SEW EURODRIVE

Operating Instructions

Explosion-protected AC motors

EDR..71 – 225, EDRN63 – 315

According to Class Division System (HazLoc-NA®)

Edition 08/2024

31974554/EN

Table of Contents

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1 General information

1.1 About this documentation

The current version of the documentation 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 for safety notes.

Signal word	Meaning	Consequences if disregarded
⚠ **DANGER**	Imminent hazard	Severe or fatal injuries
⚠ **WARNING**	Possible dangerous situation	Severe or fatal injuries
⚠ **CAUTION**	Possible dangerous situation	Minor injuries
NOTICE	Possible damage to property	Damage to the product or its environment
INFORMATION ON EXPLOSION PROTECTION	Important information about explosion protection	
INFORMATION	Useful information or tip: Simplifies handling of the product.	

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.

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Meaning of the hazard symbols

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

Hazard symbol	Meaning
	General hazard
	Warning of dangerous electrical voltage
	Warning of hot surfaces
	Warning of automatic restart
	Note on explosion protection
	Warning of explosions

1.2.3 Structure of embedded safety notes

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

This is the formal structure of an embedded safety note:

⚠ **SIGNAL WORD!** Type and source of hazard. Possible consequence(s) if disregarded. Measure(s) to prevent the hazard.

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 brands and product names in this documentation are trademarks or registered trademarks of their respective titleholders.

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1.5 Copyright notice

1.6 Other applicable documentation

Observe the corresponding documentation for all additional components.

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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:

- National and regional safety and accident prevention regulations
- Warning and safety signs on the product
- All other relevant project planning documents, installation and startup instructions, and wiring diagrams
- Do not assemble, install or operate damaged products
- All system-specific specifications and conditions

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

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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:

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

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.

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 transportation, storage, operation and waste disposal must be carried out by persons who are trained appropriately. The purpose of the training is to give persons the ability to perform the required tasks and work steps in a safe and correct manner.

2.4 Designated use

The product is intended for use in industrial and commercial systems.

In case of installation in machines, startup of the motors, (i.e. start of designated operation) is prohibited until it is determined that the machine complies with the Canadian Electrical Code C22.1 (latest edition) in Canada or the National Electrical Code NFPA 70 (latest edition) in the USA as well as all applicable regional standards and regulations.

INFORMATION

- The motor may only be operated under the conditions described in chapter "Startup" (→ 🗎 92).
- A motor may only be operated on an inverter if the requirements of the CSA approval and/or this documentation and the information on the nameplate of the motor, if available, are fulfilled.
- Make sure that there are no aggressive substances in the vicinity that could damage the paint and seals.

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2.5 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 is damaged, it must not be assembled, installed or started up.

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 lifting eyes if available.
- 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.

2.6 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" (→ 🗎 29).

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2.6.1 Restrictions of use

The following applications are prohibited unless the device is explicitly designed for such use:

- Use in areas exposed to harmful oils, acids, gases, vapors, dust, and radiation
- Operation in applications with impermissibly high mechanical vibration and shock loads in excess of the regulations stipulated in EN 61800-5-1

2.7 Electric work

2.7.1 Carrying out electrical work safely

Observe the following information to carry out electrical work safely during installation and maintenance:

- Electrical work may only be carried out by electrically skilled persons.
- Always adhere to the 5 safety rules for working on electrical components:
  - Disconnect
  - Secure the drive against restart
  - Check that no voltage is applied
  - Ground and short-circuit it
  - Cover or safeguard neighboring live parts
- When the device is switched on, dangerous voltages are present at all power connections as well as at any connected cables and terminals. This also applies even when the product is inhibited and the motor is at standstill.

2.7.2 Electrical connection

Exceeding the tolerances specified in EN 60034-1 – voltage ± 5%, frequency ± 2%, curve shape, symmetry – increases the heating and influences electromagnetic compatibility. Also adhere to the standard EN 60364. Observe any applicable, national regulations.

In addition to the generally applicable installation regulations for low-voltage electrical equipment, you must observe the special regulations for the installation of electrical systems in hazardous locations: NFPA 70 (for USA) and C22.1 (for Canada) and plant-specific conditions.

Observe the wiring information and differing data on the nameplate as well as the provided wiring diagram.

The connection must be a permanently secure electrical connection (no protruding wire ends); use the cable end equipment intended for this purpose. Establish a secure protective earth connection. When the motor is connected, the distances between live parts and between live and conductive parts must not be shorter than the minimum values according to CSA C22.2 No. 100 and national regulations.

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".

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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 preventive 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. Eliminating the cause of the problem or performing a reset may result in the drive restarting automatically. If, for safety reasons, this is not permitted for the drive-controlled machine, first disconnect the product from the supply system and then start troubleshooting.

Explosion due to overheating when using motors with backstop /RS

At low motor speeds, the centrifugal forces are so low that the sprags rub against the inner and outer ring. This results in overheating of the friction surfaces.

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

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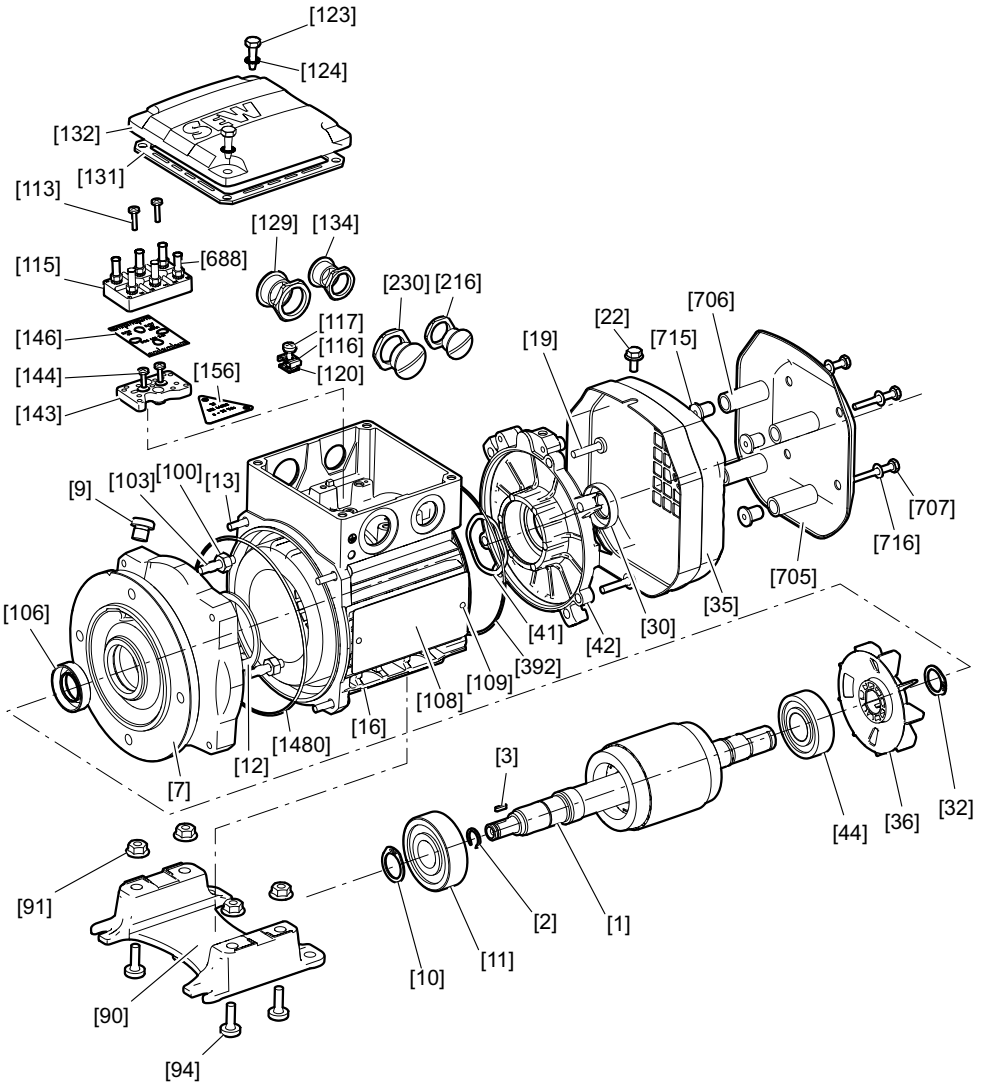
3 Motor structure

3.1 Basic structure of EDRN63 motors



28389594251

[1]	Rotor	[32]	Retaining ring	[109]	Grooved pin	[144]	Screw
[2]	Retaining ring	[35]	Fan guard	[113]	Pan head screw	[146]	Designation plate
[3]	Key	[36]	Fan	[115]	Terminal board	[156]	Information sign
[7]	Flanged endshield	[41]	Equalizing ring	[116]	Terminal clip	[216]	Hex nut
[9]	Screw plug	[42]	Rear endshield	[117]	Hex head screw	[230]	Hex nut
[10]	Retaining ring	[44]	Deep groove ball bearing	[120]	Support plate	[392]	Gasket
[11]	Deep groove ball bearing	[90]	Bed plate	[123]	Hex head screw	[688]	Protection cap
[12]	Retaining ring	[91]	Hex nut	[124]	Tooth lock washer	[705]	Canopy
[13]	Cap screw	[94]	Flat head screw	[129]	Screw plug	[706]	Spacer
[16]	Stator	[100]	Hex nut	[131]	Gasket for cover	[707]	Pan head screw
[19]	Screw	[103]	Stud	[132]	Terminal box cover	[715]	Blind rivet
[22]	Hex head screw	[106]	Oil seal	[134]	Screw plug	[716]	Washer
[30]	Oil seal	[108]	Nameplate	[143]	Adapter plate	[1480]	O-ring

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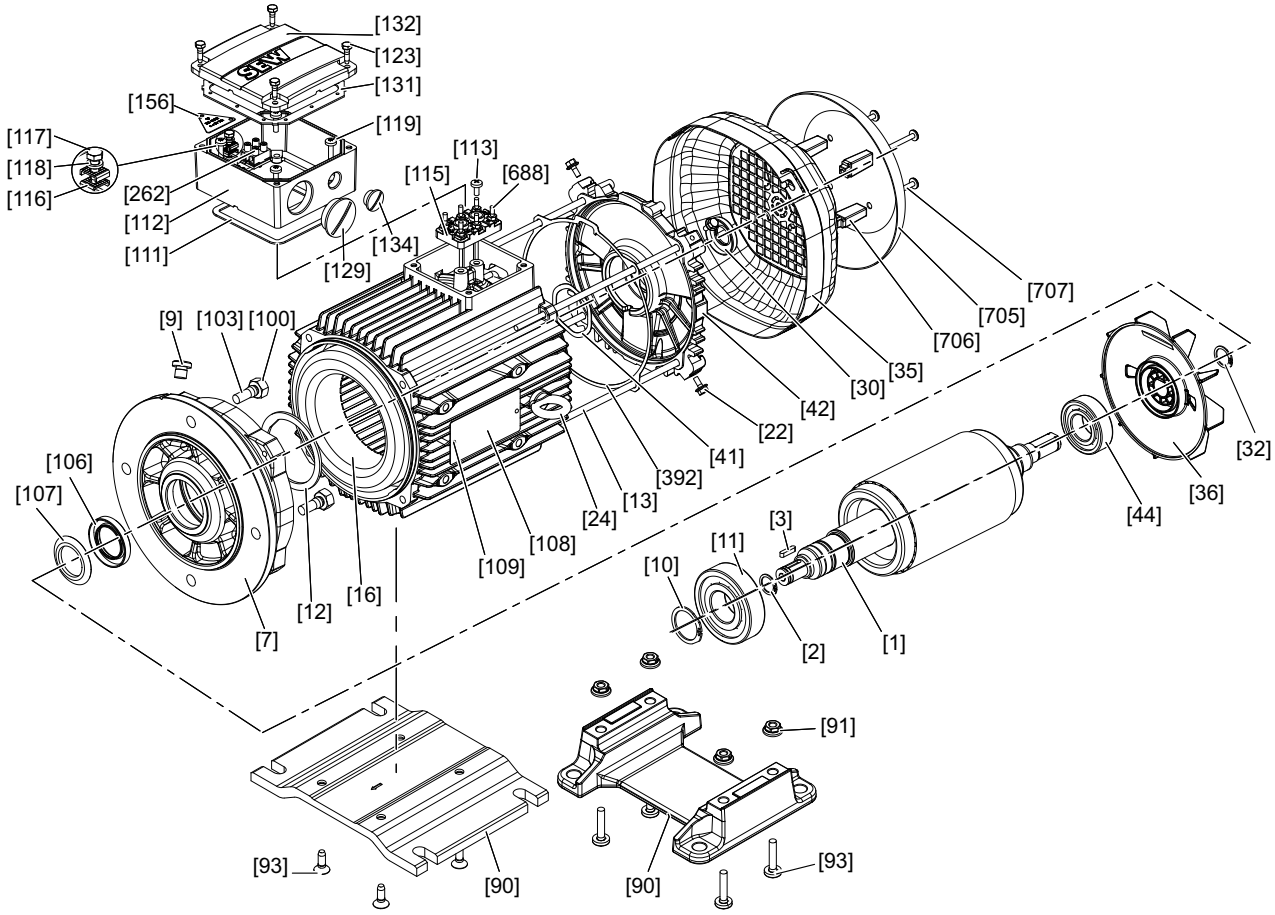
3.2 Basic structure of EDR..71 – 132, EDRN71 – 132S motors



16342499211

[1]	Rotor	[30]	Oil seal	[106]	Oil seal	[123]	Hex head screw
[2]	Retaining ring	[32]	Retaining ring	[107]	Oil flinger	[129]	Screw plug with O-ring
[3]	Key	[35]	Fan guard	[108]	Nameplate	[131]	Gasket for cover
[7]	Flanged endshield	[36]	Fan	[109]	Grooved pin	[132]	Terminal box cover
[9]	Screw plug	[41]	Equalizing ring	[111]	Gasket for lower part	[134]	Screw plug with O-ring
[10]	Retaining ring	[42]	Rear endshield	[112]	Terminal box lower part	[156]	Information sign
[11]	Deep groove ball bearing	[44]	Deep groove ball bearing	[113]	Pan head screw	[262]	Terminal clip, complete
[12]	Retaining ring	[90]	Bed plate	[115]	Terminal board	[392]	Gasket
[13]	Cap screw	[91]	Hex nut	[116]	Terminal clip	[688]	Protection caps
[16]	Stator	[93]	Screws	[117]	Hex head screw	[705]	Canopy
[22]	Hex head screw	[100]	Hex nut	[118]	Lock washer	[706]	Spacer
[24]	Lifting eyebolt	[103]	Stud	[119]	Pan head screw	[707]	Pan head screw

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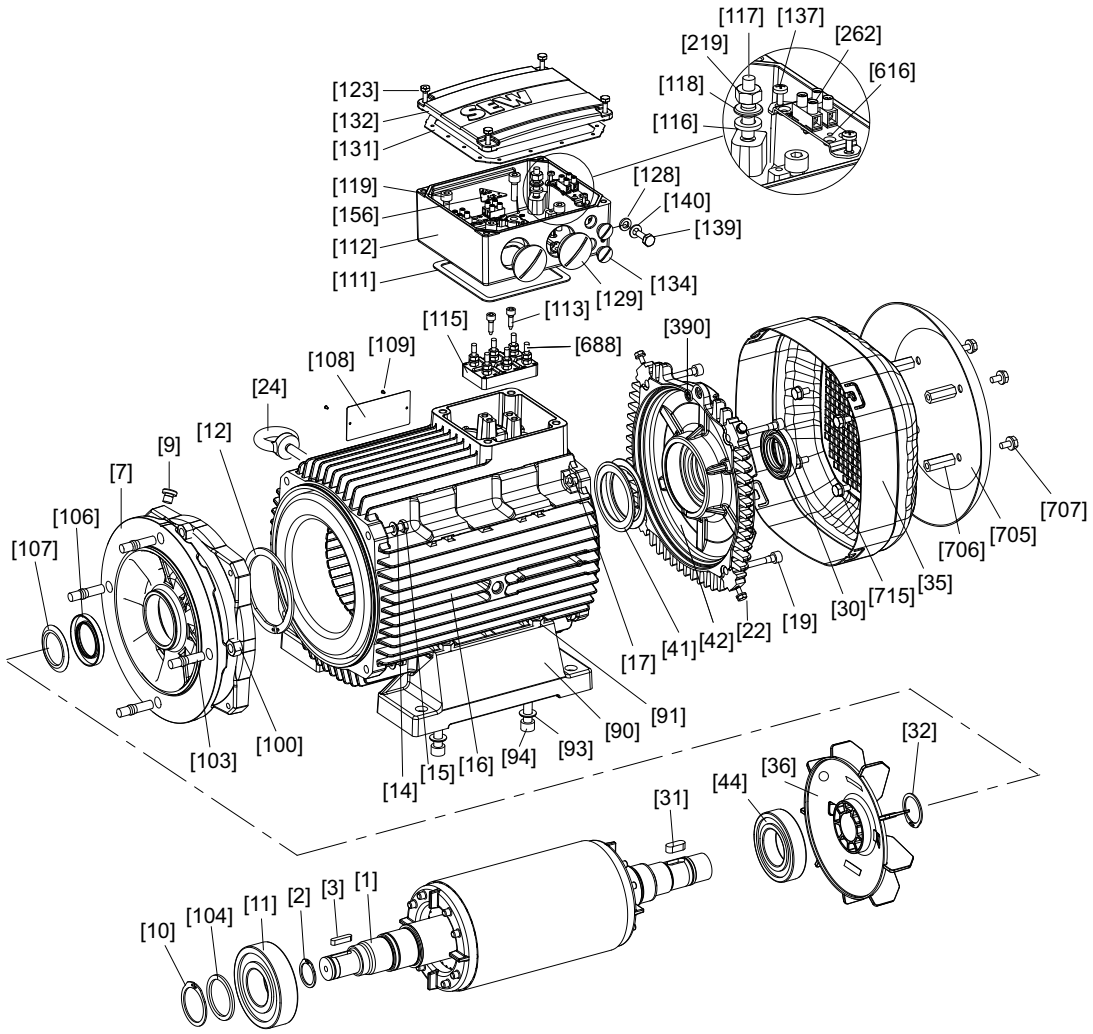
3.3 Basic structure EDRE160 – 180, EDRN132M – 180



16342348683

[1]	Rotor	[31]	Key	[108]	Nameplate	[134]	Screw plug with O-ring
[2]	Retaining ring	[32]	Retaining ring	[109]	Grooved pin	[137]	Screw
[3]	Key	[35]	Fan guard	[111]	Gasket for lower part	[139]	Hex head screw
[7]	Flange	[36]	Fan	[112]	Terminal box lower part	[140]	Washer
[9]	Screw plug	[41]	Cup spring	[113]	Screw	[156]	Information label
[10]	Retaining ring	[42]	B-side endshield	[115]	Terminal board	[219]	Hex nut
[11]	Deep groove ball bearing	[44]	Deep groove ball bearing	[116]	Serrated lock washer	[262]	Connection terminal
[12]	Retaining ring	[90]	Foot	[117]	Stud	[390]	O-ring
[14]	Washer	[91]	Hex nut	[118]	Washer	[616]	Retaining plate
[15]	Hex head screw	[93]	Washer	[119]	Cap screw	[688]	Protection caps
[16]	Stator	[94]	Cap screw	[123]	Hex head screw	[705]	Canopy
[17]	Hex nut	[100]	Hex nut	[128]	Serrated lock washer	[706]	Spacer
[19]	Cap screw	[103]	Stud	[129]	Screw plug with O-ring	[707]	Hex head screw
[22]	Hex head screw	[104]	Supporting ring	[131]	Gasket for cover	[715]	Hex head screw
[24]	Lifting eyebolt	[106]	Oil seal	[132]	Terminal box cover		
[30]	Sealing ring	[107]	Oil flinger				

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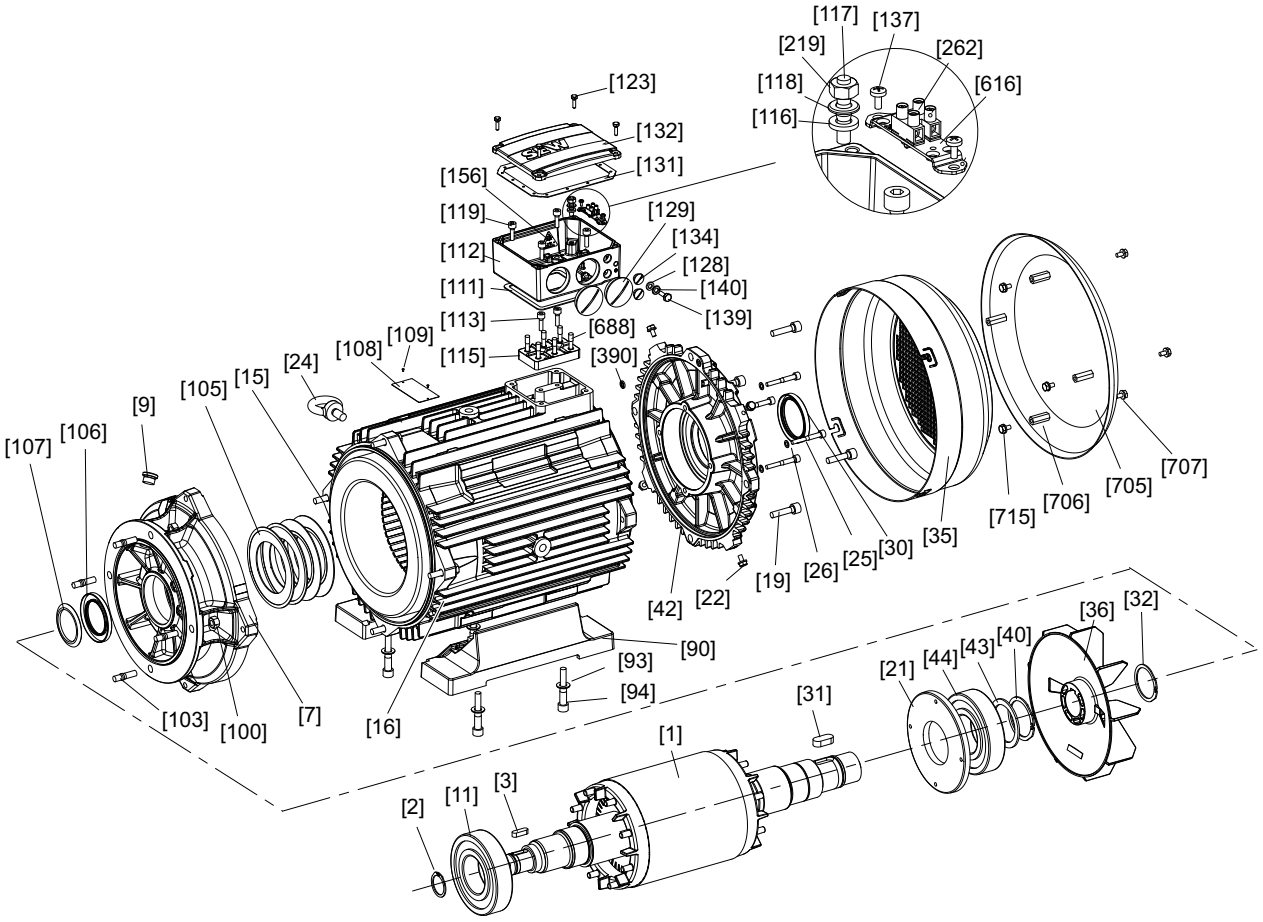
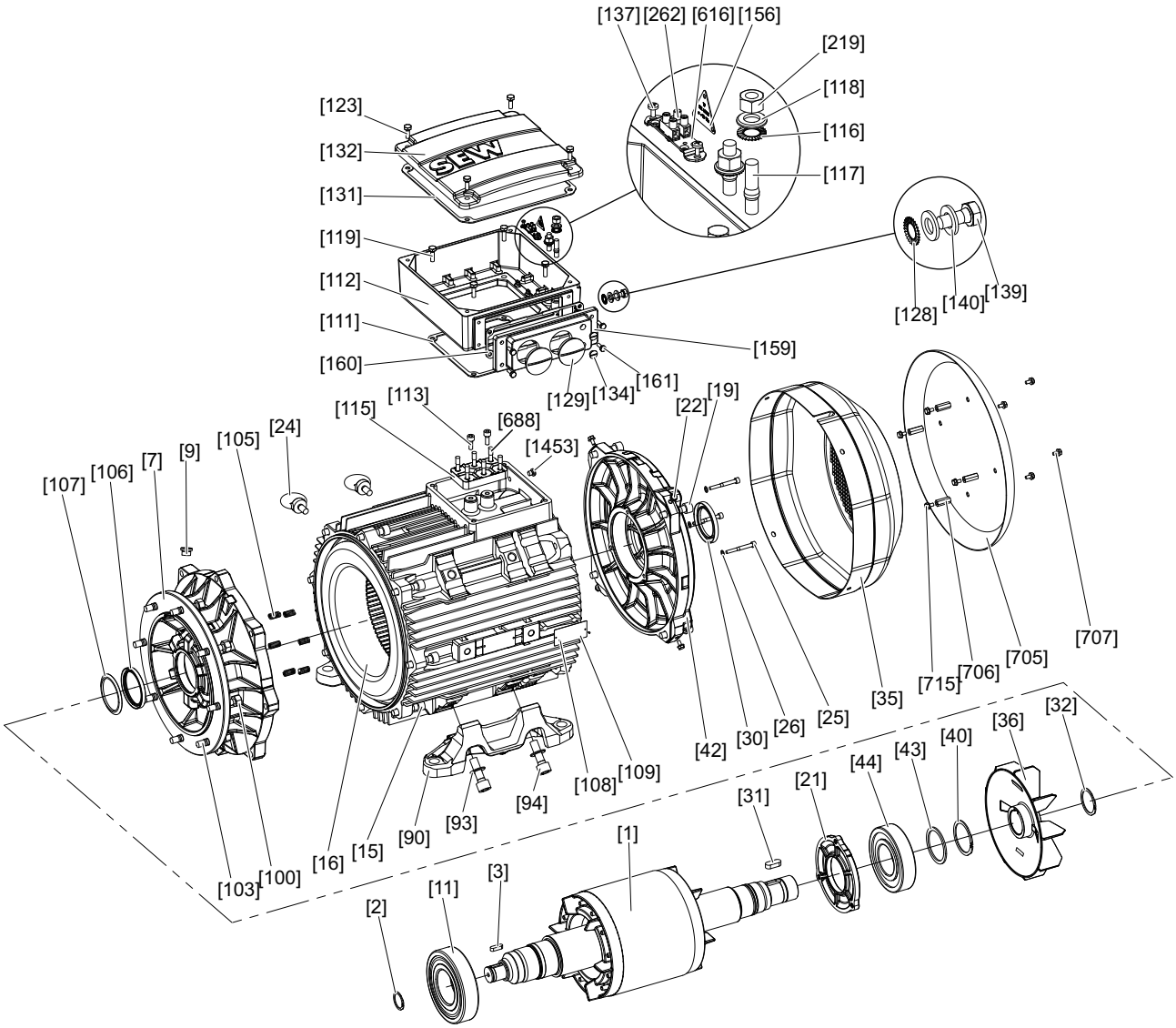
3.4 Basic structure EDRE200 – 225, EDRN200 – 225



16342491915

[1]	Rotor	[31]	Key	[107]	Oil flinger	[132]	Terminal box cover
[2]	Retaining ring	[32]	Retaining ring	[108]	Nameplate	[134]	Screw plug
[3]	Key	[35]	Fan guard	[109]	Grooved pin	[137]	Screw
[7]	Flange	[36]	Fan	[111]	Gasket for lower part	[139]	Hex head screw
[9]	Screw plug	[40]	Retaining ring	[112]	Terminal box lower part	[140]	Washer
[11]	Deep groove ball bearing	[42]	B-side endshield	[113]	Cap screw	[156]	Information label
[15]	Hex head screw	[43]	Supporting ring	[115]	Terminal board	[219]	Hex nut
[16]	Stator	[44]	Deep groove ball bearing	[116]	Serrated lock washer	[262]	Connection terminal
[19]	Cap screw	[90]	Foot	[117]	Stud	[390]	O-ring
[21]	Oil seal flange	[93]	Washer	[118]	Washer	[616]	Retaining plate
[22]	Hex head screw	[94]	Cap screw	[119]	Cap screw	[688]	Protection caps
[24]	Lifting eyebolt	[100]	Hex nut	[123]	Hex head screw	[705]	Canopy
[25]	Cap screw	[103]	Stud	[128]	Serrated lock washer	[706]	Spacer bolt
[26]	Shield ring	[105]	Cup spring	[129]	Screw plug	[707]	Hex head screw
[30]	Oil seal	[106]	Oil seal	[131]	Gasket for cover	[715]	Hex head screw

3.5 Basic structure EDRN250 – 280



16342494347

[1]	Rotor	[32]	Retaining ring	[109]	Grooved pin	[139]	Hex head screw
[2]	Retaining ring	[35]	Fan guard	[111]	Gasket for lower part	[140]	Washer
[3]	Key	[36]	Fan	[112]	Terminal box lower part	[156]	Information label
[7]	Flange	[40]	Retaining ring	[113]	Cap screw	[159]	Connection piece
[9]	Screw plug	[42]	B-side endshield	[115]	Terminal board	[160]	Connection piece seal
[11]	Deep groove ball bearing	[43]	Supporting ring	[116]	Serrated lock washer	[161]	Hex head screw
[15]	Cap screw	[44]	Deep groove ball bearing	[117]	Stud	[219]	Hex nut
[16]	Stator	[90]	Foot	[118]	Washer	[262]	Connection terminal
[19]	Cap screw	[93]	Washer	[119]	Hex head screw	[616]	Retaining plate
[21]	Oil seal flange	[94]	Cap screw	[123]	Hex head screw	[688]	Protection caps
[22]	Hex head screw	[100]	Hex nut	[128]	Serrated lock washer	[705]	Canopy
[24]	Lifting eyebolt	[103]	Stud	[129]	Screw plug	[706]	Spacer bolt
[25]	Cap screw	[105]	Compression spring	[131]	Gasket for cover	[707]	Hex head screw
[26]	Shield ring	[106]	Oil seal	[132]	Terminal box cover	[715]	Hex head screw
[30]	Oil seal	[107]	Oil flinger	[134]	Screw plug	[1453]	Screw plug
[31]	Key	[108]	Nameplate	[137]	Screw		

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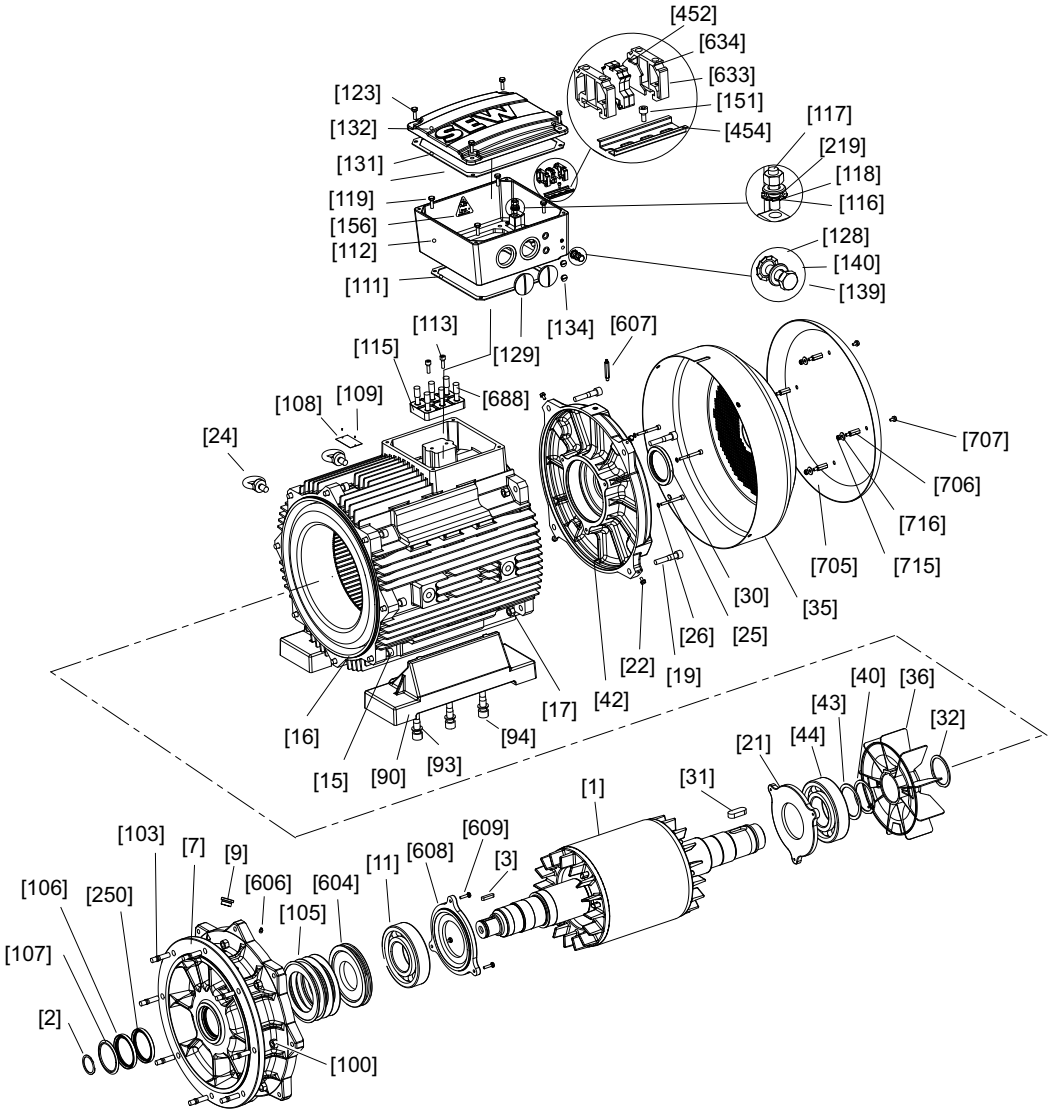
3.6 Basic structure EDRN315



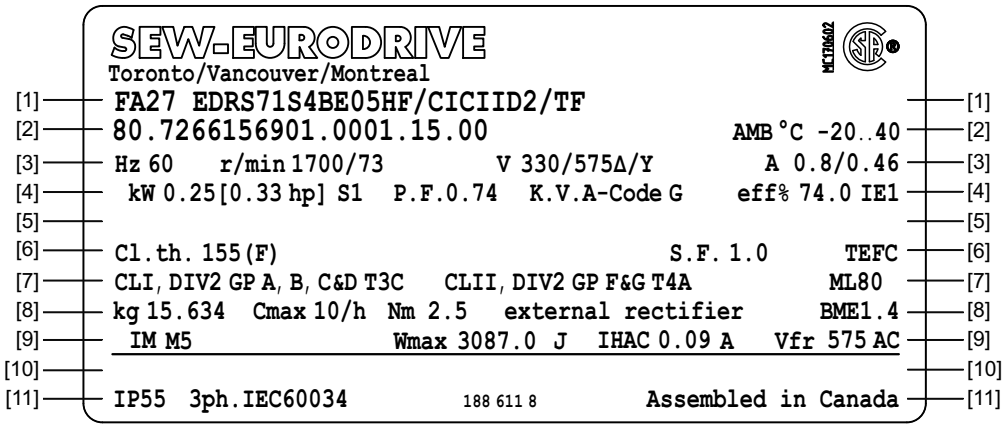
16342496779

[1]	Rotor	[32]	Retaining ring	[111]	Gasket for lower part	[156]	Information label
[2]	Retaining ring	[35]	Fan guard	[112]	Terminal box lower part	[219]	Hex nut
[3]	Key	[36]	Fan	[113]	Cap screw	[250]	Oil seal
[7]	Flange	[40]	Retaining ring	[115]	Terminal board	[452]	Terminal strip
[9]	Screw plug	[42]	B-side endshield	[116]	Serrated lock washer	[454]	Mounting rail
[11]	Rolling bearing	[43]	Supporting ring	[117]	Stud	[604]	Lubrication ring
[15]	Cap screw	[44]	Rolling bearing	[118]	Washer	[606]	Grease nipple
[16]	Stator	[90]	Foot	[119]	Hex head screw	[607]	Grease nipple
[17]	Hex nut	[93]	Washer	[123]	Hex head screw	[608]	Oil seal flange
[19]	Cap screw	[94]	Cap screw	[128]	Serrated lock washer	[609]	Hex head screw
[21]	Oil seal flange	[100]	Hex nut	[129]	Screw plug	[633]	End bracket
[22]	Hex head screw	[103]	Stud	[131]	Gasket for cover	[634]	End plate
[24]	Lifting eyebolt	[105]	Cup spring	[132]	Terminal box cover	[688]	Protection caps
[25]	Cap screw	[106]	Oil seal	[134]	Screw plug	[705]	Canopy
[26]	Shield ring	[107]	Oil flinger	[139]	Hex head screw	[706]	Spacer bolt
[30]	Oil seal	[108]	Nameplate	[140]	Washer	[707]	Hex head screw
[31]	Key	[109]	Grooved pin	[151]	Cap screw	[715]	Hex nut
						[716]	Washer

3.7 Nameplate

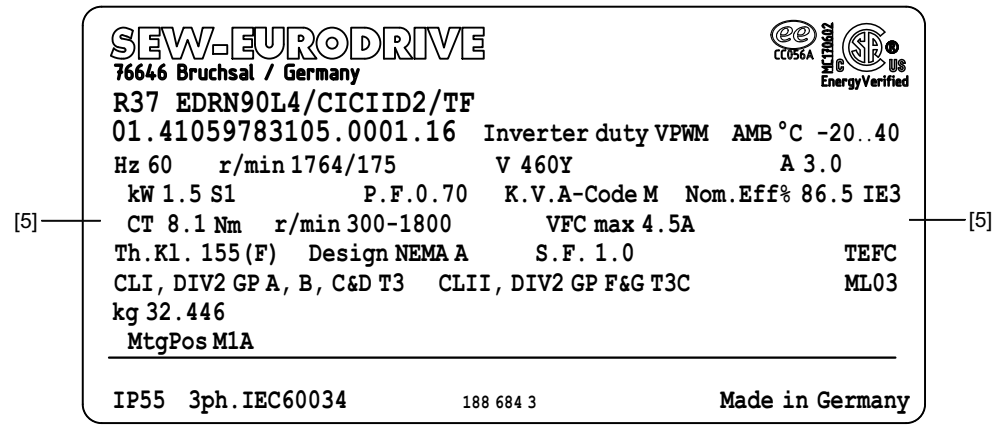
3.7.1 EDR../EDRN.. motor nameplate

The following figure shows a nameplate for line operation:



9007215424625675

The following figure shows a nameplate for inverter operation:



9007216013911051

Line	Information
[1]	• Type designation
[2]	• Serial number • Permitted ambient temperature range
[3]	• Nominal frequency • Nominal speed motor/gear unit output • Nominal voltage with connection type[1)] • Nominal current
[4]	• Nominal power in kW/hp and duty type • Power factor • KVA code according to NEMA MG1 • Efficiency information with nominal efficiency and IE class

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Line	Information
[5]	• Continuous torque MCT in specified speed range[2)] • Speed range with constant torque (300 = continuous minimum speed n_{min}, 1800 = continuous maximum speed n_{max})[2)] • Maximum dynamic current in VFC mode I_{max} VFC[2)]
[6]	• Thermal class • Design letter according to NEMA MG1 • Service factor according to NEMA • Degree of protection and cooling
[7]	• Information on explosion protection • ML = Mounting Location
[8]	• Weight in kg/lb • Switching frequency of the brake • Braking torque • Installation location of brake control • Brake control type
[9]	• Mounting position • Maximum braking work to adjustment • Nominal current of brake control • Nominal voltage of brake (connection to brake control)
[10]	• Customer-specific details
[11]	• Degree of protection according to IEC • Number of phases and underlying rating and performance standards (IEC 60034X and/or equivalent national standard)

1) Motors for inverter operation are only available with one voltage.

2) Additional information for motors for inverter operation

Some specifications on the nameplate can be given either in SI units or imperial units.

	SI unit	Imperial unit
Power	kW	hp
Braking torque	Nm	lb-in
Weight	kg	lb
Gear unit torque	Nm	lb-in

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3.7.2 Nameplate marks

The marks on the upper edge of the nameplate are only present when the motor has been certified accordingly or when it includes the relevant components. The following table contains an explanation of all marks:

Mark	Meaning
	The CSA mark indicates that a product complies with the applicable Canadian standards.
	The CSA/US mark indicates that a product complies with the applicable US and Canadian standards.
	The CSA/Energy Verification mark indicates that a product complies with the applicable Canadian standards as well as Canadian Federal and Provincial Energy Efficiency Regulations.
	The CSA C/US combined Energy Verification mark indicates that the product meets applicable US and Canadian standards and complies with Canadian Federal and Provincial Energy Efficiency Regulations along with US Federal Energy Efficiency Regulations.
	The DoE mark indicates that a product complies with US limit values for efficiency levels of AC motors.

3.7.3 Serial number

The following table lists the structure of a serial number:

Example: 01. 12212343 01. 0001. 18	
01.	Sales organization
12212343	Order number (8 digits)
01.	Order item (2 digits)
0001	Quantity (4 digits)
18	End digits of the year of manufacture (2 digits)

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3.8 Type designation

The following table shows a type designation as an example:

EDRN132M4/BE11/HR/FI/TF	
E	Explosion-protected design
DR	Product family
N	Code for product family identification
132M	Size and length
4	Number of poles
/**BE11**	Brake
HR	Manual brake release
/FI	Output option
/TF	Thermal motor protection

3.8.1 Designation of the motors

EDRN..	Explosion-protected AC motors in compliance with the energy efficiency class IE3
63 – 315	Sizes: 63, 71, 80, 90, 100, 112, 132, 160, 180, 200, 225, 250, 280, 315
S, MK, MS, M, ME, LS, LM, L, H	Lengths
4	Number of poles

3.9 Designs and options

3.9.1 Explosion-protected motors

The following table shows the option variants for hazardous locations:

Available class and division	**Description**
/CID2	Motors suitable for use in class I, division 2 Gas atmosphere
/CIID2	Motors suitable for use in class II, division 2 Dust atmosphere
/CICIID2	Motors suitable for use in class I or II, division 2 Gas or dust atmospheres

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3.9.2 Output variants

The following table shows possible output variants:

Designation	Available class and division	Description
/FI	/CID2, /CIID2, /CICIID2	IEC foot-mounted motor
/F.A, /F.B		Universal foot-mounted motor
/FG		7-series integral motor, as stand-alone motor
/FF		IEC flange-mounted motor with bore
/FT		IEC flange-mounted motor with threads
/FL		General flange-mounted motor (other than IEC)
/FM		7-series integral motor with IEC feet
/FE		IEC flange-mounted motor with bore and IEC feet
/FY		IEC flange-mounted motor with threads and IEC feet
/FK		General flange-mounted motor (deviating from IEC) with feet
/FC		C-face flange-mounted motor, dimensions in inch

3.9.3 Mechanical attachments

The following table shows possible mechanical attachments:

Designation	Available class and division	Description
/BE..	/CID2, /CIID2, /CICIID2	Spring-loaded brake with specification of size
/HF		Manual brake release, lockable
/HR		Manual brake release of the brake, automatic re-engaging function
/RS		Backstop

3.9.4 Temperature sensor/temperature detection

The following table shows the thermal protection options:

Designation	Available class and division	Description
/TF	/CID2, /CIID2, /CICIID2	Temperature sensor (PTC thermistor or PTC resistor)
/PT		1 or 3 PT100 sensor(s)
/PK		PT1000 temperature sensor

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3.9.5 Encoders

The following table shows possible encoder designs:

Designation	Available class and division	Description
/XV.A	/CID2, /CIID2, /CICIID2	Mounting adapter for third-party speed sensors (SI units)
/XC..		Mounting adapter for third-party speed sensors (Imperial units)
/XVCC		Mounting adapter with encoder mounted at factory
/XH..		Mounting adapter for third-party hollow-shaft encoders

3.9.6 Bearings

Designation	Available class and division	Description
/NS	/CID2, /CIID2, /CICIID2	Relubrication device
/ERF		Reinforced bearings on A-side with rolling bearing
/NIB		Insulated bearing B-side

3.9.7 Ventilation

The following table shows possible ventilation variants:

Designation	Available class and division	Description
/AL	/CID2, /CIID2, /CICIID2	Metal fan
None		Standard plastic fan
/C		Canopy for fan guard

3.9.8 Other additional features

The following table shows an additional feature:

Designation	Available class and division	Description
/2W	/CID2, /CIID2, /CICIID2	2nd shaft end on the motor/brakemotor
/RI		Reinforced winding insulation

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3.10 Designation of motors for hazardous locations

The motors in these designs according to Class/Division system meet the general requirements of the "Canadian Electrical Code", the U.S. American NFPA 70 (National Electric Code), as well as the relevant national standards.

The EDR../EDRN.. motors are CSA-certified as "non-incentive electrical equipment for use in Class I and Class II, Division 2 hazardous locations" according to the following product classes.

- CLASS 4228 01 - MOTORS AND GENERATORS - For Hazardous Locations
- CLASS 4228 81 - MOTORS AND GENERATORS - Certified to US Standards

3.10.1 Application areas

The following table shows the areas of application according to the nameplate designation:

Identifier for hazardous locations	Area	Motor for hazardous locations
CID2	With potentially explosive gas-air/vapor-air mixtures	Class I, division 2, groups A, B, C and D
CIID2	With explosive dust/air mixtures	Class II, division 2, groups F and G
CICIID2	With potentially explosive gas-air/vapor-air mixtures and with potentially explosive dust-air mixtures	Class I, division 2, groups A, B, C and D Class II, division 2, groups F and G

3.10.2 Classes

The class defines a general limit of the physical properties of the hazardous substances.

Class I: Gases, vapors, and liquids that can be present in sufficient quantities to be explosive or ignitable.

Class II: Dust or combustible dust that can be present in sufficient quantities to create potentially explosive mixtures or electrically conductive dust.

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3.10.3 Groups

In addition, hazardous substances are assigned to different groups according to the nature of the hazardous substance.

The following table shows the assignment of the existing classes and groups:

Assignment of groups A – D in class I		Assignment of groups E – G in class II	
Gas and vapor		Dust	
Group A	Acetylene	Group E[1)]	Flammable metal dust, including aluminum, magnesia, or similar substances
Group B	Flammable gas, flammable vapor, or flammable vapor-air mixtures, including hydrogen, butadiene, ethylene oxide, propylene oxide	Group F	Flammable dust containing carbon, e.g. black coal, carbon dust, charcoal, and coke dust
Group C	Flammable gas, flammable vapor, or flammable vapor-air mixtures, including ethylene, acetaldehyde, cyclopropane, ether, hydrogen sulfide	Group G	Flammable dust not covered by group E or F, including flour, grain, wood, plastic, and chemicals
Group D	Flammable gas, flammable vapor, or flammable vapor-air mixtures, including propane, acetone, alcohol, ammonia, gasoline, solvents, natural gas, propylene	–	–

1) Group E is not available for EDR../EDRN.. motors.

Note that the table is not exhaustive. For a full description of the groups, refer to the standards CSA C22.1 and NFPA 70.

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3.10.4 Temperature classes

EDR.., EDRN.. motors in class I for hazardous locations are additionally labeled with the respective temperature class. It is listed on the nameplate and specifies the maximum surface temperature.

The following table shows all possible temperature classes:

Temperature class	Maximum surface temperature
T1	450 °C
T2	300 °C
T2A	280 °C
T2B	260 °C
T2C	230 °C
T2D	215 °C
T3[1)]	**200 °C**
T3A	180 °C
T3B[1)]	**165 °C**
T3C[1)]	**160 °C**
T4	135 °C
T4A	**120 °C**
T5	100 °C
T6	85 °C

1) These temperature classes are available from SEW-EURODRIVE.

EDR.., EDRN.. motors of class I for hazardous locations from SEW-EURODRIVE are labeled with one of the following temperature classes depending on the operating mode:

Operating mode	Temperature class
Line operation	T3C, T3 (optional)
Inverter operation	T3
Brakemotor	T3B

Prior to startup make sure that: The temperature class specified on the motor is not higher than the ignition temperature of the hazardous substances (dust, fiber, gas, or vapor). This must not be the case, even if the ambient conditions correspond with the class and group listed on the nameplate.

INFORMATION

EDR.., EDRN.. motors of temperature class T3 (max. 200 °C), T3B (max. 165 °C), and T3C (max. 160 °C) can be safely used with gases that have a higher ignition temperature.

EDR.., EDRN.. motors of Class II hazardous locations from SEW-EURODRIVE are labeled with temperature class T4A (line operation) and T3C (inverter operation).

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4 Mechanical installation

4.1 Before you start

Only install the device if the following conditions are met:

- 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.
- The drive is undamaged (no damage caused by transportation or storage).
- All transport protection has been removed.
- Ambient temperature is as specified on the nameplate.

  Note that the temperature range of the gear unit might also be restricted (see "Gear units" operating instructions).
- You have ensured that there are no oils, acids, gases, vapors, radiation, etc. present.
- Options, such as encoder and brake, are suitable for the for the ambient conditions.
- The installation altitude is max. 1000 m above sea level. For altitudes above 1000 m above sea level, please refer to the chapter on performance reduction in the catalog “AC motors DRN63 – 315, DR2S56 – 225, DR2L71 – 225”.
- 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 information above refers to standard orders. The requirements for special designs might vary from the standard. For this reason, 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 any damaged seals.

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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 any damaged rolling bearings.

Reduced grease quantity

7. If motors with relubrication devices 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 chapter "Measuring the insulation resistance" (→ 🗎 30)) and dry the motor (see chapter "Drying the electric cylinder" (→ 🗎 30)).

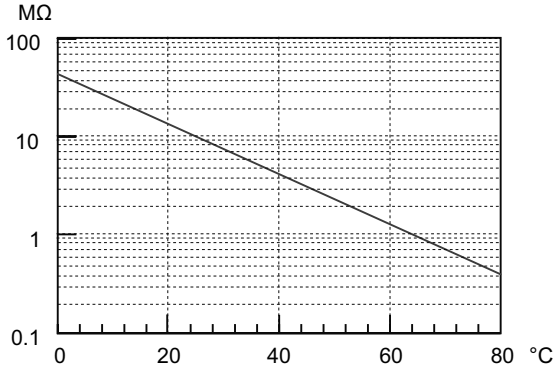
4.2.1 Checking the brake

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 electric cylinder

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.

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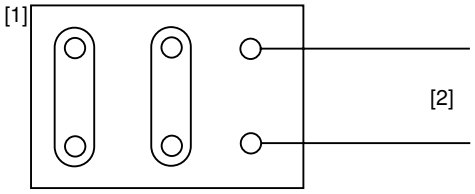
Drying the motor with an isolation transformer

1. Connect the windings in series.
2. Auxiliary AC voltage supply max. 10% of the nominal voltage with max. 20% of the rated current.

Connect the windings in series: Wiring diagram R13



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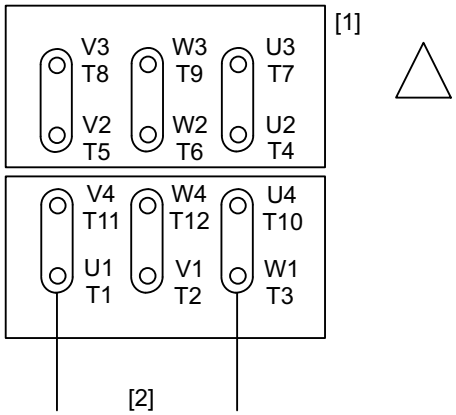
[1] Motor terminal board [2] Transformer

Connect the windings in series: Wiring diagram R72



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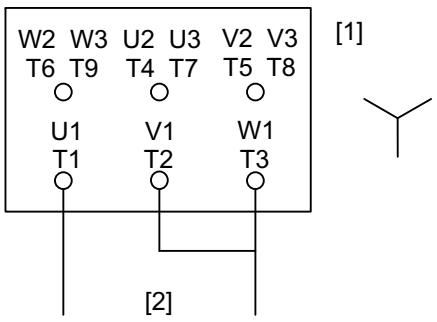
[1] Motor terminal boards [2] Transformer

Connect the windings in series: Wiring diagram R76



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[1] Motor terminal board [2] Transformer

4.3 Motor installation notes

Observe the following when setting up the motor:

⚠ CAUTION

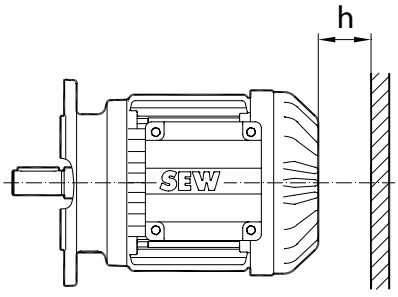
Sharp edges due to open keyway.

Risk of cutting injuries.

- Insert the key into the keyway.
- Pull a protective tubing over the shaft.

- Remove any anti-corrosion agent and dirt from motor shaft ends and flange surfaces. Use a commercially available solvent. Do not allow the solvent to come in contact with the bearings or sealing rings.
- The mounting position for installation must correspond with the specifications on the nameplate.
- Only install the gearmotor in the specified mounting position on a level, vibration-free and torsionally rigid support structure.
- Make sure the customer's counter-bearing is unobstructed and can move freely.
- Align the motor and the driven machine carefully in order to prevent the output shaft from being exposed to unacceptable strain. Observe the permitted overhung and axial forces.
- Do not jolt or hammer the shaft end.
- Balance components for subsequent mounting on the shaft with a half key (motor shafts are balanced with a half key).
- Make sure that there is sufficient clearance around the motor to provide for adequate cooling air supply, and that the motor does not draw in warm exhaust air from other units. Observe the minimum distances specified in chapter "Cooling air supply distances" (→ 🗎 32).

4.3.1 Cooling air supply distances



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Motors	h in mm
EDR..71 – 80, EDRN63 – 80	15
EDRE90 – 100, EDRN90 – 100	20
EDRE112 – 132, EDRN112 – 132S	25
EDRE160, EDRN132M/L	30
EDRE180, EDRN180	35
EDRE200 – 225, EDRN200 – 225	45
EDRN250 – 280	50

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Motors	h in mm
EDRN315	55

4.3.2 Using belt pulleys

The following conditions must be met when using belt pulleys:

- Use only belts that do not build up an electrostatic charge.
- Do not exceed the maximum permitted overhung load.

4.3.3 Cover for motors in vertical mounting position

Motors in vertical mounting position with the motor output shaft pointing upwards or downwards (e.g. M4/V1 or M2/V3 mounting positions) must be equipped with a cover to prevent objects from falling into the drive. The cover must meet the following conditions:

- The cover must not obstruct the supply of cooling air.

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4.3.4 Mounting the motor with aluminum feet

To mount motors with a foot made of aluminum, you have to use washers with an outer diameter that is at least twice the screw diameter (e.g. DIN EN ISO 7090).

Use bolts of strength class 8.8 up to max. 10.9.

Tightening torque according to VDI 2230-1.

Motors	Maximum permitted screw lengths
EDRN63 – 71	M6×25
EDRN80 – 90	M10×25
EDRN100 – 132S	M10×25

4.3.5 Installation in damp locations or outdoors

- Use suitable cable glands for the incoming cable (use reducing adapters if necessary) according to the installation instructions.
- If possible, arrange the terminal box in such a way that the cable entries are pointing downwards.
- Seal the cable entry properly.
- Clean the sealing surfaces of the terminal box and the terminal box cover carefully before re-assembly; replace embrittled gaskets.
- If required, touch up the corrosion protection (especially at the eyebolts).
- Check the degree of protection.
- Protect the shaft against corrosion using a suitable anti-corrosion agent.

4.4 Installation tolerances

Shaft end	Flanges
Diameter tolerance according to EN 50347 • ISO j6 with Ø ≤ 28 mm • ISO k6 with Ø ≥ 38 mm up to ≤ 48 mm • ISO m6 with Ø ≥ 55 mm • Centering bore according to DIN 332, shape DR	Centering shoulder tolerance according to EN 50347 • ISO j6 with Ø ≤ 250 mm • ISO h6 with Ø ≥ 300 mm

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4.5 Assembling the input elements

Drive components that are installed on the motor shaft end, e.g. pinions, must be warmed up prior to assembly in order to prevent damage, e.g. to the encoder of stand-alone motors.

⚠ WARNING

Unsecured key skidding out of the keyway.

Severe or fatal injuries due to flying parts.

- Only operate the motor with attached customer output element (e.g. gear unit), or with a suitably secured key.

⚠ WARNING

Generating of sparks due to unsecured key.

Severe or fatal injuries from explosion.

- Only operate the motor with attached customer output element (e.g. gear unit), or with a suitably secured key.

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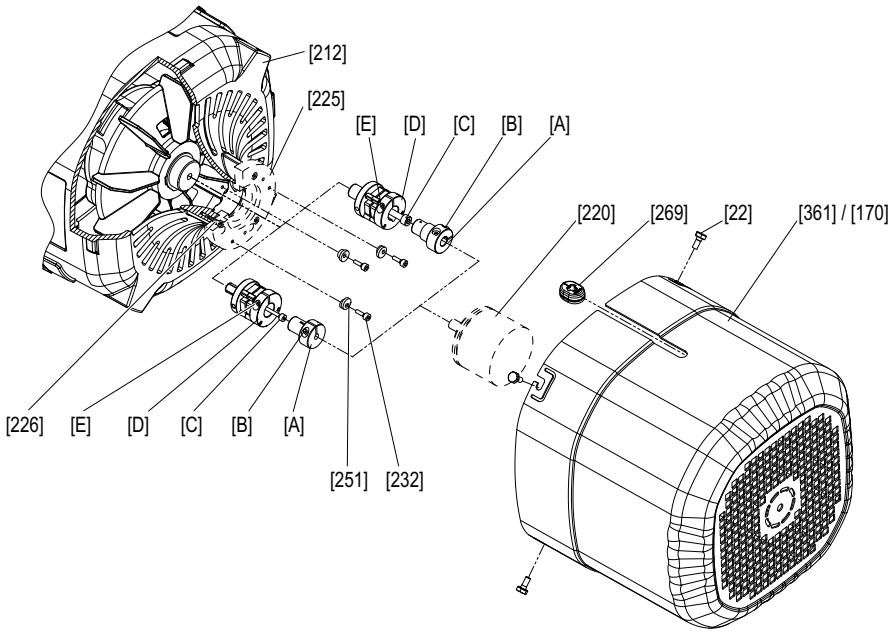
4.6 Encoder mounting adapter

If a drive was ordered with encoder mounting adapter, SEW-EURODRIVE will deliver the drive with enclosed coupling. Do not connect the coupling for operation without the encoder.

4.6.1 Encoder mounting adapter XV../EV../XC.. for EDR..71 – 225, EDRN71 – 225 motors

When an XV.., EV.. or XC.A encoder mounting adapter is ordered, the adapter [A] and coupling [B – E] are included in the motor delivery and must be mounted by the customer.

The following figure shows how to assemble the coupling and the adapter:



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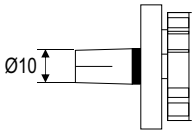
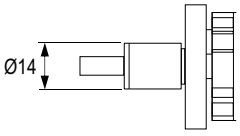
[22] Screw
[170] Forced cooling fan guard
[212] Fan guard with encoder mount
[220] Encoder
[225] Intermediate flange (XV1A)
[226] Screw
[232] Screws (XV1A, XV2A)
[251] Conical spring washers (XV1A, XV2A)
[361] Safety cover
[269] Grommet
[A] Adapter
[B] Retaining screw
[C] Central retaining screw
[D] Coupling
[E] Retaining screw

Depending on the motor design, one of the following couplings is included in the delivery:

Coupling type	Designation
	Coupling with spread shaft Ø10 mm
	Coupling with plug-in shaft Ø14 mm

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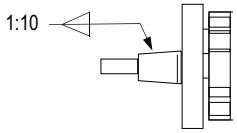
Coupling type	Designation
	Coupling with cone shaft 1:10

Mounting encoders to XV../EV../XC.. encoder mounting adapters at EDR..71 – 225, EDRN71 – 225 motors

1. Remove the safety cover [361], or the forced cooling fan if required.
2. **For XV2A, XV3A, XV4A, XC.A:** Remove the intermediate flange [225].
3. Screw the coupling [D] to the bore at the shaft end using screw [C].
4. Plug the adapter [A] onto the pin of the encoder [220].
5. Tighten the central retaining screw [B].
6. **For XV2A, XV3A, XV4A, XC.A:** Mount the intermediate flange [225] using the screws [226].
7. Plug the encoder [220] with adapter [A] onto the coupling [D].
8. Tighten the retaining screw [E].
9. **For XV1A, XV2A:** Re-install the retaining screws [232] with conical spring washers [251].
10. **For XV3A, XV4A, XC.A:** Installed by the customer via bores in the encoder plate.

Motor	Screw	Tightening torque
		Nm
EDR..71 – 132 EDRN71 – 132 Coupling with spread shaft Ø10 mm	[C]	3
EDRN71 – 225 Coupling with cone shaft 1:10	[C]	3.3
EDR..160 – 225 EDRN132M – 225 Coupling with plug-in shaft Ø14 mm	[C]	8
EDR..71 – 225 EDRN71 – 225	[226]	3
EDR..71 – 225 EDRN71 – 225	[B]	3
EDR..71 – 225 EDRN71 – 225	[E]	3
EDR..71 – 225 EDRN71 – 225	[232]	3

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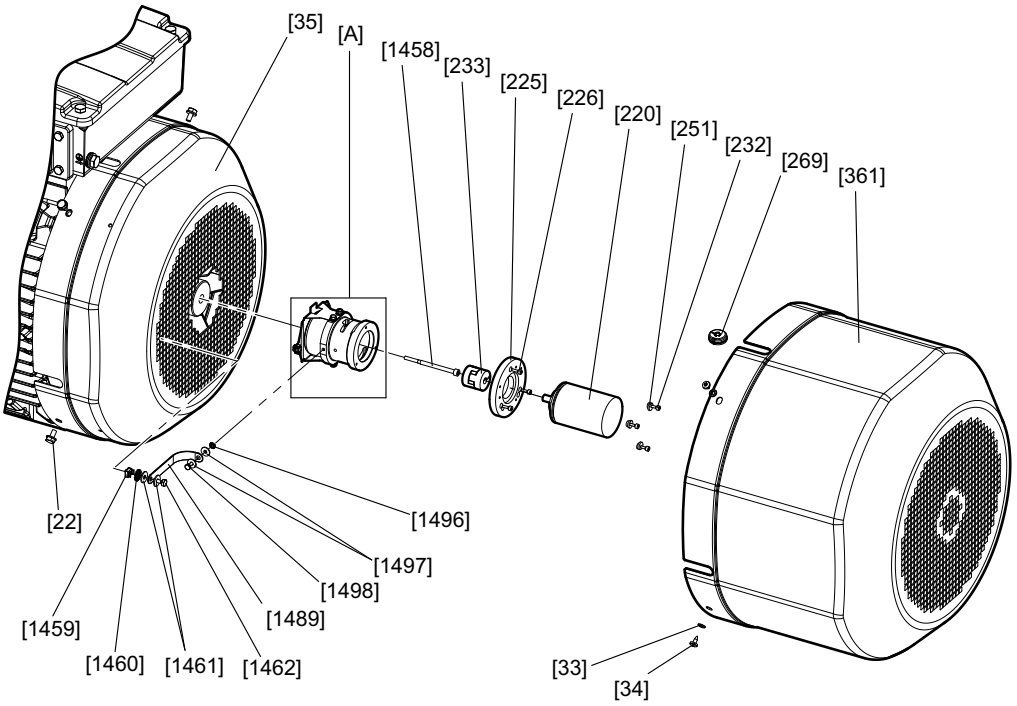
4.6.2 XV../EV.. encoder mounting adapters for EDRN250 – 280 motors

If you have ordered the XV../EV.. encoder mounting adapter, the coupling [233] and the encoder mounting adapter [A] are enclosed with the motor and must be installed by the customer.

The following figure shows an example of how the coupling is installed:



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[22]	Screw	[361]	Safety cover (normal/long)
[33]	Washer	[1458]	Screw
[34]	Screw	[1459]	Cage nut
[35]	Fan guard	[1460]	Serrated lock washer
[220]	Encoder	[1461]	Washer
[225]	Intermediate flange (optional)	[1462]	Screw
[226]	Screw	[1489]	Ground strap
[232]	Screws (.V1A, .V2A)	[1496]	Serrated lock washer
[233]	Coupling	[1497]	Washer
[251]	Conical spring washers (.V1A, .V2A)	[1498]	Screw
[269]	Cable grommet	[A]	Encoder mounting adapter

Mounting encoders to XV../EV.. encoder mounting adapters at EDRN250 – 280 motors

1. Remove the safety cover [361], or the forced cooling fan if required.
2. Insert the encoder mounting adapter [A] into the bore of the rotor.
3. Tighten the screw [1458].
4. Place the coupling [233] onto the pin of the encoder mounting adapter [A].
5. Tighten the screw of the coupling [233] via the slots in the encoder mounting adapter.
6. **For XV2A, XV3A, XV4A:** Mount the intermediate flange [225] to the encoder mounting adapter [A] using screw [226].
7. **For XV1A, XV2A:** Insert the screws [232] with conical spring washers [251] in the encoder mounting adapter [A].

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8. Fasten the encoder [220] to the encoder mounting adapter [A] or the intermediate flange [225].
9. Plug the encoder [220] into the coupling [233].
10. Insert the screws [232] to fasten the conical spring washers [251].
11. **For XV1A, XV2A:** Tighten the screws [232] while turning the conical spring washers [251] in clockwise direction into the groove of the encoder [220].
12. Tighten the screw of the coupling [233].
13. Insert the encoder cable into the cable grommet [269].
14. Insert the cable grommet [269] into the recess of the safety cover [361] or the forced cooling fan.
15. Mount the safety cover [361] onto the forced cooling fan.

Motor	Screw	Tightening torque
		Nm
EDRN250 – 280	Screw of the coupling [233]	3.3
EDRN250 – 280	[226]	3.3
EDRN250 – 280	[232]	2.25
EDRN 250 – 280 with plug-in shaft Ø14 mm	[1458]	8
EDRN 250 – 280 with cone shaft 1:10	[1458]	3.3

4.6.3 XH.A encoder mounting adapter

The XH1A, XH7A and XH8A encoder mounting adapters for hollow shaft encoders are premounted on delivery.

To mount the encoder, proceed as described in chapter "Motor and brake maintenance – preliminary work" (→ 🗎 107).

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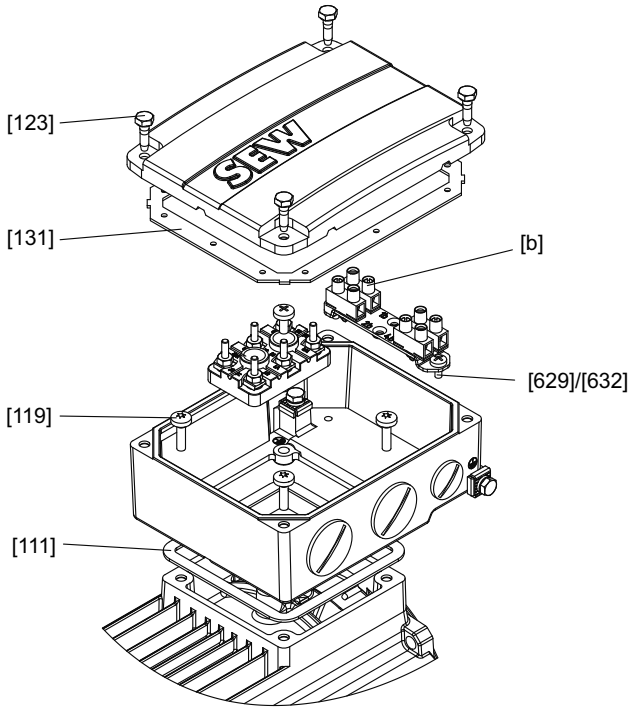
4.7 Terminal box

4.7.1 Turning the terminal box

The following figure shows the structure of the terminal box variant with terminal board:



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[111] Gasket
[119] Terminal box lower part
hex head screws (4 ×)
[123] Terminal box cover
hex head screws (4 ×)
[131] Gasket
[b] Terminal
[629]/[632] Screws

Proceed as follows to turn the terminal box:

1. Loosen the screws [123] of the terminal box cover. Remove the terminal box cover.
2. Remove the screws [629]/[632].
3. Remove the terminal [b].
4. Remove the retaining screws [119] of the terminal box.
5. Clean the sealing surfaces at the stator shoulder, terminal box lower part and terminal box cover.
6. Check the gaskets [111] and [131] for damage.
7. Replace any damaged gaskets.
8. ⚠ **DANGER!** Electric shock due to damaged cables. Severe or fatal injuries. When installing the terminal box lower part or the terminal board, make sure the cables are not crushed or twisted. Do not use sharp or pointed objects to align the cables.
   Turn the terminal box to the required position.
9. Make sure that the gasket [111] is positioned correctly.

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10. Attach the terminal box lower part.
11. Apply the corresponding tightening torque to tighten the screws [119] of the terminal box lower part.
12. Refer to chapter "Appendix" (→ 🗎 182) for the arrangement of the auxiliary terminals.
13. Secure terminal [b] with screws [629]/[632].
14. Make sure that the gasket [131] is positioned correctly.
15. Attach the terminal box cover to the terminal box lower part.
16. Apply the corresponding tightening torque to tighten the screw [123] of the terminal box cover.
17. To make sure that the cables have not been damaged, perform an insulation test after reassembly, see chapter "Preliminary work after longer periods of storage" (→ 🗎 29).

Tightening torques of the terminal box lower part

Motor	Screw	Tightening torque
		Nm
EDR..71 – 132 EDRN71 to 132S	[119]	5
EDR..160 – 225 EDRN132M to 225	[119]	27.3
EDRN250 – 315	[119]	54

Tightening torques of the terminal box cover

Motor	Screw	Tightening torque
		Nm
EDR..71 – 132 EDRN63 – 132S	[123]	4
Aluminum EDR..160 – 225 EDRN132M to 225	[123]	11.3
Gray cast iron EDR..160 – 225 EDRN132M to 225	[123]	27.3
EDRN250 – 315	[123]	54

4.7.2 Terminal box with NPT thread

In terminal boxes with NPT thread, cable glands cannot always be screwed in all the way (up to the O-ring).

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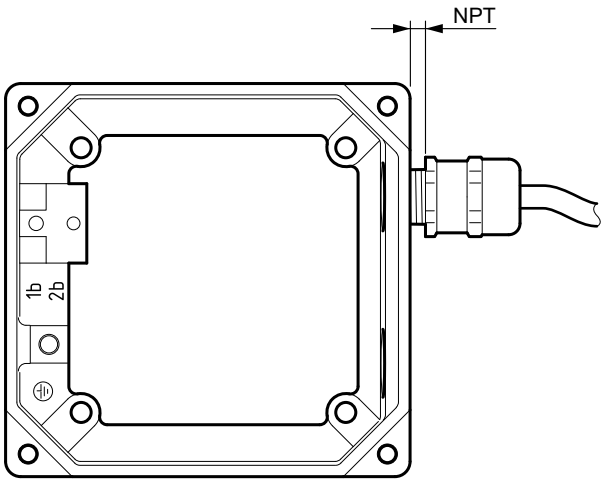


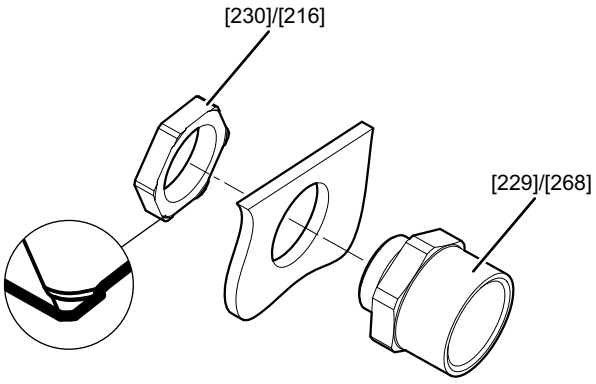
14949925387

For applications in wet areas, SEW-EURODRIVE recommends using metric screw fittings.

4.7.3 NPT adapter for EDRN63

SEW-EURODRIVE offers an accessory bag that enables you to exchange the opening for metric cable glands with an adapter for NPT½" conical inch threads.

Observe the following during assembly: The M16/M20 screw plug must be replaced with the suitable NPT½" M16/M20 adapter.



29760059403

1. Remove the screw plugs [129]/[134] from the terminal box.
2. Insert the adapter [229]/[268] through the opening in the terminal box.
3. Fasten the adapter [229]/[268] using the nut [230]/[216]. Make sure the teeth of the nut point towards the terminal box wall.
   - ⇨ Tightening torque for the **M16** adapter [268]: 3.5 Nm
   - ⇨ Tightening torque for the **M20** adapter [229]: 5 Nm
4. Seal unused adapters using a suitable screw plug with NPT½" conical thread according to ANSI B 1.20.1.

Name	Part number
Accessory bag with NPT½" for EDRN63	21020272
NPT½" screw plug according to ANSI B 1.20.1	13222902

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4.8 Coating

SEW-EURODRIVE delivers the drives with a painting that complies with the requirements for preventing electrostatic charging according to IEC 60079-0.

⚠ WARNING

Risk of explosion due to electrostatic charge and sparks caused by improper painting.

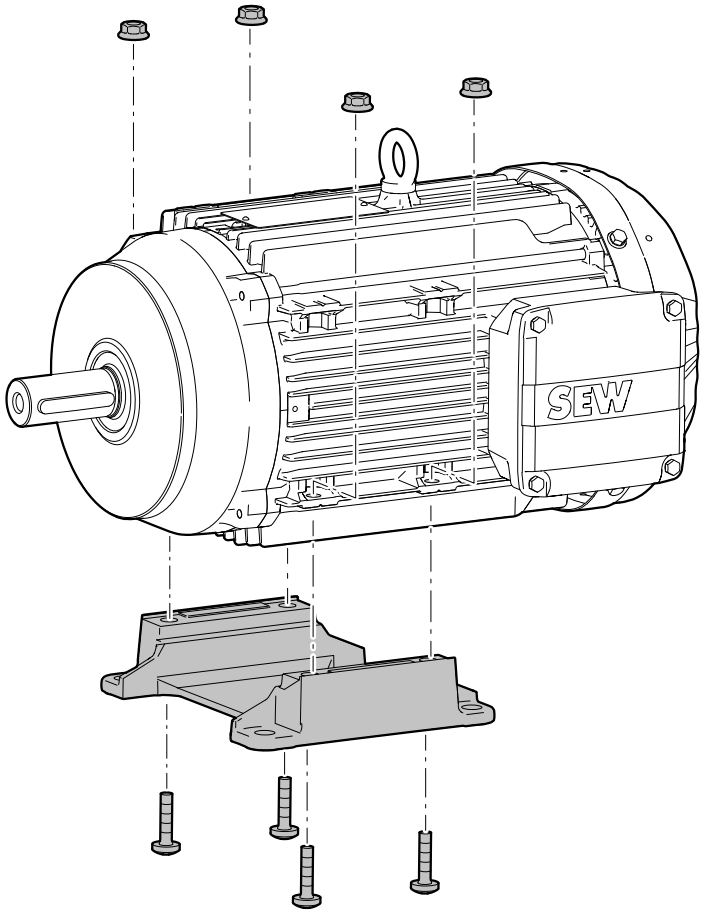
Severe or fatal injuries from explosion.

- If the motor is repainted, observe the requirements for painting to avoid electrostatic charge according to IEC 60079-0.

4.9 Retrofitting or modifying motor feet

4.9.1 EDRN63 – 132S motors

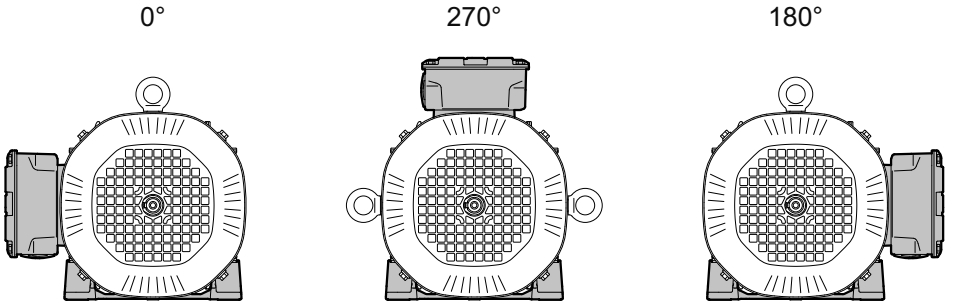
The following figure shows a motor with option /F.A (retrofit foot).



22845053579

✓ The contact surfaces at the foot [90] and stator [16] are painted.

1. Observe the following figure when selecting the contact surfaces. The figure illustrates the possible terminal box positions with reference to the retrofittable motor feet.



2. Remove the paint from the stator [16] contact surface where the foot is to be screwed on.
3. Apply a thin layer of corrosion protection to the contact surfaces after the paint has been removed.
4. Remove the paint from the contact surfaces of the foot [90].
5. Apply a thin layer of corrosion protection to the contact surfaces after the paint has been removed.
6. Attach the foot [90] to the motor using the screws [94] and washers [91]. Tighten the screws in diametrically opposite sequence. The screws are micro-encapsulated. This is why you have to screw in and tighten the screws quickly.
7. If necessary, you can apply paint or corrosion protection at the joint after attaching the foot [90].

Changing the motor foot position

For converting the motor foot to another position, observe the following points:

- After removing the screws [94], check for damage to the thread or other similar damage.
- When changing the position of the motor foot, apply corrosion protection to unpainted surfaces.

Tightening torques

Motor	Screw	Tightening torque
EDRN63 – 90	M6	11.3 Nm
EDRN100 – 132S	M8	27.3 Nm

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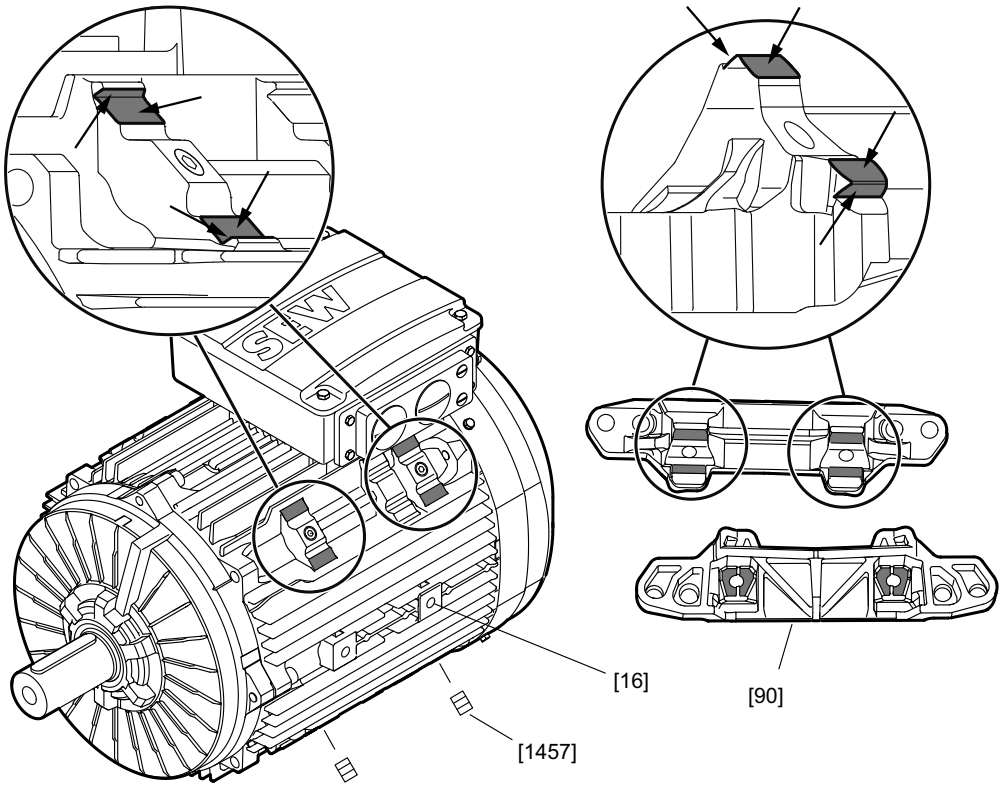
4.9.2 EDRN225 – 315 motors

The following figure shows a motor with option /F.A (retrofit feet).



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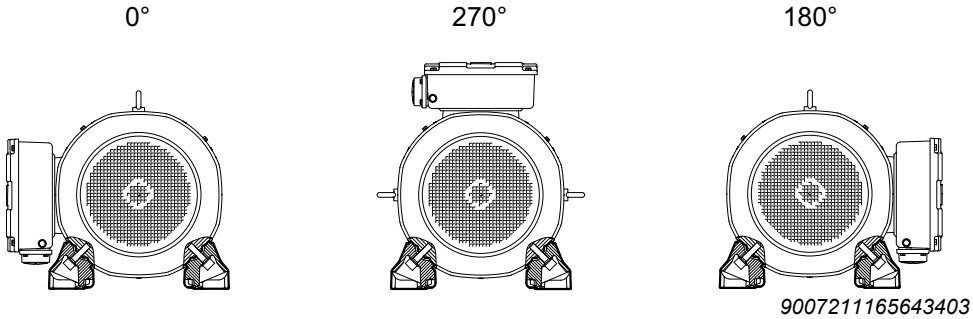
[16]	Stator	[1457]	Set screw
[90]	Foot		Remove the paint from the marked surfaces

✓ The tapped holes of the foot mounting surfaces are closed with set screws [1457]. The contact surfaces at the feet [90] and stator [16] are painted.

1. Observe the following figure when selecting the contact surfaces. The figure illustrates the possible terminal box positions with reference to the retrofittable motor feet.



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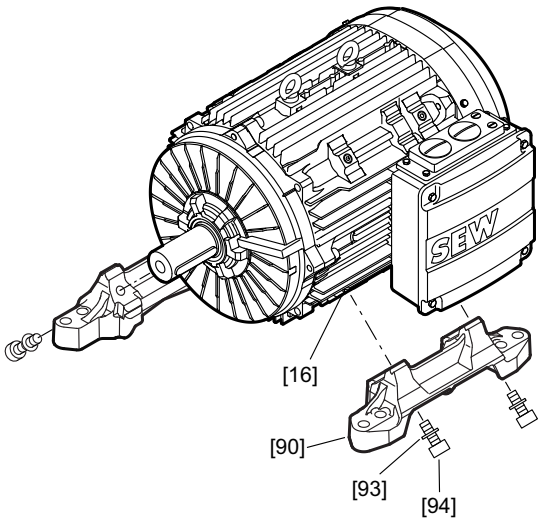
2. Remove the set screws [1457] from those threads into which you will screw the foot screws [94].
   - ⇨ Size 225 – 280: 8 set screws
   - ⇨ Size 315: 12 set screws

3. Remove the paint from the contact surfaces of the stator [16] where the feet are to be screwed on.
   - ⇨ Size 225 – 280: 8 surfaces
   - ⇨ Size 315: 12 surfaces
4. Apply a thin layer of corrosion protection to the contact surfaces after the paint has been removed.
5. Remove the paint from the contact surfaces of the feet [90].
6. Apply a thin layer of corrosion protection to the contact surfaces after the paint has been removed.
7. Attach the feet [90] to the motor using the screws [94] and washers [93]. The screws are micro-encapsulated. This is why you have to screw in and tighten the screws quickly.
8. Apply paint or corrosion protection at the parting line after attaching the feet [90].

Changing motor feet positions



9007206996709387

[16] Stator
[90] Foot
[93] Washer
[94] Screw

For converting the motor feet to another position, observe the following points:

- After removing the screws [94], check for damage to the thread or other similar damage.
- Remove the old micro-encapsulation.
- Clean the threads of the screws [94].
- Apply a high-strength thread locker to the screw threads [94] before inserting the screws again.
- The set screws removed from the new mounting position can be reused for the bores of the old mounting position. After inserting the set screw [1457] into the open tapped holes in the stator [16], paint or corrosion protection can be applied on the bare joining surfaces of the stator.
- When the position of the motor feet is changed, apply corrosion protection to the unpainted surfaces.

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Tightening torques

Motor	Screw	Tightening torque
EDRN225	M16	230 Nm
EDRN250	M20	464 Nm
EDRN280	M20	464 Nm
EDRN315	M20	464 Nm

4.10 Options

4.10.1 /HR, /HF Manual brake release

The option manual brake release /HR, /HF is preinstalled and set at the factory for some brake sizes. If your drive was not delivered with manual brake release and you wish to retrofit it, observe the instructions in chapter "Retrofitting the /HR, /HF manual brake release" (→ 🗎 131).

Activating and loosening the /HF manual brake release

⚠ WARNING

No brake function due to activated manual brake release.

Severe or fatal injuries.

- Before startup, make sure that the hand lever has been removed or secured against unintentional activation to prevent unintentional brake release during operation.

You can use the option /HF (lockable manual brake release) to continuously mechanically release the BE.. brake with a set screw and a releasing lever.

On delivery, the set screw is inserted far enough to not fall out and to not affect the brake performance. The set screw is self-locking. This prevents it from unintended turning in or from falling out.

In case of BE03 brakes, the set screw is stored in the grommets between the stator fins.

Activating the /HF manual brake release with BE03 brake

Proceed as follows:

1. Screw in the set screw until there is no more clearance at the releasing lever.
2. To release the brake manually, screw in the set screw by 1/2 – 1 turn.

Activating the /HF manual brake release with BE05 – BE122 brake

Proceed as follows:

1. Screw in the set screw until there is no more clearance at the releasing lever.
2. To release the brake manually, screw in the set screw by 1/4 – 1/2 turn.

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Loosening the /HF manual brake release with BE03 brake

Proceed as follows:

1. Remove the set screw completely from the thread.
2. Fasten the set screw between the stator fins with both grommets.

Loosening the /HF manual brake release with BE05 – BE122 brake

Proceed as follows:

1. Loosen the set screw at least until the floating clearance of the manual brake release has completely returned, see chapter "Retrofitting the /HR, /HF manual brake release".

Activating and loosening the /HR manual brake release

⚠ WARNING

No brake function due to activated manual brake release.

Severe or fatal injuries.

- Before startup, make sure that the hand lever has been removed or secured against unintentional activation to prevent unintentional brake release during operation.

You can use the option /HF manual brake release to mechanically release the BE.. brake for a short time via a combination of releasing lever and hand lever. It is designed with a spring mechanism, so that it reengages automatically.

During assembly, the mechanics inside the fan guard is preset at the factory. A hand lever is included in the delivery that is attached to the stator housing.

Activating the /HR manual brake release

Proceed as follows:

1. Remove the hand lever from the stator housing.
2. Screw the thread of the hand lever completely into the thread of the releasing lever.
3. To release the brake, pull the hand lever in the direction away from the terminal box. The correct direction of use is indicated by an arrow symbol on the fan guard or on the closing part on the fan guard opening.

Loosening the /HR manual brake release

INFORMATION

The releasing procedure can be performed with usual force application, do not apply too much force to the lever to avoid damage to the drive.

Proceed as follows:

1. Let go of the lever in the actuated state. The lever automatically reengages to the initial position and the brake is applied.
2. Screw out the hand lever and keep it safe. With motors of sizes 63 – 280, you can attach the hand lever to the stator housing with the provided grommets or clamps.

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4.10.2 2nd shaft end with optional cover

SEW-EURODRIVE delivers motors with the 2nd shaft end option /2W with the key inserted and secured by transport protection. This transport protection is not suitable for operation.

⚠ WARNING

Rotating shaft end or attachments.

Severe or fatal injuries.

- Only start the motor with installed protective cover at the second shaft end.

⚠ WARNING

Unsecured key flung out of the keyway.

Severe or fatal injuries.

- Only operate the motor with attached customer output element (e.g. gear unit), or with a suitably secured key.

⚠ WARNING

Generating of sparks due to unsecured key.

Severe or fatal injuries from explosion.

- Only operate the motor with attached customer output element (e.g. gear unit), or with a suitably secured key.

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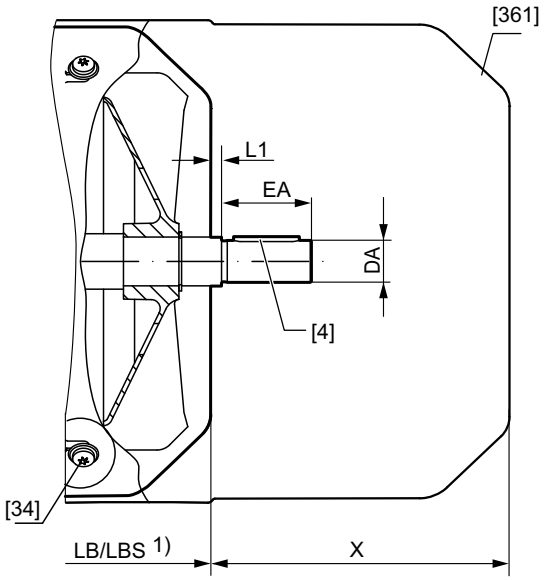
A cover for the second shaft end is not included in delivery as standard. This can be ordered as an option for the EDRN63 – 280 motors. If no optional cover is selected, the customer must provide a protection cover to ensure a suitable touch guard.

The following figure shows the dimensions of the optional cover. The optional cover is standard for EDR..71 – 132, EDRN63 – 132S, EDRN250 – 280, and optional for EDR..160 – 225, EDRN132M – 225 motors.



18014402029073931

[4] Keyway
[34] Tapping screw
[361] Safety cover
LB/LBS Length of the motor/brakemotor
1) Refer to the "AC Motors" catalog for dimensions

Dimensions for the optional cover

Motors		DA	EA	L1	X
EDR..	**EDRN..**	**mm**	**mm**	**mm**	**mm**
–	EDRN63	11	23	2	78
–	EDRN63 /BE				
EDR..71	EDRN71	11	23	2	91.5
EDR..71 /BE	EDRN71 /BE				88
EDR..80	EDRN80	14	30	2	95.5
EDR..80 /BE	EDRN80 /BE				94.5
EDR..90	EDRN90	14	30	2	88.5
EDR..90 /BE	EDRN90 /BE				81
EDR..100	EDRN100	14	30	2	87.5
EDR..100 /BE	EDRN100 /BE				81
EDR..112 – 132	EDRN112 – 132S	19	40	3.5	125
EDR..112 – 132 /BE	EDRN112 – 132S /BE				120.5

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Motors		DA	EA	L1	X
EDR..	**EDRN..**	**mm**	**mm**	**mm**	**mm**
EDR..160	EDRN132M/L	28	60	4	193
EDR..160 /BE	EDRN132M/L /BE				187
EDR..180	EDRN160 – 180	38	80	4	233
EDR..180 /BE	EDRN160 – 180 /BE				236
EDR..200 – 225	EDRN200 – 225	48	110	5	230
EDR..200 – 225 /BE	EDRN200 – 225 /BE				246
–	EDRN250 – 280	55	110	3	243.5
–	EDRN250 – 280 /BE				

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5 Electrical installation

5.1 General information

⚠ WARNING

Electric shock due to incorrect installation.

Severe or fatal injuries.

- Use switch contacts in utilization category AC-3 IEC 60947-4-1 for switching the motor.
- When motors are powered by inverters, you must adhere to the wiring instructions in the frequency inverter operating instructions.

5.2 Additional regulations

The generally applicable installation regulations CSA C22.1 and NFPA 70 for electrical low-voltage equipment must be observed when installing electrical systems.

5.3 Wiring diagrams and terminal assignment diagrams

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

INFORMATION

Do not connect or start up the motor if the wiring diagram is missing.

5.4 Cable entries

The connection boxes have NPT tapped holes according to ANSI B1.20.1-1983. All bores are equipped with explosion-protected closing plugs upon delivery.

For a correct cable entry, replace the closing plugs by cable glands with strain relief that are certified for use in the respective hazardous location. Select the cable gland corresponding to the outer diameter of the cable used. For the tightening torque of the cable entry, refer to the operating/installation instructions. The IP degree of protection of the cable entry must be at least as high as the IP degree of protection of the motor.

Only use connection glands with screw heads that fit into the existing countersink.

To meet the IP requirements, all unused cable entries must be sealed with a closing plug after the installation has been completed. A closing plug may only be replaced with another explosion-protected closing plug.

5.5 Equipotential bonding

IEC 60364-5 might require a connection to an equipotential bonding system. Observe chapter "Improving the grounding (EMC), HF grounding" (→ 🗎 56).

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5.6 Wiring notes

During installation observe the safety notes in chapter 2 and 5.

5.6.1 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.

5.6.2 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.

5.7 Special aspects in switching operation

When the motors are used in switching operation, possible interference of the switchgear must be excluded by ensuring suitable wiring. According to IEC 60204 (electrical equipment of machines), motor windings must have interference suppression to protect the numerical or programmable logic controllers. As it is primarily switching operations that cause interference, SEW-EURODRIVE recommends installing protective circuit in the switching devices.

5.8 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. It is essential to observe chapter "Duty types and limit values" (→ 🗎 82) and the operating instructions of the frequency inverter.

If a drive has an earth leakage current higher than AC or DC 10 mA on a line connection, one or more of the following requirements must be met for the protective earth system:

- The PE must have a minimum cross section over its entire length of 10 mm^2 with copper or 16 mm^2 with aluminum.
- Where the PE has a cross section of less than 10 mm^2 with copper or 16 mm^2 with aluminum, a second PE with at least the same cross section is required to the point where the PE has a cross section of not less than 10 mm^2 with copper or 16 mm^2 with aluminum.

  The drive might need to be equipped with a separate connection for a second PE.

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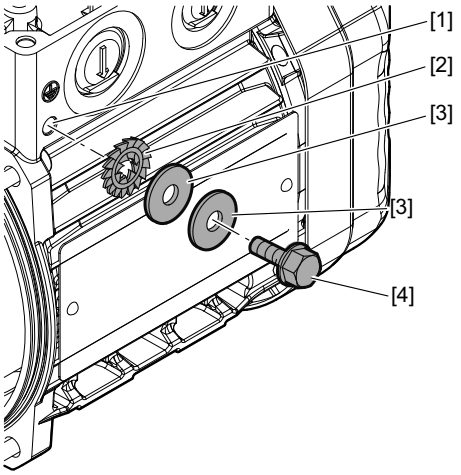
5.9 Exterior grounding at the terminal box, LF grounding

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.

The LF grounding can be ordered completely pre-assembled from the factory. For this, an aluminum or gray cast iron terminal box designed for brake connections is required for DR..71 – 132, DRN71 – 132S, DR2..71 – 80 motors. For DR..160 – 225, DRN132M – 225 motors, this option can be combined with all terminal box types.

The option can be combined with "HF grounding".

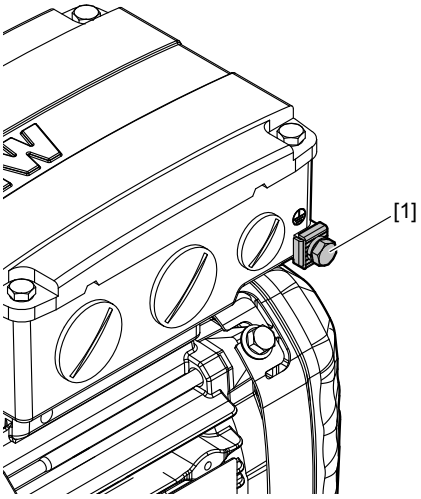
EDRN63 motor



32631576971

[1] Use of the pre-cast bore on the stator housing
[2] Serrated lock washer
[3] Washer ISO 7093
[4] Self-tapping screw DIN 7500 M × 16, tightening torque 5 Nm

EDRN71 – 132S motors



9007207279069579

[1] LF grounding at the terminal box

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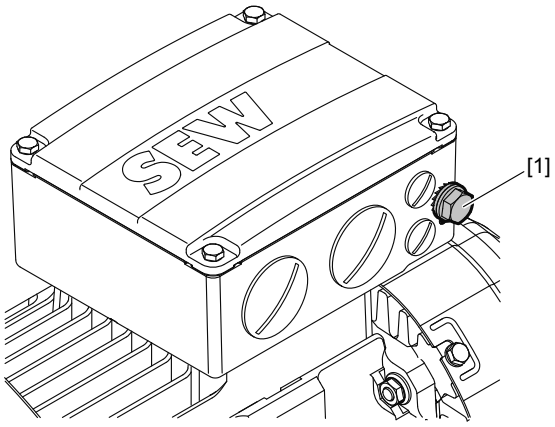
EDRN132M – 225 motors



8026938379

[1] LF grounding at the terminal box

5.10 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:

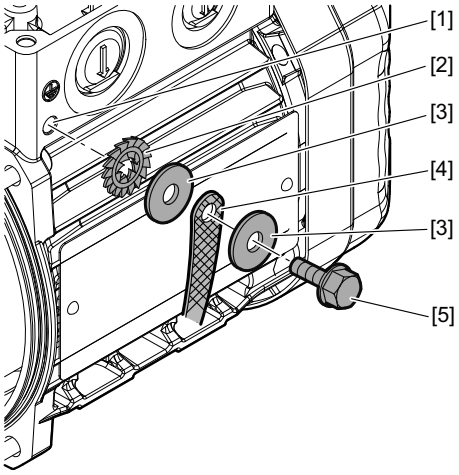
- Completely pre-assembled at the factory
- As "grounding terminal" kit for customer installation; part numbers listed in the following table.

Motors	Part number of "grounding terminal" kit
EDRN63	21014817
EDRN71 EDRN80	21015988
EDRN90	
EDRN100LS	
EDRN100L – 132S	13633945
EDRN132M – 225 with aluminum terminal box	

INFORMATION

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

5.10.1 EDRN63 motors with HF (+NF) grounding



22297406859

[1] Use of the pre-cast bore at the stator housing
[2] Serrated lock washer
[3] Disk ISO 7093
[4] Ground strap (not included in the delivery)
[5] Self-tapping screw DIN 7500 M5 × 16, tightening torque 5 Nm

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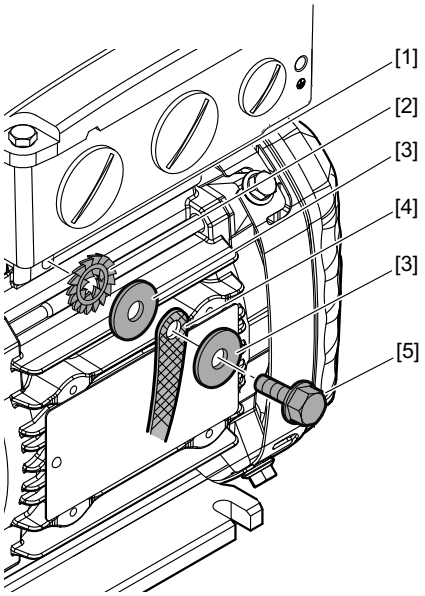
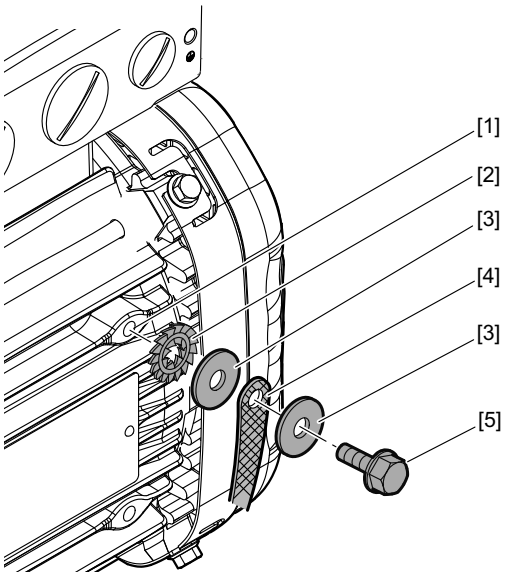
5.10.2 EDRN71 – 80 motors with HF (+LF) grounding



8026768011

[1] Use of the pre-cast bore at the stator housing
[2] Serrated lock washer
[3] Washer ISO 7093
[4] Ground strap (not included in the delivery)
[5] Self-tapping screw DIN 7500 M6 × 16, tightening torque 10 Nm

5.10.3 EDRN90 motors with HF (+LF) grounding



8026773131

[1] Use of the pre-cast bore at the stator housing
[2] Serrated lock washer
[3] Washer ISO 7093
[4] Ground strap (not included in the delivery)
[5] Self-tapping screw DIN 7500 M6 × 16, tightening torque 10 Nm

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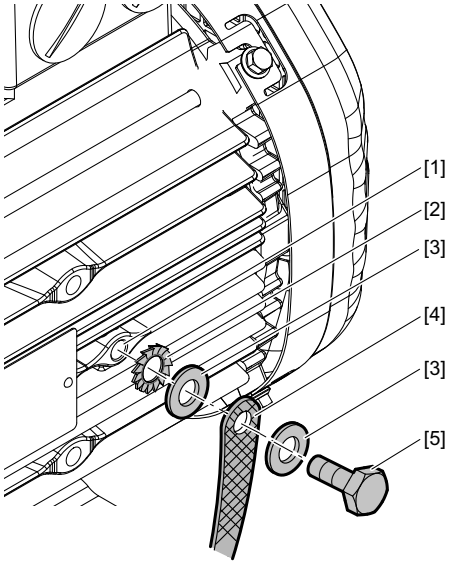
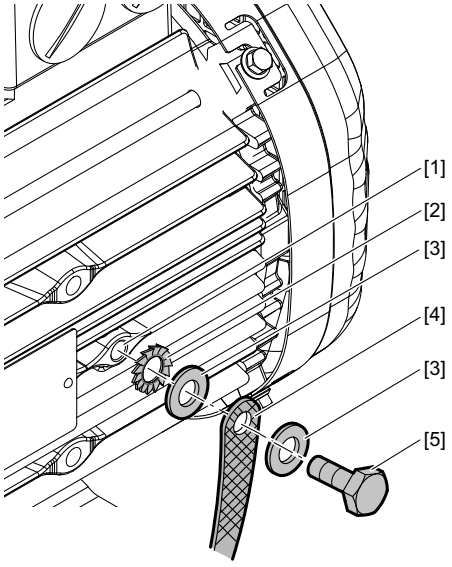
5.10.4 EDRN100LS motors with HF (+LF) grounding



18014402064551947

[1] Use of the pre-cast bore at the stator housing
[2] Serrated lock washer
[3] Washer ISO 7093
[4] Ground strap (not included in the delivery)
[5] Self-tapping screw DIN 7500 M6 × 16, tightening torque 10 Nm

5.10.5 EDRN100L – 132S motors with HF (+LF) grounding



18014402064551947

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

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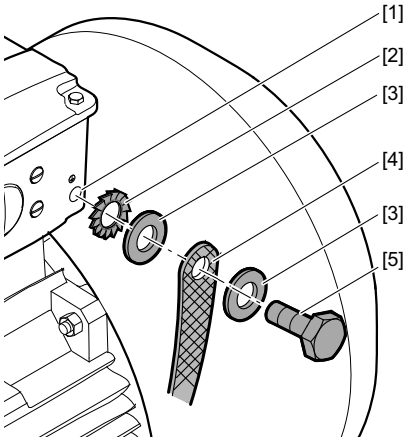
5.10.6 EDRN132M – 315 motors with HF (+LF) grounding



18014402076409099

[1] Use of the tapped hole on the terminal box
[2] Serrated lock washer DIN 6798
[3] Washer ISO 7089/ISO 7090
[4] Ground strap (not included in the scope of delivery)
[5]
- Hex head screw ISO 4017 M8 × 18 (with aluminum terminal boxes of EDRN132M – 225 motors), tightening torque 10 Nm
- Hex head screw ISO 4017 M10 × 25 (with gray cast iron terminal boxes of EDRN132M – 225 motors), tightening torque 10 Nm
- Hex head screw ISO 4017 M12 × 30 (terminal boxes of EDRN250 – 315 motors), tightening torque 15.5 Nm

In the case of EDRN 132M – 225 motors with a gray cast iron terminal box, the grounding component is always pre-assembled when the drive is delivered.

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5.11 Ambient conditions during operation

5.11.1 Ambient temperature

The temperature range of -20 °C to +40 °C must be ensured unless specified otherwise on the nameplate.

5.11.2 Hazardous radiation

Motors must not be subjected to hazardous radiation (such as ionizing radiation). Consult SEW-EURODRIVE, if necessary.

5.11.3 Hazardous gases, vapors and dusts

If used according to their designated use, explosion-protected motors are incapable of igniting explosive gases, vapors or dusts. However, explosion-protected motors may not be subjected to gases, vapors or dusts that endanger operational safety, for example through

- Corrosion
- Damage to the protective coating
- Damage to the sealing material, etc.

Gasket selection

If the motor is operated in environments with high environmental impact, such as increased ozone values, the motors can be optionally equipped with gaskets of a higher quality. If you have doubts regarding the stability of the gaskets when subjected to the respective environmental impacts, contact SEW-EURODRIVE.

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5.12 Motors for hazardous locations

5.12.1 General information

The SEW-EURODRIVE motors for hazardous locations of the EDR../EDRN.. series are designed for the following areas of application:

Identifier for hazardous locations	Area of application
CID2	Motor for hazardous locations according to CSA C22.1 or NFPA 70 • Class I, division 2, groups A, B, C and D
CIID2	Motor for hazardous locations according to CSA C22.1 or NFPA 70 • Class II, division 2, groups F and G
CICIID2	Motor for hazardous locations according to CSA C22.1 or NFPA 70 • Class I, division 2, groups A, B, C and D • Class II, division 2, groups F and G

5.12.2 Temperature classes (Class I)

The motors are approved for temperature classes T3, T3B, and T3C. The temperature class of the motor can be found on the nameplate or on the order confirmation.

5.12.3 Surface temperatures (Class II)

The surface temperature of the motor can be found on the nameplate or on the order confirmation.

5.12.4 Protection against impermissibly high surface temperatures

Explosion-protected motors ensure safe operation under normal operating conditions. The motor must be switched off securely in the case of overload to avoid the risk of impermissibly high surface temperatures.

5.12.5 Protection exclusively with motor circuit breaker

Note the following when installing the motor circuit breaker according to IEC 60947:

- The motor circuit breaker must disconnect all poles in the event of a phase failure.
- The motor circuit breaker must be set to the nominal motor current indicated on the nameplate.

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5.12.6 Protection exclusively with PTC thermistor /TF

The PTC thermistor /TF must be evaluated using a suitable device. Observe the applicable installation regulations.

The evaluation function of the temperature monitoring must be activated in connection with the temperature sensor measuring circuit and must become effective in the event of an overtemperature.

5.12.7 Protection with motor circuit breaker and additional PTC thermistor /TF

The conditions stated for exclusive protection with motor circuit breaker also apply here. Protection with PTC thermistors /TF only represents a supplementary protection measure which is irrelevant to the approval for potentially explosive atmospheres.

INFORMATION

Proof of the efficacy of the installed protective equipment is required prior to startup.

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5.13 Notes regarding motor connection

INFORMATION

The protection caps must be mounted properly on the terminal studs for startup; otherwise, the approval is void.

INFORMATION

It is essential to comply with the valid wiring diagram. Do not connect or start up the motor if this wiring diagram is missing. You can obtain the valid wiring diagrams free of charge from SEW-EURODRIVE.

Observe the following points when connecting the motor:

- Check the cable cross section.
- Correctly arrange the terminal links, see chapter "Motor connection via terminal board" (→ 🗎 64).
- Screw in connections and PEs.
- Make sure that the connection cables are not cramped to prevent the cable insulation from being damaged.
- Adhere to the air gaps, see chapter “Electrical installation”
- Check the winding connections in the terminal box and tighten them, if necessary
- Connect the grounding according to the enclosed wiring diagram.
- Avoid protruding wire ends.
- Connect the motor according to the specified direction of rotation.

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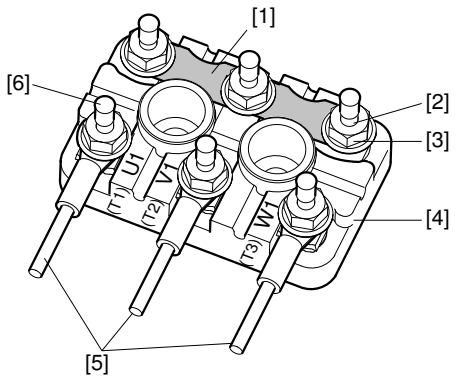
5.14 Motor connection via terminal board

5.14.1 According to wiring diagram R13

Arrangement of terminal links with ⅄ connection

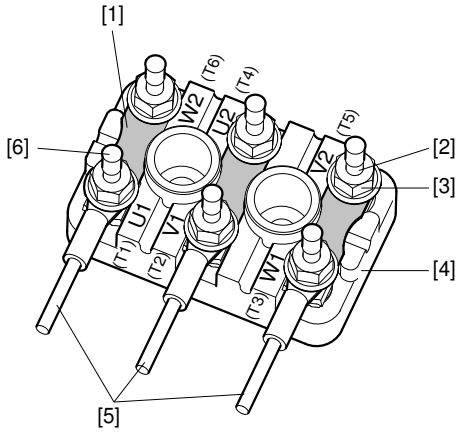


16160516235

Arrangement of terminal links with △ connection

Motor size EDR..71 – 225, EDRN80 – 280:

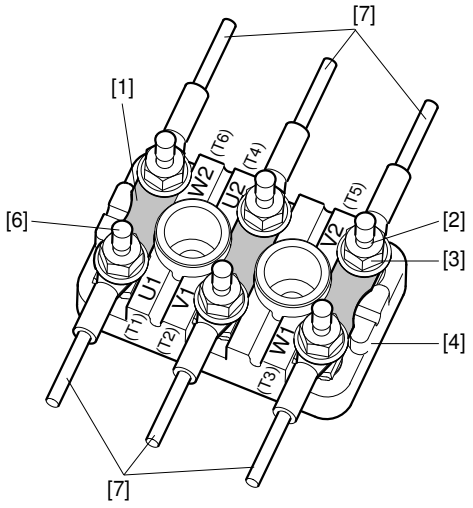
(Single-sided supply)



16160462603

Motor size EDRN250 – 315:

(Double-sided supply)



16160460171

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

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INFORMATION

For EDRN250 – 315 motors, SEW-EURODRIVE recommends a double-sided supply for load currents higher than

- M12: 200 A
- M16: 252 A

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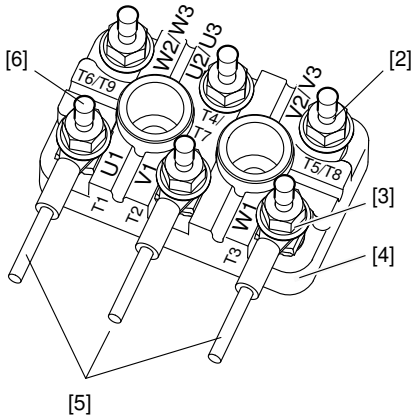
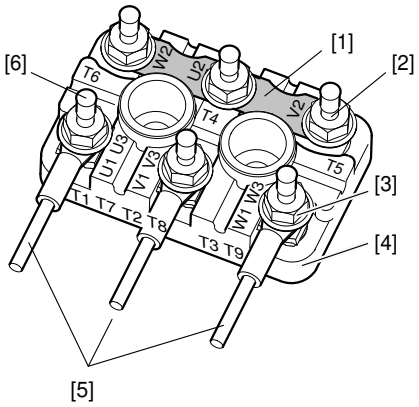
5.14.2 According to wiring diagram R76

Arrangement of terminal links with ⅄ connection



16160541195

Arrangement of terminal links with ⅄⅄ connection



16160525963

[1] Terminal link
[2] Terminal stud
[3] Flange nut
[4] Terminal board
[5] Customer connection
[6] Protection caps

INFORMATION

Three winding lead ends must be rewired to change from high to low voltage:

The lines designated U3 (T7), V3 (T8) and W3 (T9) must be reconnected.

- U3 (T7) from U2 (T4) to U1 (T1)
- V3 (T8) from V2 (T5) to V1 (T2)
- W3 (T9) from W2 (T6) to W1 (T3)

→ Changing from low to high voltage is carried out in reverse order. In both cases, the customer connection is made to U1 (T1), V1 (T2) and W1 (T3). You can change the direction of rotation by interchanging 2 supply cables.

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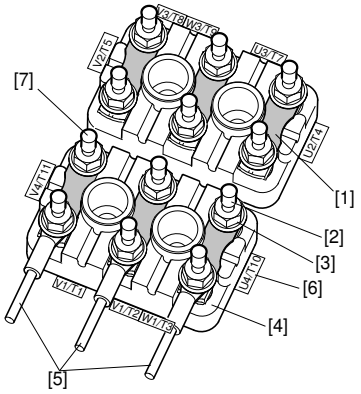
5.14.3 According to wiring diagram R72

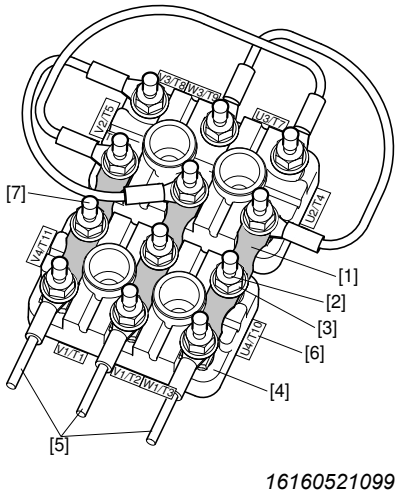
Arrangement of terminal links with △ connection



Arrangement of terminal links with △△ connection

Motor size EDR..71 – 225, EDRN80 – 280:

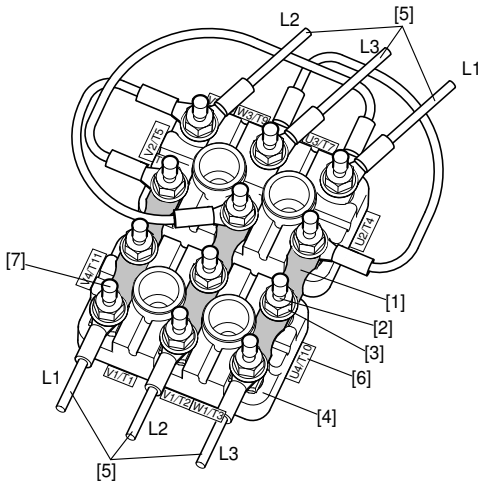
(Single-sided supply)



16160521099

Motor size EDRN250 – 315:

(Double-sided supply)



16160518667

[1]	Terminal link	[6]	Wiring designation plate
[2]	Terminal stud	[7]	Protection caps
[3]	Flange nut	L1	Conductor 1
[4]	Terminal board	L2	Conductor 2
[5]	Customer connection	L3	Conductor 3

INFORMATION

For EDRN250 – 315 motors, SEW-EURODRIVE recommends a double-sided supply for load currents higher than

- M10: 128 A

5.14.4 Connection variants via terminal board

The motors are supplied and connected differently depending on the electrical design. Arrange the terminal links as shown in the wiring diagram and screw them on firmly. Observe the tightening torques specified in the following tables.

EDRN63 motors							
Terminal stud Ø	**Tightening torque hex nut**	**Connection** Cross section	**Design**	**Connection type**	**Scope of delivery**	**PE connection screw** Ø	**PE design**
M4	**1.6 Nm** (14.2 lb-in)	**≤ 1.5 mm²** (AWG 16)	**1a**	**Conductor end sleeve**	**Preassembled terminal links**	M4	6
		≤ 2.5 mm² (AWG 14)	**1a**	**Solid wire**	**Preassembled terminal links**		
		≤ 6 mm² (AWG 10)	**1b**	**Ring cable lug**	**Preassembled terminal links**		
		≤ 6 mm² (AWG 10)	2	Ring cable lug	Connection accessories enclosed		
Motor size EDR..71 – 100, EDRN71 – 100							
Terminal stud Ø	**Tightening torque hex nut**	**Connection** Cross section	**Design**	**Connection type**	**Scope of delivery**	**PE connection screw** Ø	**PE design**
M4	**1.6 Nm** (14.2 lb-in)	**≤ 1.5 mm²** (AWG 16)	**1a**	**Conductor end sleeve**	**Preassembled terminal links**	M5	4
		≤ 6 mm² (AWG 10)	**1b**	**Ring cable lug**	**Preassembled terminal links**		
		≤ 6 mm² (AWG 10)	2	Ring cable lug	Connection accessories enclosed		
M5	2.0 Nm (17.7 lb-in)	**≤ 2.5 mm²** (AWG 14)	1a	Solid wire Conductor end sleeve	Preassembled terminal links		
		≤ 16 mm² (AWG 6)	1b	Ring cable lug	Preassembled terminal links		
		≤ 16 mm² (AWG 6)	2	Ring cable lug	Connection accessories enclosed		
M6	3.0 Nm (26.5 lb-in)	≤ 35 mm² (AWG 2)	3a	Ring cable lug	Connection accessories enclosed		
Motor size EDR..112 – 132, EDRN112 – 132S							
Terminal stud Ø	**Tightening torque hex nut**	**Connection by customer** Cross section	**Design**	**Connection type**	**Scope of delivery**	**PE connection screw** Ø	**PE design**
M5	**2.0 Nm** (17.7 lb-in)	**≤ 2.5 mm²** (AWG 14)	**1a**	**Solid wire Conductor end sleeve**	**Preassembled terminal links**	M5	4
		≤ 16 mm² (AWG 6)	**1b**	**Ring cable lug**	**Preassembled terminal links**		
		≤ 16 mm² (AWG 6)	2	Ring cable lug	Connection accessories enclosed		
M6	3.0 Nm (26.5 lb-in)	≤ 35 mm² (AWG 2)	3a	Ring cable lug	Connection accessories enclosed		

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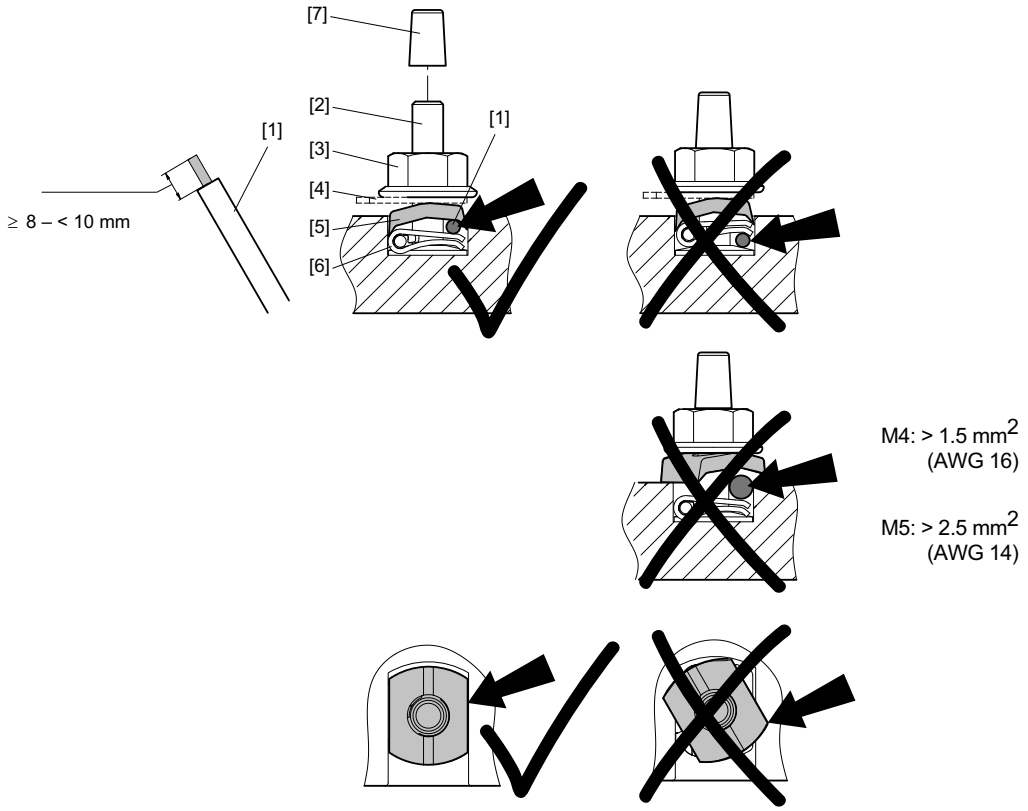
Motor size EDRN132M							
Terminal stud	**Tightening torque hex nut**	**Connection by customer**	**Design**	**Connection type**	**Scope of delivery**	**PE connection screw**	**PE design**
Ø		**Cross section**				**Ø**	
M5	**2.0 Nm** (17.7 lb-in)	**≤ 2.5 mm²** (AWG 14)	**1a**	**Solid wire Conductor end sleeve**	**Preassembled terminal links**	M8	5
		≤ 16 mm² (AWG 6)	**1b**	**Ring cable lug**	**Preassembled terminal links**		
		≤ 16 mm² (AWG 6)	2	Ring cable lug	Connection accessories enclosed		
M6	3.0 Nm (26.5 lb-in)	≤ 35 mm² (AWG 2)	3a	Ring cable lug	Connection accessories enclosed	M10	5
Motor size EDR..160, EDRN132L							
Terminal stud	**Tightening torque hex nut**	**Connection by customer**	**Design**	**Connection type**	**Scope of delivery**	**PE connection screw**	**PE design**
Ø		**Cross section**				**Ø**	
M6	**3.0 Nm** (26.5 lb-in)	**≤ 35 mm²** (AWG 2)	**3a**	**Ring cable lug**	**Connection accessories enclosed**	M8	5
M8	6.0 Nm (53.1 lb-in)	≤ 70 mm² (AWG 2/0)	3a	Ring cable lug	Connection accessories enclosed	M10	5
Motor size EDR..180 – 225, EDRN160 – 225							
Terminal stud	**Tightening torque hex nut**	**Connection by customer**	**Design**	**Connection type**	**Scope of delivery**	**PE terminal stud**	**PE design**
Ø		**Cross section**				**Ø**	
M8	**6.0 Nm** (53.1 lb-in)	**≤ 70 mm²** (AWG 2/0)	**3a**	**Ring cable lug**	**Connection accessories enclosed**	M8	5
M10	10 Nm (88.5 lb-in)	≤ 95 mm² (AWG 3/0)	3a	Ring cable lug	Connection accessories enclosed	M10	5
M12	15.5 Nm (137.2 lb-in)	≤ 95 mm² (AWG 3/0)	3a	Ring cable lug	Connection accessories enclosed	M10	5
Motor size EDRN250 – 280							
Terminal stud	**Tightening torque hex nut**	**Connection by customer**	**Design**	**Connection type**	**Scope of delivery**	**PE terminal stud**	**PE design**
Ø		**Cross section**				**Ø**	
M10	**10 Nm** (88.5 lb-in)	**≤ 95 mm²** (AWG 3/0)	**3a**	**Ring cable lug**	**Connection accessories enclosed**	M12	5
M12	**15.5 Nm** (137.2 lb-in)	**≤ 95 mm²** (AWG 3/0)	**3a**	**Ring cable lug**	**Connection accessories enclosed**	M12	5
M16	**30 Nm** (265.5 lb-in)	**≤ 120 mm²** (AWG4/0)	3b	Ring cable lug	Connection accessories enclosed	M12	5
Motor size EDRN315							
Terminal stud	**Tightening torque hex nut**	**Connection by customer**	**Design**	**Connection type**	**Scope of delivery**	**PE terminal stud**	**PE design**
Ø		**Cross section**				**Ø**	
M12	**15.5 Nm** (137.2 lb-in)	**≤ 95 mm²** (AWG 3/0)	**3a**	**Ring cable lug**	**Premounted connection pieces**	M12	5
M16	**30 Nm** (265.5 lb-in)	**≤ 120 mm²** (AWG4/0)	**3b**				

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

Variant 1a:



9007203598605835

[1] External connection
[2] Terminal stud
[3] Flange nut
[4] Terminal link
[5] Terminal washer
[6] Winding connection with Stocko terminal
[7] Protection caps

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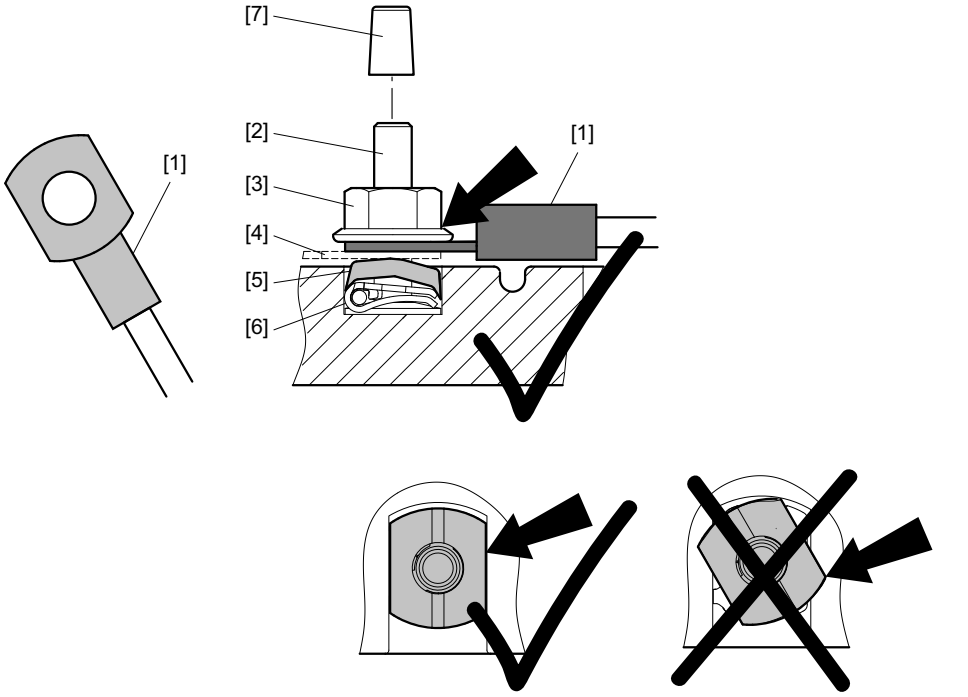
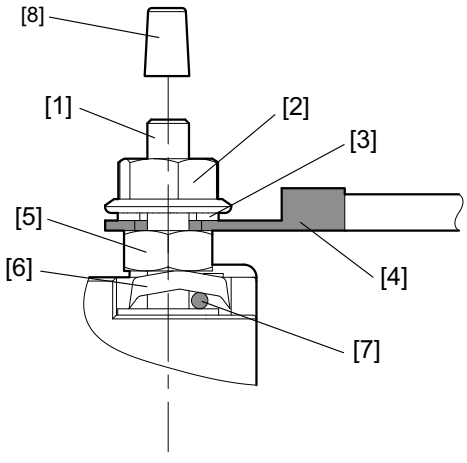
Variant 1b:



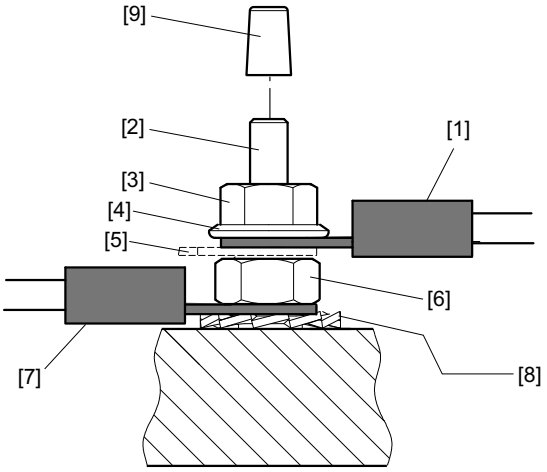
[1]	External connection with ring cable lug, according to DIN 46237 or DIN 46234, for example	[5]	Terminal washer
[2]	Terminal stud	[6]	Winding connection with Stocko terminal
[3]	Flange nut	[7]	Protection caps
[4]	Terminal link		

Variant 2



[1]	Terminal stud	[5]	Bottom nut
[2]	Upper 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	[8]	Protection cap

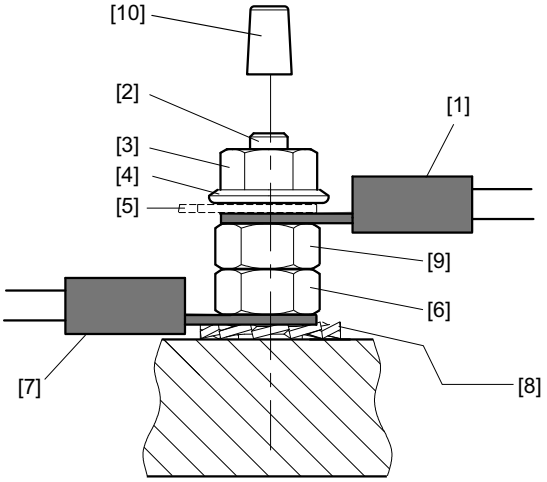
Variant 3a



4343868683

[1]	External connection with ring cable lug, according to DIN 4637 or DIN 46234, for example	[6]	Bottom nut
[2]	Terminal stud	[7]	Winding connection with ring cable lug
[3]	Upper nut	[8]	Serrated lock washer
[4]	Washer	[9]	Protection caps
[5]	Terminal link		

Variant 3b



16160455307

[1]	External connection with ring cable lug, according to DIN 4637 or DIN 46234, for example	[6]	Bottom nut
[2]	Terminal stud	[7]	Winding connection with ring cable lug
[3]	Upper nut	[8]	Serrated lock washer
[4]	Washer	[9]	Middle nut
[5]	Terminal link	[10]	Protection caps

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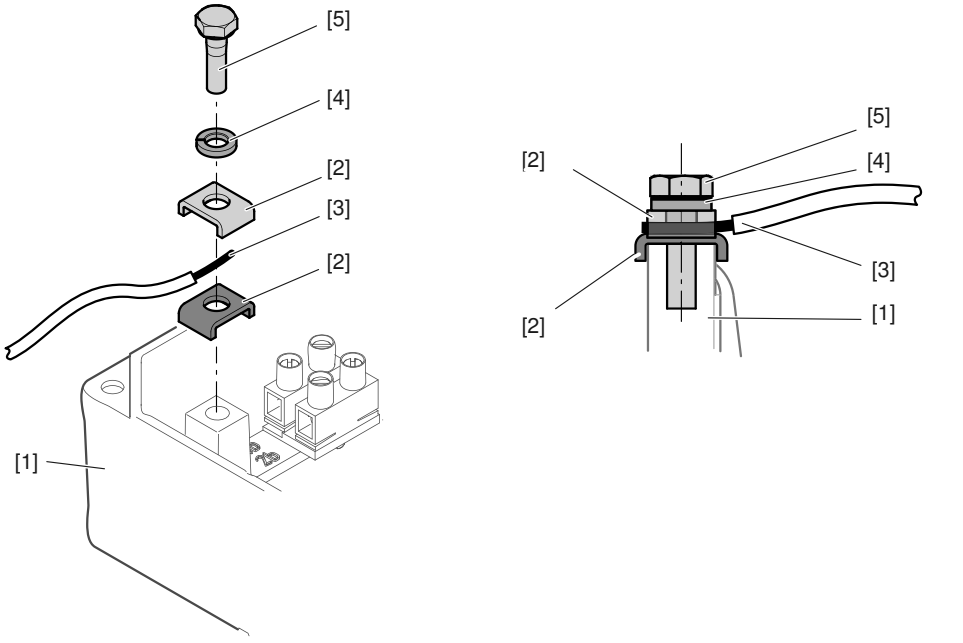
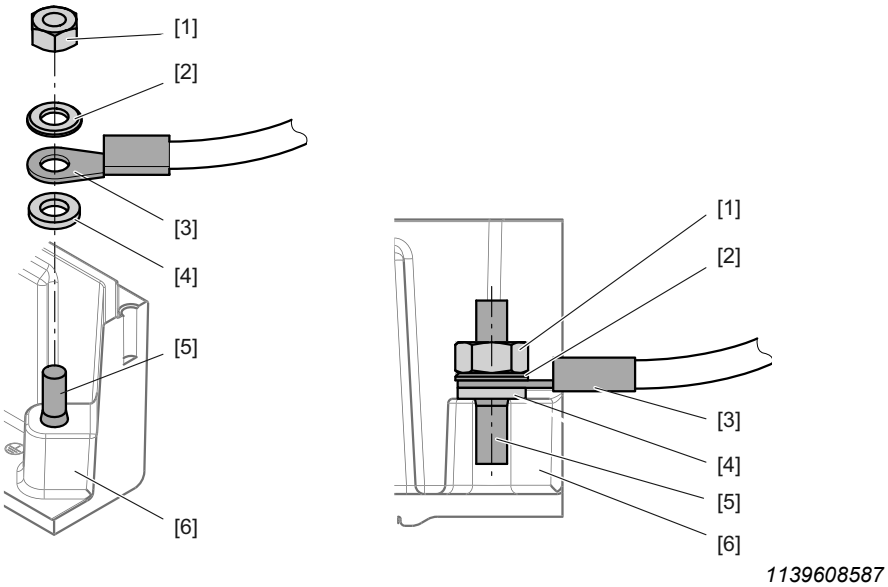
Variant 4



18014399649088651

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

Variant 5



1139608587

[1] Hex nut
[2] Washer
[3] PE conductor with cable lug
[4] Serrated lock washer
[5] Stud
[6] Terminal box

5.15 Connecting the brake

BE.. brakes are powered by energized DC voltage and are released electrically. The brake is applied mechanically when the voltage supply is disconnected.

⚠ WARNING

Delayed brake application or unintentional brake release due to incorrect control or connection.

Severe or fatal injuries, e.g. due to falling hoist.

- Comply with the applicable regulations issued by the relevant employer's liability insurance association regarding phase failure protection and the associated circuit/circuit modification.
- Connect the brake according to the enclosed wiring diagram.
- In case of emergency off, always disconnect all poles of the brake control from the supply voltage.
- Only use suitable contactors with sufficient contact rating (utilization category according to IEC 60947-4-1/IEC 60947-5-1, see chapter "Brake voltage supply" (→ 🗎 76)).
- For contactor selection, observe the inductive load to switch, and the high current load while switching the brake.

5.15.1 Connecting the brake control

The brake is powered by a brake control system with protection circuit. The brake control is either installed in the motor's terminal box or in the control cabinet. If the motor is prepared for the brake control in the control cabinet, the brake supply cables are connected to a terminal strip in the motor terminal box.

Usually screw terminals are used as terminals on the brake control.

The connectable cable cross sections are restricted to 2.5 mm^2. If you use larger cable cross sections due to application reasons, additional intermediate terminals must be used.

The brake is internally connected to the motor PE. An additional connection for the brake is not necessary.

⚠ WARNING

Delayed brake application or unintentional brake release due to incorrect control or connection.

Severe or fatal injuries, e.g. due to falling hoist.

- Observe the specifications of this documentation for connecting the brake.
- If you are uncertain about brake control, voltage supply type and design, or overvoltage and short circuit protection, contact the plant manufacturer or SEW-EURODRIVE.

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5.15.2 Permitted brake controls

INFORMATION

The following specifications refer to motors designed for operation at ambient temperatures of -20 °C to +40 °C, and with thermal class 155 (F). Deviations may occur depending on the installed motor options.

In individual cases, always also observe the additional specifications in the order confirmation and on the motor nameplate.

The brake is designed for operation with AC voltage, depending on the design. A brake control by SEW-EURODRIVE is used that is either installed in the motor terminal box or in the control cabinet.

The following brake control types are not permitted:

- Operation with AC voltage without brake control by SEW-EURODRIVE with BE03 – BE122 brakes.
- Operation at DC voltage
- Operation with third-party brake control systems.

For an overview of available brake controls by SEW-EURODRIVE and of the technical data, refer to chapter "Brake control" (→ 🗎 169).

⚠ WARNING

Severe or fatal injuries

Great and unexpected elongation of the stopping distance.

- Operate each brake with a separate brake control.
- Observe the notes on dimensioning in the catalog, or contact SEW-EURODRIVE.

5.15.3 Optional separation of DC and AC circuits

In case of brakes operated with AC voltage, make sure the disconnection type designated by the manufacturer is applied correctly during the brake connection. The following types are distinguished:

- Cut-off in the AC circuit with normal application time
- Cut-off in AC circuit and DC circuit with shortened application time

The correct switch-off type must be ensured by a respective wiring. Certain brake controls by SEW-EURODRIVE realize the same AC and DC cut-off via integrated switching relays (e.g. BMP1.5).

The switch-off type is specified on the included wiring diagrams by a pictogram.

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⚠ WARNING

Delayed brake application or unintentional ongoing brake release due to incorrect switch-off.

Severe or fatal injuries, e.g. due to falling hoist or extended coasting.

- During project planning, consider the required cut-off type and the effects on the expected stopping distance in particular.
- Only use the faster cut-off in the DC and AC circuit for hoists and hoist-like applications.
- If it is unclear whether the application is a hoist-like application, contact SEW-EURODRIVE.
- Make sure that the configured cut-off type (AC or AC-DC) is implemented correctly during startup, regardless of the type of application.

5.15.4 Brake voltage supply

The brake voltage supply must match the values specified on the nameplate of the motor. The brake must be supplied via the designated brake control.

The specifications on the nameplate have a tolerance of +/-5% of the stated nominal value, or of the mean value of the stated connection range. Observe order-specific deviations.

Make sure the voltage supply is sufficiently stable by using cable cross sections and voltage sources that are dimensioned accordingly. Make sure the supply voltage does not drop below 90% of the nominal value during starting. This could be caused by an increased inrush current, see chapter "Operating currents" (→ 🗎 162).

When using single-speed drives with brake control in the terminal box that are operated directly at the supply system (meaning without inverter or soft start devices), the brake supply voltage can also be picked off from the terminal board of the motor. Adhere to the following restrictions:

- The nominal brake voltage must either match the phase-to-neutral voltage, or the phase-to-phase voltage of the motor (observe nameplate and motor switching type).
- This operating mode is not permitted for hoists or hoist-like applications, as the remanence voltage of the motor may cause the brake to remain released unintentionally.
- For combinations with BMP3.1 brake control (BE60 – 122) a voltage supply via the terminal board is not permitted.

INFORMATION

In variable-speed motors and motors operated with soft start devices, the brake voltage must not be picked up at the motor terminal board because the voltage there is not constant.

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5.15.5 Switching equipment

The high current utilization during switching the brake (inductive load) requires suitable contactors/switch contacts, to obtain the correct function of the brake.

Depending on brake type and type design, the switch contacts must meet the specifications in the following utilization categories:

- Switch contacts for the supply voltage at AC voltage operation: AC-3 according to IEC 60947-4-1 or AC-15 according to IEC 60947-5-1.
- Switch contact for the supply voltage at DC voltage operation: Preferably AC-3 or DC-3 according to IEC 60947-4-1. As an alternative, contacts in utilization category DC-13 according to IEC 60947-5-1 are also permitted.
- Switch contacts for optional separation on DC side: AC-3 according to IEC 60947-4-1.

Observe the specifications on the provided wiring diagram.

Using a semi-conductor relay is not permitted.

5.15.6 Brake controls with functional control input

In addition to the voltage supply, the optional brake controls of the BMK., BMKB. and BMV. series offer a control input for a DC 24 V signal with which the brakes can be switched via a PLC.

It is a purely functional input that is not "functionally safe" with respect to safety technology.

Due to their operating principle, fault states can occur in these devices that lead to unintentional ongoing brake release, even if the control voltage has been switched off.

⚠ WARNING

Unintentional ongoing brake release due to unrecognized malfunction of the brake control.

Severe or fatal injuries, e.g. due to falling hoist or extended coasting.

- Always disconnect all poles of the supply and control voltage for hoists and hoist-like applications.
- Ensure that a malfunction of the control input can be detected through additional, suitable diagnostic measures e.g. by monitoring the braking current to meet high safety and reliability requirements.
- Use the BST.. brake control for functional safety applications.
- If you have any questions regarding the handling of the control input, contact SEW-EURODRIVE.

5.15.7 Damage protection against overvoltage and short circuit

To obtain protection against overvoltage damages (e.g. due to short circuit), a sufficiently dimensioned fusing must be used at the supply cables.

Observe the notes on dimensioning in the catalog, or contact SEW-EURODRIVE.

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5.16 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.

INFORMATION

Do not connect any options if the wiring diagram is missing.

5.16.1 /TF temperature sensor

⚠ WARNING

Explosion caused by impermissible heating of the motor due to defective temperature sensor /TF.

Severe or fatal injuries.

- Do not connect any voltages > 30 V to the temperature sensor /TF.
- Observe the provided wiring diagram for the connection of the temperature sensor /TF.

The PTC thermistors comply with DIN VDE V 0898-1-401.

Resistance measurement (measuring device with U ≤ 2.5 V or I < 1 mA):

- Standard measured values: 20 – 500 Ω, hot resistance > 4000 Ω

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

If there is a 2nd terminal box for the /TF temperature sensor, the temperature sensor must be connected there.

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

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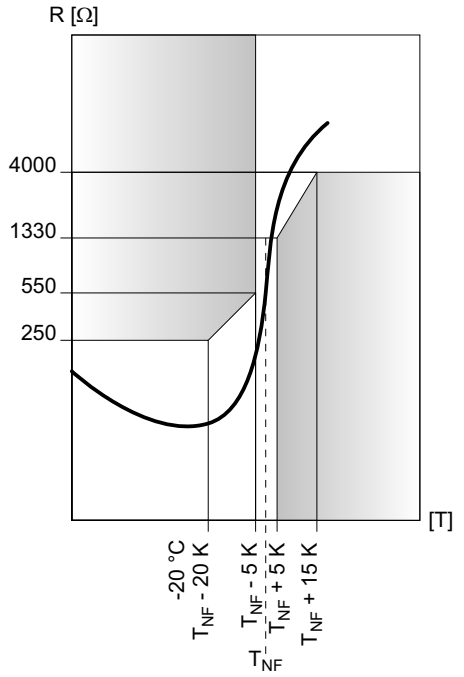
The figure below shows the characteristic curve of the /TF with reference to the nominal response temperature (referred to as T_{NF}):



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5.16.2 Temperature sensor /PK (Pt1000)

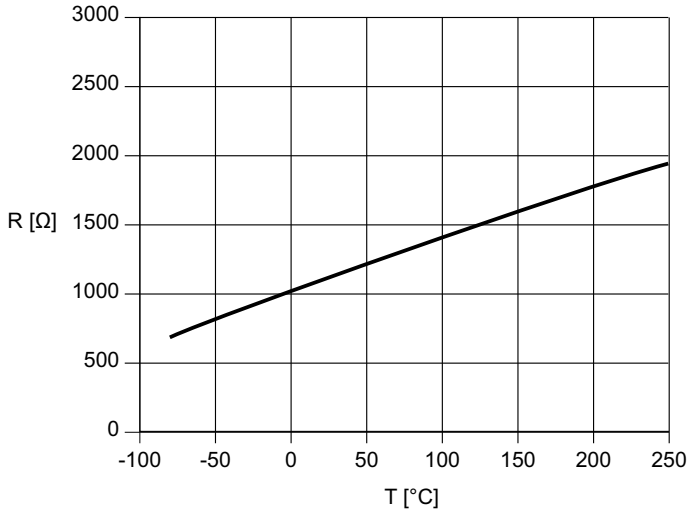
NOTICE

Damage to the insulation of the temperature sensor and the motor winding due to excessive self-heating of the temperature sensor.

Possible damage to the drive system.

- The current in the circuit must not exceed 3 mA.
- Observe the correct connection of the Pt1000 to ensure correct evaluation of the temperature sensor.

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



17535480203

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

5.16.3 Temperature sensor /PT (Pt100)

NOTICE

Damage to the insulation of the temperature sensor and the motor winding due to excessive self-heating of the temperature sensor.

Possible damage to the drive system.

- The current in the circuit must not exceed 3 mA.
- Observe the correct connection of the Pt100 to ensure correct evaluation of the temperature detection system.

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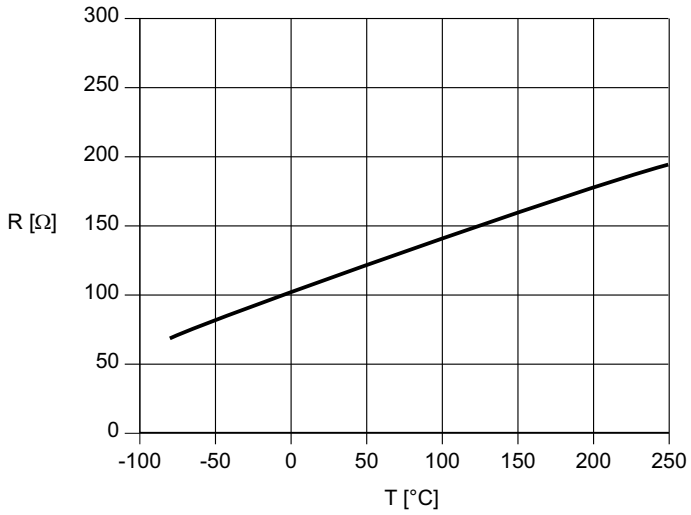
The characteristic curve in the following figure shows the resistance curve subject to the motor temperature.



1145838347

Technical data	PT100
Connection	Red/white
Resistance at 20 – 25 °C per PT100	107.8 Ω < R < 109.7 Ω
Test current	< 3 mA

6 Duty types and limit values

6.1 Permitted operating modes

6.1.1 Permitted duty types and protection concept for division 2 motors

Design	Duty type acc. to nameplate	Permitted duty types	Protection against excessive heating	Mark on the nameplate
CID2	S1	Line operation: S1	Motor circuit breaker[1)]	–
CIID2 CICIID2	S1	Line operation: • Switching operation • Soft starters • Heavy starting	PTC thermistor[2)]	Option /TF
	S1, inverter duty VPWM	FI operation: • Single drive • Group drive (only CIID2)	PTC thermistor[2)]	CT[3)], permitted speed range, nominal current, and maximum current
		Line operation: • Switching operation • Soft starters • Heavy starting	PTC thermistor[2)]	

1) Motor circuit breaker with approval according to cULus for USA/Canada.
2) Monitoring of the PTC thermistor via thermistor motor protection control unit with approval according to cULus for USA and Canada.
3) Constant torque in specified speed range

6.2 Line operation

6.2.1 Continuous duty

The motors are designed for continuous duty at a constant power rating (S1) and are marked accordingly. This includes low load startup at a small number of starts per hour that cause hardly any additional heating.

Overload protection must be ensured using a time delayed, current-controlled overload protection device.

6.2.2 Switching operation

In case of switching frequencies that are assigned to duty types S3, S4, and S6, the load changes must be considered in addition to start-up. This is ensured by calculating the permitted switching frequency.

To calculate the permitted cycles per hour, use the formula for calculating the switching frequency.

Important notes on the brake

In line operation, the brake is applied at rated speed of the motor when the drive is switched off or in case of an emergency stop. The braking work may not exceed the permitted maximum braking work per braking operation. Observe the information in the manual "Project Planning for BE.. Brakes – DR.., DRN.., DR2.., EDR.., EDRN.. AC Motors – Standard Brake/Safety Brake".

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The evaluation of a PTC thermistor (/TF) is the only measure to prevent overheating. The brakemotors from SEW-EURODRIVE are equipped with PTC thermistors (/TF).

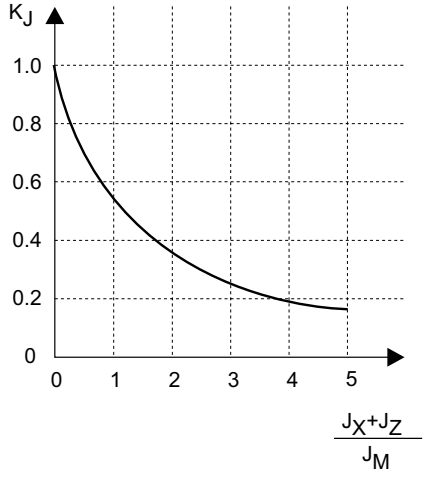
6.2.3 Calculating the starting frequency

You can determine the permitted switching frequency Z of the motor in cycles/hour using the following formula:

$$\mathbf{Z = Z_0 \times K_J \times K_M \times K_P}$$

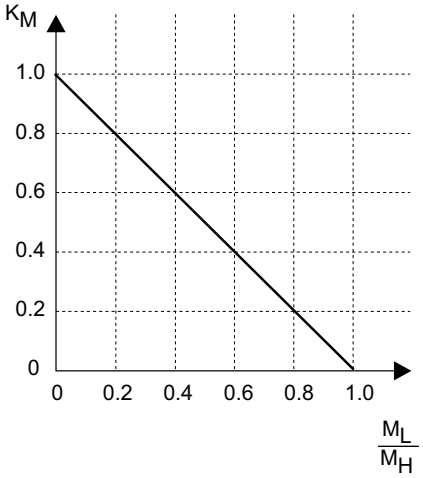
You can determine the factors $_J$, K_M, and K_P using the following diagrams:

Depending on the additional moment of inertia



19214810891

Depending on the counter-torque at startup



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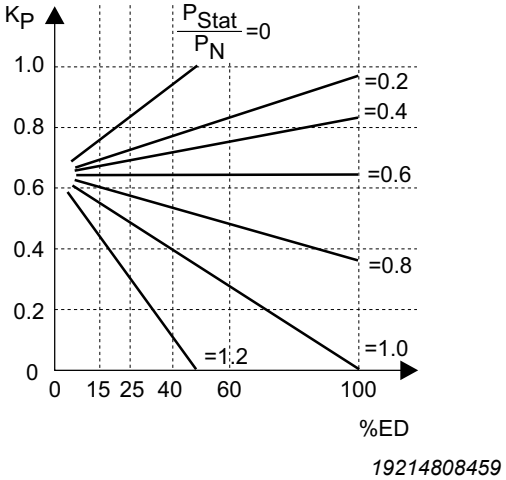
Depending on the static power and the relative cyclic duration factor cdf



19214808459

J_X	Total of all external mass moments of inertia in relation to the motor axis	M_H	Acceleration torque of the motor
J_Z	Mass moment of inertia flywheel fan	P_{Stat}	Power demand after run-up (static power)
J_M	Motor's mass moment of inertia	P_N	Rated motor power
M_L	Counter-torque during startup	% cdf	Relative cyclic duration factor

Z_0 is the no-load starting frequency defined by the manufacturer.

The permitted starting frequency Z of a motor is calculated using the formula for calculating the starting frequency. Z_0 indicates the number of times per hour that the motor can accelerate the mass moment of inertia of its rotor up to nominal speed without counter-torque.

6.2.4 Soft starter/soft start units

Soft start units are permitted for motors of Division 2 when the motors are equipped with the temperature sensor /TF option and meet the requirements of EN/IEC 60079-14.

During startup, you must detect and document whether temperature monitoring is effective and whether the motor starts up correctly. When the protection device trips, disconnect the motor from the supply system.

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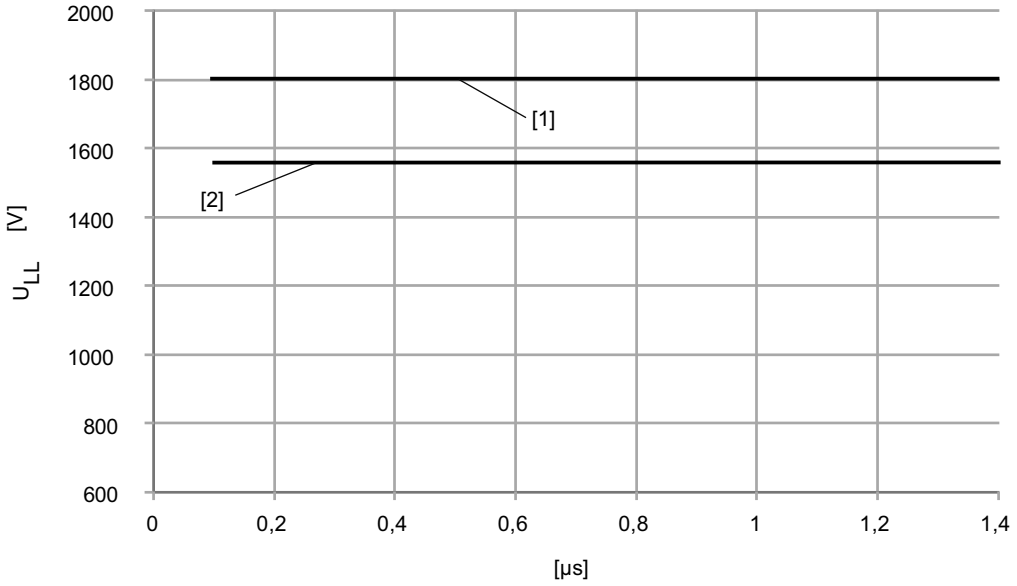
6.3 Inverter operation

6.3.1 Permitted voltage stress in inverter operation

Operating motors from SEW-EURODRIVE on 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 EDR../EDRN.. motors with reinforced insulation (option /RI)

[2] Permitted pulse voltage for EDR../EDRN.. motors with standard insulation in double-star and star connection

U_{LL} Permitted pulse voltage

µs Voltage rise time

INFORMATION

The permitted maximum PE voltage of 1200 V must not be exceeded in IT system operation even in the event of an error.

INFORMATION

If the permitted pulse voltage is exceeded, you have to provide for according measures to limit it. Consult the manufacturer of the inverter.

Frequency inverters from SEW-EURODRIVE

The pulse voltage at the motor terminals (caused by reflections) depends among others on the level of the DC link voltage and the cable length between frequency inverter and motor.

When using frequency inverters from SEW-EURODRIVE at line voltages of up to 500 V and in non-regenerative operation, the maximally permitted limit values of the motors are met.

In case of line voltages higher than 500 V (e.g. 575 V), you must select the reinforced winding insulation option (/RI) for EDR.. and EDRN.. motors.

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If regenerative operation cannot be ruled out, a braking resistor must be configured and connected to the frequency inverter to avoid an increased DC link voltage.

Regenerative power supply

The regenerative power supply module of MOVIDRIVE® or MOVIAXIS® with the necessary options can be used without restrictions. Regenerative power supply prevents high DC link voltages and ensures that the limit values are not exceeded.

Frequency inverters from third-party manufacturers

If the maximum permitted limit values cannot be met with frequency inverters from other manufacturers, you must take limiting measures. Contact the manufacturer of the frequency inverter for more information.

IT system

In an IT system, an insulation fault between a phase and ground is tolerated. The ground fault on the motor could mean that the maximum permitted limit value for phase/ground of 1200 V is exceeded in regenerative operation. To prevent this effectively, you have to install suitable protection elements between the frequency inverter and the motor. Usually, sine filters are installed between the frequency inverter and motor in this case. For detailed information about component selection and wiring, please contact the manufacturer of the frequency inverter.

6.4 Safe operation of division 2 motors on inverters

The project planning is the basic prerequisite for a safe operation of explosion-protected motors in division 2 for CI (gas) and CII (dust). The following points have to be considered:

- Adhere to the thermal torque limit characteristic curve (M_{CT})
- Observe the dynamic limit torque
- Observe the minimum and maximum motor speeds n_{min} and n_{max}
- Select a suitable inverter
- Use a braking resistance if regenerative operation cannot be ruled out completely
- Strictly observe the maximum permitted braking work per emergency stop
- Check the overhung and axial loads on the motor shaft of stand-alone motors

Observe the following additional points in case of combinations with explosion-protected gear units (according to 2014/34/EU):

- For the maximum gear unit input speed, refer to n_{emax} on the nameplate
- Observe the maximum gear unit output torque, see M_{amax} on the nameplate

6.4.1 Maximum permitted torques

The thermal torque limit characteristic curve shows the permitted maximum torque for continuous operation of the motor.

The values may be exceeded for brief periods if the effective operating point lies below the thermal limit characteristic curve (M_{CT}).

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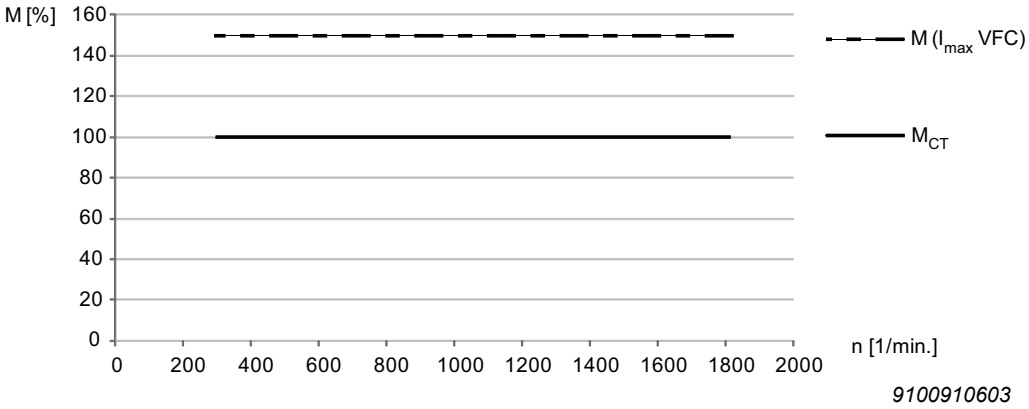
The maximum dynamic limit torque must not be exceeded. This is ensured as the inverter limits the output current to 150% of the nominal motor current.



Permitted maximum and minimum motor speeds

Observe the minimum and maximum motor speeds listed in the assignment tables for the motor/frequency inverter combinations. The actual values may not exceed or fall below these specifications continuously.

Inverter selection

The inverters of the MOVIDRIVE® and MOVITRAC® series are designed for operation of EDR../EDRN.. motors. Inverters that have similar values with respect to output current and output voltage can also be used.

Base your selection of the appropriate inverter on the assignment tables in chapter "Motor/inverter assignment for motors in division 2" (→ 🗎 86):

In case of deviating rated motor voltage, select the inverter manually. If this is the case, observe that the maximally permitted output current is 150% of the nominal motor current.

The power of the inverter is limited by the following condition:

$$I_{N\,FU} \leq 2.5 \times I_{N\,Mot}$$

$I_{N\,FU}$ = nominal current at the inverter output
$I_{N\,Mot}$ = nominal motor current

Motor/inverter assignment for motors in division 2

INFORMATION

The options brake/backstop or gear units may result in deviating minimum or maximum speeds (see nameplate).

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Motor/inverter assignment, EDRS../EDRE.. motor, 60 Hz

Canada/USA: 460 – 480 V

Inverter output voltage				Canada/USA: 460 – 480 V							
Rated motor voltage				460 V				230 V			
Connection type				⅄				⅄⅄			
Motor	P_n	P_n	M_n	$n_{min} – n_{max}$	$I_{N\ Mot}$	FI	FI	$n_{min} – n_{max}$	$I_{N\ Mot}$	FI	FI
	kW	HP	Nm	1/min	A	kW	HP	1/min	A	kW	HP
EDRS71S4	0.18	0.25	1.01	300 – 1800	0.44	0.25	0.34	300 – 3000	0.87	0.37	0.5
EDRS71S4	0.25	0.34	1.4	300 – 1800	0.57	0.25	0.34	300 – 3000	1.14	0.37	0.5
EDRS71S4	0.37	0.5	2.1	450 – 1800	0.92	0.37	0.5	450 – 3000	1.84	0.75	1
EDRS71M4	0.55	0.75	3.1	450 – 1800	1.25	0.55	0.75	450 – 3000	2.5	1.1	1.5
EDRE80M4	0.75	1	4.1	300 – 1800	1.44	0.75	1	300 – 3000	2.88	1.5	2
EDRE90M4	1.1	1.5	6	300 – 1800	2.3	1.1	1.5	300 – 3000	4.5	2.2	3
EDRE90L4	1.5	2	8.2	300 – 1800	2.9	1.5	2	300 – 3000	5.7	3	4
EDRE100L4	2.2	3	12.1	300 – 1800	4	2.2	3	300 – 3000	8	4	5.4
EDRE112M4	3.7	5	20	300 – 1800	6.3	4	5.4	300 – 3000	12.6	7.5	10
EDRE132S4	4	5.4	21.5	300 – 1800	6.9	4	5.4	300 – 3000	13.8	7.5	10
EDRE132M4	5.5	7.5	30	300 – 1800	9	5.5	7.5	300 – 3000	18	11	15
EDRE160S4	7.5	10	40.5	300 – 1800	12.7	7.5	10	300 – 3000	25.4	15	20
EDRE160M4	9.2	12.5	49.5	300 – 1800	15.4	11	15	300 – 3000	30.8	22	30
EDRE180S4	11	15	59	300 – 1800	17.9	11	15	300 – 3000	35.8	22	30
EDRE180M4	15	20	81	300 – 1800	24	15	20	300 – 2700	48	30	40
EDRE180L4	18.5	25	100	300 – 1800	30	22	30	300 – 2700	60	37	50
EDRE200L4	22	30	118	300 – 1800	36.5	22	30	Setting range not possible			
EDRE200L4	30	40	161	450 – 1800	49.5	30	40				
EDRE225S4	37	50	200	300 – 1800	59	37	50				
EDRE225M4	45	60	240	900 – 1800	71	45	60				

Canada: 575 V

Inverter output voltage				Canada: 575 V			
Rated motor voltage				575 V		330 V	
Connection type				⅄		△	
Motor	P_n	P_n	M_N	n_{min} - n_{max}	$I_{N\ Mot}$	n_{min} - n_{max}	$I_{N\ Mot}$
	kW	HP	Nm	min^{-1}	A	min^{-1}	A
EDRS71S4	0.18	0.25	1.01	300 – 1800	0.35	300 – 3000	0.61
EDRS71S4	0.25	0.34	1.4	300 – 1800	0.46	300 – 3000	0.79
EDRS71S4	0.37	0.5	2.1	450 – 1800	0.74	450 – 3000	1.3
EDRS71M4	0.55	0.75	3.1	450 – 1800	1	450 – 3000	1.7

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Inverter output voltage				Canada: 575 V			
Rated motor voltage				575 V		330 V	
Connection type				⅄		△	
Motor	P_n	P_n	M_N	n_{min} - n_{max}	$I_{N\ Mot}$	n_{min} - n_{max}	$I_{N\ Mot}$
	kW	HP	Nm	min^{-1}	A	min^{-1}	A
EDRE80M4	0.75	1	4.1	300 – 1800	1.2	300 – 3000	2.0
EDRE90M4	1.1	1.5	6	300 – 1800	1.8	300 – 3000	3.1
EDRE90L4	1.5	2	8.2	300 – 1800	2.3	300 – 3000	4.0
EDRE100L4	2.2	3	12.1	300 – 1800	3.2	300 – 3000	5.6
EDRE112M4	3.7	5	20	300 – 1800	5.0	300 – 3000	8.8
EDRE132S4	4	5.4	21.5	300 – 1800	5.5	300 – 3000	9.6
EDRE132M4	5.5	7.5	30	300 – 1800	7.2	300 – 3000	12.5
EDRE160S4	7.5	10	40.5	300 – 1800	10.2	300 – 3000	17.7
EDRE160M4	9.2	12.5	49.5	300 – 1800	12.3	300 – 3000	21.5
EDRE180S4	11	15	59	300 – 1800	14.3	300 – 3000	25.0
EDRE180M4	15	20	81	300 – 1800	19.2	300 – 2700	33.5
EDRE180L4	18.5	25	100	300 – 1800	24.0	300 – 2700	41.8
EDRE200L4	22	30	118	300 – 1800	29.2	Setting range not possible	
EDRE200L4	30	40	161	450 – 1800	39.6		
EDRE225S4	37	50	200	300 – 1800	47.2		
EDRE225M4	45	60	240	900 – 1800	56.8		

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Motor/inverter assignment, EDRN.. motor, 60 Hz

Canada/USA: 460 – 480 V

Inverter output voltage				Canada/USA: 460 – 480 V							
Rated motor voltage				460 V				230 V			
Connection type				⅄ (for 160M and larger: △)				⅄⅄ (for 160M and larger: △△)			
Motor	P_N	P_N	M_N	n_{min} – n_{max}	I_N	FI		n_{min} – n_{max}	I_N	FI	
	kW	HP	Nm	min^{-1}	A	kW	HP	min^{-1}	A	kW	HP
EDRN63MS4	0.12	0.16	0.67	300 – 1800	0.37	0.12	0.16	300 – 3000	0.74	0.25	0.33
EDRN63M4	0.18	0.25	1.01	300 – 1800	0.52	0.18	0.25	300 – 3000	1.04	0.37	0.5
EDRN71MS4	0.25	0.33	1.39	300 – 1800	0.65	0.25	0.33	300 – 3000	1.3	0.55	0.75
EDRN71M4	0.37	0.5	2.05	300 – 1800	0.92	0.37	0.5	300 – 3000	1.84	0.75	1
EDRN80MK4	0.55	0.75	3	300 – 1800	1.16	0.55	0.75	300 – 3000	2.32	1.1	1.5
EDRN80M4	0.75	1	4.1	300 – 1800	1.56	0.75	1	300 – 3000	3.12	1.5	2.2
EDRN90S4	1.1	1.5	6	300 – 1800	2.3	1.1	1.5	300 – 3000	4.6	2.2	3
EDRN90L4	1.5	2	8.1	300 – 1800	3	1.5	2	300 – 3000	6	3	4
EDRN100L4	2.2	3	11.9	300 – 1800	4.15	2.2	3	300 – 3000	8.3	4	5.5
EDRN100L4	3	4	16.2	300 – 1800	5.8	3	4	300 – 3000	11.6	7.5	10
EDRN100L4	3.7	5	20	900 – 1800	7.2	4	5	900 – 3000	14.4	7.5	10
EDRN112M4	4	5.4	21.5	300 – 1800	7.1	4	5	300 – 3000	14.2	7.5	10
EDRN132S4	5.5	7.5	29.5	300 – 1800	9.2	5.5	7.5	300 – 3000	18.4	11	15
EDRN132M4	7.5	10	40.5	300 – 1800	13.3	7.5	10	300 – 3000	26.6	15	20
EDRN132L4	9.2	12.5	49.5	300 – 1800	16.5	11	15	300 – 3000	33	22	30
EDRN160M4	11	15	59	300 – 1800	18.5	11	15	300 – 3000	37	22	30
EDRN160L4	15	20	81	300 – 1800	25	15	20	300 – 3000	50	30	40
EDRN180M4	18.5	25	99	300 – 1800	29.5	22	30	300 – 2700	59	37	50
EDRN180L4	22	30	118	300 – 1800	34	22	30	300 – 2700	68	45	60
EDRN200L4	30	40	161	450 – 1800	48.5	30	40	Setting range not possible			
EDRN225S4	37	50	198	300 – 1800	56	37	50				
EDRN225M4	45	60	240	900 – 1800	70	45	60				
EDRN250ME4	55	75	295	300 – 1800	88	55	75				
EDRN280S4	75	100	400	900 – 1800	125	90	125				
EDRN280M4	90	125	480	300 – 1800	141	90	125				
EDRN315S4	110	150	590	300 – 1800	165	110	150				
EDRN315ME4	132	180	700	300 – 1800	200	132	180				
EDRN315L4	150	200	800	300 – 1800	225	160	215				
EDRN315L4	160	215	850	900 – 1800	235	160	215				
EDRN315H4	185	250	990	300 – 1800	290	200	275				
EDRN315H4	200	275	1070	450 – 1800	310	200	275				

Canada: 575 V

Inverter output voltage				Canada: 575 V			
Rated motor voltage				575 V		330 V	
Connection type				⅄		△	
Motor	P_N	P_N	M_N	$n_{min} – n_{max}$	I_N	$n_{min} – n_{max}$	I_N
	kW	HP	Nm	min^{-1}	A	min^{-1}	A
EDRN63MS4[1)]	0.12	0.16	0.67	300 – 1800	0.295	300 – 3000	0.51
EDRN63M4[1)]	0.18	0.25	1.01	300 – 1800	0.415	300 – 3000	0.72
EDRN71MS4[1)]	0.25	0.33	1.39	300 – 1800	0.52	300 – 3000	0.90
EDRN71M4[1)]	0.37	0.5	2.05	300 – 1800	0.74	300 – 3000	1.28
EDRN80MK4[1)]	0.55	0.75	3	300 – 1800	0.93	300 – 3000	1.61
EDRN80M4	0.75	1	4.1	300 – 1800	1.25	300 – 3000	2.2
EDRN90S4	1.1	1.5	6	300 – 1800	1.85	300 – 3000	3.2
EDRN90L4	1.5	2	8.1	300 – 1800	2.4	300 – 3000	4.2
EDRN100L4	2.2	3	11.9	300 – 1800	3.35	300 – 3000	5.8
EDRN100L4	3	4	16.2	300 – 1800	4.7	300 – 3000	8.1
EDRN100L4	3.7	5	20	900 – 1800	5.7	900 – 3000	9.9
EDRN112M4	4	5.5	21.5	300 – 1800	5.6	300 – 3000	9.8
EDRN132S4	5.5	7.5	29.5	300 – 1800	7.4	300 – 3000	12.9
EDRN132M4	7.5	10	40.5	300 – 1800	10.6	300 – 3000	18.5
EDRN132L4	9.2	12.5	49.5	300 – 1800	13.2	300 – 3000	23.0
EDRN160M4	11	15	59	300 – 1800	14.8	300 – 3000	25.8
EDRN160L4	15	20	81	300 – 1800	20	300 – 3000	34.8
EDRN180M4	18.5	25	99	300 – 1800	23.5	300 – 2700	40.9
EDRN180L4	22	30	118	300 – 1800	27.5	300 – 2700	47.9
EDRN200L4	30	40	161	450 – 1800	39.0	Setting range not possible	
EDRN225S4	37	50	198	300 – 1800	44.5		
EDRN225M4	45	60	240	900 – 1800	56.0		
EDRN250ME4	55	75	295	300 – 1800	70.0		
EDRN280S4	75	100	400	900 – 1800	100		
EDRN280M4	90	125	480	300 – 1800	113		
EDRN315S4	110	150	590	300 – 1800	130		
EDRN315ME4	132	180	700	300 – 1800	159		
EDRN315L4	150	200	800	300 – 1800	179		
EDRN315L4	160	215	850	900 – 1800	189		
EDRN315H4	185	250	990	300 – 1800	220		
EDRN315H4	200	275	1070	450 – 1800	240		

1) Only operate EDRN63MS – 80MK motors with sine filter.

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6.4.2 Notes for safe operation

General

Install the frequency inverter outside the potentially explosive atmosphere.

Thermal motor protection

Only motors that are equipped with a PTC thermistor /TF are permitted for operation on an inverter to ensure that the permitted limit temperature is not exceeded. This must be evaluated using an appropriate device.

Motors that are suitable for inverter operation have an "Inverter duty" label on the nameplate.

Overvoltage at the motor terminals

When operating the motors on frequency inverters, observe chapter "Permitted voltage stress in inverter operation" (→ 🗎 84).

EMC measures

The following components are permitted for the MOVIDRIVE® and MOVITRAC® inverter series:

- Line filters of the NF...-... series
- Output chokes of the HD... series
- Output filter (sine filter) HF..

  If an output filter is used, the voltage drop at the filter must be taken into account.

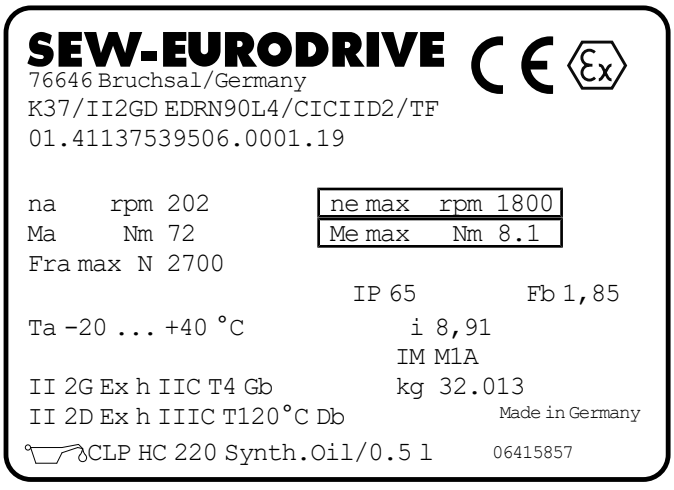
Voltage drop

Always observe the voltage drop to avoid undervoltage.

Gear unit according to Directive 2014/34/EU

When parameterizing frequency inverter controlled gearmotors, observe the n_{emax} and M_{amax} values of the gear unit.

In the following illustration, the values are inserted in the nameplate as an example:



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7 Startup

7.1 General information

⚠ WARNING

Electric shock due to incorrect installation.

Severe or fatal injuries.

- Use switch contacts in utilization category AC-3 IEC 60947-4-1 for switching the motor.
- When motors are powered by inverters, you must adhere to the wiring instructions in the frequency inverter operating instructions.

INFORMATION

Limit the maximum speed at the inverter. For information on the procedure, refer to the documentation of the inverter.

⚠ CAUTION

The surfaces on the drive can be very hot during operation.

Risk of burns.

- Let the motor cool down sufficiently before you start working on it.

7.2 Before you start

Ensure the following before startup:

- The drive must be undamaged and not blocked.
- All transport protection has been removed.
- After an extended storage period (independent of the ambient conditions), observe the information in chapter "Startup after storage".
- 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.
- Observe the operating instructions of the frequency inverter.
- Limit the maximum current on the frequency inverter.
- The brake may only be applied when the speed is ≤ 20 min^{-1}. For greater speeds, contact SEW-EURODRIVE.
- Only operate the brake as a holding brake.
- 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.
- The brake is not manually released.
  - The set screw of /HF option is loosened correctly.

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– The hand lever of the /HR option has been removed and correctly attached to the stator using the designated clamps.

7.3 Parameter setting: Frequency inverters for division 2 motors

INFORMATION

When you start up the frequency inverter, observe the operating instructions of the respective frequency inverter as well as the operating instructions of the gear unit if you use a gearmotor.

7.3.1 Startup procedure for MOVITRAC® 07B

Observe the following points during startup:

- Use the latest MOVITOOLS® MotionStudio software version for guided startup.
- Startup and operation of the motors in Division 2 is possible in parameter set 1 and 2.
- Always select the startup mode direct entry.
- The system configuration allows only single drives.
- As the control mode, you can set both "V/f" and "vector controlled" (VFC).
- For the application, you can only select the speed control and the "hoist" option. Do not use the options "DC braking" or "Flying start function".
- The operating mode must always be set to "4-quadrant operation".
- Select the matching motor series in the "Motor type" window.
- In the "Motor selection" window, you must choose the respective Class/Division design, the line voltage, the motor voltage and the connection type in addition to the motor.

Example for motor voltage selection:	
Specified voltage on the nameplate: 460 V 人	Specified voltage on the nameplate: 230 V 人 人
Entry in MOVITOOLS® MotionStudio: • Selecting motor voltage 230/460 V • Connection type 人	Entry in MOVITOOLS® MotionStudio: • Selecting motor voltage 230/460 V • Connection type 人 人

Current limit

In guided startup, the *current limit* parameter is set to 150% $I_{N\ Mot}$ in the application window. This value must be reduced according to the permitted maximum output torque at the gear unit M_{amax}.

Maximum motor speed

The maximum motor speed must be limited in the "System limits" window. Observe the following when you set the parameter *maximum speed*:

- Maximum speed ≤ motor limit speed
- Maximum speed ≤ maximum gear unit input speed n_{emax} (see gear unit nameplate) if you use a gear unit according to Directive 2014/34/EU.

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Automatic adjustment

The *automatic adjustment* parameter is activated via guided startup. Thus, the frequency inverter sets parameter *IxR value* with each enable signal. A manual change is not permitted.

7.3.2 Startup procedure for MOVIDRIVE® B

Observe the following points during startup:

- Use the latest MOVITOOLS® MotionStudio software version for guided startup.
- Startup and operation of the motors in Division 2 is possible in parameter set 1 and 2.
- The first startup must always be a complete startup.
- As the control mode, you can set both "V/f" and "vector controlled" (VFC).
- Select the matching motor series in the "Motor type" window.
- For the application, you can only select the speed control and the "hoist" option. Do not use the options "DC braking" or "Flying start function".
- The operating mode must always be set to "4-quadrant operation".
- In the "Motor selection" window, you must choose the respective Class/Division design, the line voltage, the motor voltage and the connection type in addition to the motor.

Example for motor voltage selection:	
Specified voltage on the nameplate: 460 V ⅄	Specified voltage on the nameplate: 230 V ⅄ ⅄
Entry in MOVITOOLS® MotionStudio: • Selecting motor voltage 230/460 V • Connection type ⅄	Entry in MOVITOOLS® MotionStudio: • Selecting motor voltage 230/460 V • Connection type ⅄ ⅄

Current limit

In guided startup, the *current limit* parameter is set to 150% $I_{N\ Mot}$ in the application window. This value must be reduced according to the permitted maximum output torque at the gear unit M_{amax}.

Maximum motor speed

The maximum motor speed must be limited in the "System limits" window. Observe the following when you set the parameter *maximum speed*:

- Maximum speed ≤ motor limit speed
- Maximum speed ≤ maximum gear unit input speed n_{emax} (see gear unit nameplate) if you use a gear unit according to Directive 2014/34/EU.

Automatic adjustment

The *automatic adjustment* parameter is activated via guided startup. Thus, the frequency inverter sets parameter *IxR value* with each enable signal. A manual change is not permitted.

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7.3.3 Startup procedure for MOVI-C® modular automation system and MOVIDRIVE® application inverter

Observe the following points during startup:

- Use the latest version of MOVISUITE® software for guided startup.
- Startup and operation of category 2 motors is possible in drive train 1 and 2.
- Motor details: Select the motor type, frequency, nominal motor voltage, connection type, and type of cooling in the drive train.
- Explosion protection: Select the rule set and the design.
- Temperature monitoring: The PTC thermistor /TF is monitored by a certified external monitoring device. Therefore, the setting in the frequency inverter must be set to "No temperature monitoring".
- Brake: The brake type, attachment and nominal torque must be selected
- When setting the controller, select the "VFCplus" operating mode as the control mode. Select "4Q (motor mode + generator mode)" braking operation. The functions "Flux optimization", "Flying start", and "DC braking" must not be used.
- In the case of group operation or multi-motor operation, use the "V/f" operating mode.

Application limit positive/negative speed

First perform startup without specifying the user units in order to specify the speed limit in min^{-1}. When setting the application limit, note the following conditions:

- Maximum speed ≤ motor limit speed
- Maximum speed ≤ maximum gear unit input speed n_{emax} (see gear unit nameplate) when using a gear unit according to Directive 2014/34/EU.

Application limit torque

The torque limit setting is based on the nominal motor torque M_N. The maximum permissible output torque M_{amax} must not be exceeded.

When the application limits have been defined, options such as gear units, motor encoders, additional transmissions, user units, etc. can be selected via the "Add components" option.

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7.3.4 General information for frequency inverter operation

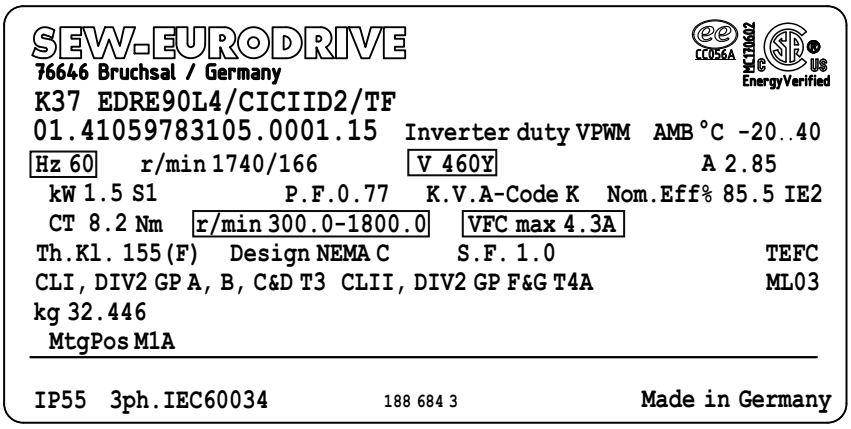
The following examples show the required settings of the frequency inverter.

Basic procedure:

1. Use the nominal motor data specified on the nameplate.
2. Set the motor characteristics based on the base frequency.
3. Set the limit values (minimum speed, maximum speed and current limit).

60 Hz characteristic curve – 460 V

For output voltage 3 × 460 V – 480 V



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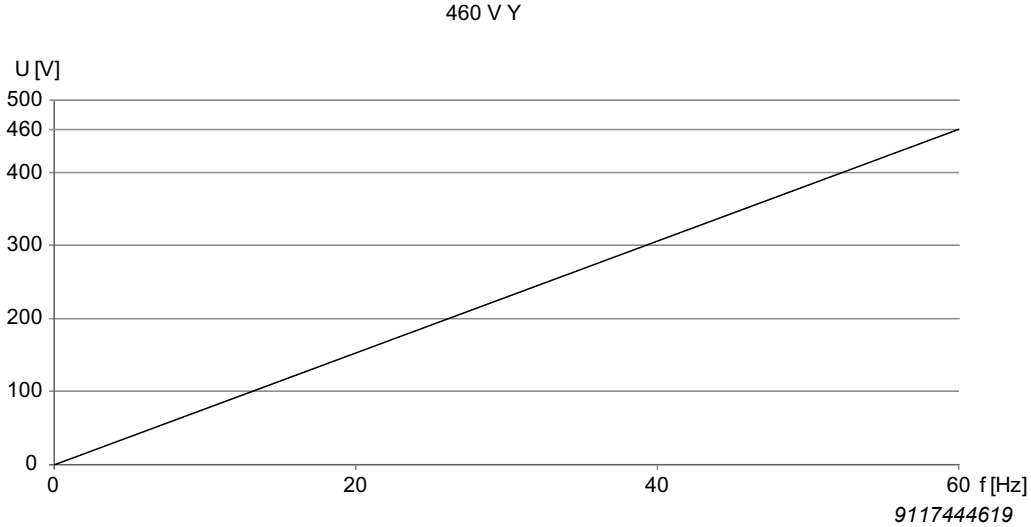
Setting the 60 Hz characteristic curve (460 V ⅄, 60 Hz, 1800 min^{-1})



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Use the limit values on the nameplate:

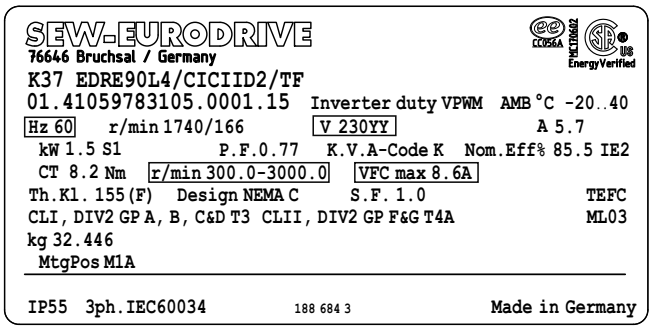
Minimum speed = 300 min^{-1}

Maximum speed = 1800 min^{-1}

I_{max} = 4.3 A

120 Hz characteristic curve – 460 V

For output voltage 3 × 460 V – 480 V



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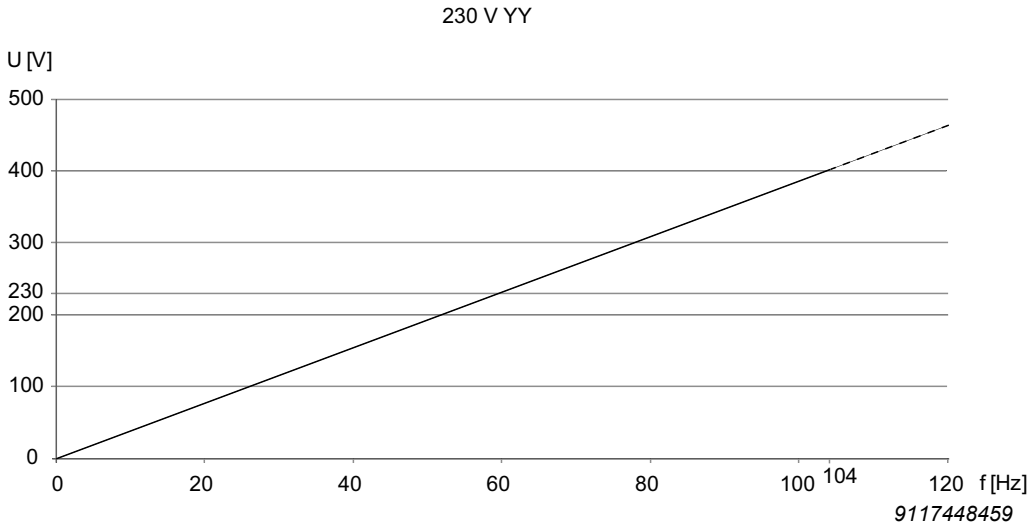
Setting the 120 Hz characteristic curve (230 V 人 人, 60 Hz, 3000 min^{-1})



9117448459

Use the limit values on the nameplate:

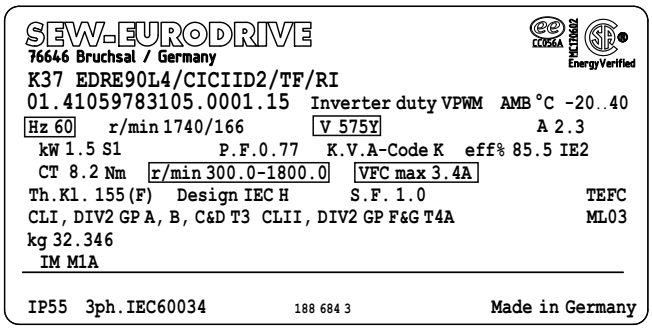
Minimum speed = 300 min^{-1}

Maximum speed = 3000 min^{-1}

I_{max} = 8.6 A

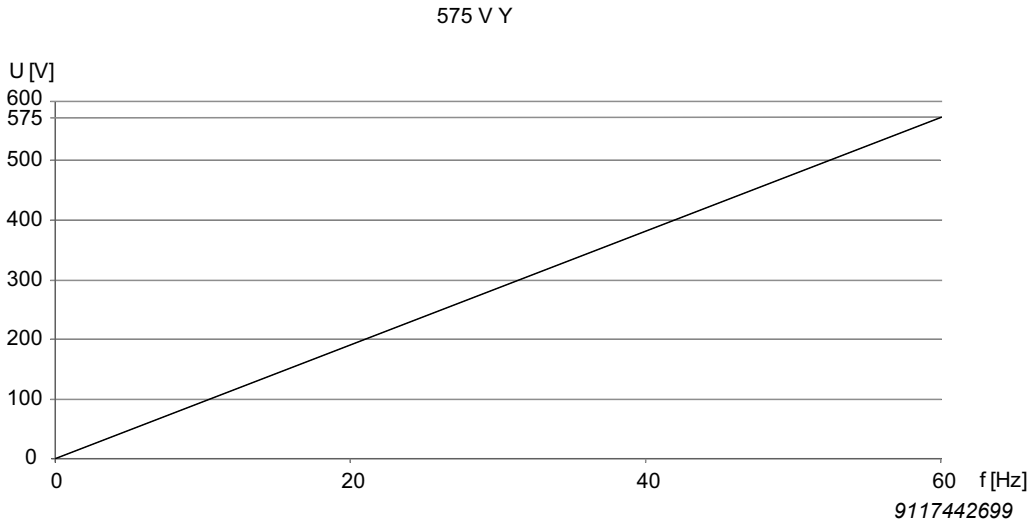
60 Hz characteristic curve – 575 V

For output voltage 3 × 575 V



9007208372528779

Setting the 60 Hz characteristic curve (575 V ⅄, 60 Hz, 1800 min^{-1})



9117442699

Use the limit values on the nameplate:

Minimum speed = 300 min^{-1}

Maximum speed = 1800 min^{-1}

I_{max} = 3.4 A

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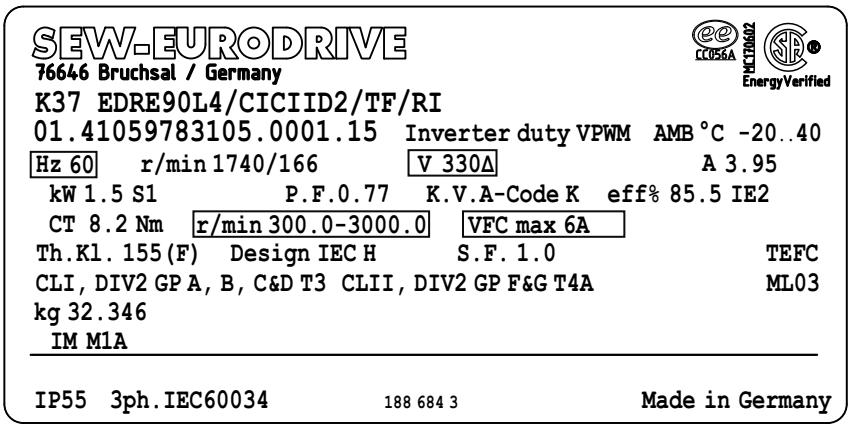
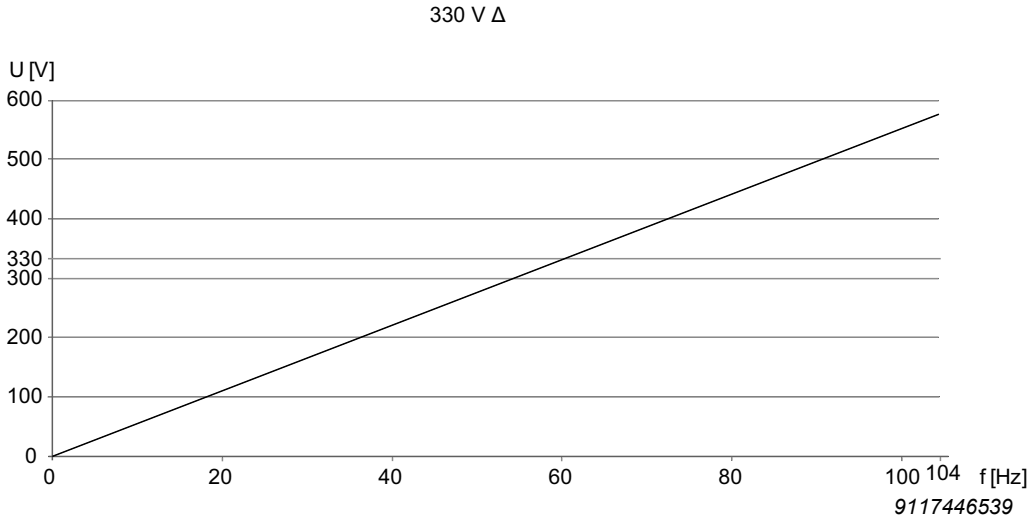
104 Hz characteristic curve – 575 V

For output voltage 3 × 575 V



9007208372530699

Setting the 104 Hz characteristic curve (330 V △, 60 Hz, 3000 min^{-1})



9117446539

Use the limit values on the nameplate:

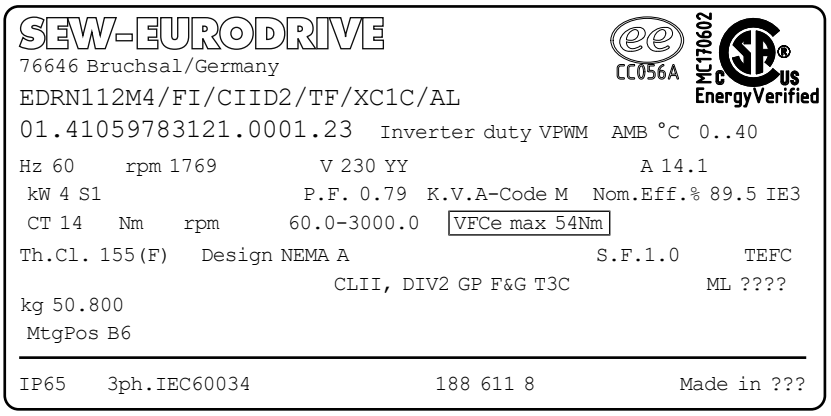
Minimum speed = 300 min^{-1}

Maximum speed = 3000 min^{-1}

I_{max} = 6 A

7.4 VFCe operating data in combination with MOVIDRIVE®

7.4.1 120 Hz characteristic curve – 460 V



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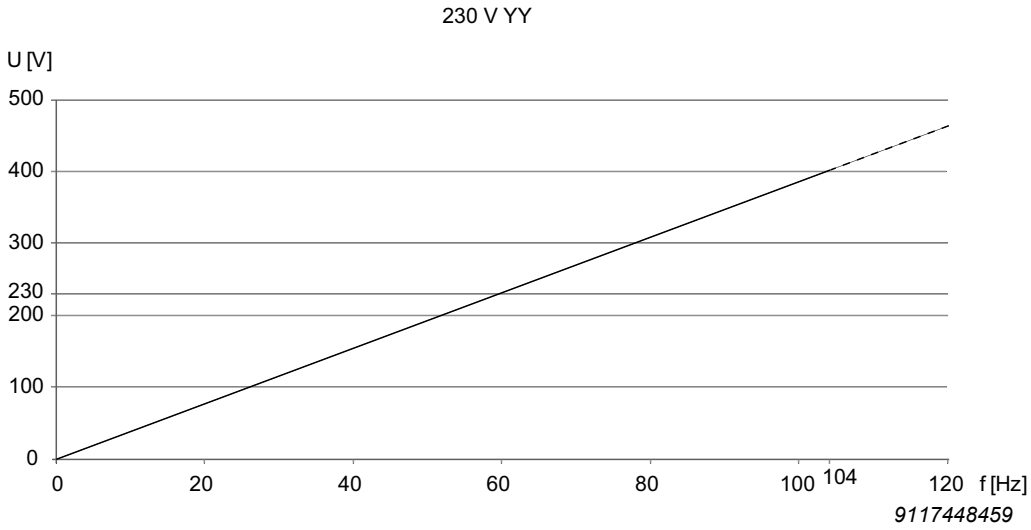
Setting the 120 Hz characteristic curve (230 V 人人, 60 Hz, 3000 min^{-1})



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Use the limit values on the nameplate:

Minimum speed = 60 min^{-1}

Maximum speed = 3000 min^{-1}

I_N = 14.1 A

$I_{max} = I_N \times 150\ \%$

7.5 Motors with backstop /RS

An /RS backstop is used to block/prevent a direction of rotation of the motor. The direction of rotation is indicated by an arrow on the fan guard of the motor or on the device housing.

Observe the direction of rotation of the end shaft and the number of stages when you mount the motor to the gear unit. Do not start up the motor in blocking direction (note the correct phase angle when connecting the motor). For inspection purposes, you can operate the backstop once with half the motor voltage in blocking direction.

If a conversion is required to change the blocking direction, follow the instructions in chapter "Altering the blocking direction on motors with a backstop" (→ 🗎 132).

7.5.1 Limit speed of the backstop

If a motor is equipped with a backstop, the sprag lift-off speed represents the lower speed limit during operation on an inverter.

Motors		Locking torque	Lift-off speed of clamping parts	Maximum speed
		Nm	min^{-1}	min^{-1}
–	EDRN63	95	890	5000
EDRS71	EDRN71	95	890	5000
EDR..80	EDRN80	130	860	5000
EDRE90/100	EDRN90/100	370	750	5000
EDRE112/132	EDRN112/132S	490	730	5000
EDRE160	EDRN132M/L	700	700	4500
EDRE180	EDRN160/180	1400	610	4500
EDRE200/225	EDRN200/225	2500	400	3500
–	EDRN250/280	2600	400	2600
–	EDRN315	6300	320	2500

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8 Inspection/maintenance

8.1 General information

⚠ WARNING

Risk of injury if the drive starts up unintentionally.

Severe or fatal injuries.

- Before you start working on the unit, disconnect the motor and all connected options from the power supply.
- Secure the motor against unintended power-up.

⚠ CAUTION

Inhalation and swallowing brake abrasion when releasing the brake.

Irritation of the respiratory tract and respiratory organs.

- ✓ Wear a respirator of class FFP2 during the maintenance 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.

⚠ CAUTION

The surfaces on the drive can be very hot during operation.

Risk of burns.

- Let the motor cool down sufficiently before you start working on it.

NOTICE

Damage to the oil seals if the temperature is too low during installation.

Possible damage to the oil seals.

- Before assembly, make sure that the ambient temperature and the temperature of the oil seal are not below 0 °C.

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INFORMATION

- Only use genuine spare parts in accordance with the valid spare and wearing parts list, otherwise the approval for use in explosion-protected areas becomes void.
- The routine test must be repeated whenever motor parts relating to explosion protection are replaced.
- Ensure that the motor is assembled correctly and all openings have been plugged after service and maintenance work.
- If the motor is opened during inspection/maintenance, it must be cleaned before closing it again.
- Clean motors in explosion-protected areas regularly. Prevent dust from building up higher than 5 mm. Do not use processes for cleaning that cause strong electrical charge.
- Explosion protection largely depends on the IP degree of protection. Therefore, always check that the seals are fitted correctly and are in perfect condition when performing any work on the machine.
- Explosion protection can only be ensured if motors are serviced and maintained correctly.
- If you repaint motors or gearmotors, observe the requirements for preventing electrostatic charging according to IEC 60079-0.

INFORMATION

Apply grease with a grease depot to the lip of the oil seal before assembly. For further information on lubricants, refer to chapter "Order information for lubricants, anticorrosion agents and sealants" (→ 🗎 175).

8.2 Inspection and maintenance intervals

The following table shows the intervals for inspection and maintenance:

Unit/part of unit	Time interval	Required steps
Brake BE03	• **If used as a working brake:** At least every 3000 operating hours[1)] • **If used as a holding brake:** Every 0.5 to 4 years, depending on the load conditions[1)]	Inspect the brake • Measure working air gap • Inspect switch contacts, replace if necessary (e.g. in case of burn-out)

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Unit/part of unit	Time interval	Required steps
Brakes BE05 – BE122	• **If used as a working brake:** At least every 3000 operating hours[1)] • **If used as a holding brake:** Every 0.5 to 4 years, depending on the load conditions[1)]	Inspect the brake: • Measure thickness of brake lining carrier • Brake lining carrier, brake • Measure and set working air gap • Pressure plate • Driver/gearing • Pressure rings • Vacuum any abrasion • Inspect switch contacts, replace if necessary (e.g. in case of burn-out)
Motor	• **Every 10 10000 operating hours**[2)3)]	Inspect the motor: • Check rolling bearings, replace if necessary • Replace oil seals • Clean cooling air ducts
Drive	• Varying[3)]	• Touch up or renew the surfaces/corrosion protection coating • Check and clean air filter • If existent, clean condensation drain holes at the lowest point of the fan guard • clean clogged bores
Connection cable	• as for the motor	Inspect cables • Check for damage. If necessary, replace connection cable. • Check all cable glands and retighten them, if necessary.

1) Wear times are subject to many factors and can be quite short. The required intervals for inspection and maintenance must be individually calculated by the system manufacturer in accordance with the project planning documents.
2) Chapter "Bearing lubrication DR.250 – 315".
3) The interval depends on external influences and can be quite short, e.g. in the event of high dust levels in the environment.

8.2.1 Sealing points

Perform the maintenance of seals according to the following table:

Sealing point			
Item no.	**Position**	**Use**	**Maintenance/inspection**
[28]	Closing plug (for BE20 – 122, if no manual brake release is installed)	BE20 – 122	• Exchange during each disassembly
[30]	Oil seal at non-input end	BE60 – 122	• Every 10 000 operating hours[1)]

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Sealing point			
Item no.	**Position**	**Use**	**Maintenance/inspection**
[37]	Backstop sealing ring	EDR..71 – 315, EDRN63 – 315	• Every 10 000 operating hours[1)] • Check the sealing ring seat for corrosion (rust). • Replace the brake, if necessary.
[47]	O-ring of manual brake release	BE03 – 122	• Every 10 000 operating hours at the latest[1)] • Exchange during each disassembly
[61]	Nut Mounting rest for the nuts on the magnet body	BE05 – 122	• SEW-L-Spezial must be replaced during each inspection or maintenance. • The nuts must be replaced during each disassembly.
[66]	Sealing strip	BE05 – 122	• Check the sealing strip for plastic deformation during each inspection or maintenance and replace it if necessary. If the sealing strip seats show signs of corrosion, replace the brake. • Replace the sealing strip at least every 10 000 operating hours.
[95]	Sealing ring (BE05 – 11, incl. manual brake release seal)	BE03 – 122	• Every 10 000 operating hours[1)] • Check the sealing ring seat for corrosion (rust). If the seats show signs of corrosion, replace the brake or the magnet body.
[106]/ [250]	Input end oil seal	EDR../EDRN..	• Every 10 000 operating hours[1)]
[390]	Cable bushing Stator (Brake) Endshield	BE20 – 62	• Exchange during each disassembly
[392]	Stator B-side endshield, brake endshield, or backstop endshield	EDR..71 – 132, EDRN63 – 132S	• Exchange during each disassembly
[901]/ [1607]	Friction disk brake endshield Backstop housing brake endshield	EDR..71 – 132 and EDRN63 – 132S /BE.. or /RS (flat gasket) EDR..160 – 315 and/or EDRN132M – 315 with /BE.. or /RS (O-ring)	• Exchange during each disassembly
[703]/ [900]	Friction disk screw Backstop housing	EDRN100 /BE.. or /RS	• Exchange during each disassembly (pressure-tight thread locker e.g. precote® 85-8)

1) The interval depends on outer influences and can be very short, e.g. in the event of high dust concentration in the environment.

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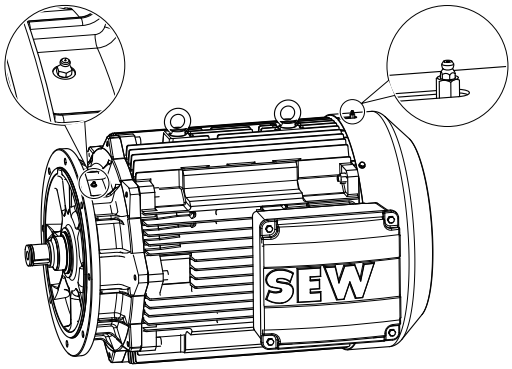
8.3 Bearing lubrication

8.3.1 Bearing lubrication for EDR..71 – 225, EDRN63 – 280 motors

In standard design, the bearings are lubricated for life.

8.3.2 Bearing lubrication for EDRN225 – 315 motors with relubrication device /NS

EDRN225 – 315 motors can be equipped with a relubrication device. The following figure shows the positions of the lubrication devices.



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[1] Relubrication device in type A according to DIN 71412

Under normal operating conditions and at an ambient temperature between -20 °C to +40 °C, SEW-EURODRIVE uses Mobil Polyrex EM (K2P-20 DIN 51825), a polyurea-based mineral high-performance, high-temperature grease for initial lubrication.

For motors in the low temperature range up to -40 °C SEW-EURODRIVE uses SKF GXN or LGHP2, which is also a polyurea-based mineral grease.

Relubrication

The grease can be purchased from SEW-EURODRIVE in 400 g cartridges. For the relevant order information, refer to chapter "Order information for lubricants, anti-corrosion agents and sealants" (→ 🗎 175).

INFORMATION

Only mix lubricants of the same thickness type, the same base oil and the same consistency (NLGI class).

Grease the motor bearings in accordance with the information on the lubricant plate. The used grease collects inside the motor and should be removed every 6 to 8 relubrication cycles during an inspection. Each time you relubricate the bearings, ensure that the bearing is two-thirds full.

Start up the motors slowly after lubrication so that the grease is distributed evenly.

The relubrication channels leading the grease from the grease nipples to the bearings must always be filled with grease. This is usually ensured by adhering to the relubrication intervals. During maintenance work, the grease may remain in the channels and does not need to be removed.

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Re-lubrication period

For the relubrication intervals of the bearings, adhere to the requirements stated in the table:

- Ambient temperature: -20 °C to +40 °C
- Rated speed that corresponds to that of a 4-pole AC motor
- Normal load

In case of higher ambient temperatures, higher speeds, or larger loads, the relubrication intervals are shorter. Use 1.5 times of the stated quantity for the initial filling.

The relubrication channels leading the grease from the grease nipples to the bearings must always be filled with grease. This is usually ensured by adhering to the relubrication intervals. During maintenance work, the grease may remain in the channels and does not need to be removed.

	Horizontal mounting position		Vertical mounting position	
Motors	**Duration**	**Quantity**	**Duration**	**Quantity**
EDRN225 /NS	5000 h	40 g	3000 h	60 g
EDRN250 – 315 /NS	5000 h	50 g	3000 h	70 g
EDRN250 – 315 /ERF /NS	3000 h	50 g	2000 h	70 g

8.4 Reinforced bearings

⚠ WARNING

Risk of explosion due to impermissible heating of bearing and motor.

Severe or fatal injuries.

- Do not operate cylindrical roller bearings without overhung load.

In the /ERF (reinforced bearing) option, cylindrical rolling bearings are installed on the A-side. The reinforced bearings must have overhung load applied to them and must never be operated without overhung load.

The reinforced bearings are only offered with the /NS (relubrication) option so as to facilitate optimal lubrication of the bearing.

For lubricating the bearings, observe the notes in chapter "Bearing lubrication for EDRN225 – 315 motors with relubrication device /NS" (→ 🗎 106).

8.5 Motor and brake maintenance – preliminary work

⚠ WARNING

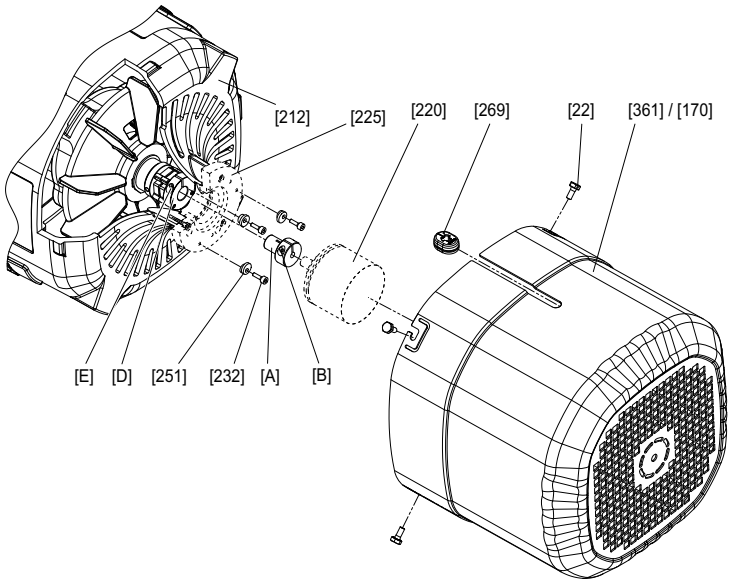
Risk of injury if the drive starts up unintentionally.

Severe or fatal injuries.

- Before you start working on the unit, disconnect the motor and all connected options from the power supply.
- Secure the motor against unintended power-up.

8.5.1 Mounting/removing rotary encoders with XV../EV../AV.. mounting adapter for EDR..71 – 225, EDRN80 – 225

The following figure illustrates the disassembly procedure using a third-party encoder as an example:



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[22]	Screw	[361]	Safety cover (normal/long)
[170]	Forced cooling fan guard	[269]	Grommet
[212]	Fan guard with encoder mount	[A]	Adapter
[220]	Encoder	[B]	Clamping screw
[225]	Intermediate flange (not with XV1A)	[D]	Coupling (spread- or solid shaft coupling)
[232]	Screws (enclosed with XV1A and XV2A)	[E]	Clamping screw
[251]	Conical spring washers (enclosed with XV1A and XV2A)		

Removing XV.., EV.., AV.. encoders

1. Remove the safety cover [361], or the forced cooling fan if required.
2. Loosen the retaining screws [232] and turn the conical spring washers [251] outwards.
3. Loosen the clamping screw [E] of the coupling.
4. Remove adapter [A] and encoder [220].

Reassembly

1. Proceed as described in chapter "Encoder mounting adapter" (→ 🗎 36) to mount the encoder.

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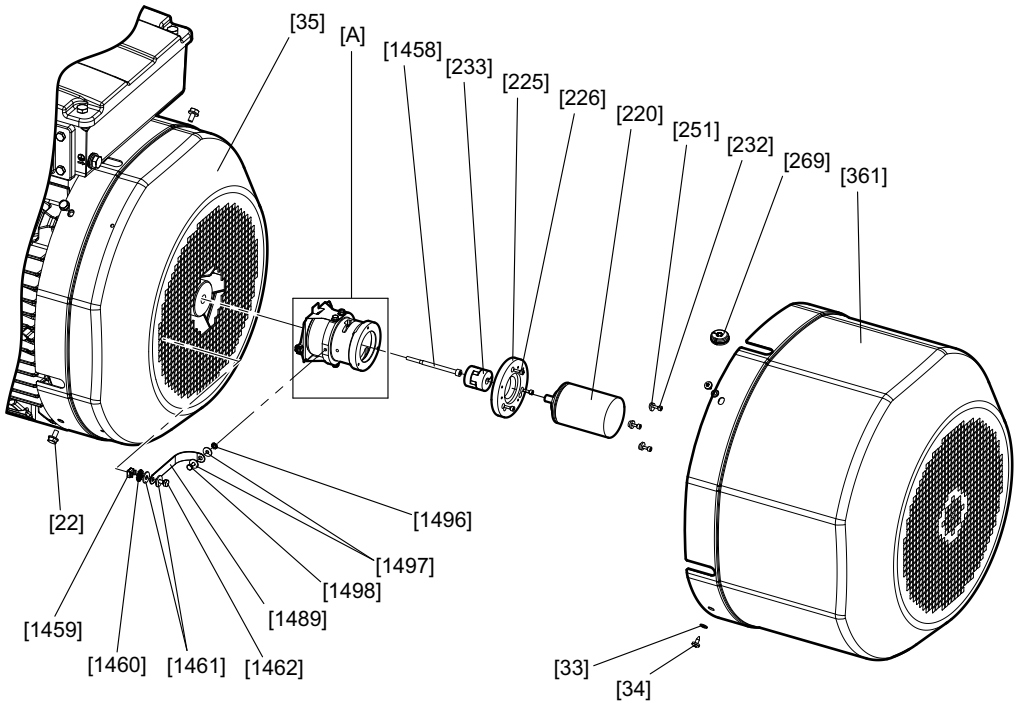
8.5.2 Mounting/removing rotary encoders with XV../EV../AV.. mounting adapter for EDRN250 – 280

The following figure illustrates the disassembly procedure using a third-party encoder as an example:



18014406225445899

[22]	Screw	[361]	Safety cover (normal/long)
[33]	Washer	[1458]	Screw
[34]	Screw	[1459]	Cage nut
[35]	Fan guard	[1460]	Serrated lock washer
[220]	Encoder	[1461]	Washer
[225]	Intermediate flange (optional)	[1462]	Screw
[226]	Screw	[1489]	Ground strap
[232]	Screws (enclosed with .V1A and .V2A)	[1496]	Serrated lock washer
[233]	Coupling	[1497]	Washer
[251]	Conical spring washers (enclosed with .V1A and .V2A)	[1498]	Screw
[269]	Grommet	[A]	Encoder mounting adapter

Removing the encoder mounting adapter

1. Remove the screws [34] to disassemble the safety cover [361].
2. Remove the encoder [220], see chapter "Removing EV.., AV.. encoders" (→ 🗎 110).
3. In order to remove the ground strap [1489] from the encoder mounting adapter [A], loosen the serrated lock washer [1496], washer [1497], and screw [1498].

4. Remove the screws [22] to disassemble the fan guard [35].
5. Loosen the screw [1458] to remove the encoder mounting adapter [A].
   ⇨ **If the encoder mounting adapter cannot easily be removed:** Screw an M6 set screw (length 20 – 35 mm) hand tight in the rotor bore. Screw an M8 set screw (length > 10 mm) into the same bore and push the encoder mounting adapter [A] off the rotor [1]. Remove the M6 set screw from the rotor bore.

Removing EV.., AV.. encoders

1. Remove the screws [34] to disassemble the safety cover [361].
2. Pull out the cable grommet [269] together with the encoder cable from the safety cover [361].
3. Loosen the retaining screws [232] and turn the conical spring washers [251] outwards.
4. Loosen the screw at the coupling clamping hub [233] at the encoder end, the screw can be accessed through the slots of the encoder mounting adapter [A].
5. Remove the encoder [220] from the encoder mounting adapter [A] or the intermediate flange [225].

Reassembly

1. Proceed as described in chapter "Encoder mounting adapter" (→ 🗎 36) to mount the encoder.

8.6 Inspection/maintenance work for EDR..71 – 225, EDRN63 – 315 motors

8.6.1 Inspection steps for EDR..71 – 225, EDRN63 – 315 motors

⚠ WARNING

Risk of injury if the drive starts up unintentionally.

Severe or fatal injuries.

- Before you start working on the unit, disconnect the motor and all connected options from the power supply.
- Secure the motor against unintended power-up.

1. With gearmotors: Remove the motor from the gear unit.

   Remove pinion and oil flinger [107].
2. Remove forced cooling fan and rotary encoder, if installed, see chapter "Motor and brake maintenance – preliminary work" (→ 🗎 107).
3. Remove fan guard [35] and fan [36].
4. Remove stator:
   - **EDR..71 – 132, EDRN71 – 132S motors:** Remove cap screws [13] from flanged endshield [7] and rear endshield [42]. Remove stator [16] from flanged endshield [7].
   - **EDR..160 – 180, EDRN63, EDRN132M – 180 motors:** Loosen cap screw [19] and remove rear endshield [42]. Loosen hex head screw [13]/[15] and remove stator from flanged endshield [7].
   - **EDR..200 – 225, EDRN200 motors**

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- Loosen hex head screw [15] and remove flanged endshield [7] from stator.
- Loosen cap screws [19] and remove the complete rotor [1] together with the rear endshield [42].
- Loosen cap screws [25] and remove the complete rotor [1] from the rear endshield [42].

- **EDRN225 – 280 motors without** /ERF or /NS option
  - Loosen cap screws [15] and remove the flange [7].
  - Loosen cap screws [19] and remove the rear endshield [42] together with the rotor [1].
  - Loosen cap screws [25] and remove the rear endshield [42] from the rotor [1].
- **EDRN225 – 280 motors with** /ERF or /NS option, or **EDRN315 motors**
  - Loosen cap screws [19] and [25], and remove the rear endshield [42].
  - Loosen cap screws [15] and remove the flange [7] together with the rotor [1].

    Apply tension or pressure to the rotor [1], carry the flange [7] evenly.
  - Loosen hex head screws [609] and remove the flange [7] from the rotor [1].
  - Before disassembly, protect the oil seal seat from damage using masking tape or a protective sleeve.

5. Visual inspection: Is there any moisture or gear unit oil inside the stator?
   - If not, proceed with step 7.
   - If there is moisture, proceed with step 6.
   - If there is gear oil, have the motor repaired by a specialist workshop.
6. If there is moisture inside the stator:
   - With gearmotors: Remove the motor from the gear unit.
   - With motors without a gear unit: Remove the A-flange.
   - Remove the rotor [1].
   - Clean the winding, dry it and check it electrically, see chapter "Drying the electric cylinder" (→ 🗎 30).
7. Replace the rolling bearing [11], [44] with permitted rolling bearing types, see chapter "Permitted rolling bearings" (→ 🗎 173).

   Apply tension or pressure to the inner ring of the bearings.
8. **EDRN225 – 280 motors with** /ERF or /NS option, or **EDRN315 motors**
   - Fill the rolling bearing with grease until it is two-thirds full, see chapter "Bearing lubrication" (→ 🗎 106).
   - Notice: Before installing the bearings, place the oil seal flange [608] and [21] onto the rotor shaft.
   - Mount the motor vertically starting on the A-side.
   - Place the springs [105] and lubrication ring [604] into the bearing bore of the flange [7].
   - Hang the rotor [1] onto the B-side thread, and guide it into the flange [7].
   - Fasten the oil seal flange [608] to the flange [7] using the hex head screws [609].
9. Reseal the shaft:
   - A-side: Replace the oil seal [106].

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- B-side: Replace the oil seal [30].

  Coat the sealing lip with grease (Klüber Petamo GHY 133).

10. Reseal the stator seat:
    - Seal the sealing surface with duroplastic sealing compound (operating temperature -40 °C to +180 °C), such as "SEW-L-Spezial".
    - For **EDR..71 – 132, EDRN63 – 132S** motors: Replace the seal [392].
    - For **EDR..71 – 132, EDRN63 – 132S** motors: Replace the O-ring [1480] if it is deformed or damaged. Instead of the O-ring, you can use "SEW-L-Spezial" for example.
11. Install the motor and options.

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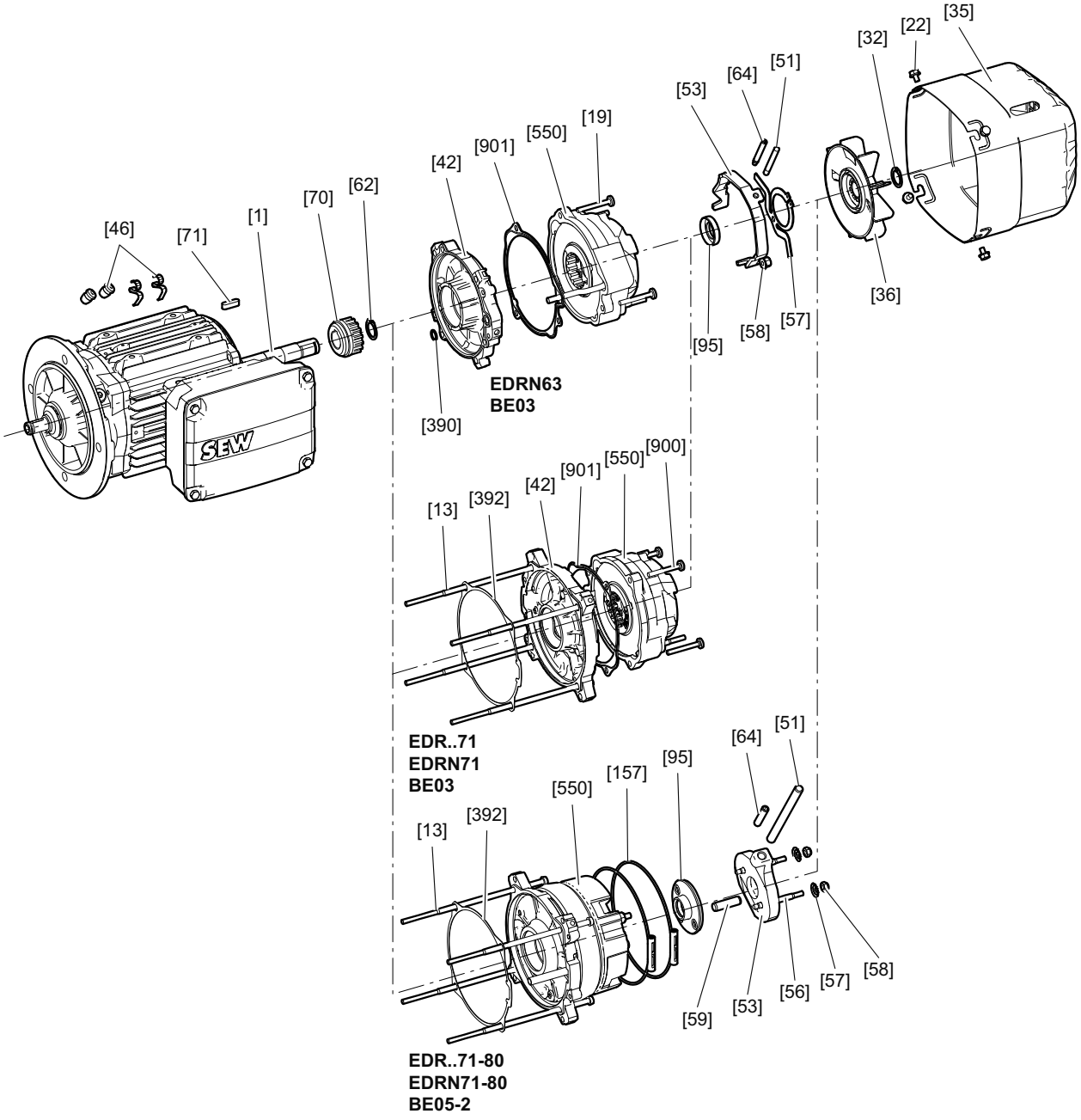
8.7 Inspection/maintenance work for EDR..71 – 225, EDRN63 – 315 brakemotors

8.7.1 Basic structure of EDRN63 – 80 brakemotors



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[1]	Motor	[51]	Hand lever (/HR)	[70]	Driver
[13]	Cap screw	[53]	Releasing lever	[71]	Key
[19]	Screw	[56]	Stud	[95]	Sealing ring
[22]	Hex head screw	[57]	Conical spring	[157]	Clamping strap (optional)
[32]	Retaining ring	[58]	Hex nut	[392]	Gasket
[35]	Fan guard	[59]	Parallel pin	[550]	Brake pre-assembled
[36]	Fan wheel	[62]	Retaining ring	[900]	Screw
[42]	Brake endshield	[64]	Set screw (/HF)	[901]	Flat gasket
[46]	Clip				

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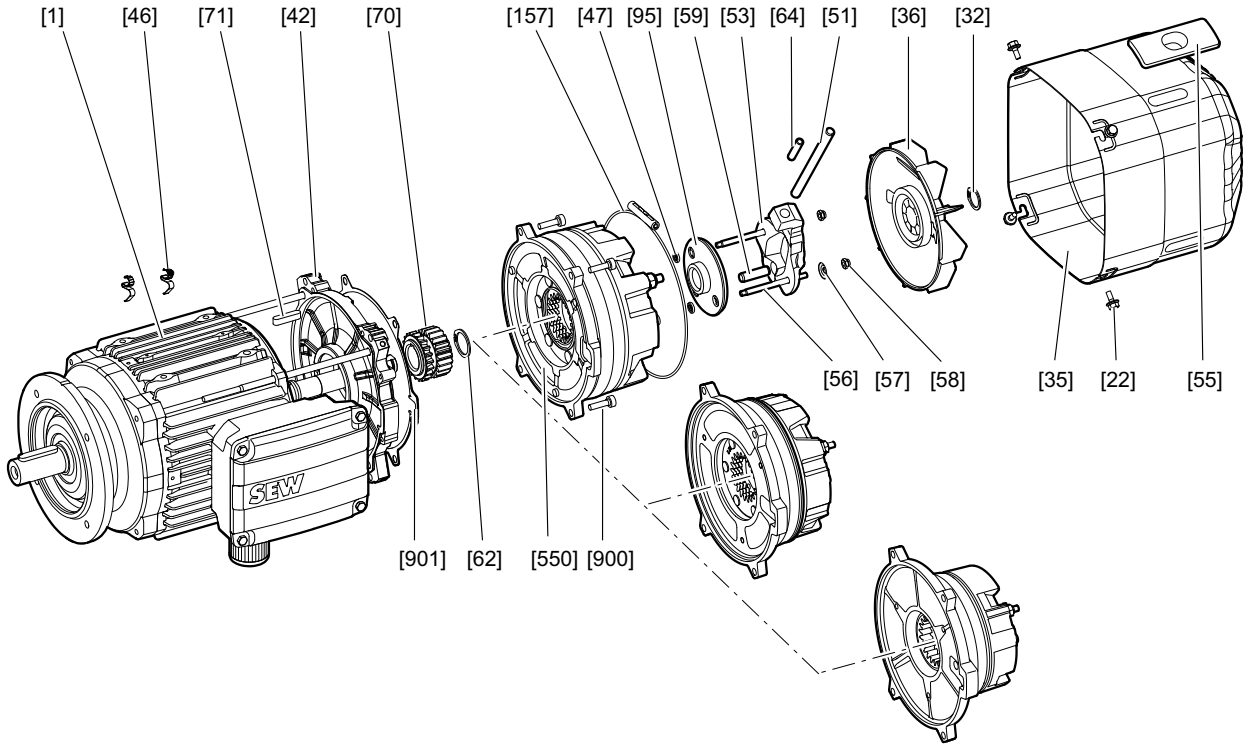
8.7.2 Basic structure of EDRN90 – 132S brakemotors



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[1] Motor
[22] Hex head screw
[32] Retaining ring
[35] Fan guard
[36] Fan wheel
[42] Brake endshield
[46] Clip
[47] O-ring
[51] Hand lever (/HR)
[53] Releasing lever
[55] Fan guard closing piece (EDRN112 – 132S motors)
[56] Stud
[57] Conical spring
[58] Hex nut
[59] Parallel pin
[62] Retaining ring
[64] Set screw (/HF)
[70] Driver
[71] Key
[95] Sealing ring
[157] Clamping strap
[550] Brake pre-assembled
[900] Screw
[901] Gasket

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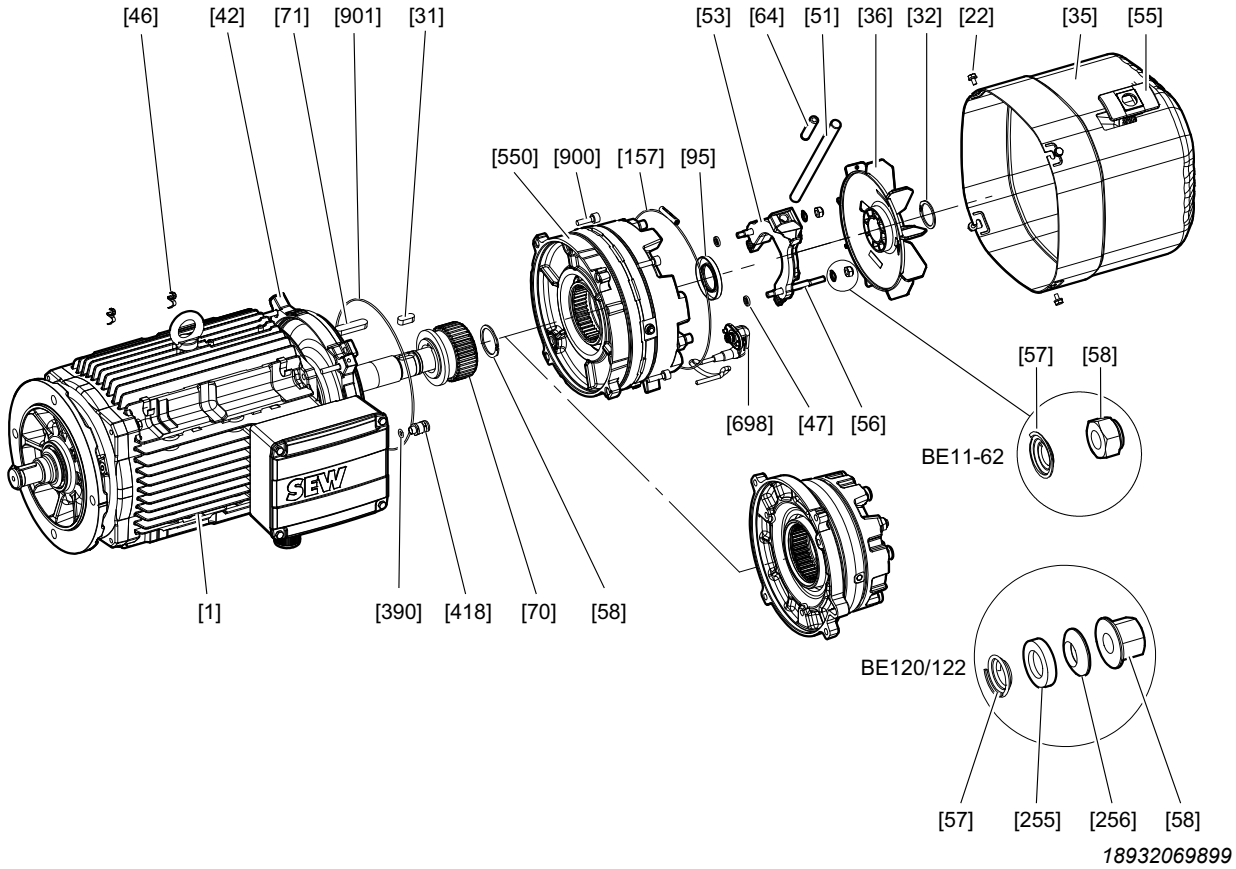
8.7.3 Basic structure of EDR..160 – 225, EDRN132M – 315 brakemotors



[1]	Motor with brake endshield	[53]	Releasing lever	[95]	Sealing ring
[22]	Hex head screw	[55]	Closing piece	[157]	Clamping strap
[31]	Key	[56]	Stud	[255]	Conical seat
[32]	Retaining ring	[57]	Conical spring	[256]	Spherical washer
[35]	Fan guard	[58]	Hex nut	[390]	O-ring (EDR..160 – 225, EDRN132M – 225 motors)
[36]	Fan	[58]	Adjusting nut	[418]	Cable gland
[42]	Brake endshield	[62]	Retaining ring	[550]	Pre-assembled brake
[46]	Clip	[64]	Set screw (/HF)	[698]	Connector complete (BE20-BE122)
[47]	O-ring	[70]	Driver	[900]	Screw
[51]	Hand lever	[71]	Key	[901]	O-ring/seal (EDR..160 – 225, EDRN132M – 225 motors)
				[1607]	O-ring (EDRN250 – 280)

8.7.4 Inspection steps for EDR..71 – 225, EDRN63 – 315 brakemotors

⚠ WARNING

Risk of injury if the drive starts up unintentionally.

Severe or fatal injuries.

- Before you start working on the unit, disconnect the motor and all connected options from the power supply.
- Secure the motor against unintended power-up.

1. With gearmotors: Remove the motor from the gear unit. Remove pinion and oil flinger [107].

2. Remove forced cooling fan and rotary encoder, if installed. See chapter "Motor and brake maintenance – preliminary work" (→ 🗎 107).
3. Remove the fan guard with encoder mount [212] or fan guard [35] and the fan [36].
4. **EDR..90 – 225, EDRN63 – 315 motors**: Remove the brake cpl. [550] (if applicable) with mounted /HR, /HF option manual brake release.
   - **BE03 – 11**: Remove the terminal box cover and loosen the brake cable from the connection terminals.
   - **BE20 – 122**: Loosen locking screws of the brake plug connector [698] and remove plug connector.
   - Loosen screws [13]/[19]/[900], press brake [550] off the endshield [42], and carefully lift off the brake.
5. Remove stator:
   - **EDR..71 – 132, EDRN63 – 132S motors:** Remove cap screws [13] from flanged endshield [7] and rear endshield [42]. Remove stator [16] from flanged endshield [7].
   - **EDR..160 – 180, EDRN132M – 180 motors:** Loosen cap screw [19] and remove rear endshield [42]. Loosen hex head screw [13]/[15] and remove stator from flanged endshield [7].
   - **EDR..200 – 225, EDRN200 – 225 motors**
     – Loosen hex head screw [15] and remove flanged endshield [7] from stator.
     – Loosen cap screws [19] and remove the complete rotor [1] together with the rear endshield [42].
     – Loosen cap screws [25] and remove the complete rotor [1] from the rear endshield [42].
   - **EDRN225 – 280 motors without** /ERF or /NS option
     – Loosen cap screws [15] and remove the flange [7].
       Apply tension or pressure to the rotor [1], carry the flange [7] evenly.
     – Loosen cap screws [19] and remove the rear endshield [42] together with the rotor [1].
     – Loosen cap screws [25] and remove the rear endshield [42] from the rotor [1].
   - **EDRN225 – 280 motors with** /ERF or /NS option, or **EDR../EDRN315 motors**
     – Loosen cap screws [19] and [25], and remove the rear endshield [42].
     – Loosen cap screws [15] and remove the flange [7] together with the rotor [1].
       Apply tension or pressure to the rotor [1], carry the flange [7] evenly.
     – Loosen hex head screws [609] and remove the flange [7] from the rotor [1].
     – Before disassembly, preferably protect the oil seal seat from damage using adhesive tape or a protective sleeve.
6. Pull the stator back by approx. 3 to 4 cm.
7. Visual inspection: Is there any moisture or gear unit oil inside the stator?
   - If not, proceed with step 10.
   - If there is moisture, proceed with step 9.
   - If there is gear oil, have the motor repaired by a specialist workshop.
8. If there is moisture inside the stator:
   - With gearmotors: Remove the motor from the gear unit

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- With motors without a gear unit: Remove the A-flange
- Remove the rotor [1]
- Clean the winding, dry it and check it electrically, see chapter "Drying the electric cylinder" (→ 🗎 30).

9. Remove retaining ring [62]. Preheat the driver [70] and remove it using suitable tools. Remove key [71].
10. Replace the rolling bearing [11], [44] with permitted rolling bearing types, see chapter "Permitted rolling bearings" (→ 🗎 173).

    Apply tension or pressure to the inner ring of the bearings.
11. Install key [71] and driver [70]:
    - Preheat the driver to allow for easier installation (joining temperature +85 °C to +115 °C).
    - **EDR..71, EDRN63 – 71 motors:** Clean the driver seat at the rotor [1] before installation. Glue in the driver using Loctite 649. Join the retaining ring [62] flush to the driver. Protect the sealing surface for the oil seal from scratches.
    - **EDR..80 – 225, EDRN80 – 315 motors**: Clean the driver at the rotor [1] and coat with anti-corrosion agent NOCO® fluid before fitting. Next, mount the retaining ring [62].
12. Seal the stator again and install it:
    - **EDR..71 – 132, EDRN63 – 132S motors**: Replace gasket [392]
    - **EDR..160 – 225, EDRN63, EDRN132M – 225 motors:** Replace O-ring [390].
    - **EDR..160 – 225, EDRN132M – 315 motors**: Seal the sealing surfaces with duroplastic sealing compound (operating temperature -40 °C to +180 °C), such as "SEW-L-Spezial".
13. **EDRN225 – 280 motors with** /ERF or /NS option, or **EDR../EDRN315 motors**
    - Fill the rolling bearing with grease until it is two-thirds full, see chapter "Bearing lubrication" (→ 🗎 106).
    - Notice: Place the oil seal flange [608], [21] onto the rotor shaft before installing the bearings.
    - Mount the motor vertically starting on the A-side.
    - Place the springs [105] and lubrication ring [604] into the bearing bore of the flange [7].
    - Hang the rotor [1] onto the B-side thread, and guide it into the flange [7].
    - Fasten the oil seal flange [608] to the flange [7] using the hex head screws [609].
    - Screw in the stator [16] and flange [7] with screws [15].

      Notice: Protect the winding overhang from damage.
    - Before mounting the rear endshield, screw in the M8 set screw (approximately 200 mm) into the oil seal flange [21].
    - Before mounting the rear endshield [42], insert the set screw in through a bore for the screw [25]. Screw rear endshield to stator [16] using cap screws [19] and hex nuts [17]. Lift the oil seal flange [21] with the set screw, and fasten using 2 screws [25]. Remove the set screw and screw in the remaining screws [25].
14. Reseal the shaft:
    - Replace the oil seal [106] on the A-side.

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- **EDRN315 motors with /FG option:** Replace the oil seal [250] on the A-side.
- **EDRN225 – 315 motors with /NS option:** Replace the oil seal [30] on the B-side.
- Apply suitable grease to the sealing lip, see chapter "Order information for lubricants, anti-corrosion agents and sealants" (→ 🗎 175).

15. Seal the friction disk of the brake [550] again at the brake endshield [42]:
    - **EDRN63 – 71 motors with BE03:** Replace flat gasket [901].
    - **EDR..71 – 132, EDRN71 – 132S** motors: Replace the seal [901].
    - **EDR..160 – 225, EDRN132M – 280 motors:** Replace O-ring [901] or [1607].
    - **EDRN315 motors:** Seal the sealing surface with duroplastic sealing compound (operating temperature -40 °C to +180 °C), such as "SEW-L-Spezial".
16. Reinstall the brake [550]: Insert the brake cable into the terminal box when installing the brake. Install the brake. Observe the alignment of the brake. (Cams at the endshield, manual brake release position).
    - **BE03 brake**: The self-tapping screws must be distributed and tightened around the brake evenly to prevent the mounted brake from being tilted.
    - **EDRN63 motors with BE03**: Tighten screw [19] M5x35 (self-tapping) with a tightening torque of 5 Nm. The screws can be reused.
    - **EDRN71 motors with BE03:** Tighten screws [900] M5x20 (self-tapping) with a tightening torque of 5 Nm. New screws must be used each time the brake is mounted again.
    - **EDR..71 – 80, EDRN71 – 80** motors: Install cap screws [13]. Tightening torque: 5 Nm
    - **EDR..90 – 225, EDRN90 – 315 motors:** Install the cap screws [900].

EDR..	**90 – 100**	**112 – 160**	**180**	**200 – 225**	**–**
EDRN..	**90 – 100**	**112 – 132**	**160 – 180**	**200 – 225**	**250 – 315**
Tightening torque	10.3 Nm	25.5 Nm	50 Nm	87.3 Nm	230 Nm

17. Connect the brake connection cable.
    - **BE03 – 11**: Reconnect the brake cable according to the wiring diagram.
    - **BE20 – 122**: Plug in the brake plug connector [698] again. Tighten the retaining screws again (tightening torque: 3 Nm)
18. Coat a new sealing ring [95] with a grease suitable for EPP material and fit in the sealing ring seat, see chapter "Order information for lubricants, anti-corrosion agents and sealants" (→ 🗎 175).
19. Install the fan [36] and the fan guard [35] or fan guard with encoder mount [212] and the available optional equipment.
20. With gearmotors: Replace oil flinger [107] and install the pinion.

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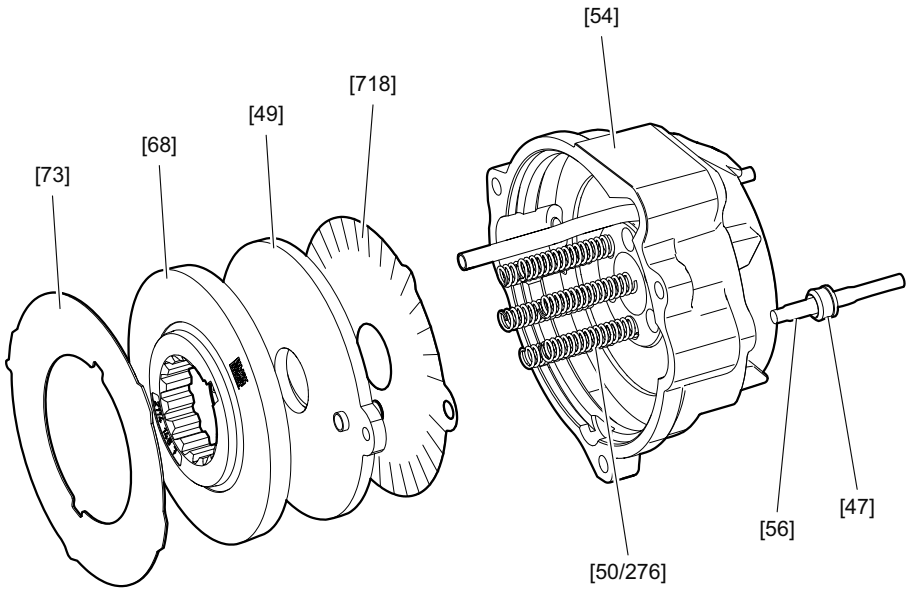
8.7.5 Basic structure of BE03 brakes



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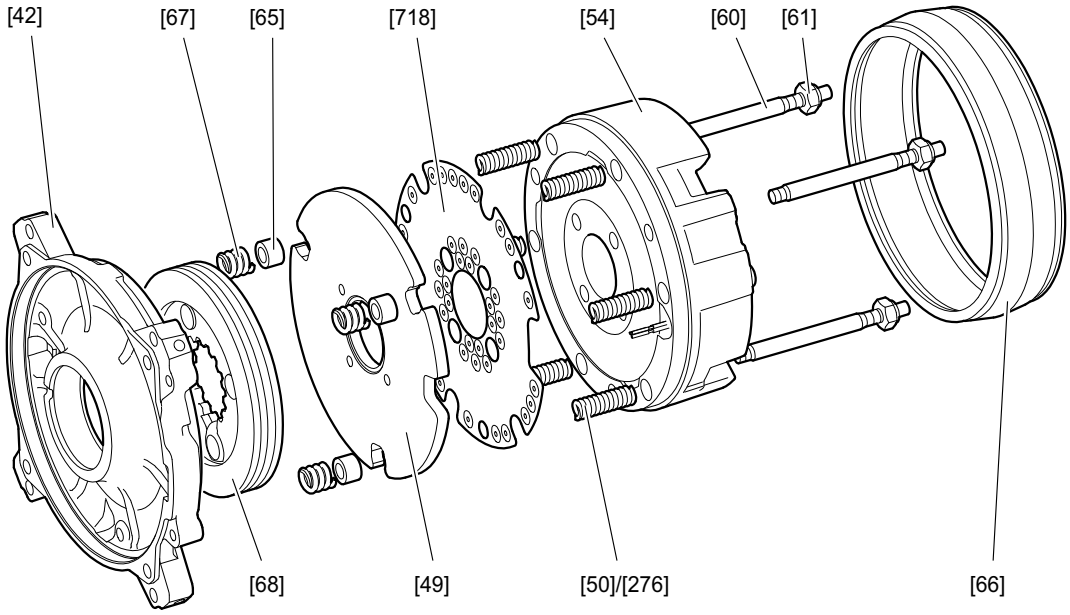
[47]	Sealing element	[54]	Magnet body, complete	[73]	Friction plate
[49]	Pressure plate	[56]	Stud	[276]	Brake spring
[50]	Brake spring	[68]	Brake disk (complete)	[718]	Damping plate

8.7.6 Basic structure of BE05 – 2 brakes



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[42]	Brake endshield	[61]	Hex nut	[276]	Brake spring (blue)
[49]	Pressure plate	[65]	Pressure ring	[718]	Damping plate
[50]	Brake spring (normal)	[66]	Sealing strip		
[54]	Magnet body, complete	[67]	Counter spring		
[60]	Stud	[68]	Brake lining carrier		

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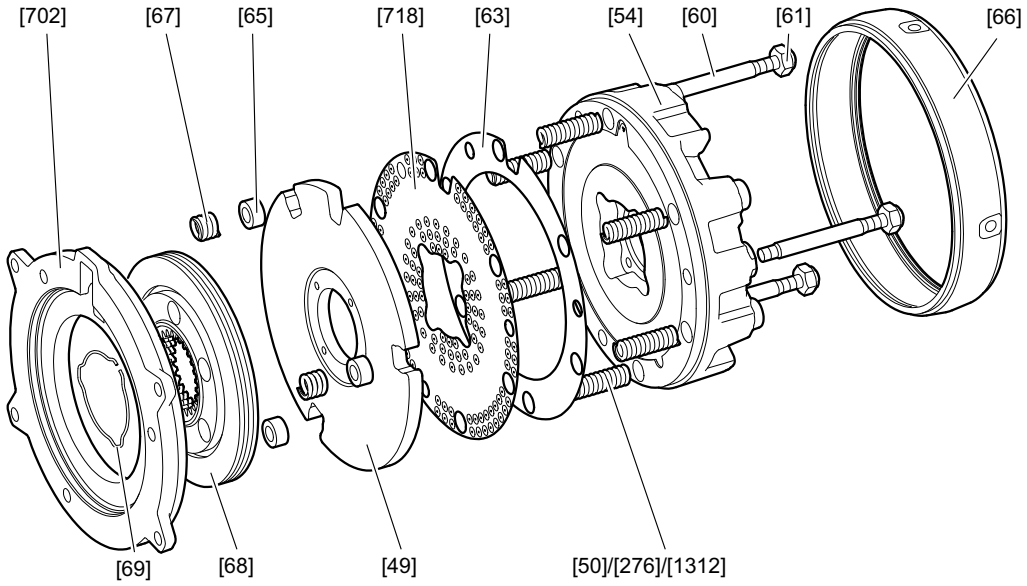
8.7.7 Basic structure of BE05 – 20 brakes



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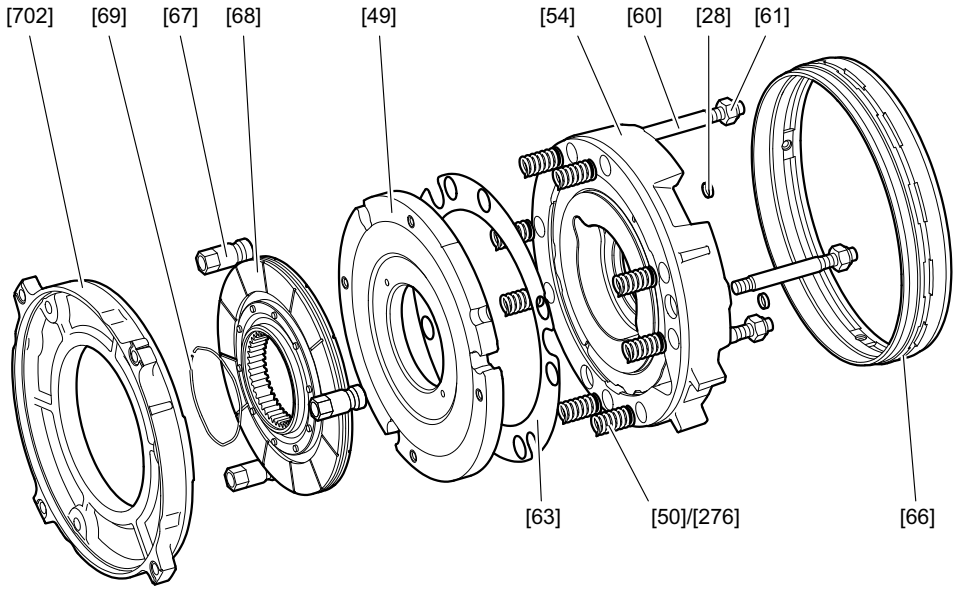
[49]	Pressure plate	[65]	Pressure ring	[702]	Friction disk
[50]	Brake spring (normal)	[66]	Sealing strip	[718]	Damping plate (BE05 – 11)
[54]	Magnet body, complete	[67]	Counter spring	[1312]	Brake spring (white)
[60]	Stud	[68]	Brake lining carrier		
[61]	Hex nut	[69]	Circular spring/clasp (BE5 – 20)		
[63]	Pole sheet	[276]	Brake spring (blue)		

8.7.8 Basic structure of BE30, 60, 120 brakes



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[28]	Closing cap	[61]	Hex nut	[69]	Circular spring
[49]	Pressure plate	[63]	Pole sheet	[276]	Brake spring (blue)
[50]	Brake spring (normal)	[66]	Sealing strip	[702]	Friction disk
[54]	Magnet body, complete	[67]	Setting sleeve		
[60]	Stud	[68]	Complete brake disk		

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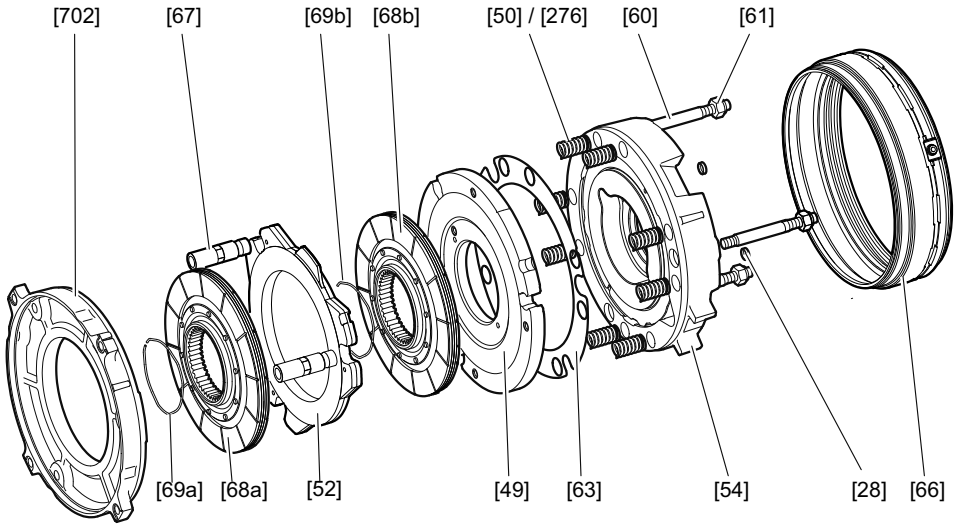
8.7.9 Basic structure of BE32, 62, 122 brakes



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[28]	Closing cap	[61]	Hex nut	[69a]	Circular spring
[49]	Pressure plate	[63]	Pole sheet	[69b]	Circular spring
[50]	Brake spring (normal)	[66]	Sealing strip	[276]	Brake spring (blue)
[52]	Brake plate complete	[67]	Setting sleeve	[702]	Friction disk
[54]	Magnet body, complete	[68a]	Complete brake disk		
[60]	Stud	[68b]	Complete brake disk		

8.7.10 Measuring the wear of BE03 brakes

The working air gap of BE03 brakes cannot be adjusted. Check the stroke of the pressure plate during maintenance.

Replacing individual parts of the brake is not permitted.

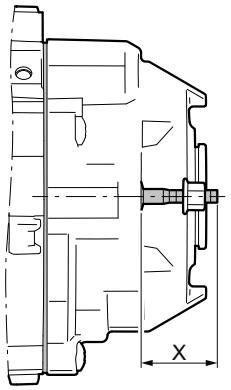
✓ The motor and all connected options are disconnected from the power supply.

✓ The motor is protected against unintended restart.

1. Measure the dimension "X" at the stroke of the studs when the brake is released or applied using a depth gauge or slide gauge.

   ⇨ The difference between both values is the working air gap.

⇨ The maximum permitted working air gap is 0.65 mm. Replace the brake in case this value is exceeded.



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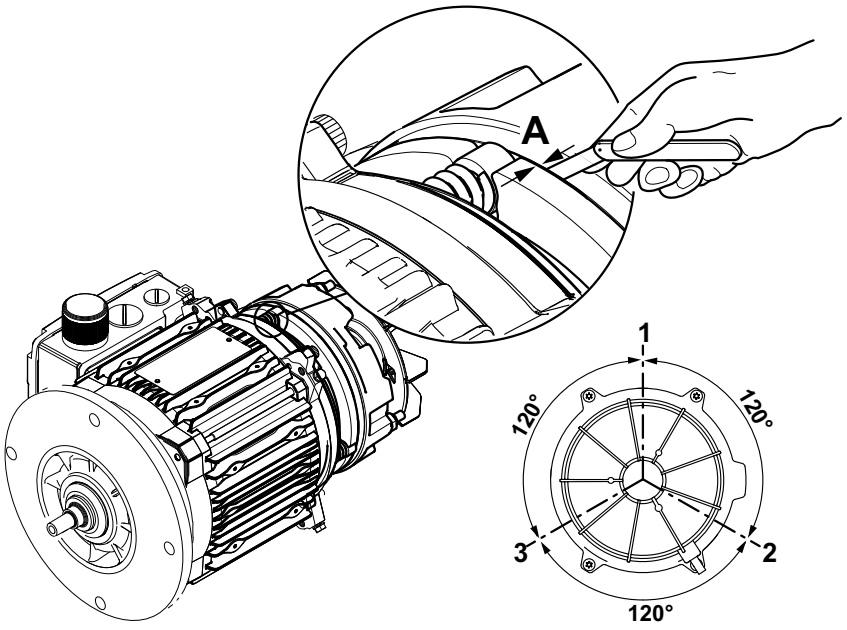
8.7.11 Setting the working air gap of BE05 – BE122 brakes

✓ The motor and all connected options are disconnected from the power supply.

✓ The motor is protected against unintended restart.

1. Disassemble the following parts:
   - ⇨ Forced cooling fan and rotary encoder, if installed, see chapter "Motor and brake maintenance – preliminary work" (→ 🗎 107).
   - ⇨ Fan guard with encoder mount [212] or fan guard [35], retaining ring [32]/[62] and fan [36]
2. To move the sealing strip [66], loosen the clamping strap [157].
3. Remove brake abrasion by suction.
4. Measure the brake lining carrier [68].
   - ⇨ For the minimum thickness of the brake lining, see chapter "Technical data" (→ 🗎 135).
   - ⇨ If necessary, replace the brake lining carrier, see chapter "Replacing the brake disk of BE05 – BE122 brakes" (→ 🗎 123).
5. **BE30 – 122:** To loosen the setting sleeves [67], turn the setting sleeves [67] towards the B-side endshield.
6. Measure the working air gap A with a feeler gauge according to the figure at 3 points offset by 120°.
   - ⇨ **BE05 – 11**: between pressure plate [49] and damping plate [718].
   - ⇨ **BE20 – 122**: between pressure plate [49] and magnet body [54].



27021597944201611

7. Set the working air gap A.
   - ⇨ **BE05 – 20:** Tighten the hex nuts [61] until the working air gap is set correctly, see chapter "Braking work, working air gap, and brake lining carrier thickness" (→ 🗎 159).

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⇨ **BE30 – 122:** Tighten the hex nuts [61] until the working air gap is 0.05 to 0.1 mm smaller than the desired setting value (for default values, see chapter "Braking work, working air gap, and brake lining carrier thickness" (→ 🗎 159)).

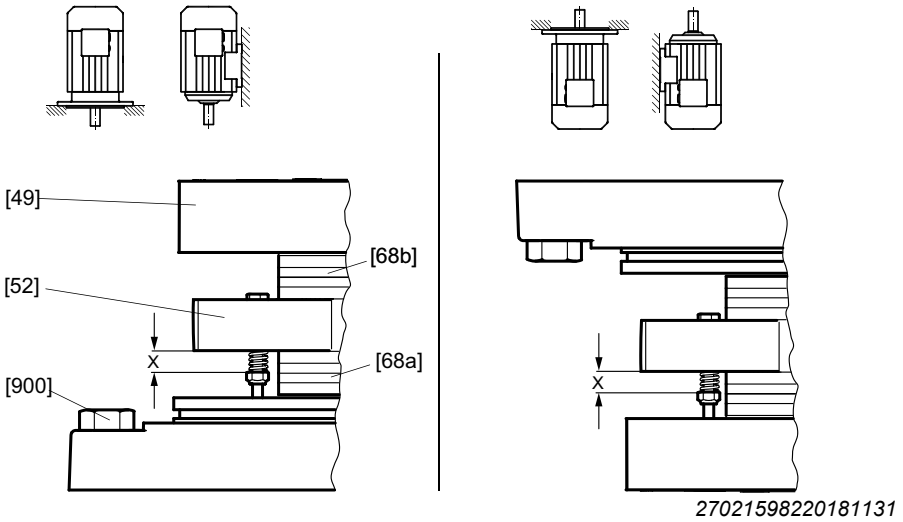
8. **BE30 – 122:** In order to position the setting sleeves [67] evenly against the friction disk [702], screw the setting sleeves [67] out of the magnet body [54].

   ⇨ Tighten the hex nuts [61] with the following tightening torque. Check the working air gap and adjust it if necessary.

Brake	Tightening torque
BE30 – BE32	93 Nm
BE60 – BE62	40 Nm
BE120 – BE122	230 Nm

9. If you are mounting **BE32, BE62**, **BE122** in a vertical position, set the 3 springs of the brake plate [52] to the following dimension X:

Brake	Dimension X in mm
BE32	7.3
BE62	10.0
BE122	10.0



10. **BE30 – 122:** Screw the setting sleeves [67] to the magnet body until the working air gap is set correctly, see chapter "Technical data" (→ 🗎 135).
11. Check the sealing strip [66] for plastic deformation and other damage. If necessary, replace the sealing strip [66]. Mount the clamping strap [157]. Make sure the sealing strip and clamping strap are positioned correctly.
12. Seal the hex nuts [61] with SEW-L-Spezial.
13. Install the disassembled parts of the motor.

8.7.12 Replacing the brake disk of BE05 – BE122 brakes

In addition to the brake elements listed in column "BE brake" (see chapter "Inspection and maintenance intervals" (→ 🗎 103)), check the hex nuts [61] for wear when you replace the brake disk. Always replace the hex nuts [61] when you replace the brake lining carrier.

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INFORMATION

- With EDR..71 – 80, EDRN80 motor with BE05 – 2, the brake cannot be removed from the motor because the /BE brake is directly installed on the brake endshield of the motor.

1. Before starting to perform any work on the motor, disconnect the motor and all mounted options from the power supply before and secure the motor against unintentional power-up.
2. Remove the following:
   - Forced cooling fan and rotary encoder, if installed, see chapter "Motor and brake maintenance – preliminary work" (→ 🗎 107).
   - Fan guard with encoder mount or fan guard [35], retaining ring [32], and fan [36]
3. Remove the brake cable
   - **BE05 – 11:** Loosen the terminal box cover and unfasten the brake cable from the rectifier.
   - **BE20 – 122:** Loosen locking screws of the brake plug connector [698] and remove plug connector.
4. Remove the clamping strap [157] and sealing strip [66].
5. Remove manual brake release if necessary.
   - Adjusting nuts [58], conical springs [57], studs [56], releasing lever [53], conical seat [255], spherical washer [256]
6. Loosen the hex nuts [61], carefully pull off the magnet body [54] (brake cable!) and remove the brake springs [50]/[276]/[1312].
7. **BE05 – 11:** Remove the damping plate [718], pressure plate [49] and brake disk [68]

   BE20, BE30, BE60, BE120: Remove the pressure plate [63], pole sheet [63] and brake disk [68]

   BE32, BE62, BE122: Remove the pressure plate [49], brake disk [68a] and [68b], as well as the brake plate [52].
8. Clean the brake components.
9. Install new brake lining carrier(s).
10. Assemble the brake parts again as described in chapter "Inspection steps for EDR..71 – 225, EDRN63 – 315 brakemotors" (→ 🗎 115).
    - Use the new hex nuts [61] and clean the contact surfaces of the nuts at the magnet body of any residues of sealing compound.
    - Do so except for the fan [36] and the fan guard [35] because the working air gap has to be set first, see chapter "Setting the working air gap of BE05 – BE122 brakes" (→ 🗎 122).
    - After having set the working air gap, make sure the areas at sealing strip [66] and hex nuts [61] are correctly sealed.
11. In case of manual brake release: Use the adjusting nuts to adjust the floating clearance "s" between the conical springs (pressed flat) and the adjusting nuts (see chapter "Retrofitting the /HR, /HF manual brake release" (→ 🗎 131).

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⚠ WARNING

No braking due to incorrectly set floating clearance "s".

Severe or fatal injuries.

- Make sure the floating clearance "s" is correctly set, so that the pressure plate can move up as the brake lining wears.

12. Assemble the remaining parts of the motor you have removed before.

INFORMATION

After replacing the brake disk, the maximum braking torque is reached only after several cycles.

8.7.13 Changing the braking torque of BE05 – BE122 brakes

You can alter the braking torque in stages. This can be done in various ways:

- By changing the type and number of brake springs.
- By changing the complete magnet body (only possible for BE05 and BE1).
- By changing the brake (for motor size 90 and larger)
- By changing to a double disk brake (only possible for BE30, BE60, BE120)

For possible braking torque steps, refer to chapter "Technical data" (→ 🗎 135).

8.7.14 Changing the brake spring of BE05 – BE122 brakes

⚠ WARNING

Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Disconnect the motor and all connected options from the power supply before you start working.
- Secure the motor against unintended power-up.

1. Remove the following:
   - Forced cooling fan and rotary encoder, if installed, see chapter "Motor and brake maintenance – preliminary work" (→ 🗎 107).
   - Fan guard with encoder mount or fan guard [35], retaining ring [32]/[62], and fan [36]
2. Remove the brake cable.
   - **BE05 – 11:** Remove the terminal box cover. Remove the brake cable from the rectifier.
   - **BE20 – 122:** Loosen the locking screws of the brake plug connector [698]. Remove the plug connector.
3. Remove the clamping strap [157] and sealing strip [66].
4. Remove manual brake release if necessary.
   - Adjusting nuts [58], conical springs [57], studs [56], releasing lever [53], conical seat [255], spherical washer [256]
5. Unfasten the hex nuts [61] and pull off the magnet body [54]

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- By approx. 50 mm (watch the brake cable!)

6. Replace or add brake springs [50/276/1312]
   - Arrange brake springs symmetrically
7. Assemble the brake parts again as described in chapter "Inspection steps for EDR..71 – 225, EDRN63 – 315 brakemotors" (→ 🗎 115).
   - Use the new hex nuts [61] and clean the contact surfaces of the nuts at the magnet body of any residues of sealing compound.
   - Do so except for the fan [36] and the fan guard [35] because the working air gap has to be set first, see chapter "Setting the working air gap of BE05 – BE122 brakes" (→ 🗎 122).
   - After having set the working air gap, make sure the areas at sealing strip [66] and hex nuts [61] are correctly sealed.
8. In case of manual brake release: Use the adjusting nuts to adjust the floating clearance "s" between the conical springs (pressed flat) and the adjusting nuts (see chapter "Retrofitting the /HR, /HF manual brake release" (→ 🗎 131).

⚠ WARNING

No braking due to incorrectly set floating clearance "s".

Severe or fatal injuries.

- Make sure the floating clearance "s" is correctly set, so that the pressure plate can move up as the brake lining wears.

9. Assemble the remaining parts of the motor you have removed before.

INFORMATION

Replace the setting sleeves [58] if the removal procedure is repeated.

8.7.15 Changing the magnet body of BE05 – BE122 brakes

⚠ WARNING

Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Disconnect the motor and all connected options from the power supply before you start working.
- Secure the motor against unintended power-up.

1. Remove the following:
   - Forced cooling fan and rotary encoder, if installed, see chapter "Motor and brake maintenance – preliminary work" (→ 🗎 107).
   - Fan guard with encoder mount or fan guard [35], retaining ring [32], and fan [36]
2. Remove the brake cable.
   - **BE05 – 11:** Remove the terminal box cover. Remove the brake cable from the rectifier.

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- **BE20 – 122:** Loosen the locking screws of the brake plug connector [698]. Remove the plug connector.

3. Remove the clamping strap [157] and sealing strip [66].
4. Loosen hex nuts [61], remove complete magnet body [54], remove brake springs [50]/[276]/[1312].
5. Install new magnet body with brake springs. For possible braking torque steps, refer to chapter "Technical data" (→ 🗎 135).
6. Assemble the brake parts again as described in chapter "Inspection steps for EDR..71 – 225, EDRN63 – 315 brakemotors" (→ 🗎 115).
   - Use the new hex nuts [61] and clean the contact surfaces of the nuts at the magnet body of any residues of sealing compound.
   - Do so except for the fan [36] and the fan guard [35] because the working air gap has to be set first, see chapter "Setting the working air gap of BE05 – BE122 brakes" (→ 🗎 122).
   - After having set the working air gap, make sure the areas at sealing strip [66] and hex nuts [61] are correctly sealed.
7. In case of manual brake release: Use the adjusting nuts to adjust the floating clearance "s" between the conical springs (pressed flat) and the adjusting nuts (see chapter "Retrofitting the /HR, /HF manual brake release" (→ 🗎 131).

⚠ WARNING

No braking due to incorrectly set floating clearance "s".

Severe or fatal injuries.

- Make sure the floating clearance "s" is correctly set, so that the pressure plate can move up as the brake lining wears.

8. Assemble the remaining parts of the motor you have removed before.
9. Replace the brake control in the event of an interturn short circuit or a short circuit to frame.

INFORMATION

Replace the setting sleeves [58] if the removal procedure is repeated.

8.7.16 Replacing BE03 brakes of EDRN63 – 71 motors

✓ The motor and all connected options are disconnected from the power supply.

✓ The motor is protected against unintended restart.

1. Disassemble the following parts:
   ⇨ Forced cooling fan and rotary encoder, if installed, see chapter "Motor and brake maintenance – preliminary work" (→ 🗎 107).
   ⇨ Fan guard with encoder mount [212] or fan guard [35], retaining ring [32]/[62] and fan [36]
2. Remove the terminal box cover and loosen the brake cable from the brake control/ terminals. Attach trailing wire to brake cables, if necessary.
3. Remove the screws and brake (with brake endshield if necessary) from the stator.
   ⇨ EDRN63 motor: Screws [19]

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⇨ EDRN71 motor: Screws [900]

4. Replace the gasket [901]. Observe the alignment of the gasket, if necessary.
5. If necessary, replace driver [70], key [71], and retaining ring [62], see chapter "Inspection steps for EDR..71 – 225, EDRN63 – 315 brakemotors" (→ 🗎 115).
6. Insert the brake cable of the new brake into the terminal box.
7. Position the new brake. Make sure the cable outlet and brake lining carrier gearing are correctly aligned.
8. Fasten the brake using screws [19] or [900]. Distribute the screws around the brake and tighten them one after the other.
   ⇨ EDRN63 motor: The screws [19] can be reused. Tightening torque 5 Nm, tolerance ±10%.
   ⇨ EDRN71 motor: Use new screws [900]. Tightening torque 5 Nm, tolerance ±10%.
9. Seal the shaft.
10. Replace the sealing ring [95].
11. Apply grease to the sealing lip, see chapter "Order information for lubricants, anticorrosion agents and sealants" (→ 🗎 175).
12. ⚠ **DANGER!** No braking due to incorrectly set floating clearance "s". Severe or fatal injuries. Make sure the floating clearance "s" is set correctly so that the pressure plate can move up as the brake lining wears.
    Manual brake release option: Set the floating clearance "s" using the adjusting nuts, see chapter "Retrofitting the /HR, /HF manual brake release" (→ 🗎 131).
13. Install the disassembled parts of the motor.

8.7.17 Replacing BE05 – 2 brakes of EDR..71 – 80, EDRN71 – 80 motors

✓ The motor and all connected options are disconnected from the power supply.
✓ The motor is protected against unintended restart.

1. Disassemble the following parts:
   ⇨ Forced cooling fan and rotary encoder, if installed, see chapter "Motor and brake maintenance – preliminary work" (→ 🗎 107).
   ⇨ Fan guard with encoder mount [212] or fan guard [35], retaining ring [32]/[62] and fan [36]
2. Remove the terminal box cover and loosen the brake cable from the brake control/terminals. Attach trailing wire to brake cables, if necessary.
3. Remove the screws and brake (with brake endshield if necessary) from the stator.
   ⇨ EDR..71 – 80, EDRN71 – 80 motors: Cap screws [13]
4. Replace gasket [392]. Observe the alignment of the gasket.
5. If necessary, replace driver [70], key [71], and retaining ring [62], see chapter "Inspection steps for EDR..71 – 225, EDRN63 – 315 brakemotors" (→ 🗎 115).
6. Insert the brake cable of the new brake into the terminal box.
7. Position the new brake. Make sure the cable outlet and brake lining carrier gearing are correctly aligned.
8. Refasten the brake using the screws.
   ⇨ Cap screws [13]

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⇨ Tightening torque 5 Nm.

⇨ Tolerance ±10%.

9. Seal the sealing ring seat with SEW-L-Spezial. For motors with the /HF or /HR option, additionally install O-rings [47].
10. Seal the shaft.
11. Replace the sealing ring [95].
12. Apply grease to the sealing lip, see chapter "Order information for lubricants, anti-corrosion agents and sealants" (→ 🗎 175).
13. Remove the clamping strap [157] of the old brake. Attach the clamping strip [157] to the sealing strip [66] of the new brake. Make sure that sealing strip and clamping strap are positioned correctly.
14. ⚠ **DANGER!** No braking due to incorrectly set floating clearance "s". Severe or fatal injuries. Make sure the floating clearance "s" is set correctly so that the pressure plate can move up as the brake lining wears.
    Manual brake release option: Set the floating clearance "s" using the adjusting nuts, see chapter "Retrofitting the /HR, /HF manual brake release" (→ 🗎 131).
15. Install the disassembled parts of the motor.

8.7.18 Replacing BE05 – 62 brakes of EDR..90 – 225, EDRN90 – 225 motors

✓ The motor and all connected options are disconnected from the power supply.

✓ The motor is protected against unintended restart.

1. Disassemble the following parts:
   ⇨ Forced cooling fan and rotary encoder, if installed, see chapter "Motor and brake maintenance – preliminary work" (→ 🗎 107).
   ⇨ Fan guard with encoder mount [212] or fan guard [35], retaining ring [32]/[62] and fan [36]
2. Loosen the brake cable.
   ⇨ BE05 – 11: Remove the terminal box cover and loosen the brake cable from the brake control/terminals.
   ⇨ BE20 – 62: Loosen locking screws of the brake plug connector [698] and remove plug connector.
3. Remove the screws and brake (with brake endshield if necessary) from the stator.
4. Replace the gasket [901]. Observe the alignment of the gasket, if necessary.
5. If necessary, replace driver [70], key [71], and retaining ring [62], see chapter "Inspection steps for EDR..71 – 225, EDRN63 – 315 brakemotors" (→ 🗎 115).
6. BE05 – 11: Insert the brake cable of the new brake into the terminal box.
7. Position the new brake. Make sure the cable outlet and brake lining carrier gearing are correctly aligned.
   ⇨ BE20 – 62 with manual brake release option: It is important that the manual brake release is positioned properly.
8. Refasten the brake using the screws.
   ⇨ Cap screws [900]
   ⇨ Tightening torque EDR..90 – 100, EDRN90 – 100: 10.3 Nm
   ⇨ Tightening torque EDR..112 – 160, EDRN112 – 132: 25.5 Nm

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⇨ Tightening torque EDR..180, EDRN160 – 180: 50 Nm

⇨ Tightening torque EDR..200 – 225, EDRN200 – 225: 87.3 Nm

⇨ Tolerance ±10%.

9. Seal the sealing ring seat with SEW-L-Spezial. For motors with the /HF or /HR option, additionally install O-rings [47].
10. Seal the shaft.
11. Replace the sealing ring [95].
12. Apply grease to the sealing lip, see chapter "Order information for lubricants, anticorrosion agents and sealants" (→ 🗎 175).
13. BE20 – 62: Insert the plug connector [698] into the brake and fasten using screws.
    ⇨ Tightening torque 3 Nm
14. Remove the clamping strap [157] of the old brake. Attach the clamping strip [157] to the sealing strip [66] of the new brake. Make sure that sealing strip and clamping strap are positioned correctly.
15. ⚠ **DANGER!** No braking due to incorrectly set floating clearance "s". Severe or fatal injuries. Make sure the floating clearance "s" is set correctly so that the pressure plate can move up as the brake lining wears.
    Manual brake release option: Set the floating clearance "s" using the adjusting nuts, see chapter "Retrofitting the /HR, /HF manual brake release" (→ 🗎 131).
16. Install the disassembled parts of the motor.

8.7.19 Replacing BE60 – 122 brakes of EDRN250 – 315 motors

✓ The motor and all connected options are disconnected from the power supply.

✓ The motor is protected against unintended restart.

1. Disassemble the following parts:
   ⇨ Forced cooling fan and rotary encoder, if installed, see chapter "Motor and brake maintenance – preliminary work" (→ 🗎 107).
   ⇨ Fan guard with encoder mount [212] or fan guard [35], retaining ring [32]/[62] and fan [36]
2. Unscrew the locking screws of the brake plug connector [698] and remove the plug connector.
3. Remove the screws and brake (with brake endshield if necessary) from the stator.
   ⇨ EDRN250 – 280 motors: Replace the O-ring [1607].
4. If necessary, replace driver [70], key [71], and retaining ring [62], see chapter "Inspection steps for EDR..71 – 225, EDRN63 – 315 brakemotors" (→ 🗎 115).
5. Seal the shaft.
6. Replace the sealing ring [95].
7. Apply grease to the sealing lip, see chapter "Order information for lubricants, anticorrosion agents and sealants" (→ 🗎 175).
8. Position the new brake. Make sure the cable outlet and brake lining carrier gearing are correctly aligned.
   ⇨ Manual brake release option: It is important that the manual brake release is positioned properly.

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9. Refasten the brake using the screws.
   - ⇨ Cap screws [900]
   - ⇨ Tightening torque: 230 Nm
   - ⇨ Tolerance ±10%.
10. Insert plug connector [698] in the brake and fasten using screws.
    - ⇨ Tightening torque 3 Nm
11. Remove the clamping strap [157] of the old brake. Attach the clamping strip [157] to the sealing strip [66] of the new brake. Make sure that sealing strip and clamping strap are positioned correctly.
12. ⚠ **DANGER!** No braking due to incorrectly set floating clearance "s". Severe or fatal injuries. Make sure the floating clearance "s" is set correctly so that the pressure plate can move up as the brake lining wears.
    Manual brake release option: Set the floating clearance "s" using the adjusting nuts, see chapter "Retrofitting the /HR, /HF manual brake release" (→ 🗎 131).
13. Install the disassembled parts of the motor.

8.7.20 Retrofitting the /HR, /HF manual brake release

- ✓ The motor and all connected options are disconnected from the power supply.
- ✓ The motor is protected against unintended restart.

1. Disassemble the following parts:
   - ⇨ Forced cooling fan and rotary encoder, if installed, see chapter "Motor and brake maintenance – preliminary work" (→ 🗎 107).
   - ⇨ Fan guard with encoder mount [212] or fan guard [35], retaining ring [32]/[62] and fan [36]
2. Mount the manual brake release.
   - ⇨ BE03: Position the releasing lever [53] and the spring plate [53] correctly. Mount the flange nut [58]. Attach the hand lever [51]/set screw [64] to the stator using the grommets.
   - ⇨ BE05 – BE11: Remove the old sealing ring [95]. Screw in the studs [56] and glue them. Insert the sealing rings for the manual brake release [95]. Hammer in the parallel pin [59]. Install the releasing lever [53], the conical springs [57] and the adjusting nuts [58].
   - ⇨ BE20 – BE62: Insert O-rings [47] into the magnet body. Screw in the studs [56] and glue them. Install the releasing lever [53], the conical springs [57] and the adjusting nuts [58].
   - ⇨ BE120 – BE122: Insert O-rings [47] in the magnet body. Screw in the studs [56] and glue them.
3. ⚠ **DANGER!** No braking due to incorrectly set floating clearance "s". Severe or fatal injuries. Make sure the floating clearance "s" is set correctly so that the pressure plate can move up as the brake lining wears.
   Set the floating clearance "s" using the adjusting nuts or flange nuts.
   - ⇨ BE03: Between releasing lever and flange nut (see following illustration).
   - ⇨ BE05 – 122: Between conical springs (pressed flat) and adjusting nuts (see following illustration).

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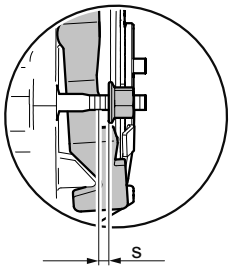
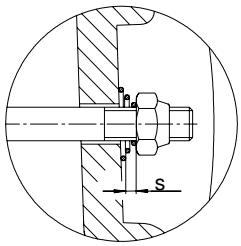
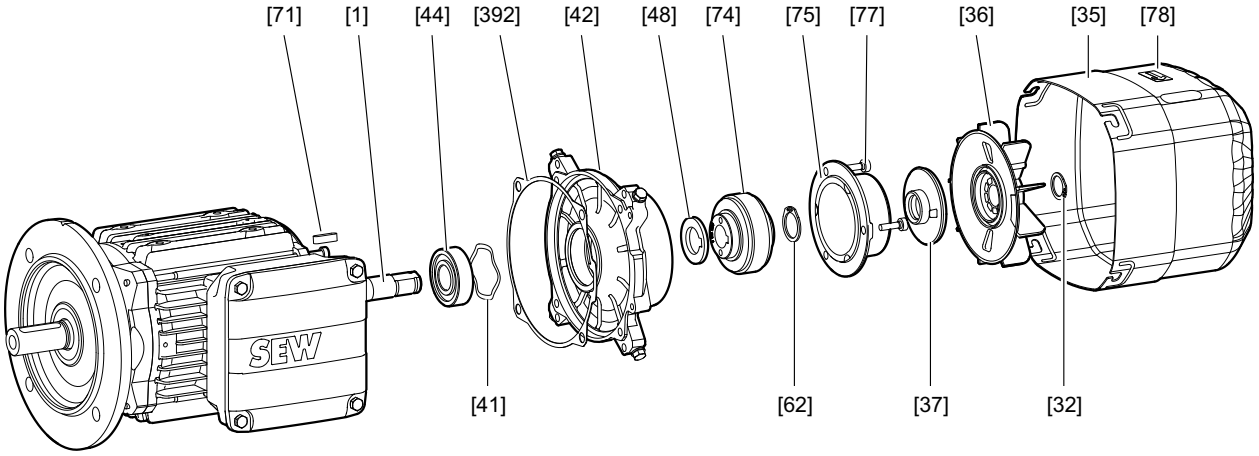
BE03	BE05 – 122
	

Brake	Floating clearance s mm
BE03	2.2
BE05, BE1, BE2	1.5
BE5	1.7
BE11, BE20, BE30, BE32, BE60, BE62, BE120, BE122	2

4. Install the disassembled parts of the motor.

8.8 Altering the blocking direction on motors with a backstop

8.8.1 Basic structure of EDR..71 – 80, EDRN71 – 80 motors with backstop



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[1] Motor with brakemotor
[32] Retaining ring
[35] Fan guard
[36] Fan wheel
[37] Sealing ring
[41] Equalizing ring
[42] Backstop endshield, complete
[44] Deep groove ball bearing
[48] Spacing ring
[62] Retaining ring
[71] Key
[74] Backstop
[75] Sealing flange
[77] Cap screw
[78] Direction of rotation information sign
[392] Gasket

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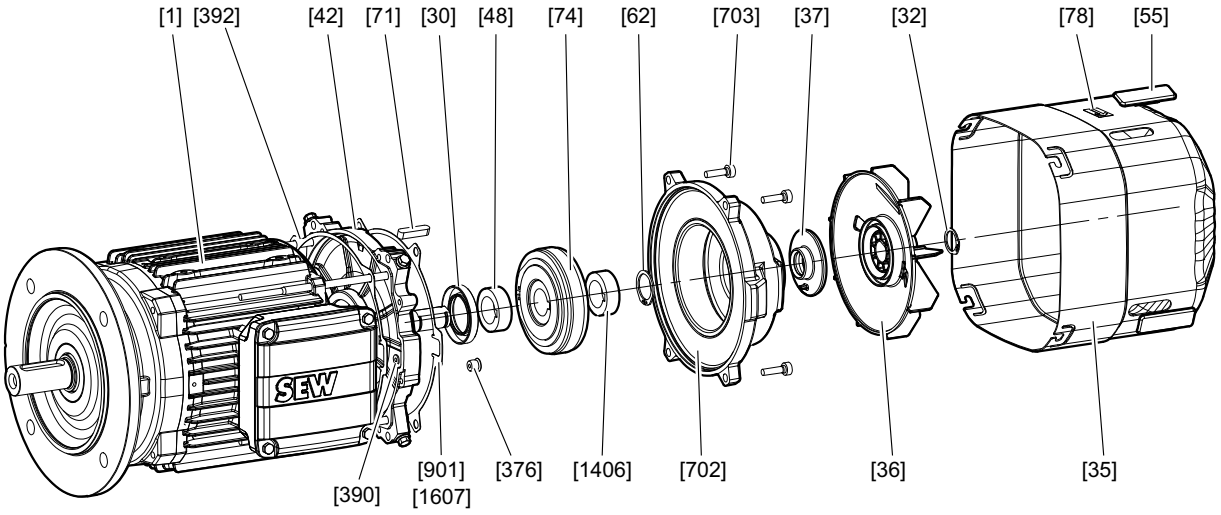
8.8.2 Basic structure of EDR..90 – 315, EDRN63, EDRN90 – 315 motors with backstop



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[1]	Motor	[74]	Backstop
[30]	Sealing ring (EDR../EDRN250 – 315 motors)	[78]	Information sign for direction of rotation
[35]	Fan guard	[702]	Backstop housing
[36]	Fan wheel	[703]	Cap screw
[37]	Sealing ring	[376]	Screw plug (EDR..160 – 315, EDRN132M – 315 motors)
[42]	Brake endshield	[390]	O-ring (EDR..160 – 225, EDRN132M – 225 motors)
[48]	Spacing ring	[392]	Seal (EDR..90 – 132, EDRN90 – 132S motors)
[55]	Closing piece	[901]	Seal (EDR../EDRN90 – 225 motors)
[62]	Retaining ring	[1406]	Spacing ring (EDR../EDRN250 – 315 motors)
[71]	Key	[1607]	O-ring (EDR../EDRN250 – 280 motors)

8.8.3 Changing the blocking direction

Proceed as follows to change the blocking direction:

- ✓ The motor and all connected options are disconnected from the power supply.
- ✓ The motor is protected against unintended restart.

1. Disassemble the following parts:
   - ⇨ Forced cooling fan and rotary encoder, if installed, see chapter "Motor and brake maintenance – preliminary work" (→ 🗎 107).
   - ⇨ Fan guard with encoder mount [212] or fan guard [35], retaining ring [32]/[62] and fan [36]
   - ⇨ **EDR..71 – 80, EDRN71 – 80 motors:** Sealing flange [75].
   - ⇨ **EDR..90 – 315, EDRN63, 90 – 315 motors:** Backstop housing, complete [702].
2. Remove the retaining ring [62] and, if necessary, the spacing ring [1406].
3. Dismount the backstop [74] using a puller.
4. To alter the blocking direction, turn around the backstop [74].
5. Check the old grease. If necessary, replace the grease as specified below.
   - ⇨ **EDRN63 – 71 motors**: Glue in the backstop [74] with Loctite 648/649.

⇨ **EDR..71 – 315, EDRN80 – 315 motors:** Press on the backstop [74].

6. Mount the retaining ring [62].
7. Mount the following parts:
   ⇨ **EDR..71 –80, EDRN71 – 80 motors:** Apply SEW-L-Spezial sealant to the sealing flange [75]. Mount the sealing flange [75].
   ⇨ **EDR..90 – 315, EDRN63, 90 – 315 motors:** Replace the seals [901], [1607], and if necessary [37]. Mount the complete backstop housing [702].
8. Install the disassembled parts of the motor.
9. Replace the label [78] indicating the direction of rotation.

Lubricating the backstop

The backstop is greased at the factory with the corrosion protection low-viscosity grease LBZ 1. If you want to use another grease, make sure it complies with NLGI class 00/000 with a base oil viscosity of 42 mm^2/s at 40 °C on a lithium saponified and mineral oil base. The application temperature range is from -50 °C to +90 °C. See the following table for the amount of grease required:

EDR..	**71**	**80**	**90/100**	**112/132**	**160**	**180**	**200/225**	**250/280**	**315**
EDRN..	**63/71**	**80**	**90/100**	**112/132S**	**132M/L**	**160/180**	**200/225**	**250/280**	**315**
Amount of grease in g	9	11	15	20	30	45	80	80	120

The tolerance regarding the grease level is ± 30%.

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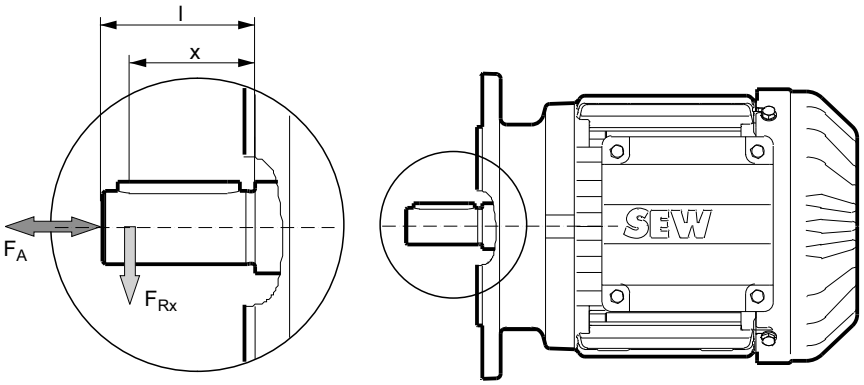
9 Technical data

9.1 Overhung loads

9.1.1 Permitted overhung load

Refer to the following diagrams for the permitted overhung load F_{Rx} for EDR../EDRN motors. In order to read the permitted overhung load from the diagram, you must know what the distance x is between the force application point of the overhung load F_R and the shaft shoulder.

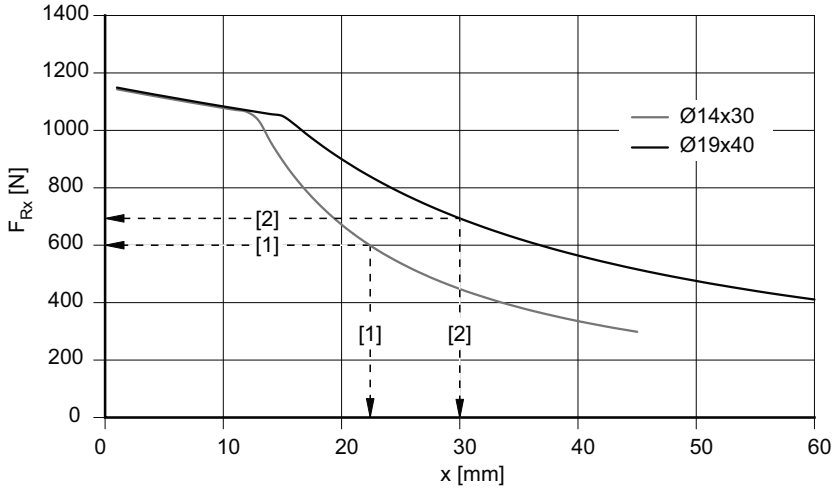
The following figure shows the application point of the overhung load.



2636511499

x	Distance between overhung load application point and shaft shoulder	l	Length of the shaft end
F_{RX}	Overhung load at force application point	F_A	Axial load

The following diagram shows an example of how you can read the overhung load from the diagram:



2636513163

[1] Motor with shaft diameter 14 mm, force application x at 22 mm, permitted overhung load F_{Rx} = 600 N

[2] Motor with shaft diameter 19 mm, force application x at 30 mm, permitted overhung load F_{Rx} = 700 N

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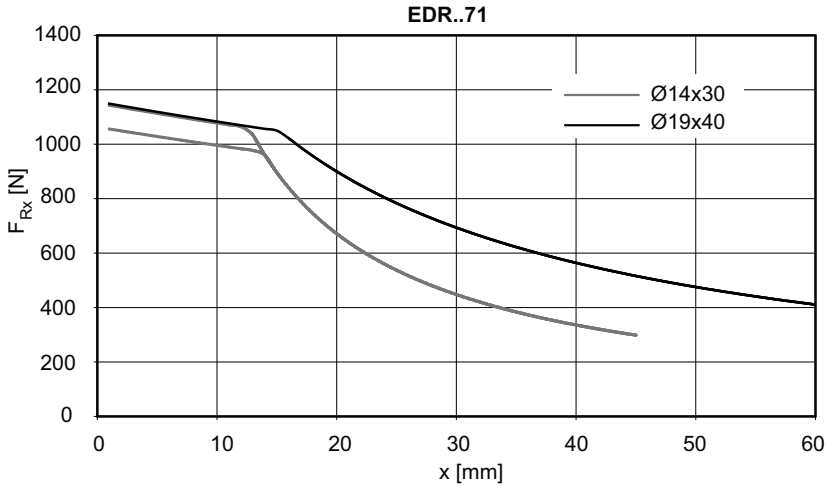
Permitted axial load for EDR../EDRN.. motors

You can then determine the permitted axial load F_A by means of the previously determined overhung load F_{Rx}:

$F_A = 0.2 \times F_{Rx}$

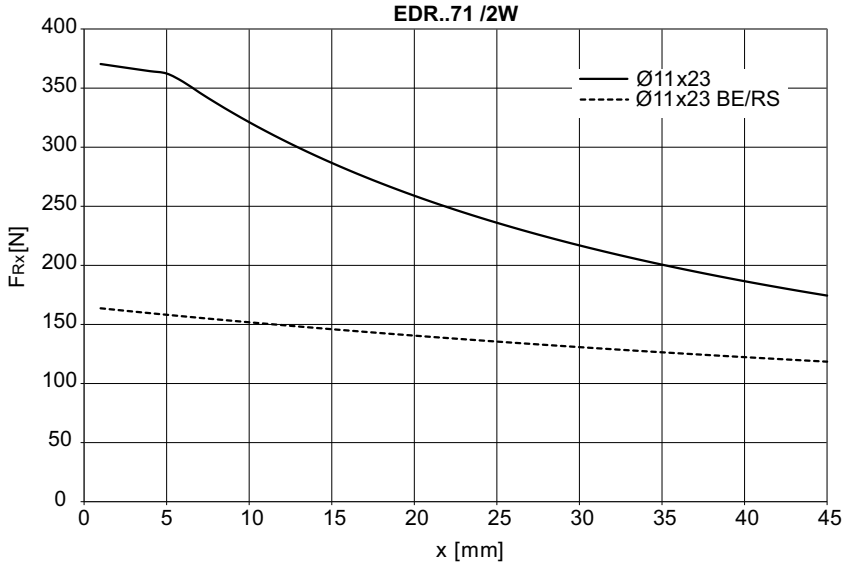
9.1.2 Overhung load diagrams of 4-pole EDR.. motors

Overhung load diagram of EDR..71



18014401146912395

Overhung load diagram of EDR..71 on the 2nd shaft end



9007201891634827

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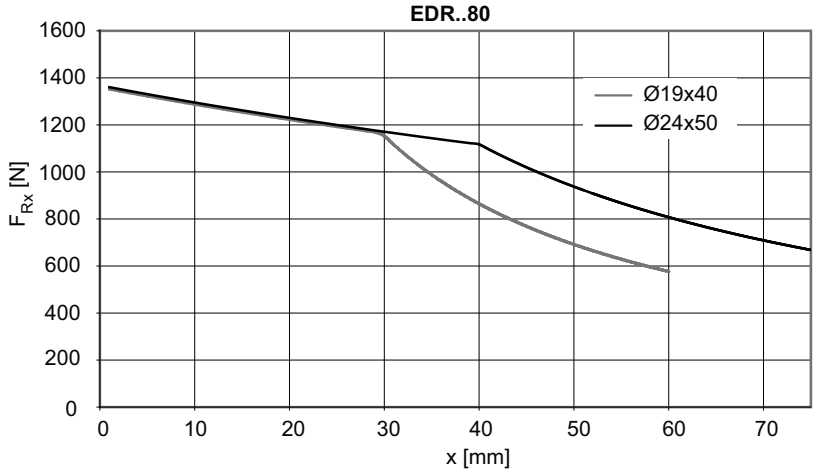
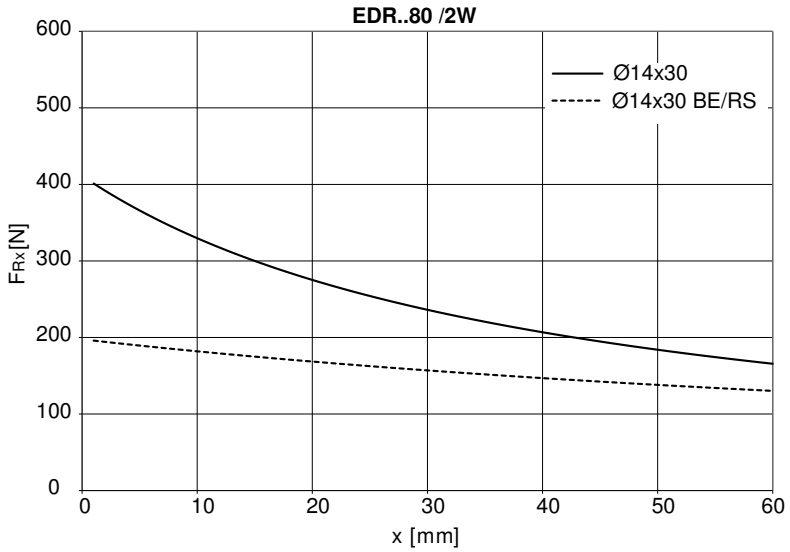
Overhung load diagram of EDR..80



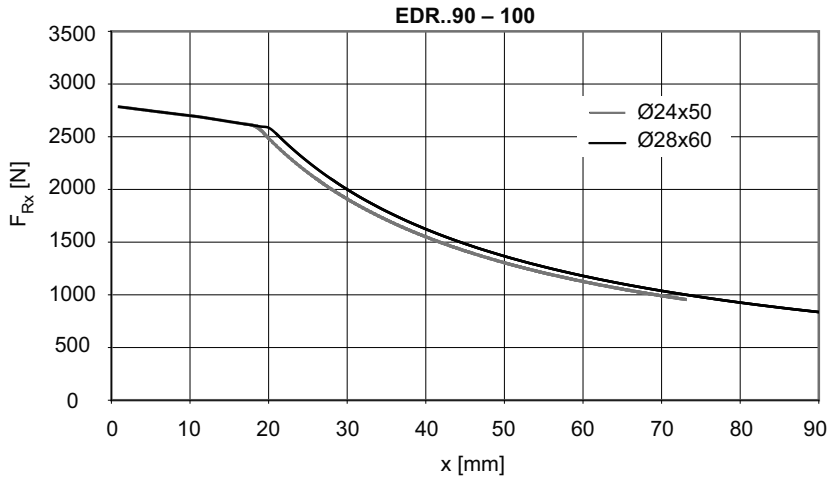
18014401146378507

Overhung load diagram of EDR..180 on the 2nd shaft end



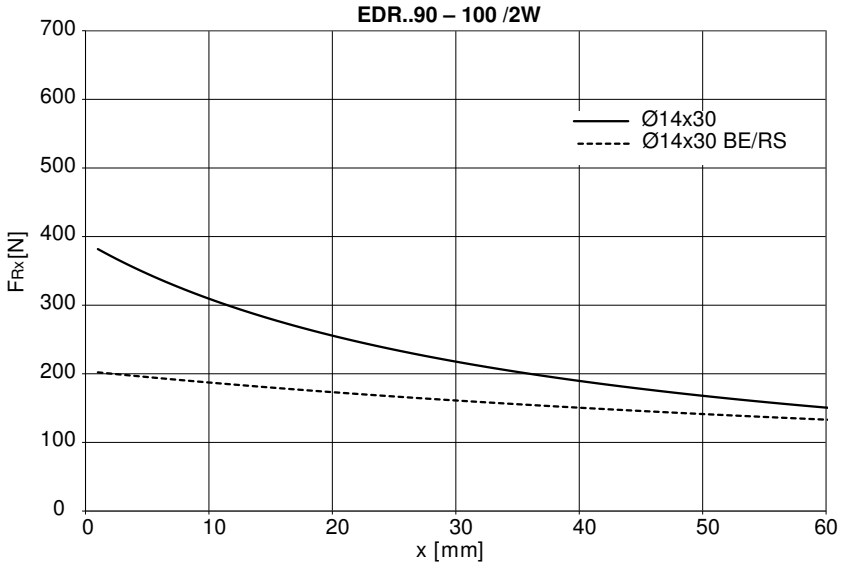
9007201891640203

Overhung load diagram of EDR..90 – 100



18014401146383883

Overhung load diagram of EDR..90 – 100 on the 2nd shaft end



9007201891645579

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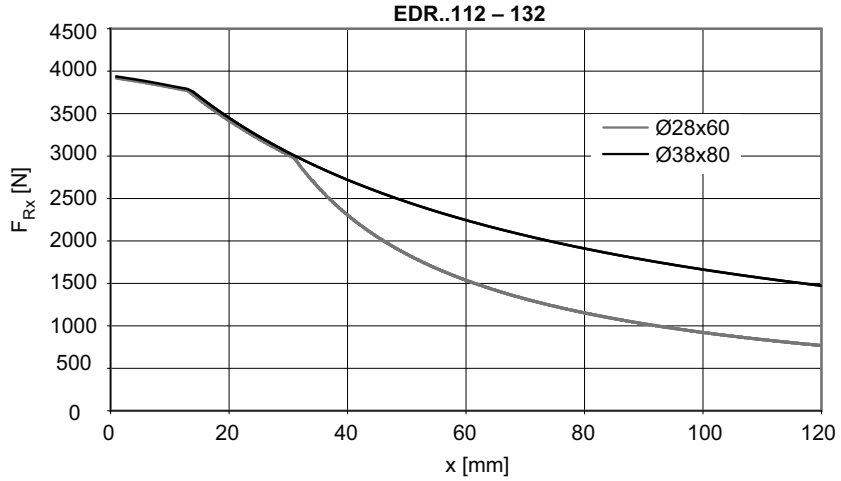
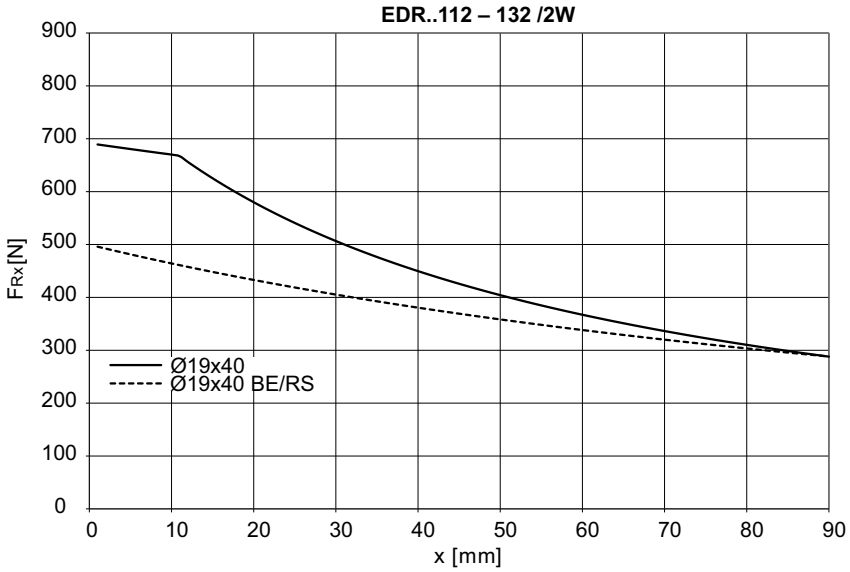
Overhung load diagram of EDR..112 – 132



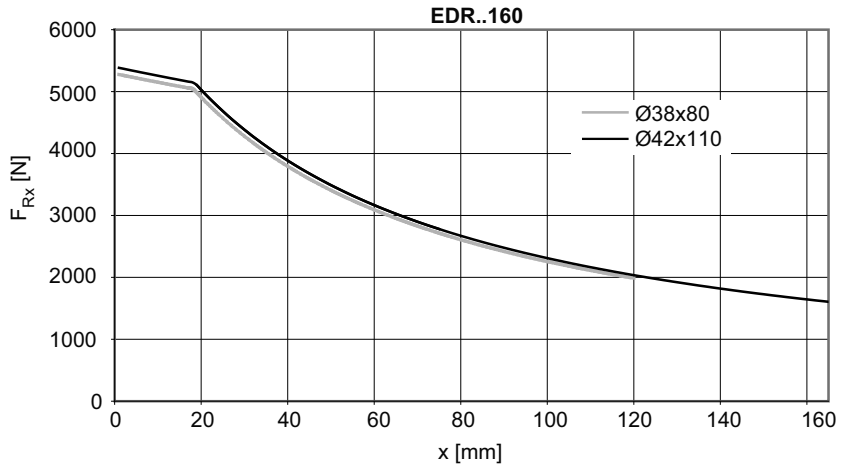
18014401146389259

Overhung load diagram of EDR..112 – 132 on the 2nd shaft end



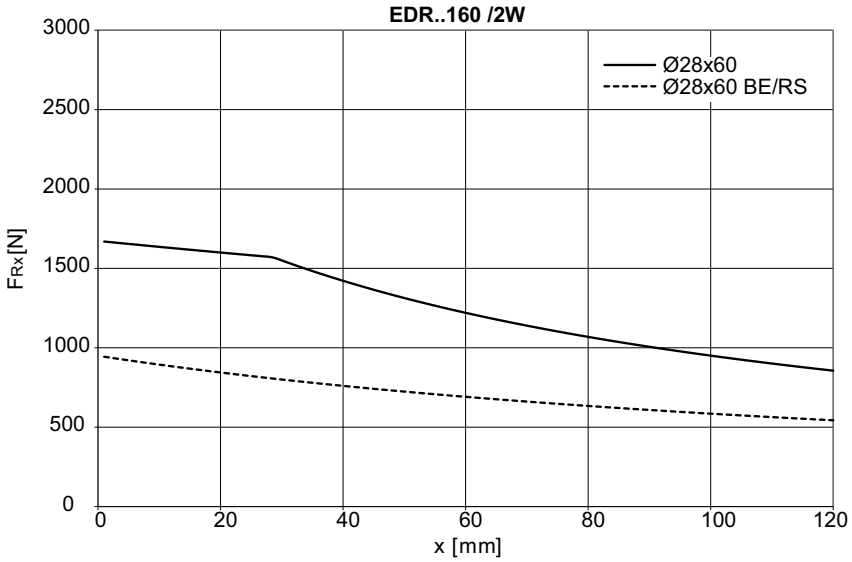
9007201891650955

Overhung load diagram of EDR..160



18014401146394635

Overhung load diagram of EDR..160 on the 2nd shaft end



9007201891656331

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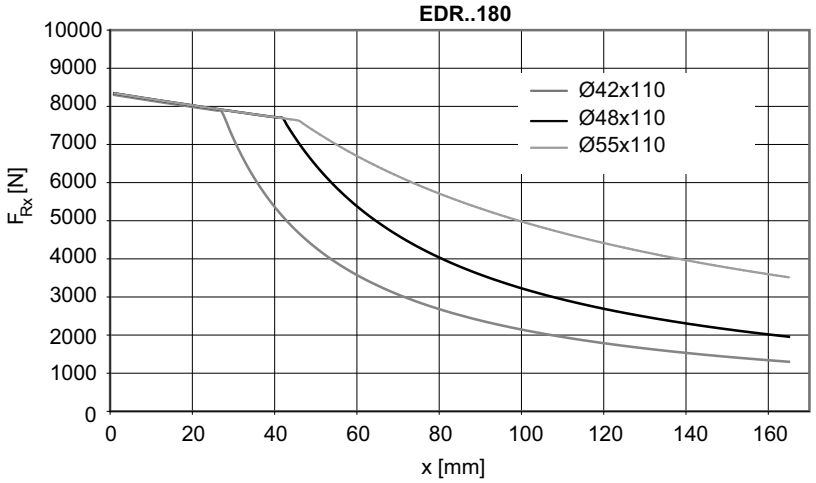
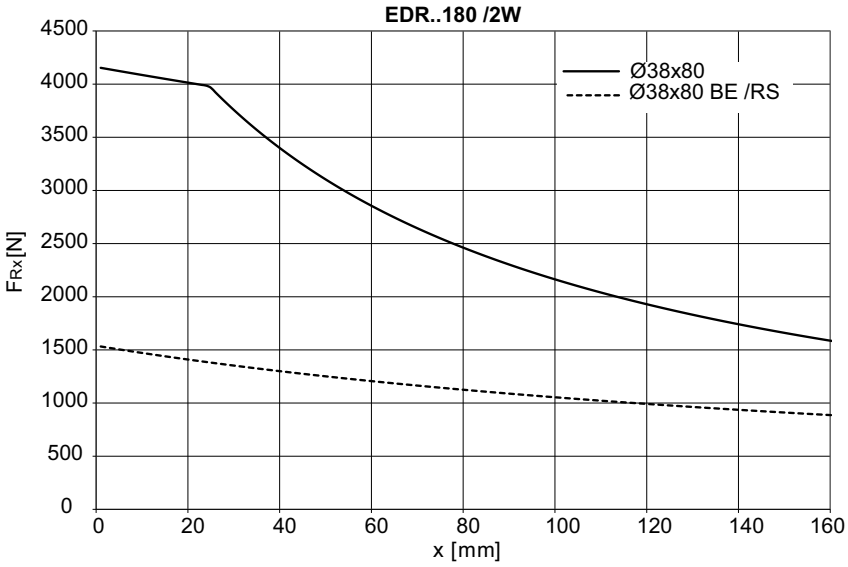
Overhung load diagram of EDR..180



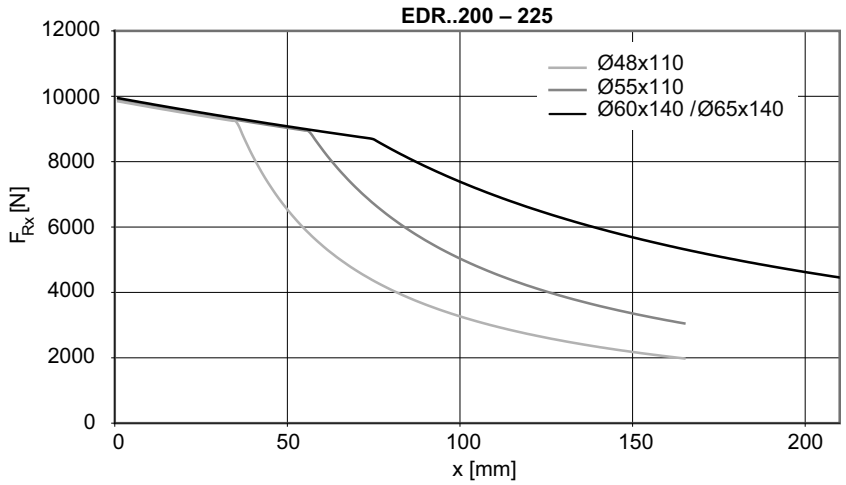
9007201891659019

Overhung load diagram of EDR..180 on the 2nd shaft end



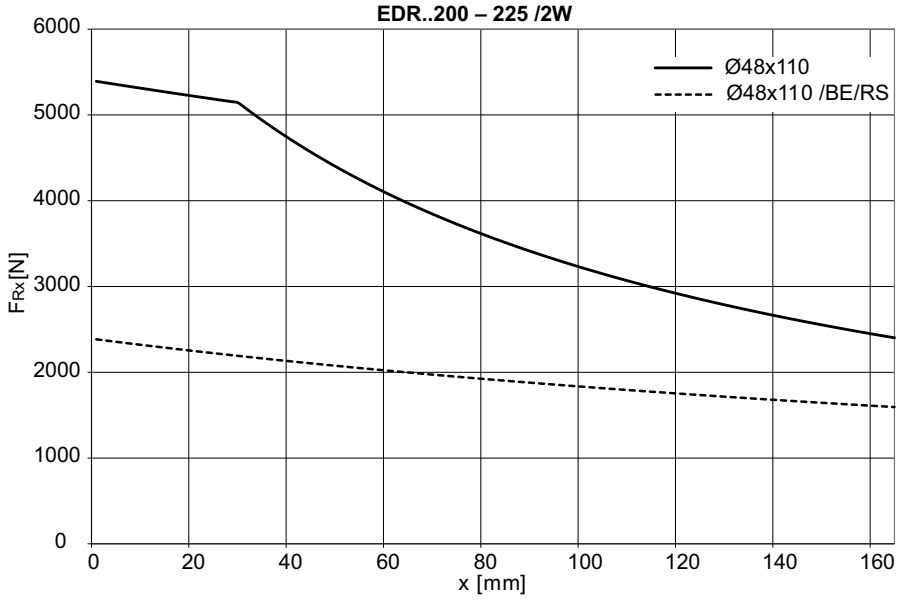
9007201891661707

Overhung load diagram of EDR..200 – 225



9007201891664395

Overhung load diagram of EDR..200 – 225 on the 2nd shaft end



9007201891667083

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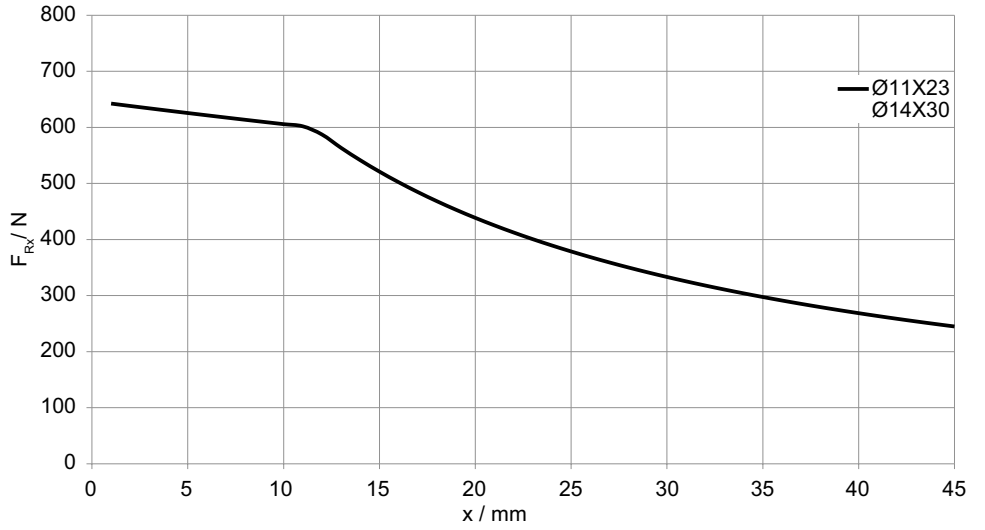
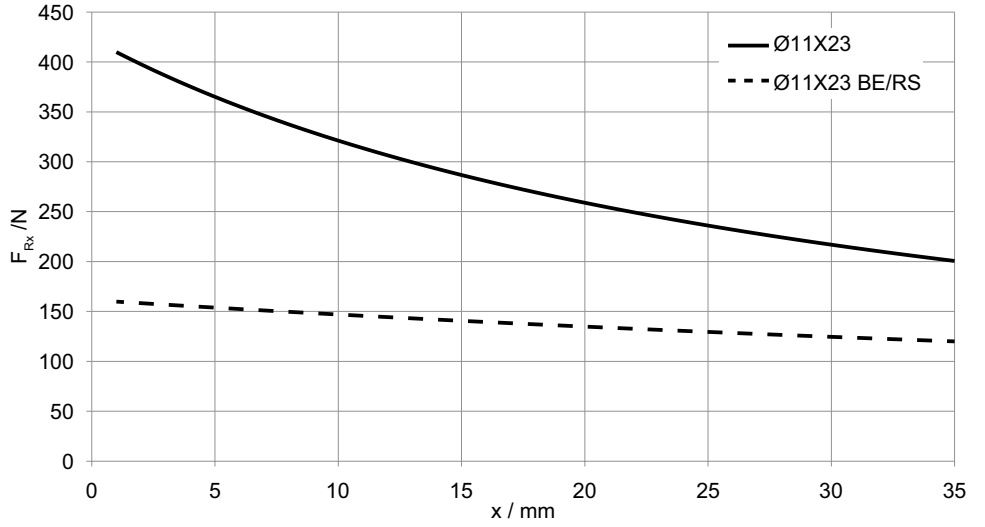
9.1.3 Overhung load diagrams of 4-pole EDRN.. motors

Overhung load diagram of EDRN63



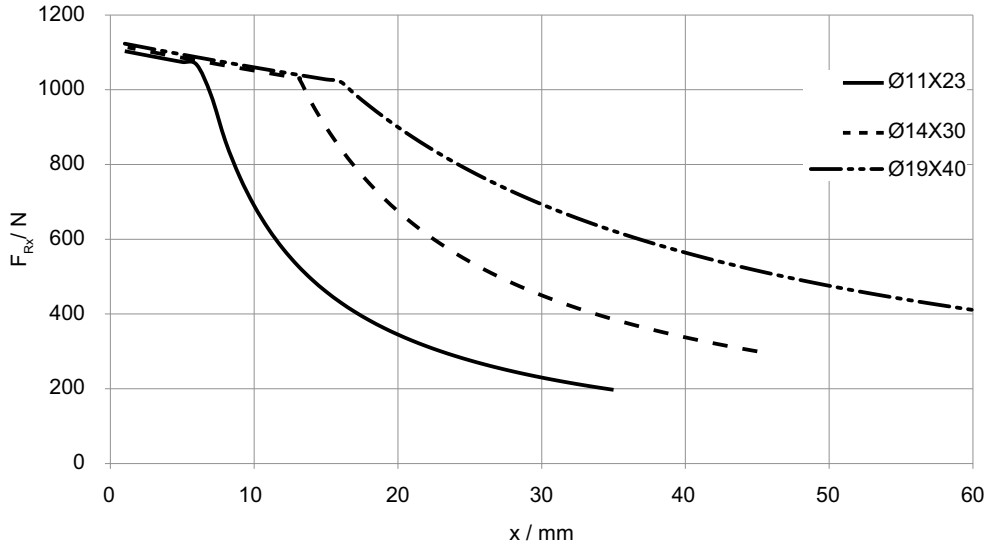
28379285259

Overhung load diagram of EDRN63 on the 2nd shaft end



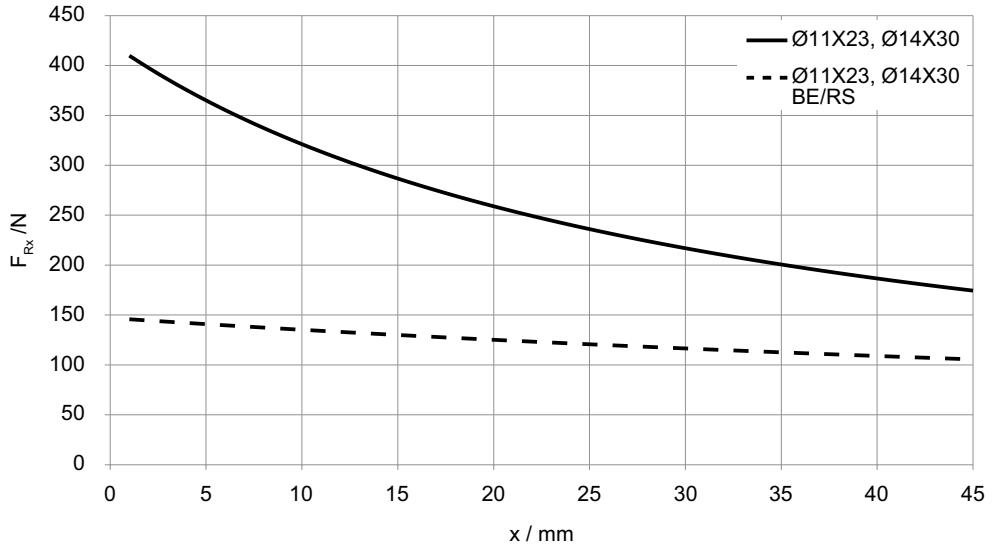
9007223611897227

Overhung load diagram of EDRN71



28379343115

Overhung load diagram of EDRN71 on the 2nd shaft end



9007223611902091

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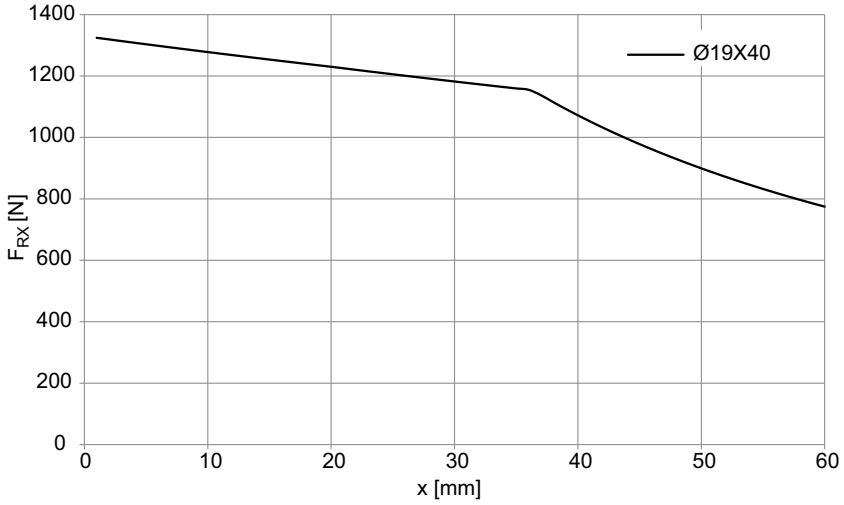
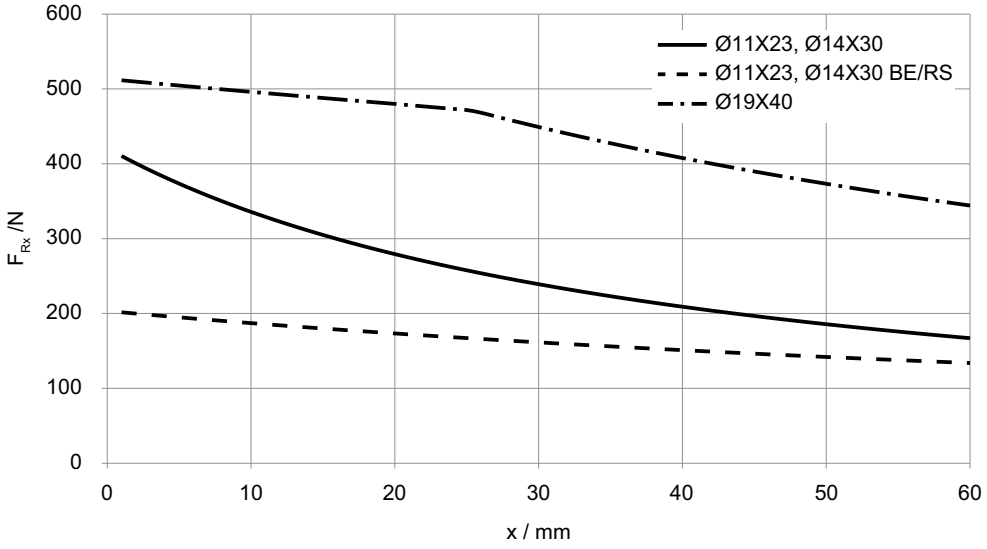
Overhung load diagram EDRN80



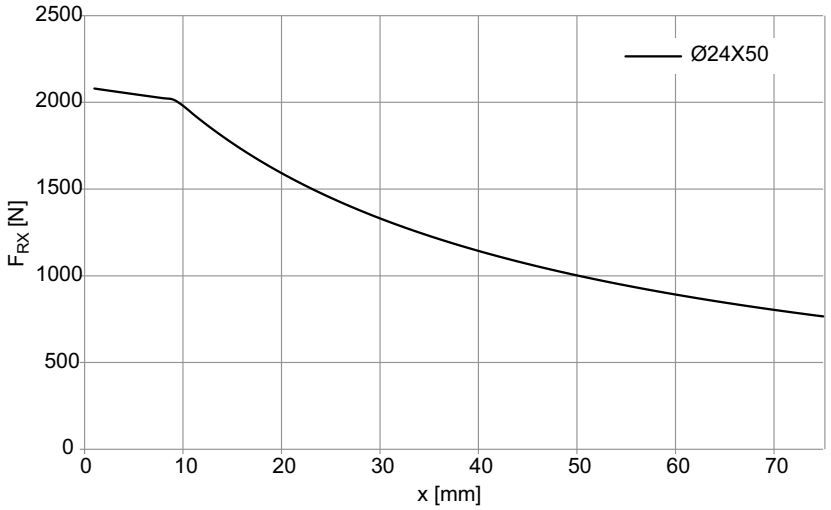
28379276939

Overhung load diagram EDRN80, 2nd shaft end



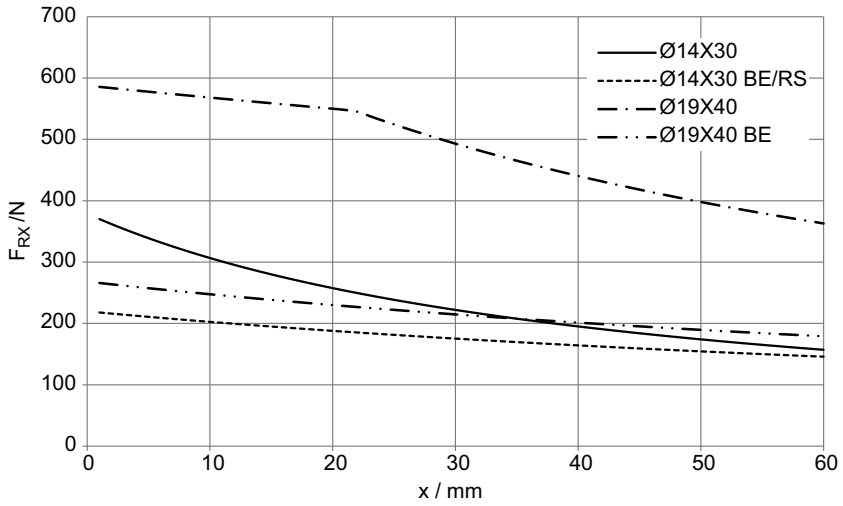
27021611226706827

Overhung load diagram EDRN90



28379349771

Overhung load diagram EDRN90, 2nd shaft end



27021611226710667

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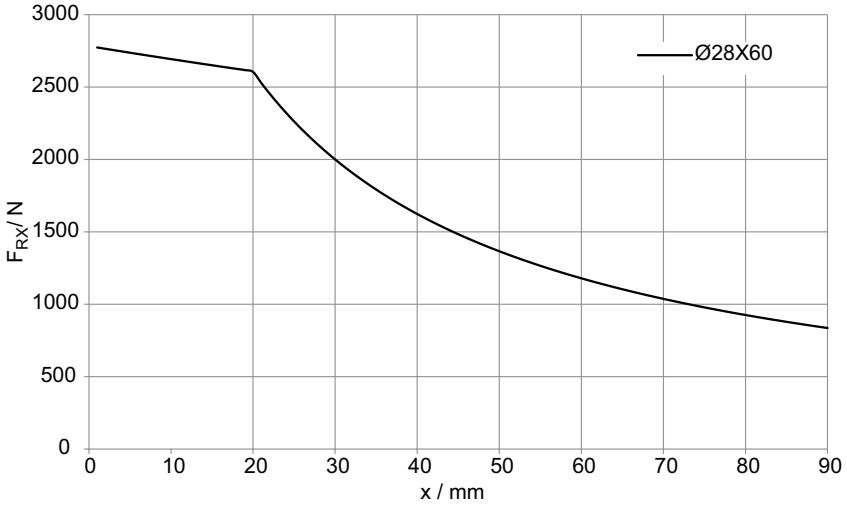
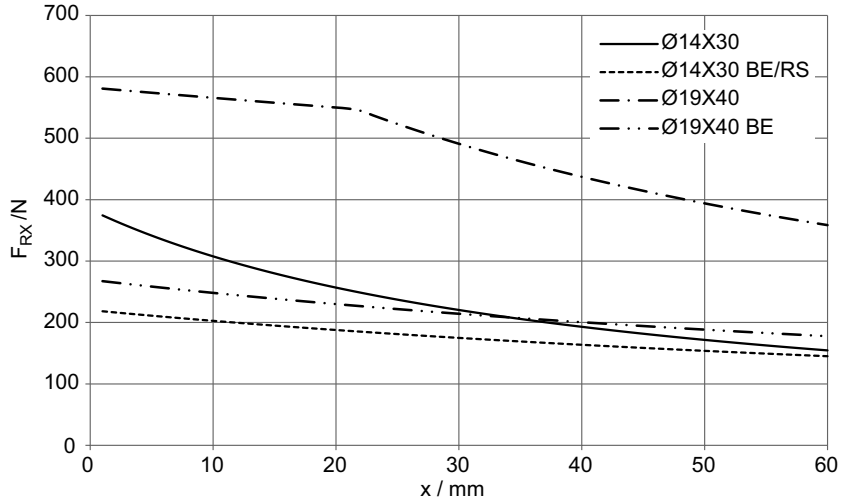
Overhung load diagram EDRN100



28379396491

Overhung load diagram EDRN100, 2nd shaft end



27021611226633867

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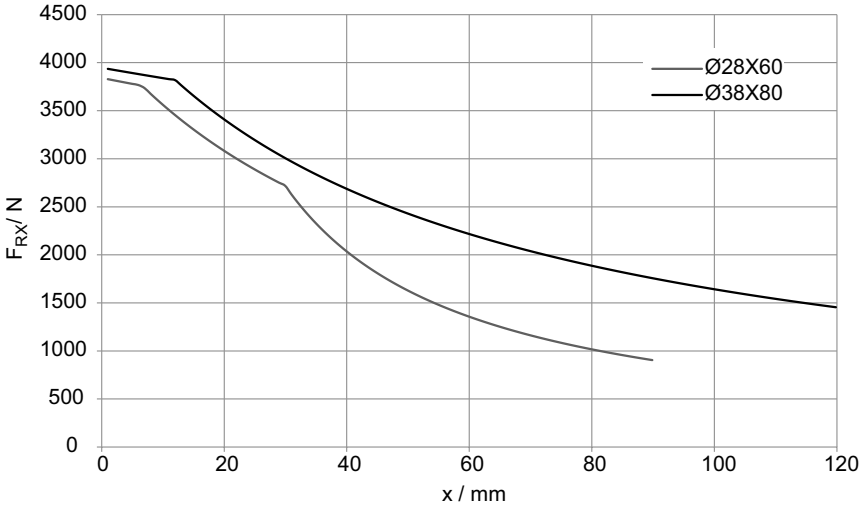
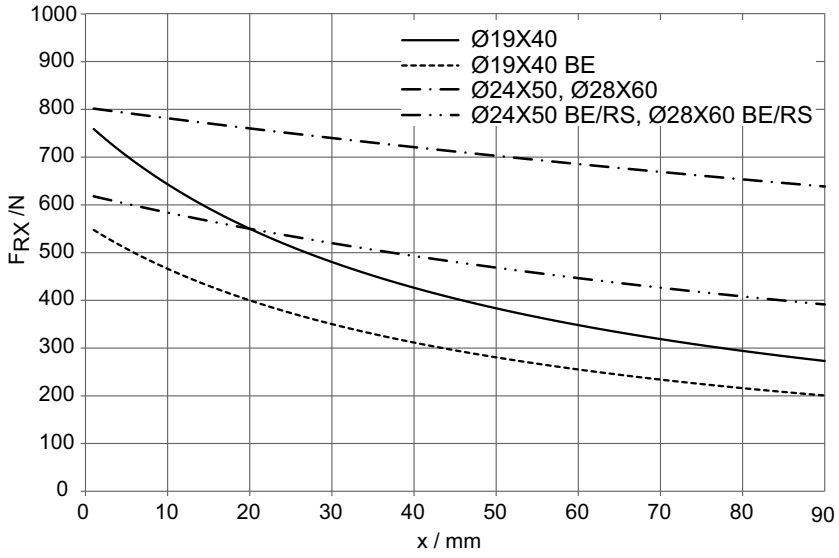
Overhung load diagram EDRN112M – EDRN132S



28379404811

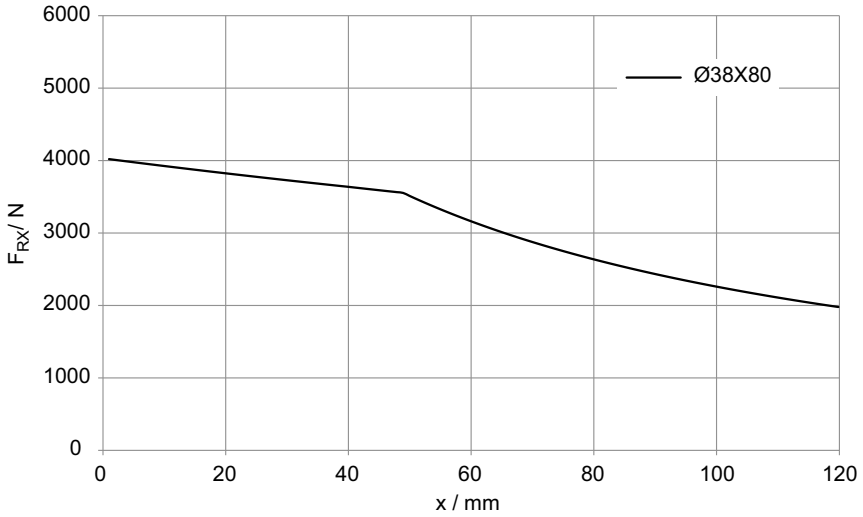
Overhung load diagram EDRN112M – EDRN132S, 2nd shaft end



27021611226637707

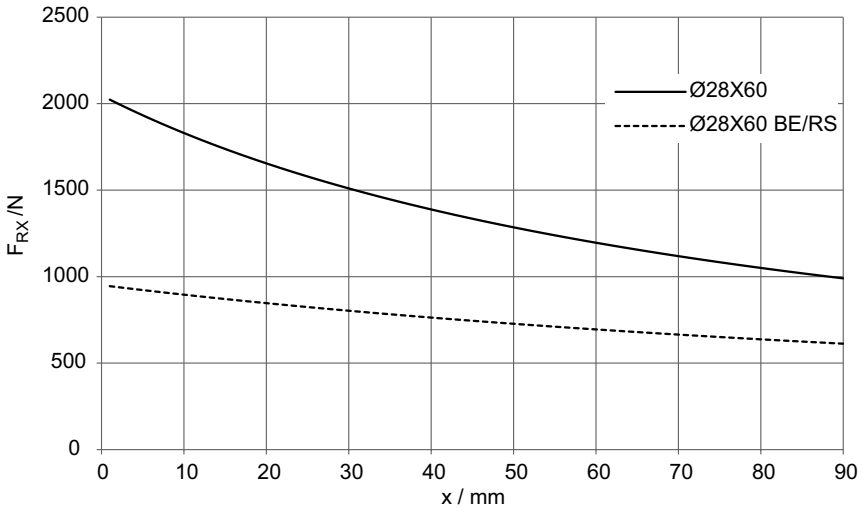
31974554/EN – 08/2024

Overhung load diagram EDRN132S – EDRN132L



28379413515

Overhung load diagram EDRN132S – EDRN132L, 2nd shaft end



27021611226679947

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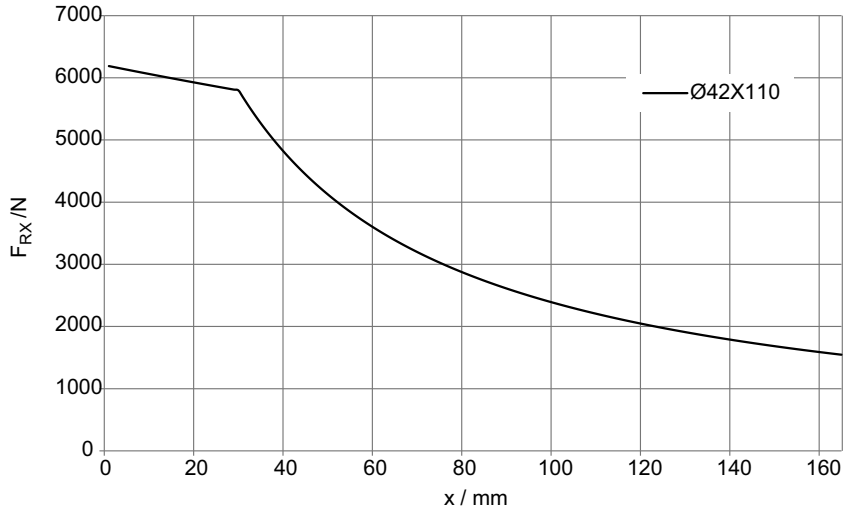
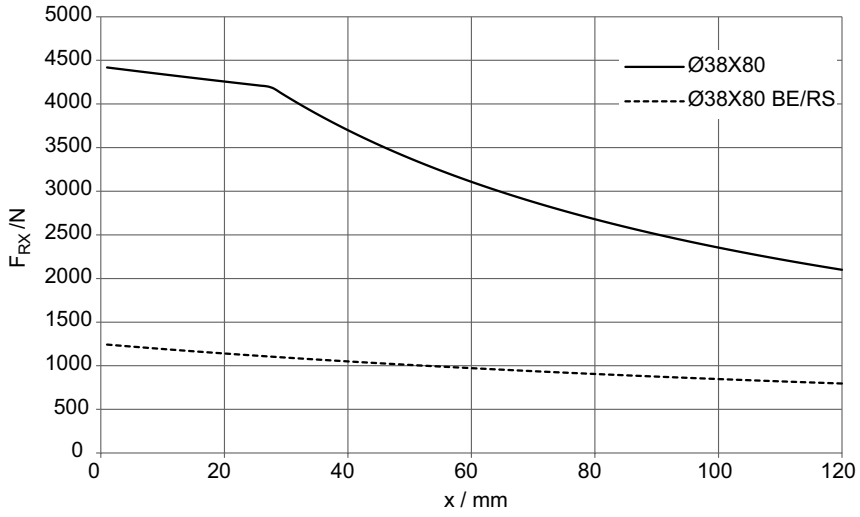
Overhung load diagram EDRN160



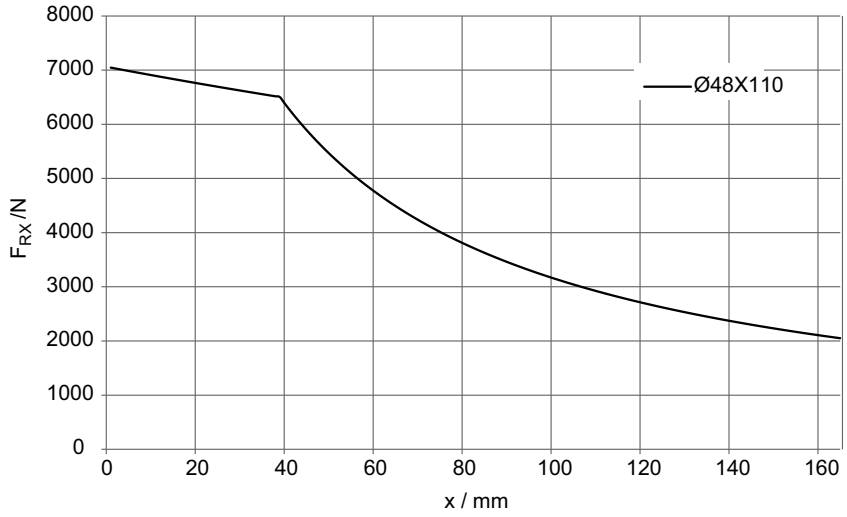
28379473419

Overhung load diagram EDRN160, 2nd shaft end



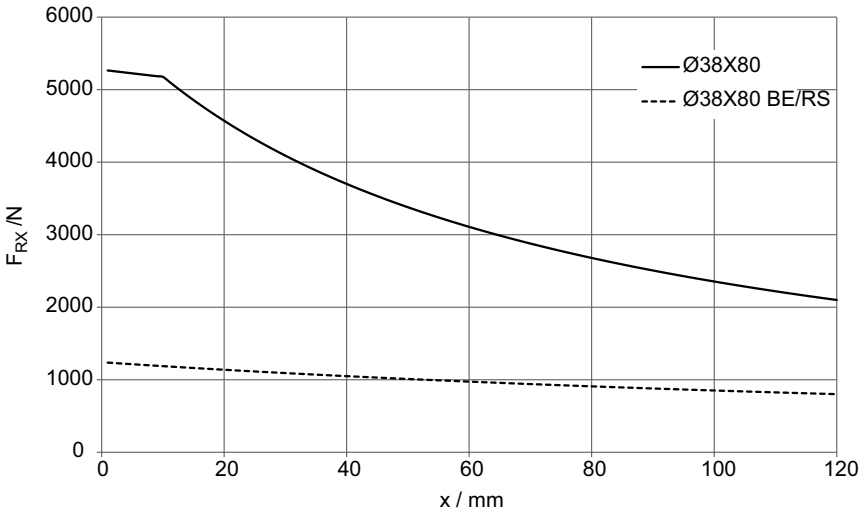
27021611226683787

Overhung load diagram EDRN180



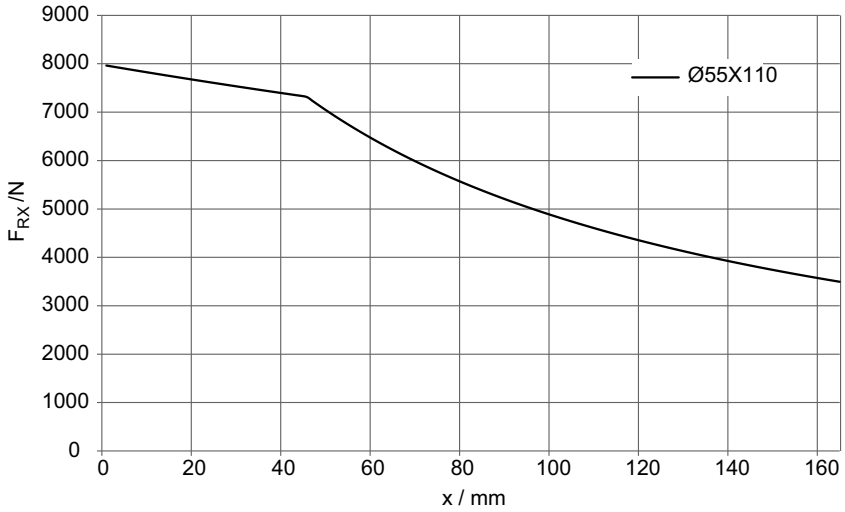
18014411971944715

Overhung load diagram EDRN180, 2nd shaft end



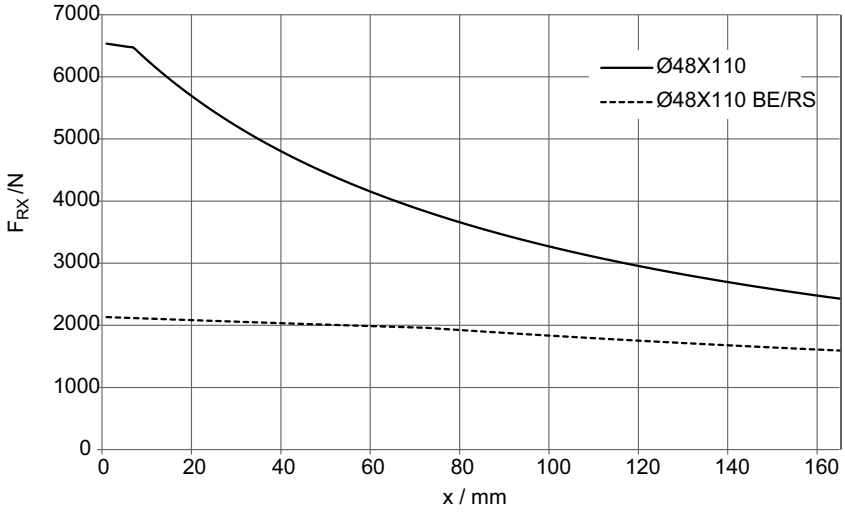
18014411971946635

Overhung load diagram EDRN200



18014411971948555

Overhung load diagram EDRN200, 2nd shaft end



18014411971950475

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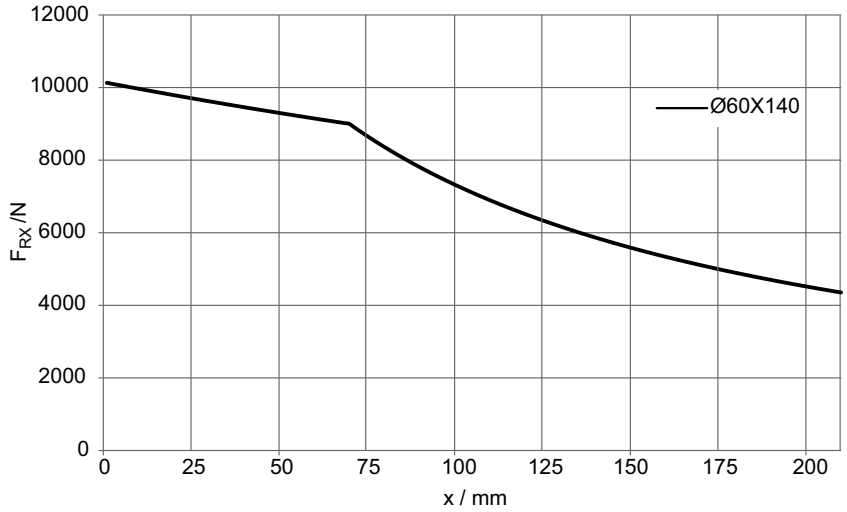
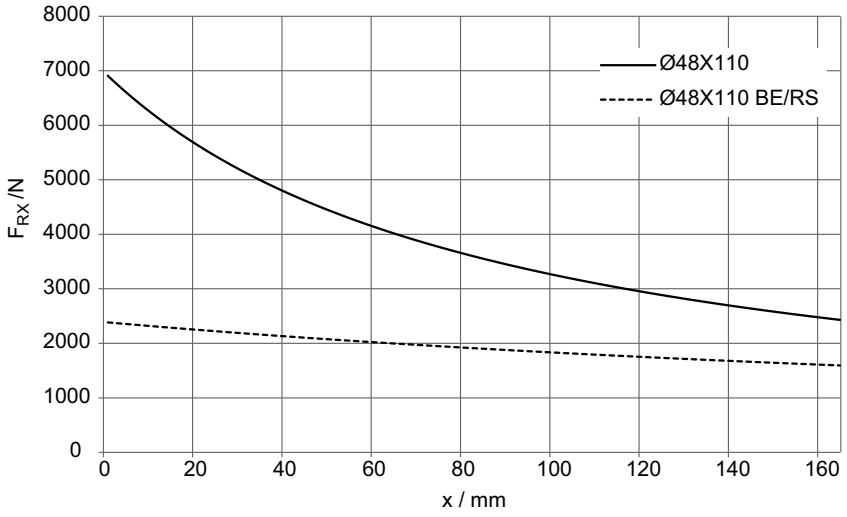
Overhung load diagram EDRN225



27021611226693387

Overhung load diagram EDRN225, 2nd shaft end



18014411971954315

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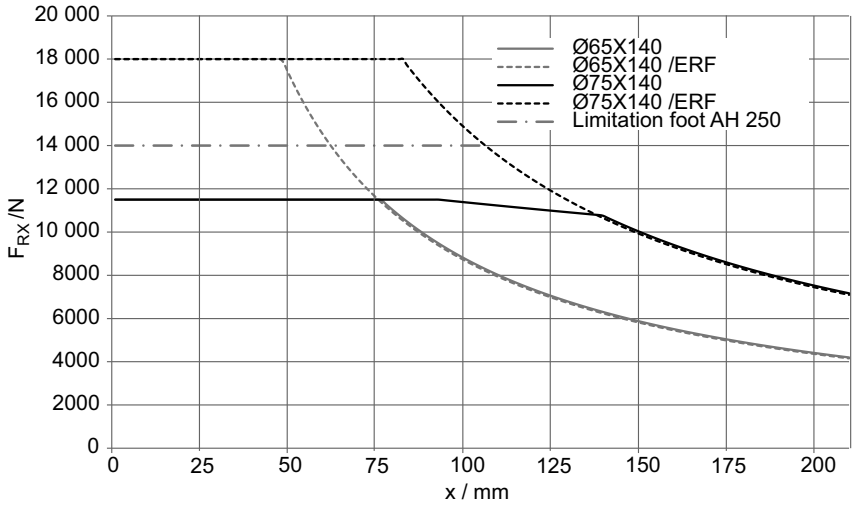
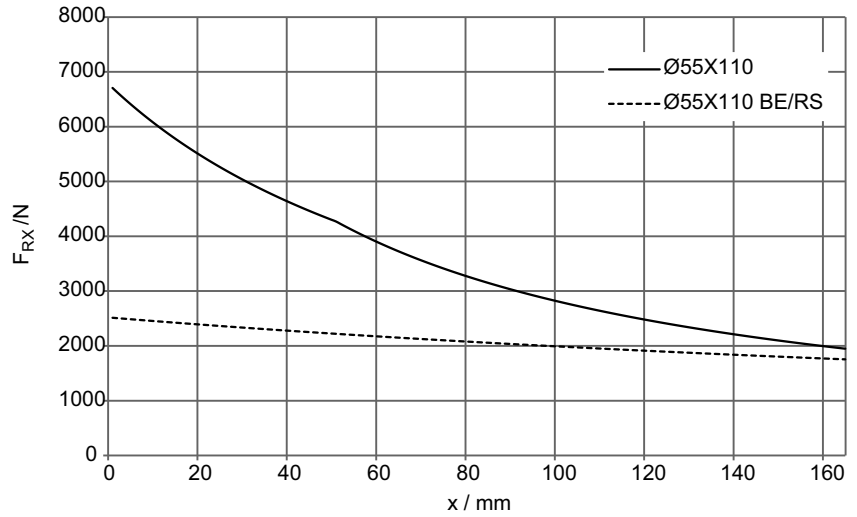
Overhung load diagram EDRN250 – EDRN280



27021611226697227

Overhung load diagram EDRN250 – EDRN280, 2nd shaft end



18014411971958155

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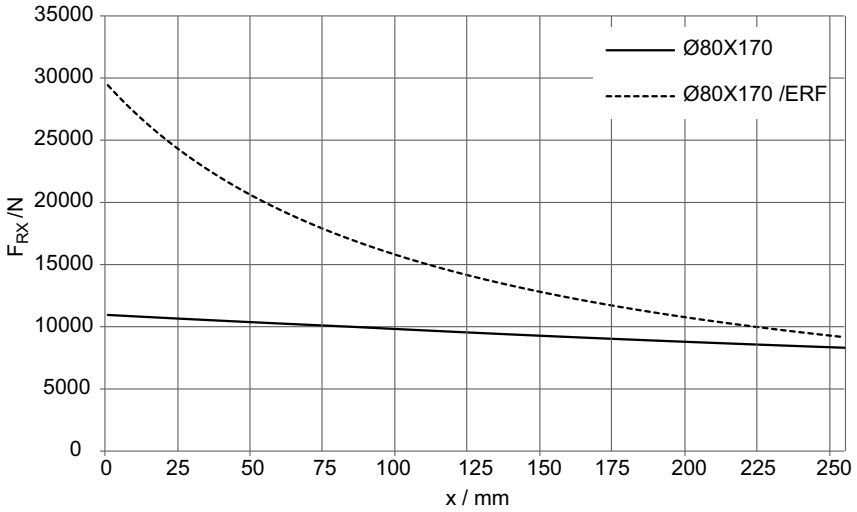
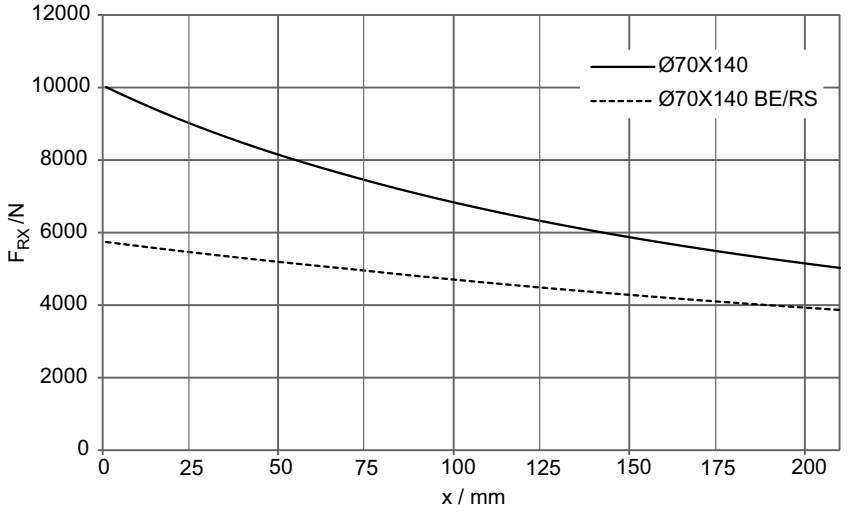
Overhung load diagram EDRN315



36028810481442059

Overhung load diagram EDRN315, 2nd shaft end



18014411971961995

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9.2 Important notes on the brake

The type of application determines what the brake is used for. The decisive factor is the switching frequency of the brake.

INFORMATION

During line operation, the braking work in case of an emergency off is the same for continuous and switching operation.

INFORMATION

In inverter operation, the emergency off braking work depends on the rotational speed.

9.2.1 Continuous operation

In S1 continuous duty, the brake is applied when the drive is switched off or in case of emergency off. The braking work may not exceed the specified maximum braking work per braking operation. The maximum braking work is specified on the nameplate as C_{max}.

A maximum of 10 emergency off braking operations are permitted per hour. Between 2 emergency off braking operations, a waiting time of minimum 6 minutes must be adhered to.

For the permitted braking work, refer to the manual "Project planning for BE.. brakes". In this manual, the values are specified as $W_{perm.,\,Z}$ for the load range R.

9.2.2 Switching operation

If the brakemotor is used in an application that requires a high starting frequency, both the motor and the brake are dimensioned accordingly. In this case, the motor must be equipped with a temperature sensor /TF.

The braking work in an emergency may not exceed the specified maximum braking work per emergency braking operation. It is listed on the nameplate.

9.2.3 Inverter operation

Due to the thermal load at low speeds, high braking torques cannot be realized within one size. Observe the permitted combinations in chapter "Brake control" (→ 🗎 169).

Observe the specifications in the manual "Project planning for BE.. brakes" during project planning.

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9.3 Braking torques

The following table shows the possible braking torque combinations for various sizes of the BE05 – 122 brake. For BE03 brakes, the braking torques of each brake are preset at the factory and cannot be adjusted.

⚠ WARNING

Insufficient or excessive braking torque due to impermissible spring pack.

Severe or fatal injuries.

- Maintenance work may only be performed by a trained specialist.
- In case of a conversion, make sure the selected spring set generates nominal braking torques that are permitted for your drive combination and are suitable for the application.
- Observe the project planning note in the manual "Project Planning for BE.. Brakes – DR.., DRN.., DR2.., EDR.., EDRN.. AC Motors – Standard Brake/Safety Brake", or contact SEW-EURODRIVE.

Brake	Part number Damping plate [718] Pole sheet [63]	Braking torque settings					
		Braking torque	Type and number of brake springs			Purchase order numbers for brake springs	
		Nm	Normal [50]	Blue [276]	White [1312]	Normal	Blue/white
BE05	13740563	5.0	3	–	–	0135017X	13741373
		3.5	–	6	–		
		2.5	–	4	–		
		1.8	–	3	–		
BE1	13740563	10	6	–	–	0135017X	13741373
		7.0	4	2	–		
		5.0	3	–	–		
BE2	13740199	20	6	–	–	13740245	13740520
		14	2	4	–		
		10	2	2	–		
		7.0	–	4	–		
		5.0	–	3	–		
BE5	13740695	55	6	–	–	13740709	13740717
		40	2	4	–		
		28	2	2	–		
		20	–	–	6		13747738
		14	–	–	4		

Brake	Part number Damping plate [718] Pole sheet [63]	Braking torque settings					
		Braking torque	Type and number of brake springs			Purchase order numbers for brake springs	
		Nm	Normal [50]	Blue [276]	White [1312]	Normal	Blue/white
BE11	13741713	110	6	–	–	13741837	13741845
		80	2	4	–		
		55	2	2	–		
		40	–	4	–		
	13741713 + 13746995	28	–	3	–		
		20	–	–	4		13747789
BE20	–	200	6	–	–	13743228	13742485
	–	150	4	2	–		
	–	110	3	3	–		
	–	80	3	–	–		
	13749307	55	–	6	–		
	13749307	40	–	4	–		
BE30	–	300	8	–	–	01874551	13744356
	–	200	4	4	–		
	–	150	4	–	–		
	–	100	–	8	–		
	13749455	75	–	6	–		
BE32	–	600	8	–	–	01874551	13744356
	–	500	6	2	–		
	–	400	4	4	–		
	–	300	4	–	–		
	–	200	–	8	–		
	13749455	150	–	6	–		
	13749455	100	–	4	–		
BE60	–	600	8	–	–	01868381	13745204
	–	500	6	2	–		
	–	400	4	4	–		
	–	300	4	–	–		
	–	200	–	8	–		
BE62	–	1200	8	–	–	01868381	13745204
	–	1000	6	2	–		
	–	800	4	4	–		
	–	600	4	–	–		
	–	400	–	8	–		

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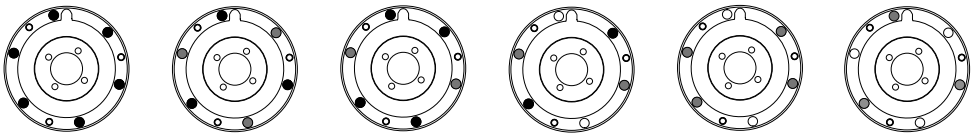
Brake	Part number Damping plate [718] Pole sheet [63]	Braking torque settings					
		Braking torque	Type and number of brake springs			Purchase order numbers for brake springs	
		Nm	Normal [50]	Blue [276]	White [1312]	Normal	Blue/white
BE120	–	1000	8	–	–	13608770	13608312
	–	800	6	2	–		
	–	600	4	4	–		
	–	400	4	–	–		
BE122	–	2000	8	–	–	13608770	13608312
	–	1600	6	2	–		
	–	1200	4	4	–		
	–	800	4	–	–		

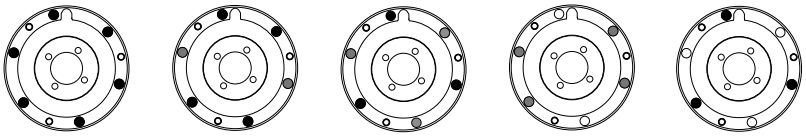
9.3.1 Brake spring layout

The following table shows the brake spring layout:

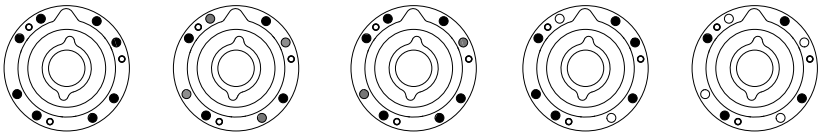
BE05 – 11:

6 springs	3 + 3 springs	4 + 2 springs	2 + 2 springs	4 springs	3 springs
					

BE20:

6 springs	4 + 2 springs	3 + 3 springs	4 springs	3 springs
				

BE30 – 122:

8 springs	4 + 4 springs	6 + 2 springs	6 springs	4 springs
				

9.4 Braking work, working air gap, and brake lining carrier thickness

If the brake is used in combination with a safety encoder, or if the brake is designed as safety brake, the maximum values for the working air gap and for the braking work until maintenance are reduced. For the new values, refer to the addendum to the operating instructions for safety brakes and safety encoders.

Brake	Braking work until maintenance[1]	Working air gap		Brake lining carrier
		min.[2]	Maximum	Minimum
	10^6 J	mm	mm	mm
BE03	200	0.25	0.65	–[3]
BE05	120	0.25	0.6	11.0
BE1	120	0.25	0.6	11.0
BE2	180	0.25	0.6	11.0
BE5	390	0.25	0.9	11.0
BE11	640	0.3	1.2	12.5
BE20	1000	0.3	1.2	12.5
BE30	1500	0.3	1.2	12.5
BE32	1500	0.4	1.2	12.5
BE60	2500	0.3	1.2	14.0
BE62	2500	0.4	1.2	14.0
BE120	390	0.6	1.2	14.0
BE122	390	0.8	1.2	14.0

1) The specified values are nominal values that were determined during rating operation. The actual braking work that can be reached before maintenance may vary depending on the actual load during operation.
2) When checking the working air gap, note: After a test run, parallelism tolerances on the brake lining carrier may give rise to deviations of ±0.15 mm.
3) The brake lining carrier cannot be replaced. When the minimum brake lining carrier thickness/maximum working air gap is reached, the brake must be replaced.

INFORMATION

In case of drives with BE32, BE62, or BE122 brake in pivoted mounting position, the specified value may be reduced by up to 50%, depending on the pivoting angle.

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9.5 Braking torque assignment

9.5.1 Motor size EDRN63 – 71

Motor	Brake	Braking torque gradation in Nm					
EDRN63 EDRN71	BE03	0.9	1.3	1.7	2.1	2.7	3.4

does not apply to inverter operation

9.5.2 Motor size EDR..71 – 100, EDRN80 – 100

Motor	Brake	Braking torque gradation in Nm										
EDR..71	BE05	1.8	2.5	3.5	5.0							
	BE1				5.0	7.0	10					
EDRE80 EDRN80	BE05	1.8	2.5	3.5	5.0							
	BE1				5.0	7.0	10					
	BE2				5.0	7.0	10	14	20			
EDRE90 EDRN90	BE1				5.0	7.0	10					
	BE2				5.0	7.0	10	14	20			
	BE5							14	20	28	40	55
EDRE100 EDRN100	BE1				5.0	7.0	10					
	BE2				5.0	7.0	10	14	20			
	BE5							14	20	28	40	55

does not apply to inverter operation

9.5.3 Motor size EDR..112 – 225, EDRN112 – 225

Motor	Brake	Braking torque gradation in Nm												
EDRE112 EDRN112	BE5	14	20	28	40	55								
	BE11			20	40	55	80	110						
EDRE132 EDRN132S	BE5	14	20	28	40	55								
	BE11			20	40	55	80	110						
EDRE160 EDRN132M/L	BE11			20	40	55	80	110						
	BE20				40	55	80	110	150	200				
EDRE180 EDRN160/ 180	BE20				40	55	80	110	150	200				
	BE30						75	100	150	200	300			
	BE32							100	150	200	300	400	500	600

does not apply to inverter operation

9.5.4 Motor size EDRE200 – 225, EDRN200 – 315

Motor	Brake	Braking torque gradation in Nm												
EDRE200 EDRE225 EDRN200 EDRN225	BE30	75	100	150	200	300								
	BE32		100	150	200	300	400	500	600					
	BE60				200	300	400	500	600					
	BE62						400		600	800	1000	1200		
EDRN250/280	BE60				200	300	400	500	600					
	BE62						400		600	800	1000	1200		
	BE120						400		600	800	1000			
	BE122									800		1200	1600	2000
EDRN315	BE120						400		600	800	1000			
	BE122									800		1200	1600	2000

does not apply to inverter operation

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9.6 Operating currents

9.6.1 General information on determining operating currents

The tables in this chapter list the operating currents of BE.. brakes at different voltages.

The acceleration current I_B (= inrush current) flows only for a short time (approx. 160 ms for BE03 – BE62, 400 ms for BE60 – BE122 with BMP3.1 brake control) when the brake is released.

The values for the holding currents I_H are rms values. Only use current measurement units that are designed to measure rms values.

INFORMATION

The following operating currents and power consumption values are nominal values. They refer to a coil temperature of +20 °C.

Operating currents and power consumption usually decrease during normal operation due to heating of the brake coil.

Note that the actual operating currents can be higher by up to 25% depending on the ambient temperature and with coil temperatures below +20 °C.

9.6.2 Key

The following tables list the operating currents of the brakes at different voltages.

The following values are specified:

- P_B Nominal value of the electric power consumption in the brake coil in watt.
- U_N Nominal voltage (rated voltage range) of the brake in V (AC).
- I_H Nominal holding current in A (AC). rms value of the braking current in the supply cable to the SEW-EURODRIVE brake control
- I_B Acceleration current in A (AC) when operated with SEW-EURODRIVE brake control for high-speed excitation.
- I_B/I_H Inrush current ratio ESV.

9.6.3 Calculation rules for nominal operating currents and nominal coil power

Depending on the drive design, SEW-EURODRIVE may reduce the power of the brake coil to achieve lower self-heating. The following table gives an overview of possible designs. The nominal power applicable for the application and the resulting nominal currents can be calculated using the table values for rated operation and the specified adjustment factors.

Brake coil design	Adjustment factor for power and current	EDR../EDRN..
Rated power	Table values for currents and power without adjustment	Explosion-protected drives according to HazLoc-NA® (line operation)
1st reduced power	Table values for currents and power × 0.79	Explosion-protected drives according to HazLoc-NA® (inverter operation)

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9.6.4 BE03, BE05, BE1, BE2 brakes

	BE03	BE05, BE1	BE2
Nominal power brake coil in W	25	30	41
Inrush current ratio ESV	4	4	4

Nominal voltage (rated voltage range) V_N	BE03	BE05, BE1	BE2
	I_H	I_H	I_H
AC V	AC A	AC A	AC A
120 (111 – 123)	0.41	0.45	0.59
184 (174 – 193)	0.27	0.29	0.38
208 (194 – 217)	0.24	0.26	0.34
230 (218 – 243)	0.22	0.23	0.30
254 (244 – 273)	0.20	0.20	0.27
290 (274 – 306)	0.18	0.18	0.24
330 (307 – 343)	0.16	0.16	0.21
360 (344 – 379)	0.13	0.14	0.19
400 (380 – 431)	0.11	0.13	0.17
460 (432 – 484)	0.10	0.11	0.15
500 (485 – 542)	0.09	0.10	0.14
575[1)] (543 – 600)	0.08	0.09	0.12

1) Only for line-operated motors.

9.6.5 Brakes BE5, BE11, BE20, BE30, BE32, BE60, BE62

	BE5	BE11	BE20	BE30, BE32	BE60, BE62
Nominal power brake coil in W	50	70	95	120	195
Inrush current ratio ESV	5.9	6.6	7.5	8.5	9.2

Nominal voltage (rated voltage range) V_N	BE5	BE11	BE20	BE30, BE32	BE60, BE62
	I_H	I_H	I_H	I_H	I_H
AC V	AC A	AC A	AC A	AC A	AC A
60 (57 – 63)	1.28	2.05	2.55	–	–
120 (111 – 123)	0.64	1.04	1.28	1.66	–
184 (174 – 193)	0.41	0.66	0.81	1.05	–
208 (194 – 217)	0.37	0.59	0.72	0.94	1.50
230 (218 – 243)	0.33	0.52	0.65	0.84	1.35
254 (244 – 273)	0.29	0.47	0.58	0.75	1.20
290 (274 – 306)	0.26	0.42	0.51	0.67	1.12
330 (307 – 343)	0.23	0.37	0.46	0.59	0.97
360 (344 – 379)	0.21	0.33	0.41	0.53	0.86

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Nominal voltage (rated voltage range) V_N	BE5	BE11	BE20	BE30, BE32	BE60, BE62
	I_H	I_H	I_H	I_H	I_H
AC V	AC A	AC A	AC A	AC A	AC A
400 (380 – 431)	0.18	0.30	0.37	0.47	0.77
460 (432 – 484)	0.16	0.27	0.33	0.42	0.68
500 (485 – 542)	0.15	0.24	0.29	0.38	0.60
575[1] (543 – 600)	0.13	0.22	0.26	0.34	0.54

1) Only for line-operated motors.

9.6.6 Brake BE120, BE122

	BE120, BE122
Nominal power brake coil in W	220
Inrush current ratio ESV	6

Nominal voltage (rated voltage range) V_N	BE120, BE122
	I_H
AC V	AC A
230 (218 – 243)	1.45
254 (244 – 273)	1.30
290 (274 – 306)	1.16
360 (344 – 379)	0.92
400 (380 – 431)	0.82
460 (432 – 484)	0.73
500 (485 – 542)	0.65
575[1] (543 – 600)	0.58

1) Only for line-operated motors.

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9.7 Resistors

The depicted values apply to the standard temperature range of -20 to +40 °C. Deviating resistances may occur in other temperature ranges, especially in case of drives with permitted temperature above +60 °C, or in case of non-ventilated drives, due to modified winding configurations. The values are available from SEW-EURODRIVE on request.

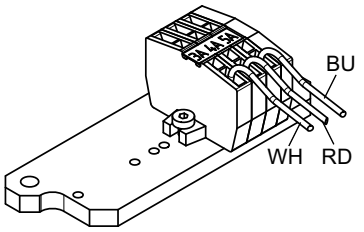
9.7.1 Resistance measurement for BE03 – BE62

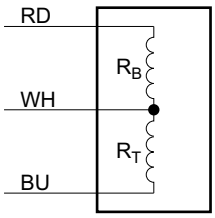
INFORMATION

The colored cores of the brake coil must be removed from their terminals for the resistance measurement; otherwise, this could lead to incorrect measurement results.

Brake control system in the control cabinet

The following figure shows the brake coil resistance measurement at the auxiliary terminal strip in the terminal box when the brake controller is installed in the control cabinet:



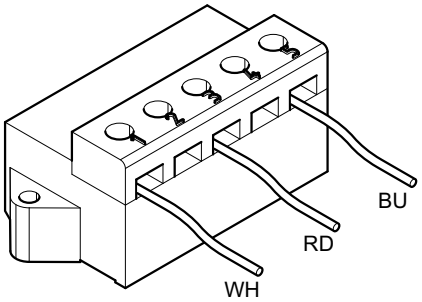


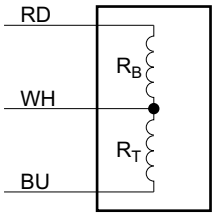
R_B Accelerator coil resistance at 20 °C in Ω
R_T Coil section resistance at 20 °C in Ω

RD Red
WH White
BU Blue

Brake controller in the terminal box

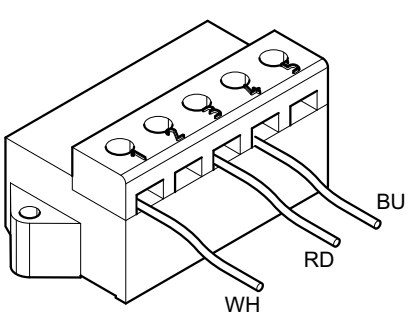
The following figure shows the resistance measurement when the brake controller is installed in the terminal box (cut-off in the AC circuit):





9007199497350795

The following figure shows the resistance measurement when the brake controller is installed in the terminal box (cut-off in the DC and AC circuit):



18014398752093451

R_B	Accelerator coil resistance at 20 °C in Ω	RD	Red
R_T	Coil section resistance at 20 °C in Ω	WH	White
		BU	Blue

Calculation rules for resistance values

Brake coil design	Resistance adjustment factor	EDR../EDRN..
Rated power	Table values for resistance without adjustment	Explosion-protected drives according to HazLoc-NA® (line operation)
1st reduced power	Table values for resistance × 1.265	Explosion-protected drives according to HazLoc-NA® (inverter operation)

9.7.2 BE03, BE05, BE1, BE2 brakes

	BE03	BE05, BE1	BE2
Nominal power brake coil in W	25	32	43
Inrush current ratio ESV	4	4	4

Nominal voltage (rated voltage range) V_N	BE03		BE05, BE1		BE2	
AC V	**R_B**	**R_T**	**R_B**	**R_T**	**R_B**	**R_T**
60 (57 – 63)	6	20	4.85	14.8	3.60	11.0
120 (111 – 123)	25	78	19.4	59.0	14.4	44.0
184 (174 – 193)	62	191	48.5	148	36.0	110
208 (194 – 217)	78	241	61.0	187	45.5	139
230 (218 – 243)	96	296	77.0	235	58.0	174
254 (244 – 273)	119	367	97.0	296	72.0	220
290 (274 – 306)	150	462	122	372	91	275
330 (307 – 343)	191	589	154	469	115	350
360 (344 – 379)	247	762	194	590	144	440
400 (380 – 431)	326	1004	244	743	182	550

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Nominal voltage (rated voltage range) V_N	BE03		BE05, BE1		BE2	
AC V	R_B	R_T	R_B	R_T	R_B	R_T
460 (432 – 484)	412	1270	308	935	230	690
500 (485 – 542)	512	1580	387	1178	290	870
575 (543 – 600)	645	1989	488	1483	365	1100

9.7.3 Brakes BE5, BE11, BE20, BE30, BE32, BE60, BE62

	BE5	BE11	BE20	BE30, BE32	BE60, BE62
Nominal power brake coil in W	49	77	95	120	195
Inrush current ratio ESV	5.9	6.6	7.5	8.5	9.2

Nominal voltage (rated voltage range) V_N	BE5		BE11		BE20		BE30, BE32		BE60, BE62	
AC V	R_B	R_T	R_B	R_T	R_B	R_T	R_B	R_T	R_B	R_T
120 (111 – 123)	8.70	42.0	4.90	28.0	3.4	22.8	2.3	17.2	–	–
184 (174 – 193)	22.0	105	12.3	70	8.5	57.2	5.8	43.2	–	–
208 (194 – 217)	27.5	132	15.5	88	10.7	72.0	7.3	54.4	4.0	32.6
230 (218 – 243)	34.5	166	19.5	111	13.5	90.6	9.2	68.5	5.0	41.0
254 (244 – 273)	43.5	210	24.5	139	17.0	114.1	11.6	86.2	6.3	51.6
290 (274 – 306)	55.0	265	31.0	175	21.4	143.6	14.6	108.6	7.9	65.0
330 (307 – 343)	69.0	330	39.0	220	26.9	180.8	18.4	136.7	10.0	81.8
360 (344 – 379)	87.0	420	49	280	33.2	223	23.1	172.1	12.6	103
400 (380 – 431)	110	530	62	350	42.7	287	29.1	216.6	15.8	130
460 (432 – 484)	138	660	78	440	53.2	357	35.1	261.8	19.9	163
500 (485 – 542)	174	830	98	550	67.7	454	45.2	336.4	25.1	205
575 (543 – 600)	220	1050	123	700	83.5	559	56.3	419.2	31.6	259

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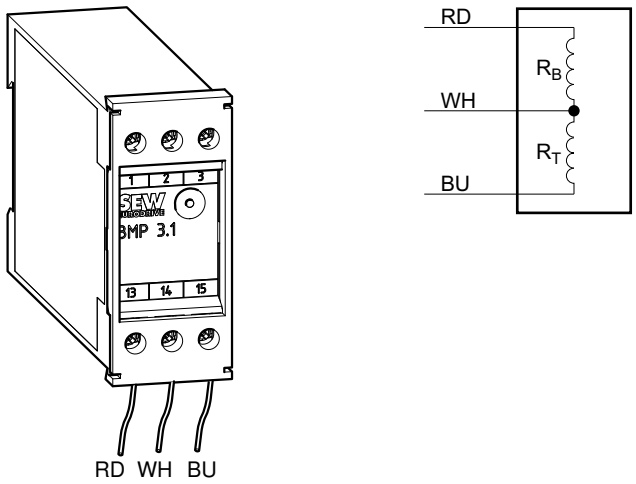
9.7.4 Resistance measurement BE120, BE122

The following illustration shows how to measure resistance with BMP 3.1.



BS	Accelerator coil	RD	Red
TS	Coil section	WH	White
R_B	Accelerator coil resistance at 20 °C in Ω	BU	Blue
R_T	Coil section resistance at 20 °C in Ω		
V_N	Nominal voltage (rated voltage range)		

INFORMATION

When measuring the resistance of the coil section (R_T) or the acceleration coil (R_B), remove the white conductor from the brake rectifier; if it remains connected, the internal resistance of the brake rectifier will cause erroneous results.

9.7.5 Brake BE120, BE122

	BE120, BE122
Nominal power brake coil in W	220
Inrush current ratio ESV	6

Nominal voltage (rated voltage range) V_N	BE120, BE122	
AC V	**R_B**	**R_T**
230 (218 – 243)	7.6	37.9
254 (244 – 273)	9.6	47.7
290 (274 – 306)	12.1	60.1
360 (344 – 379)	19.2	95.2
400 (380 – 431)	24.2	119.9
460 (432 – 484)	30.4	150.9
500 (485 – 542)	38.3	189.9
575 (543 – 600)	48.2	239.1

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9.8 Brake control

INFORMATION

Do not use a brake control in the terminal box when the voltage exceeds 500 V.

9.8.1 Installation in the control cabinet

The table below shows the standard and optional combinations of brakes and brake rectifiers for installation in control cabinets:

	BE03 with EDRN63	BE03	BE05	BE1	BE2	BE5
BME..	x	•	•	•	•	•
BMH..	•	•	•	•	•	•
BMP..	•	•	•	•	•	•
BMK..	•	•	•	•	•	•

	BE11	BE20	BE30, BE32	BE60, BE62	BE120, BE122
BME..	•	•	•	•	–
BMH..	•	•	•	–	–
BMP..	•	•	•	•	x
BMK..	•	•	•	–	–

• Can be selected
x Series
– Not permitted

Control cabinet

The following tables list the technical data of brake control systems for installation in the control cabinet. The different housings have different colors (= color code) to make them easier to distinguish.

BME..

Half-wave rectifier with electronic switching.

Type	Nominal voltage	Nominal output current I_L	Part number	Color code
BME1.4	AC 230 – 575 V	DC 1.0 A	08298319	Vermilion
BME1.5	AC 150 – 500 V	DC 1.5 A	08257221	Vermilion
BME3	AC 42 – 150 V	DC 3.0 A	0825723X	Light blue

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BMH..

Half-wave rectifier with electronic switching and heating function

Type	Nominal voltage	Nominal output current I_L	Part number	Color code
BMH1.4	AC 230 – 575 V	DC 1.0 A	08298343	Signal green
BMH1.5	AC 150 – 500 V	DC 1.5 A	0825818X	Signal green
BMH3	AC 42 – 150 V	DC 3.0 A	08258198	Zinc yellow

BMP..

Half-wave rectifier with electronic switching and integrated voltage relay for cut-off in the DC circuit.

Type	Nominal voltage	Nominal output current I_L	Part number	Color code
BMP1.4	AC 230 – 575 V	DC 1.0 A	08298327	Light gray
BMP1.5	AC 150 – 500 V	DC 1.5 A	08256853	Light gray
BMP3	AC 42 – 150 V	DC 3.0 A	08265666	Light green
BMP3.1	AC 230 – 575 V	DC 2.8 A	08295077	–

BMK..

Half-wave rectifier with electronic switching, DC 24 V control input, and cut-off in the DC circuit.

Type	Nominal voltage	Nominal output current I_L	Part number	Color code
BMK1.4	AC 230 – 575 V	DC 1.0 A	08298335	Water blue
BMK1.5	AC 150 – 500 V	DC 1.5 A	08264635	Water blue
BMK3	AC 42 – 150 V	DC 3.0 A	08265674	Light pink

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9.8.2 Installation in the motor terminal box

INFORMATION

Do not use a brake control in the terminal box when the voltage exceeds 500 V.

The table below shows the standard and optional combinations of brakes and brake rectifiers for installation in the wiring space of the motor:

	BE03 with EDRN63	BE03	BE05	BE1	BE2	BE5
BGE..	-	x	x	x	x	x

	BE11	BE20	BE30, BE32	BE60, BE62	BE120, BE122
BGE..	x	x	x	x	–

• Can be selected
x Series
– Not permitted

Motor terminal box

The following table shows the technical data of the brake controls for installation in the terminal box. The different housings have different colors (= color code) to make them easier to distinguish.

BGE..

Half-wave rectifier with electronic switching.

Type	Nominal voltage	Nominal output current I_L	Part number	Color code
BGE1.5	AC 150 – 500 V	DC 1.5 A	08253854	Vermilion
BGE3	AC 42 – 150 V	DC 2.8 A	08253870	Light blue

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9.8.3 Parallel operation of several brakes with one controller

For EDR../EDRN.. motors, parallel voltage supply of two or more brakes via a single brake controller is not permitted due to the stricter requirements of explosion protection. This means a separate brake controller must be used for each brake.

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9.9 Permitted rolling bearings

9.9.1 Rolling bearing types for EDR..71 – 225 motors

Motors	A-side bearing		B-side bearing	
	AC motor	Gearmotor	AC motor	Brakemotor
EDR..71	6204-2Z-C3	6303-2Z-C3	6203-2Z-C3	6203-2RS-C3
EDR..80	6205-2Z-C3	6304-2Z-C3	6304-2Z-C3	6304-2RS-C3
EDR..90 – 100	6306-2Z-C3		6205-2Z-C3	6205-2RS-C3
EDR..112 – 132	6308-2Z-C3		6207-2Z-C3	6207-2RS-C3
EDR..160	6309-2Z-C3		6209-2Z-C3	6209-2RS-C3
EDR..180	6312-2Z-C3		6213-2Z-C3	6213-2RS-C3
EDR..200 – 225	6314-2Z-C3		6314-2Z-C3	6314-2RS-C3

9.9.2 Rolling bearing types for EDRN63 – 280 motors

Motors	A-side bearing		B-side bearing	
	AC motor	Gearmotor	AC motor	Brakemotor
EDRN63	6202-2Z-C3	6303-2Z-C3	6203-2Z-C3	6203-2Z-C3
EDRN71	6204-2Z-C3	6303-2Z-C3	6203-2Z-C3	6203-2Z-C3
EDRN80	6205-2Z-C3	6304-2Z-C3	6304-2Z-C3	6304-2RS-C3
EDRN90	6305-2Z-C3		6205-2Z-C3	6205-2RS-C3
EDRN100	6306-2Z-C3		6205-2Z-C3	6205-2RS-C3
EDRN112	6308-2Z-C3		6207-2Z-C3	6207-2RS-C3
EDRN132S	6308-2Z-C3	6308-2Z-C3	6207-2Z-C3	6207-2RS-C3
EDRN132M/L	6308-2Z-C3	6309-2Z-C3	6209-2Z-C3	6209-2RS-C3
EDRN160	6310-2Z-C3	6312-2Z-C3	6212-2Z-C3	6212-2RS-C3
EDRN180	6311-2Z-C3	6312-2Z-C3	6212-2Z-C3	6212-2RS-C3
EDRN200	6312-2Z-C3	6314-2Z-C3	6314-2Z-C3	6314-2RS-C3
EDRN225	6314-2Z-C3		6314-2Z-C3	6314-2RS-C3
EDRN250 – 280	6317-2Z-C4		6315-2Z-C3	

9.9.3 Rolling bearing types for EDRN315 motors

Motors	A-side bearing		B-side bearing	
	AC motor	Gearmotor	AC motor	Gearmotor
EDRN315S	6319-C3	6319-C3	6319-C3	6319-C3
EDRN315M/ME				
EDRN315L	6319-C3	6322-C3	6319-C3	6322-C3
EDRN315H				

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9.9.4 Motors with reinforced bearings /ERF for EDRN250 – 315 motors

Motors	A-side bearing	B-side bearing	
		AC motor	Gearmotor
EDRN250 – 280	NU317E-C3	6315-C3	
EDRN315S	NU319E	6319-C3	6319-C3
EDRN315M/ME			
EDRN315L			6322-C3
EDRN315H			

9.9.5 Current-insulated rolling bearings /NIB for EDR..200 – 225, EDRN200 – 315 motors

Motors	B-side bearing	
	AC motor	Gearmotor
EDR..200 – 225, EDRN200 – 225	6314-C3-EI	6314-C3-EI
EDRN250 – 280	6315-Z-C3-EI	6315-Z-C3-EI
EDRN315S	6319-C3-EI	6319-C3-EI
EDRN315M/ME		
EDRN315L		6322-C3-EI
EDRN315H		

9.9.6 Motors with relubrication /NS for EDRN225 – 315 motors

Motors	A-side bearing		B-side bearing	
	AC motor	Gearmotor	AC motor	Gearmotor
EDRN225	6314-C3	6314-C3	6314-C3	6314-C3
EDRN250 – 280	6317-C4	6317-C4	6315-C3	6315-C3
EDRN315S – 315ME	6319-C3	6319-C3	6319-C3	6319-C3
EDRN315L – 315H	6319-C3	6322-C3	6319-C3	6322-C3

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9.10 Lubricant tables

9.10.1 Lubricant table for rolling bearings

INFORMATION

Use of wrong bearing grease can damage the bearings.

Motor size EDR..71 – 225, EDRN80 – 315

The bearings are 2Z or 2RS closed bearings and cannot be relubricated.

	Ambient temperature	Manufacturer	Type	DIN designation
Motor rolling bearings	-20 °C to +40 °C	Mobil	Polyrex EM[1)]	K2P-20
	-20 °C to +40 °C	Kyodo Yushi	Multemp SRL[2)]	K2N-40
	-20 °C to +40 °C	SKF	LGHP2[1)]	K2N-40

1) Mineral lubricant (= mineral-based bearing grease)
2) Synthetic lubricant (= synthetic-based roller bearing grease)

9.11 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
Schmierstoff für Wälzlager	Mobile	Polyrex EM	400 g	09101470
	SKF	LGHP2	400 g	09101276
Lubricant for sealing rings				
Material: NBR/FKM	Klüber	Petamo GHY 133 N	10 g	04963458
	FUCHS LUBRITECH	gleitmo 100 S	1 kg	03258092
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

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9.12 Mounting adapters for rotary encoders with solid shaft

9.12.1 XV.A

Encoder mounting adapter with SI units.

Mounting adapter		XV0A	XV1A	XV2A	XV3A	XV4A	XV5A
for motors		EDRN71 – 315					
Mounting type of encoder		Flange centered with coupling					
Design	Encoder shaft	Any	6 mm	10 mm	12 mm	11 mm	12 mm
	Centering	Any	50 mm	50 mm	80 mm	85 mm	45 mm
Suitable for encoder		Provided by the customer or by SEW-EURODRIVE on behalf of the customer.					

9.12.2 XC.A

Encoder mounting adapter with imperial units.

Mounting adapter		XC0A	XC1A
For motors		EDR..71 – 225, EDRN80 – 315	
Mounting type of encoder		Flange centered with coupling	
Design	Encoder shaft	Any	9.55 mm (3/8‘‘)
	Centering	Any	31.75 mm (1.25‘‘)
	Flange	Any	64 mm (2.5‘‘)
Suitable for encoder		Provided by the customer or by SEW-EURODRIVE on behalf of the customer.	

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10 Malfunctions

10.1 General information

⚠ WARNING

Risk of injury if the drive starts up unintentionally.

Severe or fatal injuries.

- Before you start working on the unit, disconnect the motor and all connected options from the power supply.
- Secure the motor against unintended power-up.

⚠ CAUTION

The surfaces on the drive can be very hot during operation.

Risk of burns.

- Let the motor cool down sufficiently before you start working on it.

NOTICE

Improper troubleshooting measures may damage the drive.

The drive system might be damaged.

- Use only genuine spare parts in accordance with the valid parts list.

10.2 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 "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
	Malfunction in control or in the control process	Observe the switching sequence; correct if necessary

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Fault	Possible cause	Measure
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; follow the wiring diagram
	Motor power designed for star-star connection but only connected in star	Correct the connection from star to star-star; follow the 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; 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; 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; Check the connections
Incorrect direction of rotation	Motor connected incorrectly	Swap two phases of the motor supply cable
Motor hums and has high current consumption	Brake does not release	See "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 wiring, observe the 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
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

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Fault	Possible cause	Measure
Motor heats up excessively (measure temperature)	Overload	Measure power, check project planning and use larger motor or reduce load if necessary
	Insufficient cooling	Provide for 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 blown	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
	Nominal duty cycle (S1 to S10, DIN 57530) exceeded, e.g. caused by excessive starting frequency	Adjust the nominal duty cycle of the motor to the required operating conditions; consult a professional to determine the proper drive, if necessary
Excessively loud	Ball bearing compressed, dirty or damaged	Re-align motor and the driven machine, inspect rolling bearing and replace if necessary.
	Vibration of rotating parts	Look for the case, possibly an imbalance; correct the cause, observe method for balancing
	Foreign bodies in cooling air ducts	Clean cooling air ducts

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10.3 Brake malfunctions

Fault	Possible cause	Measure
Brake does not release	Incorrect voltage on brake control unit	Apply the correct voltage; brake voltage specified on the nameplate
	Brake control unit failed	Install a new brake control, check resistance and insulation of the brake coils (see "Resistance" chapter for resistance values) Check switchgear, replace if necessary
	Max. permitted working air gap exceeded because brake lining worn down	Measure and set working air gap. If the brake disk is too thin, replace the brake disk.
	Voltage drop along supply cable > 10%	Provide correct connection voltage: brake voltage specifications on the nameplate. Check the cable cross section of the brake cable; increase cross section if necessary
	Inadequate cooling, brake overheats	Provide for cooling air supply or clear cooling air passages, check air filter, clean or replace if necessary.
	Brake coil has interturn fault or short circuit to frame	Check resistance and insulation of the brake coils (see "Resistance" chapter for resistance values); Replace complete brake and brake control (specialist workshop), Check switchgear, replace if necessary
	Rectifier defective	Replace rectifier and brake coil; it may be more economical to replace the complete brake
Brake does not brake	Working air gap not correct	Measure and set working air gap. If the brake disk is too thin, replace the brake disk.
	Brake lining worn down	Replace entire brake disk.
	Incorrect braking torque	Check the project planning and change the braking torque if needed; see chapter "Technical Data" > "Work done, working air gap, braking torques" • by changing the type and number of brake springs. • by selecting a different brake
	Working air gap so large that setting nuts for the manual brake release come into contact	Set the working air gap.
	Manual brake release device not set correctly	Set the adjusting nuts for the manual brake release correctly
	Brake locked by manual brake release HF	Loosen the set screw, remove if needed.
Brake is applied with time lag	Brake is switched only on AC voltage side	Switch both, the DC and AC voltage sides; observe wiring diagram

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Fault	Possible cause	Measure
Noise in vicinity of brake	Gearing wear on the brake disk or the driver caused by jerky startup	Check the project planning, replace the brake disk if necessary Have a specialist workshop replace the driver
	Alternating torques due to incorrectly set frequency inverter	Check correct setting of frequency inverter according to its operating instructions, correct if necessary.

10.4 Malfunctions when operated with a frequency inverter

The symptoms described in chapter "Motor malfunctions" (→ 🗎 177) can also occur when the motor is operated with a frequency inverter. Refer to the frequency inverter operating instructions for the meaning of the problems that occur and to find information about rectifying the problems.

10.5 Customer service

Have the following information available if you require customer service assistance:

- Nameplate data (complete)
- Nature and extent of the problem
- Time the failure occurred and any accompanying circumstances
- Assumed cause
- Ambient conditions e.g.:
  - Ambient temperature
  - Humidity
  - Installation altitude
  - Dirt
  - etc.

10.6 Disposal

Dispose of the motors in accordance with the material structure and the regulations in force:

- Iron
- Aluminum
- Copper
- Plastics
- Electronic parts
- Oil and grease (not mixed with solvents)

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11 Appendix

11.1 Wiring diagrams

INFORMATION

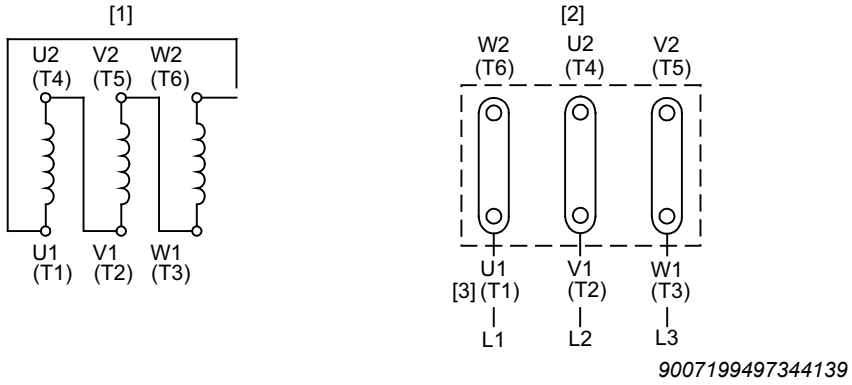
The motor should be connected as shown in the connection wiring diagram or the terminal assignment diagram, which are supplied with the motor. The following section only shows a selection of the common types of connections. You can obtain the relevant wiring diagrams free of charge from SEW-EURODRIVE.

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

For all motors with one speed, direct on-line, or ⅄/△ start-up.

Delta connection

The following illustration shows the △ connection for lower voltage.

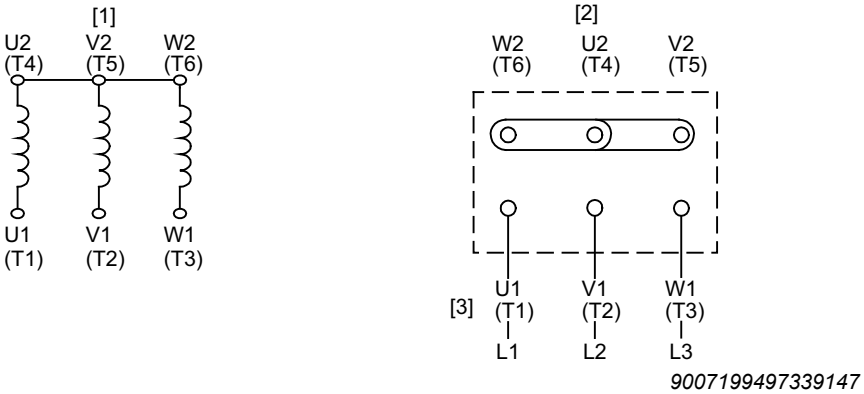


9007199497344139

[1] Motor winding
[2] Motor terminal board
[3] Supply cables

Star connection

The following illustration shows the ⅄ connection for high voltage.



9007199497339147

[1] Motor winding
[2] Motor terminal board
[3] Supply cables

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Proceed as follows to reverse the direction of rotation:

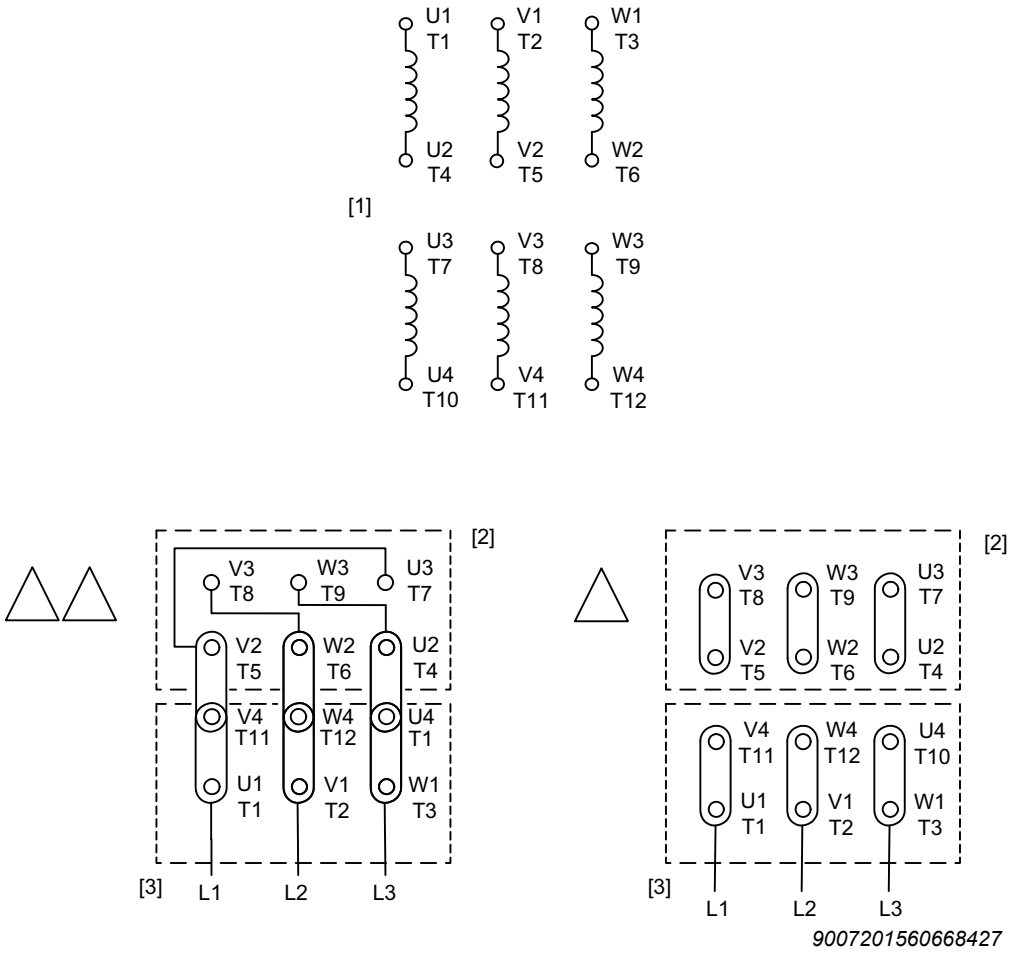
1. Swap the supply cables L1 – L2.

11.1.2 Delta connection with wiring diagram R72 (68192 xx 09)

For all motors with one speed and direct power-on.

Delta connection, Double-delta connection

The following figure shows the △ connection for high voltages and the △△ connection for lower voltages.



[1] Motor winding
[2] Motor terminal board
[3] Supply cables

Proceed as follows to reverse the direction of rotation:

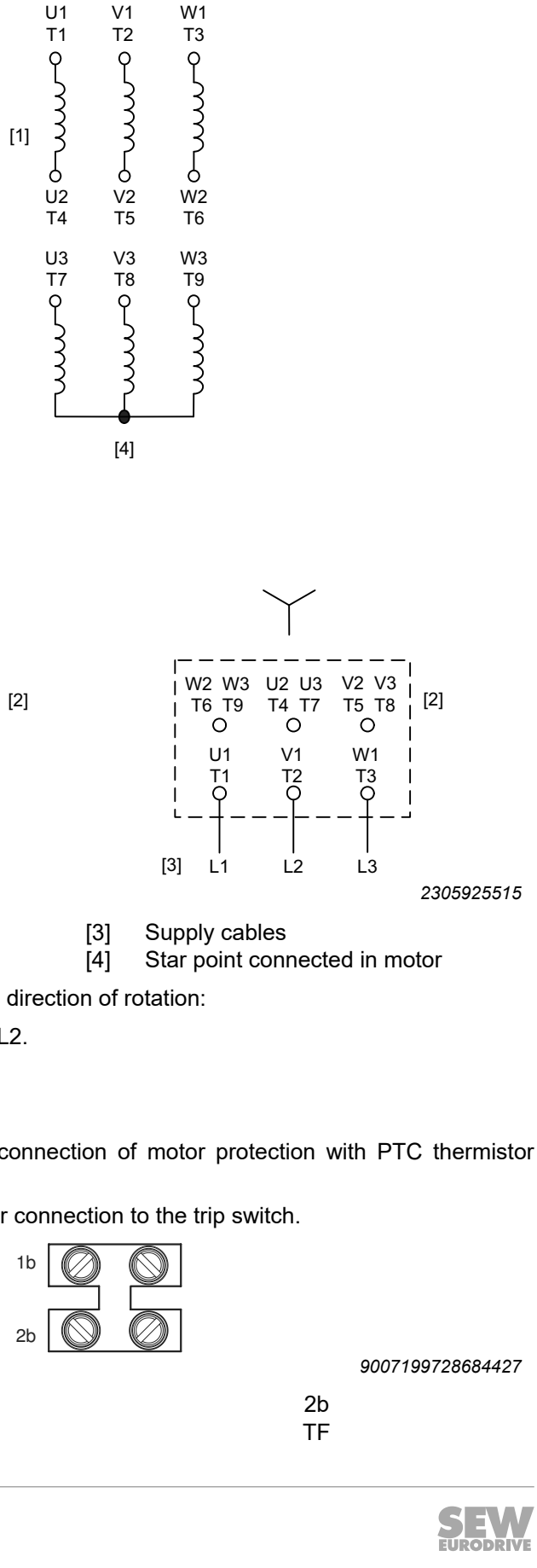
1. Swap the supply cables L1 – L2.

11.1.3 Star connection with wiring diagram R76 (68043 xx 06)

For all motors with one speed and direct power-on.

Star connection, double-star connection

The following figure shows the ⅄ connection for high voltages and the ⅄ ⅄ connection for lower voltages.



[1] Motor winding
[2] Motor terminal board
[3] Supply cables
[4] Star point connected in motor

Proceed as follows to reverse the direction of rotation:

1. Swap the supply cables L1 – L2.

11.1.4 Motor protection with /TF

The following figures show the connection of motor protection with PTC thermistor sensor /TF.

Various terminals are available for connection to the trip switch.

Example: /TF to 2-pin terminal strip

1b
TF

2b
TF

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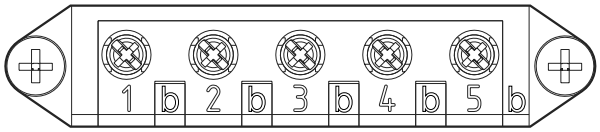
Example: 2 × /TF to 5-pin terminal strip



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1b	2b	3b	4b	5b
1.TF	1.TF	2.TF	2.TF	-

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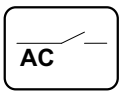
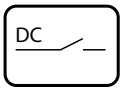
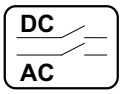
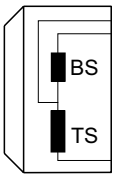
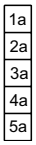
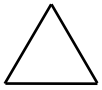
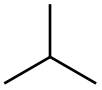
11.1.5 Brake controller – wiring diagrams

Key

	Cut-off in the AC circuit (standard application of the brake)
	Cut-off in the DC circuit (rapid brake application)
	Cut-off in the DC and AC circuits (rapid brake application)
	Brake BS = Accelerator coil TS = Coil section
	Auxiliary terminal strip in terminal box
	Motor with delta connection
	Motor with star connection
	Control cabinet limit
WH	White
RD	Red
BU	Blue
BN	Brown
BK	Black

More wiring diagrams of brake controllers are available on request.

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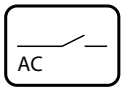
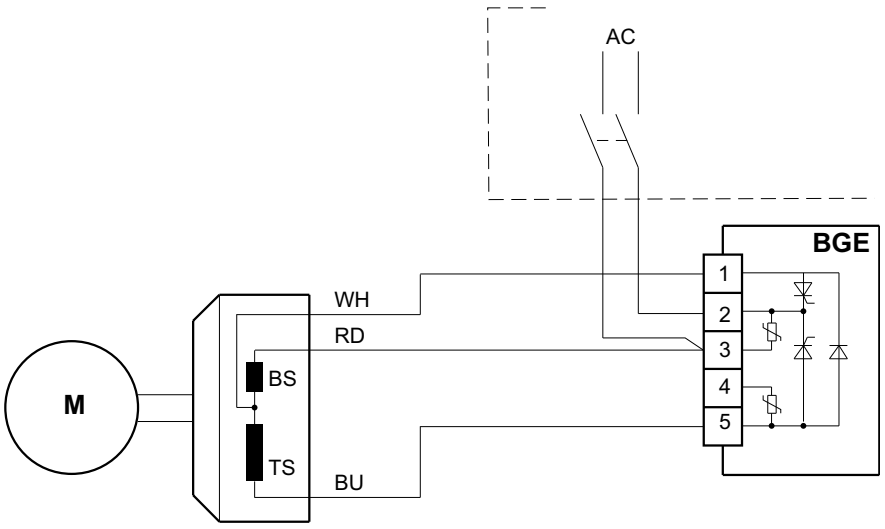
Brake control systems in the terminal box

BGE.. brake control





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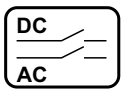

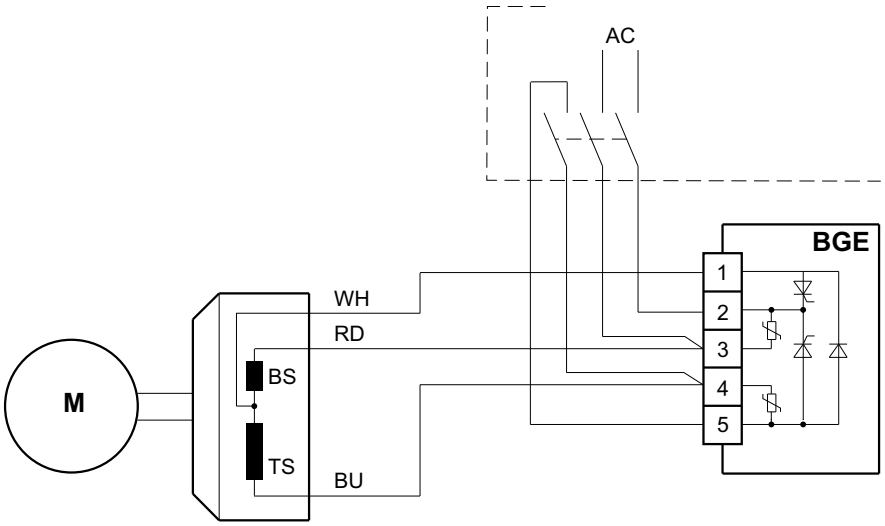

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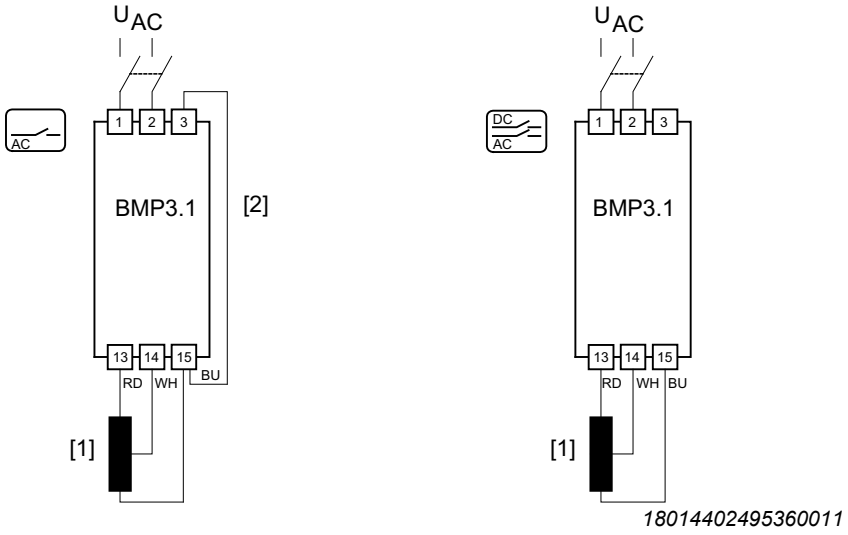
BMP 3.1 brake control (installation in terminal box)

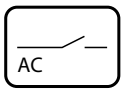


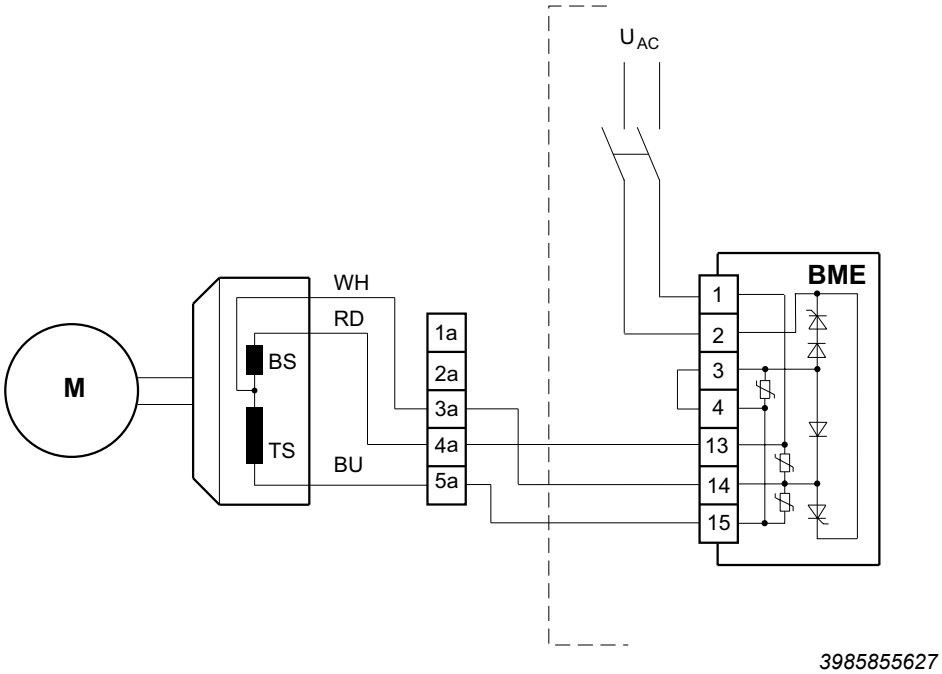
18014402495360011

[1] Brake coil
[2] Wire jumper

Brake control systems in the control cabinet

BME.. brake control





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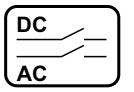
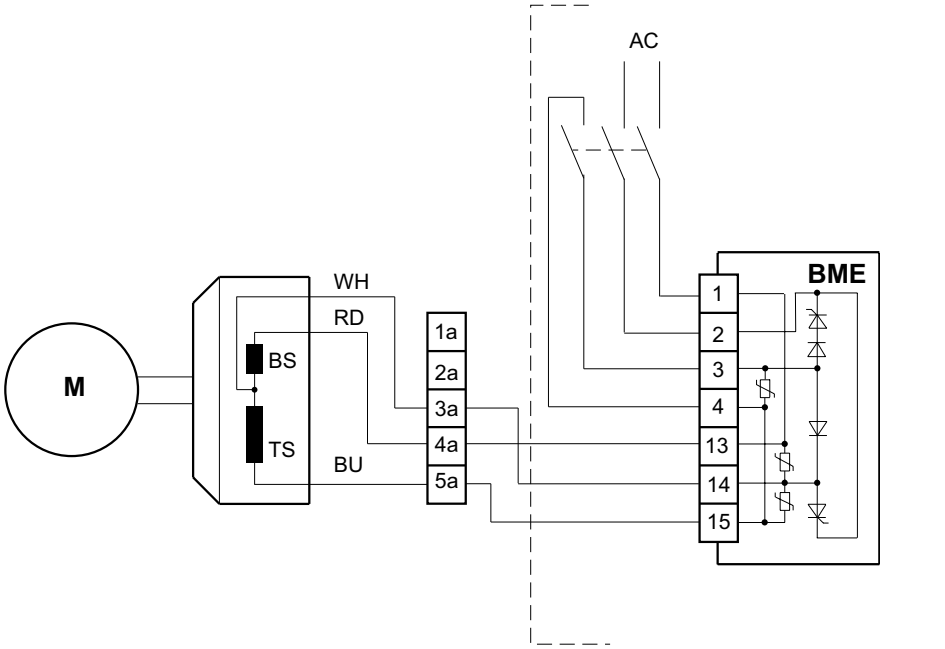
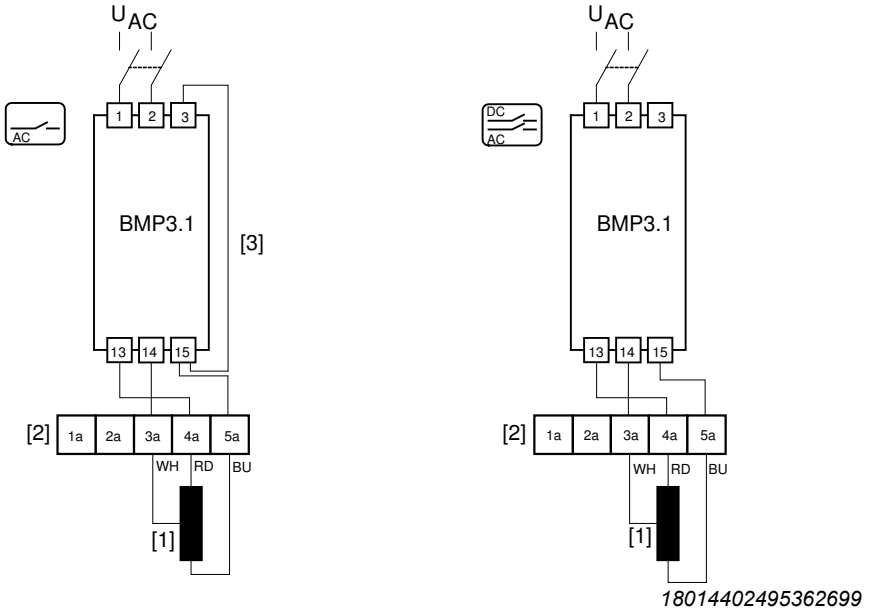


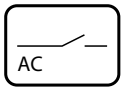


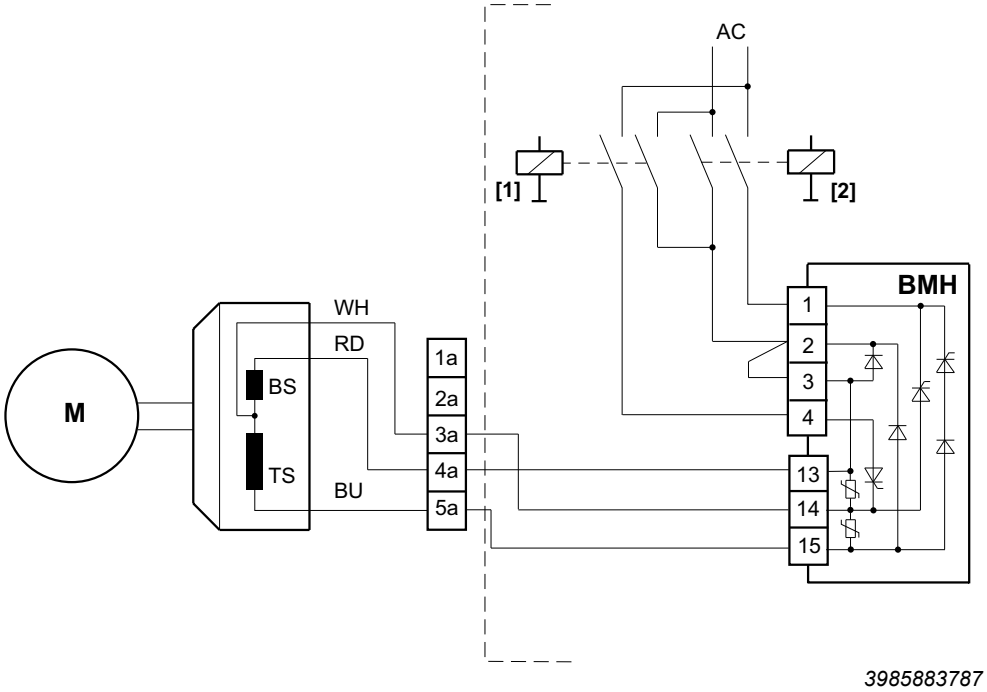
BMP 3.1 brake control (installation in control cabinet)



[1] Brake coil
[2] Terminal strip
[3] Wire jumper

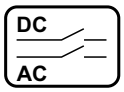
BMH.. brake control

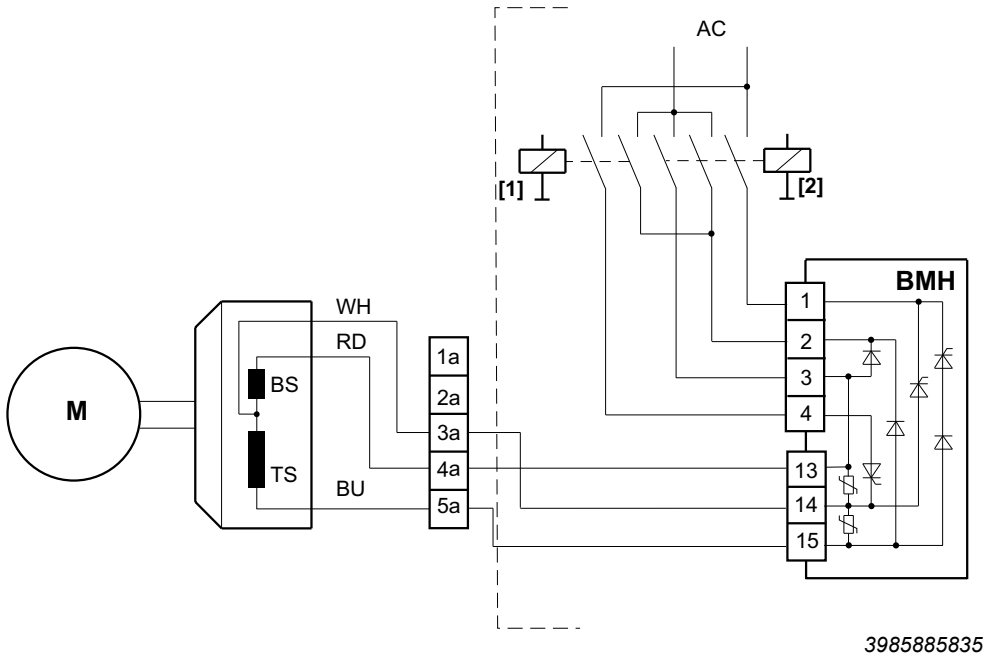




3985883787

[1] Heating
[2] Releasing





3985885835

[1] Heating
[2] Releasing

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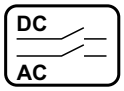
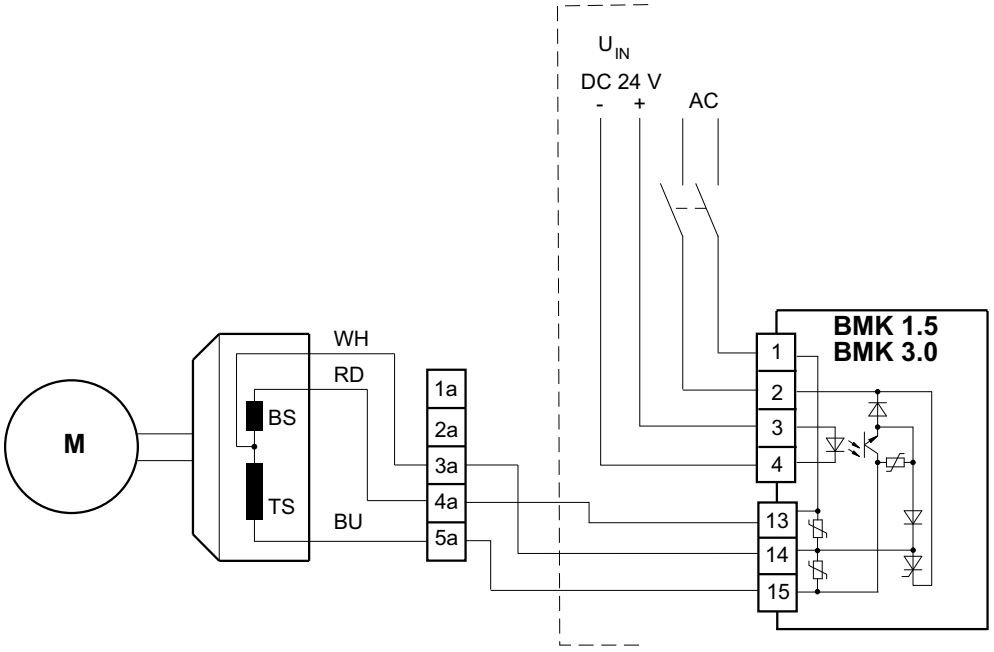
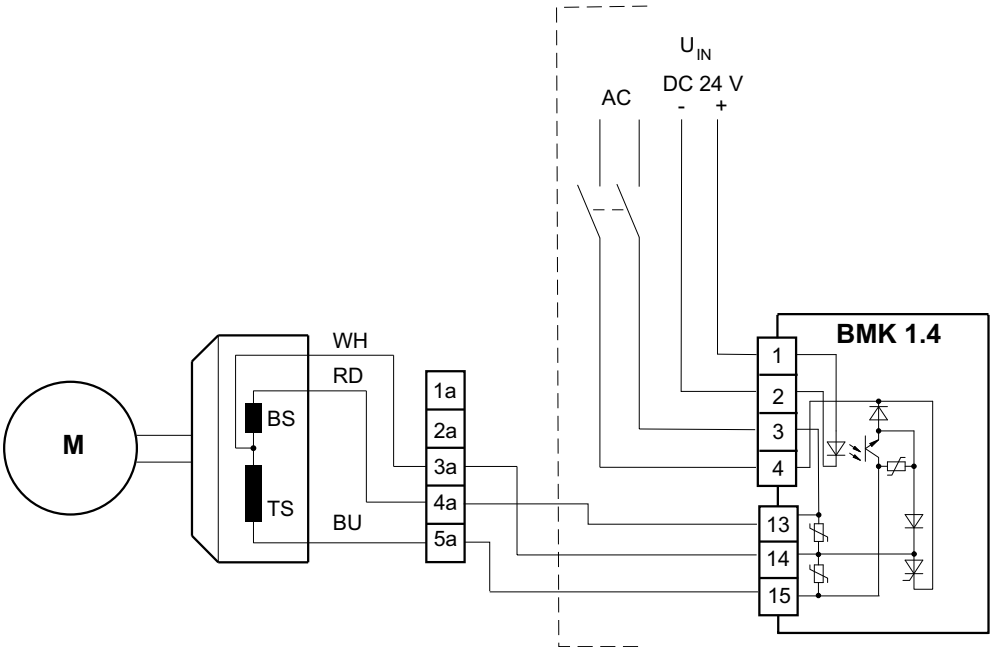
BMK.. brake control



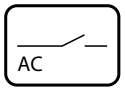


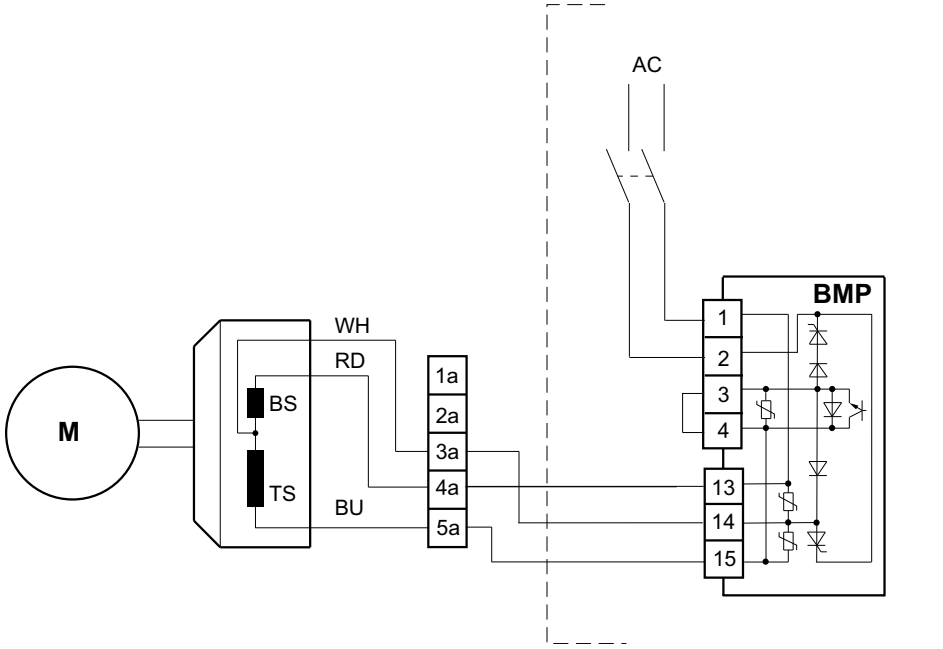
30905511691



30788147339

BMP.. brake control





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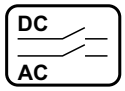

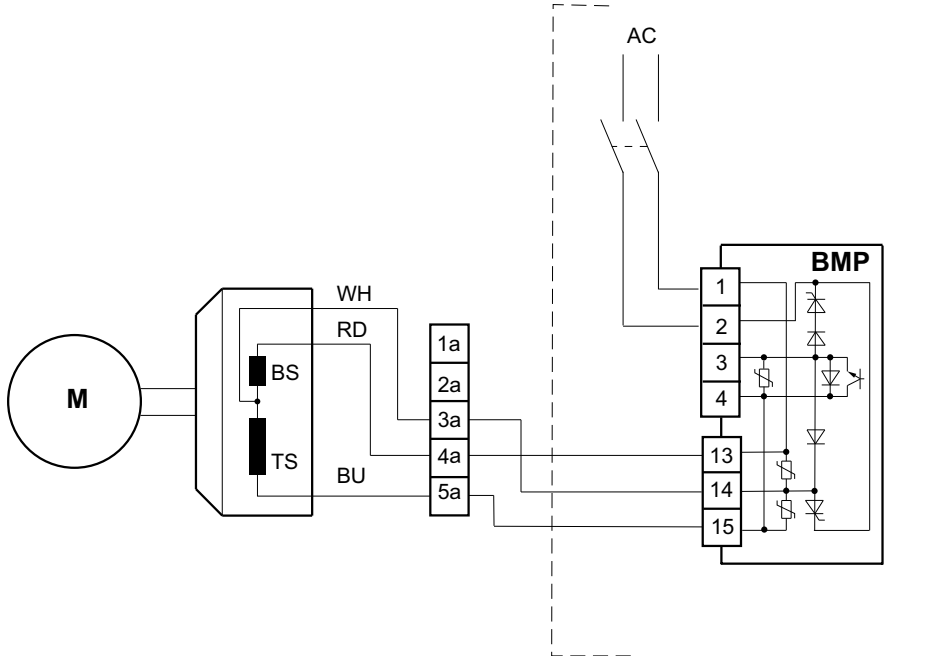

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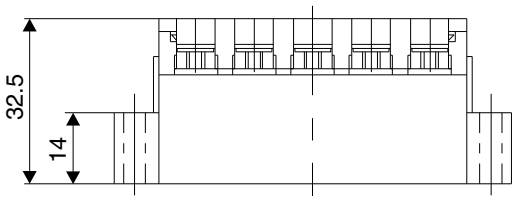
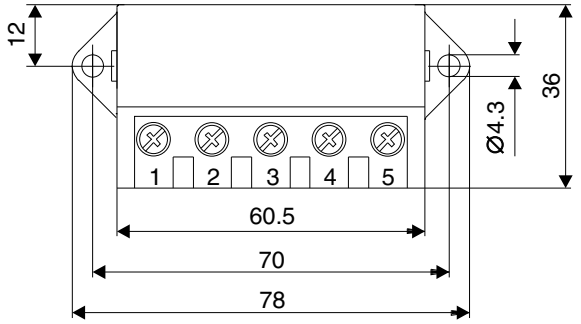
11.2 Dimensions of the brake control system

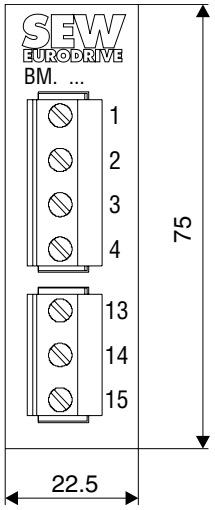
11.2.1 BGE..

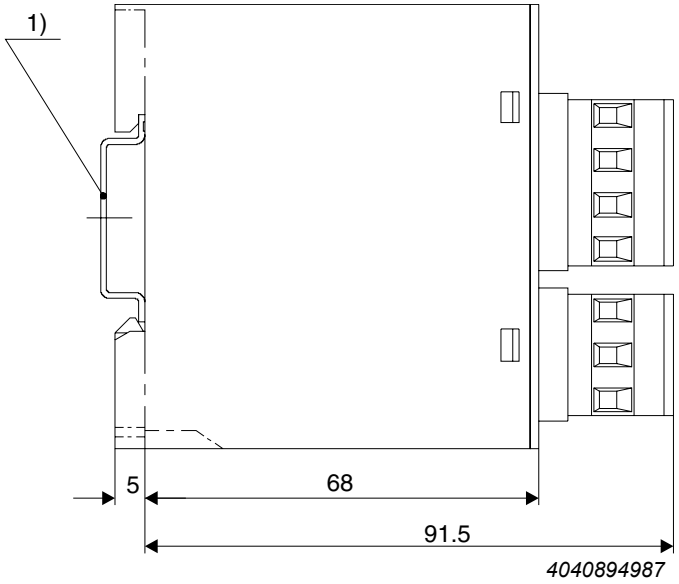




9007203295602315

11.2.2 BME.., BMH.., BMP.., BMK..





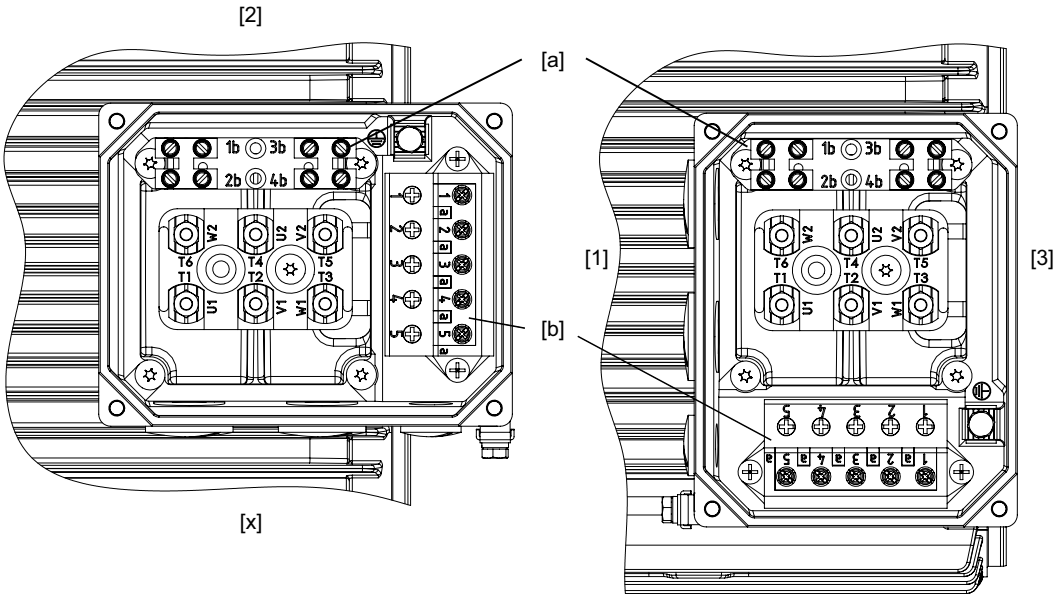
4040894987

11.3 Auxiliary terminals

The following figure shows the arrangement of the auxiliary terminals for the different terminal box positions.

Terminal box position 2 and X, here X[1)]

Terminal box position 1 and 3, here 3



1) If auxiliary terminal 2 is not provided, you can install auxiliary terminal 1 in the same position.

[1]	Terminal box position 1	[X]	Terminal box position X
[2]	Terminal box position 2	[a]	Auxiliary terminal 1
[3]	Terminal box position 3	[b]	Auxiliary terminal 2

Regardless of the terminal box position, auxiliary terminal 1 must always be mounted parallel to the terminal board.

The terminal structure can vary depending on the terminal box design.

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12 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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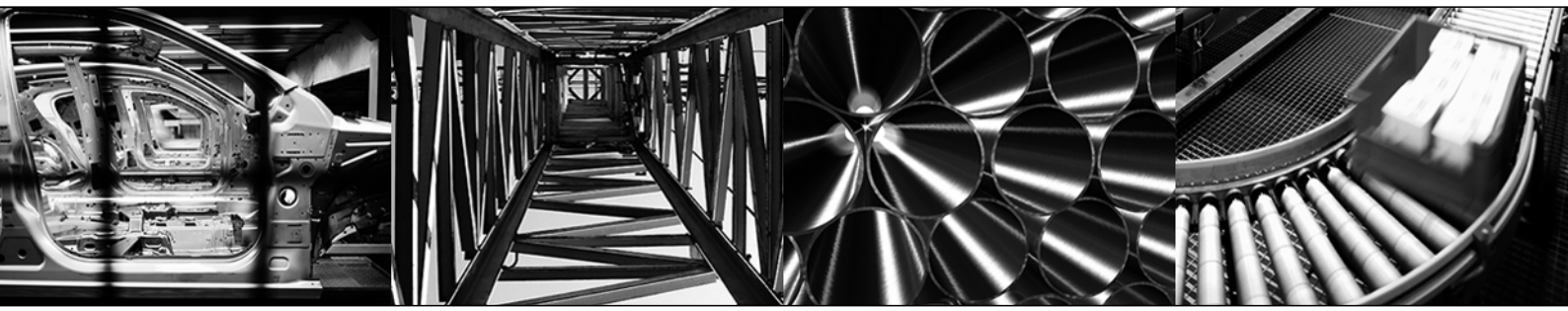

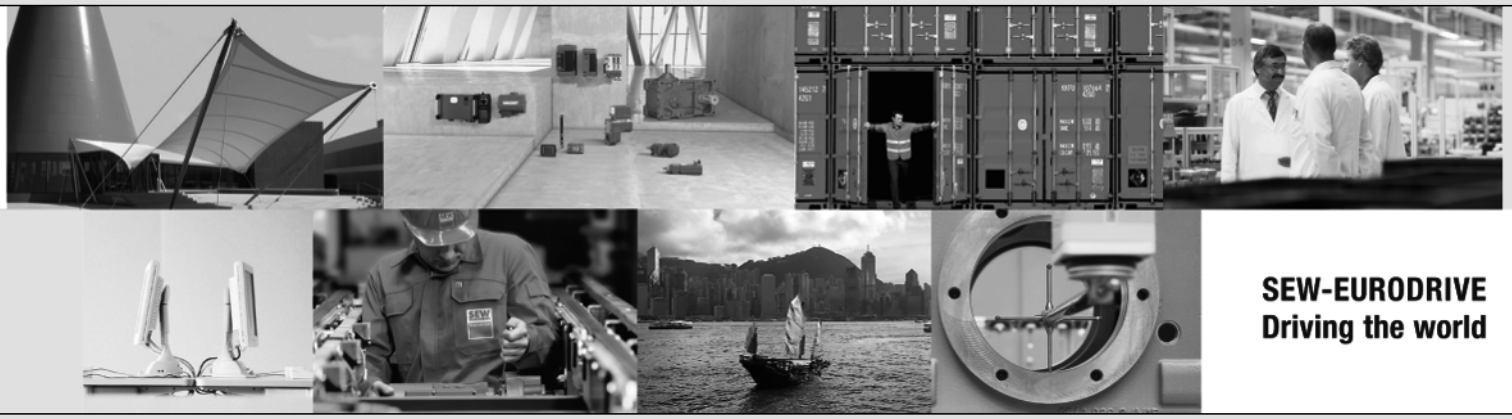

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