**▲ SIGNAL WORD!** Type and source of danger. Possible consequence(s) if disregarded. Measure(s) to prevent danger.

## 1.3 Rights to claim under limited warranty

Read the information in this documentation. This is essential for fault-free operation and fulfillment of any rights to claim under limited warranty. Read the documentation before you start working with the product.

## 1.4 Product names and trademarks

The product names mentioned in this documentation are trademarks or registered trademarks of the respective titleholders.

## 1.5 Copyright notice

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## **1.6 Other applicable documentation**

Observe the corresponding documentation for all additional components.

### **1.6.1 AC motors**

The following documentation and documents must also be observed:

- Wiring diagrams included with the motor
- DRN63 – 315, DR2S56 – 225, DR2L71 – 225 AC motors catalogs

### **1.6.2 Brakes**

When performing work on the brake, follow the operating instructions of the brake manufacturer Chr. Mayr GmbH + Co. KG in the appendix of these operating instructions.

### **1.6.3 Encoder**

When performing work on the encoder, follow the operating instructions of the encoder manufacturer in the appendix of these operating instructions.

## 2 Safety notes

### 2.1 Preliminary information

The following general safety notes serve the purpose of preventing injury to persons and damage to property. They primarily apply to the use of products described in this documentation. If you use additional components, also observe the relevant warning and safety notes.

### 2.2 Duties of the user

As the user, you must ensure that the basic safety notes are observed and complied with. Make sure that persons responsible for the machinery and its operation as well as persons who work on the device independently have read through the documentation carefully and understood it.

As the user, you must ensure that all of the work listed in the following is carried out only by qualified specialists:

- Setup and installation
- Installation and connection
- Startup
- Maintenance and repairs
- Shutdown
- Disassembly

Ensure that the persons who work on the product pay attention to the following regulations, conditions, documentation, and information:

- The national and regional regulations governing safety and the prevention of accidents
- Product safety label on the product
- All other associated project planning documents, installation and startup instructions, as well as connection and wiring diagrams
- Do not assemble, install, or operate damaged products
- All system-specific specifications and regulations

Ensure that systems in which the product is installed are equipped with additional monitoring and protection devices. Observe the applicable safety regulations and legislation governing technical work equipment and accident prevention regulations.

### 2.3 Target group

Specialist for mechanical work

Any mechanical work may be performed only by adequately qualified specialists. Specialists in the context of this documentation are persons who are familiar with the design, mechanical installation, troubleshooting, and maintenance of the product, and who possess the following qualifications:

- Qualifications in the field of mechanics in accordance with the national regulations
- Familiarity with this documentation

|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Specialist for electrotechnical work | Any electrotechnical work may be performed only by electrically skilled persons with a suitable education. Electrically skilled persons in the context of this documentation are persons who are familiar with electrical installation, startup, troubleshooting, and maintenance of the product, and who possess the following qualifications: <ul style="list-style-type: none"> <li>• Qualifications in the field of electrical engineering in accordance with the national regulations</li> <li>• Familiarity with this documentation</li> </ul> |
| Additional qualifications            | In addition to that, these persons must be familiar with the valid safety regulations and laws, as well as with the requirements of the standards, directives, and laws specified in this documentation.<br><br>The persons must have the express authorization of the company to operate, program, parameterize, label, and ground devices, systems, and circuits in accordance with the standards of safety technology.                                                                                                                            |
| Instructed persons                   | All work in the areas of transport, storage, installation, operation and waste disposal may only be carried out by persons who are trained and instructed appropriately. These instructions must enable the persons to carry out the required activities and work steps safely and in accordance with regulations.                                                                                                                                                                                                                                   |

## 2.4 Designated use

The product is intended for installation in electrical systems or machines.

In case of installation in electrical systems or machines, startup of the product is prohibited until it is determined that the machine meets the requirements stipulated in the local laws and directives. For Europe, Machinery Directive 2006/42/EC as well as the EMC Directive 2014/30/EU apply. Observe EN 60204-1 (Safety of machinery - electrical equipment of machines). The product meets the requirements stipulated in the Low Voltage Directive 2014/35/EU.

The standards given in the declaration of conformity apply to the product.

The systems can be mobile or stationary.

The product can be used to operate the following motors in industrial and commercial systems:

- AC asynchronous motors with squirrel-cage rotor

Technical data and information on the connection conditions are provided on the nameplate and in chapter "Technical data" in the documentation. Always comply with the data and conditions.

Unintended or improper use of the product may result in severe injury to persons and damage to property.

Do not use the product as a climbing aid.

### 2.4.1 Restrictions under the European WEEE Directive 2012/19/EU

Options and accessories from SEW-EURODRIVE may only be used in combination with products from SEW-EURODRIVE.

## 2.5 Creating a safe working environment

Before you work on the product, ensure a safe working environment. Observe the following basic safety notes:



**2.5.1 Performing electrical work safely**

Observe the following information to perform electrical work safely:

Electrical work may only be performed by an electrically skilled person or an electronically instructed person under the supervision of an electrically skilled person.

The fact that the operation or display elements are no longer illuminated does not indicate that the product has been disconnected from the supply system and no longer carries any voltage.

**Live parts**

Always adhere to the 5 safety rules for all work on electrical components:

1. Disconnect.
2. Secure the device against a restart.
3. Check that no voltage is applied.
4. Ground and short-circuit.
5. Cover or isolate neighboring live parts.

Depending on the situation, it is possible to deviate from rules 4 and 5. Observe standard EN 50110-1.

**Dangerous voltage**

When the system is switched on, dangerous voltages are present at all power connections as well as any cables and terminals that are connected. This also applies even when the product is inhibited and the motor is in an idle state. Observe the following notes to avoid the risk of electric shock:

- Do not touch any exposed live parts (e.g. male contacts, connectors, terminals).
- Secure all open live components with a touch guard.
- Ensure that the terminal boxes are closed and screwed tight before applying the supply voltage.
- Before applying the supply voltage, make sure that all required covers are mounted.
- Secure the output shaft against rotation when working without touch guard.

## 2.6 Transportation/storage

Inspect the shipment for damage as soon as you receive the delivery. Inform the shipping company immediately about any damage. If the product or the packaging is damaged, do not assemble, install, connect, or start up the product. If the packaging is damaged, the product itself may also be damaged.

The lifting eyebolts are designed to carry only the weight of the motor without gear unit. Tighten installed lifting eyebolts. Mounted gear units have separate suspension attachments, which must be used according to the gear unit operating instructions when lifting the gearmotor. Do not mount any additional loads.

The installed lifting eyebolts are in accordance with DIN 580. Observe the loads and regulations specified there. The tension force vector of the slings must not exceed a 45° angle in accordance with DIN 580.

If necessary, use suitable, sufficiently dimensioned handling equipment.

Observe the following notes when transporting the device:

- Always use all attachment points if available. The attachment points are designed to carry only the mass of the product. Do not apply any additional loads.
- Ensure that the product is not subject to mechanical impact.

If the product is not immediately installed, it must be stored in a dry and dust-free location. The product can be stored for up to 9 months without requiring any special measures before startup. Do not store the product outdoors.

Do not transport or store the product on the fan guard.

## 2.7 Installation/assembly

Note the following points during installation:

- Make sure that the supports are even, the foot and flange mounting is correct and if there is direct coupling, align with precision.
- Avoid resonance between the rotational frequency and the double supply system frequency.
- Release the brake (for motors with mounted brake).
- Turn the rotor by hand and listen for unusual grinding noise.
- Check the direction of rotation in decoupled state.
- Only install or remove belt pulleys and couplings using suitable devices (heat up). Cover the belt pulleys and couplings with a touch guard. Avoid unacceptable belt tension.
- Establish any necessary pipe connections.
- Mounting positions with the shaft end pointing upward must be equipped with a cover to prevent foreign objects from falling into the fan. Ensure that ventilation openings are not obstructed and that used air cannot be drawn in again straight away. The same applies to air from adjacent units.

See also the information in chapter "Mechanical installation" (→ 20).

## 2.8 Startup/operation

Risk of burns: The surface temperature of the product can exceed 60 °C during operation. Do not touch the product during operation. Let the product cool down before touching it.

Do not deactivate monitoring and protection devices of the machine or system, even for a test run.

Depending on the degree of protection, products may have live, uninsulated, and sometimes moving or rotating parts as well as hot surfaces during operation.

Make sure that any existing transport protection is removed.

In the event of deviations from normal operation, switch off the product. Possible deviations are increased temperatures, noise, or vibration, for example. Determine the cause. Contact SEW-EURODRIVE if necessary.

Ensure that the terminal box is closed and screwed down before applying the supply voltage.

Additional protective measures may be required for applications with increased hazard potential. Be sure to check the effectiveness of the protection devices after every modification.

Mechanical blocking or internal protective functions of the product can cause a motor standstill. Removing the cause of this problem or performing a reset can result in the machine or the system re-starting on its own. First, disconnect the product from the supply system before you start troubleshooting.

Overheating of  
motors with back-  
stop /RS

With low motor speeds, the centrifugal forces are so low that the backstop sprags brush against the inner and outer ring. This causes overheating of the friction surfaces.

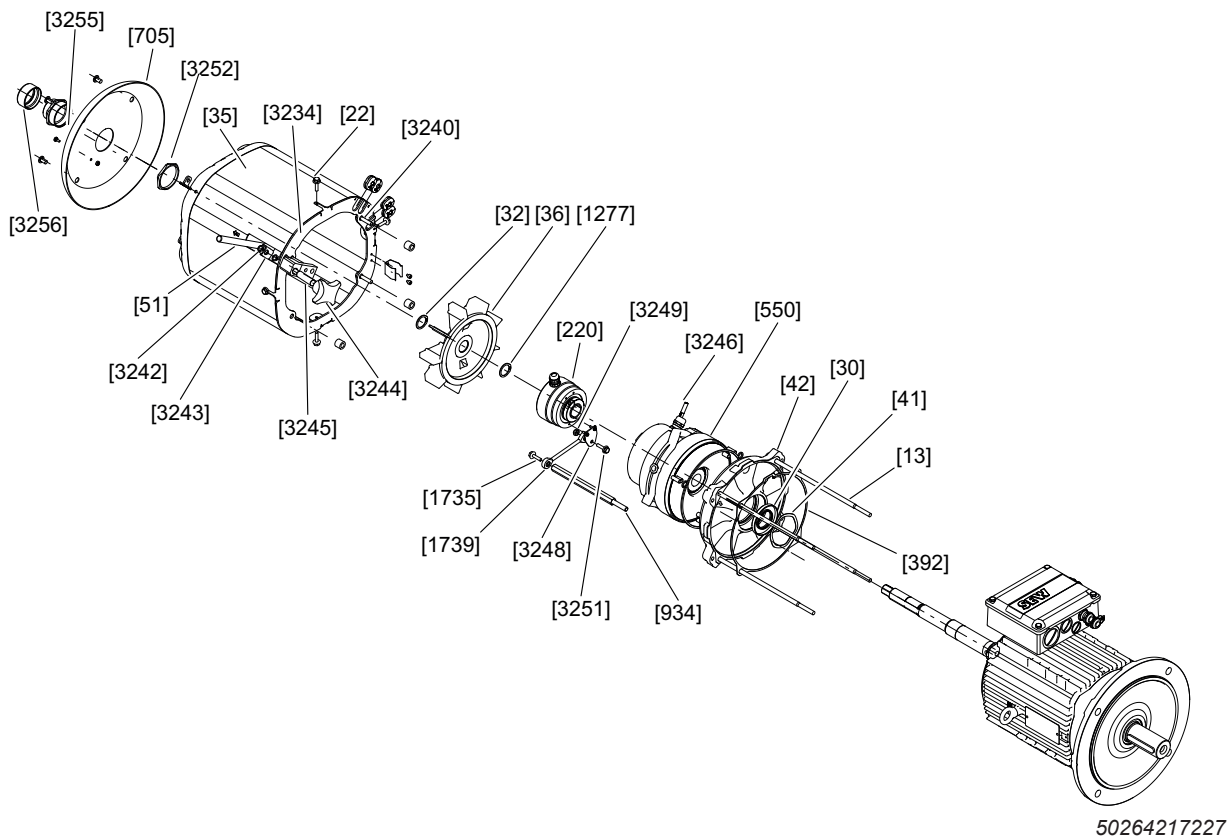
- Do not permanently operate motors with backstop /RS below lift-off speed.

## 3 Motor structure

### 3.1 Basic structure

The following figures are merely schematic representations. Discrepancies may occur depending on the size and design.

#### 3.1.1 Structure of the motor with brake



|      |                 |        |                |        |                 |
|------|-----------------|--------|----------------|--------|-----------------|
| [13] | Cap screw       | [220]  | Encoder        | [3240] | Hex head screw  |
| [22] | Hex head screw  | [392]  | Seal           | [3244] | Adjusting screw |
| [30] | Oil seal        | [550]  | Brake          | [3245] | Holder          |
| [32] | Retaining ring  | [705]  | Canopy         | [3248] | Fastening kit   |
| [35] | Fan guard       | [934]  | Spacer bolt    | [3249] | Hex nut         |
| [36] | Fan wheel       | [1277] | Retaining ring | [3251] | Hex head screw  |
| [41] | Equalizing ring | [1735] | Hex head screw | [3252] | Hex nut         |
| [42] | Rear endshield  | [1739] | Torque arm     | [3255] | Cable gland     |
| [51] | Hand lever      | [3234] | Ring           | [3256] | Protection cap  |

### 3.2 Nameplate and type designation

#### 3.2.1 Nameplates on the motor

The following figure shows an example of a nameplate:

|      |                                        |                        |                               |
|------|----------------------------------------|------------------------|-------------------------------|
| [1]  | SEW-EURODRIVE                          | CE                     | [1]                           |
|      | 76646 Bruchsal / Germany               |                        |                               |
| [2]  | DR2S112M4/BXMHR/FF/KCC/TF/XH0C/AL/C/DH |                        | [2]                           |
| [3]  | 01.8327759809.0001X24                  | Inverter duty VPWM     | 3~IEC60034 [3]                |
| [4]  | Hz 53 r/min 1540                       | V 380 Y                | [4]                           |
| [5]  | kW 6 S9                                | A 12.7                 | [5]                           |
| [6]  | Cosφ 0.82                              |                        | [6]                           |
| [7]  | Th.K1 155 (F)                          | IP 55                  | [7]                           |
| [8]  | Inverter duty only                     | FU-data: 380 V / 53 Hz | Jahr 2024 [8]                 |
| [9]  | Art. 1037209+G                         | Ubr 104 DC V           | [9]                           |
| [10] | FF FF265 D300                          | WE 38X80               | Nm 60 [10]                    |
| [11] | IM V1                                  | 2W SK018239            | [11]                          |
| [12] | kg 73.552                              | -20...40 °C            | 188 684 3 Made in France [12] |

49989337739

| Line | Information                                                                                                                                                                                                                                |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [1]  | <ul style="list-style-type: none"> <li>Manufacturer, address</li> <li>CE label</li> </ul>                                                                                                                                                  |
| [2]  | <ul style="list-style-type: none"> <li>Type designation</li> </ul>                                                                                                                                                                         |
| [3]  | <ul style="list-style-type: none"> <li>Serial number</li> <li>Suitability for inverter operation</li> <li>Number of phases and underlying rating and performance standards (EN/IEC 60034-X and/or equivalent national standard)</li> </ul> |
| [4]  | <ul style="list-style-type: none"> <li>Rated frequency</li> <li>Rated speed</li> <li>Nominal voltage</li> </ul>                                                                                                                            |
| [5]  | <ul style="list-style-type: none"> <li>Rated power, operating mode</li> <li>Rated current</li> </ul>                                                                                                                                       |
| [6]  | <ul style="list-style-type: none"> <li>Power factor</li> </ul>                                                                                                                                                                             |
| [7]  | <ul style="list-style-type: none"> <li>Thermal class</li> <li>Degree of protection according to IEC/EN 60034-5</li> </ul>                                                                                                                  |
| [8]  | <ul style="list-style-type: none"> <li>Suitability for inverter operation</li> <li>Year of manufacture</li> </ul>                                                                                                                          |
| [9]  | <ul style="list-style-type: none"> <li>Nominal voltage of brake</li> </ul>                                                                                                                                                                 |
| [10] | <ul style="list-style-type: none"> <li>Flange</li> <li>Shaft end</li> <li>Nominal braking torque</li> <li>WEEE mark</li> </ul>                                                                                                             |
| [11] | <ul style="list-style-type: none"> <li>Mounting position</li> <li>2nd shaft end</li> </ul>                                                                                                                                                 |

| Line | Information                                                                                                                                                                |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [12] | <ul style="list-style-type: none"> <li>• Mass</li> <li>• Permitted ambient temperature range</li> <li>• Part number nameplate</li> <li>• Country of manufacture</li> </ul> |

### 3.2.2 Serial number

The following table shows an example structure of a serial number:

| <b>Example: 01. 12212343 01. 0001X 25</b> |                                                  |
|-------------------------------------------|--------------------------------------------------|
| 01.                                       | Sales organization                               |
| 12212343                                  | Order number (8 digits)                          |
| 01.                                       | Order item (2 digits)                            |
| 0001                                      | Running part no./unit number (4 digits)          |
| X                                         | Special design                                   |
| 25                                        | End digits of the year of manufacture (2 digits) |

## 3.2.3 Type designation

## Motor with brake

The following table shows an example of a type designation:

| <b>DR2S112M4/BXMHR/FF/KCC/TF/XH0C</b> |                                                                       |
|---------------------------------------|-----------------------------------------------------------------------|
| DR                                    | Product family                                                        |
| 2                                     | 2. Generation                                                         |
| S                                     | Code for product line identification                                  |
| 112                                   | Motor size                                                            |
| M                                     | Motor length                                                          |
| 4                                     | Number of poles                                                       |
| BXM                                   | Brake                                                                 |
| HR                                    | Manual brake release                                                  |
| FF                                    | IEC flange-mounted motor with through bores                           |
| KCC                                   | 6-pole terminal strip with cage clamp contacts                        |
| TF                                    | Thermal motor protection                                              |
| XH0C                                  | Integrated hollow shaft encoders according to customer specifications |

## Brake

The following table shows an example of a type designation:

| <b>BXM6ALG</b> |                                              |
|----------------|----------------------------------------------|
| BX             | Brake from any manufacturer                  |
| M              | Manufacturer MAYR, ROBA-stop M® (RSM) series |
| 6              | Size 60 (RSM)                                |
| L              | With solenoid (wind release)                 |



### 3.3 Designs and options

#### 3.3.1 Designation of the motors

| Designation                               | Description                                                                                       |
|-------------------------------------------|---------------------------------------------------------------------------------------------------|
| DR2S..                                    | Standard motor, Standard efficiency IE1 (2nd generation)                                          |
| DRN..                                     | Energy-efficient motor, Premium Efficiency IE3                                                    |
| DR2L..                                    | Asynchronous servomotor (2nd generation)                                                          |
| 112, 132                                  | Size:                                                                                             |
| K, S, M, L, MC, LC, ME, MS, MK, H, LS, LM | Length                                                                                            |
| R, Q, P, I, B                             | Power identification (identification of motors of the same size but with different power ratings) |
| 4                                         | Number of poles                                                                                   |

#### 3.3.2 Output

| Designation | Description                                       |
|-------------|---------------------------------------------------|
| /FF         | IEC flange-mounted motor with through bores       |
| /FL         | Flange-mounted motor (other than IEC)             |
| /2W         | Second shaft end on the motor with hex head screw |

#### 3.3.3 Temperature detection

| Designation | Description                                        |
|-------------|----------------------------------------------------|
| /TF         | Temperature probe (PTC thermistor or PTC resistor) |
| /TH         | Thermostat (bimetallic switch)                     |
| /PK         | Temperature sensor Pt1000 in winding               |
| /PT         | Pt100 temperature sensor                           |

#### 3.3.4 Ventilation

| Designation | Description                   |
|-------------|-------------------------------|
| –           | Fan guard made of sheet steel |
| /C          | Canopy                        |
| /AL         | Aluminum fan                  |

#### 3.3.5 IP degree of protection

| Designation | Description                                                    |
|-------------|----------------------------------------------------------------|
| –           | Degree of protection IP44 – IP66 in accordance with EN 60034-5 |

## 3.3.6 Winding

| Designation | Description                                                                       |
|-------------|-----------------------------------------------------------------------------------|
| –           | Thermal class B                                                                   |
| –           | Thermal class F                                                                   |
| –           | Thermal class H                                                                   |
| /RI         | Reinforced winding insulation                                                     |
| /RI2        | Reinforced winding insulation with increased resistance against partial discharge |
| –           | Encapsulated stator winding                                                       |
| –           | Moisture and acid protection                                                      |
| –           | Tropicalization                                                                   |

## 3.3.7 Terminal box and stator

| Designation | Description                         |
|-------------|-------------------------------------|
| –           | Aluminum terminal box               |
| –           | Terminal box made of gray cast iron |
| –           | Anti-condensation heating           |
| /DH         | Condensation drain hole             |

## 3.3.8 Surface and corrosion protection

| Designation | Description                   |
|-------------|-------------------------------|
| –           | Unpainted design              |
| –           | Base coat OSG                 |
| –           | Surface protection OS1 to OS4 |
| –           | Corrosion protection          |

## 3.3.9 Brake

| Designation | Description                                        |
|-------------|----------------------------------------------------|
| /BXM        | Spring-loaded brake                                |
| /HR         | Manual brake release, with automatic spring-return |

## 3.3.10 Encoder mounting adapters

| Designation | Description                               |
|-------------|-------------------------------------------|
| /XH0.       | Mounted third-party encoders              |
| /XH0A       | Mounting adapter for third-party encoders |

### 3.3.11 Connector

| Designation | Description                                                      |
|-------------|------------------------------------------------------------------|
| /IV         | Other industrial connectors according to customer specifications |

### 3.3.12 Cage clamp terminals

| Designation | Description                                    |
|-------------|------------------------------------------------|
| /KCC        | 6-pole terminal strip with cage clamp contacts |

## 4 Mechanical installation

### 4.1 Before you start

Only install the device if the following conditions are met:

- The drive is undamaged (no damage caused by transportation or storage).
- All transport protection has been removed.
- Observe the information on the nameplate.
- The information on the nameplate of the drive corresponds to the voltage supply system or to the output voltage of the inverter.
- Ambient temperature is as specified on the nameplate.

Note that the temperature range of the mounted gear unit might also be restricted (see operating instructions of the gear unit).

- You have ensured that there are no oils, acids, gases, vapors, radiation, etc. present.
- Options, such as encoder and brake, are suitable for the ambient conditions.
- The installation altitude is max. 1000 m above sea level. For installation altitudes above 1000 m above sea level, observe the information on power derating.
- If the product is equipped with functionally safe options, please note the indications in the corresponding operating instructions.

You can recognize a product with functional safety by the FS logo on the nameplate.

The specifications listed above refer to the standard designs. The requirements for special designs might vary from the standard. Refer to the order confirmation for deviating conditions. Make sure that the drive is designed according to the ambient conditions.

### 4.2 Preliminary work after longer periods of storage

Depending on the duration and ambient conditions during storage, corrosion, aging of lubricants, embrittlement of sealing elements, and moisture absorption in the insulation can occur.

Perform the measures described below on any drives that have been stored for longer than 9 months.

#### **Corrosion**

1. Check for damage to the motor and/or components (coating, shafts, connection and fastening parts).
2. Correct the corrosion damage.

#### **Embrittlement of seals**

3. Visually inspect seals and look for fissures, hardening, and embrittlement.
4. Replace damaged seals.

**Reduced grease service life**

If the drives are stored for longer than a year, the service life of the bearing grease is reduced due to aging and de-oiling of the lubricant.

5. Check the condition and usability of the rolling bearings.
6. Replace damaged rolling bearings.

**Reduced grease quantity**

7. If motors with relubrication device are stored for longer than 5 years, relubricate the motor as specified on the lubrication plate.

**Moisture absorption**

8. Check to see that the wiring space of the motor is dry and clean.
9. Remove moisture and dirt.
10. If the motor has absorbed moisture, measure the insulation resistance (see "Measuring the insulation resistance" (→ 21)) and dry the motor (see "Drying the motor" (→ 22)).

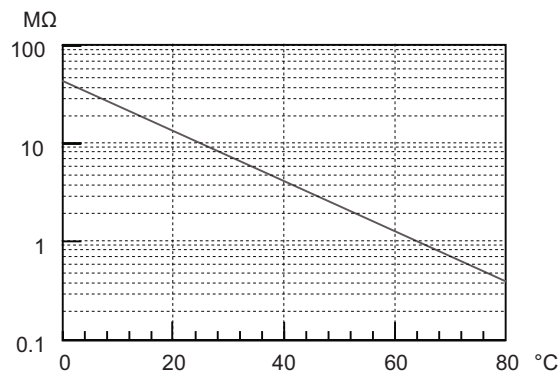
**4.2.1 Checking the brake**

If motors with brake have been stored or non-operational for longer than 9 months, check their function before taking them into operation.

**4.2.2 Measuring the insulation resistance**

The insulation resistance (see following figure) varies greatly depending on the temperature.

If the measured resistance is within the range of the limit characteristic curve (depending on the ambient temperature), the insulation resistance is sufficient. If the value is below the limit characteristic curve, dry the motor.



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**4.2.3 Drying the motor**

Use either warm air or an isolation transformer to dry the motor.

The motors of size 56 may only be dried with warm air.

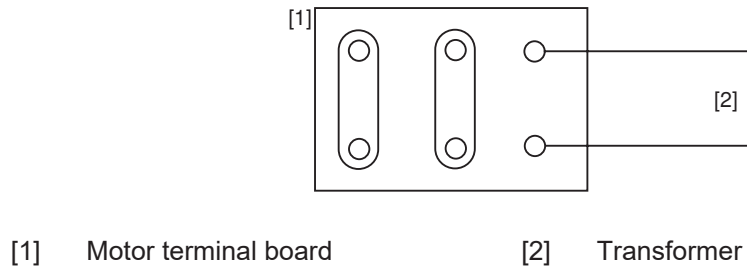
**Drying the motor with warm air**

1. Dry the motor with warm air.
2. End the drying process when the minimum insulation resistance is exceeded.

**Drying the motor with an isolation transformer**

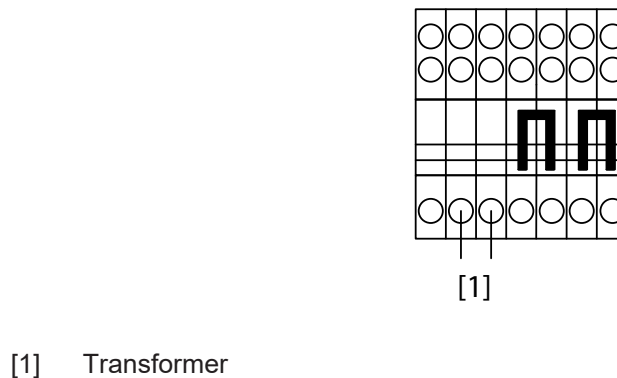
1. If possible, disconnect the stator from the rotor.
2. Connect the windings in series.
3. The auxiliary AC voltage must not exceed 10% of the nominal voltage with max. 20% of the rated current.

*Connect the windings in series: Wiring diagram R13*



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*Connect the windings in series: Wiring diagram C13*



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### 4.3 Motor installation notes

- Insert the key into the keyway.
- Pull a protective tubing over the shaft.
- Motor shaft ends, output shafts, and flange surfaces must be thoroughly cleaned of anti-corrosion agents, contamination, or similar. Use a commercially available solvent for this purpose. The solvent must not get into the bearings or sealing rings as this can damage the material.
- Only install the device in the specified mounting position on a level and torsionally rigid support structure.
- Observe the information on the nameplate.
- Ensure that the cooling air supply to the motor is unobstructed.
- Make sure that no warm exhaust air from other devices is drawn in.
- Align the device and driven machine carefully so that the output shaft is not subjected to impermissible load. Observe the permitted overhung and axial loads.
- Do not jolt or hammer the shaft end.
- Install covers (canopy) if necessary.
- Balance parts to be subsequently mounted on the shaft only with a half key (motor shafts are balanced with a half key).
- Make sure that any existing condensate drain holes are sealed with a plug. If contaminated, the condensation drain holes must be checked for functionality on a regular basis and cleaned if necessary.

#### 4.3.1 Installation in damp locations or outdoors

- Use suitable cable glands according to the installation instructions for the supply cable (use reducers).
- Arrange the terminal box in such a way that the cable bushings face downward.
- Ensure that the cable bushings are properly sealed.
- Thoroughly clean the sealing surfaces of the terminal box and terminal box cover before reassembly.
- Replace embrittled seals.
- Renew the corrosion protection coating, especially on the lifting eyes.
- Check the degree of protection.
- Protect the shaft against corrosion with a suitable anti-corrosion agent.

**4.3.2 Special features of motors with BXM brake**

Depending on the respective design, special rotors with a splined connection are used as the output design. Because of the spline contour, it is possible that no oil seal is installed.

For these designs, ensure the degree of protection by means of a suitable seal. Observe the following points:

- Ensure that, during assembly, no contaminants can enter the motor that would reduce the service life of the motor bearing or impair the motor's insulation properties.
- Ensure through proper handling that no lubricants (oil or grease) can leak from the attached gear unit and enter the motor compartment.

**4.4 Installation tolerances**

| Shaft end                                                                                                                                                                                                                                                                                                                                                 | Flanges                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Diameter tolerance according to EN 50347 <ul style="list-style-type: none"> <li>• ISO j6 with <math>\varnothing \leq 28</math> mm</li> <li>• ISO k6 with <math>\varnothing \geq 38</math> mm up to <math>\leq 48</math> mm</li> <li>• ISO m6 with <math>\varnothing \geq 55</math> mm</li> <li>• Centering bore according to DIN 332, shape DR</li> </ul> | Centering shoulder tolerance according to EN 50347 <ul style="list-style-type: none"> <li>• ISO j6 with <math>\varnothing \leq 250</math> mm</li> <li>• ISO h6 with <math>\varnothing \geq 300</math> mm</li> </ul> |



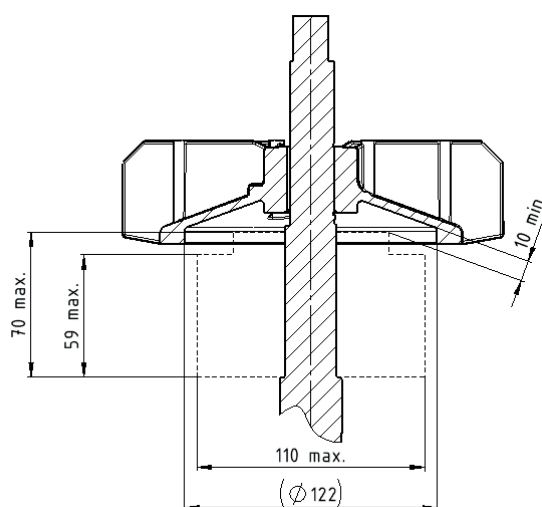
## 4.5 Encoder mounting adapter

### 4.5.1 Encoder mounting adapter for motors with BXM brake and third-party encoder

For motors with an XH0A encoder mounting adapter, SEW-EURODRIVE supplies a motor that provides clearance for installing a hollow shaft encoder within the fan guard between brake and fan wheel.

You may only install rotary encoders that have been tested and approved by SEW-EURODRIVE. Suitable rotary encoder models must have at least the following characteristics:

- Shaft diameter  $d = 25 \text{ mm}$
- Connection via a clamping hub
- The following figure shows the installation dimensions of the alternative encoder.



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For assembly, the rotary encoders must be equipped with a suitable torque arm to enable mounting with the parts listed below. Observe the specifications of the respective manufacturer when retrofitting.

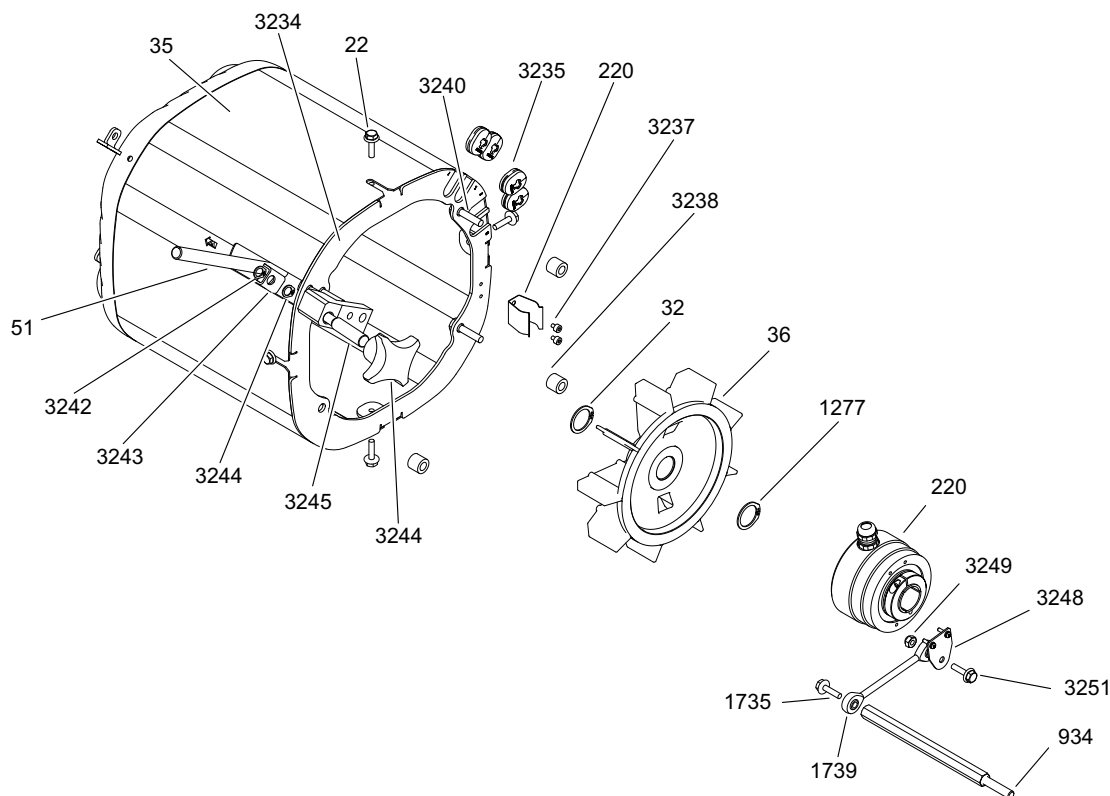
In addition to the rotary encoder, the following parts are required for mounting the torque arm:

| Part number | Designation         | Quantity |
|-------------|---------------------|----------|
| 29681758    | Spacer bolt         | 1        |
| 19096992    | Hex head screw      | 1        |
| 29681731    | Torque arm          | 1        |
| 25785095    | Fastening kit (097) | 1        |
| 00117773    | Hex nut             | 1        |
| 19096992    | Hex head screw      | 1        |

The following table lists mounting kits for torque arms:

| Type          | Manufacturer | No. of the Baumer mounting kit | Comment                                                                                                  |
|---------------|--------------|--------------------------------|----------------------------------------------------------------------------------------------------------|
| ITD40 A4 Y173 | Baumer       | 083                            | The torque arm provided by the manufacturer must first be removed and retrofitted with mounting set 097. |
| HOG75         | Baumer       | 097                            |                                                                                                          |

## 4.6 Mounting the encoder



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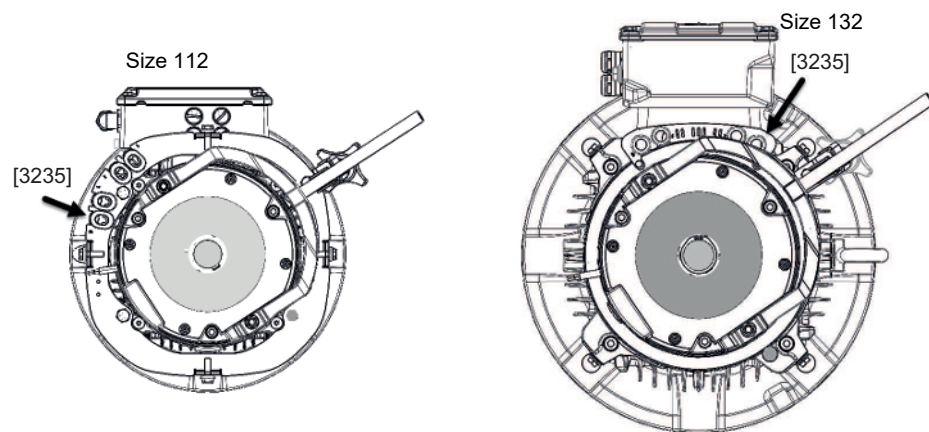
1. Loosen the screws [22] and remove the fan guard [35] from the retaining ring [3234] or endshield [42].
2. Remove the retaining ring [32].
3. Remove the fan wheel [36].
4. Remove the retaining ring [1277].
5. Clean the shaft section of the rotor [1] on which the hollow shaft encoder [220] will be mounted to remove any contaminants, anti-corrosion agents, and rust.
6. Establish an assembly state that complies with the encoder manufacturer's specifications. Observe the operating instructions of the manufacturer.
7. Install the rotary encoder [220] by pushing it up to the stop shoulder of the rotor [1].
8. For sizes 112 and 132S: Remove one of the screws [3241] from the brake endshield.
9. Install the spacer bolt [934] instead of the previously removed screw [3241].  
⇒ Tightening torque 18 Nm
10. For size 132M/L: Install the spacer bolt [934] as shown in the figure.  
⇒ Tightening torque 18 Nm
11. Mount the torque arm [1739] to the spacer bolt [934] using the screw [1735] and tighten this connection.  
⇒ Tightening torque 7.5 Nm
12. Connect the 2nd ball head of the torque arm [1739] to the torque arm of the rotary encoder [220] using the screw [3251] and nut [3249] and tighten the connection.  
⇒ Tightening torque 7.5 Nm

Information on electrically connecting the encoder, which will be done next, can be found in chapter "Connecting the encoder" (→ 47).

13. Mount the retaining ring [1277].
14. Mount the fan wheel [36] and the retaining ring [32].
15. Mount the fan guard [35], making sure that none of the connection cables on the retaining ring [3234] are damaged in the process.
16. Check that the hood is flush against the retaining ring [3234] in the area of the cable grommets [3235] and that the parts of the manual brake release are correctly aligned.
17. Secure the fan guard [35] in place using the screws [22].
  - ⇒ Tightening torque 3.3 Nm

#### 4.6.1 For products with an attached cable

1. Connect the prefabricated connection lead [619] to the encoder according to the manufacturer's specifications and wiring diagram.
2. Route the connection lead [619] of the encoder through the unused cable grommet [3235] at position "G" through the retaining ring [3234] of the fan guard [35].



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## 5 Electrical installation

### 5.1 Before you start

Ensure the following before electrical installation:

- Ensure that work is carried out by trained specialists only.
- Observe the 5 safety rules before commencing the work: Disconnect. Secure the device against a restart. Check that no voltage is applied. Ground and short-circuit it. Cover or cordon off neighboring live parts.
- Never connect or disconnect connectors while they are energized.
- Use switch contacts in utilization category DC-3 according to EN 60947-4-1 for switching the brake with DC 24 V.

The connection must be a permanently secure electrical connection (no protruding wire ends). Use the corresponding cable end equipment. Establish a safe protective earth connection. When the motor is connected, the distances to non-insulated and live parts must not be shorter than the minimum values according to IEC 60664 and to national regulations. With low voltage, the distances should be no shorter than the following values, in compliance with IEC 60664:

| Nominal voltage $V_N$ | Distance |
|-----------------------|----------|
| $\leq 500$ V          | 3 mm     |
| $\leq 690$ V          | 5.5 mm   |

The terminal box must be free from foreign objects, dirt and humidity. Unused cable entry openings and the connection box itself must be sealed so that they are dust- and water-proof.

Secure the key(s) for the test run without output elements.

When operating low-voltage machines with brakes, check that the brake is functioning properly before startup.

Observe the notes in chapter "Electrical installation".

### 5.2 Wiring diagrams and terminal assignment diagrams

Connect the motor as shown in the wiring diagrams provided with the motor. You can obtain the relevant wiring diagrams free of charge from SEW-EURODRIVE.

Note: If the wiring diagram is missing, the motor must not be connected and put into operation.

### 5.3 Wiring notes

#### 5.3.1 Protecting the brake control system against interference

Brake cables must always be routed separately from other unshielded power cables with phased currents to prevent interference with brake control. In particular, power cables with phased currents include:

- Output cables from frequency inverters and servo inverters, soft start units and brake units
- Supply cables for braking resistors and similar options

For line-operated motors and when using AC and DC circuit cut-off, the connection between the brake rectifier and the external switch contact must be in a different power cable that is separate from the motor power supply.

#### 5.3.2 Protecting the motor protection devices against interference

Adhere to the following points to protect motor protection devices by SEW-EURODRIVE against interference:

- Route separately shielded feeder cables together with switched-mode power lines in one cable
- Do not route unshielded feeder cables together with switched-mode power lines in one cable.

## 5.4 Special aspects for operation with a frequency inverter

When motors are powered from inverters, you must observe the wiring instructions issued by the inverter manufacturer. You must also observe the operating instructions for the frequency inverter.

### 5.4.1 Motors with SEW-EURODRIVE frequency inverter

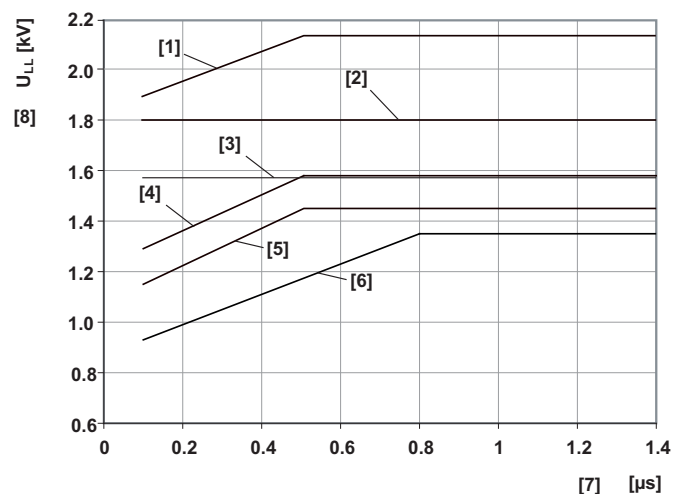
Standard-design energy-efficient motors from SEW-EURODRIVE are suitable for operation on frequency inverters from SEW-EURODRIVE. Standard-design SEW-EURODRIVE motors with standard insulation meet the requirements according to DIN CLC/TS 60034-25 VDE V 0530-25:2006-01).

For more demanding applications, SEW-EURODRIVE offers motors with adapted insulation material systems. Also observe the overview in chapter "Motor with third-party inverter" (→ 31). All voltage limit values relevant to the respective insulation material system are specified there.

For rise times of less than 0.5  $\mu\text{s}$  of the pulse voltage at the motor connection terminals, the permitted pulse voltage is reduced in accordance with the overview in chapter "Motor with third-party inverter" (→ 31).

### 5.4.2 Motor with third-party inverter

Operating SEW-EURODRIVE motors on third-party frequency inverters is permitted if the pulse voltages at the motor terminals indicated in the following figure are not exceeded.



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- [1] Permitted pulse voltage for DR../DRN.. motors with reinforced insulation and increased resistance against partial discharge (/RI2)
- [2] Permitted pulse voltage for DR../DRN.. motors with reinforced insulation (/RI)
- [3] Permitted pulse voltage according to NEMA MG1 part 31,  $V_N \leq 500$  V
- [4] Permitted pulse voltage according to IEC 60034-25, limit value curve A for rated voltage  $V_N \leq 500$  V, star connection
- [5] Permitted pulse voltage according to IEC 60034-25, limit value curve A for rated voltage  $V_N \leq 500$  V, delta connection
- [6] Permitted pulse voltage according to IEC 60034-17
- [7] Voltage rise time
- [8] Permitted pulse voltage

The insulation class depends on the voltage.

- $\leq 500 \text{ V}$  = standard insulation
- $\leq 600 \text{ V}$  = /RI
- $> 600 \text{ V} - 690 \text{ V}$  = /RI2

Consider and check compliance with the following values:

- The supply voltage level at the third-party inverter
- The threshold of the brake chopper voltage
- The operating mode of the motor (motor mode/generator mode)

If the permitted pulse voltage is exceeded, you must install limiting measures, such as filters, chokes, or special motor cables. Contact the manufacturer of the inverter for this purpose.



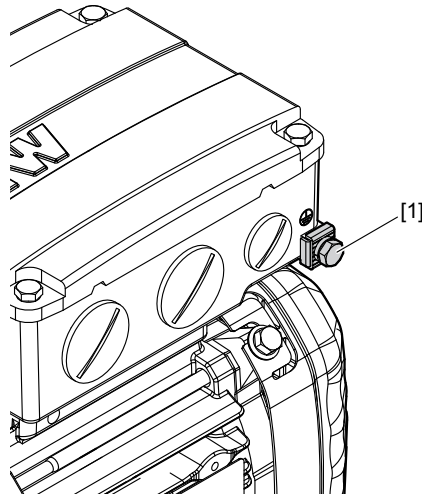
## 5.5 Exterior grounding at the terminal box, LF grounding

In addition to the interior PE connection, a LF grounding cable can be attached to the outside of the terminal box. It is not installed as standard.

LF grounding can be ordered as completely pre-installed at the factory. For this, an aluminum or gray cast iron terminal box designed for brake connections is required for DR..71 – 132S motors. For DR..132M – 225 motors, this option can be combined with all terminal box types.

The option can be combined with "HF grounding".

### DR..112 – 132S motors



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[1] NF grounding at the terminal box

## 5.6 Improving the grounding (EMC), HF grounding

For improved, low-impedance grounding at high frequencies, we recommend using the following connections with corrosion protected connection elements:

HF grounding is not installed as standard.

The HF grounding option can be combined with LF grounding at the terminal box.

If you require LF grounding in addition to HF grounding, you can connect the conductor to the same point.

The HF grounding option can be ordered as follows:

- Completely pre-assembled at the factory
- As "grounding terminal" kit for customer installation; part numbers listed in the following table.

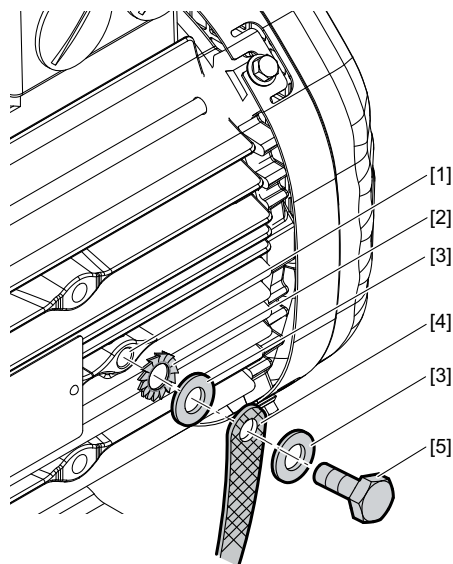
| Motors                                       | Part number of "grounding terminal" kit |
|----------------------------------------------|-----------------------------------------|
| DR..100LM – 132S                             | 13633945                                |
| DR..132M – 225<br>with aluminum terminal box |                                         |

### INFORMATION



If 2 or more ground straps are used, you have to attach them with a longer screw. The specified tightening torques refer to a strap thickness of  $t \leq 3$  mm.

#### 5.6.1 DR..112 – 132S motors with HF(+LF) grounding



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- |                                         |                                                              |
|-----------------------------------------|--------------------------------------------------------------|
| [1] Use of tapped hole for lifting eyes | [4] Ground strap (not included in the scope of delivery)     |
| [2] Serrated lock washer DIN 6798       | [5] Hex head screw ISO 4017 M8 × 18, tightening torque 10 Nm |
| [3] Washer ISO 7089/ISO 7090            |                                                              |

## 5.7 Notes regarding the connection of the motor

Make sure to observe the applicable wiring diagram. If this document is missing, the motor must not be connected and put into operation. You can obtain the relevant wiring diagrams free of charge from SEW-EURODRIVE.

To prevent contamination in the terminal box, observe the following points:

- Seal the terminal box and unused cable bushings against dust and humidity.
- Remove foreign objects, dirt and humidity from the terminal box.

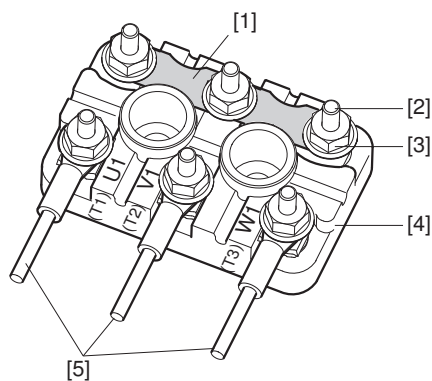
Observe the following when connecting the motor:

- Check the cable cross section
- Correctly arrange the terminal link
- Screw the connections and protective earth securely
- To prevent damage to the wire insulation, connection leads must not be cramped
- Observe air gaps, see chapter "Electrical connection"
- In the terminal box: Check winding connections and tighten if necessary
- Connect according to the enclosed wiring diagram
- Avoid protruding wire ends
- Connect the motor according to the specified direction of rotation

## 5.8 Connecting the motor via terminal block

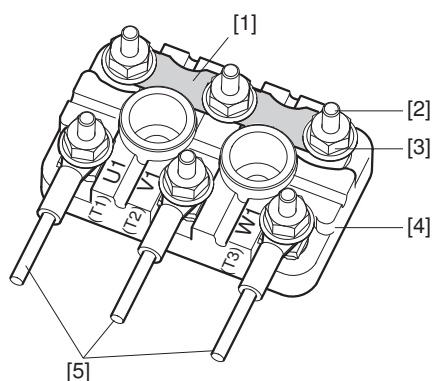
### 5.8.1 According to wiring diagram R13

Arrangement of terminal links with  $\Delta$  connection



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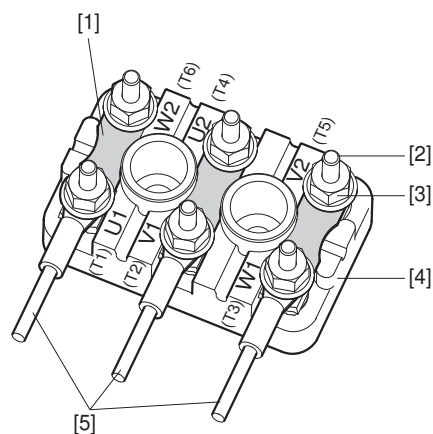
Arrangement of terminal links with  $\Delta$  connection



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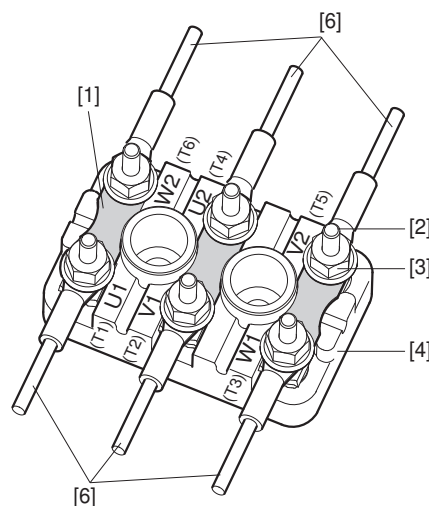
### Arrangement of terminal links with $\Delta$ connection

DR..71 – 280, DRN63 – 280, DR2..63 – 80 motors  
(single-sided supply):



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DR../DRN250 – 315 motors  
(double-sided supply):



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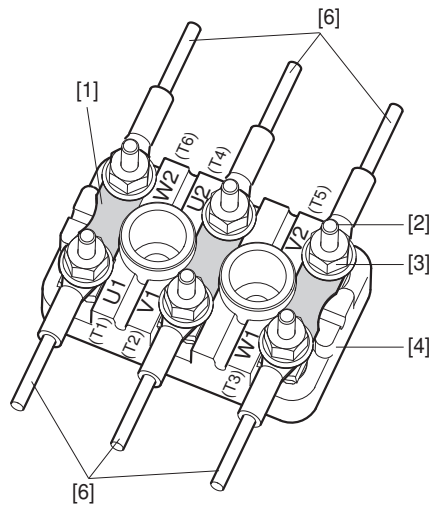
- |                    |                                                       |
|--------------------|-------------------------------------------------------|
| [1] Terminal link  | [4] Terminal board                                    |
| [2] Terminal studs | [5] Customer connection                               |
| [3] Flange nut     | [6] Customer connection with divided connection cable |

### INFORMATION



For DR../DRN250 – 315 motors, SEW-EURODRIVE recommends a double-sided supply for load currents higher than

- M12: 250 A
- M16: 315 A

Arrangement of terminal links with  $\Delta$  connection (double-sided supply)

18014398989593739

- |                   |                                                       |
|-------------------|-------------------------------------------------------|
| [1] Terminal link | [4] Terminal board                                    |
| [2] Terminal stud | [5] Customer connection                               |
| [3] Flange nut    | [6] Customer connection with divided connection cable |

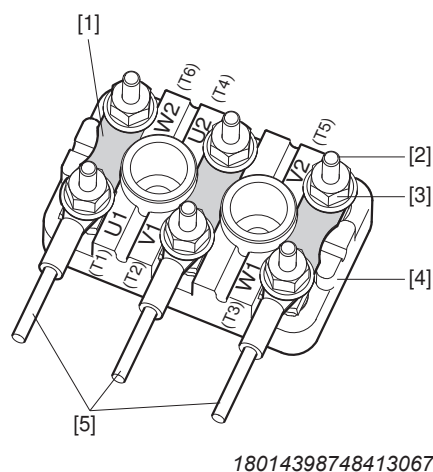
**INFORMATION**

For DRN355 / DRU355 motors, SEW-EURODRIVE recommends a double-sided supply for load currents higher than

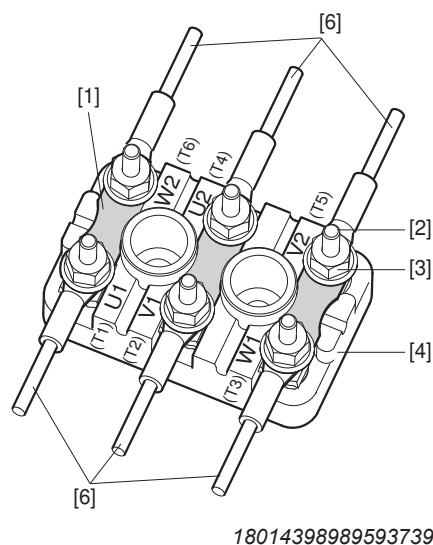
- M20: 400 A

### Arrangement of terminal links for $\Delta$ connection

DR..63 – 280 motors  
(single-sided supply):



DR..250 – 315 motors  
(double-sided supply):



- [1] Terminal link
- [2] Terminal stud
- [3] Flange nut

- [4] Terminal board
- [5] Customer connection
- [6] Customer connection with split connection cable

### INFORMATION



For DR..250 – 315 motors, SEW-EURODRIVE recommends a double-sided supply for load currents higher than

- M12: 250 A
- M16: 315 A

### 5.8.2 Connection designs via terminal board

The motors are supplied and connected in different ways depending on their electrical design. The terminal links are to be arranged according to the wiring diagram and screwed securely in place. Observe the tightening torques in the following tables.

| DR..112 – 132S motors |                           |                       |           |                                            |                                      |                     |           |
|-----------------------|---------------------------|-----------------------|-----------|--------------------------------------------|--------------------------------------|---------------------|-----------|
| Terminal stud         | Hex nut tightening torque | Customer connection   | Design    | Connection type                            | Scope of delivery                    | PE connection screw | PE design |
| Ø                     |                           | Cross section         |           |                                            |                                      | Ø                   |           |
| M5                    | 2.0 Nm                    | ≤ 2.5 mm <sup>2</sup> | <b>1a</b> | <b>Solid wire<br/>Conductor end sleeve</b> | <b>Terminal links, pre-assembled</b> | M5                  | 4         |
|                       |                           | ≤ 16 mm <sup>2</sup>  | <b>1b</b> | <b>Ring cable lug</b>                      | <b>Terminal links, pre-assembled</b> |                     |           |
|                       |                           | ≤ 16 mm <sup>2</sup>  | 2         | Ring cable lug                             | Connection accessories enclosed      |                     |           |
| M6                    | 3.0 Nm                    | ≤ 35 mm <sup>2</sup>  | 3         | Ring cable lug                             | Connection accessories enclosed      |                     |           |

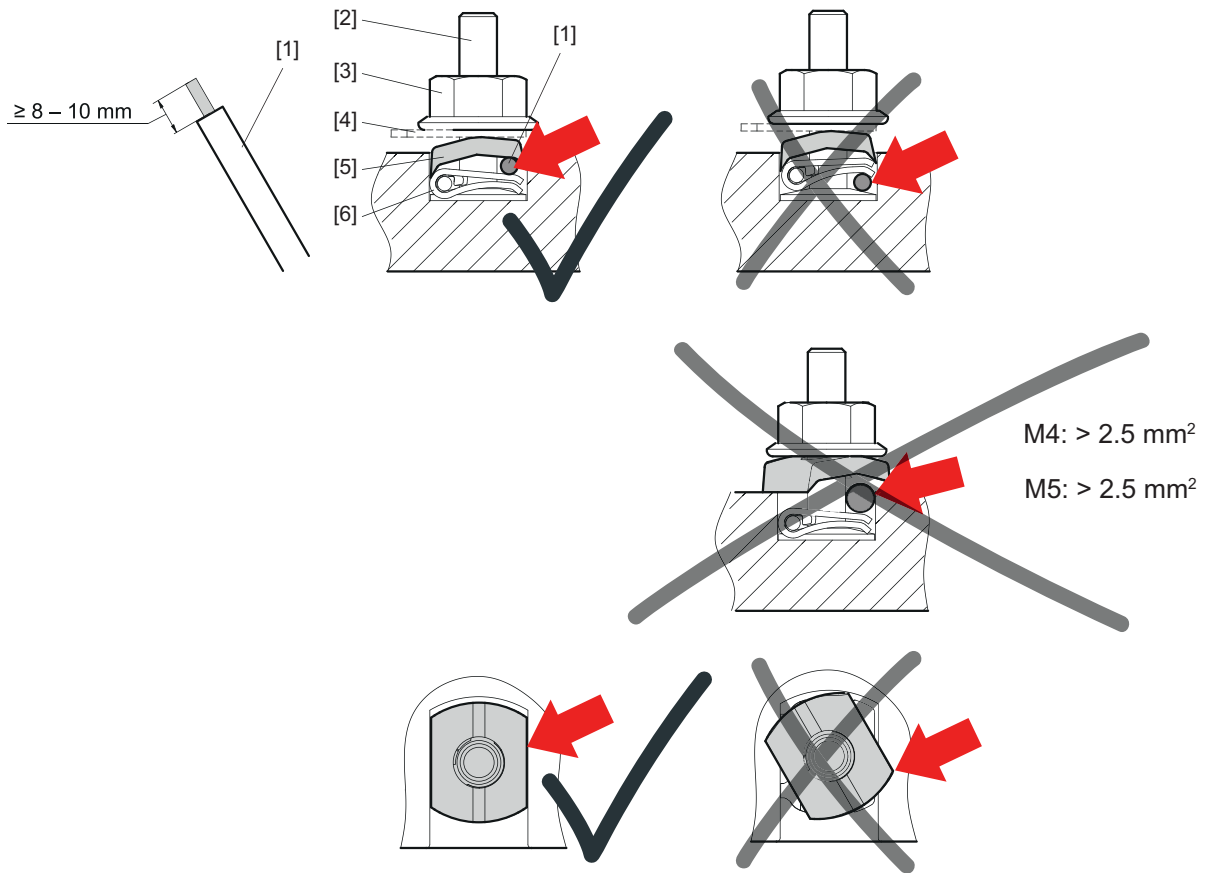
| DR..132M motors |                           |                       |           |                                            |                                      |                     |           |
|-----------------|---------------------------|-----------------------|-----------|--------------------------------------------|--------------------------------------|---------------------|-----------|
| Terminal stud   | Hex nut tightening torque | Customer connection   | Design    | Connection type                            | Scope of delivery                    | PE connection screw | PE design |
| Ø               |                           | Cross section         |           |                                            |                                      | Ø                   |           |
| M5              | 2.0 Nm                    | ≤ 2.5 mm <sup>2</sup> | <b>1a</b> | <b>Solid wire<br/>Conductor end sleeve</b> | <b>Terminal links, pre-assembled</b> | M8                  | 5         |
|                 |                           | ≤ 16 mm <sup>2</sup>  | <b>1b</b> | <b>Ring cable lug</b>                      | <b>Terminal links, pre-assembled</b> |                     |           |
|                 |                           | ≤ 16 mm <sup>2</sup>  | 2         | Ring cable lug                             | Connection accessories enclosed      |                     |           |
| M6              | 3.0 Nm                    | ≤ 35 mm <sup>2</sup>  | 3         | Ring cable lug                             | Connection accessories enclosed      |                     |           |

| DR..132L motors |                           |                      |          |                       |                                        |                     |           |
|-----------------|---------------------------|----------------------|----------|-----------------------|----------------------------------------|---------------------|-----------|
| Connection bolt | Hex nut tightening torque | Customer connection  | Design   | Connection type       | Scope of delivery                      | PE connection screw | PE design |
| Ø               |                           | Cross section        |          |                       |                                        | Ø                   |           |
| <b>M6</b>       | <b>3.0 Nm</b>             | ≤ 35 mm <sup>2</sup> | <b>3</b> | <b>Ring cable lug</b> | <b>Connection accessories enclosed</b> | M8                  | 5         |
| M8              | 6.0 Nm                    | ≤ 70 mm <sup>2</sup> | 3        | Ring cable lug        | Connection accessories enclosed        | M10                 | 5         |

The designs in bold print apply to S1 operation for the standard voltages and standard frequencies according to the data in the catalog. Other designs may have different connections, e.g. different terminal stud diameters and/or a different scope of delivery.

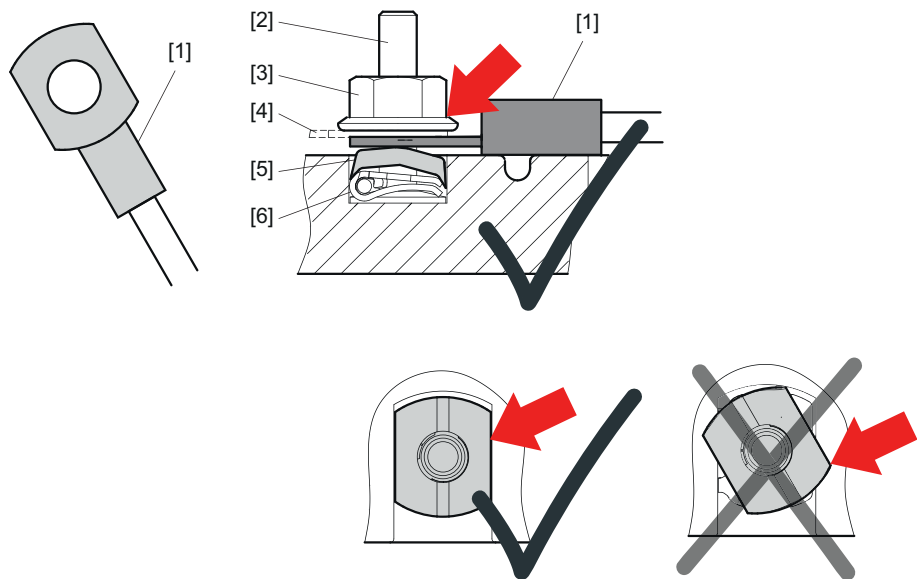


Variant 1a



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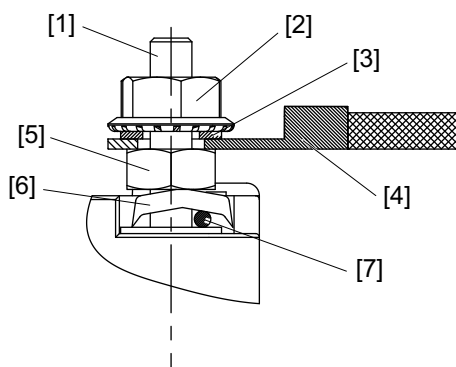
## Variant 1b:



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- |     |                                                                                           |     |                                         |
|-----|-------------------------------------------------------------------------------------------|-----|-----------------------------------------|
| [1] | External connection with ring cable lug, according to DIN 46237 or DIN 46234, for example | [4] | Terminal link                           |
| [2] | Terminal stud                                                                             | [5] | Terminal washer                         |
| [3] | Flange nut                                                                                | [6] | Winding connection with Stocko terminal |

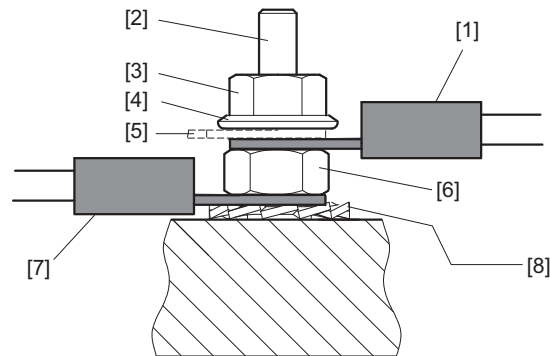
## Variant 2



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- |     |                                                                                           |     |                    |
|-----|-------------------------------------------------------------------------------------------|-----|--------------------|
| [1] | Terminal board                                                                            | [5] | Bottom nut         |
| [2] | Flange nut                                                                                | [6] | Terminal washer    |
| [3] | Terminal link                                                                             | [7] | Winding connection |
| [4] | External connection with ring cable lug, according to DIN 46237 or DIN 46234, for example |     |                    |

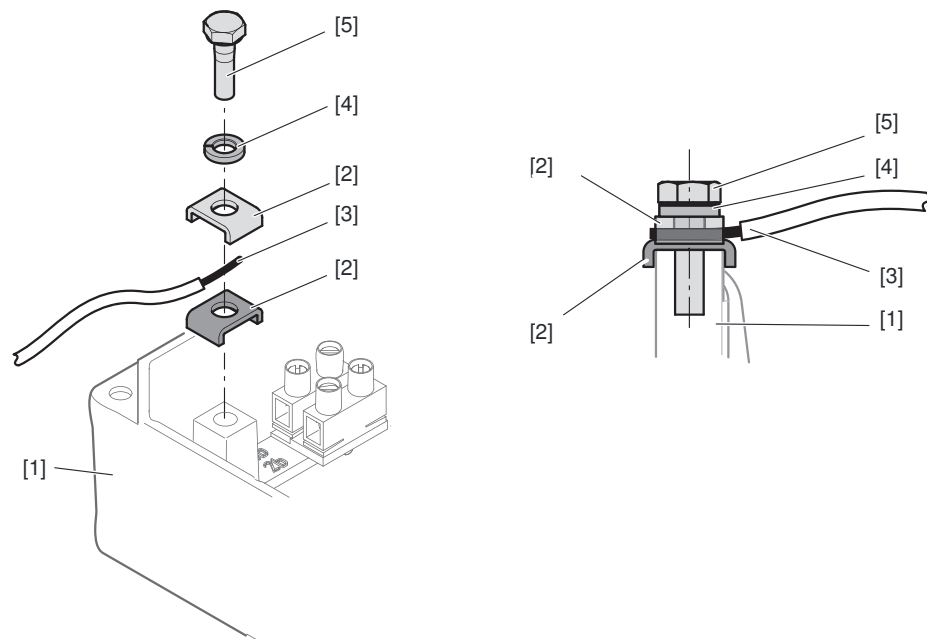
### Variant 3



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- |     |                                                                                           |     |                                        |
|-----|-------------------------------------------------------------------------------------------|-----|----------------------------------------|
| [1] | External connection with ring cable lug, according to DIN 46237 or DIN 46234, for example | [5] | Terminal link                          |
| [2] | Terminal stud                                                                             | [6] | Bottom nut                             |
| [3] | Upper nut                                                                                 | [7] | Winding connection with ring cable lug |
| [4] | Washer                                                                                    | [8] | Serrated lock washer                   |

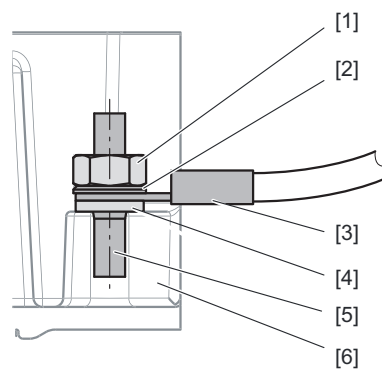
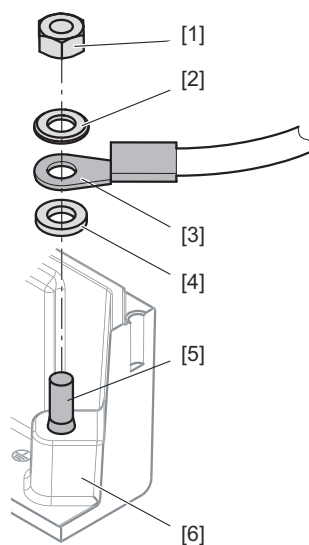
### Variant 4



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- |     |               |     |                |
|-----|---------------|-----|----------------|
| [1] | Terminal box  | [4] | Lock washer    |
| [2] | Terminal clip | [5] | Hex head screw |
| [3] | PE conductor  |     |                |

## Variant 5

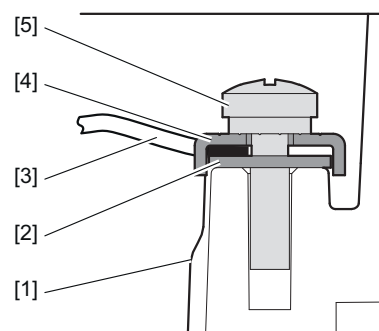
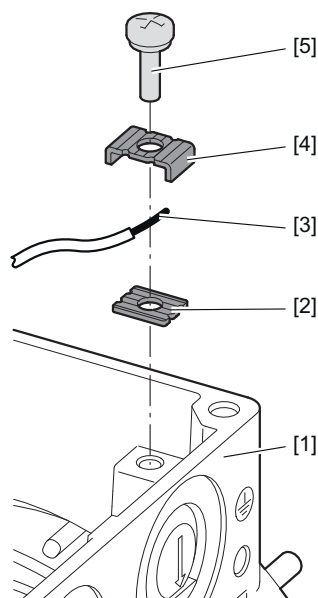


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- [1] Hex nut
- [2] Washer
- [3] PE conductor on cable lug

- [4] Serrated lock washer
- [5] Stud
- [6] Terminal box

## Variant 6



9007221552153739

- [1] Terminal box
- [2] Support plate
- [3] PE conductor

- [4] Terminal clip
- [5] Flat head screw

## 5.9 Connecting the motor via terminal strip

### 5.9.1 According to wiring diagram C13 with terminal strip /KCC

1. Connect the motor according to the enclosed wiring diagram.
2. Check the maximum cable cross section.
  - ⇒ 4 mm<sup>2</sup> rigid
  - ⇒ 4 mm<sup>2</sup> flexible
  - ⇒ 2.5 mm<sup>2</sup> flexible with conductor end sleeve
3. Check the winding connections in the terminal box and tighten them, if necessary.
4. The stripping length must be 10 – 12 mm.

## 5.10 Notes on the BXM brake

The BXM. brakes are DC-powered and are released electrically. The brake is applied mechanically when the voltage supply is disconnected.

In the BXM.L design as slewing gear brakes for cranes, the brake is additionally equipped with a solenoid to provide an electrically remote-controlled release function. This function is monitored by a microswitch.

To avoid delayed application or unintentional release of the brake caused by incorrect actuation or connection, please observe the following points:

- Connect the brake according to the enclosed wiring diagram, and observe the applicable operating instructions of the manufacturer Chr. Mayr GmbH & Co. KG.
- In case of an emergency off, always disconnect all poles of the brake control and the brake from the supply voltage.
- Use only suitable contactors with contact ratings as specified by the brake manufacturer Chr. Mayr GmbH & Co. KG.

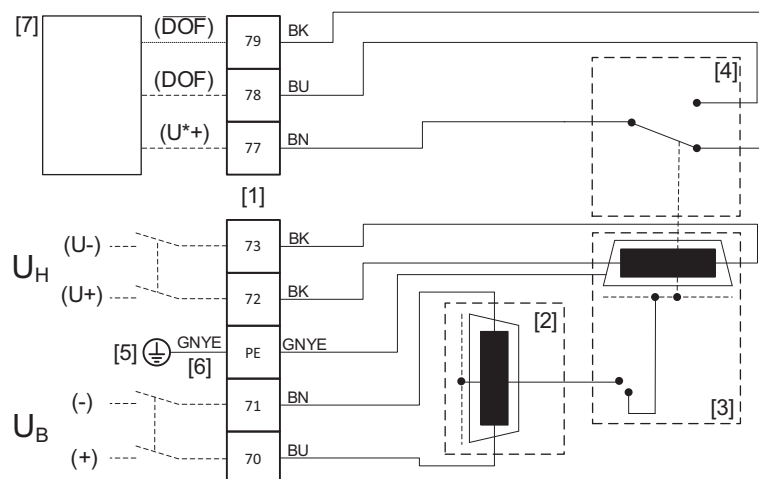
### 5.11 Connecting a BXM brake

On the motor side, the brake winding, the solenoid, and the microswitch are prewired to terminals according to the following diagram. The electrical installation of all 3 components must be performed according to the specifications of the other applicable operating instructions.

Observe the following points:

- Refer to the nameplate of the motor for the connection voltage of the brake winding. Supply the voltage using a suitable brake control.
- Refer to the order confirmation for the connection voltage of the solenoid.
- The brake is internally connected to the motor PE. An additional connection for the brake winding is not necessary.

The solenoid has its own PE connection, which is factory-connected to the motor's grounding point. When connecting, make sure that this connection is installed correctly (green-yellow conductor).



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- 1 Terminal strip
- 2 Brake coil
- 3 Solenoid
- 4 Microswitch
- 5 Grounding at the terminal box
- 6 Protective earth for solenoid
- 7 Evaluation

## **5.12 Connecting the encoder**

If an encoder is installed, observe the following points:

- Make the connection to the encoder using a shielded cable.
- Connect the encoder according to the manufacturer's operating instructions.
- When wiring, ensure adequate clearance and creepage distances to the other terminals, and use only connection cables with suitable insulation.
- For drives that have an encoder with a separate connection lead, connect the encoder at the end of the cable via a connector or using suitable terminals according to the specifications in the manufacturer's operating instructions.

### **5.12.1 For products with a connection in the terminal box**

1. Remove one of the screw plugs [133/134] from the terminal box and replace it with the cable gland [3231].
2. Insert the connection lead into the cable gland [3231] and tighten the cable gland.
3. Connect the encoder connections according to the wiring diagram, and observe the specifications in the supplied wiring diagram.

### 5.13 Options

Connect the options as shown in the wiring connection diagrams provided with the motor. You can obtain the valid wiring diagrams free of charge from SEW-EURODRIVE.

If the wiring diagram is missing, the options must not be connected and put into operation.

#### 5.13.1 /TF temperature sensor

Observe the following points to avoid impermissible heating of the motor due to a defective /TF temperature sensor:

- Do not connect any voltages  $> 30\text{ V}$  to the temperature sensor /TF.
- Observe the enclosed wiring diagram when connecting the temperature sensor /TF.

The PTC thermistor temperature sensors comply with DIN 44082.

Resistance measurement (measuring device with  $V \leq 2.5\text{ V}$  or  $I < 1\text{ mA}$ ):

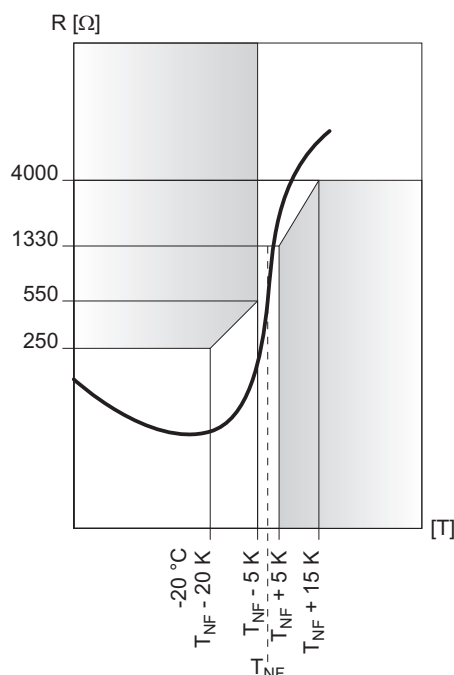
- Standard measured values:  $20 - 500\ \Omega$ , hot resistance  $> 4000\ \Omega$

When using the temperature sensor for thermal monitoring, the evaluation function must be activated to maintain operationally safe isolation of the temperature probe circuit. The thermal protection function must become active in case of overtemperature.

If a second terminal box is available for the /TF temperature sensor, the temperature sensor must be connected in this terminal box.

It is essential that you observe the enclosed wiring diagram when connecting the temperature sensor /TF. If the wiring diagram is not enclosed, it can be obtained free of charge from SEW-EURODRIVE.

The figure below shows the characteristic curve of the /TF with reference to the nominal response temperature (referred to as  $T_{NF}$ ).



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### 5.13.2 Winding thermostats /TH

The thermostats are connected in series as standard and open when the permitted winding temperature is exceeded. They can be connected in the drive monitoring loop.

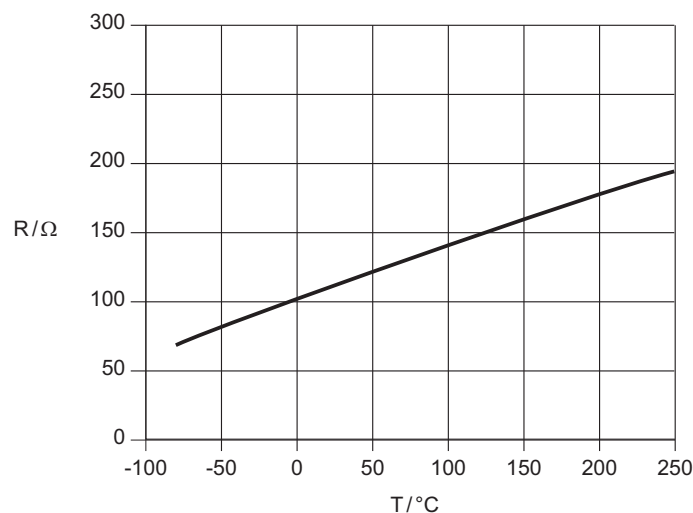
|                                                   | AC V | DC V |     |
|---------------------------------------------------|------|------|-----|
| Voltage in V                                      | 250  | 60   | 24  |
| Current ( $\cos \phi = 1.0$ ) in A                | 2.5  | 1.0  | 1.6 |
| Current ( $\cos \phi = 0.6$ ) in A                | 1.6  |      |     |
| Contact resistance max. 1 $\Omega$ at DC 5 V/1 mA |      |      |     |

### 5.13.3 Temperature sensor /PT (Pt100)

To avoid damage to the insulation of the temperature sensor and the motor winding due to excessive self-heating of the temperature sensor, observe the following points:

- The current in the circuit must not exceed 3 mA.
- Make sure the temperature sensor is connected correctly to ensure proper evaluation of measured temperatures.

The characteristic curve in the following figure shows the resistance curve as a function of the motor temperature.



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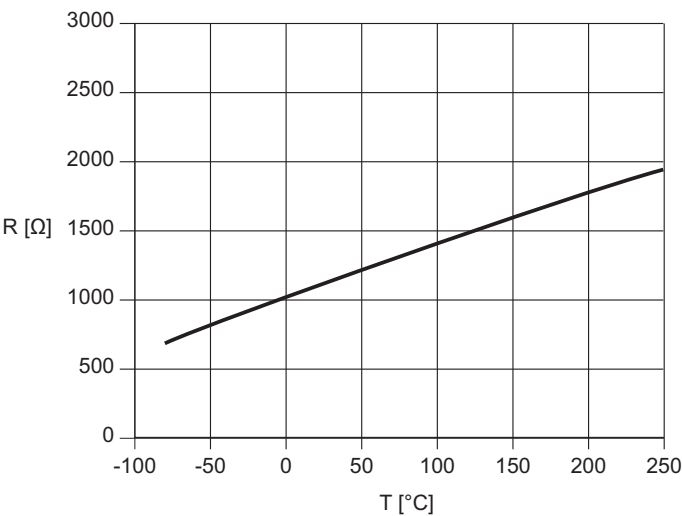
| Technical data                     | Pt100                               |
|------------------------------------|-------------------------------------|
| Connection                         | Red and white                       |
| Resistance at 20 – 25 °C per Pt100 | 107.8 $\Omega$ < R < 109.7 $\Omega$ |
| Test current                       | < 3 mA                              |

### 5.13.4 Temperature sensor /PK (Pt1000)

To avoid damage to the insulation of the temperature sensor and the motor winding due to excessive self-heating of the temperature sensor, observe the following points:

- The current in the circuit must not exceed 3 mA.
- Make sure the temperature sensor is connected correctly to ensure proper evaluation of measured temperatures.

The characteristic curve in the following figure shows the resistance curve as a function of the motor temperature.



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| Technical Data                      | Pt1000              |
|-------------------------------------|---------------------|
| Connection                          | Red-black           |
| Resistance at 20 – 25 °C per Pt1000 | 1077 Ω < R < 1098 Ω |
| Test current                        | < 3 mA              |

### 5.13.5 Anti-condensation heating

To protect a switched-off motor from freezing (rotor blockage) or condensation (formation of condensation inside the motor), the motor can optionally be equipped with anti-condensation heating. The anti-condensation heating consists of strip heaters that are integrated in the winding overhang and supplied with voltage when the motor is switched off. The motor is heated by way of the current in the strip heaters.

The strip heaters are controlled according to the following principle:

- Motor switched off → anti-condensation heating activated
- Motor switched on → anti-condensation heating deactivated

Observe the permitted voltage according to the nameplate and the enclosed terminal assignment diagram.

## **6 Operation**

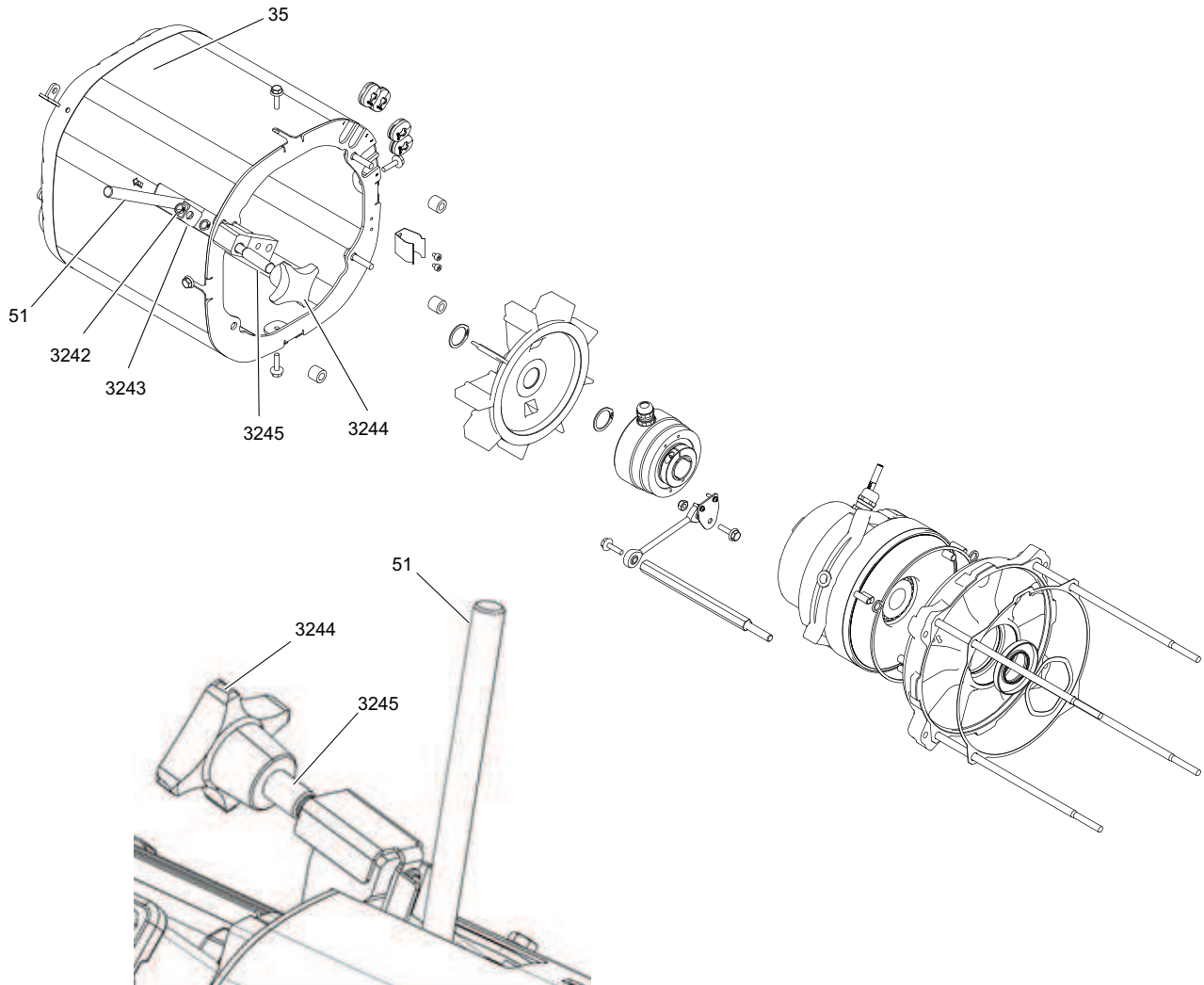
### **6.1 Before you start**

Ensure the following before startup:

- The drive must be undamaged and not blocked.
- All transport protection has been removed.
- After a relatively long storage period (depending on the ambient conditions), additionally observe the information in "Preliminary work after longer periods of storage" (→  20).
- All connections, especially the PE, have been made correctly.
- Use switch contacts in utilization category DC-3 according to EN 60947-4-1 for switching the brake with DC 24 V.
- For drives supplied by inverters, observe the operating instructions for the frequency inverter.
- For motors supplied by inverters, limit the maximum current at the frequency inverter.
- The brake may only be applied when the speed is  $\leq 20 \text{ min}^{-1}$ . For greater speeds, contact SEW-EURODRIVE.
- The direction of rotation of the motor is correct.
- All protection covers are installed correctly.
- All motor protection devices are activated.
- There are no other sources of danger.
- Loose elements are appropriately secured.

## 6.2 Manual brake release /HR

The brake of the slewing gear drive is equipped with a spring-return manual brake release [51], which can also be secured in position using an adjusting screw [3244]. This manual brake release is pre-installed and configured at the factory.



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### 6.2.1 Locking function

In addition to the automatic reset function, the manual brake release also has a locking function. The manual brake release can be locked without tools using an adjusting screw with star grip [3244].

To engage the locking function, proceed as follows:

1. To release the brake, pull the hand lever [51] in the direction indicated by the arrow on the fan guard.
2. Push the adjusting screw [3244] from its lower end position toward the hand lever [51] until the thread of the locking mechanism can engage.
3. Using the star grip, screw in the adjusting screw [3244] until the braking effect is eliminated (upper end position). While doing so, keep the hand lever of the spring-return manual brake release under tension to make turning the locking mechanism easier. Avoid applying excessive force to the adjusting screw to prevent damage to the adjusting mechanism and the hand lever [51].
4. When the adjusting screw [3244] has reached its top end position, the manual lever [51] can be released.

## 6.3 Retention device

The slewing gear drive is equipped with retention devices to prevent parts from coming loose. Before startup, ensure that these are correctly fastened. Check the following places:

- Retaining cable of the closing cap on the canopy
- Adjusting screw of the manual brake release
- Hand lever of the manual brake release
- Fastening of the canopy itself
- Routing and strain relief of the encoder cable

## **7 Inspection/maintenance**

### **7.1 Before you start**

Ensure the following before inspection/maintenance:

- Observe the 5 safety rules before commencing the work: Disconnect. Secure the device against a restart. Check that no voltage is applied. Ground and short-circuit it. Cover or cordon off neighboring live parts.
- Secure the motor against unintended power-up.
- Wear a respirator of class FFP2 when performing work in the terminal box of brakemotors.
- Avoid swirling of the brake abrasion.
- Remove the brake abrasion with suitable extraction systems or damp cloths that bind dust.
- Make sure that there is adequate ventilation in the work environment.
- Let the unit cool down sufficiently before you start working on it.
- Ensure that the ambient temperature and the temperature of the oil seals does not fall below 0 °C.
- Before assembly, apply grease to the sealing lip area of the oil seals.
- Friction disks at brakemotors may only be replaced by the SEW-EURODRIVE service.
- Repairs or modifications to the product may only be performed by trained specialists. Contact SEW-EURODRIVE Service when performing work on the unit.
- Make sure that the regulations are adhered to before restarting the motor.
- Perform a safety and functional check following all maintenance and repair work (thermal protection).

## 7.2 Inspection and maintenance intervals

The following table shows the intervals for inspection and maintenance:

| Unit/part of unit | Time interval                                                                                        | Required steps                                                                                                                                                                                                                                                                                 |
|-------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Motor             | <ul style="list-style-type: none"> <li>Every 10 000 operating hours<sup>1)</sup></li> </ul>          | Inspect the motor: <ul style="list-style-type: none"> <li>Check the rolling bearings, replace if necessary.</li> <li>Replace the oil seals.</li> <li>Clean the cooling air ducts.</li> </ul>                                                                                                   |
| Drive             | <ul style="list-style-type: none"> <li>Varying<sup>1)</sup></li> </ul>                               | <ul style="list-style-type: none"> <li>Touch up or renew the surface/corrosion protection paint.</li> <li>Check the air filter and clean it if required.</li> <li>Clean the condensation drain hole at the lowest point of the fan cover, if present.</li> <li>Clean clogged bores.</li> </ul> |
| Connection cable  | <ul style="list-style-type: none"> <li><b>Every 10 000 operating hours<sup>2)1)</sup></b></li> </ul> | Inspect cables <ul style="list-style-type: none"> <li>Check for damage. If necessary, replace connection cable.</li> <li>Check all cable glands and retighten them, if necessary.</li> </ul>                                                                                                   |

1) The interval depends on external influences and can be very short, e.g. in environments with a high dust content.

2) For EDRN225 – 315 motors with relubrication device, note the shortened relubrication periods under "Bearing lubrication for EDRN225 – 315 motors with relubrication device /NS".

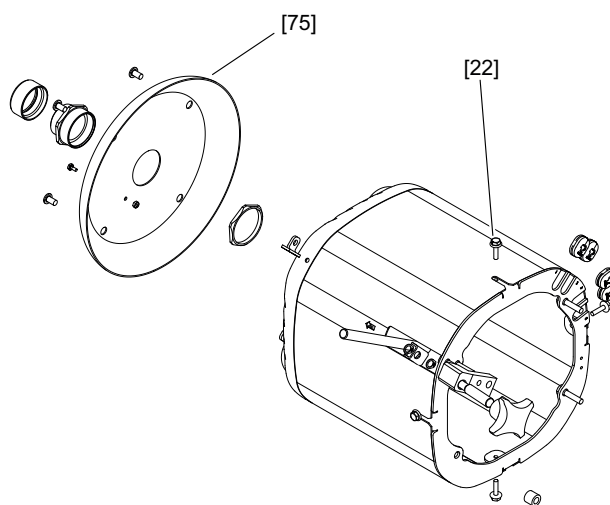
If the motor compartment is opened during inspection or maintenance, it must be cleaned before closing.

### 7.2.1 Replacing the brake lining carrier

For more information, refer to the manufacturer's documentation.

## 7.3 Preliminary work

### 7.3.1 Removing the fan guard

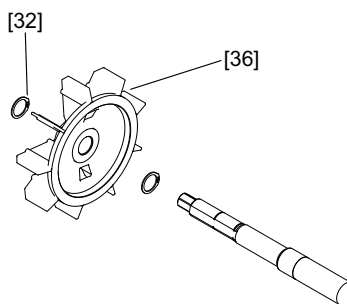


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1. Loosen the 4 screws [22].
2. Remove the fan guard with the attached canopy [75].



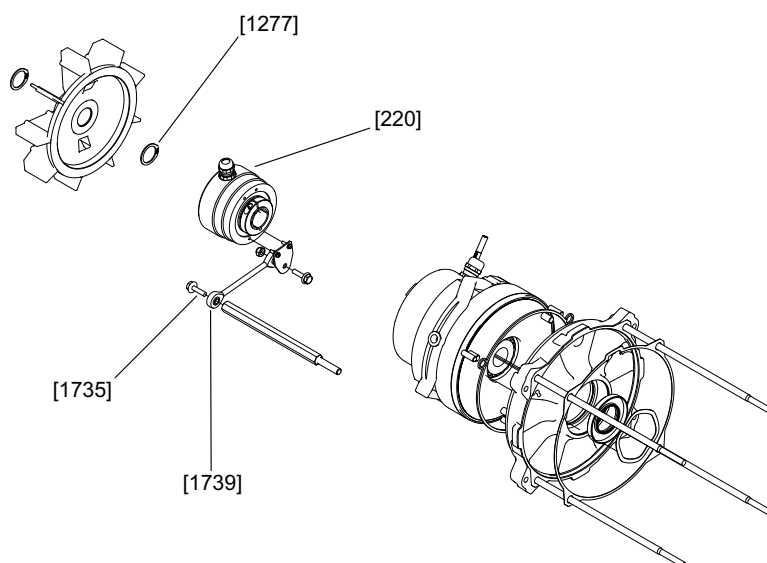
### 7.3.2 Removing the fan wheel



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1. Clean the rear shaft section of the B-side of the rotor so that the removal of the fan wheel [36] is not obstructed by dirt.
2. Remove the retaining ring [32].
3. Remove the fan wheel [36] using a puller.

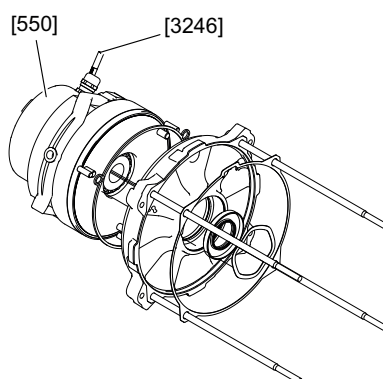
## 7.3.3 Removing the encoder



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1. Clean the rear shaft section of the B-side of the rotor so that the removal of the encoder [220] is not obstructed by dirt.
2. Remove the 2nd retaining ring [1277] of the fan wheel.
3. Loosen the screw [1735] of the torque arm.
4. Swing the torque arm [1739] to the side.
5. Remove all cable ties that secure the encoder cable.
6. If the cable is connected in the terminal box, disconnect the cable and pull it through the cable gland.
7. Alternatively, you must remove the encoder cable according to the respective connection situation so that the cable is not attached.
8. Loosen the screw of the clamping ring on the encoder [220].
9. Carefully remove the encoder [220] from the shaft.
10. Bundle and secure all cables that remain on the motor.

### 7.3.4 Removing the brake



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1. Remove the connector [3264] for the current supply of the solenoid from the brake [550].
2. Disconnect the two other cables that are connected in the terminal box and remove them through the cable guides.
3. Remove the brake [550] according to the manufacturer's specifications and detach it from the rotor [1] of the motor.

You can now perform further work on the brake according to the manufacturer's operating instructions.

## 7.4 Inspection and maintenance work

### 7.4.1 Replacing deep groove ball bearing and oil seal on rotor

The legend numbers used in the following text refer to the items in the spare and wearing parts list.

To replace the bearings [11, 44] and the oil seals [106, 30], you must first perform the following disassembly steps:

1. For gearmotors: Remove the motor from the gear unit.  
Remove the pinion and the oil flinger [107].
2. If present, remove the forced cooling fan and rotary encoder [220].
3. Remove the fan guard [35] and the fan [36].
4. Remove the stator:
  - **DR..112 – 132S motors:** Remove the cap screws [13] and loosen the brake endshield [49].
  - **DR..132M/L motors:** Remove the cap screws [19] and loosen the brake endshield [49].
  - Remove the brake endshield [49] from the stator. Completely remove the seal [392] and any sealant.
  - **For size 112-132S,** the flange [1] on the A-side is free after removing the screws [13] and you can remove the flange and rotor.
  - **For size 132M/L,** the flange [1] on the A-side is free after removing the screws [15] and you can remove the flange and rotor.
  - Loosen the retaining ring [12] to separate the rotor from the flange.
  - You can now replace the deep groove ball bearings [11, 44] and the oil seals [106, 30]. Remove the spacer ring [48]. Coat the sealing lip of the oil seal with grease (Klüber Petamo GHY 133).
  - **For size 112-132S:** Replace the seals [1480] and [392] in the stator seats.
  - **For size 132M/L:** Seal the sealing surfaces with SEW-L-Spezial.

#### 7.4.2 Inspection steps for brakemotors

1. Before starting any work, disconnect the motor and all connected options from the power supply and secure the motor against unintentional start-up.
2. For gearmotors, remove the motor from the gear unit.
3. Remove the pinion and the oil flinger [107].
4. If present, remove the forced cooling fan and rotary encoder. See chapter "Preliminary work for motor and brake maintenance".
5. Remove the stator:
  - Remove the cap screws [13] from the flanged endshield [7] and the rear endshield [42].
  - Remove the stator [16] from the flanged endshield [7].
6. Pull the stator back by 3 – 4 cm.
7. Visual inspection: Is there any moisture or gear oil inside the stator?
  - If not, proceed with step 11.
  - If there is moisture, proceed with step 10.
  - For gear oil: Have the motor repaired in a specialist workshop.
8. If there is moisture inside the stator:
  - For gearmotors: Remove the motor from the gear unit.
  - For motors without a gear unit: Remove the A-side flange.
  - Remove the rotor [1].
  - Clean, dry, and electrically test the motor; see chapter "Drying the motor" (→ 22).
9. Remove the driver from the shaft.
10. Replace the rolling bearing [11], [44] with approved rolling bearing types, see chapter "Permitted anti-friction bearing types".  
While doing so, apply either tension or pressure to the inner ring of the bearing.
11. Install the key [71] and the driver:
  - To simplify assembly, heat the driver (joining temperature +85 °C to +115 °C).
  - Clean the driver seat on the rotor [1] and coat it with the anti-corrosion agent NOCO-Paste before fitting.
  - Mount the retaining ring [62].
12. Seal the stator again and install it:
  - Replace the seal [392].
13. Reseal the shaft:
  - Replace the A-side oil seal [106].
  - Coat the sealing lip with suitable grease, see chapter "Order information for lubricants, anti-corrosion agents and sealants" (→ 65).
14. Seal the flange plate of the brake [550] on the brake endshield [42]:
  - Replace the seal [3262].
15. Mount the brake [550] using the supplied screws. Observe the manufacturer's operating instructions and the requirements for the tightening torque of the screws.
16. Connect the brake connection cable.

17. Coat the sealing ring [95] with suitable grease, see chapter "Order information for lubricants, anti-corrosion agents and sealants" (→  65).
18. Install the fan wheel [36] and the fan guard [35] as well as any available optional equipment.

#### **7.4.3 Measuring the wear of the brake**

For more information, refer to the manufacturer's documentation.

#### **7.4.4 Replacing the brake lining carrier**

For more information, refer to the manufacturer's documentation.

#### **7.4.5 Changing the braking torque of the brakes**

For more information, refer to the manufacturer's documentation.

#### **7.4.6 Additional work on the brake**

You can now perform further work on the brake according to the manufacturer's operating instructions.

After completing the work, observe the following before mounting the brake:

1. Correctly insert the sealing ring [3262] of the brake lining carrier shield.
2. Do not insert the O-ring between the brake and the brake endshield [42].

## 8 Technical data

### 8.1 Available braking torques

| Brake type | Braking torque setting range in Nm | Permitted nominal braking torque in Nm |
|------------|------------------------------------|----------------------------------------|
| BXM6L      | 30 – 60                            | 50                                     |
|            |                                    | 60                                     |
| BXM10L     | 75 – 110                           | 110                                    |
|            |                                    | 80                                     |
|            |                                    | 75                                     |

### 8.2 Motor/brake combinations

| Motor    | Mountable brake |
|----------|-----------------|
| DR2.112M | BXM6L           |
| DR2.112M | BXM10L          |
| DR2.132S | BXM6L           |
| DR2.132S | BXM10L          |
| DR2.132L | BXM10L          |

### 8.3 Permitted braking voltages

| Nominal voltage | Design        | Availability |
|-----------------|---------------|--------------|
| DC 24 V         | Fixed voltage | ✓            |
| DC 104 V        | Fixed voltage | On request   |
| DC 180 V        | Fixed voltage | ✓            |

## 8.4 Manual brake release

The design can only be combined with the HR-F manual brake release (consisting of a spring-return brake release and a locking screw). The possible manual brake release positions are limited to the following combinations due to the hole pattern of the brake endshield:

| Terminal box position | Position of manual brake release |
|-----------------------|----------------------------------|
| 0°                    | 303°                             |
| 90°                   | 33°                              |
| 180°                  | 123°                             |
| 270°                  | 213°                             |

The position between terminal box and manual brake release is always fixed at 57°.

## 8.5 Permitted rolling bearings

| Motors                             | A-side bearing                           | B-side bearing |
|------------------------------------|------------------------------------------|----------------|
| <b>DR2.112</b><br><b>DR2.132S</b>  | 6308-2RS-C3                              | 6207-2RS-C3    |
| <b>DR2.132M</b><br><b>DR2.132L</b> | 6308-2RS-C3<br>6309-2RS-C3 <sup>1)</sup> | 6209-2RS-C3    |

1) Only output shaft end Ø42×110



## 8.6 Lubricant tables

### 8.6.1 Lubricant table for rolling bearings

#### INFORMATION



Use of wrong bearing grease can damage the bearings.

#### Motors with sealed bearings

The bearings are 2Z or 2RS closed bearings and cannot be relubricated. They are used for DR..56 – 280 motors.

|                        | Ambient temperature | Manufacturer | Type                              | DIN designation |
|------------------------|---------------------|--------------|-----------------------------------|-----------------|
| Motor rolling bearings | -20 °C to +80 °C    | Mobil        | Polyrex EM <sup>1)</sup>          | K2P-20          |
|                        | +20 °C to +100 °C   | Klüber       | Klüberquiet BQ72-72 <sup>2)</sup> | KX2U            |
|                        | -40 °C to +60 °C    | Kyodo Yushi  | Multemp SRL <sup>2)</sup>         | KE2N-40         |
|                        | -20 °C to +60 °C    | SKF          | LHT23 <sup>2)</sup>               | KE2N-40         |

1) Mineral lubricant (= mineral-based bearing grease)

2) Synthetic lubricant (= synthetic-based bearing grease)

### 8.6.2 Order information for lubricants, anti-corrosion agents and sealants

Lubricants, anti-corrosion agents, and sealants can be obtained directly from SEW-EURODRIVE using the following purchase order numbers.

| Use                                | Manufacturer   | Type                   | Quantity | Purchase order number |
|------------------------------------|----------------|------------------------|----------|-----------------------|
| Lubricant for rolling bearing      | Mobile         | Polyrex EM             | 400 g    | 09101470              |
|                                    | SKF            | LGHP2                  | 400 g    | 09101276              |
| Lubricant for sealing rings        |                |                        |          |                       |
| Material: NBR/FKM                  | Klüber         | Petamo GHY 133N        | 10 g     | 04963458              |
| Material: EPDM/EPP                 | Klüber         | Klübersynth BLR 46-122 | 10 g     | 03252663              |
| Corrosion protection and lubricant | SEW-EURODRIVE  | NOCO-Paste             | 5.5 g    | 09107819              |
| Sealant                            | Marston Domsel | SEW-L-Spezial          | 80 g     | 09112286              |
| Backstop lubricant                 | Mobile         | Grease LBZ 1           | 400 g    | 03287211              |

## 9 Malfunctions

### 9.1 Before you start

Ensure the following before startup:

- The drive must be undamaged and not blocked.
- All transport protection has been removed.
- After a relatively long storage period (depending on the ambient conditions), additionally observe the information in "Preliminary work after longer periods of storage" (→  20).
- All connections, especially the PE, have been made correctly.
- Use switch contacts in utilization category DC-3 according to EN 60947-4-1 for switching the brake with DC 24 V.
- For drives supplied by inverters, observe the operating instructions for the frequency inverter.
- For motors supplied by inverters, limit the maximum current at the frequency inverter.
- The brake may only be applied when the speed is  $\leq 20 \text{ min}^{-1}$ . For greater speeds, contact SEW-EURODRIVE.
- The direction of rotation of the motor is correct.
- All protection covers are installed correctly.
- All motor protection devices are activated.
- There are no other sources of danger.
- Loose elements are appropriately secured.

## 9.2 Motor malfunctions

| Fault                                                             | Possible cause                                                                                    | Measure                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Motor does not start up                                           | Supply cable interrupted                                                                          | Check the connections and (intermediate) terminal points, correct if necessary                                                                                                                                                           |
|                                                                   | Brake does not release                                                                            | See chapter "Brake malfunctions"                                                                                                                                                                                                         |
|                                                                   | Supply cable fuse has blown                                                                       | Replace fuse                                                                                                                                                                                                                             |
|                                                                   | Motor protection (switch) has triggered                                                           | Check that the motor protection (switch) is set correctly; current specification is on the nameplate                                                                                                                                     |
|                                                                   | Motor protection does not trip                                                                    | Check motor protection control                                                                                                                                                                                                           |
|                                                                   | Error in control or in the control process                                                        | Observe the switching sequence; correct if necessary                                                                                                                                                                                     |
| Motor only starts with difficulty or does not start at all        | Motor power designed for delta connection but connected in star                                   | Correct the connection from star to delta;<br>Observe wiring diagram                                                                                                                                                                     |
|                                                                   | Motor power designed for star-star connection but only connected in star                          | Correct the connection from star to star-star;<br>Observe wiring diagram                                                                                                                                                                 |
|                                                                   | Voltage or frequency differs considerably from the setpoint, at least when switching on the motor | Provide better power supply system; reduce the power supply load;<br>Check cross section of supply cable, replace with cable of larger cross section if necessary                                                                        |
| Motor does not start in star connection, only in delta connection | Star connection does not provide sufficient torque                                                | If the delta inrush current is not too high (observe the regulations of the power supplier), start up directly in delta;<br><br>Check the project planning and use a larger motor or special design if necessary. Contact SEW-EURODRIVE. |
|                                                                   | Contact fault on star/delta switch                                                                | Check the switch, replace if necessary;<br>Check the connections                                                                                                                                                                         |
| Incorrect direction of rotation                                   | Motor connected incorrectly                                                                       | Swap 2 phases of the motor supply cable                                                                                                                                                                                                  |
| Motor hums and has high current consumption                       | Brake does not release                                                                            | See chapter "Brake malfunctions"                                                                                                                                                                                                         |
|                                                                   | Winding defective                                                                                 | Send motor to specialist workshop for repair                                                                                                                                                                                             |
|                                                                   | Rotor rubbing                                                                                     | Send motor to specialist workshop for repair                                                                                                                                                                                             |
| Fuses blow or motor protection trips immediately                  | Short circuit in the motor supply cable                                                           | Eliminate short circuit                                                                                                                                                                                                                  |
|                                                                   | Supply cables connected incorrectly                                                               | Correct the connection;<br>Observe wiring diagram                                                                                                                                                                                        |
|                                                                   | Short circuit in the motor                                                                        | Send motor to specialist workshop for repair                                                                                                                                                                                             |
|                                                                   | Ground fault on motor                                                                             | Send motor to specialist workshop for repair                                                                                                                                                                                             |

| Fault                                            | Possible cause                                                                               | Measure                                                                                                                                                   |
|--------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severe speed loss under load                     | Motor overload                                                                               | Measure power, check project planning and use larger motor or reduce load if necessary                                                                    |
|                                                  | Voltage drops                                                                                | Check cross section of supply cable, replace with cable of larger cross section if necessary                                                              |
| Motor heats up excessively (measure temperature) | Overload                                                                                     | Measure power, check project planning and use larger motor or reduce load if necessary                                                                    |
|                                                  | Insufficient cooling                                                                         | Provide a cooling air supply or clear cooling air passages, retrofit forced cooling fan if necessary. Check the air filter, clean or replace if necessary |
|                                                  | Ambient temperature too high                                                                 | Observe the permitted temperature range, reduce the load if necessary                                                                                     |
|                                                  | Motor in delta connection instead of star connection as intended                             | Correct the wiring, observe the wiring diagram                                                                                                            |
|                                                  | Loose contact in supply cable (one phase missing)                                            | Tighten loose contact, check connections, observe wiring diagram                                                                                          |
|                                                  | Fuse defective                                                                               | Look for and rectify cause; replace fuse                                                                                                                  |
|                                                  | Line voltage deviates from the rated motor voltage by more than 5% (range A) / 10% (range B) | Adjust motor to line voltage                                                                                                                              |
|                                                  | Operating mode (S1 to S10, DIN 57530) exceeded, e.g. caused by excessive switching frequency | Adjust the operating mode of the motor to the required operating conditions; consult a professional to determine the proper drive, if necessary           |
| Loud noises                                      | Ball bearing compressed, dirty or damaged                                                    | Realign motor and the driven machine, inspect rolling bearing and replace if necessary.                                                                   |
|                                                  | Vibration of rotating parts                                                                  | Look for the cause, possibly an imbalance; correct the cause, observe method for balancing                                                                |
|                                                  | Foreign bodies in cooling air ducts                                                          | Clean cooling air ducts                                                                                                                                   |
|                                                  | For DR.. motors with rotor designation "J": Load too high                                    | Reduce the load                                                                                                                                           |

### 9.3 Brake malfunctions

For more information, refer to the manufacturer's documentation.

### 9.4 Malfunctions when operated with a frequency inverter

When the motor is operated with a frequency inverter, the symptoms described in "Motor malfunctions" (→ 67) may also occur. You can find the meaning of the problems that have occurred, as well as troubleshooting information, in the operating instructions for the frequency inverter.

### 9.5 Waste disposal

Dispose of the product and all parts separately in accordance with their material structure and the national regulations. Put the product through a recycling process or contact a specialist waste disposal company. If possible, divide the product into the following categories:

- Iron, steel or cast iron
- Stainless steel
- Magnets
- Aluminum
- Copper
- Electronic parts
- Plastics

The following materials are hazardous to health and the environment. These materials must be collected and disposed of separately:

- Oil and grease

Collect used oil and grease separately according to type. Ensure that the used oil is not mixed with solvent. Dispose of used oil and grease correctly.

- Screens
- Capacitors



#### Waste disposal according to WEEE Directive 2012/19/EU

This product and its accessories may fall within the scope of the country-specific application of the WEEE Directive. Dispose of the product and its accessories according to the national regulations of your country.

For further information, contact the responsible SEW-EURODRIVE branch or an authorized partner of SEW-EURODRIVE.

## 9.6 Service

**Please have the following information available if you require customer service assistance:**

- Nameplate data (complete)
- Type and extent of the failure
- Time the failure occurred and any accompanying circumstances
- Assumed cause
- Ambient conditions such as
  - Ambient temperature
  - Humidity
  - Installation altitude
  - Dirt
  - etc.

## 10 Appendix

### 10.1 Wiring diagrams

#### INFORMATION



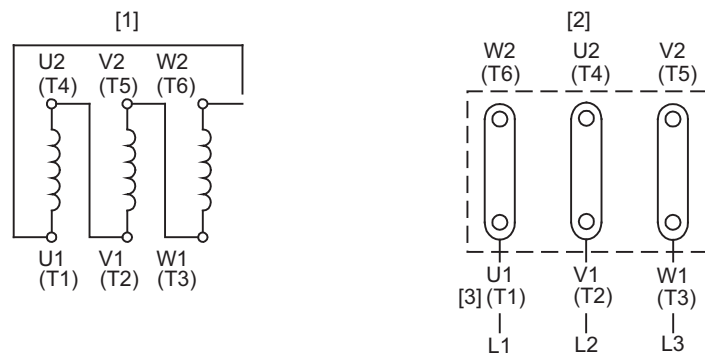
The motor should be connected as shown in the connection wiring diagram or the terminal assignment diagram, which are supplied with the motor. The following section only shows a selection of the common types of connections. You can obtain the relevant wiring diagrams free of charge from SEW-EURODRIVE.

#### 10.1.1 Delta and star connection in wiring diagram R13 (68001 xx 06)

For all motors with one speed, direct on-line, or  $\Delta/\Delta$  start-up.

##### Delta connection

The following illustration shows the  $\Delta$  connection for lower voltage.

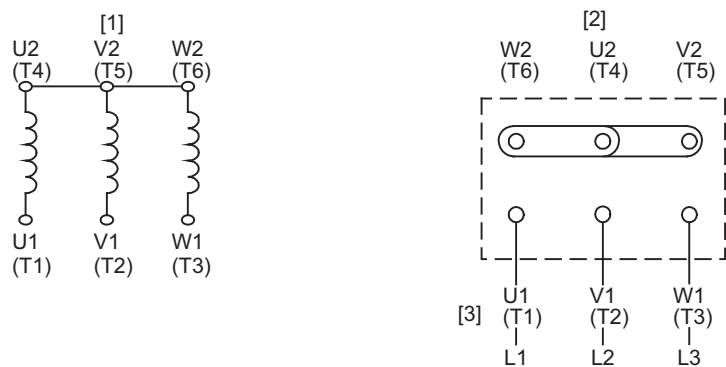


- [1] Motor winding  
[2] Motor terminal board

- [3] Supply cables

**Star connection**

The following illustration shows the  $\Delta$  connection for high voltage.



18014398752080139

[1] Motor winding  
 [2] Motor terminal board

[3] Supply cables

Proceed as follows to reverse the direction of rotation:

1. Swap the supply cables L1 – L2.

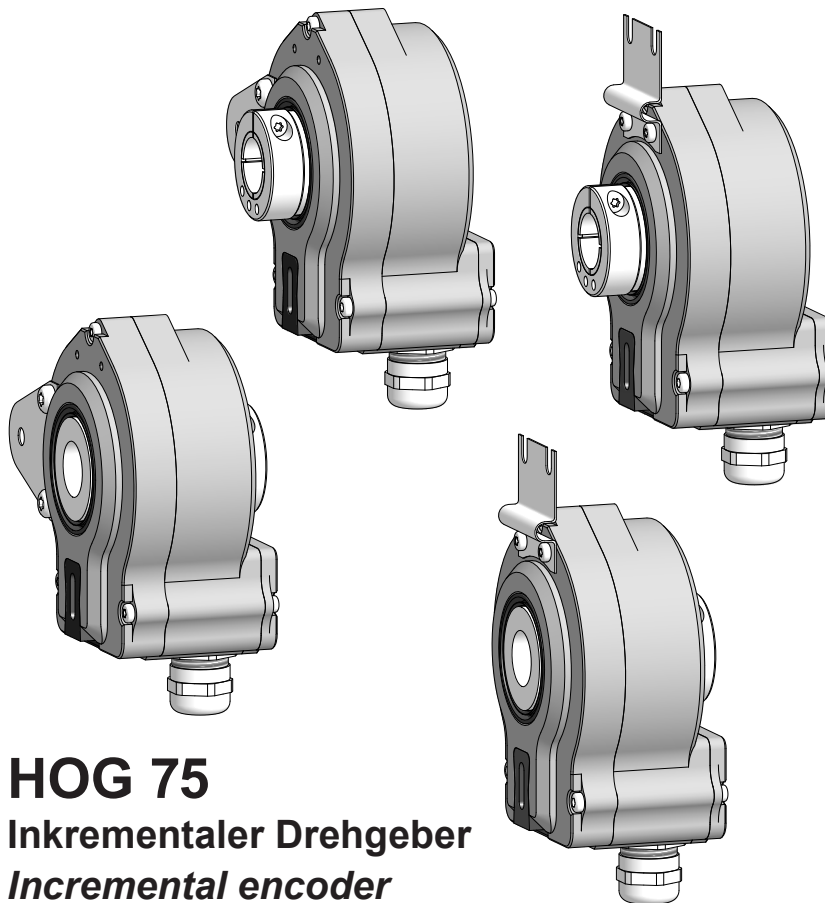


## **10.2 Encoder operating instructions; Baumer**


**Baumer**

Passion for Sensors

## **Montage- und Betriebsanleitung** *Mounting and operating instructions*



### **HOG 75** **Inkrementaler Drehgeber** *Incremental encoder*

Baumer\_HOG75ZY\_L\_T1\_DE\_EN\_202209\_MI\_11173563 (22A3)

MB010T1-11173563

**HUBNER**  
**BERLIN**  
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31558941/EN – 11/2025

Inhaltsverzeichnis

Inhaltsverzeichnis

|    |                                                                                               |    |
|----|-----------------------------------------------------------------------------------------------|----|
| 1  | <b>Allgemeine Hinweise</b>                                                                    | 1  |
| 2  | <b>Betrieb in explosionsgefährdeten Bereichen</b>                                             | 3  |
| 3  | <b>Sicherheitshinweise</b>                                                                    | 5  |
| 4  | <b>Vorbereitung</b>                                                                           | 7  |
|    | 4.1 Lieferumfang                                                                              | 7  |
|    | 4.2 Zur Montage erforderlich (nicht im Lieferumfang enthalten)                                | 8  |
|    | 4.3 Erforderliches Werkzeug (nicht im Lieferumfang enthalten)                                 | 9  |
| 5  | <b>Montage</b>                                                                                | 10 |
|    | 5.1 Schritt 1                                                                                 | 10 |
|    | 5.2 Schritt 2                                                                                 | 10 |
|    | 5.2.1 Montage mit Drehmoment-Stützblech                                                       | 10 |
|    | 5.2.2 Montage mit Aufnahmeschlitz für Drehmomentstift                                         | 11 |
|    | 5.2.3 Montage mit Stützblech und Drehmomentstütze                                             | 11 |
|    | 5.2.3.1 Schritt 2a                                                                            | 11 |
|    | 5.2.3.2 Schritt 2b                                                                            | 12 |
|    | 5.2.3.3 Schritt 2c                                                                            | 13 |
|    | 5.2.3.4 Hinweis zur Vermeidung von Messfehlern                                                | 14 |
|    | 5.3 Schritt 3                                                                                 | 15 |
|    | 5.4 Schritt 4                                                                                 | 15 |
|    | 5.5 Schritt 5                                                                                 | 16 |
|    | 5.6 Montagehinweis                                                                            | 17 |
| 6  | <b>Abmessungen</b>                                                                            | 18 |
|    | 6.1 Ohne Hybridlager                                                                          | 18 |
|    | 6.1.1 Durchgehende Hohlwelle mit Drehmomentblech und Aufnahmeschlitz für Drehmomentstift      | 18 |
|    | 6.1.2 Mit Stützblech für eine Drehmomentstütze und Aufnahmeschlitz für Drehmomentstift        | 19 |
|    | 6.1.3 Mit langem Stützblech für eine Drehmomentstütze und Aufnahmeschlitz für Drehmomentstift | 20 |
|    | 6.2 Mit Hybridlager                                                                           | 21 |
|    | 6.2.1 Mit langem Stützblech für eine Drehmomentstütze                                         | 21 |
| 7  | <b>Elektrischer Anschluss</b>                                                                 | 22 |
|    | 7.1 Beschreibung der Anschlüsse                                                               | 22 |
|    | 7.2 Ausgangssignale                                                                           | 22 |
|    | 7.3 Klemmenbelegung                                                                           | 22 |
|    | 7.4 Option Anschlusskabel: Kabelbelegung                                                      | 23 |
|    | 7.5 Sensorkabel HEK 8 (Zubehör)                                                               | 23 |
| 8  | <b>Demontage</b>                                                                              | 24 |
|    | 8.1 Schritt 1                                                                                 | 24 |
|    | 8.2 Schritt 2                                                                                 | 24 |
|    | 8.3 Schritt 3                                                                                 | 25 |
|    | 8.4 Schritt 4                                                                                 | 26 |
| 9  | <b>Zubehör</b>                                                                                | 28 |
| 10 | <b>Technische Daten</b>                                                                       | 29 |
|    | 10.1 Technische Daten - elektrisch                                                            | 29 |
|    | 10.2 Technische Daten - mechanisch                                                            | 29 |

Baumer\_HOG75ZYL\_T1\_DE\_EN\_202209\_MI\_11173563 (22A3) MB010T1 - 11173563

## Table of contents

**Table of contents**

|    |                                                                      |    |
|----|----------------------------------------------------------------------|----|
| 1  | <b>General notes</b>                                                 | 2  |
| 2  | <b>Operation in potentially explosive environments</b>               | 4  |
| 3  | <b>Security indications</b>                                          | 6  |
| 4  | <b>Preparation</b>                                                   | 7  |
|    | 4.1 Scope of delivery                                                | 7  |
|    | 4.2 Required for mounting (not included in scope of delivery)        | 8  |
|    | 4.3 Required tools (not included in scope of delivery)               | 9  |
| 5  | <b>Mounting</b>                                                      | 10 |
|    | 5.1 Step 1                                                           | 10 |
|    | 5.2 Step 2                                                           | 10 |
|    | 5.2.1 Mounting with torque support plate                             | 10 |
|    | 5.2.2 Mounting with slot for torque pin                              | 11 |
|    | 5.2.3 Mounting with support plate and torque arm                     | 11 |
|    | 5.2.3.1 Step 2a                                                      | 11 |
|    | 5.2.3.2 Step 2b                                                      | 12 |
|    | 5.2.3.3 Step 2c                                                      | 13 |
|    | 5.2.3.4 How to prevent measurement errors                            | 14 |
|    | 5.3 Step 3                                                           | 15 |
|    | 5.4 Step 4                                                           | 15 |
|    | 5.5 Step 5                                                           | 16 |
|    | 5.6 Mounting instruction                                             | 17 |
| 6  | <b>Dimensions</b>                                                    | 18 |
|    | 6.1 Without hybrid bearings                                          | 18 |
|    | 6.1.1 Through hollow shaft with torque sheet and slot for torque pin | 18 |
|    | 6.1.2 With support plate for torque arm and slot for torque pin      | 19 |
|    | 6.1.3 With long support plate for torque arm and slot for torque pin | 20 |
|    | 6.2 With hybrid bearings                                             | 21 |
|    | 6.2.1 With long support plate for torque arm                         | 21 |
| 7  | <b>Electrical connection</b>                                         | 22 |
|    | 7.1 Terminal significance                                            | 22 |
|    | 7.2 Output signals                                                   | 22 |
|    | 7.3 Terminal assignment                                              | 22 |
|    | 7.4 Option connecting cable: Cable assignment                        | 23 |
|    | 7.5 Sensor cable HEK 8 (accessory)                                   | 23 |
| 8  | <b>Dismounting</b>                                                   | 24 |
|    | 8.1 Step 1                                                           | 24 |
|    | 8.2 Step 2                                                           | 24 |
|    | 8.3 Step 3                                                           | 25 |
|    | 8.4 Step 4                                                           | 26 |
| 9  | <b>Accessories</b>                                                   | 28 |
| 10 | <b>Technical data</b>                                                | 30 |
|    | 10.1 Technical data - electrical ratings                             | 30 |
|    | 10.2 Technical data - mechanical design                              | 30 |

MB010T1 - 11173563 Baumer\_HOG75ZYL\_T1\_DE\_EN\_202209\_MI\_11173563 (22A3)

## 1 Allgemeine Hinweise

### 1 Allgemeine Hinweise

#### 1.1 Zeichenerklärung:



##### Gefahr

Warnung bei möglichen Gefahren



##### Hinweis zur Beachtung

Hinweis zur Gewährleistung eines einwandfreien Betriebes des Gerätes



##### Information

Empfehlung für die Gerätehandhabung

1.2 Der **inkrementale Drehgeber HOG 75** ist ein **opto-elektronisches Präzisionsmessgerät**, das mit Sorgfalt nur von technisch qualifiziertem Personal gehandhabt werden darf.

1.3 Die zu erwartende **Lebensdauer** des Gerätes hängt von den **Kugellagern** ab, die mit einer Dauerschmierung ausgestattet sind.

1.4  Der **Lagertemperaturbereich** des Gerätes liegt zwischen -15 °C bis +70 °C.

1.5  Der **Betriebstemperaturbereich** des Gerätes liegt zwischen -30 °C bis +85 °C, eingeschränkt im Ex-Bereich, siehe Abschnitt 2, am Gehäuse gemessen.

1.6  **EU-Konformitätserklärung** gemäß den europäischen Richtlinien.

1.7 Das Gerät ist **zugelassen nach UL** (gilt nicht für Einsatz in explosionsgefährdeten Bereichen).

1.8 Wir gewähren **2 Jahre Gewährleistung** im Rahmen der Bedingungen des Zentralverbandes der Elektroindustrie (ZVEI).

1.9 **Wartungsarbeiten** sind nicht erforderlich. Das Gerät darf nur wie in dieser Anleitung beschrieben geöffnet werden. **Reparaturen**, die ein vollständiges Öffnen des Gerätes erfordern, sind vom **Hersteller** durchzuführen. Am Gerät dürfen keine Veränderungen vorgenommen werden.

1.10 Bei **Rückfragen** bzw. **Nachlieferungen** sind die auf dem Typenschild des Gerätes angegebenen Daten, insbesondere Typ und Seriennummer, unbedingt anzugeben.

1.11  **Entsorgung (Umweltschutz):**  
Gebrauchte Elektro- und Elektronikgeräte dürfen nicht im Hausmüll entsorgt werden. Das Produkt enthält wertvolle Rohstoffe, die recycelt werden können. Wenn immer möglich sollen Altgeräte lokal am entsprechenden Sammeldepot entsorgt werden. Im Bedarfsfall gibt Baumer den Kunden die Möglichkeit, Baumer-Produkte fachgerecht zu entsorgen. Weitere Informationen siehe [www.baumer.com](http://www.baumer.com).



##### Achtung!

Beschädigung des auf dem Gerät befindlichen Siegels  führt zu Gewährleistungsverlust.

## 1 General notes

### 1.1 Symbol guide:



#### **Danger**

Warnings of possible danger



#### **General information for attention**

Informations to ensure correct device operation



#### **Information**

Recommendation for device handling

1.2 The **incremental encoder HOG 75** is an **opto electronic precision measurement device** which must be handled with care by skilled personnel only.

1.3 The expected **service life** of the device depends on the **ball bearings**, which are equipped with a permanent lubrication.

1.4



The **storage temperature range** of the device is between -15 °C and +70 °C.

1.5



The **operating temperature range** of the device is between -30 °C and +85 °C, restricted in potentially explosive environments, see section 2, measured at the housing.

1.6



**EU Declaration of Conformity** meeting to the European Directives.

1.7

The device is **UL approved** (not applicable for operation in potentially explosive atmospheres).

1.8

We grant a **2-year warranty** in accordance with the regulations of the ZVEI (Central Association of the German Electrical Industry).

1.9

**Maintenance work** is not necessary. The device may be only opened as described in this instruction. **Repair work** that requires opening the device completely must be carried out by the **manufacturer**. Alterations of the device are not permitted.

1.10

In the event of **queries** or **subsequent deliveries**, the data on the device type label must be quoted, especially the type designation and the serial number.

1.11



#### **Disposal (environmental protection):**

Do not dispose of electrical and electronic equipment in household waste. The product contains valuable raw materials for recycling. Whenever possible, waste electrical and electronic equipment should be disposed locally at the authorized collection point. If necessary, Baumer gives customers the opportunity to dispose of Baumer products professionally. For further information see [www.baumer.com](http://www.baumer.com).



#### **Warning!**

Damaging the seal  on the device invalidates warranty.

## 2 Betrieb in explosionsgefährdeten Bereichen

### 2 Betrieb in explosionsgefährdeten Bereichen (nur bei Option ATEX)

Das Gerät entspricht der **Richtlinie 2014/34/EU** für explosionsgefährdete Bereiche. Der Einsatz ist gemäß den **Gerätekategorien 3 G** (Ex-Atmosphäre Gas) und **3 D** (Ex-Atmosphäre Staub) zulässig.

|                             |                                                                                                                     |                                                                                                  |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| <b>Gerätekategorie 3 G:</b> | - Ex-Kennzeichnung:<br>- Normenkonformität:                                                                         | <b>II 3 G Ex ec IIC T4 Gc</b><br>EN IEC 60079-0:2018<br>EN IEC 60079-7:2015 +A1:2018             |
|                             | - Zündschutzart:<br>- Temperaturklasse:<br>- Gerätegruppe:                                                          | ec<br>T4<br>II                                                                                   |
| <b>Gerätekategorie 3 D:</b> | - Ex-Kennzeichnung:<br>- Normenkonformität:<br>- Schutzprinzip:<br>- Max. Oberflächentemperatur:<br>- Gerätegruppe: | <b>II 3 D Ex tc IIIC T135°C Dc</b><br>EN 60079-31:2014<br>Schutz durch Gehäuse<br>+135 °C<br>III |

Der Einsatz in anderen explosionsgefährdeten Bereichen ist nicht zulässig.

- 2.1 Der maximale **Umgebungstemperaturbereich** für den Einsatz des Gerätes im Ex-Bereich beträgt -20 °C bis +40 °C.
- 2.2 Der Anlagenbetreiber hat zu gewährleisten, dass eine mögliche **Staubablagerung** eine maximale Schichtdicke von **5 mm** nicht überschreitet (gemäß EN 60079-14).
- 2.3 Eine gegebenenfalls an anderen Stellen aufgeführte **UL-Listung gilt nicht für den Einsatz im Ex-Bereich**.
- 2.4 Das Gerät darf nur in Betrieb genommen werden, wenn ...
  - die Angaben auf dem Typenschild des Gerätes mit dem zulässigen Ex-Einsatzbereich vor Ort übereinstimmen (Gerätegruppe, Kategorie, Zone, Temperaturklasse bzw. maximale Oberflächentemperatur),
  - die Angaben auf dem Typenschild des Gerätes mit dem Spannungsnetz übereinstimmen,
  - das Gerät unbeschädigt ist (keine Schäden durch Transport und Lagerung) und
  - sichergestellt ist, dass keine explosionsfähige Atmosphäre, Öle, Säure, Gase, Dämpfe, Strahlungen etc. bei der Montage vorhanden sind.
- 2.5 An Betriebsmitteln, die in explosionsgefährdeten Bereichen eingesetzt werden, darf keine Veränderung vorgenommen werden. Reparaturen dürfen nur durch vom Hersteller autorisierte Stellen ausgeführt werden. **Bei Zuwiderhandlung erlischt die Ex-Zulassung.**
- 2.6 Bei der Montage und Inbetriebnahme ist die Norm EN 60079-14 zu beachten.



**Das Gerät ist entsprechend den Angaben in der Montage- und Betriebsanleitung zu betreiben. Die für die Verwendung bzw. den geplanten Einsatzzweck zutreffenden Gesetze, Richtlinien und Normen sind zu beachten.**

## 2 Operation in potentially explosive environments (only with option ATEX)

The device complies with the **directive 2014/34/EU** for potentially explosive atmospheres. It can be used in accordance with **equipment categories 3 G** (explosive gas atmosphere) and **3 D** (explosive dust atmosphere).

|                                |                             |                                                      |
|--------------------------------|-----------------------------|------------------------------------------------------|
| <b>Equipment category 3 G:</b> | - Ex labeling:              | <b>II 3 G Ex ec IIC T4 Gc</b>                        |
|                                | - Conforms to standard:     | EN IEC 60079-0:2018<br>EN IEC 60079-7-2015 + A1:2018 |
|                                | - Type of protection:       | ec                                                   |
|                                | - Temperature class:        | T4                                                   |
| <b>Equipment category 3 D:</b> | - Group of equipment:       | II                                                   |
|                                | - Ex labeling:              | <b>II 3 D Ex tc IIIC T135°C Dc</b>                   |
|                                | - Conforms to standard:     | EN 60079-31:2014                                     |
|                                | - Protective principle:     | Protection by enclosure                              |
|                                | - Max. surface temperature: | +135 °C                                              |
|                                | - Group of equipment:       | III                                                  |

The operation in other explosive atmospheres is not permissible.

- 2.1** In Ex areas the device must only be used within the **ambient temperature range** from -20 °C to +40 °C.
- 2.2** The plant operator must ensure that any possible **dust deposit** does not exceed a thickness of **5 mm** (in accordance with EN 60079-14).
- 2.3** An **UL listing** that may be stated elsewhere is **not valid for use in explosive environments**.
- 2.4** Operation of the device is only permissible when ...
- the details on the type label of the device match the on-site conditions for the permissible Ex area in use (group of equipment, equipment category, zone, temperature class or maximum surface temperature),
  - the details on the type label of the device match the electrical supply network,
  - the device is undamaged (no damage resulting from transport or storage), and
  - it has been checked that there is no explosive atmosphere, oils, acids, gases, vapors, radiation etc. present when mounting.
- 2.5** It is not permissible to make any alteration to equipment that is used in potentially explosive environments. Repairs may only be carried out by authorized authorities provided by the manufacturer. **Contravention invalidates the EX approval.**
- 2.6** Attend the norm EN 60079-14 during mount and operation.



**The device must be operated in accordance with the stipulations of the mounting and operating instructions. The relevant laws, regulations and standards for the planned application must be observed.**



### 3 Sicherheitshinweise

### 3 Sicherheitshinweise



#### 3.1 Verletzungsgefahr durch rotierende Wellen

Haare und Kleidungsstücke können von rotierenden Wellen erfasst werden.

- Vor allen Arbeiten alle Betriebsspannungen ausschalten und Maschinen stillsetzen.

#### 3.2 Zerstörungsgefahr durch elektrostatische Aufladung

Die elektronischen Bauteile im Gerät sind empfindlich gegen hohe Spannungen.

- Steckkontakte und elektronische Komponenten nicht berühren.
- Ausgangsklemmen vor Fremdspannungen schützen.
- Maximale Betriebsspannung nicht überschreiten.

#### 3.3 Zerstörungsgefahr durch mechanische Überlastung

Eine starre Befestigung kann zu Überlastung durch Zwangskräfte führen.

- Die Beweglichkeit des Gerätes niemals einschränken.  
Unbedingt die Montagehinweise beachten.
- Die vorgegebenen Abstände und/oder Winkel unbedingt einhalten.

#### 3.4 Zerstörungsgefahr durch mechanischen Schock

Starke Erschütterungen, z. B. Hammerschläge, können zur Zerstörung der Abtastung führen.

- Niemals Gewalt anwenden.  
Bei sachgemäßer Montage lässt sich alles leichtgängig zusammenfügen.
- Für die Demontage geeignetes Abziehwerkzeug benutzen.

#### 3.5 Zerstörungsgefahr durch Verschmutzung

Schmutz kann im Gerät zu Kurzschlüssen und zur Beschädigung der Abtastung führen.

- Während aller Arbeiten am Gerät auf absolute Sauberkeit achten.
- Niemals Öl oder Fett in das Innere des Gerätes gelangen lassen.

#### 3.6 Zerstörungsgefahr durch klebende Flüssigkeiten

Klebende Flüssigkeiten können die Abtastung und die Kugellager beschädigen. Die Demontage eines mit der Achse verklebten Gerätes kann zu dessen Zerstörung führen.

#### 3.7 Explosionsgefahr (nur bei Option ATEX)

Das Gerät darf in explosionsgefährdeten Bereichen der Kategorien 3 D und 3 G eingesetzt werden. Der Betrieb in anderen explosionsgefährdeten Bereichen ist nicht zulässig.



### 3 Security indications



#### 3.1 Risk of injury due to rotating shafts

*Hair and clothes may become tangled in rotating shafts.*

- Before all work switch off all voltage supplies and ensure machinery is stationary.

#### 3.2 Risk of destruction due to electrostatic charge

*Electronic parts contained in the device are sensitive to high voltages.*

- Do not touch plug contacts or electronic components.
- Protect output terminals against external voltages.
- Do not exceed maximum voltage supply.

#### 3.3 Risk of destruction due to mechanical overload

*Rigid mounting may give rise to constraining forces.*

- Never restrict the freedom of movement of the device.  
The mounting instructions must be followed.
- It is essential that the specified clearances and/or angles are observed.

#### 3.4 Risk of destruction due to mechanical shock

*Violent shocks, e. g. due to hammer impacts, can lead to the destruction of the sensing system.*

- Never use force.  
Mounting is simple when correct procedure is followed.
- Use suitable puller for dismounting.

#### 3.5 Risk of destruction due to contamination

*Dirt penetrating inside the device can cause short circuits and damage the sensing system.*

- Absolute cleanliness must be maintained when carrying out any work on the device.
- Never allow lubricants to penetrate the device.

#### 3.6 Risk of destruction due to adhesive fluids

*Adhesive fluids can damage the sensing system and the ball bearings. Dismounting a device, secured to a shaft by adhesive may lead to the destruction of the device.*

#### 3.7 Explosion risk (only with option ATEX)

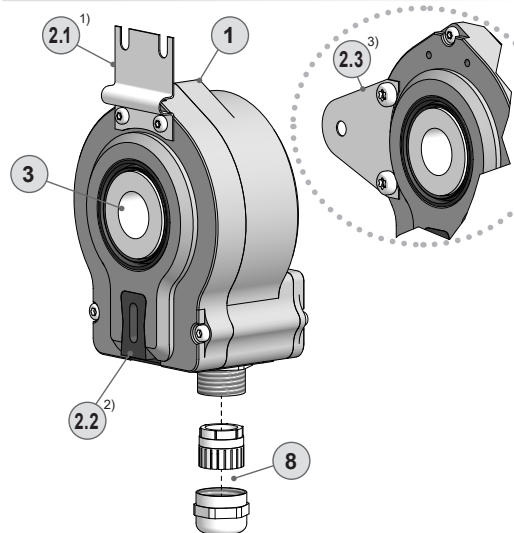
*You can use the device in areas with explosive atmospheres of category 3 D and 3 G. The operation in other explosive atmospheres is not permissible.*



## 4 Vorbereitung / Preparation

### 4 Vorbereitung

#### 4.1 Lieferumfang



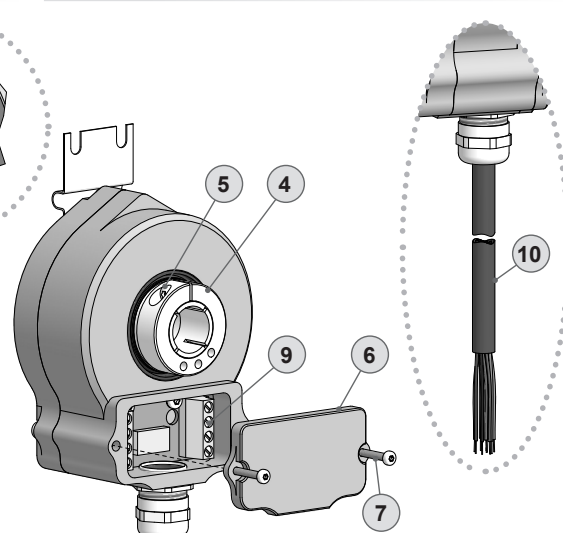
- 1 Gehäuse
- 2.1<sup>1)</sup> Drehmomentblech
- 2.2<sup>2)</sup> Aufnahmeschlitz für Drehmomentstift
- 2.3<sup>3)</sup> Stützblech für Drehmomentstütze
- 3 Durchgehende Hohlwelle
- 4 Klemmring
- 5 Torxschraube M3x12 mm
- 6 Klemmendeckel mit Dichtung
- 7 Torxschraube M3x12 mm
- 8 Kabelverschraubung M16x1,5 mm für Kabel ø5...9 mm
- 9 Anschlussklemmen, siehe Abschnitt 7.3.
- 10 Option Anschlusskabel, siehe Abschnitt 7.4. (je nach Version)

Je nach Version:

- <sup>1)</sup> Montage mit Drehmomentblech
- <sup>2)</sup> Montage mit einem Drehmomentstift
- <sup>3)</sup> Montage mit einer Drehmomentstütze

### 4 Preparation

#### 4.1 Scope of delivery

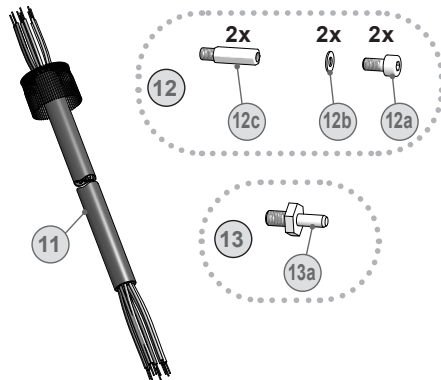


- 1 Housing
- 2.1<sup>1)</sup> Torque sheet
- 2.2<sup>2)</sup> Slot for torque pin
- 2.3<sup>3)</sup> Support plate for torque arm
- 3 Through hollow shaft
- 4 Clamping ring
- 5 Torx screw M3x12 mm
- 6 Terminal cover with seal
- 7 Torx screw M3x12 mm
- 8 Cable gland M16x1.5 mm for cable ø5...9 mm
- 9 Connecting terminal, see section 7.3.
- 10 Option connecting cable, see section 7.4. (depending on version)

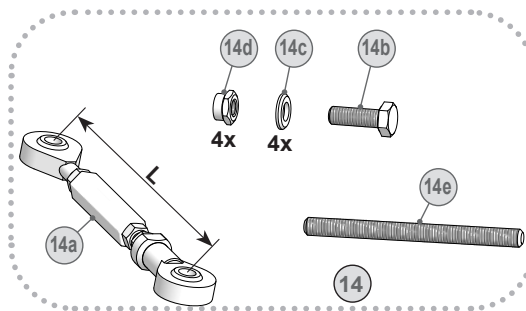
Depending on version:

- <sup>1)</sup> Mounting with torque sheet
- <sup>2)</sup> Mounting with a torque pin
- <sup>3)</sup> Mounting with a torque arm

#### 4.2 Zur Montage erforderlich (nicht im Lieferumfang enthalten)



#### 4.2 Required for mounting (not included in scope of delivery)



(11) Sensorkabel HEK 8, als Zubehör erhältlich, siehe Abschnitt 7.5.

(12) Befestigungen zur Montage des Gerätes mit Drehmomentblech, siehe auch (2.1)\*:

(12a) Befestigungsschraube M3, ISO 4762

(12b) Scheibe A3, ISO 7089

(12c) Abstandsbolzen mit M3-Gewinde

(13) Befestigungen zur Montage des Gerätes mit Aufnahmeschlitz und einem Drehmomentstift, siehe auch (2.2)\*:

(13a) Drehmomentstift

(14) Befestigungen zur Montage des Gerätes mit einer Drehmomentstütze, siehe auch (2.3)\*:

(14a) Drehmomentstütze, als Zubehör erhältlich, Länge L und Bestellnummer s. Abschnitt 9.

(14b) Sechskantschraube M6x18 mm, ISO 4017

(14c) Scheibe B6.4, ISO 7090

(14d) Selbstsichernde Mutter M6, ISO 10511

(14e) Gewindestange M6, Länge variabel

\* Siehe Seite 7

(11) Sensor cable HEK 8, available as accessory, see section 7.5.

(12) Attachments for mounting the device with torque sheet, see also (2.1)\*:

(12a) Fixing screw M3, ISO 4762

(12b) Washer A3, ISO 7089

(12c) Distance bolt for thread M3

(13) Attachments for mounting the device with a slot and a torque pin, see also (2.2)\*:

(13a) Torque pin

(14) Attachments for mounting the device with a torque arm, see also (2.3)\*:

(14a) Torque arm, available as accessory, length L and order number see section 9.

(14b) Hexagon screw M6x18 mm, ISO 4017

(14c) Washer B6.4, ISO 7090

(14d) Self-locking nut M6, ISO 10511

(14e) Thread rod M6, length variable

\* See page 7

## 4 Vorbereitung / Preparation

### 4.3 Erforderliches Werkzeug (nicht im Lieferumfang enthalten)

Montage mit Drehmomentblech (2.1)\*

 3 mm

 5, 10 (2x) und 17 mm

 TX 10

Montage mit Drehmomentstift (2.2)\*

 10 (2x) und 17 mm

 TX 10

Montage mit Drehmomentstütze (2.3)\*

 10 (2x) und 17 mm

 TX 10

(15) Werkzeugset als Zubehör erhältlich:  
Bestellnummer 11068265

### 4.3 Required tools (not included in scope of delivery)

Mounting with torque support plate (2.1)\*

 3 mm

 5, 10 (2x) and 17 mm

 TX 10

Mounting with torque pin (2.2)\*

 10 (2x) and 17 mm

 TX 10

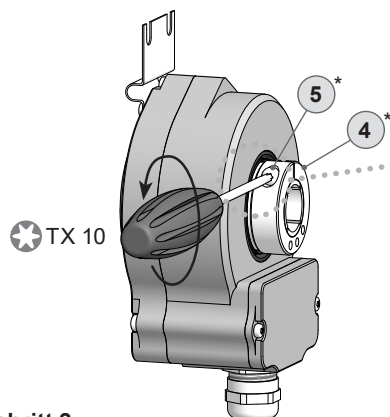
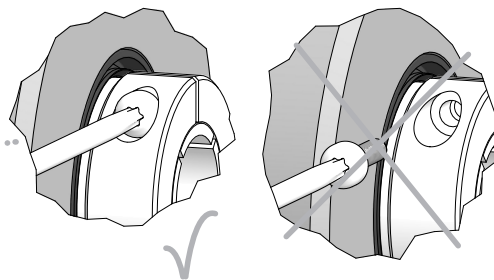
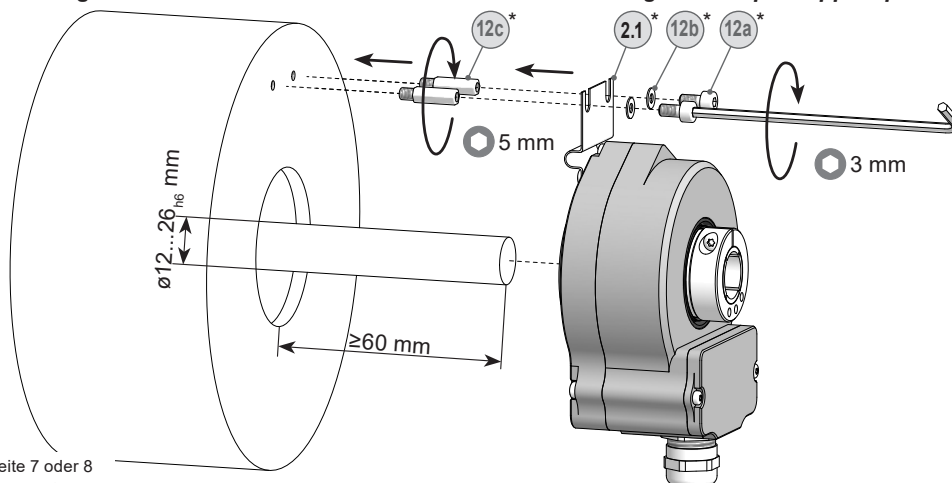
Mounting with torque arm (2.3)\*

 10 (2x) and 17 mm

 TX 10

(15) Tool kit available as accessory:  
Order number 11068265

\* Siehe Seite 7  
See page 7

**5 Montage****5.1 Schritt 1****5 Mounting****5.1 Step 1****5.2 Schritt 2****5.2.1 Montage mit Drehmoment-Stützblech**

\* Siehe Seite 7 oder 8  
See page 7 or 8

**5.2 Step 2****5.2.1 Mounting with torque support plate**

**Antriebswelle einfetten.**



**Lubricate drive shaft.**



Die Antriebswelle sollte einen möglichst kleinen Rundlauffehler aufweisen, da dieser zu einem Winkelfehler führen kann, siehe Abschnitt 5.2.3.4. Rundlauffehler verursachen Vibrationen, die die Lebensdauer des Gerätes verkürzen können.

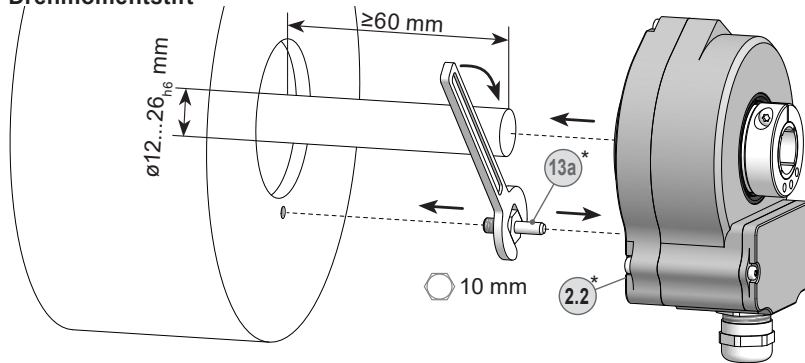


The drive shaft should have as less runout as possible because this can otherwise result in an angle error, see section 5.2.3.4. Runouts can cause vibrations, which can shorten the service life of the device.

5 Montage / Mounting

5.2 Schritt 2

5.2.2 Montage mit Aufnahmeschlitz für Drehmomentstift



Antriebswelle einfetten.



Lubricate drive shaft.



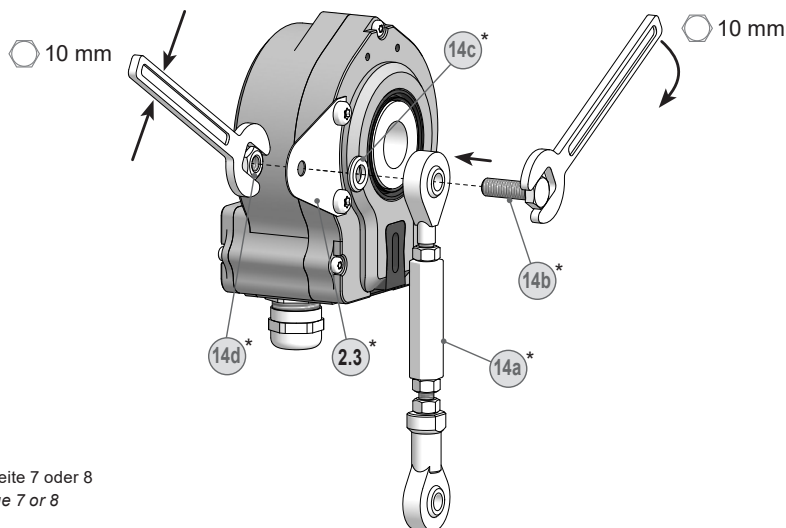
Die Antriebswelle sollte einen möglichst kleinen Rundlauffehler aufweisen, da dieser zu einem Winkelfehler führen kann, siehe Abschnitt 5.2.3.4. Rundlauffehler verursachen Vibrationen, die die Lebensdauer des Gerätes verkürzen können.



The drive shaft should have as less runout as possible because this can otherwise result in an angle error, see section 5.2.3.4. Runouts can cause vibrations, which can shorten the service life of the device.

5.2.3 Montage mit Stützblech und Drehmomentstütze

5.2.3.1 Schritt 2a



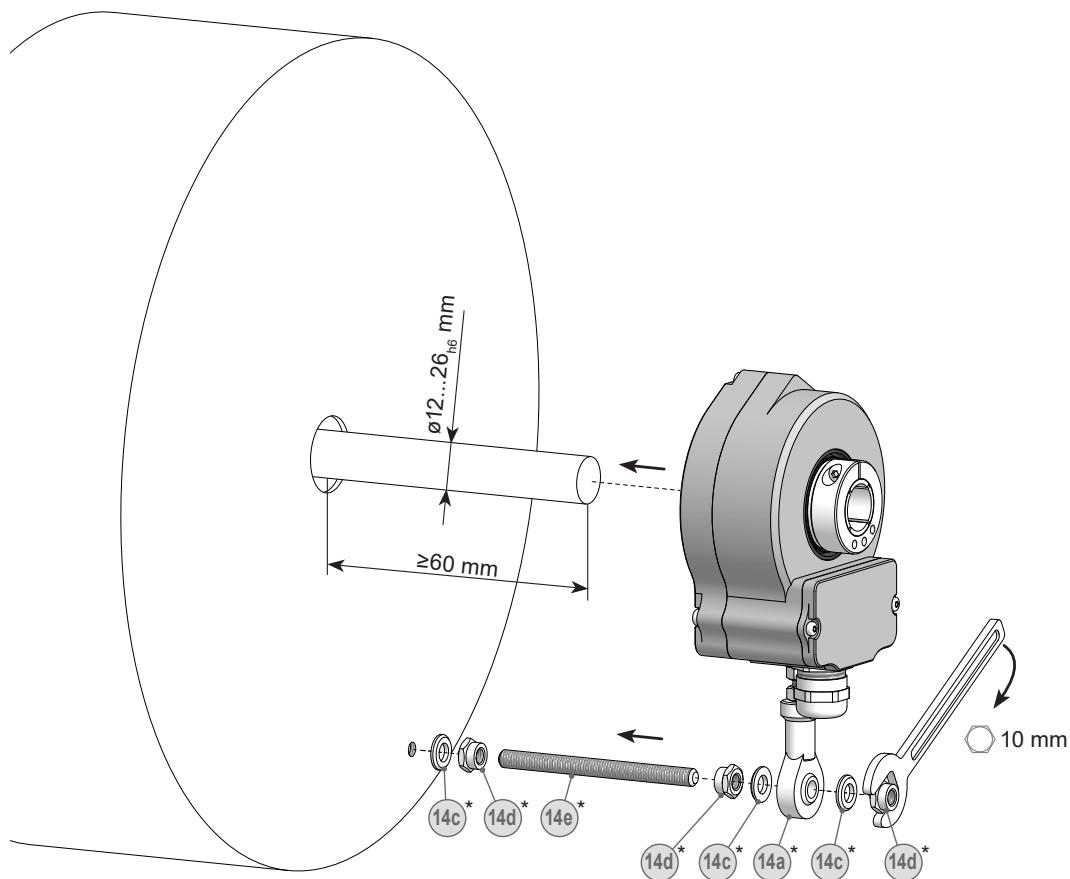
\* Siehe Seite 7 oder 8  
See page 7 or 8

5.2.3 Mounting with support plate and torque arm

5.2.3.1 Step 2a

## 5.2.3.2 Schritt 2b

## 5.2.3.2 Step 2b



\* Siehe Seite 8  
See page 8



**Antriebswelle einfetten.**



**Lubricate drive shaft.**



Die Antriebswelle sollte einen möglichst kleinen Rundlauffehler aufweisen, da dieser zu einem Winkelfehler führen kann, siehe Abschnitt 5.2.3.4. Rundlauffehler verursachen Vibrationen, die die Lebensdauer des Gerätes verkürzen können.



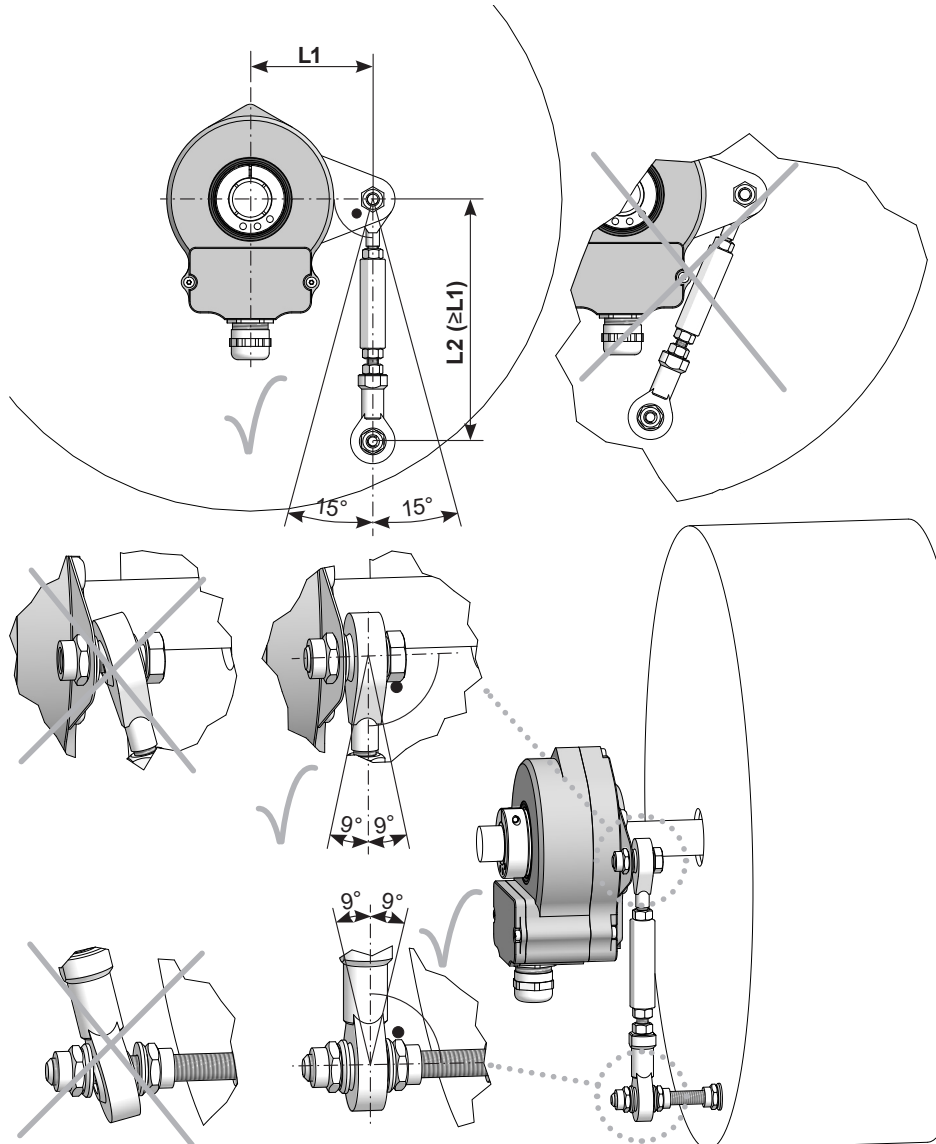
The drive shaft should have as less runout as possible because this can otherwise result in an angle error, see section 5.2.3.4. Runouts can cause vibrations, which can shorten the service life of the device.



5 Montage / Mounting

5.2.3.3 Schritt 2c

5.2.3.3 Step 2c



Die Montage der Drehmomentstütze sollte spielfrei erfolgen. Ein Spiel von beispielsweise  $\pm 0,03$  mm entspricht einem Rundlauffehler des Gerätes von  $0,06$  mm, was zu einem großen Winkelfehler führen kann, siehe Abschnitt 5.2.3.4.



The torque arm should be mounted free from clearance. A play of just  $\pm 0.03$  mm, results in a runout of the device of  $0.06$  mm. That may lead to a large angle error, see section 5.2.3.4.

#### 5.2.3.4 Hinweis zur Vermeidung von Messfehlern

Für einen einwandfreien Betrieb des Gerätes ist eine korrekte Montage, insbesondere auch der Drehmomentstütze, notwendig, wie beschrieben in Abschnitt 5.1 und 5.2.3.1 bis 5.2.3.3.

Der Rundlauffehler der Antriebswelle sollte möglichst nicht mehr als 0,2 mm (0,03 mm empfohlen) betragen, da hierdurch Winkelfehler verursacht werden.

Solche Winkelfehler können durch einen größeren Abstand **L1** reduziert werden<sup>4)</sup>. Dabei ist zu beachten, dass die Länge **L2** der Drehmomentstütze, siehe Abschnitt 5.2.3.3, mindestens gleich **L1** sein sollte<sup>5)</sup>.

Der Winkelfehler kann wie folgt berechnet werden:

$$\Delta\rho_{\text{mech}} = \pm 90^\circ/\pi \cdot R/L1$$

mit **R**:

Rundlauffehler in mm

**L1**:

Abstand der Drehmomentstütze zum Gerätemittelpunkt in mm

#### Berechnungsbeispiel:

Für **R** = 0,06 mm und **L1** = 55 mm ergibt sich ein Winkelfehler  $\Delta\rho_{\text{mech}}$  von  $\pm 0,031^\circ$ .

#### 5.2.3.4 How to prevent measurement errors

To ensure that the device operates correctly, it is necessary to mount it accurately as described in section 5.1 and 5.2.3.1 to 5.2.3.3, which includes correct mounting of the torque arm.

The radial runout of the drive shaft should not exceed 0.2 mm (0.03 mm recommended), if at all possible, to prevent an angle error.

An angle error may be reduced by increasing the length of **L1**<sup>4)</sup>. Make sure that the length **L2** of the torque arm, see section 5.2.3.3, is at least equal to **L1**<sup>5)</sup>.

The angle error can be calculated as follows:

$$\Delta\rho_{\text{mech}} = \pm 90^\circ/\pi \cdot R/L1$$

with **R**:

Radial runout in mm

**L1**:

Distance of the torque arm to the center point of the device in mm

#### Example of calculation:

For **R** = 0.06 mm and **L1** = 55 mm the resulting angle error  $\Delta\rho_{\text{mech}}$  equals  $\pm 0.031^\circ$ .

<sup>4)</sup> Auf Anfrage sind hierzu verschiedene Stützbleche für die Drehmomentstütze erhältlich.

<sup>5)</sup> Wenn **L2** < **L1** muss mit der Länge **L2** gerechnet werden.

<sup>4)</sup> For this different support plates for the torque arm are available on request.

<sup>5)</sup> If **L2** < **L1**, **L2** must be used in the calculation formula.



**Weitere Informationen erhalten Sie unter der Telefon-Hotline +49 (0)30 69003-111**

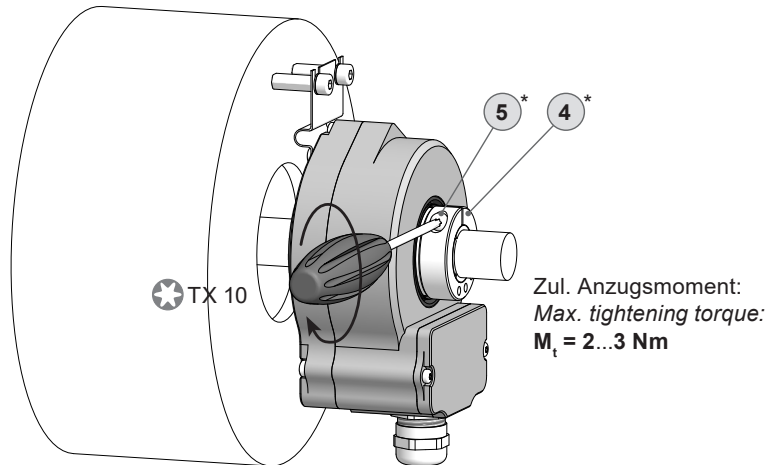


**For more information, call the telephone hotline at +49 (0)30 69003-111**

5 Montage / Mounting

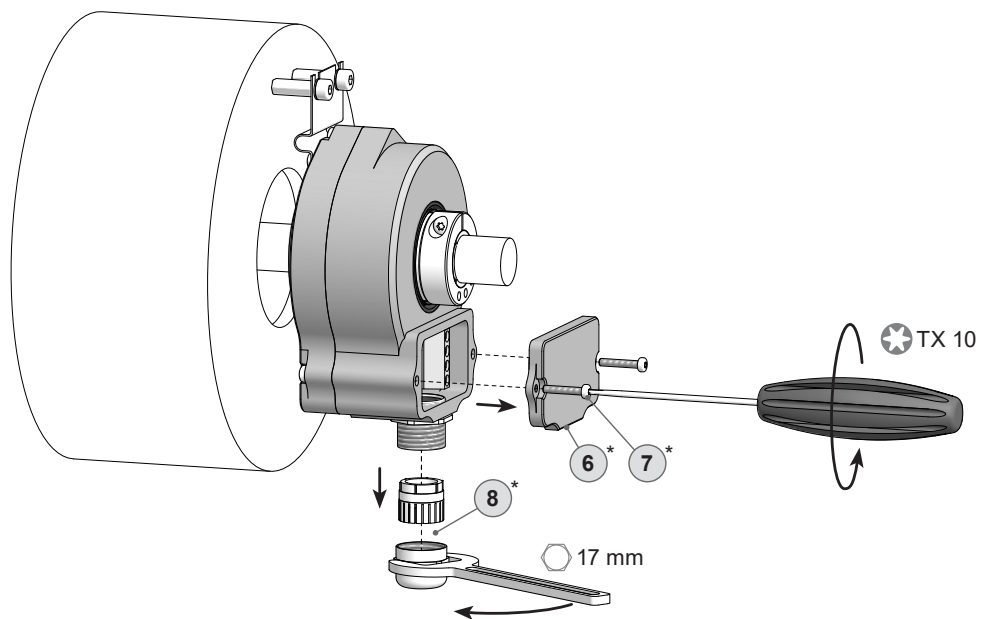
5.3 Schritt 3

5.3 Step 3



5.4 Schritt 4

5.4 Step 4

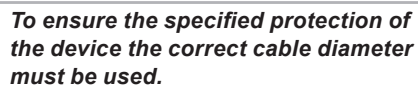


\* Siehe Seite 7  
See page 7

### 5.5 Step 5



**Zur Gewährleistung der angegebenen Schutzart sind nur geeignete Kabel-durchmesser zu verwenden.**

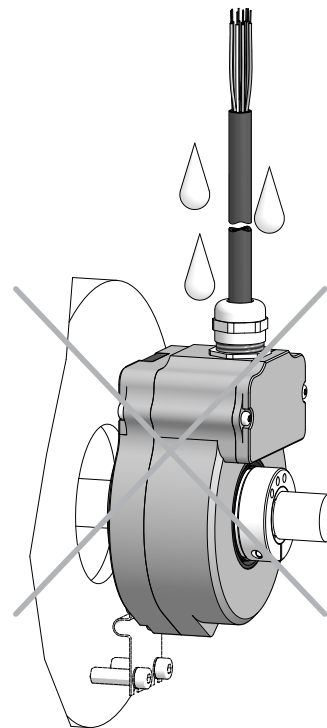
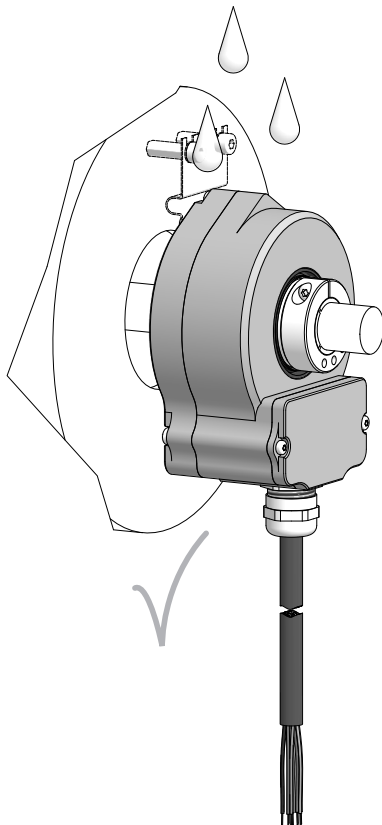


16

5 Montage / Mounting

5.6 Montagehinweis

5.6 Mounting instruction

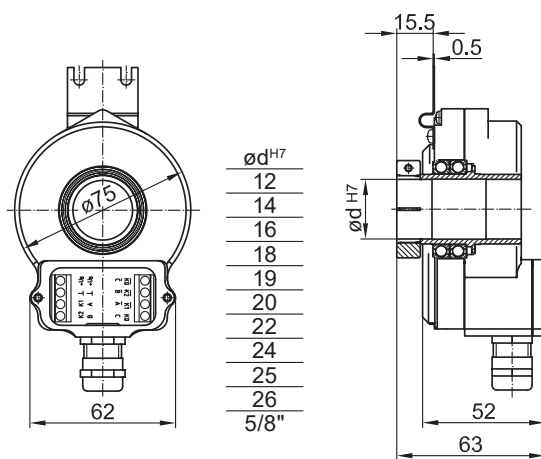


**i** Wir empfehlen, das Gerät so zu montieren, dass der Kabelanschluss keinem direkten Wassereintritt ausgesetzt ist.

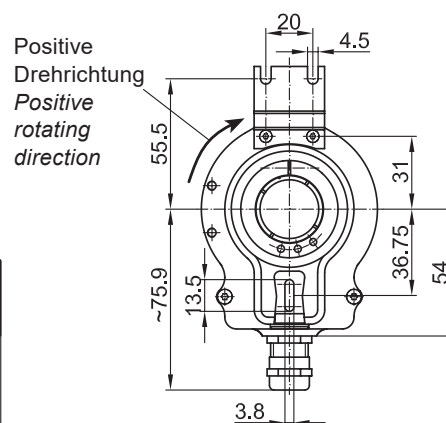
**i** It is recommended to mount the device with cable connection facing downward and being not exposed to water.

**6 Abmessungen****6.1 Ohne Hybridlager****6.1.1 Durchgehende Hohlwelle mit Drehmomentblech und Aufnahmeschlitz für Drehmomentstift****6.1.1.1 Klemmring vorne**

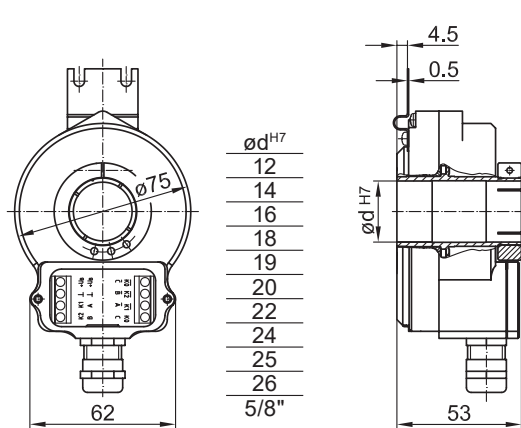
(73275)

**6 Dimensions****6.1 Without hybrid bearings****6.1.1 Through hollow shaft with torque sheet and slot for torque pin****6.1.1.1 Clamping ring in front**

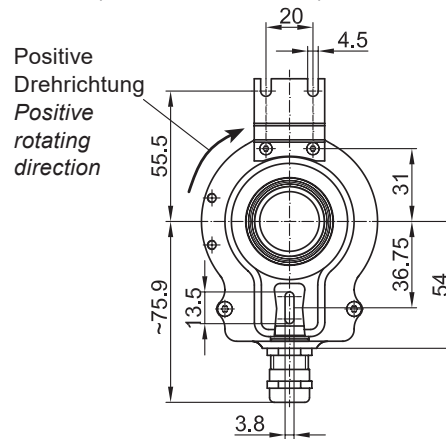
(73275)

**6.1.1.2 Klemmring hinten**

(73279, 73285, 73289)

**6.1.1.2 Clamping ring rear**

(73279, 73285, 73289)



Alle Abmessungen in Millimeter (wenn nicht anders angegeben)  
All dimensions in millimeters (unless otherwise stated)

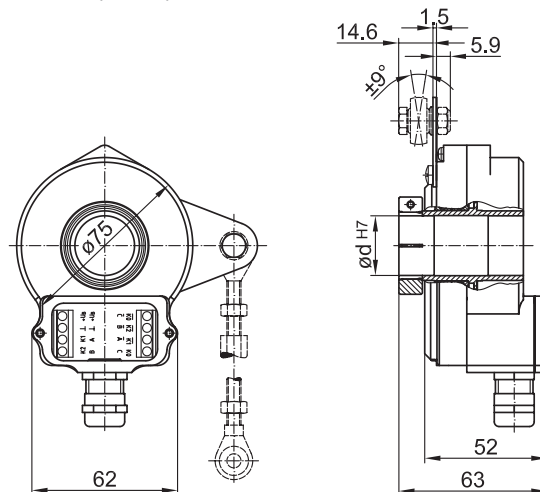
6 Abmessungen / Dimensions

6.1 Ohne Hybridlager

6.1.2 Mit Stützblech für eine Drehmomentstütze und Aufnahmeschlitz für Drehmomentstift

6.1.2.1 Klemmring vorne

(73274)

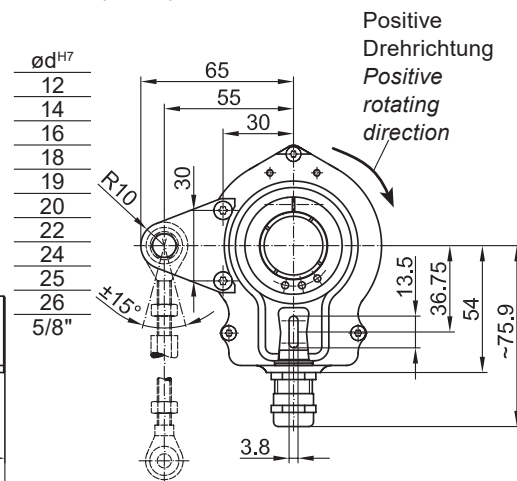


6.1 Without hybrid bearings

6.1.2 With support plate for torque arm and slot for torque pin

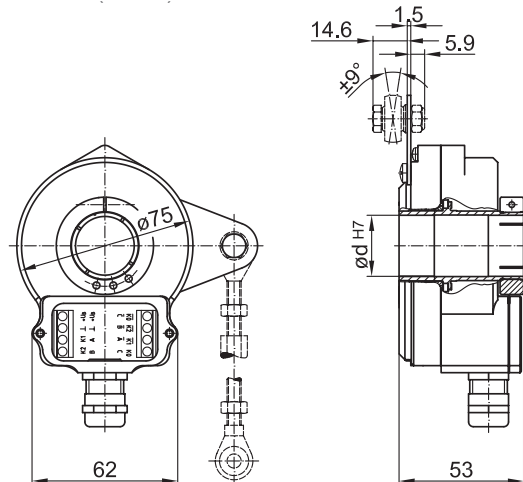
6.1.2.1 Clamping ring in front

(73274)



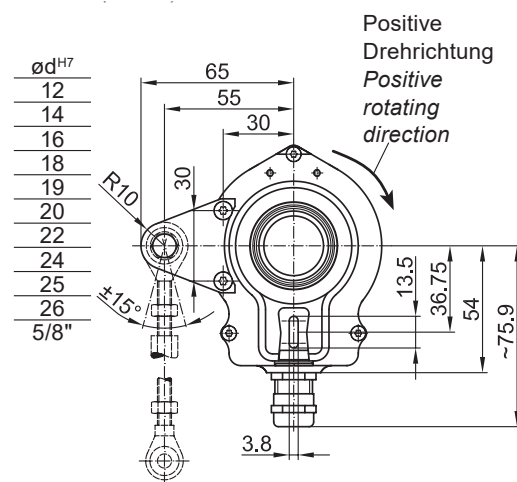
6.1.2.2 Klemmring hinten

(73282)



6.1.2.2 Clamping ring rear

(73282)



Alle Abmessungen in Millimeter (wenn nicht anders angegeben)  
All dimensions in millimeters (unless otherwise stated)

### 6.1.3 Mit langem Stützblech für eine Drehmomentstütze und Aufnahmeschlitz für Drehmomentstift

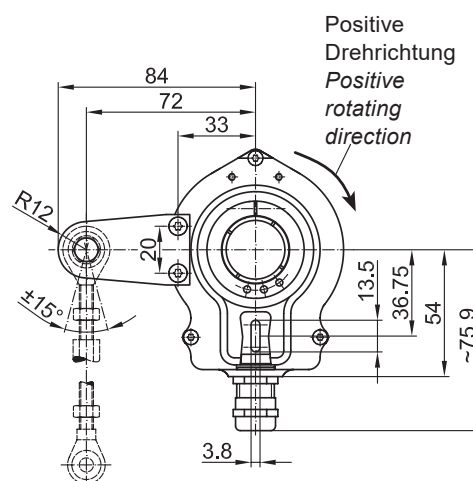
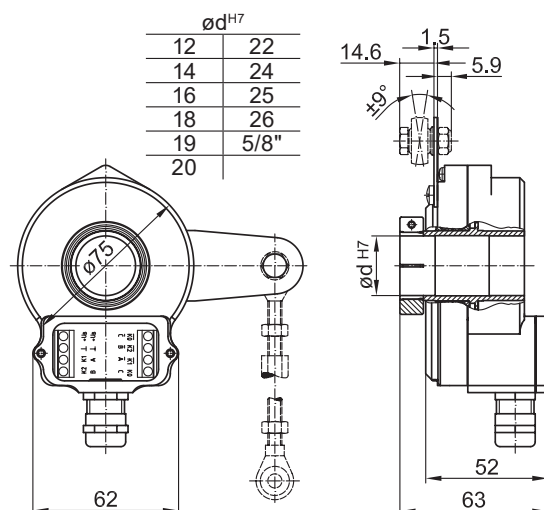
### 6.1.3 With long support plate for torque arm and slot for torque pin

#### 6.1.3.1 Klemmring vorne

#### 6.1.3.1 Clamping ring in front

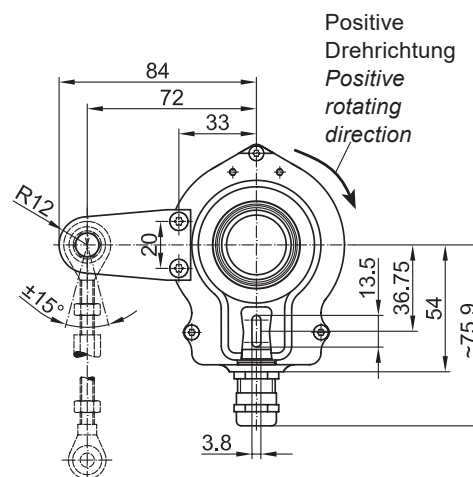
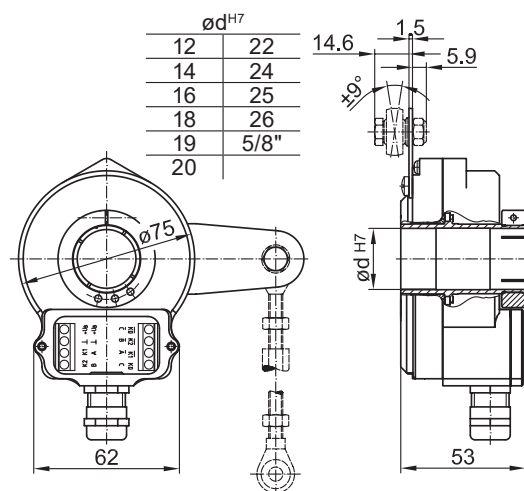
(73270)

(73270)



#### 6.1.3.2 Klemmring hinten

#### 6.1.3.2 Clamping ring rear



Alle Abmessungen in Millimeter (wenn nicht anders angegeben)  
All dimensions in millimeters (unless otherwise stated)



## 6 Abmessungen / Dimensions

## 6.2 Mit Hybridlager

### 6.2.1 Mit langem Stützblech für eine Drehmomentstütze

#### 6.2.1.1 Klemmring vorne

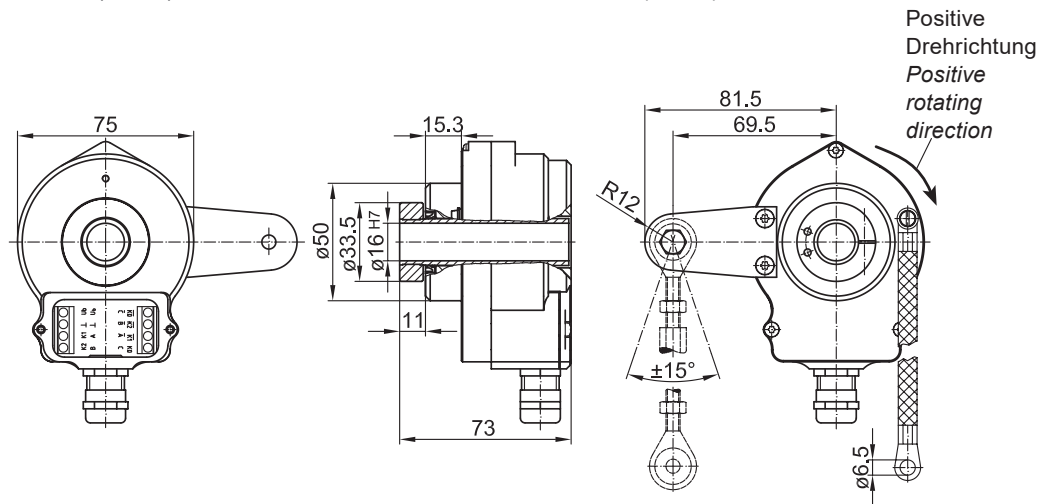
(73287)

## 6.2 With hybrid bearings

### 6.2.1 With long support plate for torque arm

#### 6.2.1.1 Clamping ring in front

(73287)



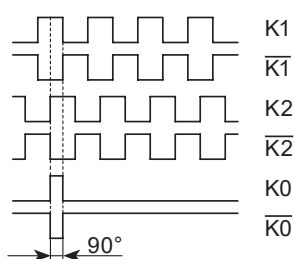
Alle Abmessungen in Millimeter (wenn nicht anders angegeben)  
*All dimensions in millimeters (unless otherwise stated)*

**7 Elektrischer Anschluss****7 Electrical connection****7.1 Beschreibung der Anschlüsse****7.1 Terminal significance**

|                                                        |                                                                                                                 |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| +UB; +                                                 | Betriebsspannung<br><i>Voltage supply</i>                                                                       |
| ⊥; ⚡; GND; 0V                                          | Masseanschluss<br><i>Ground</i>                                                                                 |
| ⊥; ⚡                                                   | Erdungsanschluss (Gehäuse)<br><i>Earth ground (housing)</i>                                                     |
| K1; A; A+                                              | Ausgangssignal Kanal 1<br><i>Output signal channel 1</i>                                                        |
| $\overline{K1}$ ; $\overline{A}$ ; A-                  | Ausgangssignal Kanal 1 invertiert<br><i>Output signal channel 1 inverted</i>                                    |
| K2; B; B+                                              | Ausgangssignal Kanal 2 (90° versetzt zu Kanal 1)<br><i>Output signal channel 2 (offset by 90° to channel 1)</i> |
| $\overline{K2}$ ; $\overline{B}$ ; B-                  | Ausgangssignal Kanal 2 invertiert<br><i>Output signal channel 2 inverted</i>                                    |
| K0; C; R; R+                                           | Nullimpuls (Referenzsignal)<br><i>Zero pulse (reference signal)</i>                                             |
| $\overline{K0}$ ; $\overline{C}$ ; $\overline{R}$ ; R- | Nullimpuls invertiert<br><i>Zero pulse inverted</i>                                                             |

**7.2 Ausgangssignale****7.2 Output signals**

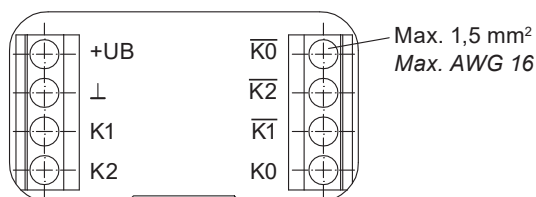
Signalfolge bei positiver Drehrichtung,  
siehe Abschnitt 6.  
*Sequence for positive rotating direction,  
see section 6.*

**7.3 Klemmenbelegung****7.3 Terminal assignment****Ansicht X**

Anschlussklemmen,  
siehe Abschnitt 5.5.

**View X**

Connecting terminal,  
see section 5.5.



**Betriebsspannung nicht auf Ausgänge legen! Zerstörungsgefahr!**

Spannungsabfälle in langen Leitungen berücksichtigen (Ein- und Ausgänge).



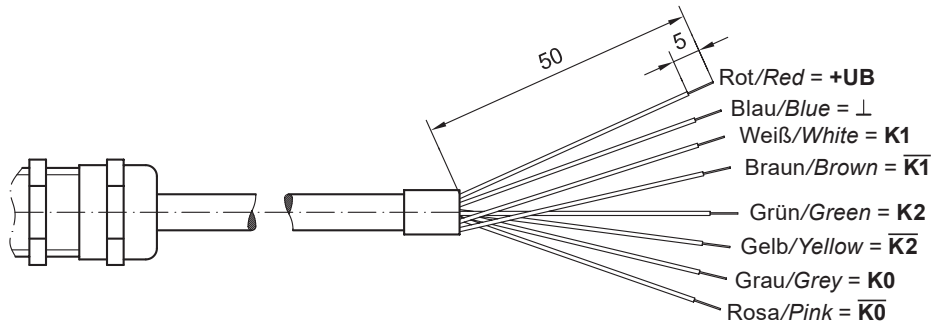
**Do not connect voltage supply to outputs! Danger of damage!**

Please, beware of possible voltage drop in long cable leads (inputs and outputs).

7 Elektrischer Anschluss / Electrical connection

7.4 Option Anschlusskabel: Kabelbelegung

7.4 Option connecting cable: Cable assignment



7.5 Sensorkabel HEK 8 (Zubehör)

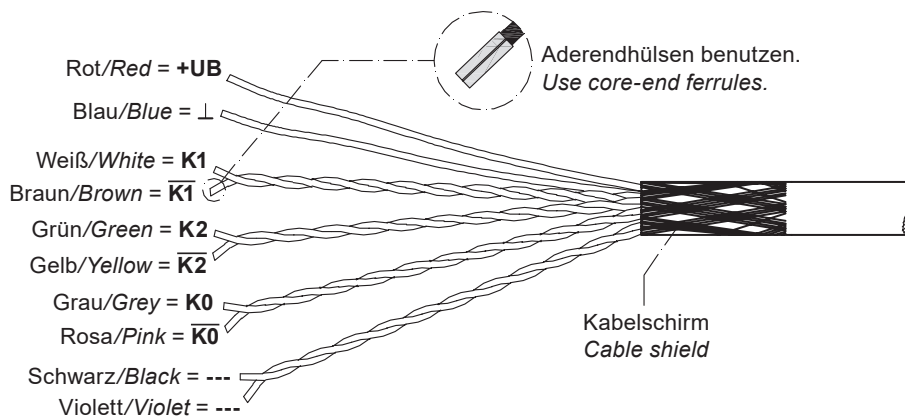
7.5 Sensor cable HEK 8 (accessory)

Es wird empfohlen, das **Baumer Hübner Sensorkabel HEK 8** zu verwenden oder ersatzweise ein geschirmtes, paarig verdrilltes Kabel. Das Kabel sollte in einem Stück und getrennt von Stromkabeln verlegt werden.

**Baumer Hübner sensor cable HEK 8** is recommended. As a substitute a shielded twisted pair cable should be used. Continuous wiring without any splices or couplings should be used. Separate signal cables from power cables.

Kabelabschluss:  
HTL: 1...3 kΩ  
TTL: 120 Ω

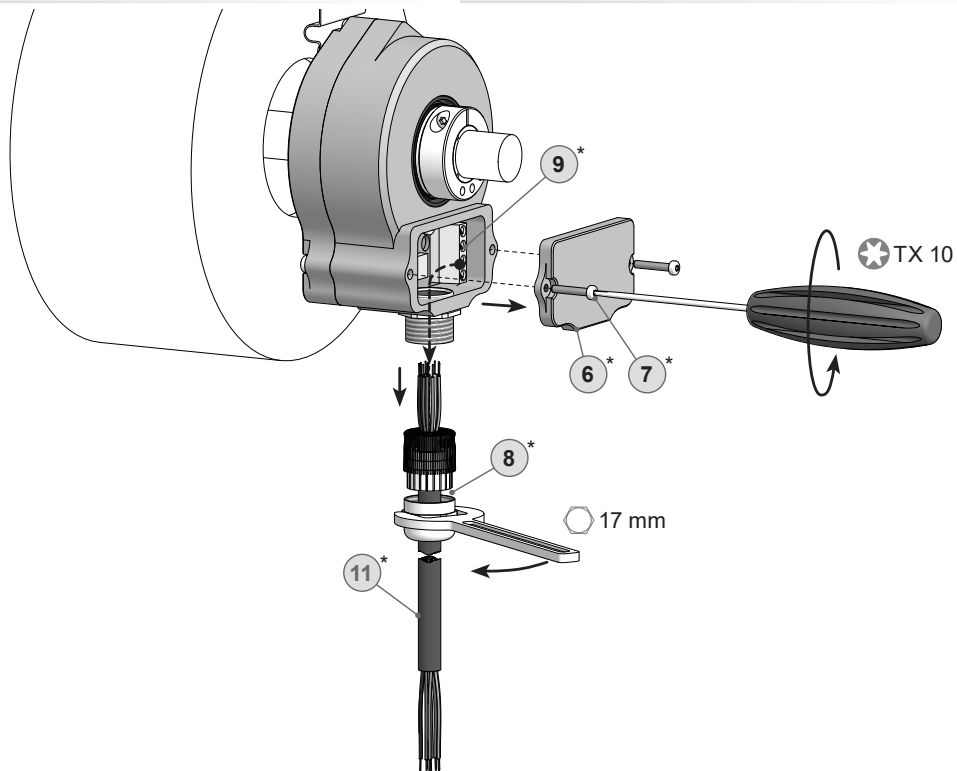
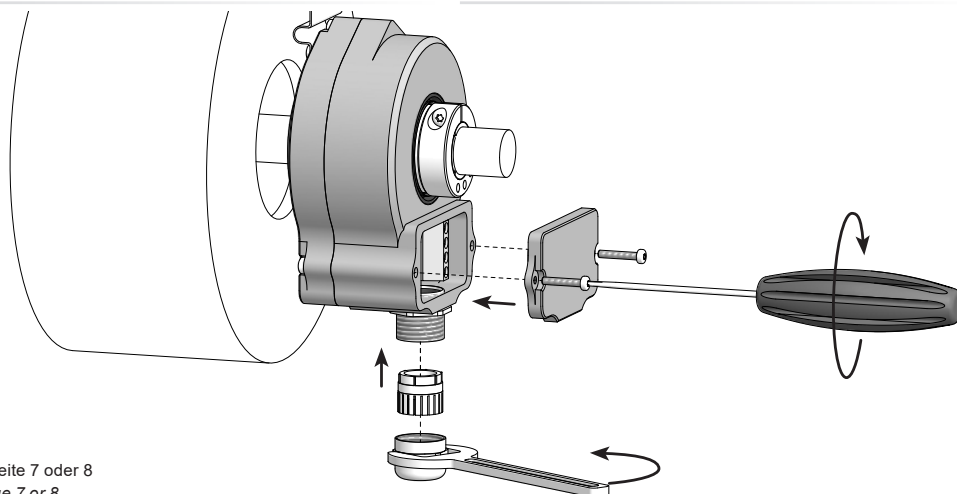
Cable terminating resistance:  
HTL: 1...3 kΩ  
TTL: 120 Ω



**Betriebsspannung nicht auf Ausgänge legen! Zerstörungsgefahr!**  
Spannungsabfälle in langen Leitungen berücksichtigen (Ein- und Ausgänge).



**Do not connect voltage supply to outputs! Danger of damage!**  
Please, beware of possible voltage drop in long cable leads (inputs and outputs).

**8 Demontage****8.1 Schritt 1****8 Dismounting****8.1 Step 1****8.2 Schritt 2**

\* Siehe Seite 7 oder 8  
See page 7 or 8

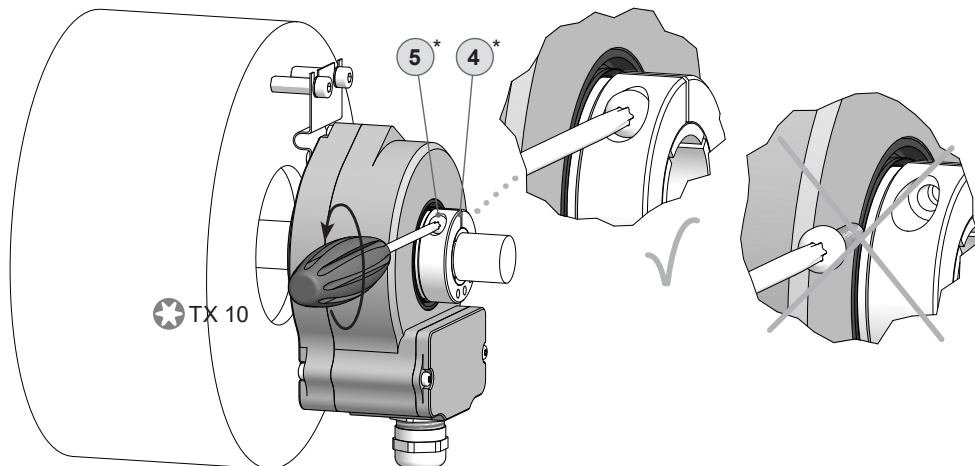
MB010T1 - 11173563 Baumer\_HOG75ZYL\_T1\_DE\_EN\_202209\_MI\_11173563 (22A3)

24

8 Demontage / Dismounting

8.3 Schritt 3

8.3.1 Demontage mit Drehmomentblech und/oder Aufnahmeschlitz für Drehmomentstift

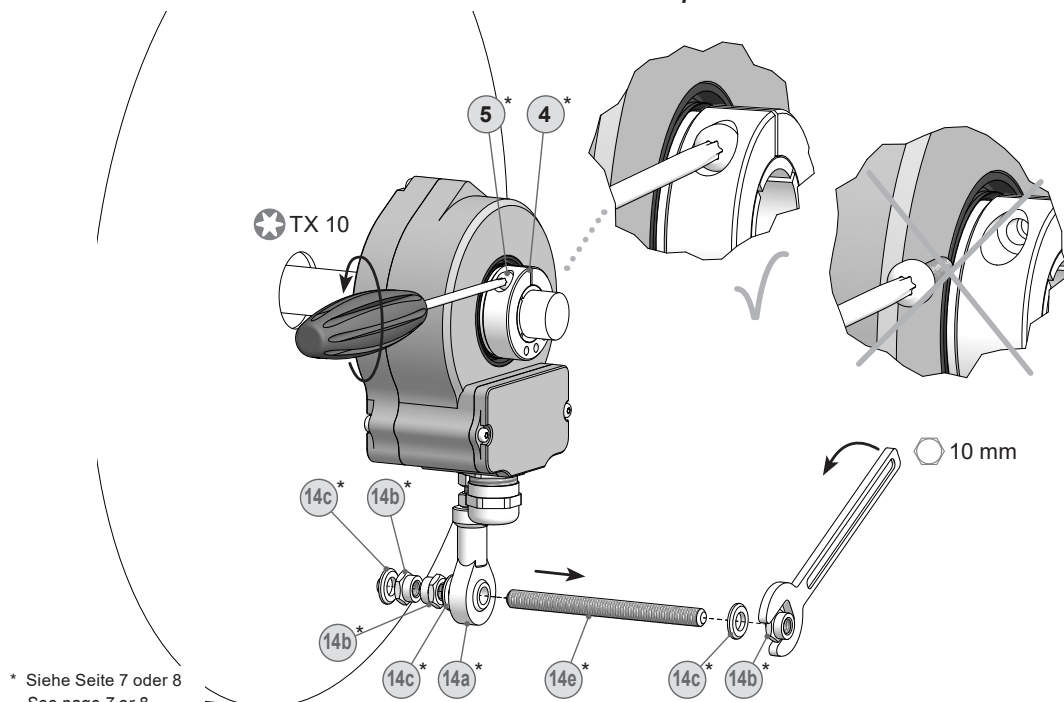


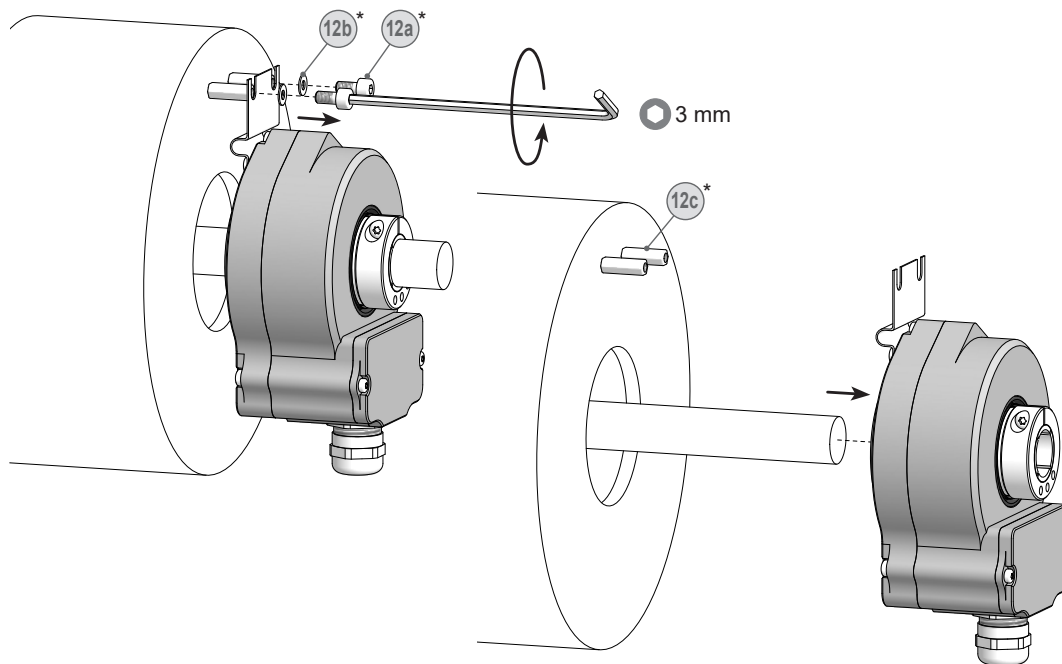
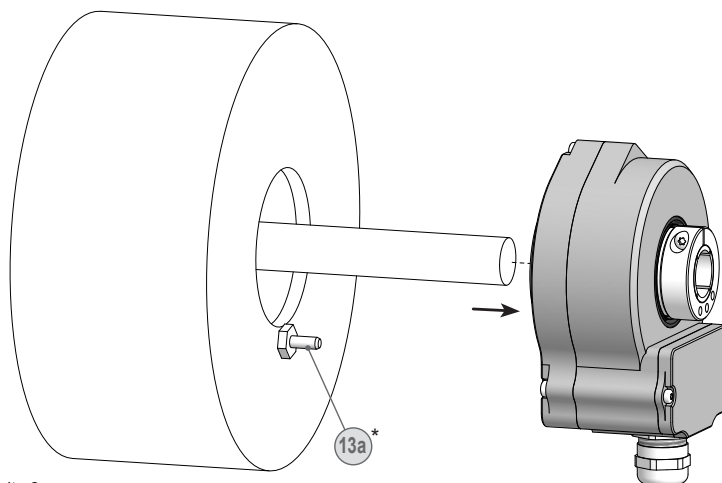
8.3 Step 3

8.3.1 Dismounting with torque sheet and/or slot for torque pin

8.3.2 Demontage mit Stützblech und Drehmomentstütze

8.3.2 Demontage with support plate and torque arm



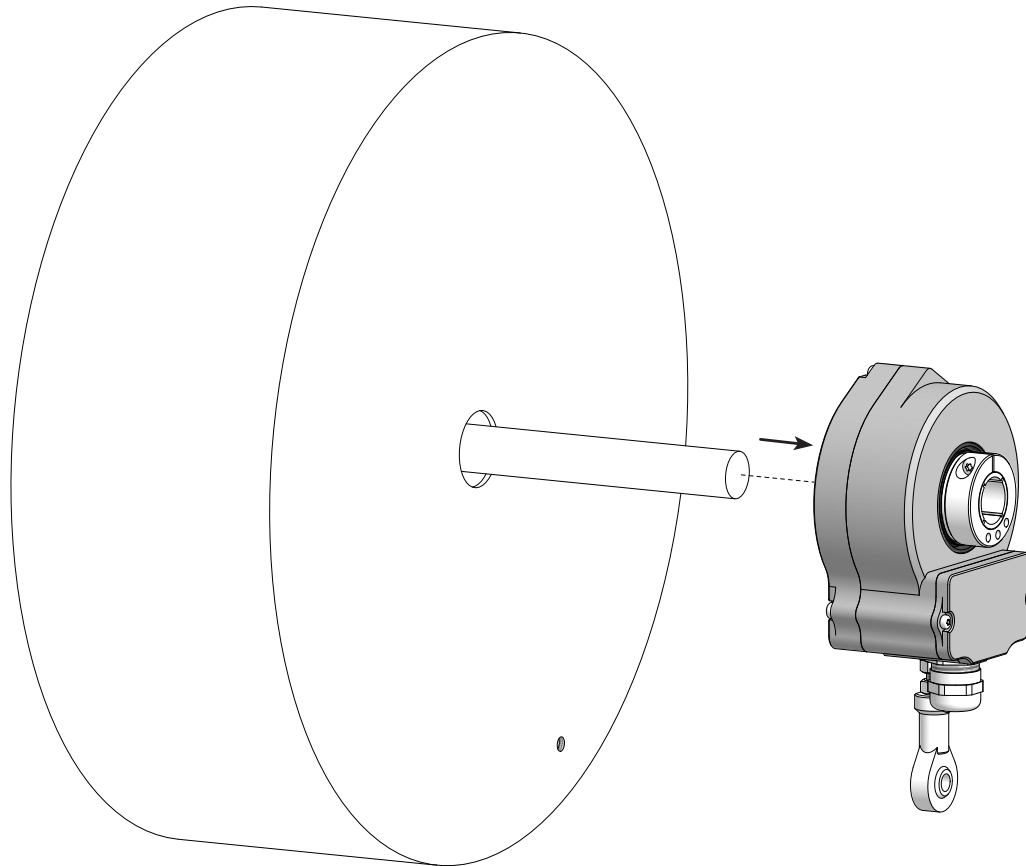
**8.4 Schritt 4****8.4 Step 4****8.4.1 Demontage mit Drehmomentblech****8.4.1 Dismounting with torque sheet****8.4.2 Demontage mit Aufnahmeschlitz für Drehmomentstift****8.4.2 Demontage with slot for torque pin**

\* Siehe Seite 8  
See page 8

8 Demontage / Dismounting

8.4.3 Demontage mit Stützblech und Drehmomentstütze

8.4.3 Demontage with support plate and torque arm



## 9

## Zubehör

- Drehmomentstütze,  
als Zubehör erhältlich: (14a)\*  

| Bestellnummer    | Länge L                        |
|------------------|--------------------------------|
| Standard         |                                |
| 11043628         | 67...70 mm                     |
| 11004078         | 125 (±5) mm <sup>6)</sup>      |
| 11002915         | 440 (+20/-15) mm <sup>7)</sup> |
| Isoliert         |                                |
| 11054917         | 67...70 mm                     |
| 11072795         | 125 (±5) mm <sup>6)</sup>      |
| 11082677         | 440 (+20/-15) mm <sup>7)</sup> |
| Rostfreier Stahl |                                |
| 11054918         | 67...70 mm                     |
| 11072787         | 125 (±5) mm <sup>6)</sup>      |
| 11072737         | 440 (+20/-15) mm <sup>7)</sup> |
- Sensorkabel für Drehgeber  
HEK 8 (11)\*
- Werkzeugset: (15)\*  
Bestellnummer 11068265
- Digital-Konverter  
HEAG 151 - HEAG 154
- LWL-Übertrager  
HEAG 171 - HEAG 176
- Digitaler Drehzahlschalter  
DS 93
- Prüfgerät für Drehgeber  
HENQ 1100

## 9

## Accessories

- Torque arm,  
available as accessory: (14a)\*  

| Order number    | Length L                       |
|-----------------|--------------------------------|
| Standard        |                                |
| 11043628        | 67...70 mm                     |
| 11004078        | 125 (±5) mm <sup>6)</sup>      |
| 11002915        | 440 (+20/-15) mm <sup>7)</sup> |
| Insulated       |                                |
| 11054917        | 67...70 mm                     |
| 11072795        | 125 (±5) mm <sup>6)</sup>      |
| 11082677        | 440 (+20/-15) mm <sup>7)</sup> |
| Stainless steel |                                |
| 11054918        | 67...70 mm                     |
| 11072787        | 125 (±5) mm <sup>6)</sup>      |
| 11072737        | 440 (+20/-15) mm <sup>7)</sup> |
- Sensor cable for encoder  
HEK 8 (11)\*
- Tool kit: (15)\*  
Order number 11068265
- Digital converters  
HEAG 151 - HEAG 154
- Fiber optic links  
HEAG 171 - HEAG 176
- Digital speed switch  
DS 93
- Analyzer for encoders  
HENQ 1100

<sup>6)</sup> Kürzbar auf ≥71 mm<sup>7)</sup> Kürzbar auf ≥131 mm

\* Siehe Abschnitt 4

<sup>6)</sup> Can be shortened to ≥71 mm<sup>7)</sup> Can be shortened to ≥131 mm

\* See section 4



## 10 Technische Daten

### 10 Technische Daten

#### 10.1 Technische Daten - elektrisch

|                            |                                                            |
|----------------------------|------------------------------------------------------------|
| • Betriebsspannung:        | 9...26 VDC (HTL, TTL - Version R)<br>5 VDC $\pm 5\%$ (TTL) |
| • Betriebsstrom ohne Last: | $\leq 100$ mA                                              |
| • Impulse pro Umdrehung:   | 250...2500 (je nach Bestellung)                            |
| • Phasenverschiebung:      | $90^\circ \pm 20^\circ$                                    |
| • Tastverhältnis:          | 40...60 %                                                  |
| • Referenzsignal:          | Nullimpuls, Breite $90^\circ$                              |
| • Abtastprinzip:           | Optisch                                                    |
| • Ausgabefrequenz:         | $\leq 120$ kHz                                             |
| • Ausgangssignale:         | K1, K2, K0 + invertierte                                   |
| • Ausgangsstufen:          | HTL<br>TTL/RS422<br>(je nach Bestellung)                   |
| • Störfestigkeit:          | EN 61000-6-2                                               |
| • Störaussendung:          | EN 61000-6-3                                               |
| • Zulassungen:             | CE, UL                                                     |

#### 10.2 Technische Daten - mechanisch

|                              |                                                                                              |
|------------------------------|----------------------------------------------------------------------------------------------|
| • Baugröße (Flansch):        | $\varnothing 75$ mm                                                                          |
| • Wellenart:                 | $\varnothing 12...26$ mm (durchgehende Hohlwelle)                                            |
| • Zulässige Wellenbelastung: | $\leq 80$ N axial<br>$\leq 150$ N radial                                                     |
| • Schutzart EN 60529:        | IP56                                                                                         |
| • Betriebsdrehzahl:          | $\leq 10000$ U/min (mechanisch)                                                              |
| • Anlaufdrehmoment:          | $\leq 4$ Ncm                                                                                 |
| • Trägheitsmoment Rotor:     | 180 gcm <sup>2</sup>                                                                         |
| • Werkstoffe:                | Gehäuse: Aluminium-Druckguss<br>Welle: Edelstahl                                             |
| • Betriebstemperatur:        | $-30...+85^\circ\text{C}$<br>Eingeschränkt im Ex-Bereich, siehe Abschnitt 2.                 |
| • Widerstandsfähigkeit:      | IEC 60068-2-6<br>Vibration 48 g, 10-2000 Hz<br>IEC 60068-2-27<br>Schock 200 g, 6 ms          |
| • Explosionsschutz:          | II 3 G Ex ec IIC T4 Gc (Gas)<br>II 3 D Ex tc IIIC T135°C Dc (Staub)<br>(nur bei Option ATEX) |
| • Anschluss:                 | Anschlussklemmen                                                                             |
| • Masse ca.:                 | 580 g                                                                                        |

## 10 Technical data

### 10.1 Technical data - electrical ratings

|                          |                                                            |
|--------------------------|------------------------------------------------------------|
| • Voltage supply:        | 9...26 VDC (HTL, TTL - version R)<br>5 VDC $\pm 5\%$ (TTL) |
| • Consumption w/o load:  | $\leq 100$ mA                                              |
| • Pulses per revolution: | 250...2500 (as ordered)                                    |
| • Phase shift:           | $90^\circ \pm 20^\circ$                                    |
| • Duty cycle:            | 40...60 %                                                  |
| • Reference signal:      | Zero pulse, width $90^\circ$                               |
| • Sensing method:        | Optical                                                    |
| • Output frequency:      | $\leq 120$ kHz                                             |
| • Output signals:        | K1, K2, K0 + inverted                                      |
| • Output stages:         | HTL<br>TTL/RS422<br>(as ordered)                           |
| • Interference immunity: | EN 61000-6-2                                               |
| • Emitted interference:  | EN 61000-6-3                                               |
| • Approvals:             | CE, UL                                                     |

### 10.2 Technical data - mechanical design

|                            |                                                                                               |
|----------------------------|-----------------------------------------------------------------------------------------------|
| • Size (flange):           | $\varnothing 75$ mm                                                                           |
| • Shaft type:              | $\varnothing 12...26$ mm (through hollow shaft)                                               |
| • Admitted shaft load:     | $\leq 80$ N axial<br>$\leq 150$ N radial                                                      |
| • Protection EN 60529:     | IP56                                                                                          |
| • Operating speed:         | $\leq 10000$ rpm (mechanical)                                                                 |
| • Starting torque:         | $\leq 4$ Ncm                                                                                  |
| • Rotor moment of inertia: | 180 gcm <sup>2</sup>                                                                          |
| • Materials:               | Housing: aluminium die-cast<br>Shaft: stainless steel                                         |
| • Operating temperature:   | -30...+85 °C<br>Restricted in potentially explosive environments, see section 2.              |
| • Resistance:              | IEC 60068-2-6<br>Vibration 48 g, 10-2000 Hz<br>IEC 60068-2-27<br>Shock 200 g, 6 ms            |
| • Explosion protection:    | II 3 G Ex ec IIC T4 Gc (gas)<br>II 3 D Ex tc IIIC T135°C Dc (dust)<br>(only with option ATEX) |
| • Connection:              | Connecting terminal                                                                           |
| • Weight approx.:          | 580 g                                                                                         |



Baumer\_HOG75ZYL\_T1\_DE\_EN\_202209\_MI\_11173563 (22A3) MB010T1 - 11173563

MB010T1 - 11173563 Baumer\_HOG75ZYL\_T1\_DE\_EN\_202209\_MI\_11173563 (22A3)



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Originalsprache der Anleitung ist Deutsch.  
Technische Änderungen vorbehalten.  
*Original language of this instruction is German.*  
*Technical modifications reserved.*

Version:  
73270, 73274, 73275, 73279, 73282, 73285, 73289

Baumer\_HOG75ZYL\_T1\_DE\_EN\_202209\_MI\_11173563 (22A3-12.09.2022) MB010T1 - 11173563

### 10.3 Brake operating instructions; Mayr

#### Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_.1 Sizes 60 and 100

(E070 06 005 000 4 EN)

Design according to

| Size | Type      | Drawing number      | Article number | Braking torque |
|------|-----------|---------------------|----------------|----------------|
| 60   | 891.064.1 | E070 06 005 200 212 | 0920788        | 40 – 60 Nm     |
| 60   | 891.064.1 | E070 06 005 434 211 | 8307351        | 30 – 50 Nm     |
| 100  | 891.065.1 | E070 07 008 000 210 | 0920590        | 80 – 110 Nm    |
| 100  | 891.065.1 | E070 07 466 000 010 | 8403142        | 110 – 140 Nm   |
| 100  | 891.065.1 | E070 07 456 000 110 | 8311093        | 110 – 140 Nm   |
| 100  | 891.065.1 | E070 07 456 000 111 | 8415634        | 50 – 80 Nm     |

#### Please read these Operational Instructions carefully and follow them accordingly!

Ignoring these Instructions may lead to malfunctions or to brake failure, resulting in damage to other parts.  
These Installation and Operational Instructions (I + O) are part of the brake delivery.  
Please keep them handy and near to the brake at all times.

#### Contents:

- Page 1:** - Contents
- Page 2:** - Safety and Guideline Signs  
- Guidelines on EU Directives
- Page 3:** - Safety Regulations
- Page 4:** - Safety Regulations
- Page 5:** - Safety Regulations
- Page 6:** - Brake Illustrations
- Page 7:** - Parts List
- Page 8:** - Brake Technical Data
- Page 9:** - Design  
- Function  
- Scope of Delivery / State of Delivery  
- Installation Conditions  
- Installation
- Page 10:** - Definition of the Braking Torques  
- Run-in Procedure  
- Brake Inspection  
- Wind Release
- Page 11:** - Braking Torque Adjustment
- Page 12:** - Hand Release Installation
- Page 13:** - Electrical Connection and Wiring
- Page 14:** - Air Gap Inspection  
- Maintenance
- Page 15:** - Replacing the Rotor  
- Information on the Components  
- Cleaning the Brake  
- Disposal
- Page 16:** - Malfunctions / Breakdowns
- Page 17:** - Malfunctions / Breakdowns

14/06/2016 TK/MW/GF/HU

Page 1 of 17

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31558941/EN – 11/2025

## Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_1 Sizes 60 and 100

(E070 06 005 000 4 EN)

### Safety and Guideline Signs

#### DANGER



Immediate and impending danger, which can lead to severe physical injuries or to death.

#### CAUTION



Danger of injury to personnel and damage to machines.



**Please Observe!**  
Guidelines on important points.



#### Guidelines on the Declaration of Conformity

A conformity evaluation has been carried out for the product (electromagnetic safety brake) in terms of the EU Low Voltage Directive 2014/35/EU. The Declaration of Conformity is laid out in writing in a separate document and can be requested if required.

#### Guidelines on the EMC Directive (2014/30/EU)

The product cannot be operated independently according to the EMC directive.

Due to their passive state, brakes are also non-critical equipment according to the EMC.

Only after integration of the product into an overall system can this be evaluated in terms of the EMC.

For electronic equipment, the evaluation has been verified for the individual product in laboratory conditions, but not in the overall system.

#### Guidelines on the Machinery Directive (2006/42/EC)

The product is a component for installation into machines according to the Machinery Directive 2006/42/EC.

The brakes can fulfill the specifications for safety-related applications in coordination with other elements.

The type and scope of the required measures result from the machine risk analysis. The brake then becomes a machine component and the machine manufacturer assesses the conformity of the safety device to the directive.

It is forbidden to start use of the product until you have ensured that the machine accords with the regulations stated in the directive.

#### Guidelines on the EU Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment

The electromagnetic brake as well as the rectifiers / microswitches / proximity switches required for control / self-monitoring fulfill the requirements laid down in the EU Directive 2011/65/EC (RoHS).

(Restrictions on the use of certain hazardous substances, such as lead (0.1 %), mercury (0.1 %), cadmium (0.01 %), hexavalent chromium (0.1 %), polybrominated biphenyls (PBB) (0.1 %), polybrominated diphenylethers (PBDE) (0.1 %))

#### Guidelines on the ATEX Directive

Without a conformity evaluation, this product is not suitable for use in areas where there is a high danger of explosion.

For application of this product in areas where there is a high danger of explosion, it must be classified and marked according to Directive 2014/34/EU.

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Page 2 of 17

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## Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_1 Sizes 60 and 100

(E070 06 005 000 4 EN)

### Safety Regulations

These Safety Regulations are user hints only and may not be complete!

#### General Guidelines

##### DANGER



Danger of death!  
Do not touch voltage-carrying lines and components.

Brakes may generate further risks, among other things:



Hand injuries



Danger of seizure



Contact with hot surfaces



Magnetic fields

Severe injury to people and damage to objects may result if:

- ☐ the electromagnetic brake is used incorrectly.
- ☐ the electromagnetic brake is modified.
- ☐ the relevant standards for safety and / or installation conditions are ignored.

During the required risk assessment when designing the machine or system, the dangers involved must be evaluated and removed by taking appropriate protective measures.

**To prevent injury or damage, only specialist personnel are allowed to work on the components.**

They must be familiar with the dimensioning, transport, installation, inspection of the brake equipment, initial operation, maintenance and disposal according to the relevant standards and regulations.



Before product installation and initial operation, please read the Installation and Operational Instructions carefully and observe the Safety Regulations. Incorrect operation can cause injury or damage. At the time these Installation and Operational Instructions go to print, the electromagnetic brakes accord with the known technical specifications and are operationally safe at the time of delivery.

- ☐ Technical data and specifications (Type tags and documentation) must be followed.
- ☐ The correct connection voltage must be connected according to the Type tag and wiring guidelines.
- ☐ Check electrical components for signs of damage before putting them into operation. Never bring them into contact with water or other fluids.
- ☐ Please observe the EN 60204-1 requirements for electrical connection when using in machines.



Only carry out installation, maintenance and repairs in a de-energized, disengaged state and secure the system against inadvertent switch-on.

#### Guidelines for Electromagnetic Compatibility (EMC)

In accordance with the EMC directive 2014/30/EU, the individual components produce no emissions. However, functional components e.g. mains-side energization of the brakes with rectifiers, phase demodulators, ROBA®-switch devices or similar controls can produce disturbance which lies above the allowed limit values. For this reason it is important to read the Installation and Operational Instructions very carefully and to keep to the EMC directives.

#### Application Conditions



The catalogue values are guideline values which have been determined in test facilities. It may be necessary to carry out your own tests for the intended application. When dimensioning the brakes, please remember that installation situations, braking torque fluctuations, permitted friction work, bedding-in condition / conditioning of the brake linings and wear as well as general ambient conditions can all affect the given values. These factors should therefore be carefully assessed, and alignments made accordingly.

- ☐ Mounting dimensions and connection dimensions must be adjusted according to the size of the brake at the place of installation.
- ☐ The brakes are designed for a relative duty cycle of 100 %.
- ☐ The braking torque is dependent on the current bedding-in condition of the brake. Bedding in / conditioning of the friction linings is necessary.
- ☐ The brakes are only designed for dry running. The torque is lost if the friction surfaces come into contact with oil, grease, water or similar substances or any other foreign bodies.
- ☐ The surfaces of the outer components have been phosphated manufacturer-side to form a basic corrosion protection.

##### CAUTION



The rotors may rust up and seize up in corrosive ambient conditions and / or after longer downtimes.  
The user is responsible for taking appropriate countermeasures.

#### Dimensioning

##### Attention!

When dimensioning the brake, please take into consideration whether a load torque is present when selecting the protection.

- ☐ Load torques reduce the deceleration torque available.
- ☐ Load torques may increase the output speed:
  - during a possible processing time in the controls
  - during the brake downtime

When calculating the friction work, please observe that the brake nominal torque is subject to a tolerance.

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Page 3 of 17

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31558941/EN – 11/2025



## Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_1 Sizes 60 and 100

(E070 06 005 000 4 EN)

### Safety Regulations

These Safety Regulations are user hints only and may not be complete!

#### Climate Conditions

The electromagnetic brake is suitable for applications with an ambient temperature of between -20 °C and +40 °C.



**Reduction in braking torque possible**  
Condensation can form on the brake and cause a loss in braking torque:

- ☐ due to fast changes in temperature
- ☐ at temperatures of around or under freezing point

The user is responsible for taking appropriate countermeasures (e.g. forced convection, heating, drain screw).



**Brake malfunction possible**  
Condensation can form on the brake and cause malfunctions:

- ☐ at temperatures around or under freezing point, the brake can freeze over and not release any more.

The user is responsible for taking appropriate countermeasures (e.g. forced convection, heating, drain screw).

The system function must be checked by the user after longer downtimes.



At high temperatures and in high humidity or with occurring dampness, the rotor can seize up to the armature disk or the bearing shield / the flange plate after longer downtimes.

#### Intended Use

mayr®-brakes have been developed, manufactured and tested in compliance with the DIN VDE 0580 standard and in accordance with the EU Low Voltage Directive as electromagnetic components. During installation, operation and maintenance of the product, the requirements for the standard must be observed. mayr®-brakes are for use in machines and systems and must only be used in the situations for which they are ordered and confirmed. Using them for any other purpose is not allowed.

#### Grounding Connection

The brake is designed for Protection Class I. This protection covers not only the basic insulation, but also the connection of all conductive parts to the protective conductor (PE) on the fixed installation. If the basic insulation fails, no contact voltage will remain. Please carry out a standardized inspection of the protective conductor connections to all contactable metal parts!

#### Class of Insulation F (+155 °C)

The insulation components on the magnetic coils are manufactured at least to class of insulation F (+155 °C).

#### Protection

**(mechanical) IP65:** When installed, in connection with sealing provided customer-side, dust-proof and protected against contact as well as against jet water from a nozzle coming from any direction.

**(electrical) IP54:** Dust-proof and protected against contact as well as against water spray from any direction.

#### Brake Storage

- ☐ Store the brakes in a horizontal position, in dry rooms and dust and vibration-free.
- ☐ Relative air humidity < 50 %.
- ☐ Temperature without major fluctuations within a range from -20 °C up to +40 °C.
- ☐ Do not store in direct sunlight or UV light.
- ☐ Do not store aggressive, corrosive substances (solvents / acids / lyes / salts / oils / etc.) near to the clutches.

For longer storage of more than 2 years, special measures are required (please contact the manufacturer).

Storage acc. DIN EN 60721-3-1 (including the limitations / additions described above): 1K3; 1Z1; 1B1; 1C2; 1S3; 1M1

#### Handling

**Before installation,** the brake must be inspected and found to be in proper condition.

The brake function must be inspected both **once attachment has taken place** as well as **after longer system downtimes**, in order to prevent the drive starting up against possibly seized linings.

#### User-implemented Protective Measures:

- ☐ Please cover moving parts to protect **against injury through seizure**.
- ☐ Place a cover on the magnetic part to protect **against injury through high temperatures**.
- ☐ **Protection circuit:** When using DC-side switching, the coil must be protected by a suitable protection circuit according to VDE 0580, which is integrated in mayr®-rectifiers. To protect the switching contact from consumption when using DC-side switching, additional protective measures are necessary (e.g. series connection of switching contacts). The switching contacts used should have a minimum contact opening of 3 mm and should be suitable for inductive load switching. Please make sure on selection that the rated voltage and the rated operating current are sufficient. Depending on the application, the switching contact can also be protected by other protection circuits (e.g. mayr®-spark quenching unit, half-wave and bridge rectifiers), although this may of course then alter the switching times.
- ☐ Install additional protective measures **against corrosion** if the brake is subject to extreme ambient conditions or is installed in open air conditions, unprotected from the weather.
- ☐ Take precautions **against freeze-up of the friction surfaces** in high humidity and at low temperatures.

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Page 4 of 17

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## Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_1 Sizes 60 and 100

(E070 06 005 000 4 EN)

### Safety Regulations

These Safety Regulations are user hints only and may not be complete!

#### Standards, Directives and Regulations Used and To Be Applied

|                       |                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------|
| DIN VDE 0580          | Electromagnetic devices and components, general specifications                           |
| 2014/35/EU            | Low Voltage Directive                                                                    |
| CSA C22.2 No. 14-2010 | Industrial Control Equipment                                                             |
| UL 508 (Edition 17)   | Industrial Control Equipment                                                             |
| EN ISO 12100          | Safety of machinery – General principles for design - Risk assessment and risk reduction |
| DIN EN 61000-6-4      | Interference emission                                                                    |
| DIN EN 61000-6-2      | Interference immunity                                                                    |

#### Liability

The information, guidelines and technical data in these documents were up to date at the time of printing. Demands on previously delivered brakes are not valid.

Liability for damage and operational malfunctions will not be taken if:

- the Installation and Operational Instructions are ignored or neglected.
- the brakes are used inappropriately.
- the brakes are modified.
- the brakes are worked on unprofessionally.
- the brakes are handled or operated incorrectly.

#### Guarantee

- ☐ The guarantee conditions correspond with the Chr. Mayr GmbH + Co. KG sales and delivery conditions.
- ☐ Mistakes or deficiencies are to be reported to *mayr*® at once!

#### CE Identification



according to the  
Low Voltage Directive 2014/35/EU

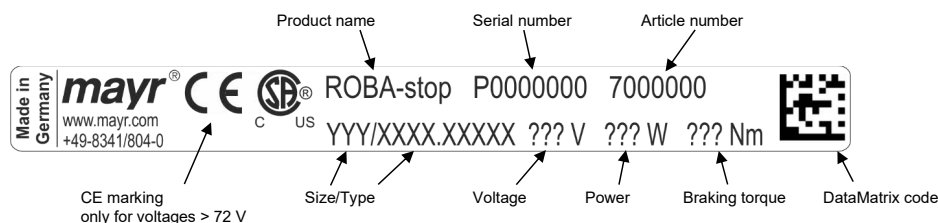
#### Conformity Markings



in terms of the Canadian and American  
approval

#### Identification

*mayr*® components are clearly marked and described on the Type tag:



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**Installation and Operational Instructions for  
ROBA-stop®-M Brake Type 891.06\_1  
Sizes 60 and 100**

(E070 06 005 000 4 EN)

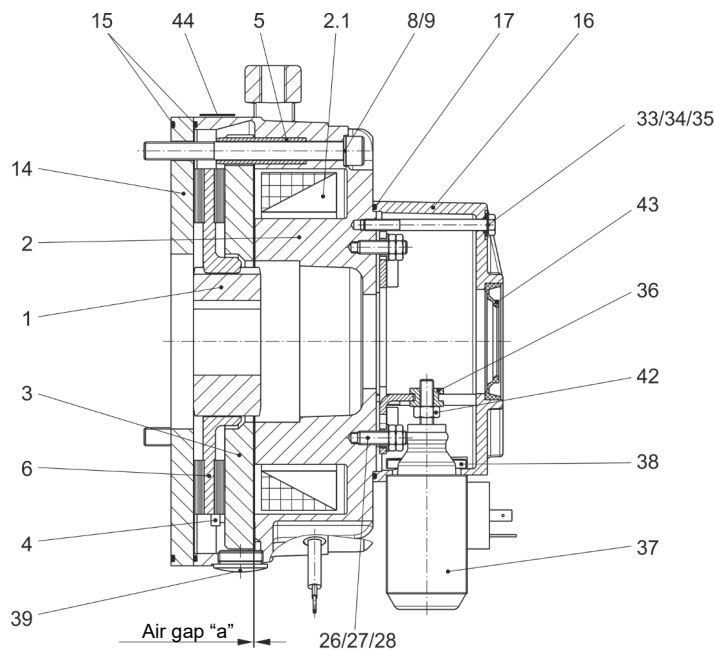


Fig. 1

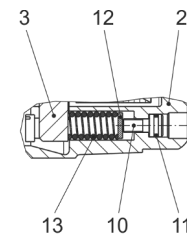


Fig. 3

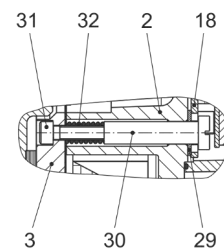


Fig. 4

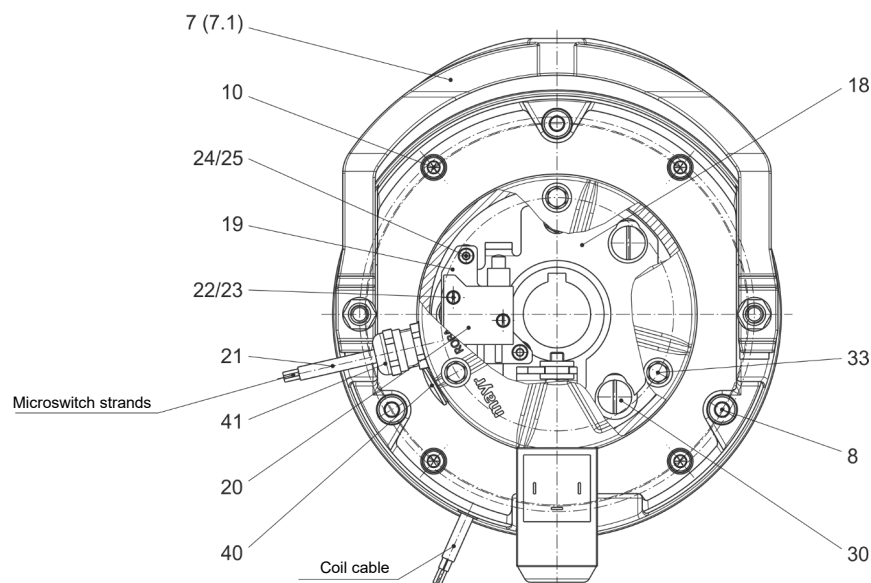


Fig. 2

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Page 6 of 17

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## Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_1 Sizes 60 and 100

(E070 06 005 000 4 EN)

### Parts List (Only use mayr® original parts)

| Item | Name                              | Pcs. |
|------|-----------------------------------|------|
| 1    | Hub                               | 1    |
| 2    | Coil carrier (with magnetic coil) | 1    |
| 2.1  | Magnetic coil                     | 1    |
| 3    | Armature disk                     | 1    |
| 4    | Shoulder screw                    | 2    |
| 5    | Bushing                           | 3    |
| 6    | Rotor                             | 1    |
| 7    | Hand release assembly             | 1    |
| 7.1  | Switch bracket                    | 1    |
| 7.2  | Threaded bolt                     | 2    |
| 7.3  | Thrust spring                     | 2    |
| 7.4  | Hexagon nut                       | 2    |
| 7.5  | Washer                            | 2    |
| 7.6  | O-ring                            | 2    |
| 7.7  | Intermediate plate                | 2    |
| 8    | Cap screw                         | 3    |
| 9    | Bonded seal                       | 3    |
| 10   | Cap screw                         | 4    |
| 11   | O-ring                            | 4    |
| 12   | Washer                            | 4    |
| 13   | Thrust spring                     | 8    |
| 14   | Flange plate                      | 1    |
| 15   | O-ring                            | 2    |
| 16   | Cover                             | 1    |
| 17   | O-ring                            | 1    |
| 18   | Sliding plate                     | 1    |

| Item | Name                      | Pcs. |
|------|---------------------------|------|
| 19   | Plate                     | 1    |
| 20   | Microswitch               | 1    |
| 21   | Heat-shrink tubing        | 1    |
| 22   | Cap screw                 | 2    |
| 23   | Washer                    | 2    |
| 24   | Bushing                   | 2    |
| 25   | Cap screw                 | 2    |
| 26   | Set screw                 | 2    |
| 27   | Hexagon nut               | 4    |
| 28   | Collar bushing            | 2    |
| 29   | Thrust washer             | 3    |
| 30   | Locking pin               | 3    |
| 31   | Cap screw                 | 3    |
| 32   | Thrust spring             | 3    |
| 33   | Hexagon head screw        | 3    |
| 34   | Washer                    | 3    |
| 35   | O-ring                    | 3    |
| 36   | Driver                    | 1    |
| 37   | Single linear solenoid    | 1    |
| 38   | Cap screw                 | 4    |
| 39   | Screw plug with O-ring    | 1    |
| 40   | Screw plug with O-ring    | 1    |
| 41   | Cable gland               | 1    |
| 42   | Hexagon nut               | 1    |
| 43   | Radial shaft sealing ring | 1    |
| 44   | Type tag                  | 1    |



mayr® will take no responsibility or guarantee for replacement parts and accessories which have not been delivered by mayr®, or for damage resulting from the use of these products.

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## Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_1 Sizes 60 and 100

(E070 06 005 000 4 EN)

Table 1: Brake Technical Data

| Size                                            | 60                                         |                                            | 100                                         |                                             |                                             |                                             |
|-------------------------------------------------|--------------------------------------------|--------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
| Article number                                  | 8307351                                    | 0920788                                    | 8415634                                     | 0920590                                     | 8403142                                     | 8311093                                     |
| Braking torque:                                 | 30 – 50 Nm                                 | 40 – 60 Nm                                 | 50 – 80 Nm                                  | 80 – 110 Nm                                 | 110 – 140 Nm                                | 110 – 140 Nm                                |
| Max. speed:                                     | 3000 rpm                                   | 3000 rpm                                   | 3000 rpm                                    | 3000 rpm                                    | 3000 rpm                                    | 3000 rpm                                    |
| Nominal voltage:                                | 24 V                                       | 104 V                                      | 24 V                                        | 104 V                                       | 104 V                                       | 180 V                                       |
| Electrical power:                               | 73 W                                       | 72 W                                       | 83 W                                        | 87 W                                        | 87 W                                        | 82 W                                        |
| Electrical connection:                          | 2 x AWG18                                  | 2 x AWG18                                  | 2 x AWG18                                   | 2 x AWG18                                   | 2 x AWG18                                   | 2 x AWG18                                   |
| Overexcitation voltage:                         |                                            |                                            |                                             |                                             | 207 V                                       |                                             |
| Overexcitation power:                           |                                            |                                            |                                             |                                             | 345 W                                       |                                             |
| Overexcitation time:                            |                                            |                                            |                                             |                                             | 0.6 s                                       |                                             |
| Weight:                                         | 10.8 kg                                    | 11.6 kg                                    | 14.8 kg                                     | 15.6 kg                                     | 14.9 kg                                     | 14.8 kg                                     |
| Nominal air gap "a" (Fig. 1):                   | 0.5 <sup>+0.05</sup> / <sub>-0.10</sub> mm | 0.5 <sup>+0.05</sup> / <sub>-0.10</sub> mm | 0.45 <sup>+0.10</sup> / <sub>-0.05</sub> mm | 0.45 <sup>+0.10</sup> / <sub>-0.05</sub> mm | 0.45 <sup>+0.10</sup> / <sub>-0.05</sub> mm | 0.45 <sup>+0.10</sup> / <sub>-0.05</sub> mm |
| Max. permitted air gap "a" after wear (Fig. 1): | 0.8 mm                                     | 0.8 mm                                     | 0.8 mm                                      | 0.8 mm                                      | 0.8 mm                                      | 0.8 mm                                      |
| Tightening torque Item 4:                       | 3.5 Nm                                     | 3.5 Nm                                     | 8 Nm                                        | 8 Nm                                        | 8 Nm                                        | 8 Nm                                        |
| Tightening torque Item 8:                       | 22 Nm                                      | 22 Nm                                      | 22 Nm                                       | 22 Nm                                       | 22 Nm                                       | 22 Nm                                       |
| Rotor thickness, "new condition" (-0.05 mm):    | 11.15 mm                                   | 11.15 mm                                   | 14 mm                                       | 14 mm                                       | 14 mm                                       | 14 mm                                       |
| Minimum rotor thickness:                        | 10.85 mm                                   | 10.85 mm                                   | 13.65 mm                                    | 13.65 mm                                    | 13.65 mm                                    | 13.65 mm                                    |
| Protection, mechanical (in installed state):    | IP65                                       | IP65                                       | IP65                                        | IP65                                        | IP65                                        | IP65                                        |
| Protection, electrical:                         | IP54                                       | IP54                                       | IP54                                        | IP54                                        | IP54                                        | IP54                                        |
| Ambient temperature:                            | -20 °C to +40 °C                           |                                            |                                             |                                             |                                             |                                             |

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Page 8 of 17

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## Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_1 Sizes 60 and 100

(E070 06 005 000 4 EN)

### Design

ROBA-stop®-M brakes are spring applied, electromagnetic safety brakes, which apply a defined braking effect after the voltage is switched off or after a voltage failure.

### Function

The ROBA-stop®-M brake is a spring applied, electromagnetic safety brake.

#### Spring applied function (brake):

In de-energized condition, thrust springs (13) press against the armature disk (3). The rotor (6) is held between the armature disk (3) and the flange plate (14) via frictional locking. The braking torque is introduced into the drive line via the toothings of the rotor (6) and the hub (1).

#### Electromagnetic function (release):

Due to the magnetic force of the coil (2.1) in the coil carrier (2), the armature disk (3) is attracted against the spring pressure to the coil carrier (2).

The brake is released and the brake rotor (6) with the hub (1) can rotate freely.

#### Safety brakes:

The ROBA-stop®-M brake brakes reliably and safely in the event of a power switch-off, a power failure or an EMERGENCY STOP.

### Scope of Delivery / State of Delivery

The brakes are pre-assembled and set manufacturer-side to the braking torque stipulated on order.

The hand release and the wind release are installed and set manufacturer-side.

On Size 60 the radial shaft sealing ring (43) is included individually packed in the delivery.

Please check the scope of delivery according to the Parts List as well as the state of delivery immediately after receiving the goods.

mayr® will take no responsibility for belated complaints.

Please report transport damage immediately to the deliverer.

Please report incomplete delivery and obvious defects immediately to the manufacturer.

### Installation Conditions

- ❑ The eccentricity of the shaft end in relation to the mounting pitch circle must not exceed 0.2 mm.
- ❑ The positional tolerance of the threads for the cap screws (8) must not exceed 0.2 mm.
- ❑ The axial run-out deviation of the screw-on surface to the shaft must not exceed the permitted axial run-out tolerance of **0.1 mm** acc. DIN 42955. The reference diameter is the pitch circle diameter for securement of the brakes. Larger deviations can lead to a drop in torque, to continuous grinding of the rotor (6) and to overheating.
- ❑ The shaft tolerance must be selected so that the hub tooth-  
ing (1) is not widened. Widening of the toothings leads to the  
rotor (6) jamming on the hub (1) and therefore to brake mal-  
functions.  
Recommended shaft tolerance: k6.  
The max. permitted joining temperature of 200 °C must not  
be exceeded.

- ❑ The hub (1) is to be positioned so that the rotor (6) toothings  
supports across its full surface.
- ❑ The toothings of the hub (1) and the rotor (6) must not be  
oiled or greased.
- ❑ The rotor (6) and brake surfaces must be oil and grease-  
free.
- ❑ Please abstain from using cleaning agents containing sol-  
vents, as they could affect the friction material.

### Installation (Figs. 1 to 4)

1. Mount the hub (1) onto the shaft, bring it into the correct po-  
sition (the length of the key should lie over the entire hub)  
and secure it axially, e.g. using a locking ring.
2. Insert an O-ring (15) into the axial groove of the flange plate  
(14).
3. Guide the flange plate (14) with inserted O-ring (15) over the  
shaft and position it onto the machine wall (please make  
sure that the bores in the flange plate (14) and the threaded  
holes in the machine wall align).
4. Measure the rotor thickness.  
See Table 1 for the nominal dimension in new condition.
5. Push the rotor (6) onto the hub (1) (the rotor collar should be  
facing away from the machine wall). The rotor toothings must  
lie over the entire length of the hub (1).  
Make sure that the toothings moves easily.
6. Insert the second O-ring (15) into the axial groove of the coil  
carrier (2).
7. Push the rest of the brake over the hub (1) and the rotor col-  
lar (6) (the fixing holes should align with the bores in the  
flange plate (14)).  
The shoulder screws (4) prevent the individual components  
from falling apart. They do not affect the brake function and  
must not be removed during installation.
8. Secure the brake evenly all around using the cap screws (8)  
and bonded seals (9) positioned under them **with a torque  
wrench and a tightening torque of 22 Nm** onto the ma-  
chine wall or motor flange through the flange plate (14).
9. Check air gap "a", see page 13.  
**Nominal air gap "a" acc. Table 1 must be given.**
10. Produce electrical connection of brake and wind release.

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Page 9 of 17

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## Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_1 Sizes 60 and 100

(E070 06 005 000 4 EN)

### Definition of the Braking Torques

#### Static braking torque

Effectively averaged, fully developed torque for slipping brake with smallest speed values.  
Guideline value:  $n = 3$  [rpm]

#### Dynamic braking torque

Effectively averaged, fully developed torque in a braking procedure from the output speed up to standstill.



For correct evaluation, a sufficient slip time is required (sliding speed between 1 m/s and 10 m/s).  
The permitted friction work and speed values must not be exceeded.

### Run-in Procedure

The stated brake nominal torque is valid for a run-in / conditioned state of the friction lining pairings in standard climate conditions.

- ❑ Please carry out conditioning of the friction lining pairings before initial operation of the system.
- ❑ Please carry out conditioning of the friction lining pairings during operation of the system (see chapter "Maintenance").
- ❑ EMERGENCY STOP only after brake run-in procedure

### Brake Inspection (before brake initial operation)

- ➔ **Braking torque inspection:**  
Please compare the requested braking torque with the torque stated on the Type tag (44).
- ➔ **Release function inspection:**  
by energizing the brake or manually by actuating the hand release.

The braking torque is not achieved until the run-in procedure has been completed. See section "Definition of the Braking Torques".

### Wind Release

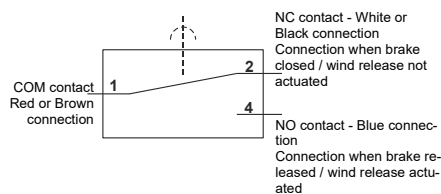


The wind release is installed and set manufacturer-side.

### Technical Data of the Single Linear Solenoid (37)

|                        |                          |
|------------------------|--------------------------|
| Nominal voltage:       | 24 V, 104 V, 180V        |
| Electrical Power       | 120 W                    |
| Duty cycle:            | 5 %                      |
| Electrical connection: | 3 x 0.75 mm <sup>2</sup> |

### Wiring Diagram of the Microswitch (20)



### Technical Data of the Microswitch (20)

|                                  |                                       |
|----------------------------------|---------------------------------------|
| Dimension:                       | 31x30.5x10.3 mm                       |
| Protection:                      | IP67 / tightness against tap water    |
| Mechanical lifetime:             | 50 x 10 <sup>6</sup> switching cycles |
| Permitted operating temperature: | -40 °C to +105 °C                     |
| Conductor cross-section:         | 3 x 0.75 mm <sup>2</sup>              |

### Microswitch (20) Specification

|                                                                   |                                                          |
|-------------------------------------------------------------------|----------------------------------------------------------|
| Characteristic values for measurement:                            | 250 V~ / 3 A                                             |
| Minimum switching power:                                          | 12 V, 10 mA DC-12                                        |
| Recommended switching power: for maximum lifetime and reliability | 24 V, 10...50 mA DC-12<br>DC-13 with freewheeling diode! |

Usage category acc. IEC 60947-5-1:  
DC-12 (resistance load), DC-13 (inductive load)



Microswitches cannot be guaranteed fail-safe. Therefore, please ensure appropriate access for replacement or adjustment.  
The switching contacts are designed so that they can be used for both small switching powers and medium ones. However, after switching a medium switching power, small switching powers are no longer reliably possible. In order to switch inductive, capacitive and non-linear loads, please use the appropriate protection circuit to protect against electric arcs and unpermitted loads!

### Actuation



Process for connection of microswitch (20) as NO contact.  
It is essential to observe the correct sequence.

### Wind release ON:

1. Energize the brake
2. Energise the linear solenoids (7.1) (linear solenoid attracts)
3. The microswitch (7.2) emits the signal "ON"
4. Brake **Power off**
5. Linear solenoid (7.1) **Power off** (brake still released)

### Wind release OFF:

1. Energize the brake
2. The lock is unlocked via the return spring in the linear solenoid (7.1).
3. The microswitch (7.2) emits the signal "OFF"
4. The brake is now ready for operation again.

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Page 10 of 17

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## Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_1 Sizes 60 and 100

(E070 06 005 000 4 EN)

### Braking Torque Adjustment

The ROBA-stop®-M brake is set manufacturer-side to the braking torque stipulated on order. However, the existing adjustment can be changed via the cap screws (10).

### Changing the Braking Torque

The adjustment range is 20 Nm for brake size 60 (see diagram 1) and 30 Nm for brake size 100 (see diagram 2). The adjustment of the braking torque takes place by turning the cap screws (10) with the aid of Diagrams 1 and 2. To precisely define a new setting, the cap screws (10) should always be screwed in up to contact and then unscrewed again by the number of rotations according to the required setting.

Diagram 1 for Brake Size 60

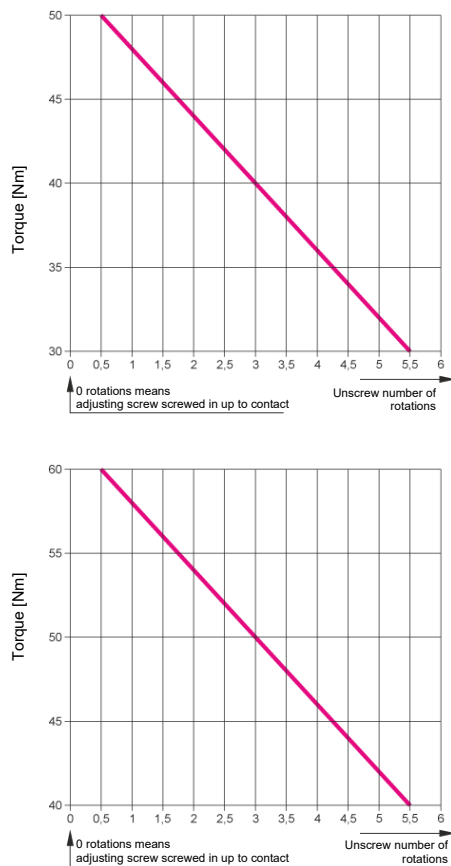
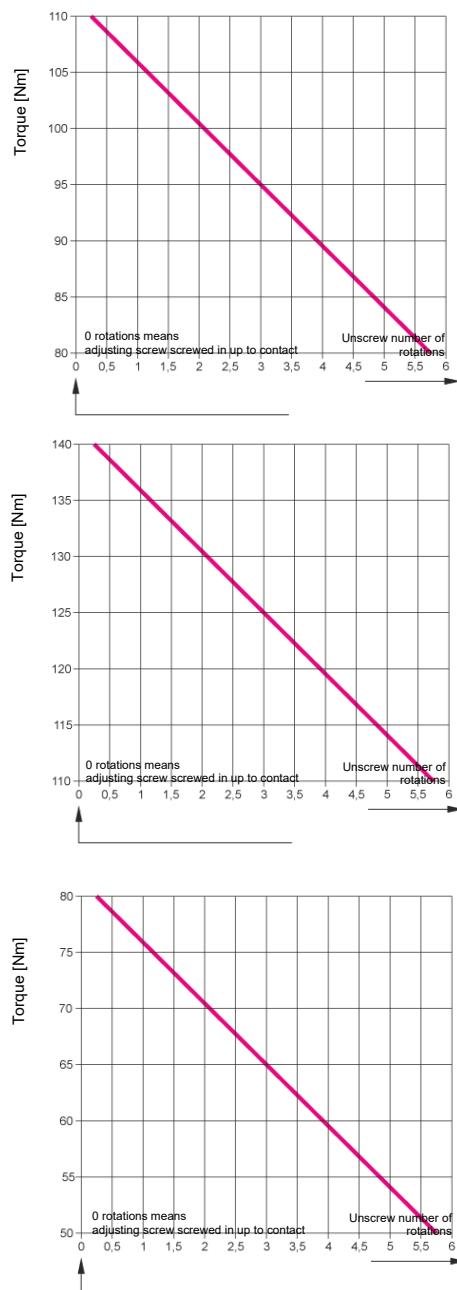


Diagram 2 for Brake Size 100



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Page 11 of 17

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## Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_1 Sizes 60 and 100

(E070 06 005 000 4 EN)

### Hand Release Installation (Manufacturer-Side / Fig. 5)



For hand release installation, the brake must be dismantled and de-energised.

#### Procedural Method:

1. Push the thrust springs (7.3) onto the threaded bolts (7.2). The threaded bolts (7.2) come manufacturer-side assembled with a key as tension element. This connection must not be loosened.
2. Push the threaded bolts (7.2) with thrust springs (7.3) from the inside (you should be facing the magnetic coil (2.1)) into the hand release bores in the coil carrier (2).
3. Push the O-rings (7.6) over the threaded bolts (7.2) and insert them into the coil carrier (2) recesses. Avoid crushing the O-rings (7.6).
4. Push the intermediate plates (7.7) over the threaded bolts (7.2).
5. Mount the switch bracket (7.1), add the washers (7.5) and lightly screw on the self-locking hexagon nuts (7.4).
6. Tighten both hexagon nuts (7.4) until the armature disk (3) lies evenly against the coil carrier (2).
7. Loosen both hexagon nuts (7.4) by 2 turns on Size 60 or 1.6 turns on Size 100, thereby producing an air gap between the armature disk (3) and the coil carrier (2). This gives you inspection dimension "x" =  $2.2^{+0.1}$  mm.



An uneven adjustment dimension on the hand release can cause the brake to malfunction.



The inspection dimension "x" is only used for hand release adjustment in dismantled condition.

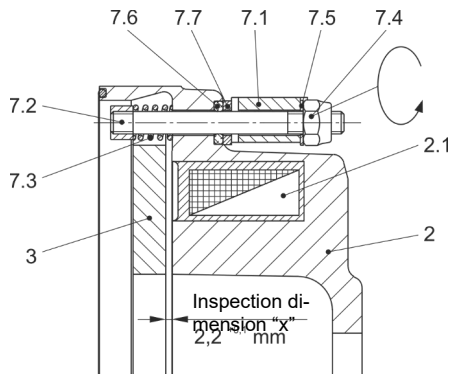


Fig. 5

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Page 12 of 17

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## Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_1 Sizes 60 and 100

(E070 06 005 000 4 EN)

### Electrical Connection and Wiring

DC current is necessary for operation of the brake. The coil voltage is indicated on the Type tag as well as on the brake body and is designed according to the DIN IEC 60038 ( $\pm 10\%$  tolerance). Operation can take place with alternating voltage using a rectifier or another suitable DC power supply. The connection possibilities can vary dependent on the brake equipment. Please follow the exact connections according to the Wiring Diagram. The manufacturer and the user must observe the applicable regulations and standards (e.g. DIN EN 60204-1 and DIN VDE 0580). Their observance must be guaranteed and double-checked!

### Grounding Connection

The brake is designed for Protection Class I. This protection covers therefore not only the basic insulation, but also the connection of all conductive parts to the protective conductor (PE) on the fixed installation. If the basic insulation fails, no contact voltage will remain. Please carry out a standardized inspection of the protective conductor connections to all contactable metal parts!

### Device Fuses

To protect against damage from short circuits, please add suitable device fuses to the mains cable.

### Switching Behavior

The reliable operational behavior of a brake is to a large extent dependent on the switching mode used. Furthermore, the switching times are influenced by the temperature and the air gap between the armature disk and the coil carrier (dependent on the wear condition of the linings).

### Magnetic Field Build-up

When the voltage is switched on, a magnetic field is built up in the brake coil, which attracts the armature disk to the coil carrier and releases the brake.

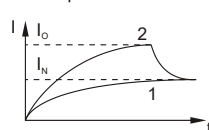
### Field build-up with normal excitation

If the magnetic coil is energized with nominal voltage, the coil current does not immediately reach its nominal value. The coil inductivity causes the current to increase slowly as an exponential function. Accordingly, the build-up of the magnetic field takes place more slowly and the braking torque drop (curve 1) is also delayed.

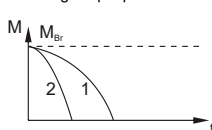
### Field build-up with overexcitation

A quicker drop in braking torque is achieved if the coil is temporarily placed under a higher voltage than the nominal voltage, as the current then increases more quickly. Once the brake is released, it needs to be switched over to the nominal voltage (curve 2). The ROBA®-(multi)switch fast acting rectifier and phase demodulator work on this principle.

Current path

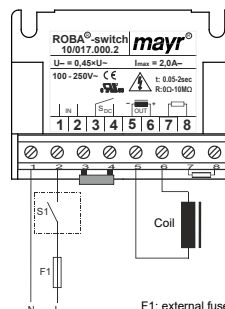


Braking torque path



### Magnetic Field Removal

#### AC-side switching

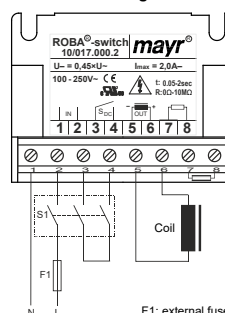


The power circuit is interrupted in front of the rectifier. The magnetic field slowly reduces. This delays the rise in braking torque.

When switching times are not important, please switch AC-side, as no protective measures are necessary for coil and switching contacts.

AC-side switching means **low-noise switching**; however, the brake engagement time is longer (approx. 6-10 times longer than with DC-side disconnection), use for non-critical braking times.

#### DC-side switching



The power circuit is interrupted between the rectifier and the coil as well as mains-side. The magnetic field reduces extremely quickly. This causes a quick rise in braking torque.

When switching DC-side, high voltage peaks are produced in the coil, which can lead to wear on the switching contacts from sparks and to destruction of the insulation.

DC-side switching means **short brake engagement times** (e.g. for EMERGENCY STOP operation); however, louder switching noises.

### Protection Circuit

When using DC-side switching, the coil must be protected by a suitable protection circuit according to VDE 0580, which is integrated in *mayr*®-rectifiers. To protect the switching contact from consumption when using DC-side switching, additional protective measures are necessary (e.g. series connection of switching contacts). The switching contacts used should have a minimum contact opening of 3 mm and should be suitable for inductive load switching. Please make sure on selection that the rated voltage and the rated operating current are sufficient. Depending on the application, the switching contact can also be protected by other protection circuits (e.g. *mayr*®-spark quenching unit, half-wave and bridge rectifiers), although this may of course then alter the switching times.

14/06/2016 TK/MW/GF/HU

Page 13 of 17

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## Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_1 Sizes 60 and 100

(E070 06 005 000 4 EN)

### Air Gap Inspection

The air gap can be inspected via a feeler gauge after removing the screw plug (39). The feeler gauge must be inserted at least 30 mm deep (see Fig. 6), so that the distance between the armature disk (3) and the coil carrier (2) can be measured.

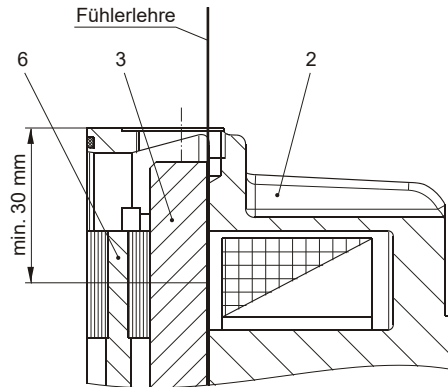


Fig. 6

### Maintenance

The amount of wear on the rotor (6) must be examined during the regular inspection intervals:

**ROBA-stop®-M** brakes are largely maintenance-free. The friction lining pairing is robust and wear-resistant. This ensures a particularly long service lifetime of the brake. The friction lining is subject to functional wear in case of **EMERGENCY STOP** and during regular conditioning of the friction lining pairing.

If the rotor (6) does become worn due to the high total friction work, and the function of the brake can no longer be guaranteed, the brake can be re-set to its functional state by replacing the rotor (6).

The quality of the counter friction surface must be checked.

The wear condition of the rotor (6) can be specified by:

- ☐ Checking the air gap (see above).  
**Max. permitted air gap see Table 1.**
- ☐ Measuring the release voltage.  
The release voltage may be up to max. 90 % of the nominal voltage on a warm brake.
- ☐ Measuring the rotor thickness on the dismantled brake.  
**See Table 1 for the minimum rotor thickness.**

We recommend the following regular inspection intervals:

#### Once a year

- Inspection of the air gaps (brake in de-energized condition)

#### Twice a year or after 1000 operating hours

- Inspection of the rotor thickness (wear)
- Inspection of the toothings of the rotor (6) and the hub (1) for moves easily, increased backlash and damage. Max. permitted rotor torsional backlash on the hub → 0.3°.
- Inspection on an engaged brake and load-free output by turning the motor shaft.
- Inspection of the armature disk (3) and the flange plate (14) for plane parallelism and wear (excessive scoring)
- Clean the brake

#### Replacing the rotors

- After having reached the maximum air gap
- In safety-critical applications at the latest after 5 years of operating the system

#### To be determined by the user

The frequency of the friction lining pairing conditioning and the torque inspection must be determined by the user depending on the application.

In order to maintain the brake torque in holding applications, the friction lining pairing must be conditioned regularly. This must be carried out in the form of dynamic braking procedures. Afterwards, the brake torque must be checked.

If regular brake conditioning in holding applications is not possible, a higher level of security must be used for dimensioning. (Recommendation:  $Si = 2.0 \Rightarrow$  Please observe: The dynamic dimensioning must be taken into account separately)

Wear times are influenced by many factors and can vary substantially. The required inspection and maintenance intervals must be calculated individually according to the system manufacturer's planning documentation.

Wear times are influenced by many factors and can vary substantially. The required inspection and maintenance intervals must be calculated individually according to the system manufacturer's planning documentation.

14/06/2016 TK/MW/GF/HU

Page 14 of 17

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## Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_1 Sizes 60 and 100

(E070 06 005 000 4 EN)

### Replacing the Rotor (6)

#### Before replacing the rotor (6)

- ☐ Clean the brake.



Please observe the section "Cleaning the Brake", see right column.

- ☐ Measure the rotor thickness of the new rotor (6).  
The nominal dimension acc. Table 1 must be given.

#### DANGER



The brake must be load-free. Please check that it is load-free before de-installation. In order to replace the rotor (6), the brake must be unscrewed from the machine wall.

#### Replace the rotor by following the Brake Installation instructions backwards.

When armature disk (3) replacement is necessary, please proceed as follows:

- 1) Unscrew the shoulder screws (4) from the coil carrier (2) and remove the armature disk (3).  
**Attention:** The thrust springs (5) press against the armature disk (3). In order to remove the shoulder screws (4), the armature disk (3) must be pressed against the coil carrier (2) to avoid immediate relaxation of the thrust springs (13). Observe the installation position of the armature disk (3), and ensure that no thrust springs (13) fall out.

#### CAUTION



Danger of injury.

- 2) Lay the new armature disk (3) onto the coil carrier (2) or the thrust springs (13) (observe installation position).
- 3) Press the armature disk (3) down against the spring force and screw in the shoulder screws (4) up to their limits using a **tightening torque acc. Table 1**.

For further assembly of the brake, please follow the Brake Installation instructions, followed by Brake Inspection and Run-in Procedure, see pages 9 and 10.

### Information on the Components

The **friction material** contains different inorganic and organic compounds, which are integrated into a system of hardened binding agents and fibers.

#### Possible hazards:

No potential dangers have been recognized so far when the brake is used according to its intended purpose. When grinding in the brake linings (new condition) and also in case of EMERGENCY STOP braking actions, functional wear can occur (wear on the friction linings); on open brake designs, fine dust can be emitted.

**Classification: Hazardous property**  
**Attention: H-classification: H372**



### Protective measures and rules of behavior:

Do not inhale dusts

Vacuum the dusts at the point of origin (tested suction devices, tested filters acc. DIN EN 60335-2-69 for dust classes H; maintenance of the suction devices and filter replacement at regular intervals).

If local dust suction is not possible or is insufficient, the entire work area must be ventilated using appropriate technology.

#### Additional information:

This friction lining is not a dangerous product in terms of the EC Directive

### Cleaning the Brake



Do not clean the brake using compressed air, brushes or similar devices!

- ☐ Use a suction system or wet towels to clean off the brake dust.
- ☐ Do not inhale brake dust (wear safety gloves / safety goggles)
- ☐ In case of dust formation, a dust mask FFP 2 is recommended.

### Disposal

Our electromagnetic brake components must be disposed of separately as they consist of different materials. Please also observe the relevant authority regulations. Code numbers may vary according to the disassembling process (metal, plastic and cables).

#### Electronic components

(Rectifier / ROBA®-switch / Microswitch):

Products which have not been disassembled can be disposed of under Code No. 160214 (mixed materials) or components under Code No. 160216, or can be disposed of by a certified disposal firm.

#### Brake bodies made of steel with coil /cable and all other steel components:

Steel scrap (Code No. 160117)

#### All aluminum components:

Non-ferrous metals (Code No. 160118)

#### Brake rotor (steel or aluminum pads with friction linings):

Brake linings (Code No. 160112)

#### Seals, O-rings, V-seals, elastomers:

Plastic (Code No. 160119)

14/06/2016 TK/MW/GF/HU

Page 15 of 17

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**Installation and Operational Instructions for  
ROBA-stop®-M Brake Type 891.06\_1  
Sizes 60 and 100**

(E070 06 005 000 4 EN)

**Malfunctions / Breakdowns**

| Malfunction                                                                   | Result of Malfunction                                                  | Possible Causes                                                                               | Solutions<br><input type="checkbox"/> The brake must always be dismantled in order to remove damage and malfunctions.<br><input type="checkbox"/> Damaged parts must be replaced in order to solve the respective problem.<br><input type="checkbox"/> The brake must be cleaned before re-installation. |
|-------------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>The brake does not release completely; permanent grinding of the rotor</b> | The axial flexibility of the rotor is limited; rotor is jammed axially | Incorrect tolerance constellation on the shaft-hub connection                                 | Check tolerances                                                                                                                                                                                                                                                                                         |
|                                                                               |                                                                        | Tolerance errors on the key connection                                                        |                                                                                                                                                                                                                                                                                                          |
|                                                                               |                                                                        | Broken hub due to installation error when mounting                                            | Suitable mounting method                                                                                                                                                                                                                                                                                 |
|                                                                               |                                                                        | Poor shaft quality                                                                            | Check the shaft quality                                                                                                                                                                                                                                                                                  |
|                                                                               |                                                                        | Poor key dimensioning                                                                         | Carry out a key calculation                                                                                                                                                                                                                                                                              |
|                                                                               |                                                                        | Contamination of the hub or rotor toothing due to abraded or worn particles                   | Check the hub and rotor toothing; maintain suitable maintenance intervals                                                                                                                                                                                                                                |
|                                                                               |                                                                        | Wear, damage, deformation or breakage of the hub and rotor toothing                           |                                                                                                                                                                                                                                                                                                          |
|                                                                               | Wiring error on the brake                                              | Incorrect voltage; no DC voltage                                                              | Check voltage; observe the wiring guidelines                                                                                                                                                                                                                                                             |
|                                                                               |                                                                        | Defective electrical wiring                                                                   | Check electrical wiring                                                                                                                                                                                                                                                                                  |
|                                                                               |                                                                        | Defective coil, coil is electrically or thermally overloaded                                  | Check coil capacity; Check insulation resistance                                                                                                                                                                                                                                                         |
|                                                                               | Air gap too small in released condition                                | Due to installation                                                                           | Air gap inspection                                                                                                                                                                                                                                                                                       |
|                                                                               |                                                                        | Penetration of foreign bodies into the brake, in particular magnetisable particles            | Check the brake interior for dirt and clean it                                                                                                                                                                                                                                                           |
|                                                                               |                                                                        | Excessive component temperatures; temperature expansion                                       | Temperature inspection                                                                                                                                                                                                                                                                                   |
| <b>Increased friction work; brake grinds</b>                                  | Excessively long engagement times                                      | Load accelerates the drive line during the brake engagement time                              | Check for correct wiring, switching times and dimensioning                                                                                                                                                                                                                                               |
|                                                                               | Drop in braking torque                                                 | Excessive wear on the rotor                                                                   | Wear inspection; replace the rotor                                                                                                                                                                                                                                                                       |
|                                                                               | Motor starts up against closed brake                                   | Excessive brake attraction times                                                              | Check for correct wiring, switching times; check dimensioning; check motor controls                                                                                                                                                                                                                      |
| <b>Component breakage</b>                                                     | Operating conditions                                                   | Oscillations, vibrations, overload, unpermittedly high speeds                                 | Check operating conditions and dimensioning                                                                                                                                                                                                                                                              |
|                                                                               | Ambient influences, temperature, fluids, media, corrosion              | Friction linings sticking, settling or swelling; changes in friction lining friction behavior | Check protection against environmental influences                                                                                                                                                                                                                                                        |
|                                                                               | Deviations, screw tightening torque                                    | Brake securement, hand release, actuation lever, screws                                       | Check the guidelines and values according to the information in the Installation and Operational Instructions                                                                                                                                                                                            |

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Page 16 of 17

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## Installation and Operational Instructions for ROBA-stop®-M Brake Type 891.06\_1 Sizes 60 and 100

(E070 06 005 000 4 EN)

### Malfunctions / Breakdowns

| Malfunction                                                                     | Result of Malfunction                             | Possible Causes                                                                                         | Solutions<br><input type="checkbox"/> The brake must always be dismantled in order to remove damage and malfunctions.<br><input type="checkbox"/> Damaged parts must be replaced in order to solve the respective problem.<br><input type="checkbox"/> The brake must be cleaned before re-installation. |
|---------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Slipping, permanent grinding of the brake under load; increase in friction work | braking torque too low                            | Brake run-in procedure not carried out                                                                  | Carry out a run-in procedure                                                                                                                                                                                                                                                                             |
|                                                                                 |                                                   | Do not carry out regular conditioning                                                                   | Carry out conditioning of the friction pairing                                                                                                                                                                                                                                                           |
|                                                                                 |                                                   | Incorrect dimensioning                                                                                  | Check the required braking torque                                                                                                                                                                                                                                                                        |
|                                                                                 |                                                   | Incorrect spring configuration                                                                          | Check the spring configuration; have the brake checked at the place of manufacture                                                                                                                                                                                                                       |
|                                                                                 | Drop in braking torque                            | Excessive wear on the rotor                                                                             | Wear inspection                                                                                                                                                                                                                                                                                          |
|                                                                                 |                                                   | Change in friction behavior on the friction lining due to exceeding the maximum permitted sliding speed | Check for correct wiring, switching times and dimensioning                                                                                                                                                                                                                                               |
|                                                                                 | Changes in braking torque                         | Unpermittedly high friction work, squeaking, type and quality of the counter friction surface           | Check for correct wiring, switching times and dimensioning                                                                                                                                                                                                                                               |
|                                                                                 |                                                   | Corrosion on the counter friction surface                                                               | Check the brake for corrosion                                                                                                                                                                                                                                                                            |
|                                                                                 |                                                   | Ambient influences, oil, Water, cleaning media, condensation formation                                  | Check protection against environmental influences                                                                                                                                                                                                                                                        |
|                                                                                 |                                                   | Type and quality of the counter friction surface                                                        | Check the counter friction surface                                                                                                                                                                                                                                                                       |
|                                                                                 |                                                   | Extremely low friction speeds                                                                           | Check the dimensioning                                                                                                                                                                                                                                                                                   |
|                                                                                 | Brake cannot be released                          | Excessive pull-in distance due to unpermitted wear                                                      | Wear inspection; replace the rotor                                                                                                                                                                                                                                                                       |
|                                                                                 |                                                   | No voltage connection                                                                                   | Check the voltage connection                                                                                                                                                                                                                                                                             |
| No braking effect on power failure                                              | Armature disk cannot engage                       | Wind release is activated                                                                               | Deactivate wind release                                                                                                                                                                                                                                                                                  |
| Wind release micro-switch does not emit a signal                                | Error message during normal wind release function | Defective microswitch                                                                                   | Replace the microswitch                                                                                                                                                                                                                                                                                  |
|                                                                                 | Wind release does not function                    | Defective linear solenoid                                                                               | Replace the linear solenoid                                                                                                                                                                                                                                                                              |



mayr® will take no responsibility or guarantee for replacement parts and accessories which have not been delivered by mayr®, or for damage resulting from the use of these products.

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Page 17 of 17

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## 11 Contacting SEW-EURODRIVE

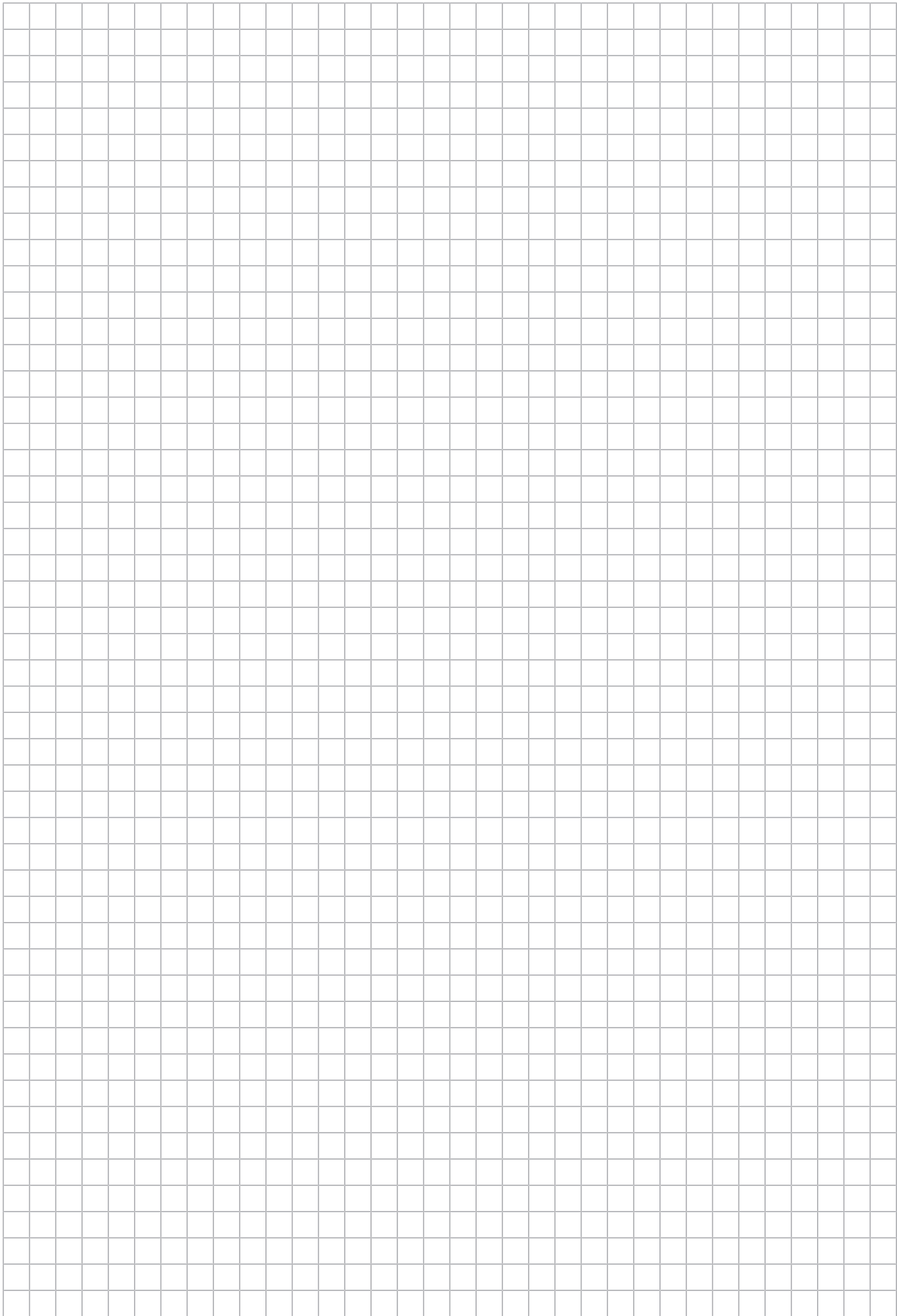
You can find the worldwide contact data and locations on the **SEW-EURODRIVE website** via the following link or the QR code shown below.

<https://www.sew-eurodrive.de/contacts-worldwide>

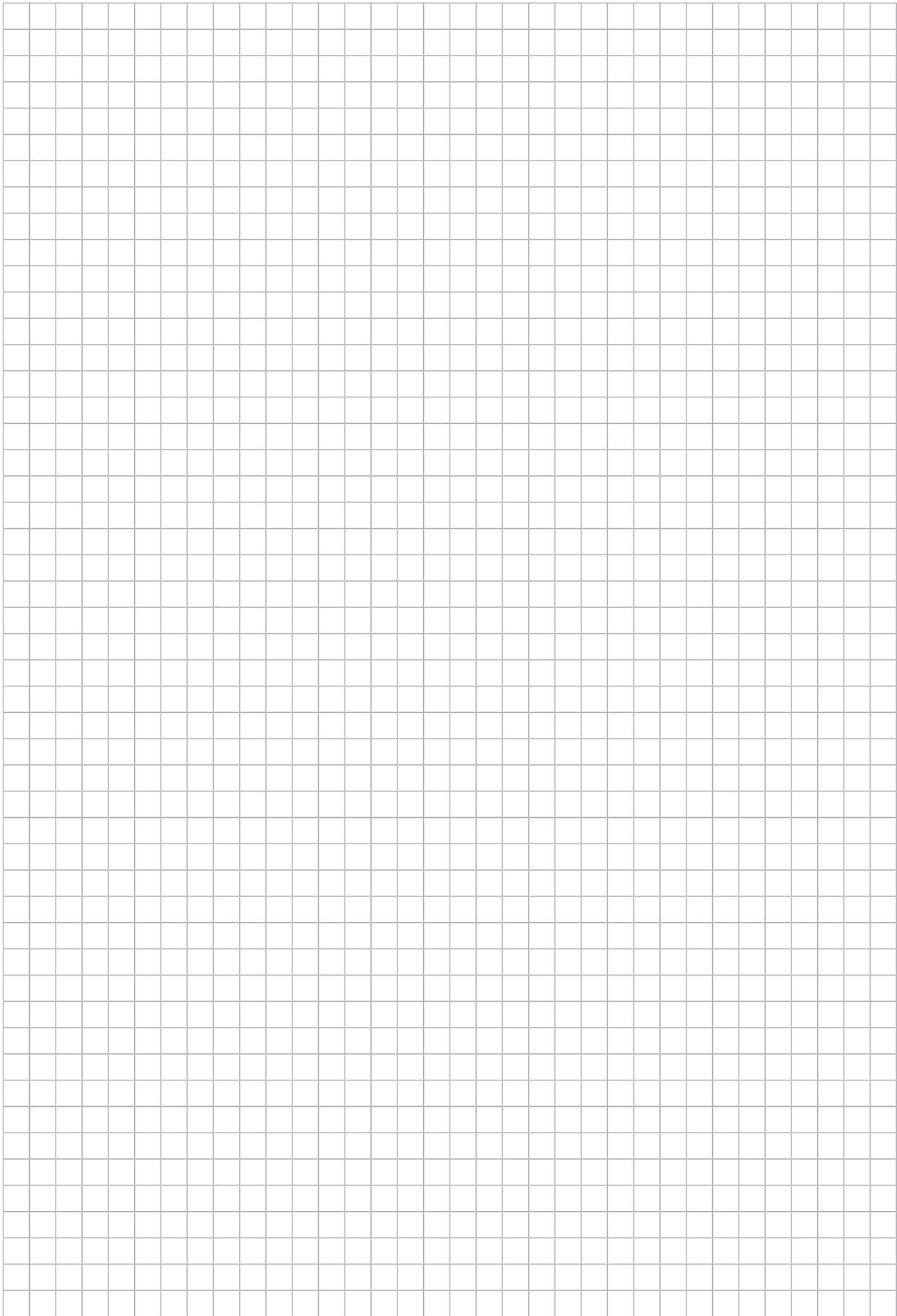


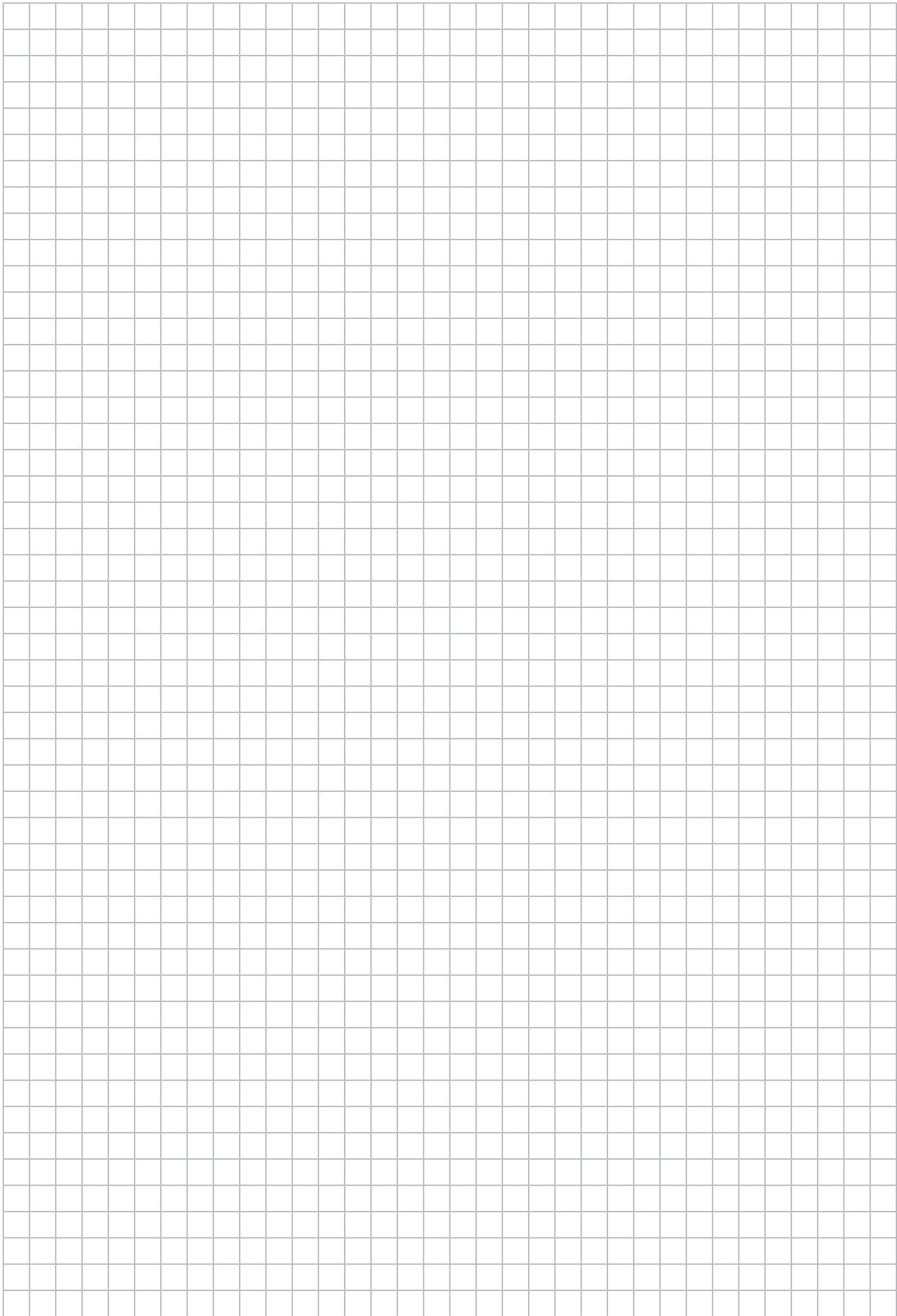
**SEW**  
**EURODRIVE**

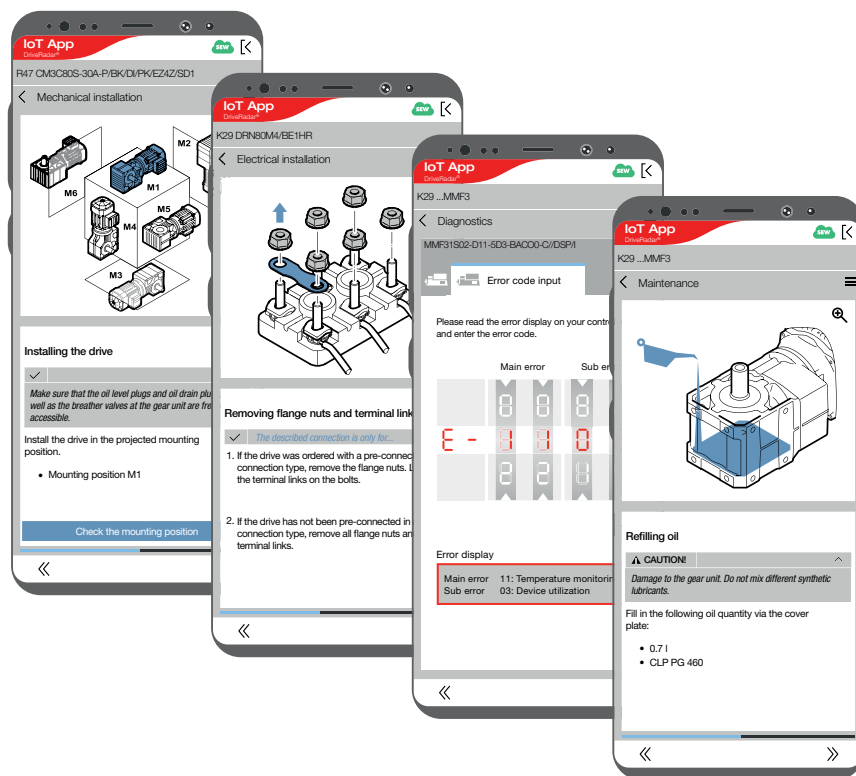














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