SEW EURODRIVE

Operating Instructions

Explosion-Proof Servomotors
CMP40 – 63, CMP.71 – 100

Edition 09/2015

21926786/EN

Contents

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1 General Information

1.1 About this documentation

This documentation is an integral part of the product. The documentation is intended for all employees who perform assembly, installation, startup, and service work on the product.

Make sure this documentation is accessible and legible. Ensure 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. If you are unclear about any of the information in this documentation or 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 grading 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 drive system or its environment.
NOTE ON EXPLOSION PROTECTION	Important information about explosion protection	Suspension of explosion protection and resulting dangers
INFORMATION	Useful information or tip: Simplifies handling of the drive system.	

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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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 unit!

1.4 Exclusion of liability

Read the information in this documentation, otherwise safe operation is impossible. You must comply with the information contained in this documentation to achieve the specified product characteristics and performance features. SEW-EURODRIVE assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of these operating instructions. In such cases, SEW-EURODRIVE assumes no liability for defects.

1.5 Copyright notice

1.6 Product names and trademarks

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

1.7 Motor type notation

These operating instructions cover the motor types CMP and CMPZ.

If information refers to both CMP and CMPZ motors, the notation CMP. motors is used.

If information refers to either CMP or CMPZ motors, the motor type is stated explicitly.

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2 Safety notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The user must ensure that the basic safety notes are read and observed. Make sure that persons responsible for the system and its operation, as well as persons who work independently on the unit, have read through the operating instructions carefully and understood them. If you are unclear about any of the information in this documentation, or if you require further information, please contact SEW-EURODRIVE.

2.1 Preliminary information

The following safety notes are primarily concerned with the use of the following components: DR../DRN.. AC motors. If you use gearmotors, also refer to the safety notes in the corresponding operating instructions for: Gear units

Also observe the additional safety notes provided in the individual chapters of this document.

2.2 General information

⚠ WARNING

During operation, the motors or gearmotors can have live, bare (in the event of open connectors/terminal boxes) and movable or rotating parts as well as hot surfaces, depending on their degree of protection.

Severe or fatal injuries.

- All work related to transportation, storage, installation, assembly, connection, startup, maintenance and repair may only be carried out by qualified personnel, in strict observance of the following points:
  - The applicable detailed documentation(s)
  - Warning and safety signs on the motor/gearmotor
  - All the project planning documents, startup instructions and wiring diagrams related to the drive
  - System-specific regulations and requirements
  - National/regional safety and accident prevention regulations.
- Never install damaged drives.
- Report any damage to the shipping company immediately.

Unauthorized removal of covers, improper use, or incorrect installation and operation may result in severe injury to persons, or damage to machinery.

Refer to the following chapters for more information.

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2.3 Target group

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

- Training in mechanical engineering, e.g. as a mechanic or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

Any electronic work may only be performed by adequately qualified electricians. Qualified electricians in the context of this documentation are persons familiar with electrical installation, startup, troubleshooting and servicing of the product who possess the following qualifications:

- Training in electrical engineering, e.g. as an electrician, electronics or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

All work in the areas of transportation, storage, operation and waste disposal must be carried out by persons who are trained appropriately.

All qualified personnel must wear appropriate protective clothing.

2.4 Designated use

The explosion-proof electric motors are intended for industrial systems.

When installed in machines, startup of the motors (i.e. start of designated operation) is prohibited until it is determined that the machine meets the requirements stipulated in EC Directive 94/9/EC (ATEX Directive).

INFORMATION

- The motor may only be operated under the conditions described in the chapter "Startup".
- The motor may only be operated on a frequency inverter within the motor's torque/speed limits.
- There may be no aggressive substances in the vicinity that could damage the painting and seals.
- The motors must not be operated in areas/applications that cause strong electrical charge on the motor housing, e.g. a fan motor in a dust-transporting tube as this may cause electrostatic charge of the coated surfaces.

Air-cooled versions are designed for ambient temperatures of -20 °C to +40 °C and installation altitudes ≤ 1000 m above sea level. Any differing specifications on the nameplate must be observed. The ambient conditions must comply with all the specifications on the nameplate.

2.5 Standards and regulations

The explosion-proof CMP synchronous servomotors comply with the applicable standards and regulations:

- Directive 94/9/EC

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- EN 60079-0: Electrical apparatus for potentially explosive atmospheres: General requirements
- EN 60079-15: Design, testing and designation of electric equipment in protection type "n"
- EN 60079-31: Electrical apparatus for use in atmospheres containing combustible dust, protected by "t" housing
- EN 60034: Rotating electrical machines

Technical data and information on the permitted conditions are given on the nameplate and in the documentation; they have to be observed under all circumstances.

2.6 Other applicable documentation

2.6.1 CMP

The following publications and documents have to be observed as well:

- Wiring diagrams provided with the motor
- Assembly and operating instructions for "Explosion-Proof Gear Units R..7, F..7, K..7, S..7 Series, SPIROPLAN® W" for gearmotors
- Assembly and operating instructions for "Explosion-Proof Gear Unit Series BS.F.. and PS.F.."
- Catalog for "Synchronous Servomotors" and/or
- Catalog for "Synchronous Servo Gearmotors"

2.7 Transport/storage

Inspect the shipment for damage as soon as you receive the delivery. Inform the shipping company immediately about any damage. It may be necessary to suspend startup.

Tighten the eyebolts securely. They are only designed for the weight of the motor/gearmotor; do not attach any additional loads.

The installed eyebolts are in accordance with DIN 580. The loads and regulations specified in that document must always be observed. If the gearmotor is equipped with 2 eyebolts, then both of these should be used for transportation. In this case, the tension force vector of the slings must not exceed a 45° angle in accordance with DIN 580.

Use suitable, sufficiently rated handling equipment if necessary. Reuse these in case of further transportation.

Store the motor/gearmotor in a dry, dust-free environment if it is not to be installed straight away. Do not store the motor/gearmotor in the open. The motor/gearmotor can be stored for up to 9 months without requiring any special measures before startup.

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2.8 Installation

Make sure that the supports are even, the foot and flange mounting is correct and if there is direct coupling, align with precision. Resonances between the rotational frequency and the double line frequency caused by the structure are to be avoided. Release the brake (if installed), turn rotor manually, check 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) and cover with a touch guard. Avoid improper belt tension.

Observe the notes in chapter "Mechanical installation" (→ 🗎 21).

2.9 Safety notes on the motor

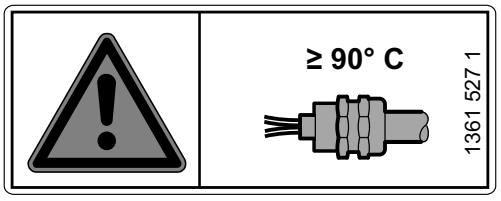
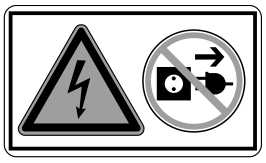
⚠ CAUTION

Safety notes or signs can become dirty or illegible over time.

Risk of injury due to illegible symbols.

- Always make sure that safety, warning, and operating notes are legible.
- Replace damaged safety notes and signs.

The safety notes on the motor must be observed. They have the following meaning:

Safety note	Meaning
	For operation with an inverter at low frequencies or high ambient temperature, you must use cable entries that are suited for temperatures of > 90 °C. The used cables must be selected regarding their temperature resistance according to standard requirements and operating conditions.
	Do not unplug the signal plug connector while it is energized!
	It is essential that you observe the correct polarity of BK brake supply. Check the polarity when replacing the brake.

2.10 Electrical connection

All work may only be carried out by qualified personnel. During work, the low-voltage machine must be at standstill, de-energized, and safeguarded against accidental restart. This also applies to auxiliary circuits (e.g. anti-condensation heating or forced cooling fan).

Check whether the unit is de-energized.

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Exceeding the tolerances in EN 60034-1 (VDE 0530, part 1) – voltage +5%, frequency +2%, curve shape, symmetry – increases the heating and influences electromagnetic compatibility. Also observe EN 60364 and EN 50110 (and, if applicable, other national regulations, such as DIN VDE 0105 for Germany).

In addition to the generally applicable installation regulations for low-voltage equipment, it is also necessary to comply with the special regulations for setting up electrical machinery in potentially explosive atmospheres (operating safety regulations in Germany; EN 60079-14 and system-specific regulations).

Observe the wiring information and differing data on the nameplate as well as the wiring diagram in the terminal box.

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 and conductive parts must not be shorter than the minimum values according to EN 60079-15 and national regulations. The minimum values according to the respective standards must be observed, see the following table:

Nominal voltage V_N	Distance for motors in category 3 (EN 60079-15)
≤ 500 V	5 ms

The connection box must be free from foreign objects, dirt and humidity. Unused cable entry openings and the box itself must be closed so that they are dust- and waterproof. Secure the key for test mode without output elements. Make sure that the unit is functioning properly before you start it up.

Observe the notes in the "Electrical installation" (→ 🗎 25) chapter.

2.11 Startup/operation

Whenever changes to normal operation occur, such as increased temperatures, noise, vibrations, etc., you should determine the cause. Consult the manufacturer if required. Never deactivate protection devices, even in test mode. Switch off the motor if you are not sure.

Regularly clean the surface in dirty environments.

2.11.1 Temperature of touchable surfaces during operation

Servomotors/brakemotors get very hot during operation.

Touching the servomotor/brakemotor when it has not cooled down could result in burns. The servomotor can have a surface temperature of more than 100 °C during operation.

Never touch the servomotor/brakemotor during operation or in the cool down phase after it has been switched off.

2.11.2 Regenerative operation

Moving the output element generates a voltage at the pin contacts of the plug connectors.

⚠ CAUTION

Electric shock due to regenerative operation.

Minor injuries.

- Do not touch the pin contacts in the plug connector.
- If the mating connector is not plugged in, attach a touch guard to the plug connector.

2.12 Painting

INFORMATION

SEW-EURODRIVE delivers the drive with a painting that complies with the requirements for preventing electrostatic charging according to EN 60079-0. If you repaint the motors or gearmotors, observe the requirements for preventing electrostatic charging according to EN 60079-0.

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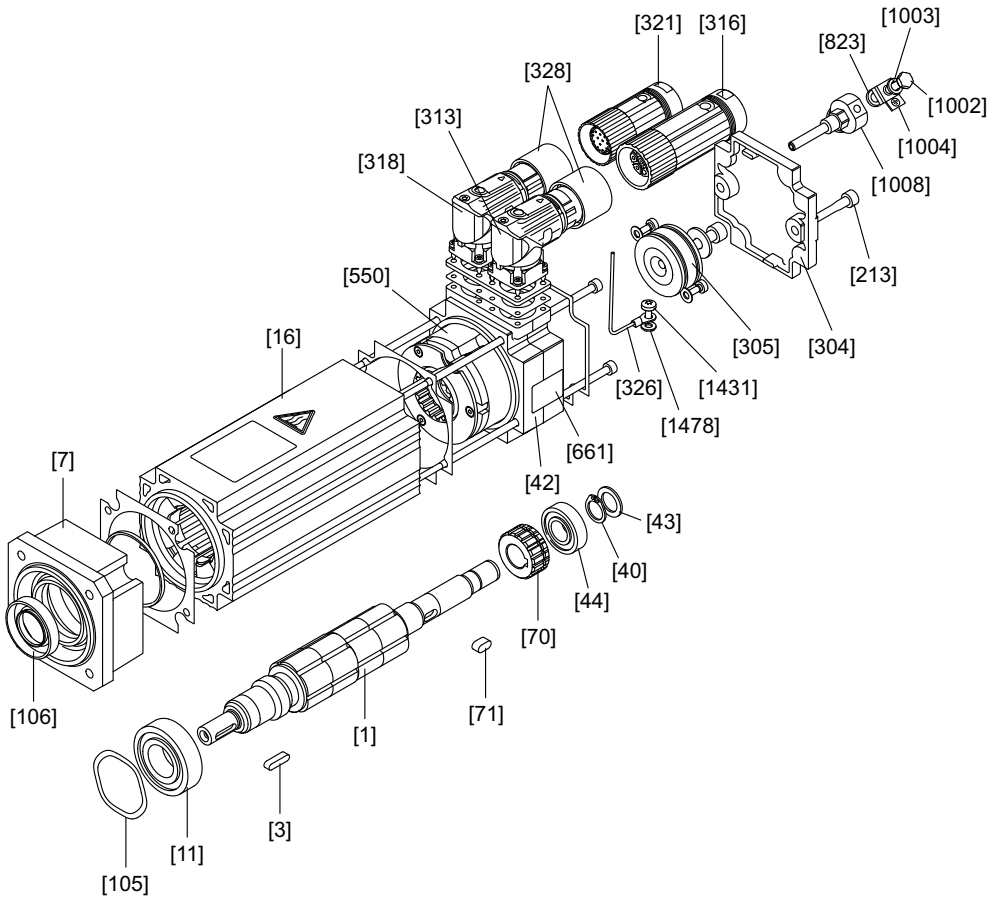
3 Motor structure

INFORMATION

The following illustrations are intended to explain the general structure. They help you to assign components to the spare parts list. Differences are possible depending on the motor size and design.

3.1 Basic structure of CMP40 – CMP63 /BP



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[1]	Rotor	[105]	Shim	[550]	Disk brake
[3]	Key	[106]	Oil seal	[661]	Label
[7]	Flanged endshield	[213]	Cap screw	[823]	Washer
[11]	Deep groove ball bearing	[304]	Housing cover	[1002]	Hex head screw
[16]	Stator	[305]	Resolver	[1003]	Lock washer
[40]	Retaining ring	[313]	Flange socket	[1004]	Terminal clip
[42]	B-side endshield	[318]	Flange socket	[1008]	Ground stud
[43]	Supporting ring	[316]	Complete connector	[1431]	Screw
[44]	Deep groove ball bearing	[321]	Complete connector	[1478]	Washer
[70]	Driver	[326]	Cable		
[71]	Key	[328]	Protection cap		

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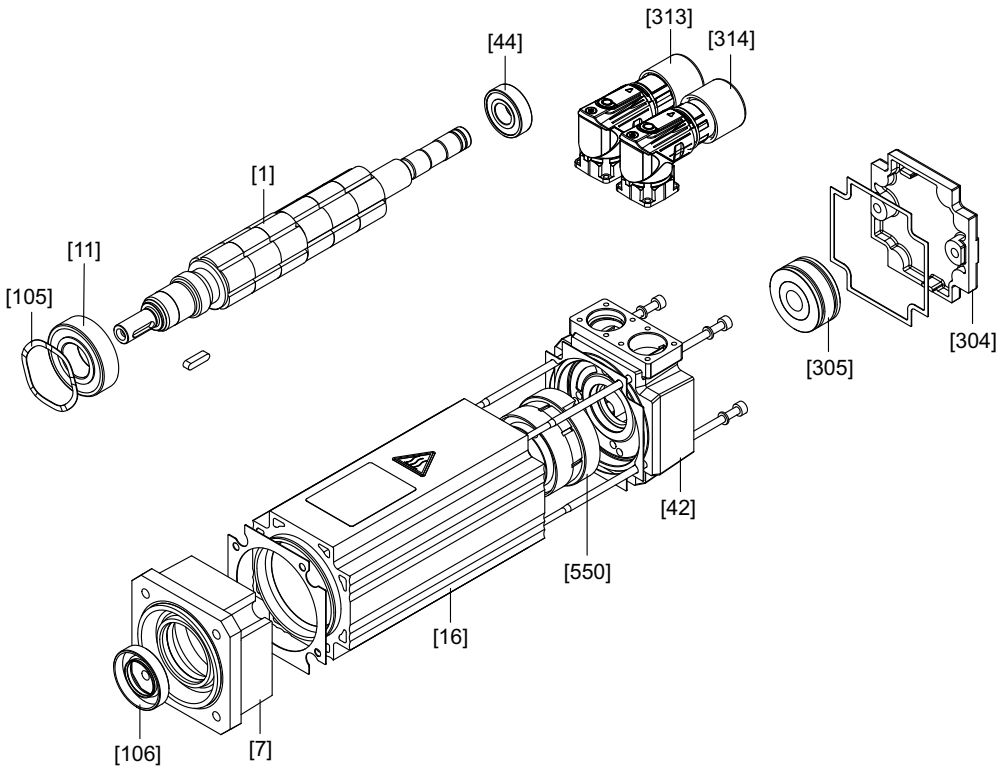
3.2 Basic structure of CMP40 – CMP63/BK



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[1]	Rotor	[106]	Oil seal
[7]	Flange	[304]	Housing cover
[11]	Deep groove ball bearing	[305]	Resolver
[16]	Stator	[313]	SM/SB signal plug connector
[42]	Brake endshield	[314]	SM/SB power plug connector
[44]	Deep groove ball bearing	[550]	BK permanent magnet brake
[105]	Shim		

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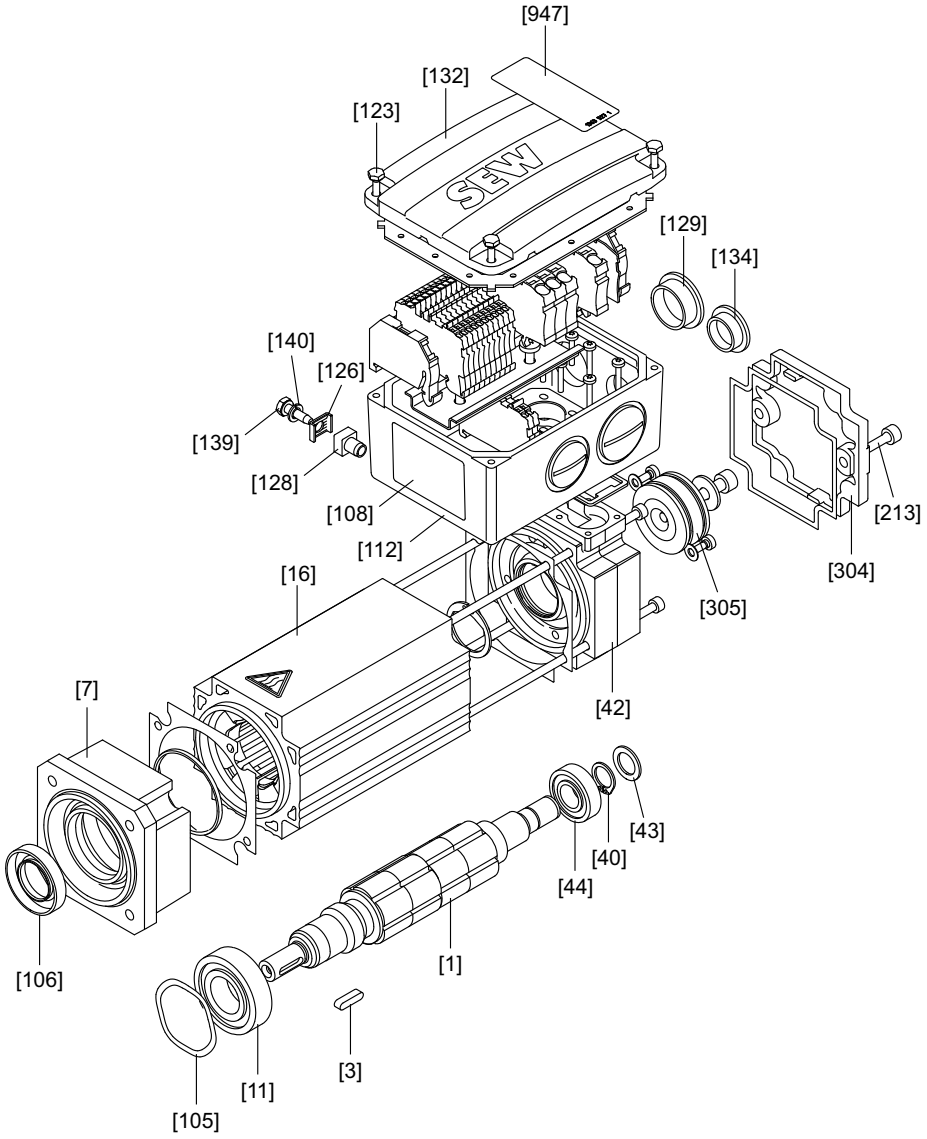
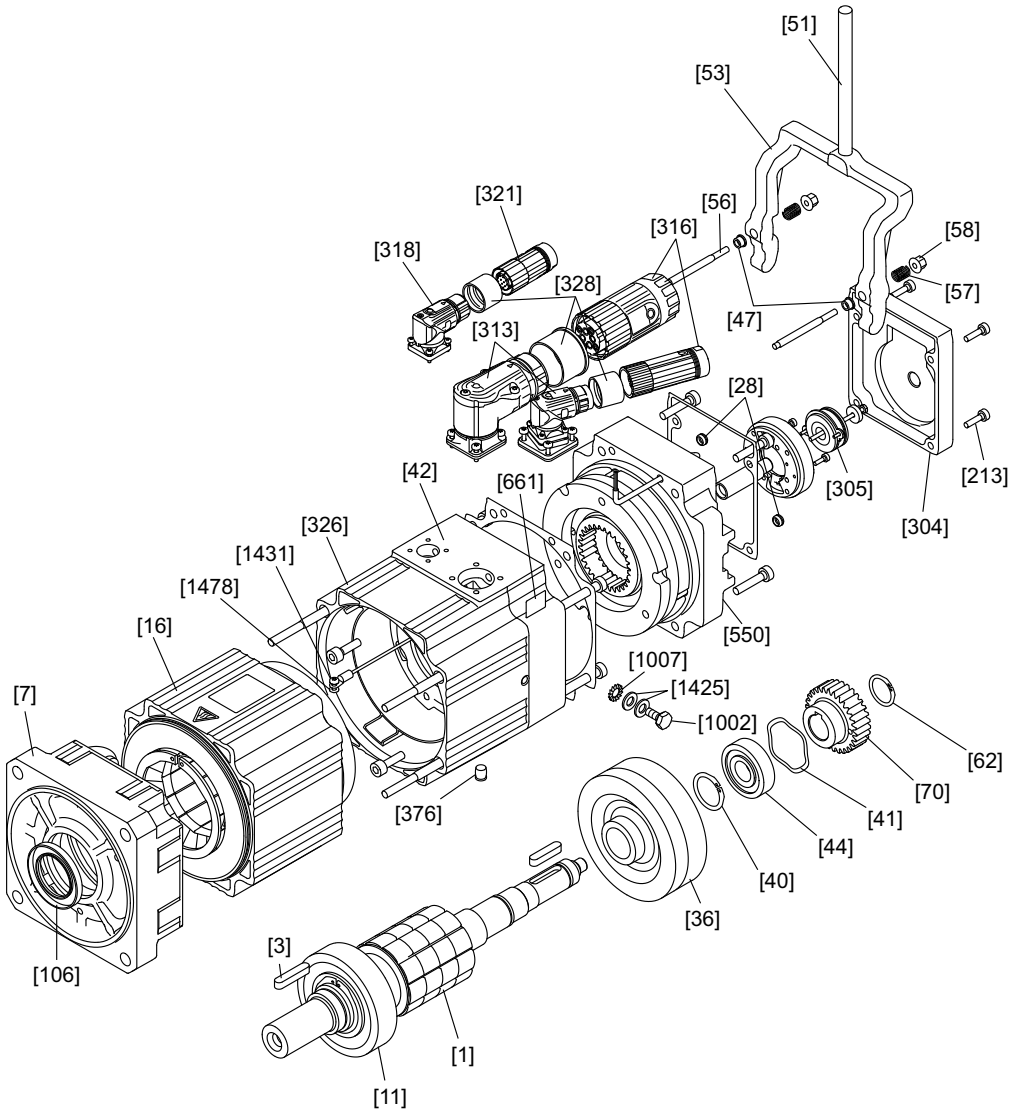
3.3 Basic structure of CMP50 – CMP63/KK



9727670795

[1] Rotor
[3] Key
[7] Flanged endshield
[11] Deep groove ball bearing
[16] Stator
[40] Retaining ring
[42] B-side endshield
[43] Supporting ring
[44] Deep groove ball bearing
[105] Shim
[106] Oil seal
[108] Nameplate
[112] Terminal box lower part
[123] Screw
[126] Terminal clip
[128] Grounding terminal
[129] Screw plug
[132] Terminal box cover
[134] Screw plug
[139] Screw
[140] Lock washer
[213] Cap screw
[304] Housing cover
[305] Resolver
[947] Information label

3.4 Basic structure of CMPZ71 – CMPZ100/BY



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[1]	Rotor	[53]	Releasing lever	[321]	Complete connector
[3]	Key	[56]	Stud	[326]	Cable
[7]	Flanged endshield	[57]	Tension spring	[328]	Protection cap
[11]	Deep groove ball bearing	[58]	Hex nut	[376]	Closing plug
[16]	Stator	[62]	Retaining ring	[550]	Disk brake
[28]	Closing cap	[70]	Driver	[661]	Label
[36]	Flywheel	[106]	Oil seal	[1002]	Screw
[40]	Retaining ring	[213]	Cap screw	[1007]	Serrated lock washer
[41]	Shim	[305]	Resolver	[1425]	Washer
[42]	B-side endshield	[313]	Flange socket	[1431]	Screw
[44]	Deep groove ball bearing	[318]	Flange socket	[1478]	Washer
[47]	Sealing element	[316]	Complete connector		
[51]	Hand lever				

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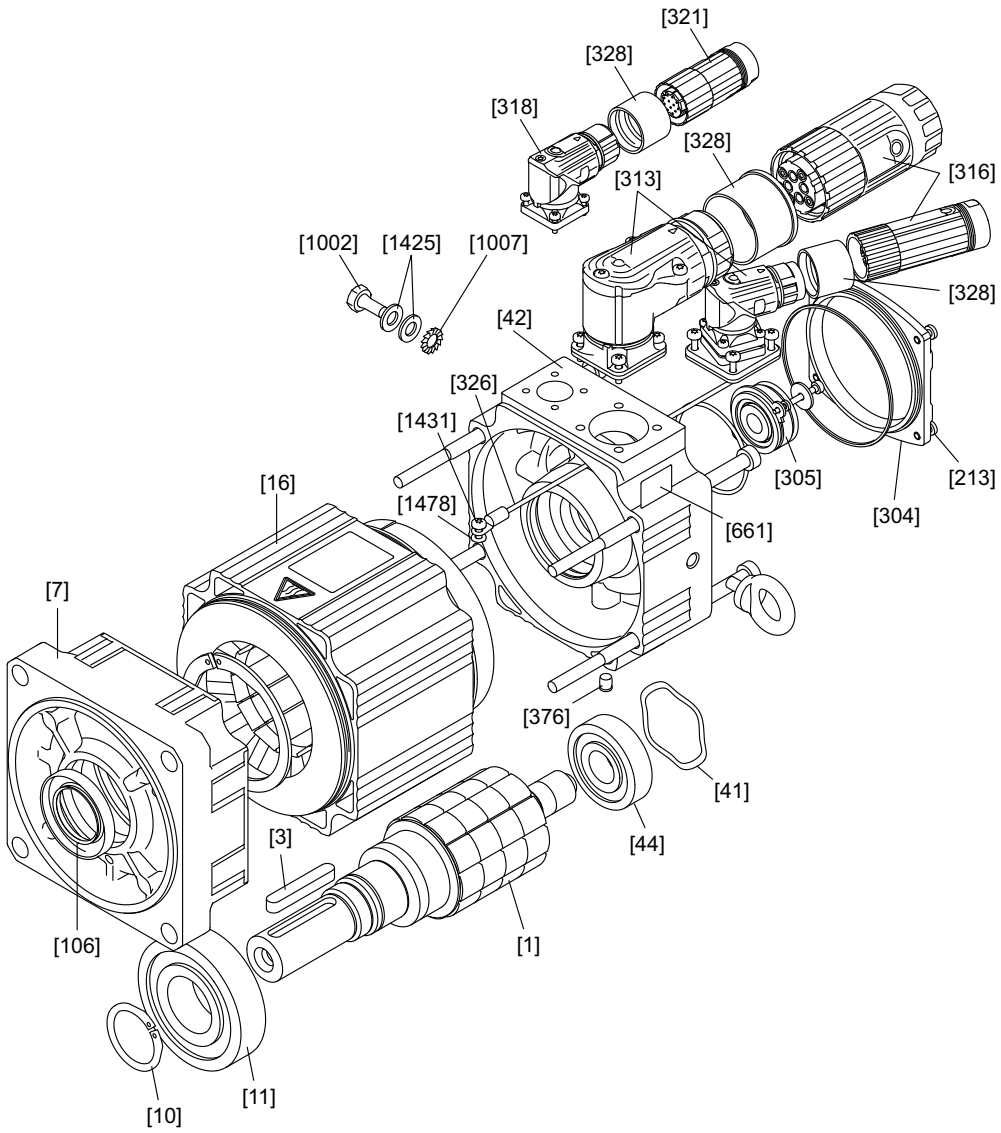
3.5 Basic structure of CMP71 – CMP100



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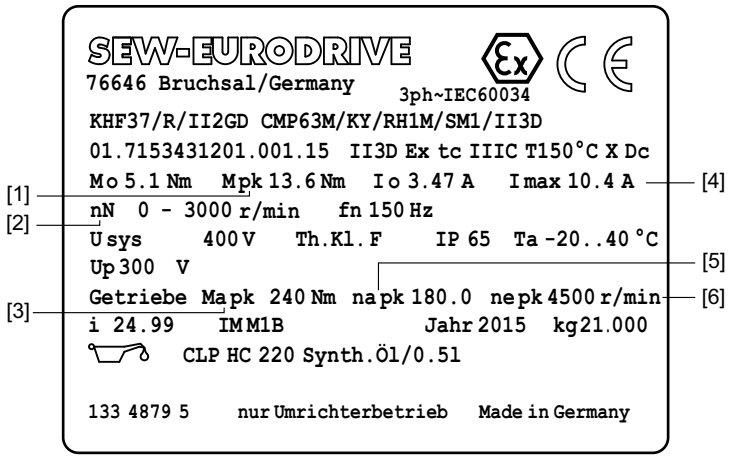
[1] Rotor
[3] Key
[7] Flanged endshield
[10] Retaining ring
[11] Deep groove ball bearing
[16] Stator
[42] B-side endshield
[41] Shim
[44] Deep groove ball bearing
[106] Oil seal
[213] Cap screw
[304] Housing cover
[305] Resolver
[313] Flange socket
[318] Flange socket
[316] Complete connector
[321] Complete connector
[326] Cable
[328] Protection cap
[376] Closing plug
[661] Label
[1002] Hex head screw
[1007] Serrated lock washer
[1425] Washer
[1431] Screw
[1478] Washer

3.6 Nameplate and type designation

3.6.1 Nameplate on the servomotor

Example: Nameplate of explosion-proof CMP synchronous servomotor



18014404429227147

[1] Dynamic limit torque
[2] Rated speed
[3] Maximum permitted output torque for short-time duty
[4] Maximum permitted motor current for short-time duty
[5] Maximum permitted output speed for short-time duty
[6] Maximum permitted input speed for short-time duty

3.6.2 Labels

The following table lists all labels that can be given on a nameplate or attached to the motor and an explanation of what they mean.

Mark	Meaning
CE	CE mark to state compliance with European guidelines, such as the Low Voltage Directive
Ex	ATEX mark to state compliance with the European Directive 94/9/EC

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3.6.3 Example type designation of an explosion-proof servomotor

The following figure shows the example of a type designation:

Example: CMP50S/BK/KY/RH1M/SB1/II3D		
Synchronous servomotor	CMP50	Flange-mounted motor size 50
Length	S	Small
Mechanical mount-on components	/BK	BK holding brake
Standard equipment temperature sensor	/KY	KY temperature sensor
Encoder motor option	/RH1M	Resolver (standard)
Motor option adjustable right-angle connector/radial connector/terminal box	SB1	Radial connector (brakemotor)
Motor option explosion protection	II3D	Category explosion protection

3.6.4 Example of a serial number for a servomotor

The following figure shows an example of a serial number:

Example: 01. 12212343 01. 0001. 14	
01.	Sales organization
12212343	Order number (8 digits)
01.	Order item (2 digits)
0001	Quantity (4 digits)
14	End digits of the year of manufacture (2 digits)

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3.7 Designs and options

3.7.1 Mechanical attachments

Designation	Design	Description
/BP	3D	Holding brake for CMP40 – 63
/BK		Holding brake for CMP40 – 63
/BY		Working brake for CMPZ71 – 100
/HR		BY manual brake release for CMPZ71 – 100, automatic disengaging function

3.7.2 Temperature sensor / temperature detection

Designation	Design	Description
/KY	3GD, 3D	Temperature sensor (standard)

3.7.3 Encoders

Designation	Design	Description
/RH1M	3D, 3GD	Resolver (standard)
/ES1H	3D	Single-turn Hiperface® encoder, spread shaft, high resolution, for CMP50 and CMP63 with /BP
/AS1H	3D	Multi-turn Hiperface® encoder, spread shaft, high resolution, for CMP50 and CMP63 with /BP
/EK0H	3D	Single-turn Hiperface® encoder, cone shaft, for CMP40
/AK0H	3D	Multi-turn Hiperface® encoder, cone shaft, CMP40 – 63, CMP.71 – 100
/EK1H	3D	Single-turn Hiperface® encoder, cone shaft, high resolution, for CMP50 – 63, CMP.71 – 100
/AK1H	3D	Multi-turn Hiperface® encoder, cone shaft, high resolution, for CMP50 – 63, CMP.71 – 100

3.7.4 Connection variants

Designation	Design	Description
/SM1	3D, 3GD	M23 motor plug connector, socket on motor end only, pluggable motor and encoder cables (standard)
/SMB	3D, 3GD	M40 motor plug connector, socket on motor end only, pluggable motor and encoder cables (standard)
/SB1	3D	M23 brakemotor plug connector, socket on motor end only, pluggable motor and encoder cables (standard)
/SBB	3D	M40 brakemotor plug connector, socket on motor end only, pluggable motor and encoder cables (standard)
/KK	3D, 3GD	Terminal box for CMP50/63, pluggable motor and encoder cable

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4 Mechanical installation

INFORMATION

It is essential to comply with the safety notes in chapter 2 during installation.

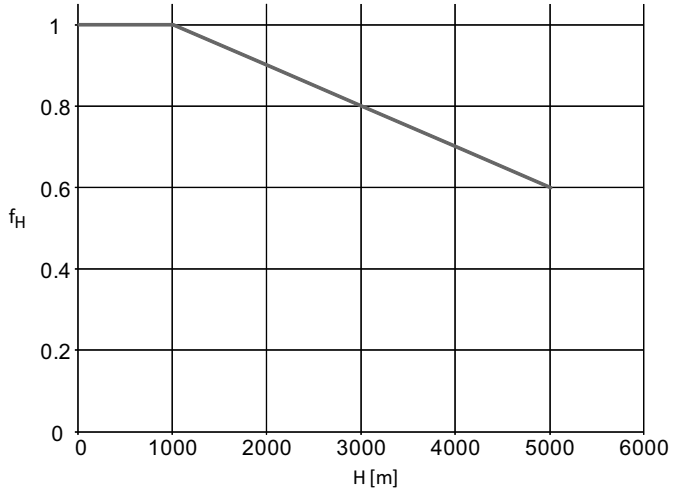
4.1 Required tools/resources

- Standard tools
- Mounting device
- Operation with conductor end sleeves: Crimping tool and conductor end sleeves
- Crimping pliers for plug connectors in case customers want to assemble cables themselves
- Removal tool

4.2 Before you start

Do only install the servomotor if the following conditions are met:

- The information on the servomotor's nameplate must match the output voltage of the servo inverter.
- The drive is undamaged (no damage caused by transportation or storage).
- The ambient temperature corresponds to the information on the nameplate and on the order confirmation.
- The surrounding area is free from oils, acids, gases, vapors, (ionizing) radiation, etc.
- The installation altitude must be no higher than 1000 m asl, otherwise the drive must be designed to meet the special ambient conditions. The following diagram shows the factor f_H by which the motor torque is reduced as a function of the installation altitude.



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- The reduction is calculated as follows: $M_{0H} = f_H \times M_0$

4.3 Preliminary work

Thoroughly clean the shaft ends and make sure that they are free from anti-corrosion agent, dirt or the like. Use a commercially available solvent. Make sure that the solvent does not come into contact with the bearing or sealing rings as it may damage the material.

NOTICE

The bearing and the sealing rings can be damaged if exposed to solvents.

Potential damage to property.

- Protect the bearing and sealing rings from exposure to solvents.

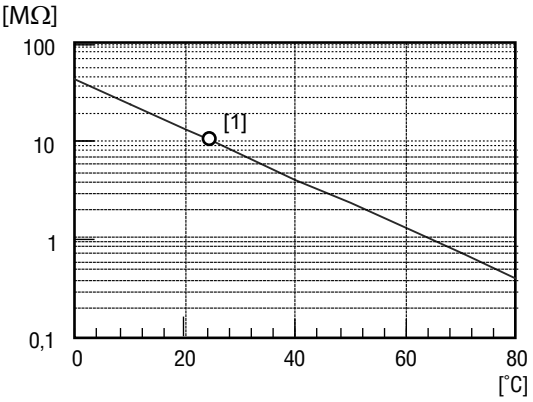
4.3.1 Long-term storage of servomotors

- The service life of the ball bearing grease is reduced after storage periods exceeding one year.
- Check whether the servomotor has absorbed moisture as a result of being stored for a long time. Measure the insulation resistance with a measurement voltage of DC 500 V.

INFORMATION

The insulation resistance varies greatly depending on the temperature, see following figure. You can measure the insulation resistance between the connection pins and the motor housing using an insulation measuring device.

The following figure shows the insulation resistance depending on the temperature.



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[1] Resistance temperature point (RT point)

INFORMATION

Insulation resistance too low:

Servomotor has absorbed moisture.

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4.4 Mounting the servomotor

4.4.1 Aligning the motor shaft

NOTICE

Improper installation may result in damages to the servomotor.

Possible damage to property.

- Mount the servomotor only in the specified mounting position on a level, vibration-free, and torsionally rigid support structure.
- Align the servomotor and the driven machine carefully to avoid placing any unacceptable strain on the output shafts.
- Permitted overhung loads and axial forces "" (→ 🗎 120).
- Do not butt or hammer the shaft end.

INFORMATION

Components with a keyway to be mounted belatedly on the shaft must be balanced using a half key. Motor shafts with a keyway are balanced with a half key.

4.4.2 Use of belt pulleys/toothed belt pulleys

If you use the belt pulleys/toothed belt pulleys, special requirements must be met.

INFORMATION

Use belts with sufficient electrical bleeder resistance < 10^9 Ω only. These have to meet the requirements of EN 60695-11-10, category FV-0. Power transmission elements should be balanced after installation and must not give rise to excessive radial or axial forces, see chapter "Overhung and axial loads" (→ 🗎 120).

4.4.3 Installation in damp locations or outdoors

- Try to arrange the motor and encoder connection so that the connector cables do not point upwards.
- Coat the threads of the cable glands and filler plugs with sealing compound and tighten them properly. Then coat them again.
- Clean the sealing surfaces of the connector (motor and/or encoder connection) before reassembly.
- Replace any brittle seals.
- If necessary, restore the corrosion protection coat.
- Check the validity of the degree of protection according to the nameplate.
- If necessary, attach covers (canopy).

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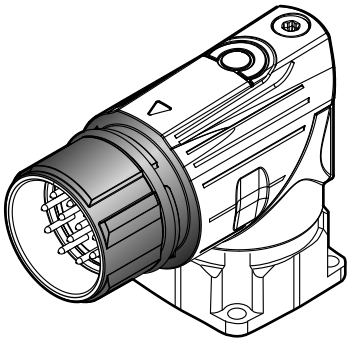
4.4.4 Installation in environments with a relative humidity of ≥ 60 %

When you install the drive in environments with a relative humidity of ≥ 60%, you must protect the parts of the plug connector system against corrosion.

The area around the flange socket thread and the O-ring as far as the flange surface must be coated with a thin layer of the supplied NOCO-Fluid® anti-corrosion agent and lubricant (part no. 09107819).

All surfaces, especially the thread root, must be covered completely. The compound may not come into contact with the pins and the inside of the housing.

You have to coat the area again each time before you re-plug the connector.



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INFORMATION

You can order NOCO-Fluid® from SEW-EURODRIVE in larger quantities.

4.5 Installation tolerances

Shaft end	Flanges
Diameter tolerance according to EN 50347 • ISO k6 • Centering bore in accordance with DIN 332, shape DR	Centering shoulder tolerance in accordance with EN 50347 • ISO j6

4.6 Plug connection, special conditions

INFORMATION

Protect the connectors from falling objects by fitting a suitable cover. The cover must be able to absorb a blow energy of 7 J (according to EN 60079-0).

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5 Electrical installation

5.1 General information

⚠ DANGER

Risk of injury due to electric shock.

Severe or fatal injuries.

- Adhere to the safety instructions in chapter 2 during installation.
- Use switch contacts in utilization category AC-3 to EN 60947-4-1 to connect the servomotor and brake.
- Observe the wiring instructions of the inverter manufacturer.
- Observe the operating instructions for the inverter.
- Do not pull the connector while it is energized.

NOTICE

Damage to the BK brake.

Possible damage to property.

- It is essential that you observe the correct polarity of BK brake supply. Check the polarity when replacing the brake.

INFORMATION

A bag containing the safety notes and wiring diagram is attached to the servomotor.

Observe the enclosed notes.

5.2 Additional regulations for potentially explosive atmospheres

INFORMATION

In addition to the generally applicable installation regulations for low-voltage electrical equipment (e.g. in Germany: DIN VDE 0100, DIN VDE 0105), it is also necessary to comply with the special provisions on setting up electrical machinery in potentially explosive atmospheres (operating safety regulations in Germany; EN 60079-14 and specific provisions for the machine).

INFORMATION

In a potentially explosive atmosphere, the plug connectors may not be unplugged under any circumstances while they carry voltage or while the motor is turning.

INFORMATION

Observe the information regarding the thermal motor protection in chapter "Thermal motor protection"" (→ 🗎 48).

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5.3 Ambient conditions during operation

5.3.1 Ambient temperature

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

5.3.2 Hazardous radiation

Motors must not be exposed to hazardous radiation (such as ionizing radiation). Contact SEW-EURODRIVE if necessary.

5.3.3 Hazardous gases, vapors and dusts

If used according to their designated use, explosion-proof servomotors are incapable of igniting explosive gases, vapors or dusts. However, explosion-proof 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.

5.3.4 General information on explosion protection

The explosion-proof CMP synchronous servomotors are intended for the following application zones.

Motor design	Area of application
3D	Application in zone 22 and compliance with the design requirements for equipment group II, category 3D
3GD	Application in zone 2 or 22 and compliance with the design requirements for equipment group II, category 3G or 3D

5.3.5 Degree of protection IP65

Servomotors in design II3D and II3GD from SEW-EURODRIVE have degree of protection IP65 in delivery state.

5.3.6 Temperature class / surface temperature

The servomotors are designed for temperature class T3. The maximum surface temperature is 150 °C.

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5.3.7 Protection against impermissibly high surface temperatures

Explosion-proof servomotors in design 3D and 3GD ensure safe operation under normal operating conditions. The servomotor must be disconnected safely in the case of overload to avoid the risk of impermissibly high surface temperatures.

INFORMATION

The CMP servomotors come equipped with KTY temperature sensors. The temperature monitoring for the motors must be performed using the KTY temperature sensor and the provided temperature model. Due to the high dynamics, this is the only way to provide for an effective thermal protection.

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5.4 Connection with SM./SB. connector system

5.4.1 Procedure

- Connect the servomotor according to the enclosed wiring diagram.
- Check whether the cable cross sections comply with:
  - Nominal motor current
  - The applicable installation instructions
  - The requirements of the place of installation

5.4.2 Wiring diagrams of plug connectors

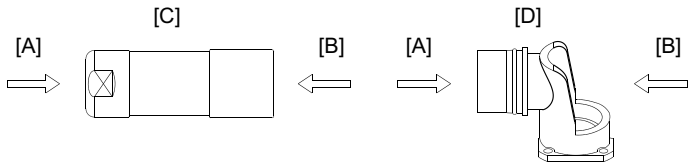
INFORMATION

Connect the standard servomotor as shown in the following wiring diagram, which is included with the servomotor.

INFORMATION

Observe any customer-specific wiring diagrams, if applicable.

Key

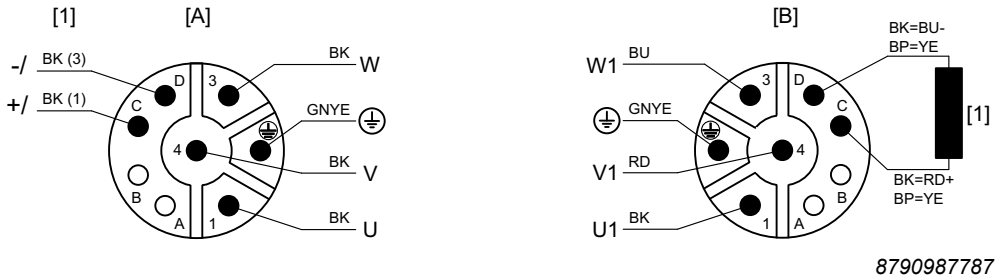


8790995467

[A] View A
[B] View B
[C] Customer connector with socket contacts
[D] Flange socket with pin contacts installed at the factory

Connection SM1/SB1 power plug connector (M23)

Wiring diagram with/without BP/BK brake



8790987787

[1] BP/BK brake (optional)

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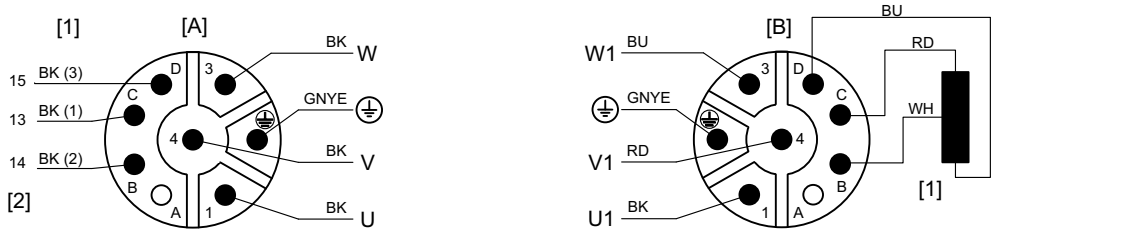
Connection SM1/SB1 power plug connector (M23)

Wiring diagram with/without BY brake

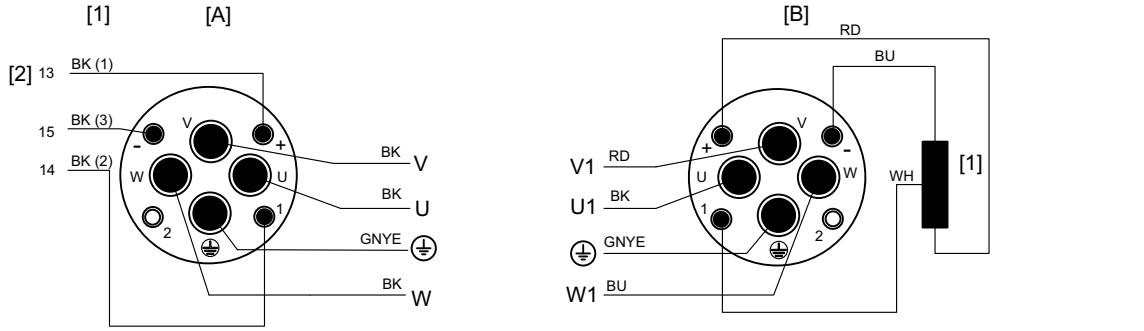


8790989707

[1] BY brake (optional)
[2] Connection to rectifier from SEW-EURODRIVE according to operating instructions

Connection SMB/SBB power plug connector (M40)

Wiring diagram with/without BY brake

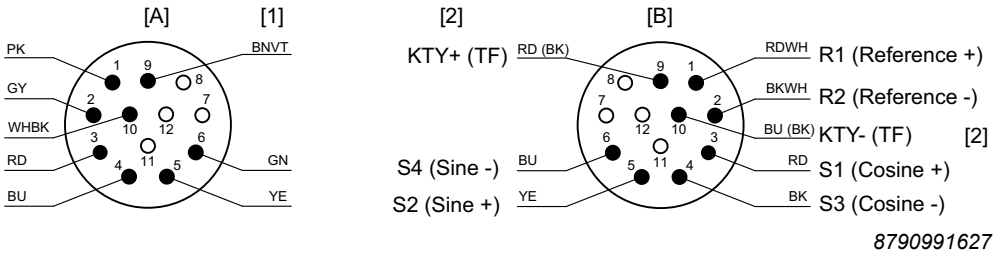


8791078027

[1] BY brake (optional)
[2] Connection to rectifier from SEW-EURODRIVE according to operating instructions. For BY.D, connection 14 is omitted.

Wiring diagram for RH1M resolver signal plug connectors

Wiring diagram



[1] Shield connected to the metal housing of the connector. Colors according to SEW-EURODRIVE cables
[2] KTY+ (RD), KTY-(BU), optional TF (BK)

Pin assignment of plug connector lower part

Pin	Color code	Connection
1	RD/WH	R1 (reference +)
2	BK/WH	R2 (reference -)
3	RD	S1 (cosine +)
4	BK	S3 (cosine –)
5	YE	S2 (sine +)
6	BU	S4 (sine –)
7	–	–
8	–	–
9	RD	KTY +
10	BU	KTY –
11	–	–
12	–	–

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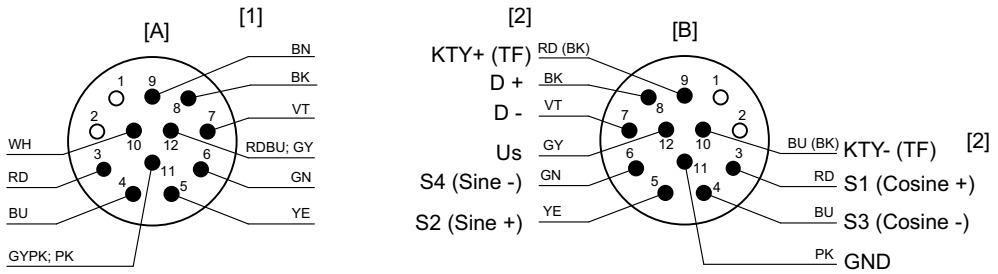
Connection signal plug connectors ES1H, AS1H, AK0H, EK0H, AK1H, EK1H encoders

Wiring diagram



8790993547

[1] Shield connected to the metal housing of the connector. Colors according to SEW-EURODRIVE cables
[2] KTY+ (RD), KTY-(BU), optional TF (BK)

Pin assignment of plug connector lower part

Pin	Color code	Connection
1	–	–
2	–	–
3	RD	S1 (cosine +)
4	BU	S3 (cosine –)
5	YE	S2 (sine +)
6	GN	S4 (sine –)
7	VT	D –
8	BK	D +
9	RD	KTY +
10	BU	KTY –
11	PK	Voltage reference (GND)
12	GY	Supply voltage Vs

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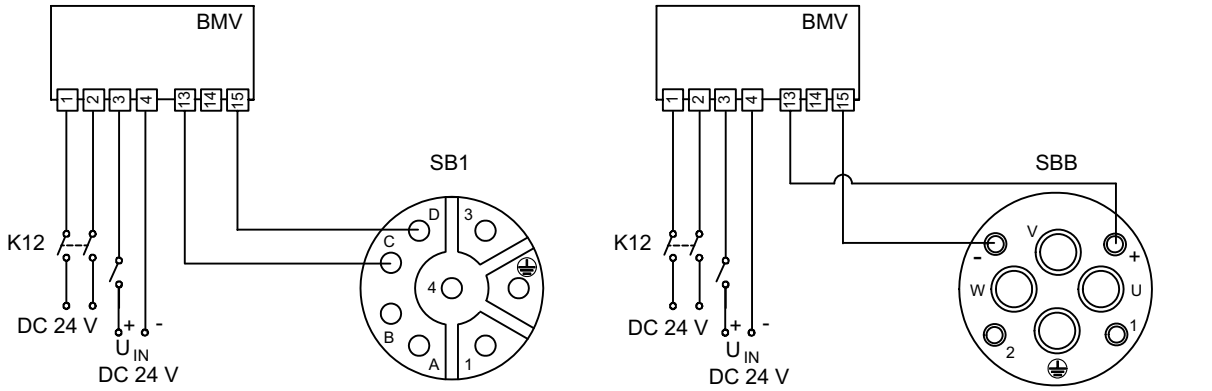
Wiring diagrams of the brake control – BP brake

In every application, the BP holding brake can be controlled via the BMV brake relay or a customer relay with varistor overvoltage protection.

If the system complies with the specifications for direct brake control, then a BP brake can also be controlled directly via the brake output of a MOVIAXIS® servo inverter.

BMV brake controller



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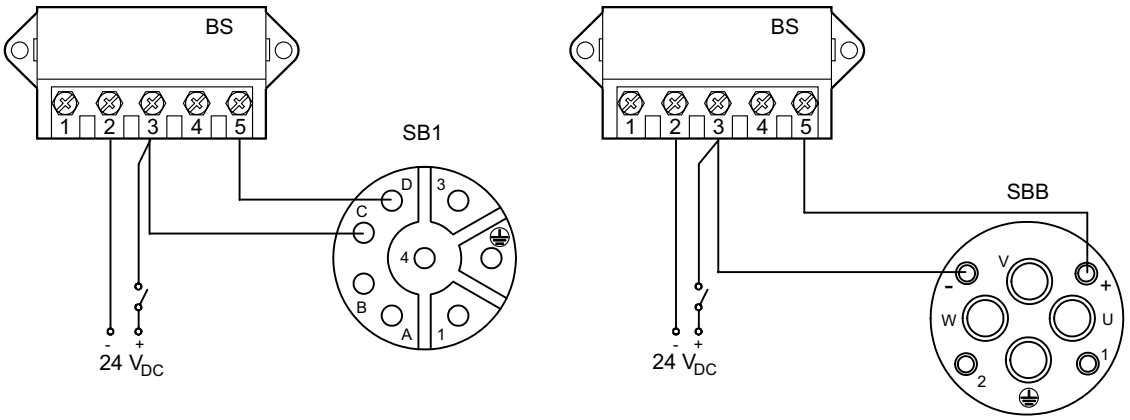
Connection 1, 2	Power supply
Connection 3, 4	Signal (inverter)

BS brake contactor



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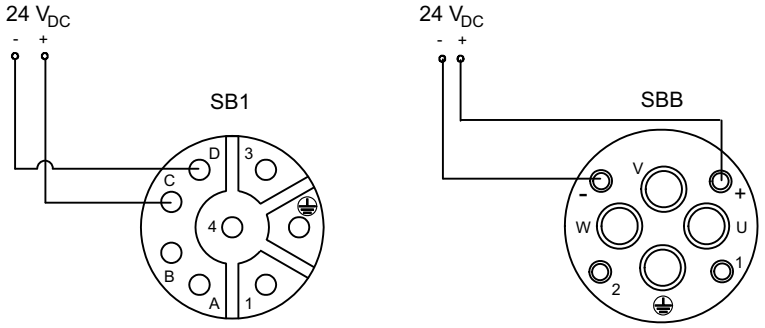
Direct 24 V brake supply



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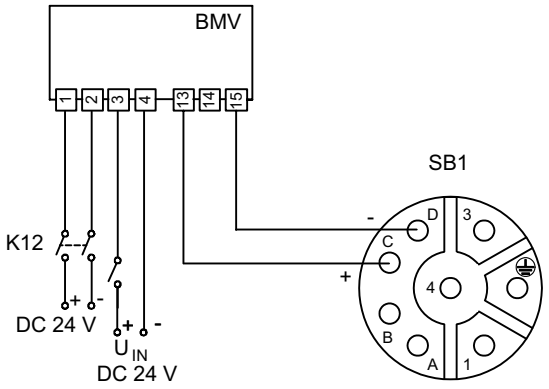
In the following cases, the brake must be protected from overvoltage, e.g. via a varistor protection circuit:

- Operation on non-SEW inverters,
- If the brake is not directly supplied from the SEW-EURODRIVE inverter.

Wiring diagrams of the brake control – BK brake

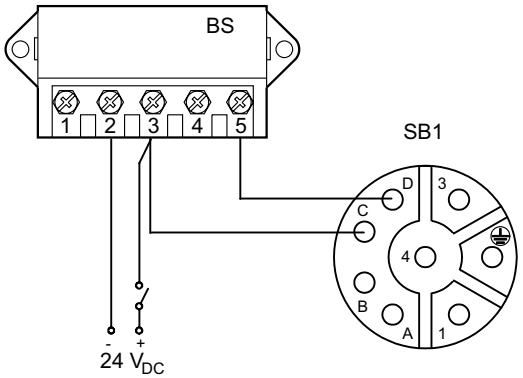
BMV brake controller



9007212241295115

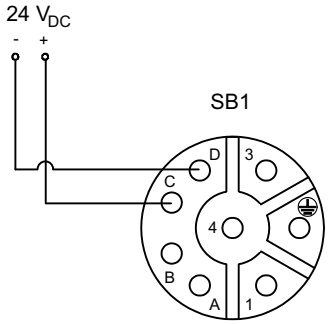
Connection 1, 2	Power supply
Connection 3, 4	Signal (inverter)

BS brake contactor



12986690059

Direct 24 V brake supply



12986696203

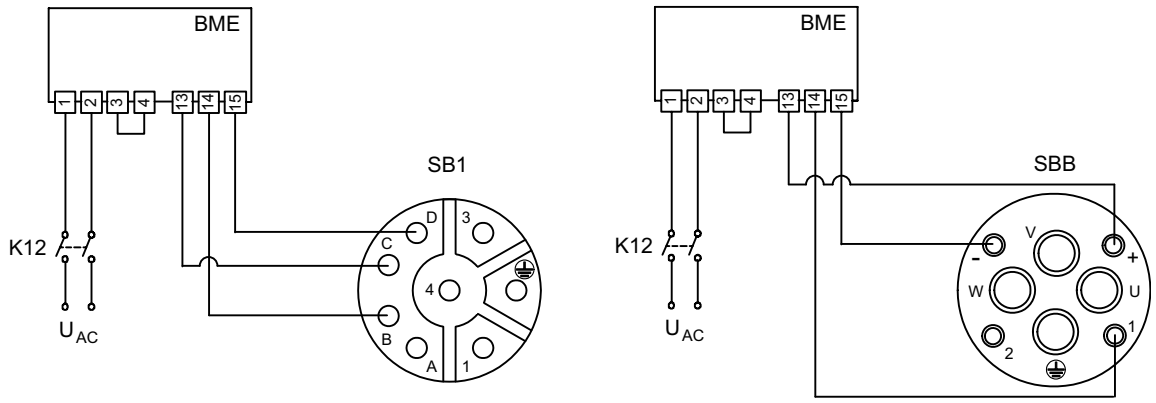
In the following cases, the brake must be protected from overvoltage, e.g. via a varistor protection circuit:

- Operation on non-SEW inverters,
- If the brake is not directly supplied from the SEW-EURODRIVE inverter.

Wiring diagrams of the brake control – BY brake

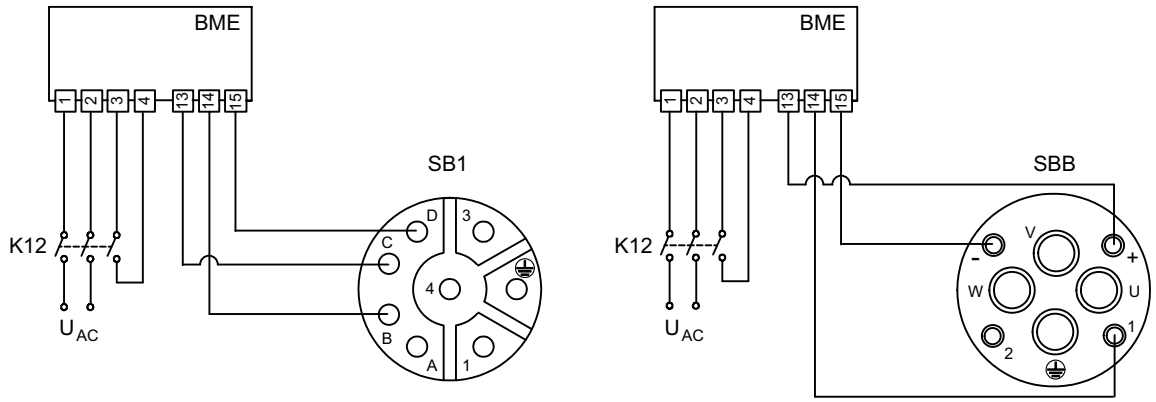
BME brake rectifier

Cut-off in the AC circuit / standard application of the brake with SB1, SBB



2901967755

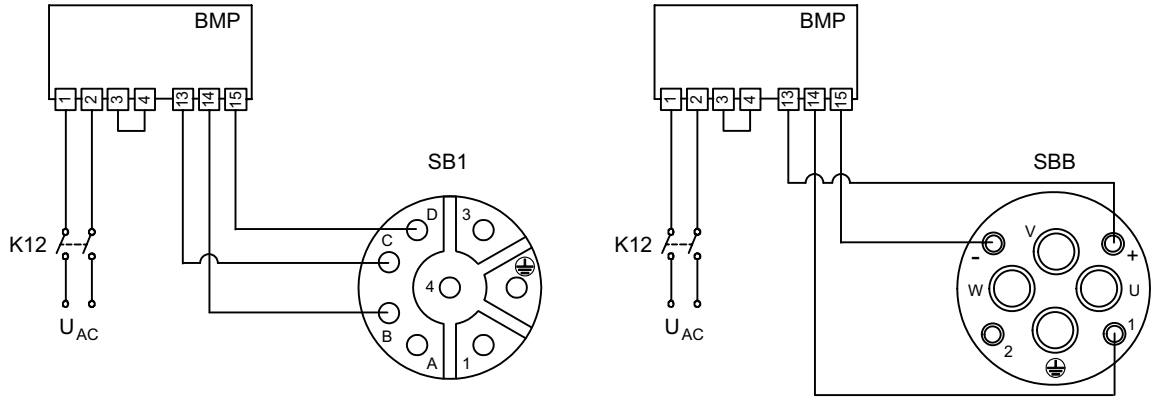
Cut-off in the DC and AC circuits / rapid application of the brake with SB1, SBB



2901969419

BMP brake rectifier

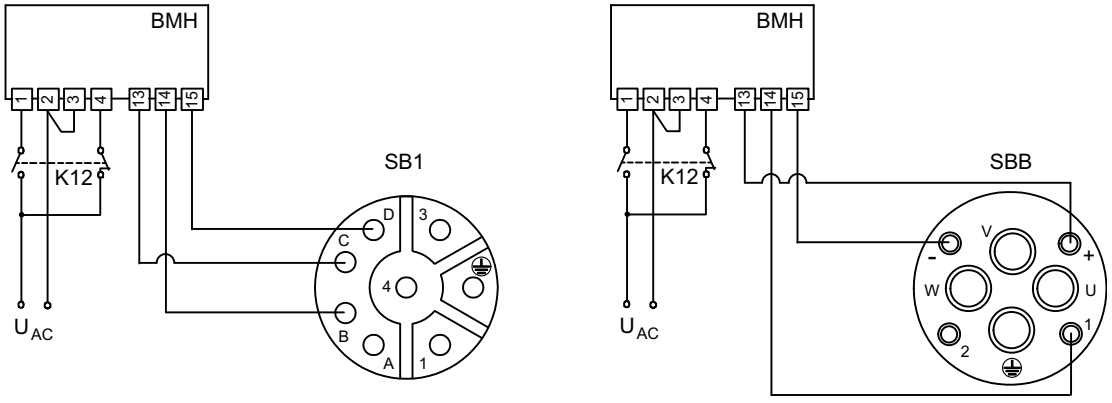
Cut-off in the DC and AC circuits / rapid application of the brake / integrated voltage relay with SBB



2901972107

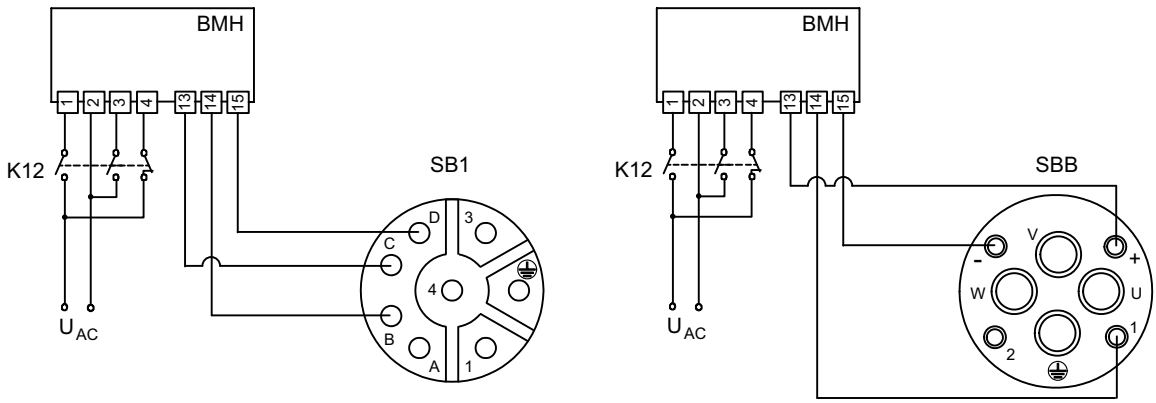
BMH brake rectifier

Cut-off in the AC circuit / standard application of the brake with SBB



2901974795

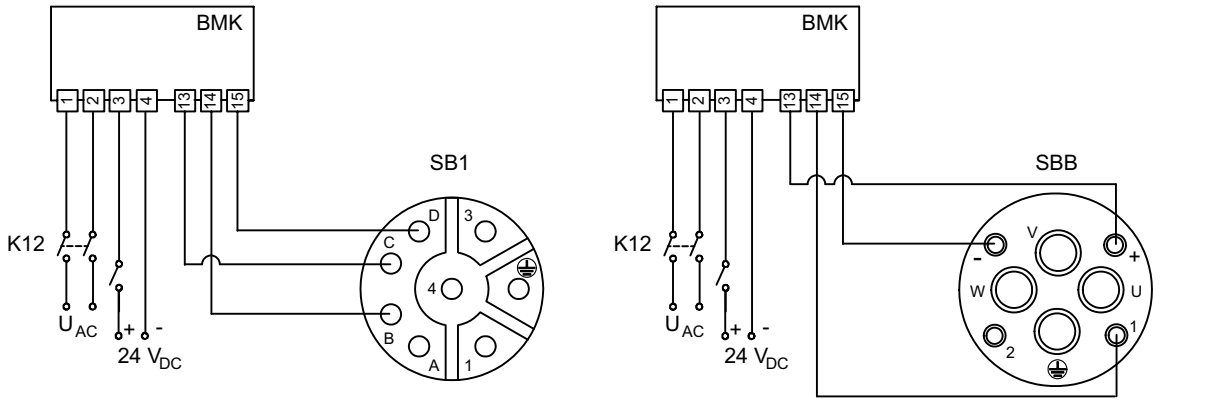
Cut-off in the DC and AC circuits / rapid application of the brake with SBB



2901976459

BMK brake controller

Cut-off in the DC and AC circuits / rapid application of the brake / integrated voltage relay / DC 24 V control input integrated with SBB

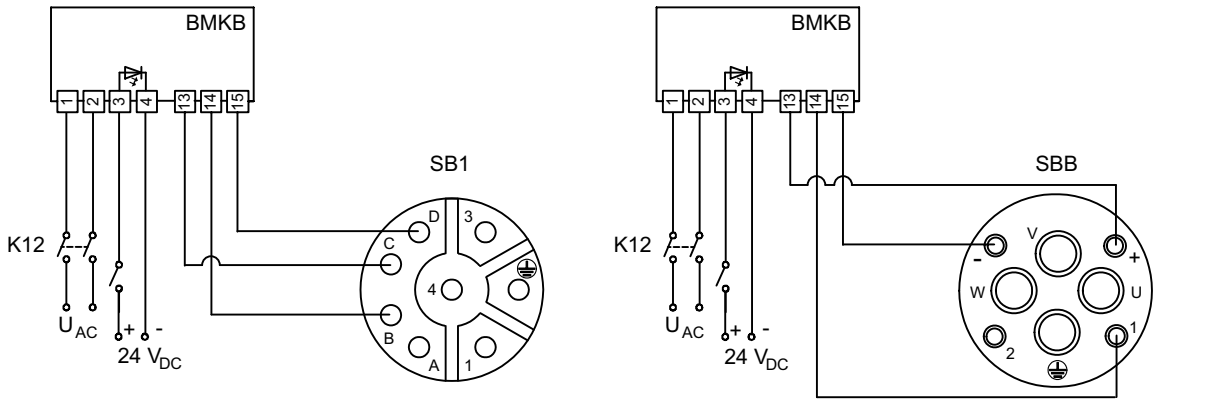


2901979147

Connection 1, 2	Energy supply
Connection 3, 4	Signal (inverter)

BMKB brake controller

Cut-off in the DC and AC circuits / rapid application of the brake / integrated voltage relay / DC24 V control input integrated / LED ready for operation display with SBB



2901981835

Connection 1, 2	Energy supply
Connection 3, 4	Signal (inverter)

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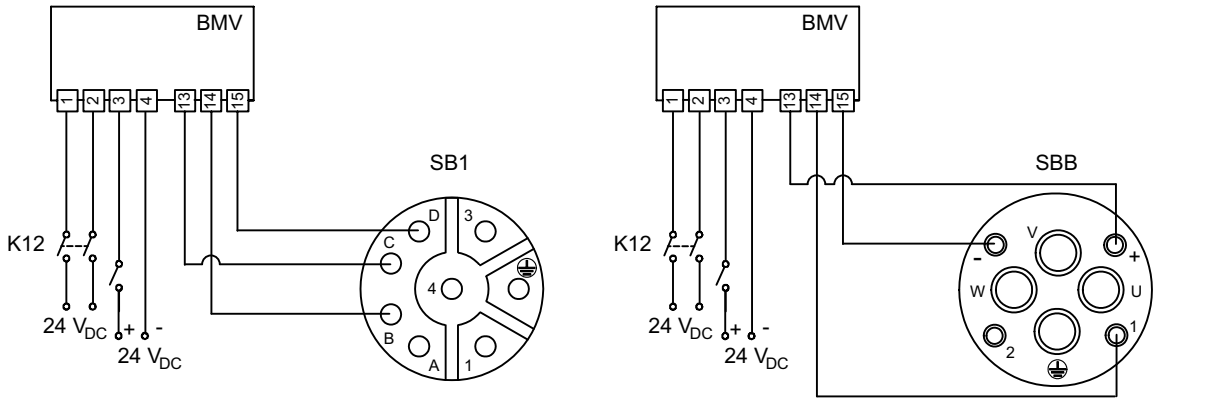
BMV brake controller

Cut-off in the DC and AC circuits / rapid application of the brake / DC 24 V control input integrated with SBB

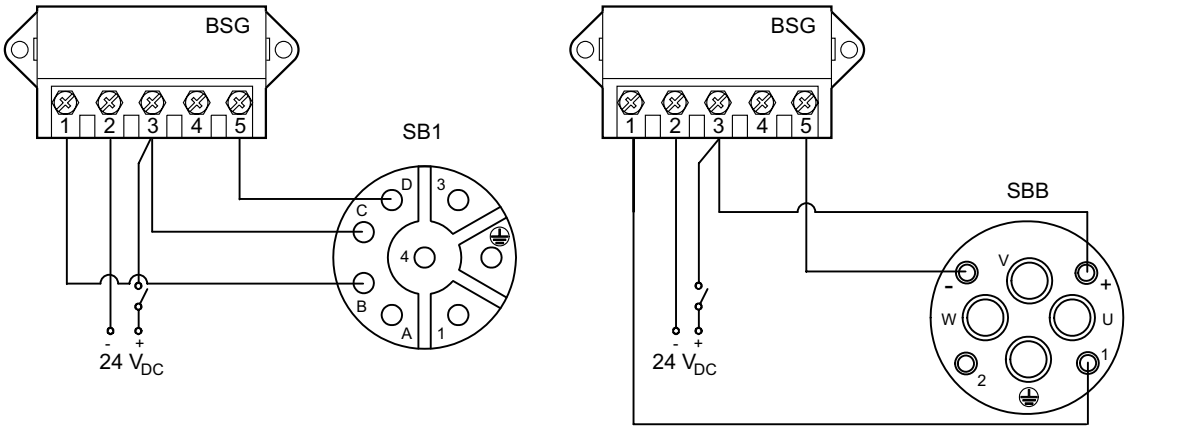


2901984523

Connection 1, 2	Energy supply
Connection 3, 4	Signal (inverter)

BSG brake control unit

For DC 24 V supply with SBB



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5.4.3 Signal plug connector connection

The following notes must be observed when connecting the encoder/resolver:

- Use only shielded cables with twisted pair cores.
- Connect the shield to the PE potential on both ends over a large surface area.
- Route the signal cables separately from the power cables (min. distance 200 mm).

INFORMATION

Do not unplug the signal plug connector while it is energized!

5.5 Connector assembly

As standard, power and signal cables enter the unit via adjustable right-angle connectors. Once the mating connector has been plugged in, the right-angle connector can be adjusted as required without using additional tools. A torque of approximately 10 Nm is required to adjust the connector. Radial connectors are also available as an option.

NOTICE

If the connector is tightened when it is installed in the wrong position, the insulator could slip, causing irreparable damage.

Possible damage to property.

- Check that the connector is installed in the correct position.
- Check that the detent on the connector is positioned correctly.
- Make sure that the connector lock can be turned without having to apply too much force.

5.5.1 Connector positions

An "adjustable" position has been defined for right-angle, rotatable connectors. This is the standard connector position. It corresponds to connector position "3".

A "radial" position has been defined for the straight connector housing (radial output). Radial connectors are optional.

INFORMATION

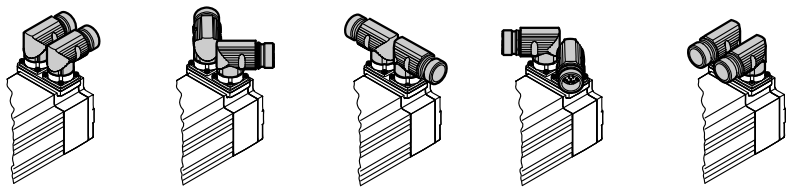
Comply with the permitted bending radii of the cables.

The right-angle connectors can be rotated to achieve the required position.

INFORMATION

The connector should only be rotated to install and connect the servomotor. Do not turn the connector regularly once it has been installed.

Positions of the adjustable plug connectors (examples)



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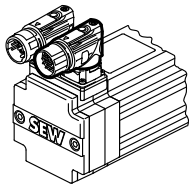
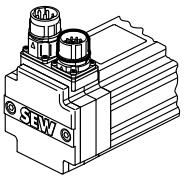
CMP40 – CMP63: SM1/SB1 plug connector

Adjustable

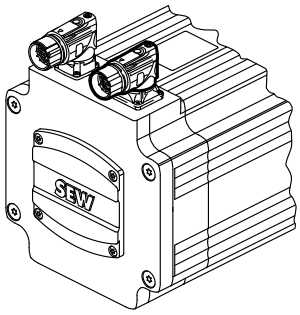


Radial

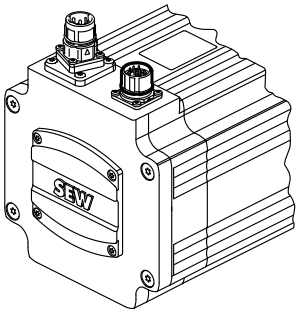


CMP.71 – CMP.100: SM1/SB1 plug connector

Adjustable



Radial



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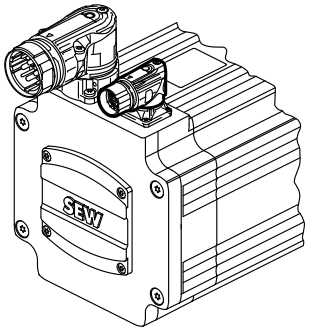
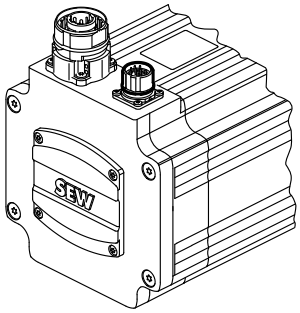
CMP.71 – CMP.100: SMB/SBB plug connector

Adjustable



Radial



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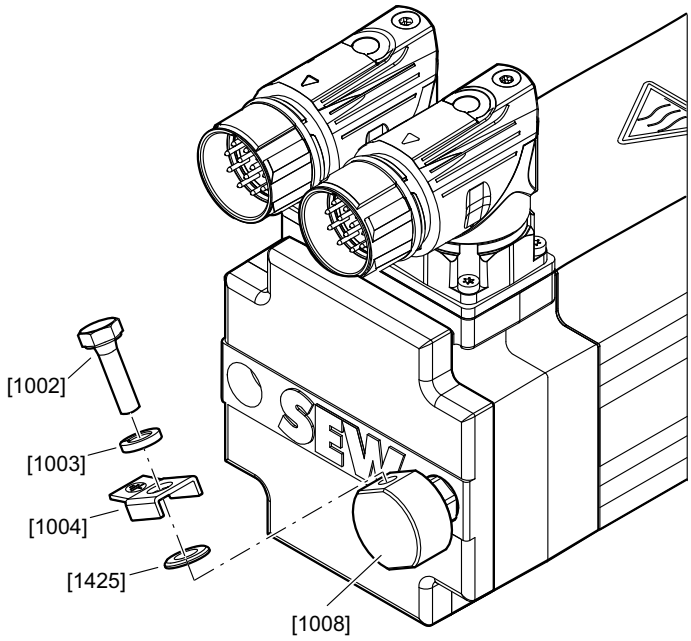
5.6 Equipotential bonding

In accordance with EN 60079-14, the unit must be connected to an equipotential bonding system. Please find below the connector and terminal box options.

5.6.1 CMP40 – 63 with plug connector option



9007205631507723

[1002] Hex head screw
[1003] Lock washer
[1004] Terminal clip
[1008] Ground stud
[1425] Washer

Tighten the hex head screw [1002] with a tightening torque of 6 Nm.

NOTICE

Loss of degree of protection and grounding if ground stud [1008] is rotated.

Possible damage to property.

- Do not twist the earthing stud [1008].

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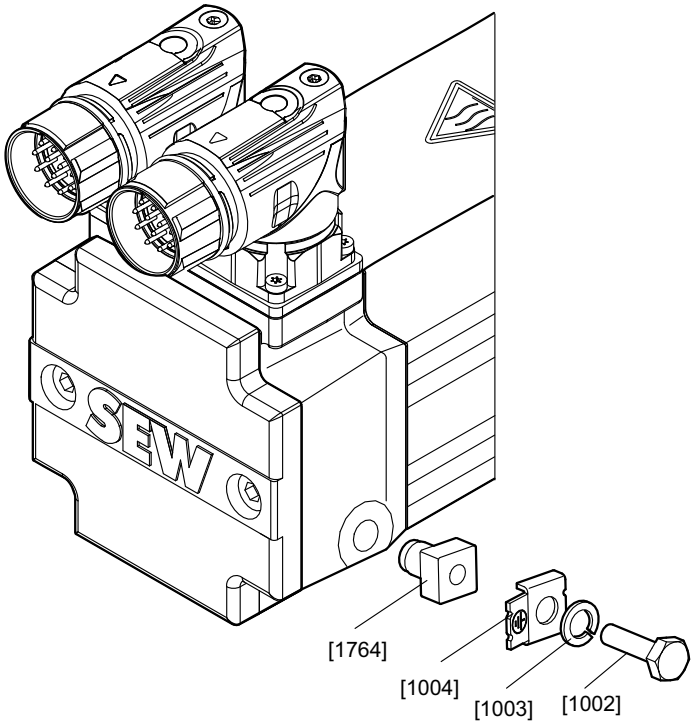
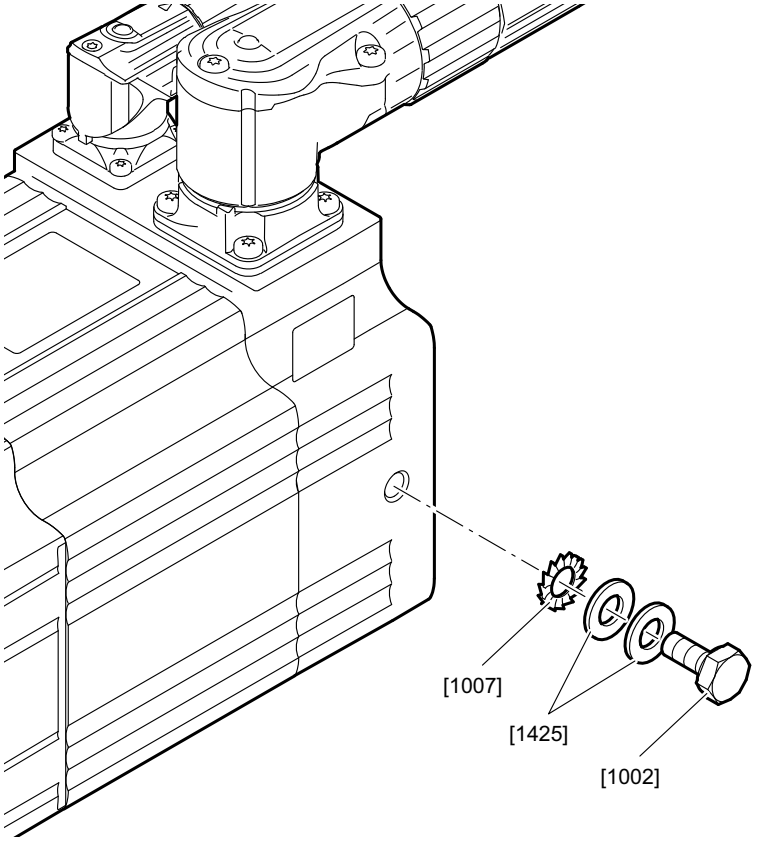
5.6.2 CMP40 – 63 with BK brake



14201906187

[1002] Hex head screw
[1003] Lock washer
[1004] Terminal clip
[1764] Grounding terminal

5.6.3 CMP.71 – 100 with plug connector option



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[1002]Hex head screw
[1007]Serrated lock washer
[1425]Washer

Tighten the hex head screw [1002] with the following tightening torques:

- CMP.71: 4.1 Nm
- CMP.80 – 100: 10 Nm

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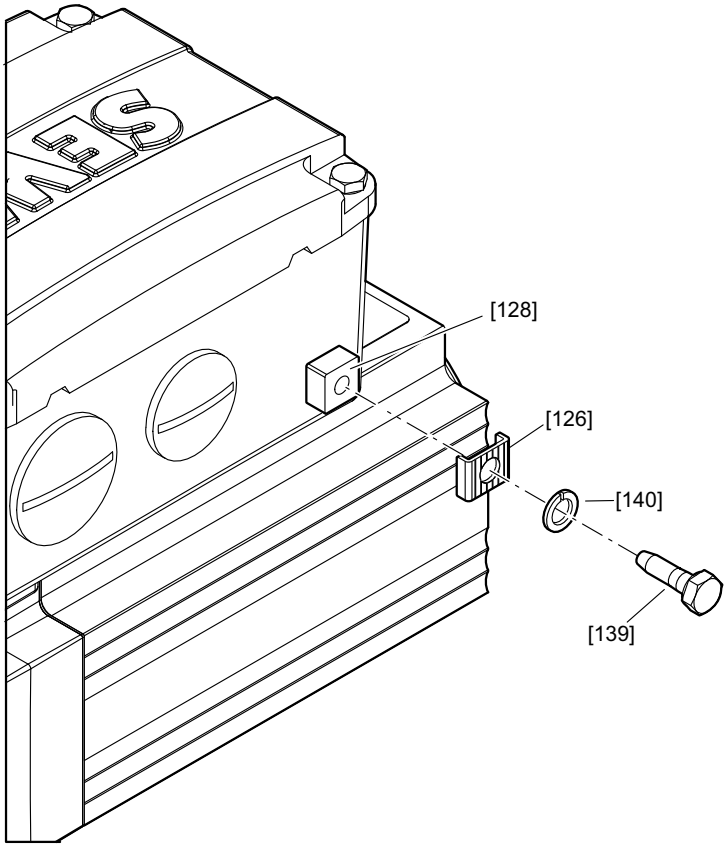
5.6.4 CMP40 – 63 with terminal box option



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[126] Terminal clip
[128] Grounding terminal
[139] Screw
[140] Lock washer

Tighten the screw [139] with a tightening torque of 2 Nm.

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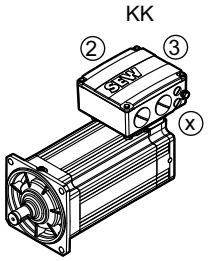
5.7 Terminal box connection

5.7.1 Notes regarding the connection of power and signal cables via terminal box

Optionally, you can connect the power and signal cables via a terminal box.

- /KK option: Connection of the power and signal cable via conductor end sleeves in the terminal box.

The cable entry position is specified with x, 2, 3.



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For motor sizes CMP50 and 63 in a fixed mounting position "x", the cable entry is possible from 3 sides.

5.7.2 Connecting the motor and encoder system via KK terminal box

- Check the cable cross sections.
- Insert the correctly stripped conductors into the corresponding plug-in terminals.
- Pull slightly on the conductor to check whether the cage clamp has locked off properly.

Connection cross section

Motor type	Power connection			Encoder/resolver/thermal motor protection	
	Connection	Maximum connection cross section	Cable entry	Connection	Cable entry
CMP50, CMP63	Spring terminals	6 mm^2	M25	Spring terminals	M20

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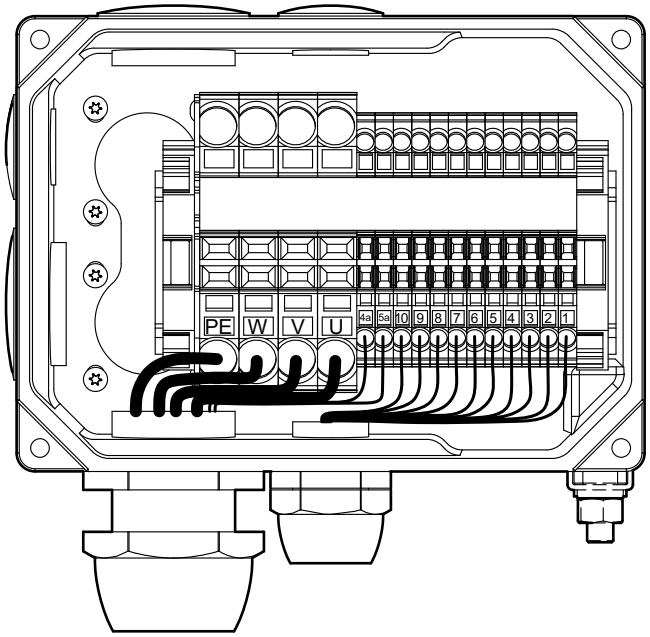
Connection of CMP50 and CMP63



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Power

Pin	Core identification	Connection
U	(BK/WH) Black with white lettering U, V, W	U
V		V
W		W
PE	(GN/YE) Green/yellow	PE conductor

BP brake, BK brake

Auxiliary terminal contacts	Core identification		BMV brake rectifier connection	BS brake control unit connection
	BP	BK		
4a (RD)	+ (YE) Yellow	+ (RD) Red	13	3
5a (BU)	- (YE) Yellow	- (BU) Blue	15	5

The brake has a standard connection voltage of DC 24 V.

NOTICE

Damage to the BK brake.

Possible damage to property.

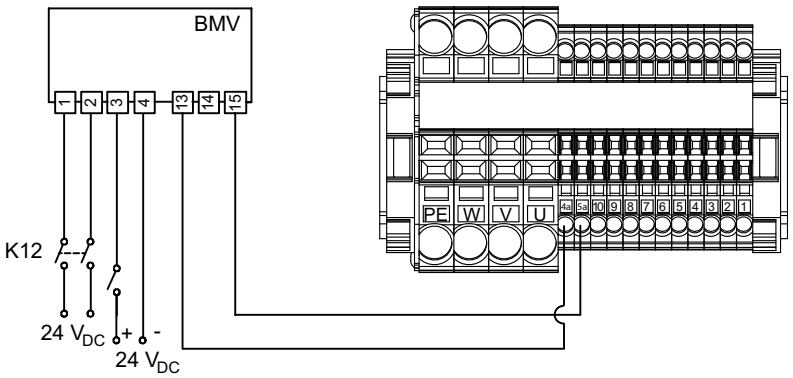
- It is essential that you observe the correct polarity of BK brake supply. Check the polarity when replacing the brake.

Signal

Resolver			Encoder		
1	ref +	Reference	1	cos +	Cosine
2	ref -		2	ref cos	Reference
3	cos +	Cosine	3	sin +	Sine
4	cos -		4	ref sin	Reference
5	sin +	Sine	5	D -	DATA
6	sin -		6	D +	DATA
7	-	–	7	GND	Ground
8	-	–	8	Us	Supply voltage
9	KTY + / (TF)	Motor protection	9	KTY + / (TF)	Motor protection
10	KTY - / (TF)		10	KTY - / (TF)	

5.7.3 Wiring diagrams

BMV brake controller – CMP50, CMP63



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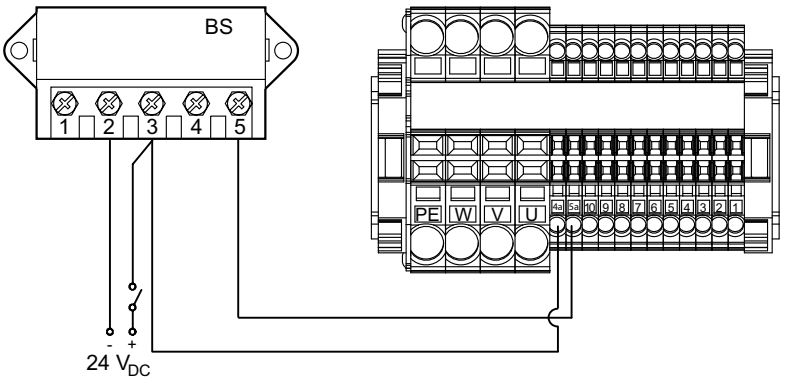
Connection 1, 2 Energy supply

Connection 3, 4 Signal (inverter)

BS brake contactor – CMP50, CMP63



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5.8 Wiring notes

5.8.1 Protecting the brake control system against interference

To protect the brake control system against interference, do not route unshielded brake cables together with switched-mode power cables.

Switched-mode power cables include in particular:

- Output cables of frequency inverters
- Supply cables to braking resistors and similar.

5.8.2 Thermal motor protection

Install the connecting lead of the KTY separately from other power cables maintaining a distance of at least 200 mm.

The cables can only be routed together if either the KTY cable or the power cable is shielded.

5.8.3 Special aspects for operation with servo inverters

When servomotors are powered from inverters, the wiring instructions issued by the inverter manufacturer must be followed. It is essential that you observe the operating instructions for the inverter.

5.9 Connecting the servomotor and encoder system using SM./SB. plug connectors

The CMP synchronous servomotors are supplied with an SM./SB. plug connector system. In the basic design, SEW-EURODRIVE delivers CMP synchronous servomotors with a flange socket on the motor end and without mating connector. The encoder system is connected using a separate 12-pin round plug connector.

The mating connectors can be ordered separately.

INFORMATION

Route the signal cables separately from the power cables with a minimum distance of 200 mm. The cables can only be routed together if either the feedback cable or the power cable is shielded.

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5.9.1 Prefabricated cables

Prefabricated cables are available from SEW-EURODRIVE to connect the SM/SB plug connector system. For information on the prefabricated cables, refer to the "CMP Synchronous Servomotors" catalog.

For information on the mating connectors with matching crimp contacts 1.5 mm^2, 2.5 mm^2 and 4 mm^2, refer to the "Assembly of Cables" manual.

Assembling the cables:

Observe the following notes if you want to assemble the cables yourself:

- Follow the instructions in the "Assembly of Cables" manual.
- The socket contacts for the motor connection are designed as crimp contacts. Only use suitable tools for crimping.
- Use suitable removal tools to remove incorrectly installed socket contacts.
- Install the insulator in the signal connectors on the motor end at "zero" degree (center position). Observe this coding on the cable end.
- Cable relief according to EN 61984 and EN 60529 is influenced by the tightening torque of the screw fitting. The tightening torque must be matched to the cable.

5.10 Thermal motor protection

INFORMATION

Due to the low thermal time constants of the winding, a thermal motor protection is only achieved if the motor current is limited on the basis of the following criteria:

- Measured values of the KTY temperature sensor
- In addition, a motor model for thermal protection must be activated as it is the case with inverters from SEW-EURODRIVE. This motor model must match the respective servomotor"" (→ 🗎 27).

5.10.1 KTY temperature sensor

NOTICE

Incorrect connection may cause damage to the temperature sensor and the motor winding.

Possible damage to property.

- Avoid currents > 4 mA in the circuit of the KTY since high self-heating of the temperature sensor can damage its insulation and the insulation of the motor winding.
- Do not route any unshielded KTY cables near power cables.
- It is essential to observe the correct connection of the KTY to ensure correct evaluation of the temperature sensor.

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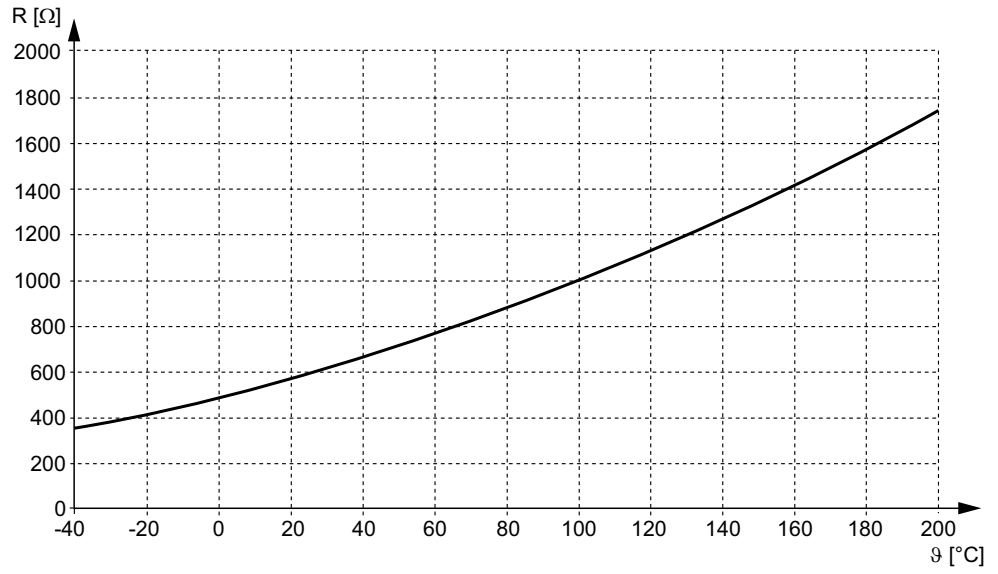
The following figure shows the resistance of the KTY sensor subject to the motor temperature. The characteristic curve shows the resistance curve with a measuring current of 2 mA and correct pole connection.



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For detailed information on connecting the KTY, refer to the contact assignments of the resolver/encoder cable. Observe the correct polarity.

6 Startup

⚠ DANGER

Risk of injury due to electric shock.

Severe or fatal injuries.

- It is essential to comply with the safety notes in chapter 2 during startup.
- Use switch contacts in utilization category AC-3 to EN 60947-4-1 to connect the servomotor and brake.
- Observe the wiring instructions of the inverter manufacturer.
- Observe the operating instructions for the servo inverter.

NOTICE

Destruction of the motor due to multiple acknowledgements of a motor protection fault.

Damage to property, damage to the motor

- Do not acknowledge a motor protection fault more than once. If an acknowledged motor protection fault occurs again shortly after the acknowledgement, you must first determine the cause for the fault and remedy it.

6.1 Before startup

INFORMATION

Before starting up the unit for the first time, make sure that:

- The plug-in connections have been established correctly.
- The plug connectors are protected against inadvertent interruption.

- The motors may only be operated in combination with frequency inverters.
- Before initial startup, frequency inverters must be configured using the MotionStudio software.
- A suitable frequency inverter is chosen during project planning. For further information on project planning, refer to the "Synchronous Servomotors" catalog.
- The drive must be undamaged and not blocked.
- Preliminary work""" (→ 🗎 22) are performed after extended storage periods.
- All connections have to be made correctly.
- The direction of rotation of the servomotor/gearmotor is correct.
- All protective covers have to be fitted correctly.
- All motor protection devices must be active.
- There must not be any other sources of danger.
- No heat-sensitive or insulating materials are allowed to cover the servomotor surface.

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6.2 Inverter operation in designs II3D and II3GD

6.2.1 Safe operation of synchronous servomotors in category 3

Project planning is the basic requirement for safe operation of explosion-proof motors. The following points have to be considered:

- Permitted torques
- Maximum speed
- Permitted combination of motor and frequency inverter
- Permitted braking work
- Overhung load and axial load
- For servo gearmotors, the limit values of the gear unit must be observed as well.

Maximum permitted torques

The thermal torque limit characteristic curve shows the permitted maximum torque (M S1) for continuous operation.

The values may be exceeded for brief periods if the effective operating point lies below the thermal limit characteristic curve see "Dynamic and thermal limit characteristic curves" (→ 🗎 94).

The maximum limit torque M_{pk} must not be exceeded.

Maximum permitted speeds

Maximum speed must not be exceeded. For this value, refer to chapter "Dynamic and thermal limit characteristic curves" (→ 🗎 94).

Inverter assignment

The required maximum motor torque determines the output current of the frequency inverter. For selecting a suitable frequency inverter, tables with inverter assignment for MOVIDRIVE®® are available, see chapter "Motor/inverter assignments" (→ 🗎 84).

Maximum permitted braking work

To avoid the brake from reaching impermissible temperatures, observe the maximum permitted braking work. Depending on the brake type, check the braking work per switching operation or for emergency stop, see chapter "Technical data" (→ 🗎 62).

Overhung and axial load

If you use servomotors without gear unit, check the overhung and axial load based on the motor shaft, see chapter "Overhung and axial loads" (→ 🗎 120).

Gear unit

If you use servo gearmotors, also observe the limit values for the gear unit M_{apk} and n_{apk} in addition.

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6.3 Parameter setting on the servo inverter

6.3.1 General information

INFORMATION

Install the servo inverter outside the potentially explosive atmosphere.

Observe the relevant operating instructions for servo inverter startup.

INFORMATION

Use the guided startup function of the current MOVITOOLS® MotionStudio or the MOVITOOLS® software. It is essential to note that the maximum current limit must be checked/reset after each guided startup.

6.3.2 Setting the maximum speed

The maximum motor speed is limited by the motor itself and, if applicable, by a gear unit and other external components.

When setting the maximum motor speed in the frequency inverter, observe the rated speed n_N, the gear unit limit value ne_{pk}, and the max. permitted speed of external components, if applicable. These data are listed on the nameplate, see "Nameplate"" (→ 🗎 18).

6.3.3 Setting the current limit

The parameter "torque limit" of the frequency inverter limits the maximum torque of the motor. In general, the torque limit setting depends on the actually required torque of the servomotor. The setting of the parameter current limit depends on the setting of the torque limit. The following condition applies: Current limit ≥ Torque limit.

During startup, MOVITOOLS® MotionStudio gives advice on setting the torque limit and current limit. If you accept the recommendation, the parameter is set to the permitted maximum current of the motor I_{max}. These data are listed on the nameplate, see chapter "Nameplate on the servomotor" (→ 🗎 18).

In case of direct drives, torque limit and current limit are determined only by the permitted maximum current of the motor I_{max}. For servo gearmotor, the gear unit limit value M_{apk} must be considered as limiting factor in addition.

If project planning was carried out, both limits are set for the motor current that is required for the maximum application torque. The correlation between torque and current are described in chapter "Torque-current characteristics" (→ 🗎 116).

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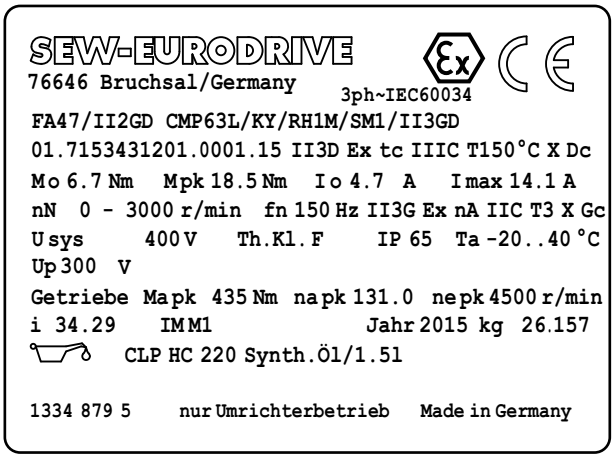
Example

A servo gearmotor with the type code FA47/II2GD CMP63L/BP/KY/RH1M/SB1/II3D is operated with a frequency inverter of the type MOVIDRIVE® MDX61B0014-5A3-4-00. According to project planning for acceleration, the motor must generate a torque of 8.95 Nm.



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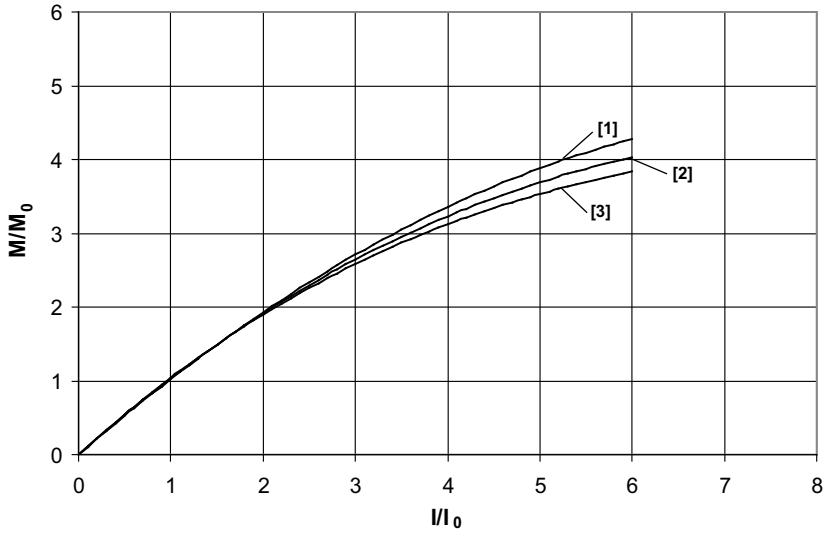
Calculating the torque-current limit:

Nominal output current of inverter = 4 A

Standstill current I_0 = 4.7 A

Factor maximum torque/standstill torque

M_{max} [Nm] / M_0 [Nm] = 8.95 A / 6.7 A = 1.34



Torque-current characteristic curve CMP63S/ M/L

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[1] CMP63L [2] CMP63M [3] CMP63S

INFORMATION

This characteristic curve and all others (M/I) must be limited to 3 × I_0.

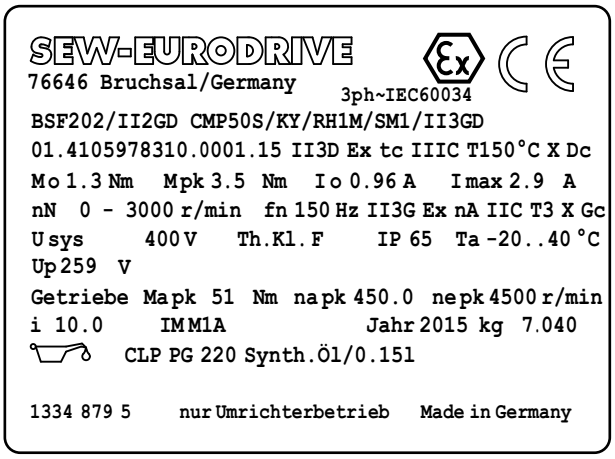
Current of the maximum torque I_{Mmax} [A] = ca. 1.34 * I_0 = 1.34 * 4.7A = 6.3A

Torque limit/current limit [% I_{N_FI}] = I_{Mmax} * 100% / I_{N_FI} = 6.3A * 100 / 4 A = 158%

Example

If no project planning was performed, take the standstill current I_0 (see nameplate) for the torque limit and current limit.

A servo gearmotor with the type code BSF202/II2GD CMP50S/KY/RH1M/SM1/II3GD is operated with a frequency inverter of the type MOVIDRIVE® MDX61B0005-5A3-4-00.



BSF202/II2GD CMP50S/KY/RH1M/SM1/II3GD *15540203787*

Calculating the torque/current limit:

Nominal output current of inverter = 2 A

Standstill current I_0 = 0.96 A

Torque limit/current limit [% I_{N_FI}] = I_0* 100% / I_{N_FI} = 0.96 A * 100 / 2 A = 48%

Motors with reduced limit torque (M_{pk})

The motors CMP80S../II3GD and CMP80M../II3GD are available in 2 variants. The difference is the maximum torque (M_{pk}):

- CMP80S…/II3 (27.5 Nm)
- CMP80S…/II3 (34.5 Nm)
- CMP80M…/II3 (42.5 Nm)
- CMP80M…/II3 (49 Nm)

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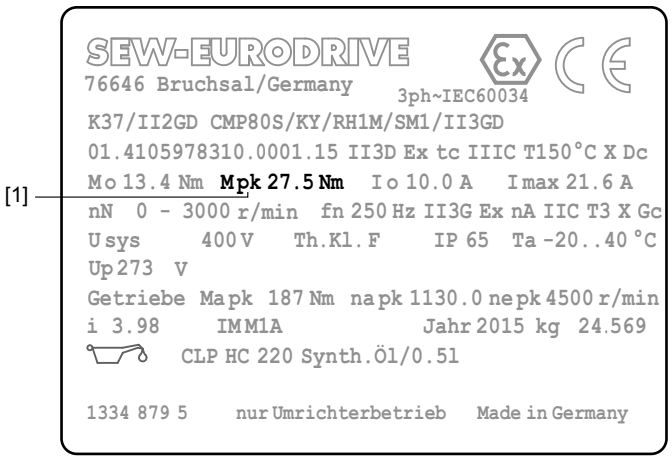
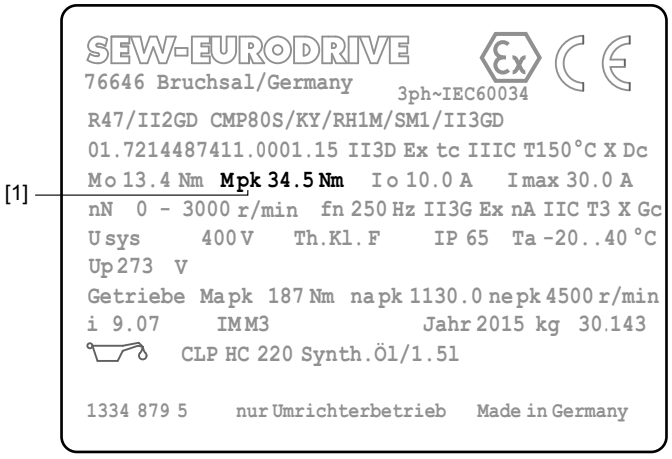
During startup, select the motor with the respective maximum torque (see M_{pk} on the nameplate).



Example M_{pk} on the nameplate *15540206219*



Example M_{pk} on the nameplate *15540208651*

6.3.4 Setting the temperature protection parameters

After each new startup procedure, you must check whether the following parameters are selected:

- Sensor type KTY (MOVIDRIVE®: parameter 530)
- Motor protection *SERVO ON* (MOVIDRIVE®: parameter 340)

INFORMATION

I^2t monitoring, which is common in non-SEW inverters, is not sufficient to ensure thermal motor protection. If you want to use a non-SEW inverter, contact SEW-EURODRIVE. The necessary temperature model is stored in the MOVIDRIVE® and MOVIAXIS® inverters from SEW-EURODRIVE. In addition to the stored temperature model, the current actual temperature must be constantly evaluated.

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7 Inspection/maintenance

Only SEW-EURODRIVE service staff, repair workshops and plants that have the necessary expertise may repair or modify the servomotor.

INFORMATION

- Use only original spare parts from the relevant and valid spare parts lists; otherwise, the approval for hazardous locations of the motor will become void.
- The routine test must be repeated whenever motor parts relating to explosion protection are replaced.
- Servomotors can become very hot during operation – danger of burns!
- Isolate the servomotor and brake from the power supply before starting work, safeguarding them against unintentional re-start!
- Drive must be shut down safely for the duration of the maintenance work, since rotation will energize the motor terminals.
- Ensure that the servomotor is assembled correctly and all openings have been plugged after service and maintenance work.
- Clean servomotors in explosion-proof areas regularly. Prevent dust from building up higher than 5 mm.
- Explosion protection is largely dependent on the IP degree of protection. Therefore, always check that the seals are fitted correctly and in perfect condition when performing any work on the machine.
- Apply grease with a grease depot (Fuchs Renolit CX-TOM 15) to the lip of the oil seal before assembly.
- Always perform safety and functional checks following all maintenance and repair work (thermal protection, brake).
- Explosion protection can only be ensured if servomotors and brakes are serviced and maintained correctly.
- If you repaint the motors or gearmotors, you have to observe the requirements regarding the prevention of electrostatic charge according to EN 60079-0, see chapter ""Painting" (→ 🗎 12)".

⚠ DANGER

The surface temperature of the servomotor can exceed 100 °C during operation.

Risk of burns.

- Never touch the CMP servomotor during operation or in the cool down phase once the it has been switched off.
- Let the servomotor cool down before you start your work.
- Wear protective gloves.

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⚠ DANGER

The servomotor has live parts during operation and as long as the rotor turns.

Severe or fatal injuries from electric shock.

- Do not perform any maintenance work while the machine is running!
- De-energize all power, brake and signal cables before unplugging the power or signal plug connector.
- Safeguard against accidental startup.
- Safeguard against accidental rotation.

NOTICE

The motor must be disassembled when replacing the brake which cannot be adjusted.

Possible damage to property.

- Only service engineers from SEW-EURODRIVE can perform maintenance on the brake because the encoder or resolver has to be reset each time the system is disassembled.

Repairs

If you repair explosion-proof units, strictly observe the country-specific standards. In Germany, the operating safety regulations (BetrSichV) and the Product Safety Act (ProdSG) apply.

In case of a repair, observe important information on checks and maintenance of electrical systems and repairs and maintenance of electrical devices in the standards EN 60079-17 and EN 60079-19. Only SEW-EURODRIVE Service, repair workshops that have the necessary expertise may repair the motor.

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7.1 Inspection and maintenance intervals

The amount of wear depends on many factors and may be high. Inspection intervals of the system and its components must be determined and documented by the operator during startup.

INFORMATION

Take the manufacturer's data into account in the maintenance schedule.

Unit / part of unit	Time interval	What to do?
Servomotor	• Every 10 000 operating hours[1)]	Inspect the servomotor: • Check ball bearing and change if necessary • Replacing the oil seal • Clean cooling air ducts
Drive	• Varies (depending on external factors)	• Touch up or renew the surfaces/anticorrosion coating
BP, BK, BY brake	• Every 0.5 to 2 years, depending on operating conditions	Inspect the brake: • Connect the brake to a regulated power supply unit. Determine the opening voltage (clicking of the brake) by increasing the voltage from 10 to 24 V. Contact SEW-EURODRIVE for further information. • Contact SEW-EURODRIVE Service when maintenance is required.
Servomotor surfaces	• Varies (depending on external factors)	• Clean surfaces

1) The periods of wear are affected by many factors and may be shorter than the recommendation above.

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7.1.1 Cleaning

Excessive dirt, dust or chips can have a negative impact on the function of servomotors; in extreme cases these factors can cause the servomotor to break down.

Therefore, you must clean the servomotors at regular intervals (after one year at the latest) to ensure a sufficiently large area for heat emission.

Insufficient heat emission can have unwanted consequences. The bearing service life is reduced through operation at impermissibly high temperatures (bearing grease degrades).

7.1.2 Connection cable

Check the connection cable for damage at regular intervals and replace it, if need be.

⚠ DANGER

The servomotor has live parts during and after operation.

Severe or fatal injuries from electric shock.

- De-energize all power, brake and signal cables before unplugging the power or signal plug connector.
- Safeguard against accidental startup.
- Do not perform temporary repairs on the connection cables. When the cable jacket is defective, no matter how small the fault, shut down the system immediately and replace the cable.

7.2 Notes on the BY brake

NOTICE

Insufficient brake maintenance may result in damage to the encoder.

Destruction of the encoder.

- The BY brake, which is designed as a working brake, must be inspected and serviced every 3000 operating hours, depending on the load conditions.

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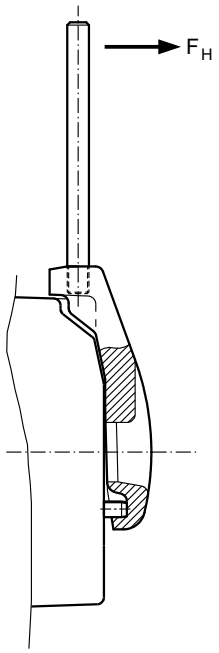
7.2.1 Manual brake release

In brakemotors with /HR option “Manual brake release with automatic reengaging function,” you can release the brake manually using the provided lever. The following table specifies the actuation force required at maximum braking torque to release the brake manually. The values are based on the assumption that you operate the lever at the upper end.



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Brake type	Motor type	Actuation force F_H in N
BY2	CMPZ71	50
BY4	CMPZ80	70
BY8	CMPZ100	90

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8 Technical data

8.1 Motor data of explosion-proof CMP. synchronous servomotors

Key

n_N	Rated speed
M_0	Standstill torque (thermal continuous torque at low speeds)
I_0	Standstill current
M_{pk}	Maximum limit torque of the servomotor
I_{max}	Maximum permitted motor current
L_1	Inductance of the winding
R_1	Ohmic resistance of the winding
V_{p0} cold	Internal voltage at 1000 min^{-1}
J_{mot}	Mass moment of inertia of the motor
J_{bmot}	Mass moment of inertia of the brakemotor
m	Weight
m_{bmot}	Mass of the brakemotor

8.1.1 CMP40 – 63 without brake

n_N	Motor	M_0	M_{pk}	I_0	I_{max}	m_{mot}	J_{mot}	L_1	R_1	V_{p0} cold	Number of poles
min^{-1}	II3GD	Nm	Nm	A	A	kg	10^{-4} kgm²	mH	Ω	V	
3000	CMP40S	0.49	1.33	1.18	3.5	1.3	0.1	23	11.9	27.5	6
	CMP40M	0.8	2.25	0.95	2.9	1.6	0.15	45.9	19.9	56.3	6
	CMP50S	1.3	3.5	0.96	2.9	2.3	0.42	71.2	22.5	86.3	6
	CMP50M	2.3	6.3	1.61	4.8	3.3	0.67	38.3	9.96	90.3	6
	CMP50L	3.3	9.2	2.2	6.6	4.1	0.92	30.4	7.42	98.2	6
	CMP63S	2.78	7.3	2.06	6.2	4	1.15	36.4	6.8	90.1	6
	CMP63M	5.11	13.62	3.47	10.4	5.7	1.92	21.8	3.56	100	6
	CMP63L	6.74	18.5	4.7	14.1	7.5	2.69	14.2	2.07	99.9	6
4500	CMP40S	0.49	1.33	1.18	3.5	1.3	0.1	23	11.9	27.5	6
	CMP40M	0.8	2.25	0.95	2.9	1.6	0.15	45.9	19.9	56.3	6
	CMP50S	1.3	3.5	1.32	4	2.3	0.42	37.2	11.6	62.4	6
	CMP50M	2.3	6.3	2.2	6.6	3.3	0.67	20.7	5.29	66.3	6
	CMP50L	3.3	9.2	3.15	9.5	4.1	0.92	14.6	3.57	68	6
	CMP63S	2.78	7.3	2.92	8.8	4	1.15	18.3	3.35	63.9	6
	CMP63M	5.11	13.62	5.21	15.6	5.7	1.92	9.79	1.48	67	6
	CMP63L	6.74	18.5	6.55	19.7	7.5	2.69	7.21	1.07	71.1	6

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8.1.2 CMP40 – 63 with BK brake

n_N	Motor	M_0	M_{pk}	I_0	I_{max}	m_{mot}	J_{mot}	m_{bmot}	J_{bmot}	L_1	R_1	V_{p0} cold	Number of poles
min^{-1}	II3D	Nm	Nm	A	A	kg	$10^{-4}kgm^2$	kg	$10^{-4}kgm^2$	mH	Ω	V	
3000	CMP40S	0.49	1.33	1.18	3.5	1.3	0.1	1.6	0.19	23	11.9	27.5	6
	CMP40M	0.8	2.25	0.95	2.9	1.6	0.15	1.9	0.24	45.9	19.9	56.3	6
	CMP50S	1.3	3.5	0.96	2.9	2.3	0.42	2.7	0.53	71.2	22.5	86.3	6
	CMP50M	2.3	6.3	1.61	4.8	3.3	0.67	3.7	0.78	38.3	9.96	90.3	6
	CMP50L	3.3	9.2	2.2	6.6	4.1	0.92	4.6	1.33	30.4	7.42	98.2	6
	CMP63S	2.78	7.3	2.06	6.2	4	1.15	4.6	1.54	36.4	6.8	90.1	6
	CMP63M	5.11	13.62	3.47	10.4	5.7	1.92	6.5	2.49	21.8	3.56	100	6
	CMP63L	6.74	18.5	4.7	14.1	7.5	2.69	8.3	3.26	14.2	2.07	99.9	6
4500	CMP40S	0.49	1.33	1.18	3.5	1.3	0.1	1.6	0.19	23	11.9	27.5	6
	CMP40M	0.8	2.25	0.95	2.9	1.6	0.15	1.9	0.24	45.9	19.9	56.3	6
	CMP50S	1.3	3.5	1.32	4	2.3	0.42	2.7	0.53	37.2	11.6	62.4	6
	CMP50M	2.3	6.3	2.2	6.6	3.3	0.67	3.7	0.78	20.7	5.29	66.3	6
	CMP50L	3.3	9.2	3.15	9.5	4.1	0.92	4.6	1.33	14.6	3.57	68	6
	CMP63S	2.78	7.3	2.92	8.8	4	1.15	4.6	1.54	18.3	3.35	63.9	6
	CMP63M	5.11	13.62	5.21	15.6	5.7	1.92	6.5	2.49	9.79	1.48	67	6
	CMP63L	6.74	18.5	6.55	19.7	7.5	2.69	8.3	3.26	7.21	1.07	71.1	6

8.1.3 CMP40 – 63 with BP brake

n_N	Motor	M_0	M_{pk}	I_0	I_{max}	m_{mot}	J_{mot}	m_{bmot}	J_{bmot}	L_1	R_1	V_{p0} cold	Number of poles
min^{-1}	II3D	Nm	Nm	A	A	kg	$10^{-4}kgm^2$	kg	$10^{-4}kgm^2$	mH	Ω	V	
3000	CMP40S	0.49	1.33	1.18	3.5	1.3	0.1	1.7	0.13	23	11.9	27.5	6
	CMP40M	0.8	2.25	0.95	2.9	1.6	0.15	2	0.18	45.9	19.9	56.3	6
	CMP50S	1.3	3.5	0.96	2.9	2.3	0.42	2.9	0.48	71.2	22.5	86.3	6
	CMP50M	2.3	6.3	1.61	4.8	3.3	0.67	3.9	0.73	38.3	9.96	90.3	6
	CMP50L	3.3	9.2	2.2	6.6	4.1	0.92	4.7	0.98	30.4	7.42	98.2	6
	CMP63S	2.78	7.3	2.06	6.2	4	1.15	5	1.49	36.4	6.8	90.1	6
	CMP63M	5.11	13.62	3.47	10.4	5.7	1.92	6.7	2.26	21.8	3.56	100	6
	CMP63L	6.74	18.5	4.7	14.1	7.5	2.69	8.5	3.03	14.2	2.07	99.9	6
4500	CMP40S	0.49	1.33	1.18	3.5	1.3	0.1	1.7	0.13	23	11.9	27.5	6
	CMP40M	0.8	2.25	0.95	2.9	1.6	0.15	2	0.18	45.9	19.9	56.3	6
	CMP50S	1.3	3.5	1.32	4	2.3	0.42	2.9	0.48	37.2	11.6	62.4	6
	CMP50M	2.3	6.3	2.2	6.6	3.3	0.67	3.9	0.73	20.7	5.29	66.3	6
	CMP50L	3.3	9.2	3.15	9.5	4.1	0.92	4.7	0.98	14.6	3.57	68	6
	CMP63S	2.78	7.3	2.92	8.8	4	1.15	5	1.49	18.3	3.35	63.9	6
	CMP63M	5.11	13.62	5.21	15.6	5.7	1.92	6.7	2.26	9.79	1.48	67	6
	CMP63L	6.74	18.5	6.55	19.7	7.5	2.69	8.5	3.03	7.21	1.07	71.1	6

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8.1.4 CMP71 – 100 without brake

n_N	Motor	M_0	M_{pk}	I_0	I_{max}	m_{mot}	J_{mot}	L_1	R_1	V_{p0} cold	Number of poles
min^{-1}	II3GD	Nm	Nm	A	A	kg	10^{-4} kgm²	mH	mH	V	
2000	CMP71S	6.4	15.8	3.4	10.2	7	3.13	33.5	3.48	128	10
	CMP71M	9.4	23.5	5	15	8.4	4.17	21.6	1.87	127	10
	CMP71L	13.1	34.5	6.3	18.9	11.4	6.27	16.2	1.2	142	10
	CMP80S	13.4	34.5	6.9	20.5	12.8	9	15.3	1.1	133	10
	CMP80M	18.7	49	9.3	28	16.5	12.1	10.5	0,689	136	10
	CMP80L	27.5	73	12.5	37.5	21.4	18.3	7.58	0,438	149	10
	CMP100S	25.5	62	13.3	40	19.8	20.3	8.51	0,439	130	10
	CMP100M	31	84	14.7	44	24.8	27.2	6.63	0,302	141	10
	CMP100L	47	129	21.8	65	34.6	40.9	4.17	0,169	145	10
3000	CMP71S	6.4	15.8	4.9	14.7	7	3.13	15.7	1.48	87.5	10
	CMP71M	9.4	23.5	7.5	22.5	8.4	4.17	9.72	0,809	85.3	10
	CMP71L	13.1	34.5	9.4	28	11.4	6.27	7.34	0,559	95.7	10
	CMP80S	13.4	34.5	10	30	12.8	9	7.2	0,544	91.1	10
	CMP80M	18.7	49	13.4	40	16.5	12.1	5.03	0,344	94.3	10
	CMP80L	27.5	73	18.7	56	21.4	18.3	3.37	0.21	99.2	10
	CMP100S	25.5	62	19.6	59	19.8	20.3	3.91	0,214	88	10
	CMP100M	31	84	21.8	65	24.8	27.2	3.04	0,142	95.5	10
	CMP100L	47	129	32.3	97	34.6	40.9	1.9	0.0809	98	10
4500	CMP71S	6.4	15.8	7.3	22	7	3.13	7.07	0,719	58.7	10
	CMP71M	9.4	23.5	10.9	32.5	8.4	4.17	4.54	0,384	58.3	10
	CMP71L	13.1	34.5	14.1	42.5	11.4	6.27	3.26	0,241	63.8	10
	CMP80S	13.4	34.5	15.3	46	12.8	9	3.06	0,221	59.4	10
	CMP80M	18.7	49	20.1	60	16.5	12.1	2.24	0,148	62.9	10
	CMP80L	27.5	73	27.8	83	21.4	18.3	1.54	0.0855	67	10
	CMP100S	25.5	62	30	90	19.8	20.3	1.68	0.0857	57.7	10
	CMP100M	31	84	33.1	99	24.8	27.2	1.32	0,065	62.9	10
	CMP100L	47	129	48.4	145	34.6	40.9	0,844	0,038	65.3	10

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8.1.5 CMPZ71 – 100 without brake

n_N	Motor	M_0	M_{pk}	I_0	I_{max}	m_{mot}	J_{mot}	L_1	R_1	V_{p0} cold	Number of poles
min^{-1}	II3GD	Nm	Nm	A	A	kg	10^{-4} kgm²	mH	mH	V	
2000	CMPZ71S	6.4	15.8	3.4	10.2	8.6	9.32	33.5	3.48	128	10
	CMPZ71M	9.4	23.5	5	15	10	10.4	21.6	1.87	127	10
	CMPZ71L	13.1	34.5	6.3	18.9	13	12.5	16.2	1.2	142	10
	CMPZ80S	13.4	34.5	6.9	20.5	15.8	27.2	15.3	1.1	133	10
	CMPZ80M	18.7	49	9.3	28	19.5	30.3	10.5	0,689	136	10
	CMPZ80L	27.5	73	12.5	37.5	24.4	36.5	7.58	0,438	149	10
	CMPZ100S	25.5	62	13.3	40	24.2	79.8	8.51	0,439	130	10
	CMPZ100M	31	84	14.7	44	29.2	86.7	6.63	0,302	141	10
	CMPZ100L	47	129	21.8	65	39	100	4.17	0,169	145	10
3000	CMPZ71S	6.4	15.8	4.9	14.7	8.6	9.32	15.7	1.48	87.5	10
	CMPZ71M	9.4	23.5	7.5	22.5	10	10.4	9.72	0,809	85.3	10
	CMPZ71L	13.1	34.5	9.4	28	13	12.5	7.34	0,559	95.7	10
	CMPZ80S	13.4	34.5	10	30	15.8	27.2	7.2	0,544	91.1	10
	CMPZ80M	18.7	49	13.4	40	19.5	30.3	5.03	0,344	94.3	10
	CMPZ80L	27.5	73	18.7	56	24.4	36.5	3.37	0.21	99.2	10
	CMPZ100S	25.5	62	19.6	59	24.2	79.8	3.91	0,214	88	10
	CMPZ100M	31	84	21.8	65	29.2	86.7	3.04	0,142	95.5	10
	CMPZ100L	47	129	32.3	97	39	100	1.9	0.0809	98	10
4500	CMPZ71S	6.4	15.8	7.3	22	8.6	9.32	7.07	0,719	58.7	10
	CMPZ71M	9.4	23.5	10.9	32.5	10	10.4	4.54	0,384	58.3	10
	CMPZ71L	13.1	34.5	14.1	42.5	13	12.5	3.26	0,241	63.8	10
	CMPZ80S	13.4	34.5	15.3	46	15.8	27.2	3.06	0,221	59.4	10
	CMPZ80M	18.7	49	20.1	60	19.5	30.3	2.24	0,148	62.9	10
	CMPZ80L	27.5	73	27.8	83	24.4	36.5	1.54	0.0855	67	10
	CMPZ100S	25.5	62	30	90	24.2	79.8	1.68	0.0857	57.7	10
	CMPZ100M	31	84	33.1	99	29.2	86.7	1.32	0,065	62.9	10
	CMPZ100L	47	129	48.4	145	39	100	0,844	0,038	65.3	10

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8.1.6 CMPZ71 – 100 with BY brake

n_N	Motor	M_0	M_{pk}	I_0	I_{max}	m_{mot}	J_{mot}	m_{bmot}	J_{bmot}	L_1	R_1	V_{p0} cold	Number of poles
min^{-1}	II3D	Nm	Nm	A	A	kg	$10^{-4}kgm^2$	kg	$10^{-4}kgm^2$	mH	Ω	V	
2000	CMPZ71S	6.4	15.8	3.4	10.2	8.6	9.32	11.2	11	33.5	3.48	128	10
	CMPZ71M	9.4	23.5	5	15	10	10.4	12.6	12.1	21.6	1.87	127	10
	CMPZ71L	13.1	34.5	6.3	18.9	13	12.5	15.6	14.2	16.2	1.2	142	10
	CMPZ80S	13.4	34.5	6.9	20.5	15.8	27.2	20.8	31	15.3	1.1	133	10
	CMPZ80M	18.7	49	9.3	28	19.5	30.3	24.5	34.1	10.5	0,689	136	10
	CMPZ80L	27.5	73	12.5	37.5	24.4	36.5	29.4	40.3	7.58	0,438	149	10
	CMPZ100S	25.5	62	13.3	40	24.2	79.8	34.7	84.2	8.51	0,439	130	10
	CMPZ100M	31	84	14.7	44	29.2	86.7	39.7	91.1	6.63	0,302	141	10
	CMPZ100L	47	129	21.8	65	39	100	49.5	105	4.17	0,169	145	10
3000	CMPZ71S	6.4	15.8	4.9	14.7	8.6	9.32	11.2	11	15.7	1.48	87.5	10
	CMPZ71M	9.4	23.5	7.5	22.5	10	10.4	12.6	12.1	9.72	0,809	85.3	10
	CMPZ71L	13.1	34.5	9.4	28	13	12.5	15.6	14.2	7.34	0,559	95.7	10
	CMPZ80S	13.4	34.5	10	30	15.8	27.2	20.8	31	7.2	0,544	91.1	10
	CMPZ80M	18.7	49	13.4	40	19.5	30.3	24.5	34.1	5.03	0,344	94.3	10
	CMPZ80L	27.5	73	18.7	56	24.4	36.5	29.4	40.3	3.37	0.21	99.2	10
	CMPZ100S	25.5	62	19.6	59	24.2	79.8	34.7	84.2	3.91	0,214	88	10
	CMPZ100M	31	84	21.8	65	29.2	86.7	39.7	91.1	3.04	0,142	95.5	10
	CMPZ100L	47	129	32.3	97	39	100	49.5	105	1.9	0.0809	98	10
4500	CMPZ71S	6.4	15.8	7.3	22	8.6	9.32	11.2	11	7.07	0,719	58.7	10
	CMPZ71M	9.4	23.5	10.9	32.5	10	10.4	12.6	12.1	4.54	0,384	58.3	10
	CMPZ71L	13.1	34.5	14.1	42.5	13	12.5	15.6	14.2	3.26	0,241	63.8	10
	CMPZ80S	13.4	34.5	15.3	46	15.8	27.2	20.8	31	3.06	0,221	59.4	10
	CMPZ80M	18.7	49	20.1	60	19.5	30.3	24.5	34.1	2.24	0,148	62.9	10
	CMPZ80L	27.5	73	27.8	83	24.4	36.5	29.4	40.3	1.54	0.0855	67	10
	CMPZ100S	25.5	62	30	90	24.2	79.8	34.7	84.2	1.68	0.0857	57.7	10
	CMPZ100M	31	84	33.1	99	29.2	86.7	39.7	91.1	1.32	0,065	62.9	10
	CMPZ100L	47	129	48.4	145	39	100	49.5	105	0,844	0,038	65.3	10

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8.2 Technical data of BK brakes

The following table shows the technical data of BK brakes. They operate with a fixed braking torque per brake size.

Brake type	$M_{4,\ 100\ °C}$ Nm	$M_{1m,\ 100\ °C}$ Nm	M_{1max} Nm	W_1 kJ	W_2 kJ	W_{insp} 10^3 kJ	P W	t_1 ms	t_2 ms
BK01	1.9	1.4	3.4	0.056	1.12	0.112	8.8	35	20
BK02	2.4	1.9	5.3	0.175	3.50	0.350	6.7	80	20
BK03	3.8	2.0	7.9	0.371	7.42	0.742	13.4	50	30
BK04	3.9	2.4	7.0	0.288	5.76	0.576	13.4	50	30
BK07	7.1	3.9	12.8	0.740	14.8	1.48	15.0	70	30

$M_{4,\ 100\ °C}$ Minimum static braking torque (holding torque) at 100 °C
$M_{1m,\ 100\ °C}$ Minimum averaged dynamic braking torque in case of emergency switching off at 100 °C
M_{1max} Maximum dynamic braking torque in case of emergency switching off
W_1 Permitted braking work per braking operation
W_2 Permitted braking work per hour
W_{insp} Permitted total braking work (braking work until maintenance)
P Power consumption of the coil
t_1 Brake response time
t_2 Brake application time

INFORMATION

The response and application times are guide values that were determined at maximum braking torque.

Possible response times of switching elements or controllers were not taken into account.

8.2.1 Motor assignment

The BK brake can be used for the following rated speeds and braking torques depending on the motor size:

Motor type	Brake type	$M_{4,\ 100\ °C}$ Nm	Speed class
CMP40S/M	BK01	1.9	3000/4500
CMP50S/M	BK02	2.4	
CMP63S	BK03	3.8	
CMP50L	BK04	3.9	
CMP63M/L	BK07	7.1	

$M_{4,\ 100\ °C}$ Minimum static braking torque (holding torque) at 100 °C

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8.2.2 Operating currents for BK brakes

	BK01	BK02	BK03	BK04	BK07
Braking torque $M_{4,\ 100\ °C}$ in Nm	1.9	2.4	3.8	3.9	7.1
Braking power in W	8.8	6.7	13.4	13.4	15

Nominal voltage U_N **V_{DC}**	**I** **A_{DC}**	**I** **A_{DC}**	**I** **A_{DC}**	**I** **A_{DC}**	**I** **A_{DC}**
24 (21.6 – 26.4)	0.365	0.280	0.557	0.557	0.623

$M_{4,\ 100\ °C}$ Minimum static braking torque (holding torque) at 100 °C
I Operating current
V_N Nominal voltage (nominal voltage range)

When dimensioning the 24 V supply, it is not necessary to consider a current reserve for releasing the brake, i.e. the ratio of inrush current to operating current is 1.

8.2.3 Resistance values of BK brake coils

	BK01	BK02	BK03	BK04	BK07
Braking torque $M_{4,\ 100\ °C}$ in Nm	1.9	2.4	3.8	3.9	7.1
Braking power in W	8.8	6.7	13.4	13.4	15

Nominal voltage U_N **V_{DC}**	**R** **Ω**	**R** **Ω**	**R** **Ω**	**R** **Ω**	**R** **Ω**
24 (21.6 – 26.4)	65.7	85.5	43.1	43.1	38.6

$M_{4,\ 100\ °C}$ Minimum static braking torque (holding torque) at 100 °C
R Coil resistance at 20 °C
V_N Nominal voltage (nominal voltage range)

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8.2.4 BK brake project planning

Hold function

The selected braking torque $M_{4,\ 100\ °C}$ must at least be higher than the highest static load torque of the application.

$$M_{4,100°C} > M_L$$

Emergency switching off function for lifting applications

To ensure a deceleration of the load, for lifting applications, the lowest averaged dynamic braking torque $M_{1m,\ 100\ °C}$ must be higher than the highest static load torque of the application.

$$M_{1m,100°C} > M_L$$

Speed difference during brake application

Due to the response time, signal transmit time, and the brake application time, as well as the gravitational acceleration, it is possible that the hoist is in "free fall" for a short time resulting in a motor speed increased by n_D (hoist downwards) or reduced by n_D (travel unit and hoist upwards).

Calculation of the emergency stop speed (hoist downwards):

$$n_{m,EmergencyStop} = n_m + n_D$$

Calculation of the emergency stop speed (travel drive and hoist upwards):

$$n_{m,EmergencyStop} = n_m - n_D$$

$$n_D = \frac{9{,}55 \times M_L \times (t_r + t_2)}{J_{Mot} + J_{ext} \times \eta_G}$$

Working capacity in case of emergency switching off

Braking work per braking cycle in case of emergency switching off:

$$W_1 = \frac{(J_{Mot} + J_{ext} \times \eta_G) \times n_{m,\mathrm{EmergStop}}{}^2 \times M_{1m,100°C}}{182.4 \times (M_{1m,100°C} \pm M_L)}$$

Observe the sign of the highest static load torque M_L in the formula. Use:

+ For vertical upward and horizontal movement
– For vertical downward movement

The calculated braking work W_1 is compared with the permitted braking work per braking operation W_1 of the BK brake (see "Technical data of BK brakes"" (→ 🗎 67)).

According to the possible number of emergency switching off braking operations, it must also be compared with the permitted braking work per hour W_2 of the BK brake (see "Technical data of BK brakes"" (→ 🗎 67)).

$$W_{1(BKbrake)} > W_{1(calculated)}$$

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The following maximum permitted inertia ratios apply:

Motor type	Brake type	Permitted J_{ext} / J_{Mot}
CMP40S/M	BK01	without restrictions
CMP50S/M	BK02	
CMP63S	BK03	J_{ext} / J_{Mot} ≤ 30
CMP50L	BK04	
CMP63M/L	BK07	J_{ext} / J_{Mot} ≤ 20

J_{ext} External mass moment of inertia in kgm²
J_{Mot} Mass moment of inertia of the motor in kgm²

Braking time / stopping distance

Braking time hoist downwards

$$t_B = \frac{(J_{Mot} + J_{ext} \times \eta_G) \times n_{m,\,EmergStop}}{9.55 \times (M_{1m,100°C} - M_L)}$$

Braking time horizontal drive, hoist upwards

$$t_B = \frac{(J_{Mot} + J_{ext} \times \eta_G) \times n_{m,EmergStop}}{9.55 \times (M_{1m,100°C} + M_L)}$$

Stopping distance

$$s_b = v \times 1000 \times (t_2 + t_r + \frac{1}{2} \times t_B)$$

Permitted gear unit load in case of emergency switching off

When using a gearmotor, in case of emergency switching off, the maximum dynamic braking torque in case of emergency switching off M_{1max} (see "Technical data of BK brakes"" (→ 🗎 67)) must not exceed the maximum permitted emergency switching off torque $M_{aEmergOff}$ of the gear unit.

The value of the maximum permitted emergency switching off torque $M_{aEmergOff}$ is specified in the "Synchronous Servo Gearmotors" catalog.

$$M_{aEmergOff} \geq M_{1max} \times i \times \eta_G$$

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8.3 Technical data of BP brakes

The following table shows the technical data of the brakes. The type and number of brake springs determines the level of the braking torque. Unless specified otherwise in the order, the brakemotors with the braking torques with gray brakemotor are delivered.

Motor type	Brake type	$M_{2,\ 20\ °C}$ Nm	$M_{4,\ 100\ °C}$ Nm	$M_{1m,\ 100\ °C}$ Nm	W_1 kJ	W_2 kJ	W_{insp} 10^3 kJ	P W	t_1 ms	t_2 ms
CMP40S/M	BP01	0.95	0.6	0.4	0.4	4.8	0.2	7	200	75
CMP50S	BP04	3.1	1.9	1.2	0.6	7.2	1.0	10.2	200	75
		4.3	2.6	1.7						
CMP50M/L	BP04	3.1	1.9	1.2	0.6	7.2	1.0	10.2	200	75
		4.3	2.6	1.7						
CMP63S	BP09	7.0	4.2	2.8	1.0	10.0	1.8	16	200	75
		9.3	5.6	3.7						
CMP63M/L	BP09	7.0	4.2	2.8	1.0	10.0	1.8	16	200	75
		9.3	5.6	3.7						

Standard braking torque
Optional braking torque

$M_{2,\ 20\ °C}$ Nominal torque for slipping brake disk (relative speed between brake disk and friction surface: 1 m/s) at 20 °C
$M_{4,\ 100\ °C}$ Minimum static braking torque (holding torque) at 100 °C
$M_{1m,\ 100\ °C}$ Minimal averaged dynamic braking torque in case of emergency switching off at 100 °C
W_1 Permitted braking work per braking operation
W_2 Permitted braking work per hour
W_{insp} Permitted total braking work (braking work until maintenance)
P Power consumption of the coil
t_1 Brake response time
t_2 Brake application time

INFORMATION

The response and application times are guide values that were determined at maximum braking torque.

Possible response times of switching elements or controllers were not taken into account.

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8.3.1 Motor assignment

The BP brake can be used for the following rated speeds and braking torques depending on the motor size:

Motor type	Brake type	$M_{2,\ 20\ °C}$ Nm		Speed class
CMP40	BP01	0.95	–	3000/4500
CMP50S	BP04	3.1	4.3	
CMP50M/L		4.3	3.1	
CMP63S	BP09	7	9.3	
CMP63M/L		9.3	7	

$M_{2,\ 20\ °C}$ Nominal torque for slipping brake disk (relative speed between brake disk and friction surface: 1 m/s) at 20 °C
Standard braking torque
Optional braking torque

8.3.2 Operating currents for BP brakes

	BP01	BP04	BP09
Braking torque $M_{2,\ 20\ °C}$ in Nm	0.95	4.3	9.3
Braking power in W	7	10.2	16

Nominal voltage V_N V_{DC}	I A_{DC}	I A_{DC}	I A_{DC}
24 (21.6 – 26.4)	0.29	0.42	0.67

$M_{2,\ 20\ °C}$ Nominal torque for slipping brake disk (relative speed between brake disk and friction surface: 1 m/s) at 20 °C
I Operating current
V_N Nominal voltage (nominal voltage range)

When dimensioning the 24 V supply, it is not necessary to consider a current reserve for releasing the brake, i.e. the ratio of inrush current to operating current is 1.

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8.3.3 Resistance values of BP brake coils

	BP01	BP04	BP09
Braking torque $M_{2,\ 20\ °C}$ in Nm	0.95	4.3	9.3
Braking power in W	7	10.2	16

Nominal voltage V_N V_{DC}	R Ω	R Ω	R Ω
24 (21.6 – 26.4)	84	56.5	35

$M_{2,\ 20\ °C}$ Nominal torque for slipping brake disk (relative speed between brake disk and friction surface: 1 m/s) at 20 °C

R Coil resistance at 20 °C

V_N Nominal voltage (nominal voltage range)

8.3.4 Permitted switching work (emergency switching off operation)

The permitted number of switching cycles per hour is 10.

The minimum pause time between 2 switching cycles is 6 minutes.

8.3.5 BP brake switching cycles

The following table shows the number of permitted switching cycles of the BP brake until end of service life when used exclusively as holding brake.

Motor type	Brake type	Approved switching cycles
CMP40	BP01	150 000
CMP50	BP04	1 000 000
CMP63	BP09	1 500 000

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8.3.6 BP brake project planning

Hold function

The selected braking torque $M_{4,\ 100\ °C}$ must at least be higher than the highest static load torque of the application.

$$M_{4,100°C} > M_L$$

The following table shows the number of permitted switching cycles of the BP brake until end of service life when used exclusively as holding brake.

Motor type	Brake type	Approved switching cycles
CMP40	BP01	150 000
CMP50	BP04	1 000 000
CMP63	BP09	1 500 000

Emergency switching off function for lifting applications

To ensure a deceleration of the load, for lifting applications, the lowest averaged dynamic braking torque $M_{1m,\ 100\ °C}$ must be higher than the highest static load torque of the application.

$$M_{1m,100°C} > M_L \times 1.2$$

Working capacity in case of emergency switching off

Braking work per braking cycle in case of emergency switching off:

$$W_1 = \frac{(J_{Mot} + J_{ext} \times \eta_G) \times n_{m,\mathrm{EmergStop}}{}^2 \times M_{1m,100°C}}{182.4 \times (M_{1m,100°C} \pm M_L)}$$

Observe the sign of the highest static load torque M_L in the formula. Use:

+ For vertical upward and horizontal movement
- For vertical downward movement

The calculated braking work W_1 is compared with the permitted braking work per braking operation W_1 of the BP brake (see "Technical data BP brake").

According to the possible number of emergency switching off braking operations, it must also be compared with the permitted braking work per hour W_2 of the BP brake (see "Technical data BP brake").

$$W_{1(BPbrake)} > W_{1(calculated)}$$

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Permitted gear unit load in case of emergency switching off

When using a gearmotor, in case of emergency switching off , the maximum dynamic braking torque in case of emergency switching off M_{1max} (see "Technical data of BK brakes"" (→ 67)) must not exceed the maximum permitted emergency switching off torque $M_{aEmergOff}$ of the gear unit.

The value of the maximum permitted emergency switching off torque $M_{aEmergOff}$ is specified in the "Synchronous Servo Gearmotors" catalog.

$$M_{aEmergOff} \geq M_{2,20°C} \times i \times \eta_G$$

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8.4 Technical data of the BY brake

The following tables list the technical data of the brakes. The type and number of brake springs determines the level of the braking torque. Unless specified otherwise in the order, the brakemotors are delivered with the braking torques marked in gray.

Motor type	Brake type	$M_{2,\ 20\ °C}$ Nm	$M_{4,\ 100\ °C}$ Nm	$M_{1m,\ 100\ °C}$ Nm	P W	t_1 ms	t_2 ms	t_3 ms
CMPZ71S	BY2	7	4.2	4.9	27	25	23	130
		10	6	7				
		14	8.4	9.8				
		20	12	14				
CMPZ71M/L	BY2	7	4.2	4.9	27	25	23	130
		10	6	7				
		14	8.4	9.8				
		20	12	14				
CMPZ80S	BY4	14	8.4	9.8	38	30	17	110
		20	12	14				
		28	16.8	19.6				
		40	24	28				
CMPZ80M/L	BY4	14	8.4	9.8	38	30	17	110
		20	12	14				
		28	16.8	19.6				
		40	24	28				
CMPZ100S	BY8	28	16.8	19.6	45	55	25	210
		40	24	28				
		55	33	38.5				
		80	48	56				
CMPZ100M/L	BY8	28	16.8	19.6	45	55	25	210
		40	24	28				
		55	33	38.5				
		80	48	56				

	Standard braking torque
	Optional braking torque
$M_{2,\ 20\ °C}$	Nominal torque for slipping brake disk (relative speed between brake disk and friction surface: 1 m/s) at 20 °C
$M_{4,\ 100\ °C}$	Minimum static braking torque (holding torque) at 100 °C
$M_{1m,\ 100\ °C}$	Minimal averaged dynamic braking torque in case of emergency switching off at 100 °C
P	Power consumption of the coil
t_1	Brake response time
t_2	Brake application time AC/DC
t_3	Brake application time AC

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INFORMATION

The response and application times are guide values that were determined at maximum braking torque.

Possible response times of switching elements or controllers were not taken into account.

The following table shows the permitted friction work depending on the application speed at which the braking process is triggered. The lower the speed, the higher the permitted braking work.

INFORMATION

If you do not stop the motor in an inverter-controlled manner but use the brake for mechanical deceleration, you must check whether the brake "can supply" (→ 🗎 82) the braking work required for the brake application speed in an emergency switching off situation.

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8.4.1 Permitted braking work of BY brake

Rated speed 1/min	Brake type	$M_{2,\ 20\ °C}$ Nm	W_1 for all applications kJ	W_1 only travel drive applications kJ	W_{insp} 10^3 kJ
2000	BY2	7	20	40	35
		10	18	36	
		14	15	30	
		20	12	24	
	BY4	14	24	48	50
		20	19.5	39	
		28	17	34	
		40	10.5	21	
	BY8	28	48	96	60
		40	44	88	
		55	32	64	
		80	18	36	
3000	BY2	7	20	40	35
		10	18	36	
		14	14	28	
		20	11	22	
	BY4	14	20	40	50
		20	15	30	
		28	10	20	
		40	4.5	9	
	BY8	28	36	72	60
		40	32	64	
		55	18	36	
		80	7	14	

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Rated speed 1/min	Brake type	$M_{2,\ 20\ °C}$ Nm	W_1 for all applications kJ	W_1 only travel drive applications kJ	W_{insp} 10^3 kJ
4500	BY2	7	16	32	35
		10	14	28	
		14	10	20	
		20	6	12	
	BY4	14	15	30	50
		20	9	18	
		28	5	10	
		40	3	6	
	BY8	28	22	44	60
		40	18	36	
		55	11	22	
		80	4	8	

INFORMATION

If the braking work W_1 (values in column "for all applications") is exceeded, the increased braking work W_1 (values in column "only travel drive applications") are applied in case of travel drive applications.

8.4.2 Motor assignment

The BY brake can be used for the following rated speeds and braking torques depending on the motor size:

Motor type	Brake type	$M_{2,\ 20\ °C}$ Nm				Speed class
CMPZ71S	BY2	7	10	14	20	2000/3000/4500
CMP71ZM/L		7	10	14	20	
CMPZ80S	BY4	14	20	28	40	2000/3000/4500
CMP80ZM/L		14	20	28	40	
CMPZ100S	BY8	28	40	55	80	2000/3000/4500
CMPZ100M/L		28	40	55	80	

$M_{2,\ 20\ °C}$ Nominal torque for slipping brake disk (relative speed between brake disk and friction surface: 1 m/s) at 20 °C
Standard braking torque
Optional braking torque

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8.4.3 No-load starting frequency

The following no-load starting frequency Z_0 must not be exceeded in order to prevent the BY brake from heating up.

Brake type	No-load starting frequency
BY2	7200 1/h
BY4	5400 1/h
BY8	3600 1/h

8.4.4 BY brake – operating currents

The following tables list the operating currents of the brakes at different voltages. The following values are specified:

- Inrush current ratio I_B/I_H; I_B = acceleration current, I_H = holding current
- Holding current I_H
- Nominal voltage V_N

The acceleration current I_B (= inrush current) only flows for a short time (ca. 150 ms) when the brake is released or during voltage dips below 70% of nominal voltage.

The values for the holding currents I_H are r.m.s. values (with DC 24 V arithmetic mean value). Use suitable measuring instruments for current measurements.

	BY2	BY4	BY8
Braking torque $M_{2,\ 20\ °C}$ in Nm	20	40	80
Braking power in W	27	38	45
Inrush current ratio I_B/I_H or I_B/I_G	5	4	4

Nominal voltage V_N		I_H	I_G	I_H	I_G	I_H	I_G
V_{AC}	V_{DC}	A_{AC}	A_{DC}	A_{AC}	A_{DC}	A_{AC}	A_{DC}
	24 (21.6 – 26.4)	–	1.05	–	1.4	–	1.6
110 (99 – 121)		0,425	–	0.58	–	0.69	–
230 (218 – 243)		0.19	–	0.26	–	0,305	–
400 (380 – 431)		0,107	–	0,147	–	0,172	–
460 (432 – 484)		0,095	–	0,131	–	0,154	–

$M_{2,\ 20\ °C}$ Nominal torque for slipping brake disk (relative speed between brake disk and friction surface: 1 m/s) at 20 °C
I_H Holding current, r.m.s. value in the supply cable to the SEW-EURODRIVE brake rectifier
I_G Direct current with direct DC voltage supply
V_N Nominal voltage (nominal voltage range)

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8.4.5 Resistance values of BY brake coils

	BY2	BY4	BY8
Braking torque $M_{2,\ 20\ °C}$ in Nm	20	40	80
Braking power in W	27	38	45

Nominal voltage V_N		R_B	R_T	R_B	R_T	R_B	R_T
V_{AC}	V_{DC}	Ω	Ω	Ω	Ω	Ω	Ω
	24 (21.6 – 26.4)	5.2	20	4.3	13.3	3.8	11.2
110 (99 – 121)		16.3	64	13.7	42	12	35.5
230 (218 – 243)		82	320	69	210	60	177
400 (380 – 431)		260	1010	215	670	191	560
460 (432 – 484)		325	1270	275	840	240	700

$M_{2,\ 20\ °C}$ Nominal torque for slipping brake disk (relative speed between brake disk and friction surface: 1 m/s) at 20 °C
R_B Accelerator coil resistance at 20 °C
R_T Coil section resistance at 20 °C
V_N Nominal voltage (nominal voltage range)

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8.4.6 BY brake project planning

Emergency switching off function for lifting applications

To ensure a deceleration of the load, for lifting applications, the lowest averaged dynamic braking torque $M_{1m,\ 100\ °C}$ must be higher than the highest static load torque of the application.

$$M_{1m,100°C} > M_L \times 1.4$$

Working capacity in case of emergency switching off

The working capacity of the brake is determined by the permitted braking work W_1 per braking operation and the total permitted braking work W_{insp} until the next inspection of the brake.

For the total permitted braking work W_{insp}, refer to chapter "Technical data BY brake".

Permitted number of braking operations until maintenance of the brake:

$$NB = \frac{W_{insp}}{W_1}$$

Braking work per braking operation:

$$W_1 = \frac{(J_{Mot} + J_{ext} \times \eta_G) \times n_{m,EmergStop}{}^2 \times M_{1m,100°C}}{182.4 \times (M_{1m,100°C} \pm M_L)}$$

The calculated braking work W_1 is compared with the permitted braking work per braking operation W_1 of the BY brake depending on the application (hoist/travel drive) (see "Technical data BY brake").

$$W_{1(BYbrake)} > W_{1(calculated)}$$

Emergency switching off features

The limits of the permitted maximum braking work must not be exceeded, not even for emergency switching off.

The emergency switching off features are based on the directions of movement.

1. **Braking during vertical movement**

   In hoist applications, the limits of the permitted maximum braking work (including emergency switching off) must not be exceeded.

   Consult SEW-EURODRIVE if you need values for increased emergency switching off braking work in hoist applications.

2. **Braking during horizontal movement**

   For horizontal motion like in travel drive applications, higher braking work might be permitted per cycle in emergency stop situations under the following conditions.

   - Selected braking torque

     All braking torques are permitted (unlike BE.. brakes of DR.. series AC motors).

   - Brake wear

     The specific wear of the brake lining increases significantly in case of an emergency stop. It can reach a factor of 100 under certain circumstances.

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This additional wear must be taken into account when determining the maintenance cycle.

- Braking process

  During the braking process, the effective dynamic braking torque can be reduced due to the heating of the brake lining during braking. In extreme cases, the effective braking torque can be reduced up to 80% of $M_{1m,100°C}$. Take this into account when you determine the braking distance.

  Example: BY8 with $M_{1m,100°C}$ = 56 Nm, minimal effective 80%

  $M_{1m,\ 100\ °C}$ = 44.8 Nm

- Braking speed

  Consult SEW-EURODRIVE if you need values for increased emergency switching off braking work in travel drive applications (values that differ from the technical data for BY brakes in this document).

3. **Braking during inclined movement**

   As the inclined movement has a vertical and a horizontal component, the permitted emergency switching off braking work is predominantly determined according to point 1.

   Contact SEW-EURODRIVE if you are unable to classify the direction of motion as solely vertical or solely horizontal.

Braking time / stopping distance

Braking time hoist downward

$$t_B = \frac{(J_{Mot} + J_{ext} \times \eta_G) \times n_{m,EmergencyStop}}{9.55 \times (M_{1m,100°C} - M_L)}$$

Braking time horizontal drive, hoist upward

$$t_B = \frac{(J_{Mot} + J_{ext} \times \eta_G) \times n_{m,EmergencyStop}}{9.55 \times (M_{1m,100°C} + M_L)}$$

Stopping distance

$$s_b = v \times 1000 \times (t_2 + t_r + \frac{1}{2} \times t_B)$$

Permitted gear unit load in case of emergency switching off

When using a gearmotor, in case of emergency switching off , the maximum dynamic braking torque in case of emergency switching off M_{1max} (see "Technical data of BK brakes"" (→ 🖹 67)) must not exceed the maximum permitted emergency switching off torque $M_{aEmergOff}$ of the gear unit.

The value of the maximum permitted emergency switching off torque $M_{aEmergOff}$ is specified in the "Synchronous Servo Gearmotors" catalog.

$$M_{aEmergOff} \geq M_{2,20°C} \times i \times \eta_G$$

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8.5 Motor/inverter assignments

8.5.1 MOVIDRIVE® inverter assignment

INFORMATION

The inverter assignment for MOVIDRIVE® applies for a AC 400 V voltage supply and standard 4 kHz modulation.

CMP40 – 63, rated speed n_N = 3000 1/min

Motor			Assignment to MOVIDRIVE®								
			0005	0008	0011	0014	0015	0022	0030	0040	0055
	I_n	[A]	2	2.4	3.1	4	4	5.5	7	9.5	12.5
	I_{max}	[A]	4	4.8	6.2	8	6	8.25	10.5	14.3	18.8
CMP40S	I_{max}	% I_N	175	146	113						
	M_{pk}	Nm (lb in)	1.33 (11.8)	1.33 (11.8)	1.33 (11.8)						
CMP40M	I_{max}	% I_N	145	121							
	M_{pk}	Nm (lb in)	2.25 (19.9)	2.25 (19.9)							
CMP50S	I_{max}	% I_N	145	121							
	M_{pk}	Nm (lb in)	3.50 (31.0)	3.50 (31.0)							
CMP50M	I_{max}	% I_N	200	200	155	120	120				
	M_{pk}	Nm (lb in)	5.42 (48.0)	6.30 (55.8)	6.30 (55.8)	6.30 (55.8)	6.30 (55.8)				
CMP50L	I_{max}	% I_N	200	200	200	165	150	120			
	M_{pk}	Nm (lb in)	5.92 (52.4)	6.99 (61.9)	8.76 (77.6)	9.20 (81.5)	8.51 (75.4)	9.20 (81.5)			
CMP63S	I_{max}	% I_N	200	200	200	155	150	113			
	M_{pk}	Nm (lb in)	5.16 (45.7)	5.97 (52.9)	7.30 (64.7)	7.30 (64.7)	7.08 (62.7)	7.30 (64.7)			
CMP63M	I_{max}	% I_N	200	200	200	200	150	150	149	109	
	M_{pk}	Nm (lb in)	6.05 (53.6)	7.14 (63.2)	8.95 (79.3)	11.1 (98.3)	8.70 (77.1)	11.4 (101)	13.6 (120)	13.6 (120)	
CMP63L	I_{max}	% I_N		200	200	200	150	150	150	148	113
	M_{pk}	Nm (lb in)		7.07 (62.6)	8.99 (79.6)	11.4 (101)	8.72 (77.2)	11.7 (104)	14.5 (128)	18.5 (164)	18.5 (164)

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CMP40 – 63, rated speed n_N = 4500 1/min

Motor			Assignment to MOVIDRIVE®									
			0005	00008	0011	0014	0015	0022	0030	0040	0055	0075
	I_n	A	2	2.4	3.1	4	4	5.5	7	9.5	12.5	16
	I_{max}	A	4	4.5	6.2	8	6	8.25	10.5	14.3	18.8	24
CMP40S	I_{max}	% I_N	175	146	113							
	M_{pk}	Nm (lb in)	1.33 (11.8)	1.33 (11.8)	1.33 (11.8)							
CMP40M	I_{max}	% I_N	145	121								
	M_{pk}	Nm (lb in)	2.25 (19.9)	2.25 (19.9)								
CMP50S	I_{max}	% I_N	200	167	129							
	M_{pk}	Nm (lb in)	3.50 (31.0)	3.50 (31.0)	3.50 (31.0)							
CMP50M	I_{max}	% I_N	200	200	200	165	150	120				
	M_{pk}	Nm (lb in)	4.10 (36.3)	4.83 (42.8)	6.03 (53.4)	6.30 (55.8)	5.87 (52.0)	6.30 (55.8)				
CMP50L	I_{max}	% I_N	200	200	200	200	150	150	136			
	M_{pk}	Nm (lb in)	4.22 (37.4)	5.02 (44.5)	6.36 (56.3)	8.00 (70.9)	6.18 (54.7)	8.22 (72.8)	9.20 (81.5)			
CMP63S	I_{max}	% I_N	200	200	200	200	150	150	126			
	M_{pk}	Nm (lb in)	3.83 (33.9)	4.48 (39.7)	5.55 (49.2)	6.76 (59.9)	5.40 (47.8)	6.92 (61.3)	7.30 (64.7)			
CMP63M	I_{max}	% I_N			200	200	150	150	150	150	125	
	M_{pk}	Nm (lb in)			6.23 (55.2)	7.84 (69.4)	6.05 (53.6)	8.05 (71.3)	9.92 (87.9)	12.7 (112)	13.6 (120)	
CMP63L	I_{max}	% I_N				200	150	150	150	150	150	123
	M_{pk}	Nm (lb in)				8.37 (74.1)	6.38 (56.5)	8.61 (76.3)	10.8 (95.7)	14.1 (125)	17.8 (158)	18.5 (164)

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CMP.71 – 100, rated speed n_N = 2000 1/min

Motor			Assignment to MOVIDRIVE®													
			0005	00008	0011	0014	0015	0022	0030	0040	0055	0075	0110	0150	0220	0300
	I_n	A	2	2.4	3.1	4	4	5.5	7	9.5	12.5	16	24	32	46	60
	I_{max}	A	4	4.5	6.2	8	6	8.25	10.5	14.3	18.8	24	36	48	69	90
CMP71S	I_{max}	% I_N	166	166	166	166	125	125	125	107						
	M_{pk}	Nm (lb in)	6.47 (57.3)	7.64 (67.7)	9.58 (84.8)	11.8 (105)	9.34 (82.7)	12.1 (107)	14.4 (128)	15.8 (140)						
CMP71M	I_{max}	% I_N			166	166	125	125	125	125	120					
	M_{pk}	Nm (lb in)			9.63 (85.3)	12.3 (109)	9.37 (83.0)	12.7 (112)	15.7 (139)	20.1 (178)	23.5 (208)					
CMP71L	I_{max}	% I_N				166	125	125	125	125	125	118				
	M_{pk}	Nm (lb in)				13.6 (120)	10.2 (90.3)	14.1 (125)	17.8 (158)	23.7 (210)	30.0 (266)	34.5 (306)				
CMP80S	I_{max}	% I_N				166	125	125	125	125	125	125				
	M_{pk}	Nm (lb in)				12.7 (112)	9.48 (84.0)	13.2 (117)	16.9 (150)	22.7 (201)	28.7 (254)	34.0 (301)				
CMP80M	I_{max}	% I_N						125	125	125	125	125	117			
	M_{pk}	Nm (lb in)						13.9 (123)	17.7 (157)	23.8 (211)	30.8 (273)	38.2 (338)	49.0 (434)			
CMP80L	I_{max}	% I_N							125	125	125	125	125	117		
	M_{pk}	Nm (lb in)							19.1 (169)	25.9 (229)	33.7 (298)	42.6 (377)	61.3 (543)	73.0 (647)		
CMP100S	I_{max}	% I_N							125	125	125	125	125	125		
	M_{pk}	Nm (lb in)							17.0 (151)	23.0 (204)	30.0 (266)	37.6 (333)	52.2 (462)	62.0 (549)		
CMP100M	I_{max}	% I_N								125	125	125	125	125		
	M_{pk}	Nm (lb in)								25.0 (221)	32.9 (291)	42.0 (372)	61.4 (544)	78.0 (691)		
CMP100L	I_{max}	% I_N									125	125	125	125	125	108
	M_{pk}	Nm (lb in)									34.0 (301)	43.5 (385)	64.8 (574)	85.1 (754)	117 (1036)	129 (1143)

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CMP.71 – 100, rated speed n_N = 3000 1/min

Motor			Assignment to MOVIDRIVE®													
			0011	0014	0015	0022	0030	0040	0055	0075	0110	0150	0220	0300	0370	0450
	I_n	A		4	4	5.5	7	9.5	12.5	16	24	32	46	60	73	89
	I_{max}	A		8	6	8.25	10.5	14.3	18.8	24	36	48	69	90	109.5	133.5
CMP71S	I_{max}	% I_N	166	166	125	125	125	125	118							
	M_{pk}	Nm (lb in)	6.9 (61.3)	8.7 (77.1)	6.74 (59.7)	8.97 (79.4)	11.0 (97.4)	13.9 (123)	15.8 (140)							
CMP71M	I_{max}	% I_N		166	125	125	125	125	125	125						
	M_{pk}	Nm (lb in)		8.33 (73.8)	6.32 (56.0)	8.62 (76.3)	10.9 (96.5)	14.4 (128)	18.2 (161)	21.9 (194)						
CMP71L	I_{max}	% I_N				125	125	125	125	125	117					
	M_{pk}	Nm (lb in)				9.44 (83.6)	12.0 (106)	16.2 (143)	21.1 (187)	26.4 (234)	34.5 (306)					
CMP80S	I_{max}	% I_N				125	125	125	125	125	125					
	M_{pk}	Nm (lb in)				8.98 (79.5)	11.5 (102)	15.8 (140)	20.7 (183)	25.9 (229)	34.5 (306)					
CMP80M	I_{max}	% I_N					125	125	125	125	125	125				
	M_{pk}	Nm (lb in)					12.3 (109)	16.7 (148)	21.8 (193)	27.6 (244)	39.5 (350)	49.0 (434)				
CMP80L	I_{max}	% I_N						125	125	125	125	125	122			
	M_{pk}	Nm (lb in)						17.4 (154)	22.8 (202)	29.0 (257)	42.8 (379)	55.5 (492)	73.0 (647)			
CMP100S	I_{max}	% I_N							125	125	125	125	125			
	M_{pk}	Nm (lb in)							20.5 (182)	26.2 (232)	38.2 (338)	48.5 (430)	61.4 (544)			
CMP100M	I_{max}	% I_N							125	125	125	125	125	108		
	M_{pk}	Nm (lb in)							22.2 (197)	28.4 (252)	42.5 (376)	55.8 (494)	76.1 (674)	84.0 (744)		
CMP100L	I_{max}	% I_N									125	125	125	125	125	109
	M_{pk}	Nm (lb in)									44.0 (390)	58.5 (518)	82.7 (732)	105 (930)	123 (1089)	129 (1143)

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CMP.71 – 100, rated speed n_N = 4500 1/min

Motor			Assignment to MOVIDRIVE®														
			0014	0015	0022	0030	0040	0055	0075	0110	0150	0220	0300	0370	0450	0550	0750
	I_n	A	4	4	5.5	7	9.5	12.5	16	24	32	46	60	73	89	105	130
	I_{max}	A	8	6	8.25	10.5	14.3	18.8	24	36	48	69	90	109.5	133.5	157.5	195
CMP71S	I_{max}	% I_N	166	125	125	125	125	125	125								
	M_{pk}	Nm (lb in)	6.06 (53.7)	4.63 (41.0)	6.26 (55.4)	7.80 (69.1)	10.2 (90.3)	12.7 (112)	15.0 (133)								
CMP71M	I_{max}	% I_N			125	125	125	125	125	125	102						
	M_{pk}	Nm (lb in)			5.98 (53.0)	7.58 (67.1)	10.2 (90.3)	13.1 (116)	16.3 (144)	22.4 (198)	23.5 (208)						
CMP71L	I_{max}	% I_N					125	125	125	125	125						
	M_{pk}	Nm (lb in)					10.9 (96.5)	14.3 (127)	18.2 (161)	26.4 (234)	33.3 (295)						
CMP80S	I_{max}	% I_N					125	125	125	125	125						
	M_{pk}	Nm (lb in)					10.2 (90.3)	13.5 (120)	17.4 (154)	25.5 (226)	31.8 (282)						
CMP80M	I_{max}	% I_N						125	125	125	125	125	100.0				
	M_{pk}	Nm (lb in)						14.6 (129)	18.7 (166)	27.6 (244)	35.8 (317)	47.4 (420)	49.0 (434)				
CMP80L	I_{max}	% I_N							125	125	125	125	125	114			
	M_{pk}	Nm (lb in)							19.7 (174)	29.3 (260)	38.6 (342)	53.9 (477)	67.5 (598)	73.0 (647)			
CMP100S	I_{max}	% I_N							125	125	125	125	125	123	101		
	M_{pk}	Nm (lb in)							17.2 (152)	25.7 (228)	33.7 (298)	46.2 (409)	56.0 (496)	62.0 (549)	62.0 (549)		
CMP100M	I_{max}	% I_N								125	125	125	125	125	111		
	M_{pk}	Nm (lb in)								28.1 (249)	37.4 (331)	53.0 (469)	67.2 (595)	78.8 (698)	84.0 (744)		
CMP100L	I_{max}	% I_N									125	125	125	125	125	125	112
	M_{pk}	Nm (lb in)									39.2 (347)	56.2 (498)	72.6 (643)	87.2 (772)	104 (921)	119 (1054)	129 (1143)

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8.5.2 MOVIAXIS® inverter assignment

INFORMATION

The inverter assignment for MOVIAXIS® applies for a AC 400 V voltage supply and standard 8 kHz modulation.

CMP40 – 63, rated speed n_N = 3000 1/min

Motor			Assignment to MOVIAXIS®									
	Size		1			2		3		4	5	6
	I_n	A	2	4	8	12	16	24	32	48	64	100
	I_{max}	A	5	10	20	30	40	60	80	120	160	250
CMP40S	I_{max}	% I_N	175									
	M_{pk}	Nm (lb in)	1.33 (11.8)									
CMP40M	I_{max}	% I_N	145									
	M_{pk}	Nm (lb in)	2.25 (19.9)									
CMP50S	I_{max}	% I_N	145									
	M_{pk}	Nm (lb in)	3.50 (31.0)									
CMP50M	I_{max}	% I_N	240									
	M_{pk}	Nm (lb in)	6.30 (55.8)									
CMP50L	I_{max}	% I_N	250	165								
	M_{pk}	Nm (lb in)	7.25 (64.2)	9.20 (81.5)								
CMP63S	I_{max}	% I_N	250	155								
	M_{pk}	Nm (lb in)	6.17 (54.6)	7.30 (64.7)								
CMP63M	I_{max}	% I_N		250								
	M_{pk}	Nm (lb in)		13.3 (118)								
CMP63L	I_{max}	% I_N		250	176							
	M_{pk}	Nm (lb in)		13.9 (123)	18.5 (164)							

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CMP40 – 63, rated speed n_N = 4500 1/min

Motor			Assignment to MOVIAXIS®									
	Size		1			2		3		4	5	6
	I_n	A	2	4	8	12	16	24	32	48	64	100
	I_{max}	A	5	10	20	30	40	60	80	120	160	250
CMP40S	I_{max}	% I_N	175									
	M_{pk}	Nm (lb in)	1.33 (11.8)									
CMP40M	I_{max}	% I_N	145									
	M_{pk}	Nm (lb in)	2.25 (19.9)									
CMP50S	I_{max}	% I_N	200									
	M_{pk}	Nm (lb in)	3.50 (31.0)									
CMP50M	I_{max}	% I_N	250	165								
	M_{pk}	Nm (lb in)	5.01 (44.4)	6.30 (55.8)								
CMP50L	I_{max}	% I_N		238								
	M_{pk}	Nm (lb in)		9.20 (81.5)								
CMP63S	I_{max}	% I_N		220								
	M_{pk}	Nm (lb in)		7.30 (64.7)								
CMP63M	I_{max}	% I_N		250	195							
	M_{pk}	Nm (lb in)		9.52 (84.3)	13.6 (120)							
CMP63L	I_{max}	% I_N			246	164						
	M_{pk}	Nm (lb in)			18.5 (164)	18.5 (164)						

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CMP.71 – 100, rated speed n_N = 2000 1/min

Motor			Assignment to MOVIAXIS®									
	Size		1			2		3		4	5	6
	I_n	A	2	4	8	12	16	24	32	48	64	100
	I_{max}	A	5	10	20	30	40	60	80	120	160	250
CMP71S	I_{max}	% I_N		250								
	M_{pk}	Nm (lb in)		15.7 (139)								
CMP71M	I_{max}	% I_N		250	188							
	M_{pk}	Nm (lb in)		17.6 (156)	23.5 (208)							
CMP71L	I_{max}	% I_N			236	157						
	M_{pk}	Nm (lb in)			34.5 (306)	34.5 (306)						
CMP80S	I_{max}	% I_N			250	171						
	M_{pk}	Nm (lb in)			34.0 (301)	34.5 (306)						
CMP80M	I_{max}	% I_N			250	233	175					
	M_{pk}	Nm (lb in)			38.2 (338)	49.0 (434)	49.0 (434)					
CMP80L	I_{max}	% I_N				250	234	156				
	M_{pk}	Nm (lb in)				61.3 (543)	73.0 (647)	73.0 (647)				
CMP100S	I_{max}	% I_N				250	250	167				
	M_{pk}	Nm (lb in)				52.2 (462)	62.0 (549)	62.0 (549)				
CMP100M	I_{max}	% I_N				250	250	183				
	M_{pk}	Nm (lb in)				61.4 (544)	78.0 (691)	84.0 (744)				
CMP100L	I_{max}	% I_N						250	203			
	M_{pk}	Nm (lb in)						121 (1072)	129 (1143)			

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CMP.71 – 100, rated speed n_N = 3000 1/min

Motor			Assignment to MOVIAXIS®									
	Size		1			2		3		4	5	6
	I_n	A	2	4	8	12	16	24	32	48	64	100
	I_{max}	A	5	10	20	30	40	60	80	120	160	250
CMP71S	I_{max}	% I_N		250								
	M_{pk}	Nm (lb in)		12.2 (108)								
CMP71M	I_{max}	% I_N		250	250							
	M_{pk}	Nm (lb in)		12.3 (109)	21.9 (194)							
CMP71L	I_{max}	% I_N			250	233						
	M_{pk}	Nm (lb in)			26.4 (234)	34.5 (306)						
CMP80S	I_{max}	% I_N			250	250						
	M_{pk}	Nm (lb in)			25.9 (229)	34.5 (306)						
CMP80M	I_{max}	% I_N			250	250	250					
	M_{pk}	Nm (lb in)			27.6 (244)	39.5 (350)	49.0 (434)					
CMP80L	I_{max}	% I_N				250	250	233				
	M_{pk}	Nm (lb in)				42.8 (379)	55.5 (492)	73.0 (647)				
CMP100S	I_{max}	% I_N				250	250	246				
	M_{pk}	Nm (lb in)				38.2 (338)	48.5 (430)	62.0 (549)				
CMP100M	I_{max}	% I_N				250	250	250				
	M_{pk}	Nm (lb in)				42.5 (376)	55.8 (494)	78.7 (697)				
CMP100L	I_{max}	% I_N						250	250			
	M_{pk}	Nm (lb in)						86.0 (762)	111 (983)			

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CMP.71 – 100, rated speed n_N = 4500 1/min

Motor			Assignment to MOVIAXIS®									
	Size		1			2		3		4	5	6
	I_n	A	2	4	8	12	16	24	32	48	64	100
	I_{max}	A	5	10	20	30	40	60	80	120	160	250
CMP71S	I_{max}	% I_N			250	183						
	M_{pk}	Nm (lb in)			15.0 (133)	15.8 (140)						
CMP71M	I_{max}	% I_N				250	203					
	M_{pk}	Nm (lb in)				22.4 (198)	23.5 (208)					
CMP71L	I_{max}	% I_N				250	250	177				
	M_{pk}	Nm (lb in)				26.4 (234)	33.3 (295)	34.5 (306)				
CMP80S	I_{max}	% I_N				250	250	192				
	M_{pk}	Nm (lb in)				25.5 (226)	31.8 (282)	34.5 (306)				
CMP80M	I_{max}	% I_N					250	250				
	M_{pk}	Nm (lb in)					35.8 (317)	49.0 (434)				
CMP80L	I_{max}	% I_N						250	250			
	M_{pk}	Nm (lb in)						56.0 (496)	71.1 (630)			
CMP100S	I_{max}	% I_N						250	250	188		
	M_{pk}	Nm (lb in)						47.8 (423)	58.2 (515)	62.0 (549)		
CMP100M	I_{max}	% I_N						250	250	206		
	M_{pk}	Nm (lb in)						55.2 (489)	71.0 (629)	84.0 (744)		
CMP100L	I_{max}	% I_N							250	250	227	
	M_{pk}	Nm (lb in)							77.2 (684)	111 (983)	129 (1143)	

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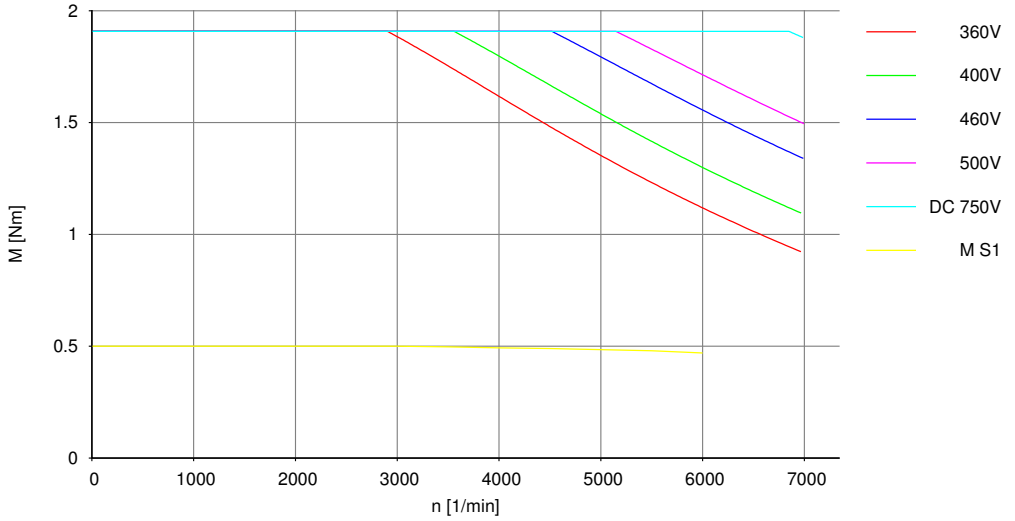
8.6 Dynamic and thermal limit characteristic curves

INFORMATION

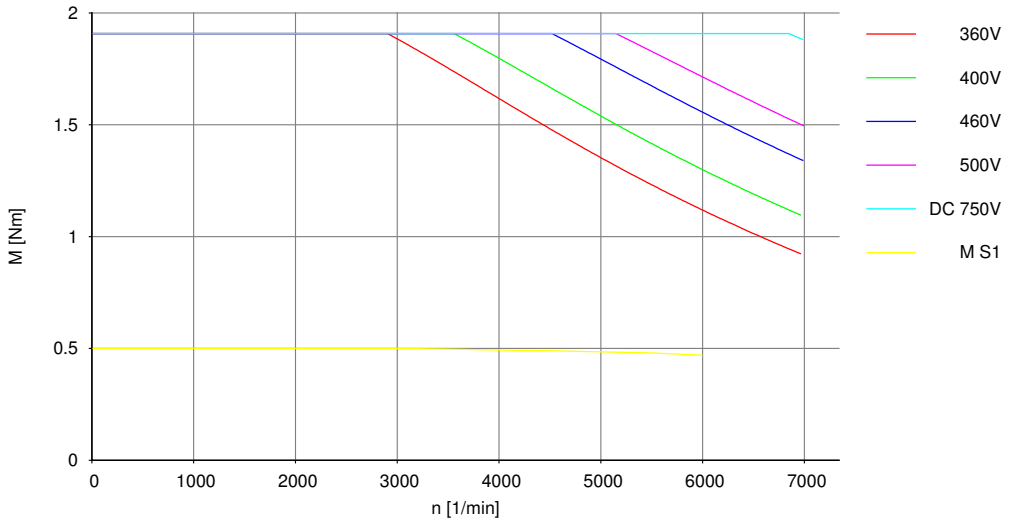
The max. permitted motor speed is n_{max} = 4500 1/min. Operation of the motors with higher speeds is not permitted.

8.6.1 CMP40S 3000 min^{-1}



13817257483

8.6.2 CMP40S 4500 min^{-1}



13818245003

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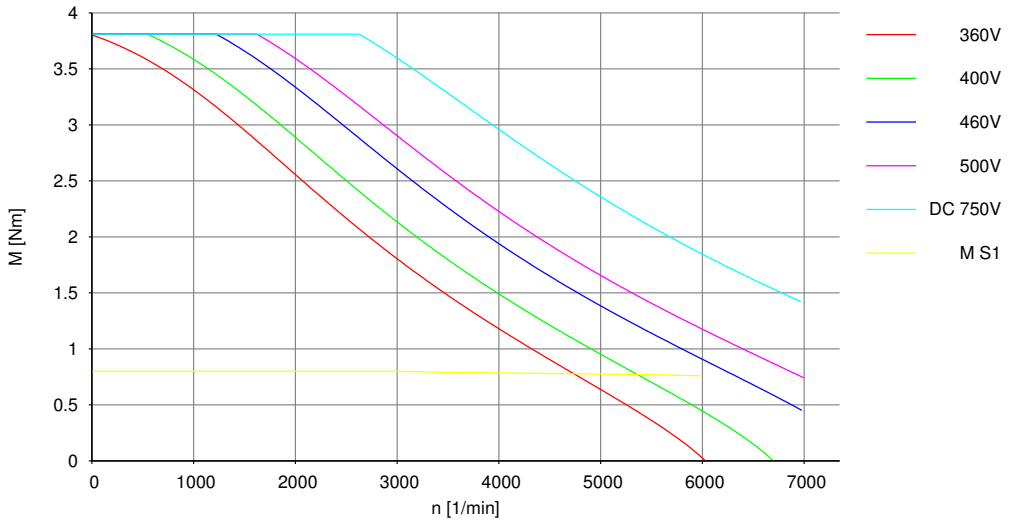
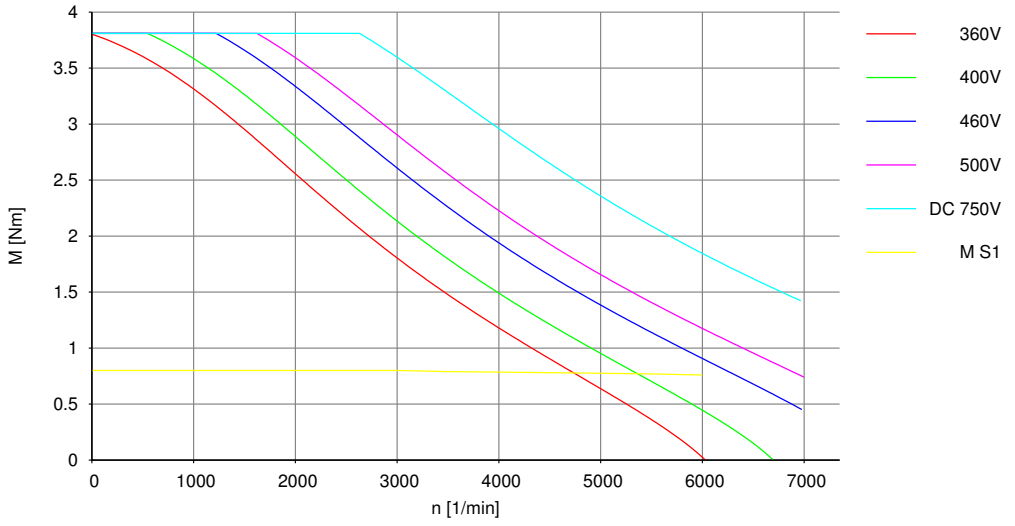
8.6.3 CMP40M 3000 min^{-1}



13817250955

8.6.4 CMP40M 4500 min^{-1}



13817252875

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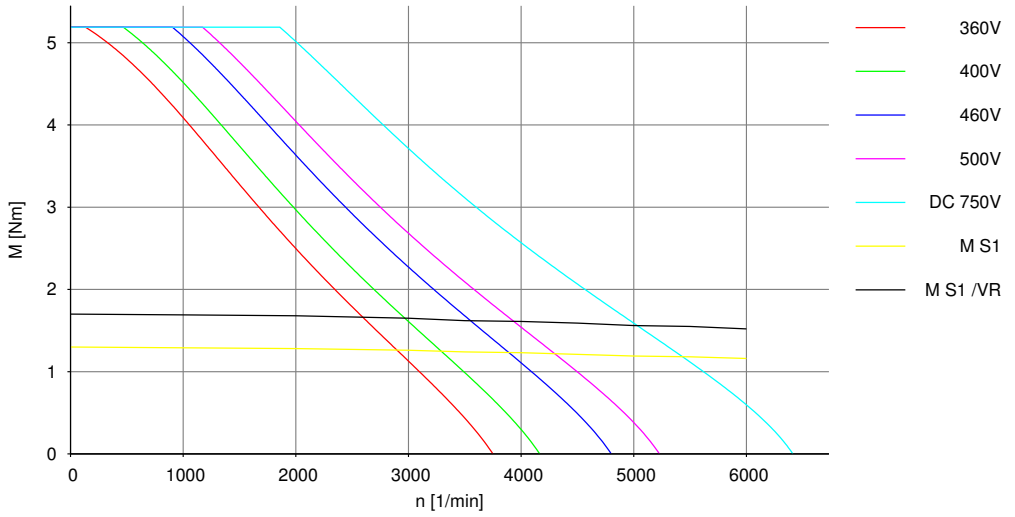
8.6.5 CMP50S 3000 min^{-1}



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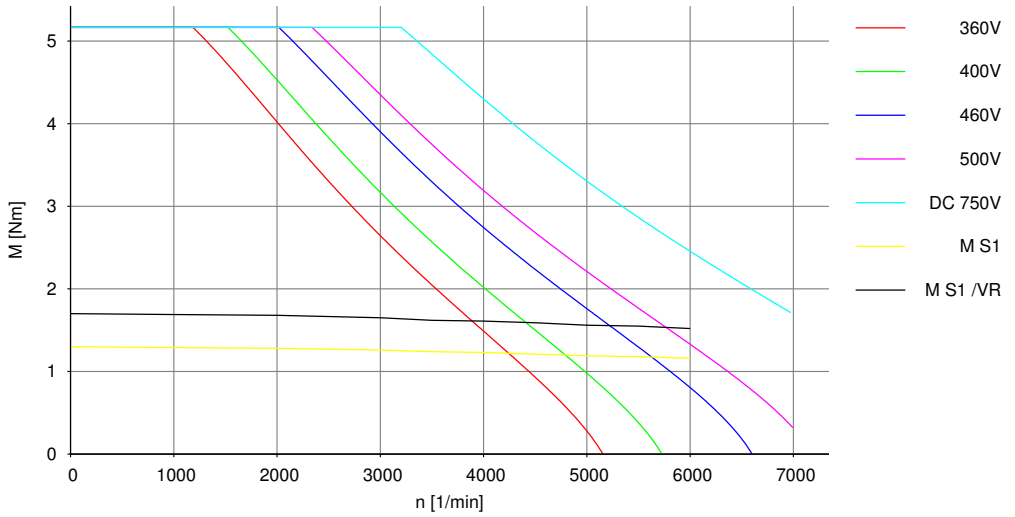
8.6.6 CMP50S 4500 min^{-1}



13818277387

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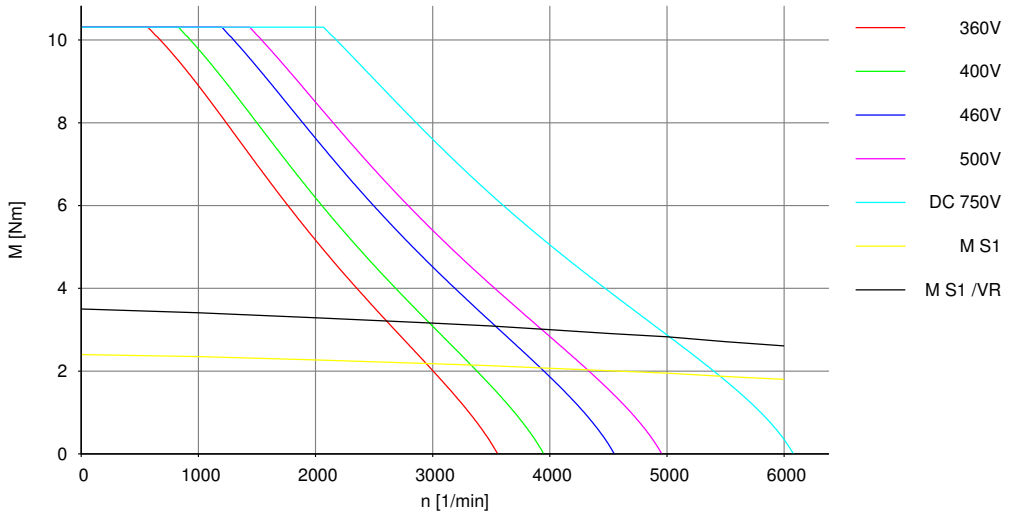
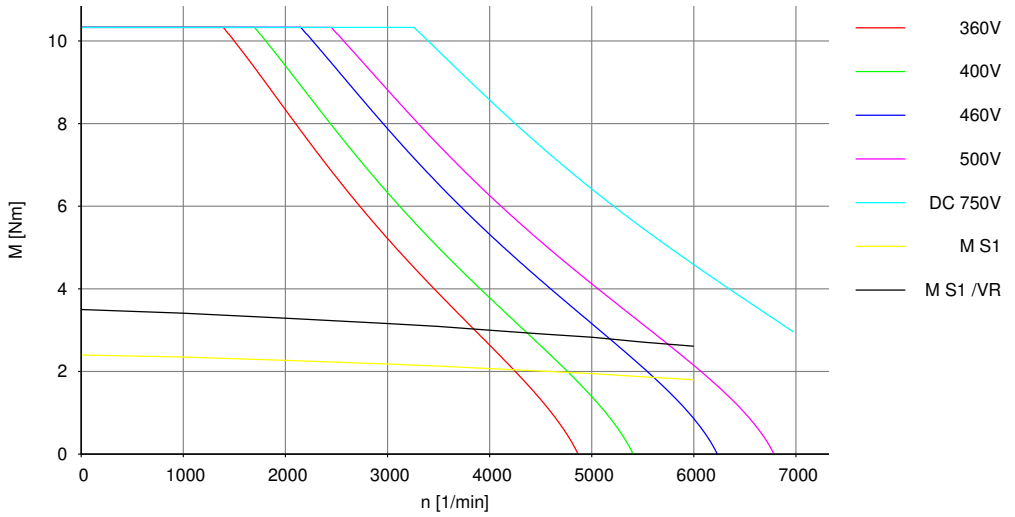
8.6.7 CMP50M 3000 min^{-1}



13818256139

8.6.8 CMP50M 4500 min^{-1}



13818270859

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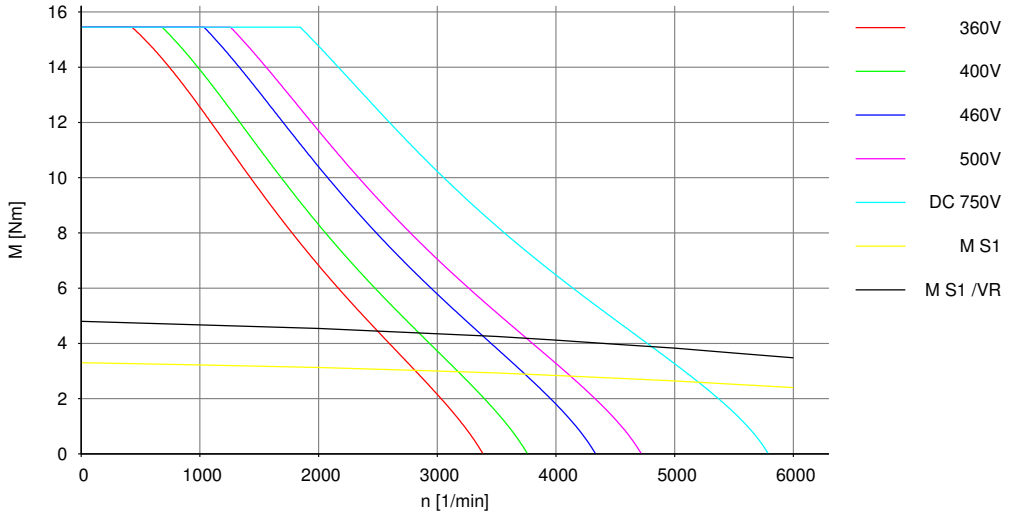
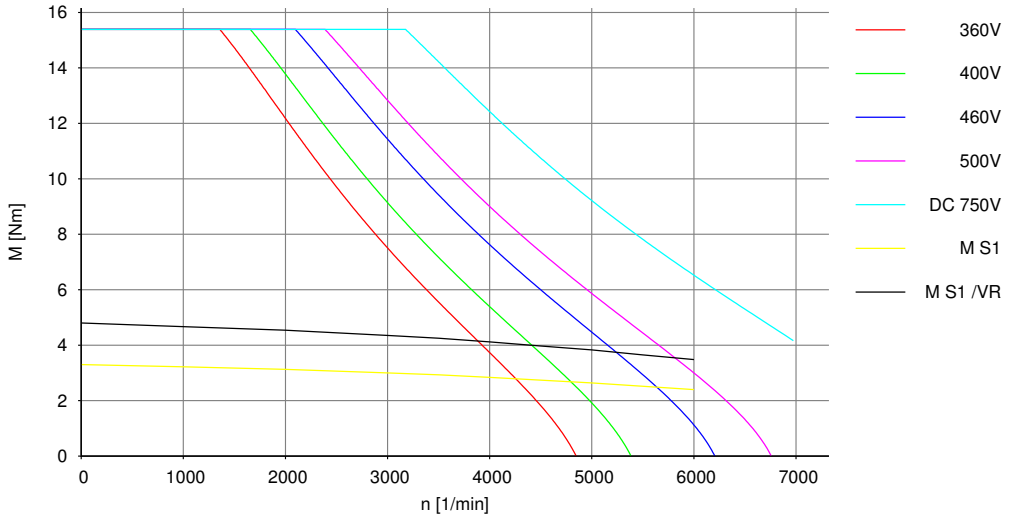
8.6.9 CMP50L 3000 min^{-1}



13818249611

8.6.10 CMP50L 4500 min^{-1}



13818251531

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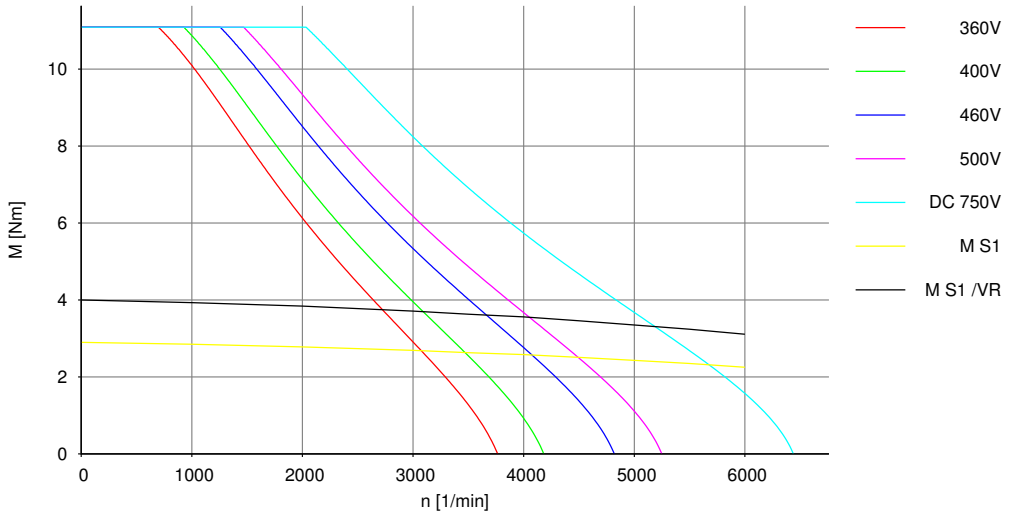
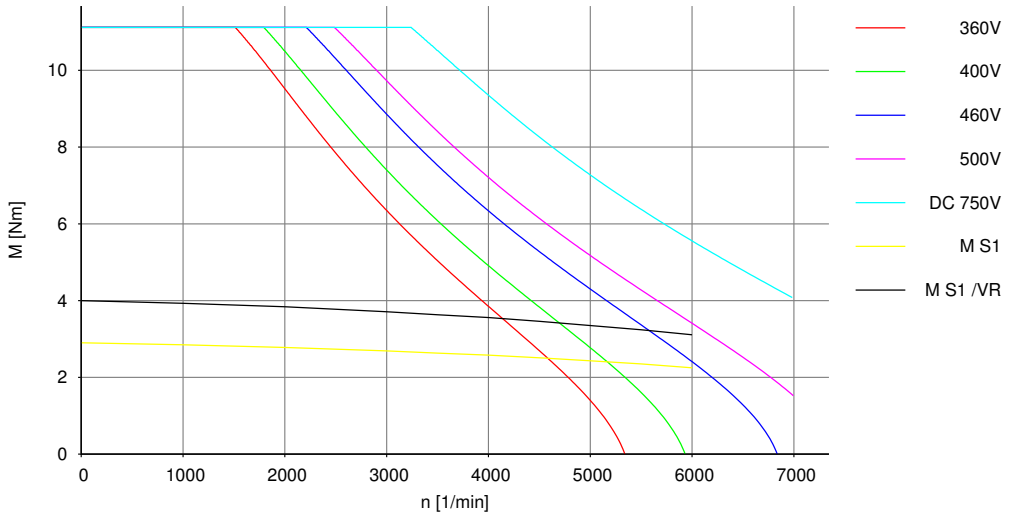
8.6.11 CMP63S 3000 min^{-1}



13818295051

8.6.12 CMP63S 4500 min^{-1}



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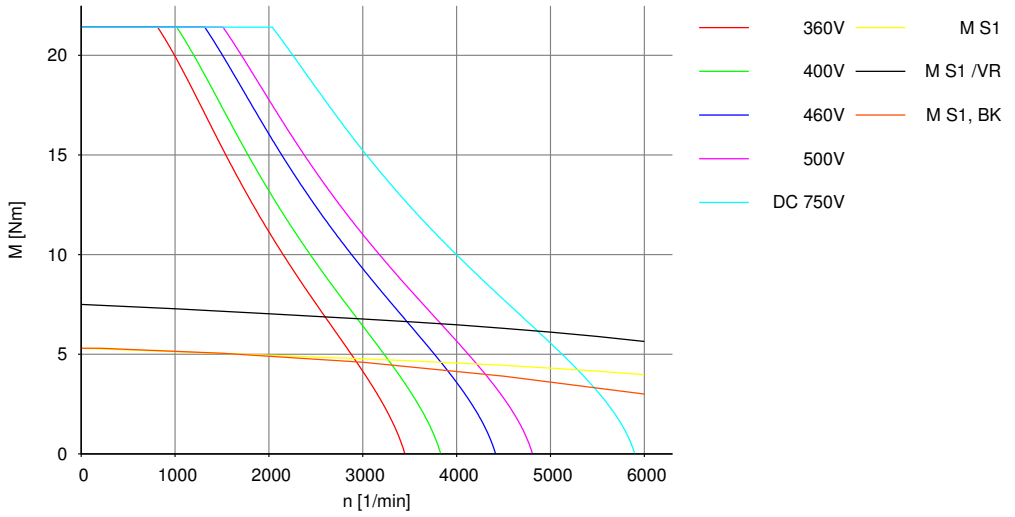
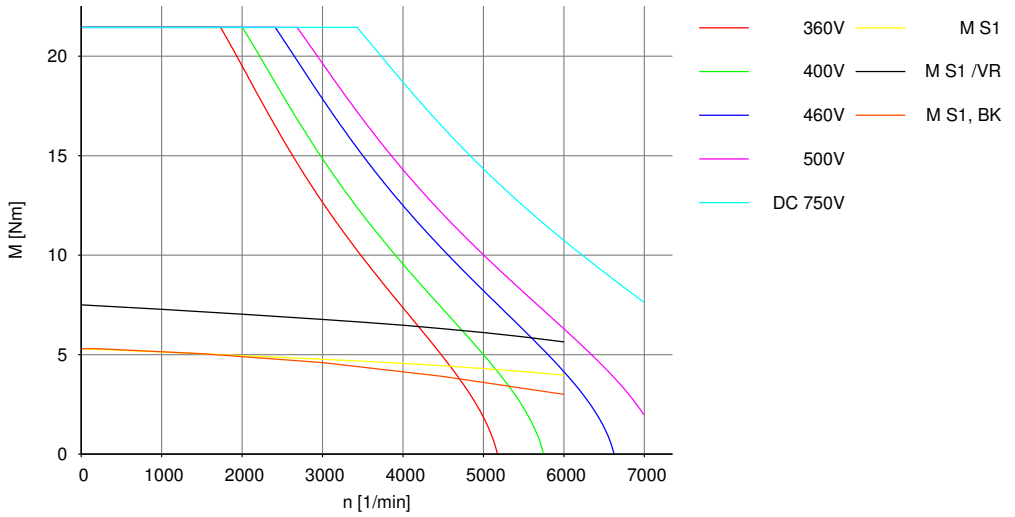
8.6.13 CMP63M 3000 min^{-1}



13818288523

8.6.14 CMP63M 4500 min^{-1}



13818290443

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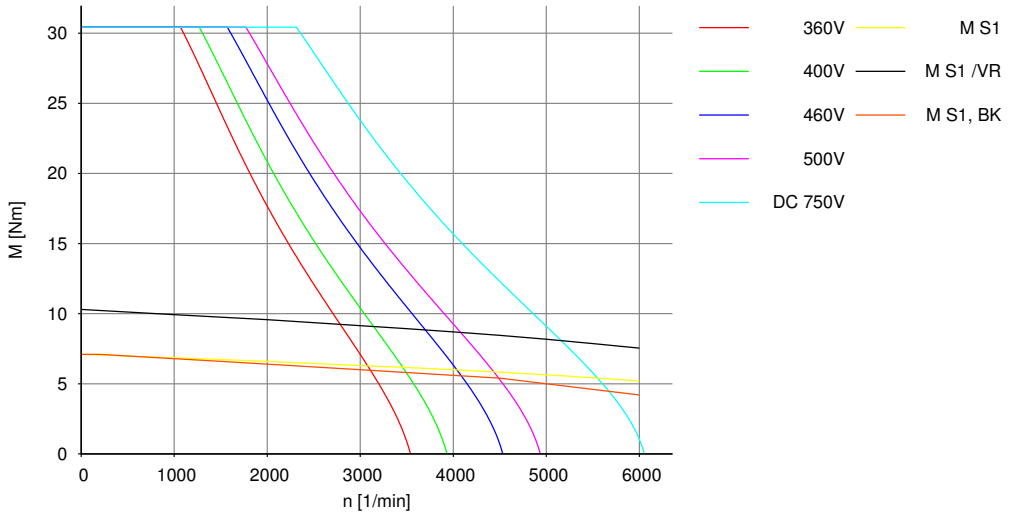
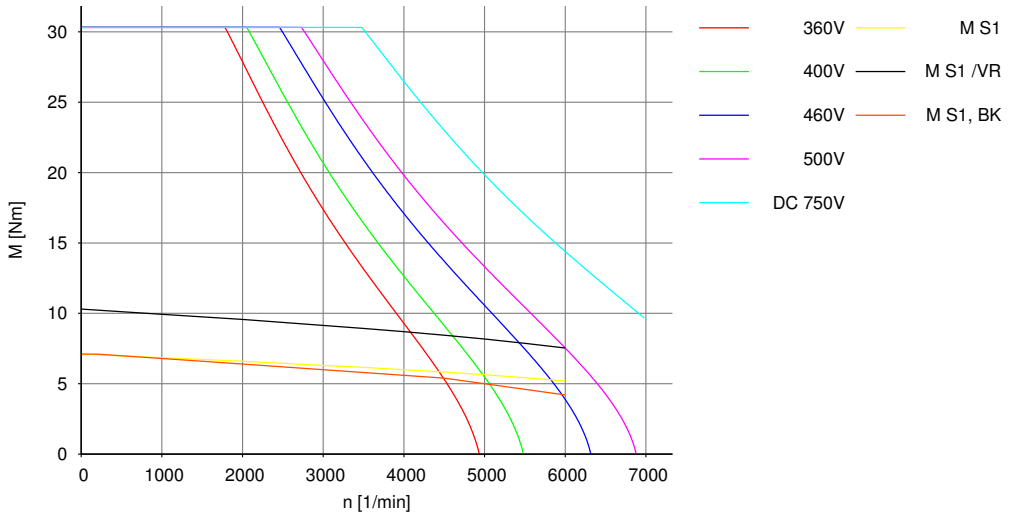
8.6.15 CMP63L 3000 min^{-1}



13818281995

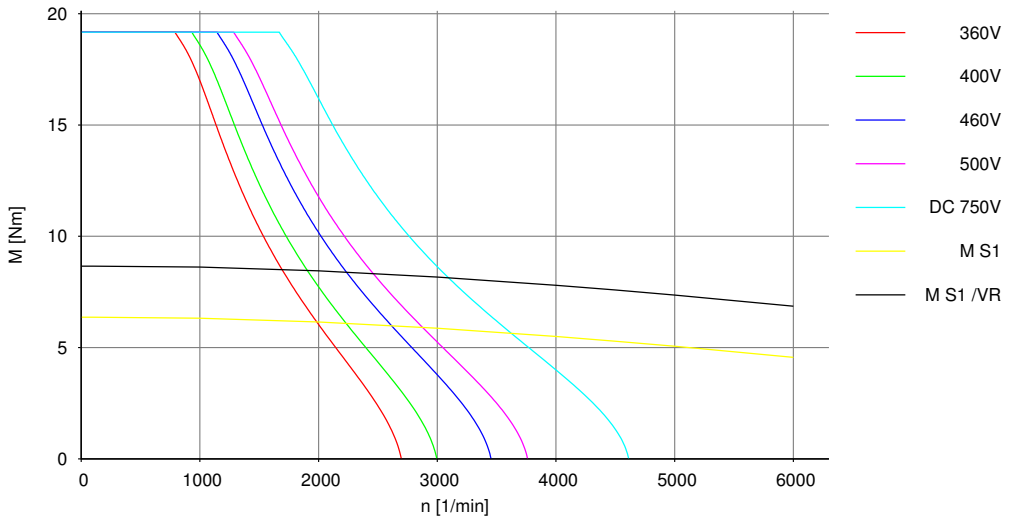
8.6.16 CMP63L 4500 min^{-1}



13818283915

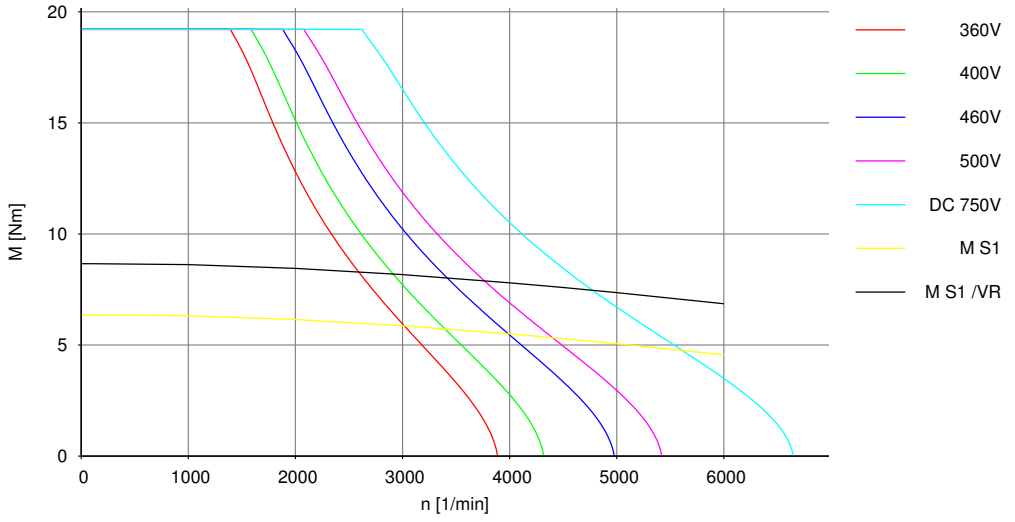
21926786/EN – 09/2015

8.6.17 CMP71S 2000 min^{-1}



13818395787

8.6.18 CMP.71S 3000 min^{-1}



13818397707

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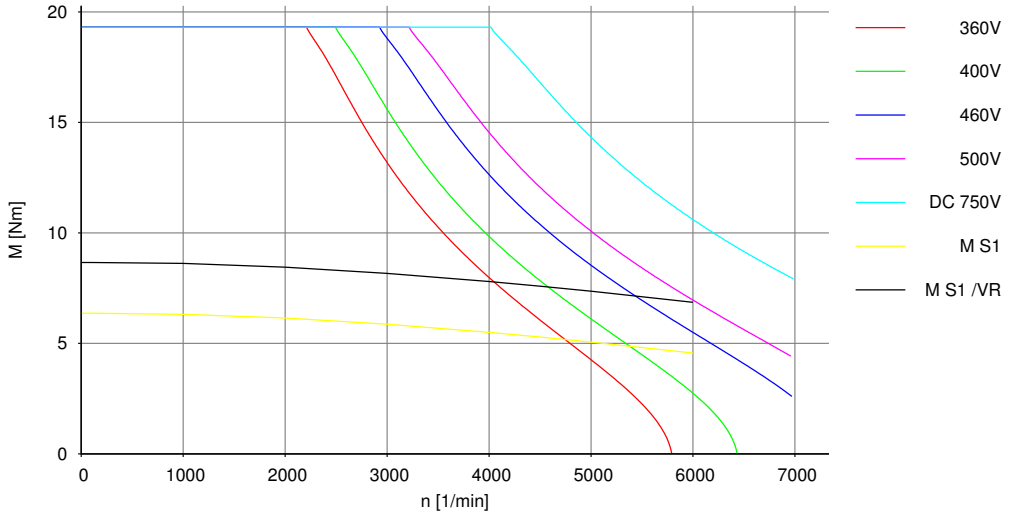
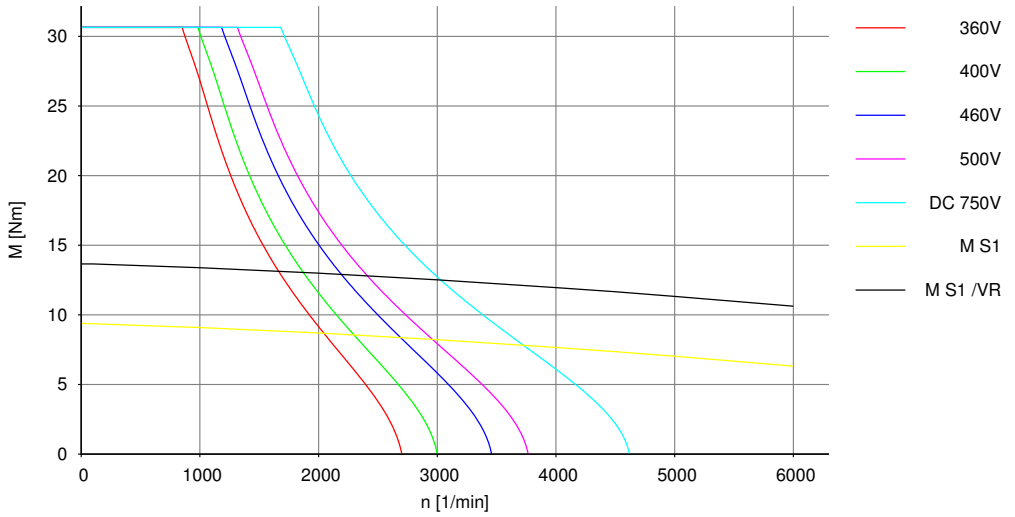
8.6.19 CMP.71S 4500 min^{-1}



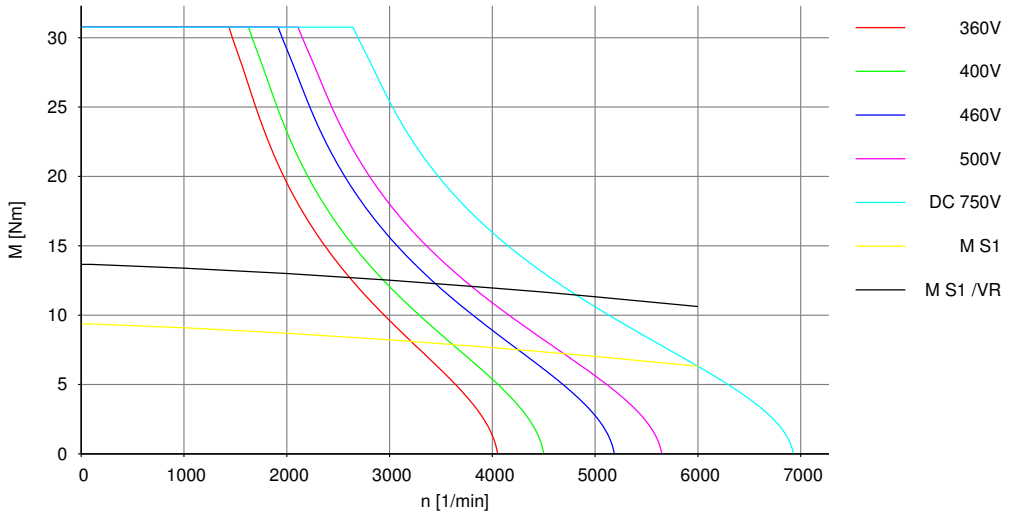
13818412427

8.6.20 CMP.71M 2000 min^{-1}



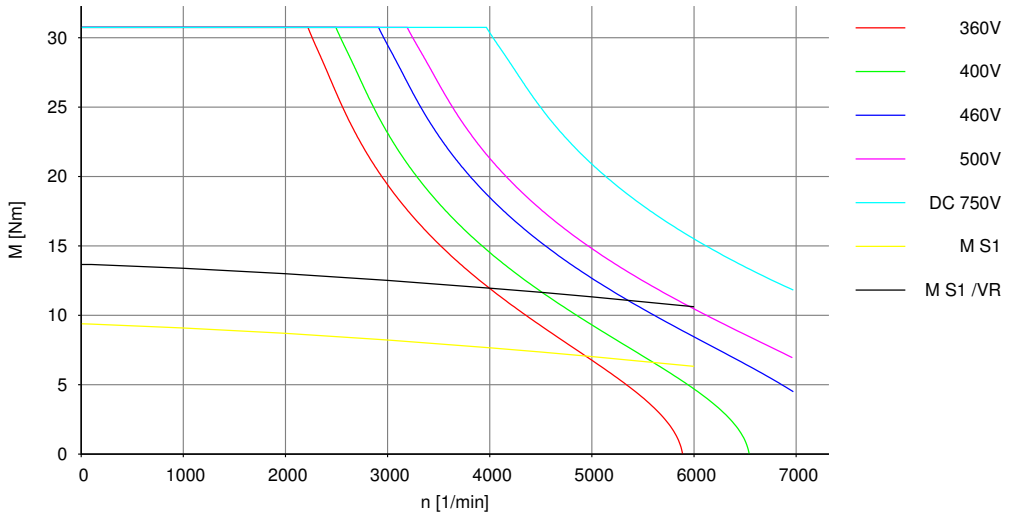
13818387083

8.6.21 CMP.71M 3000 min^{-1}



13818389003

8.6.22 CMP.71M 4500 min^{-1}



13818390923

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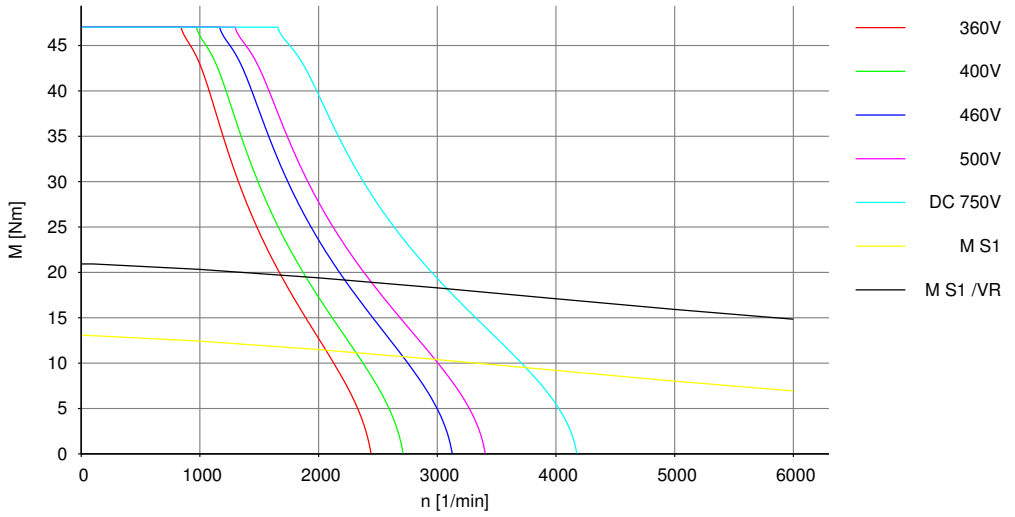
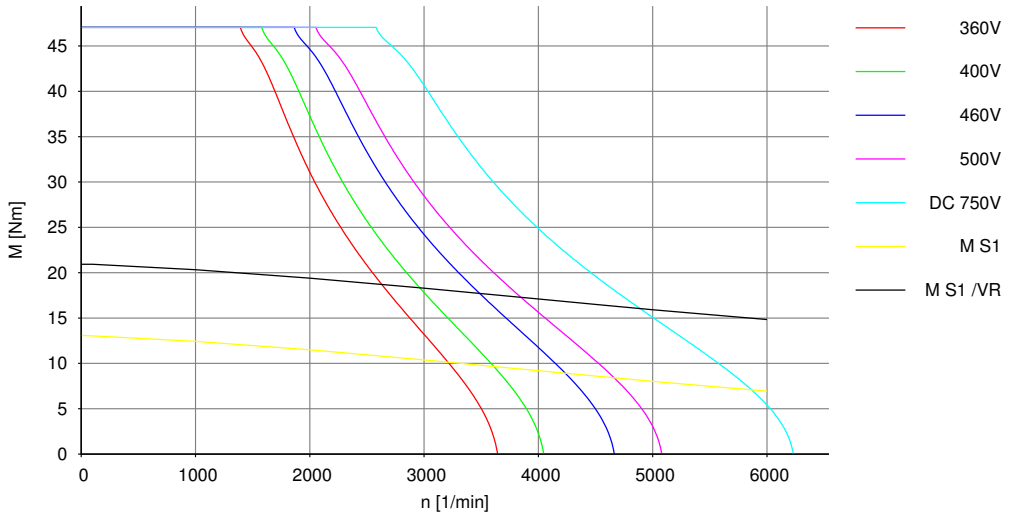
8.6.23 CMP.71L 2000 min^{-1}



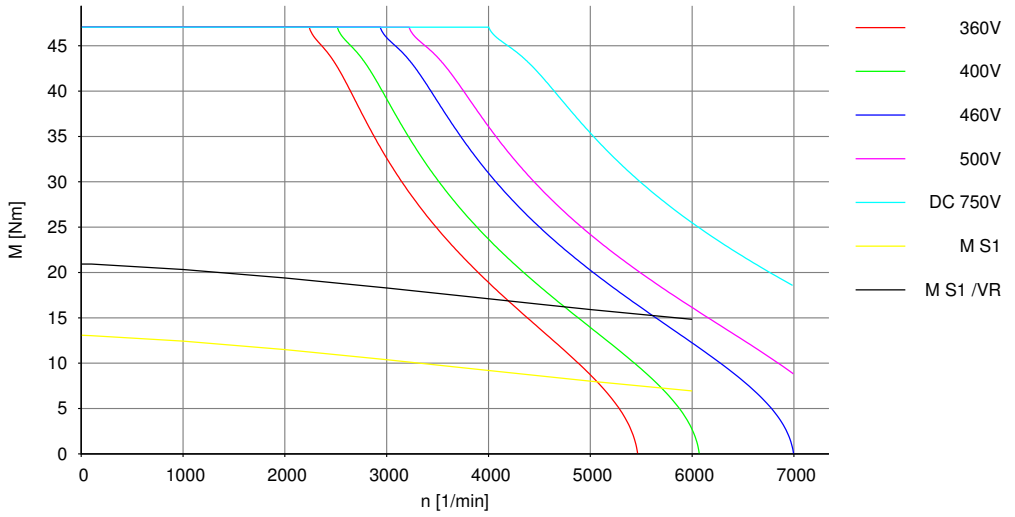
13818365579

8.6.24 CMP.71L 3000 min^{-1}



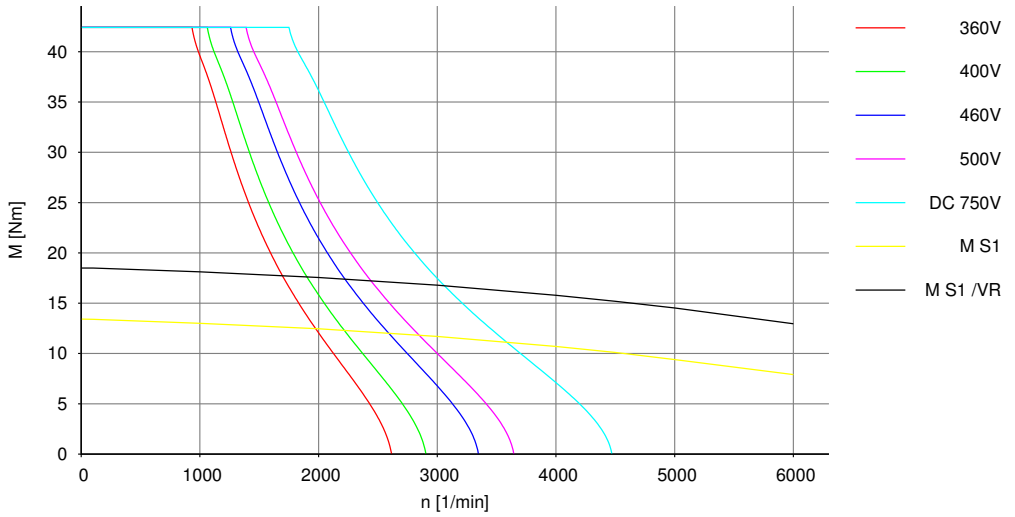
13818367499

8.6.25 CMP.71L 4500 min^{-1}



13818369419

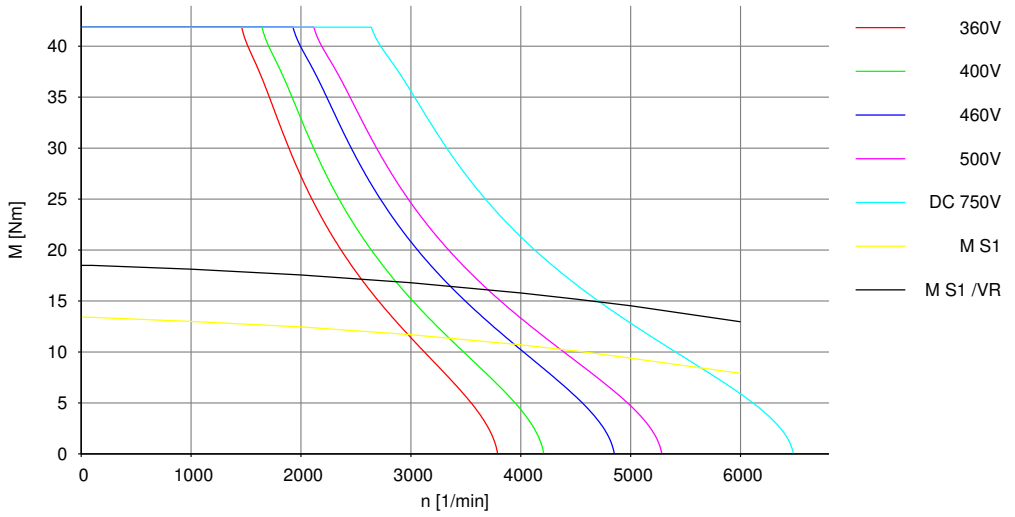
8.6.26 CMP.80S 2000 min^{-1}



13818434699

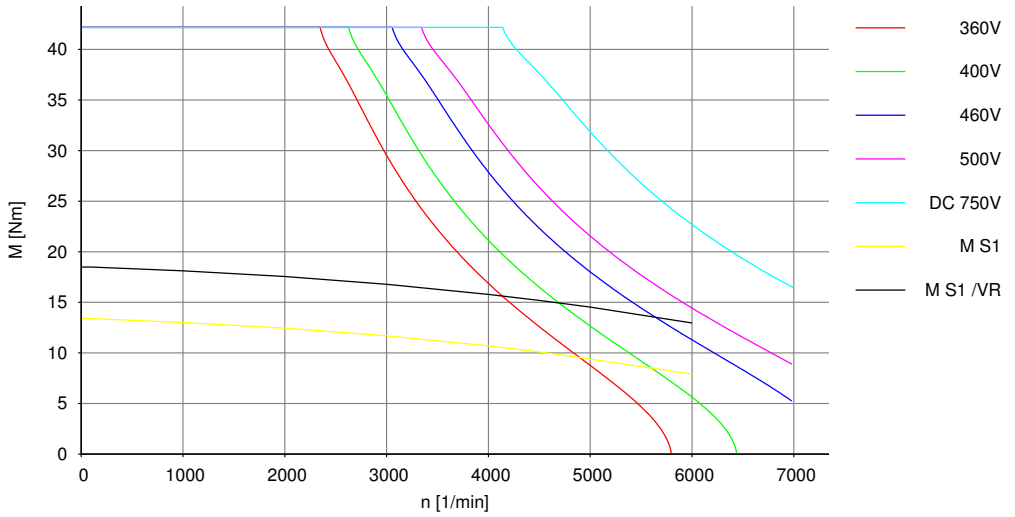
21926786/EN – 09/2015

8.6.27 CMP.80S 3000 min^{-1}



13818449419

8.6.28 CMP.80S 4500 min^{-1}



13818451339

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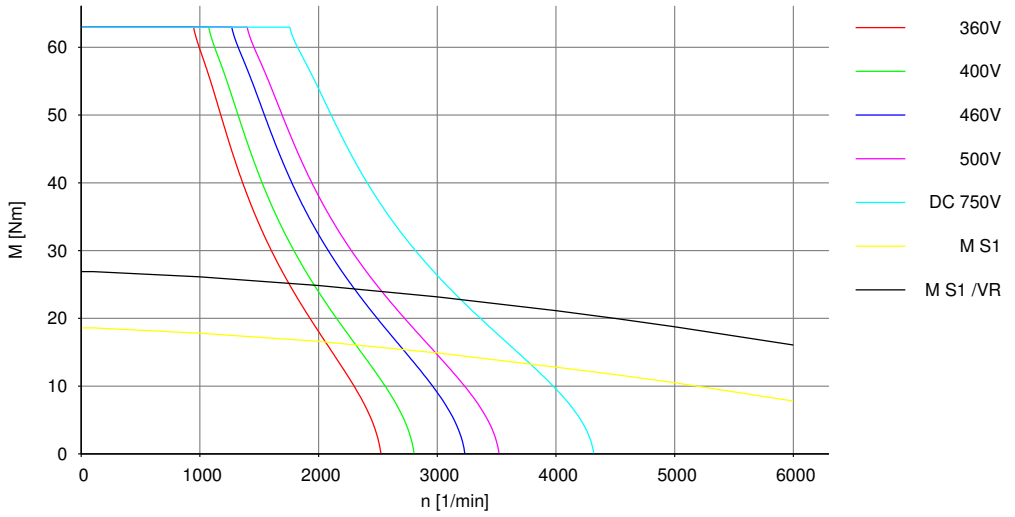
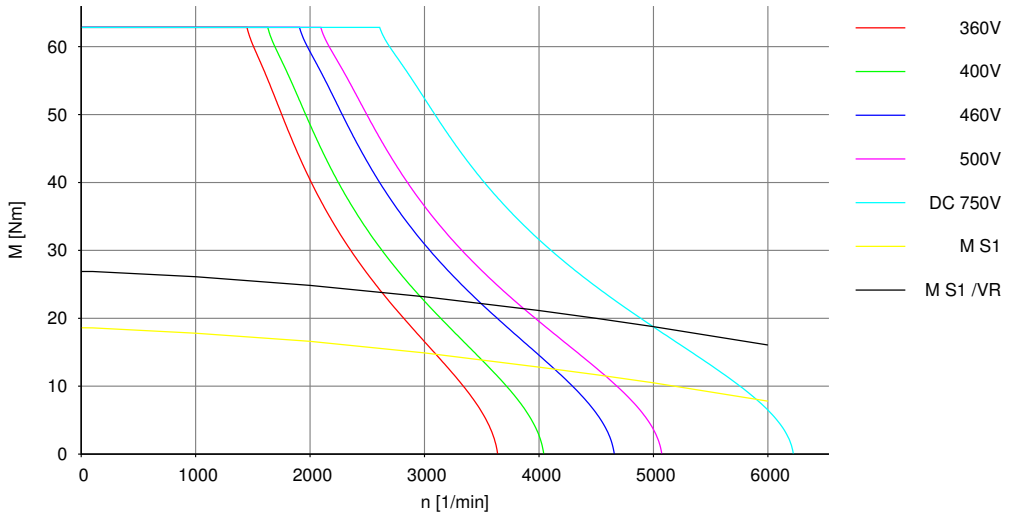
8.6.29 CMP.80M 2000 min^{-1}



13818425995

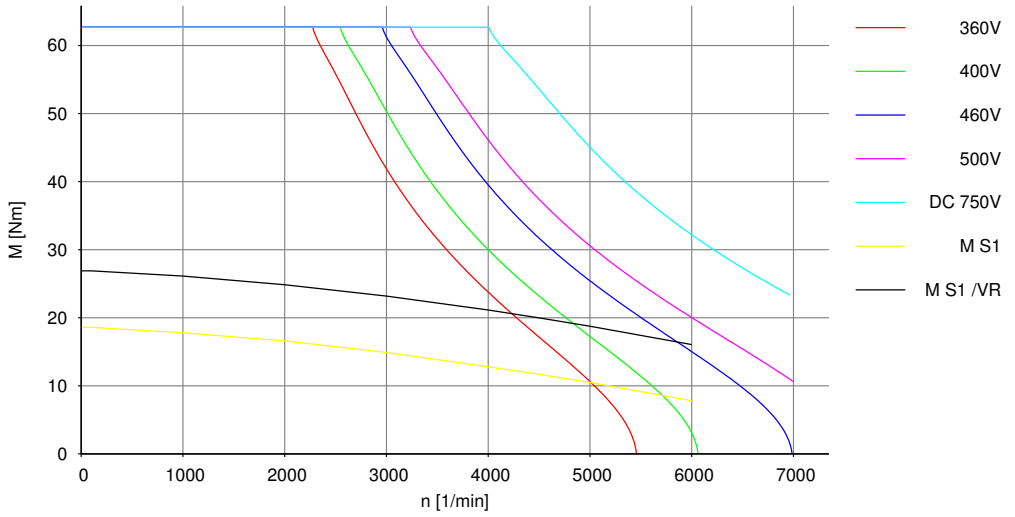
8.6.30 CMP.80M 3000 min^{-1}



13818427915

21926786/EN – 09/2015

8.6.31 CMP.80M 4500 min^{-1}



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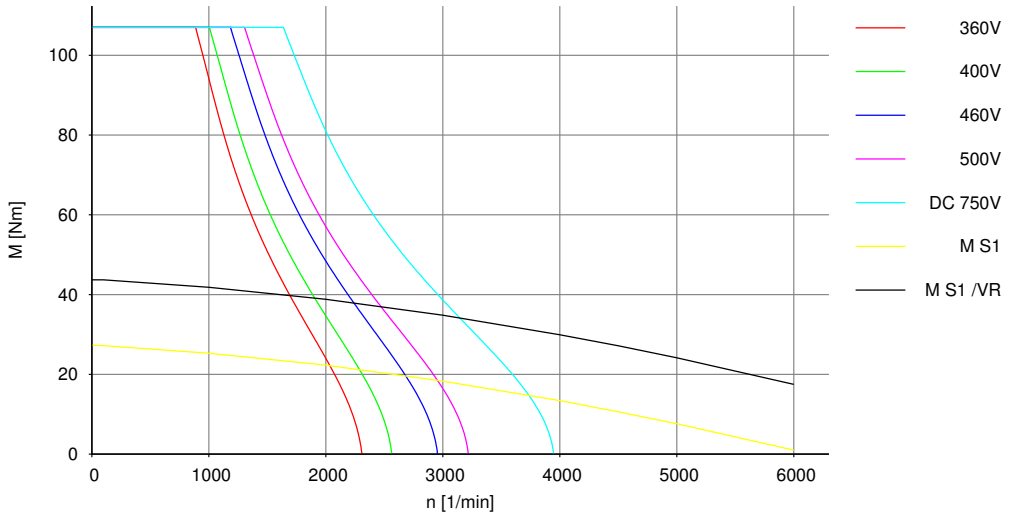
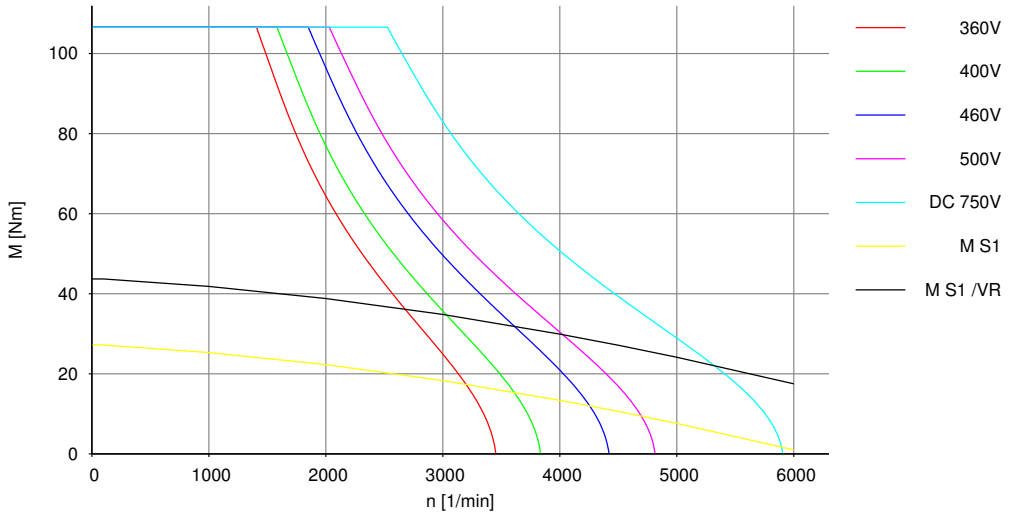
8.6.32 CMP.80L 2000 min^{-1}



13818417291

21926786/EN – 09/2015

8.6.33 CMP.80L 3000 min^{-1}



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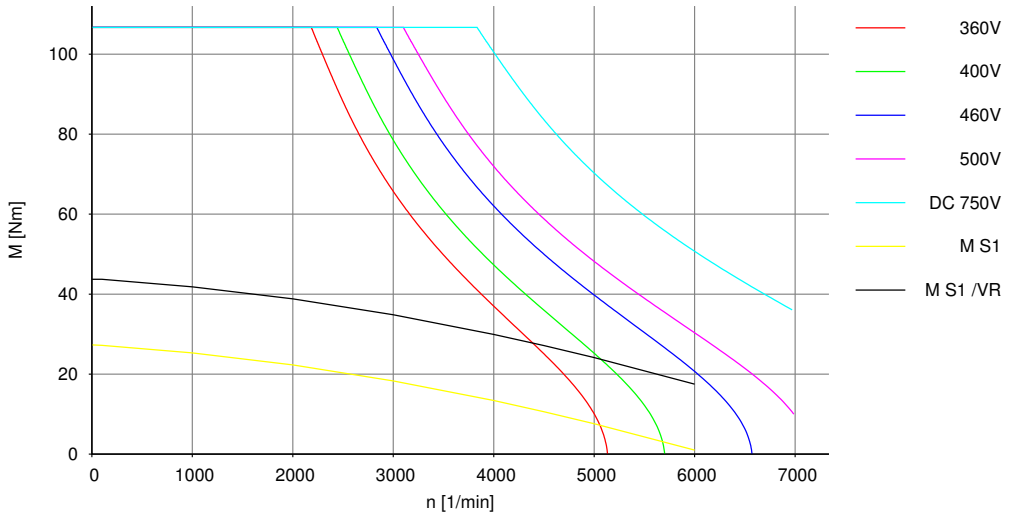
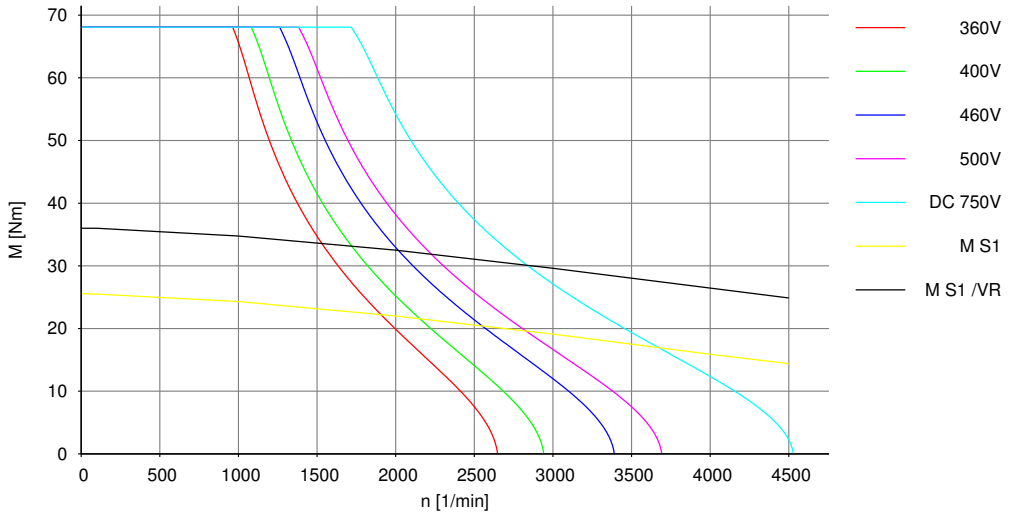
8.6.34 CMP.80L 4500 min^{-1}



13818421131

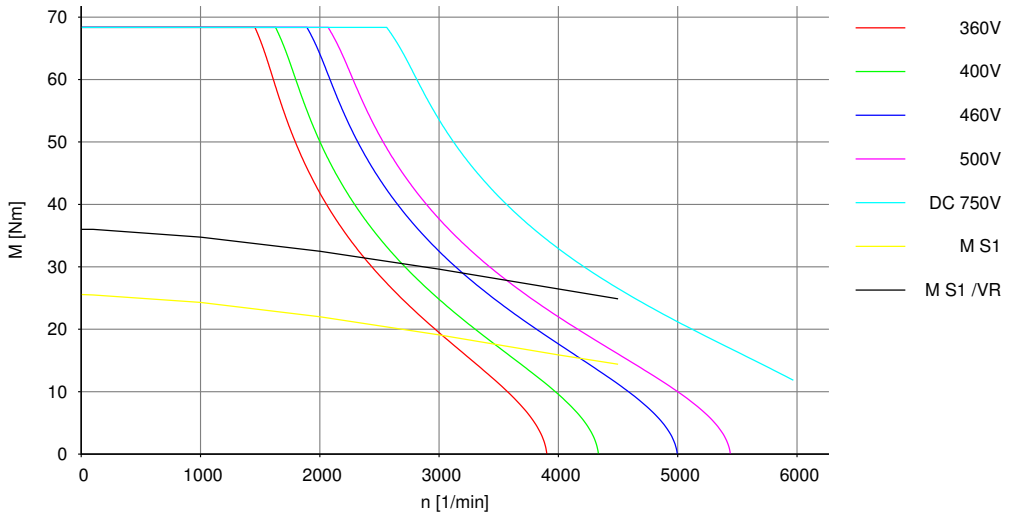
21926786/EN – 09/2015

8.6.35 CMP.100S 2000 min^{-1}



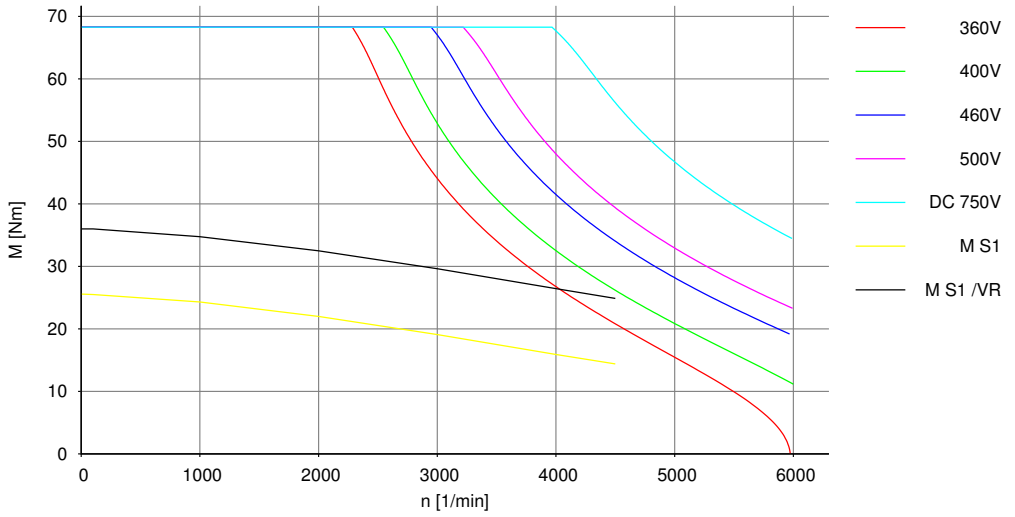
13818482059

8.6.36 CMP.100S 3000 min^{-1}



13818483979

8.6.37 CMP.100S 4500 min^{-1}



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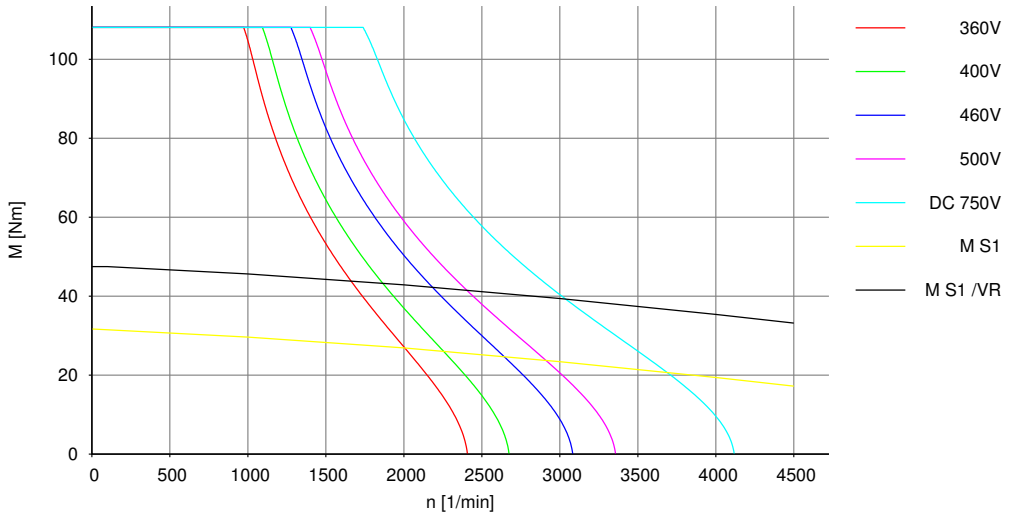
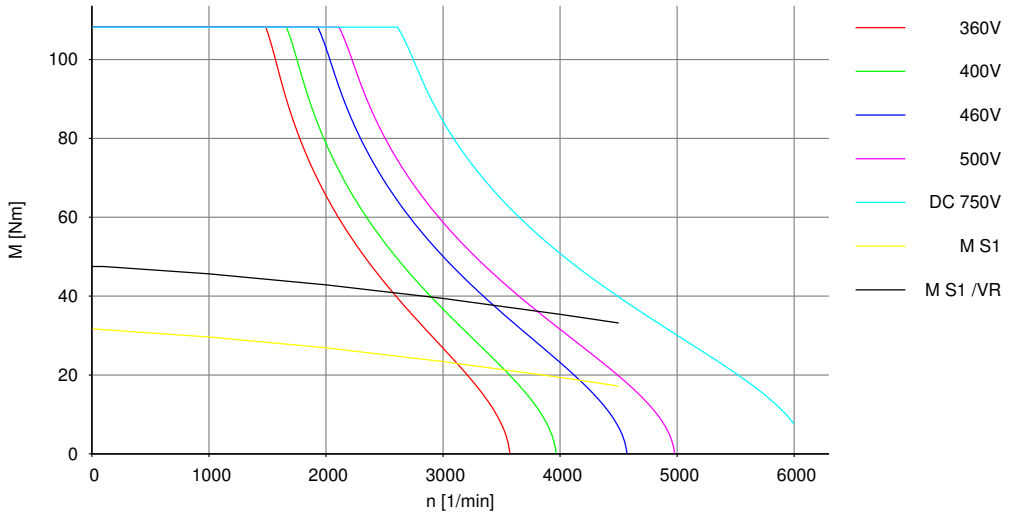
8.6.38 CMP.100M 2000 min^{-1}



13818475531

21926786/EN – 09/2015

8.6.39 CMP.100M 3000 min^{-1}



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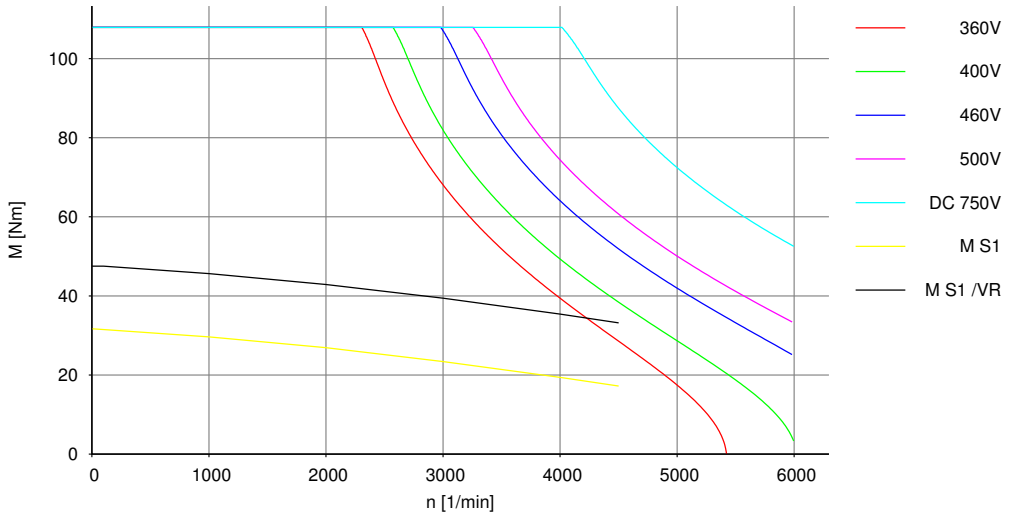
8.6.40 CMP.100M 4500 min^{-1}



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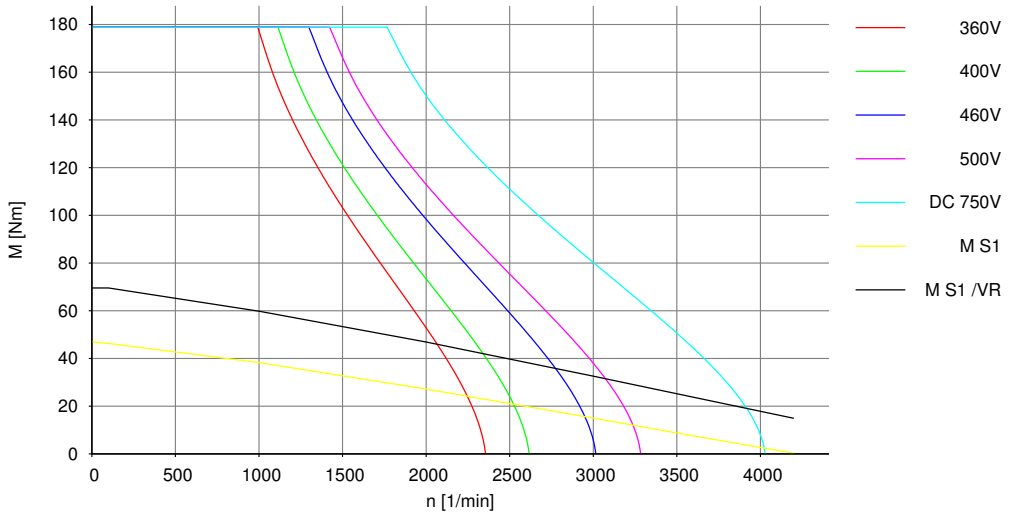
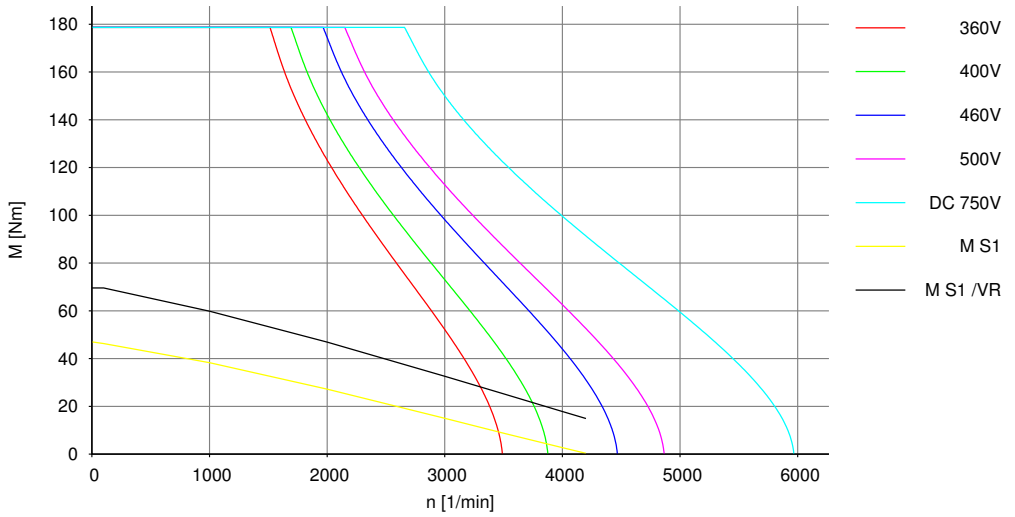
8.6.41 CMP.100L 2000 min^{-1}



13818456203

8.6.42 CMP.100L 3000 min^{-1}



13818458123

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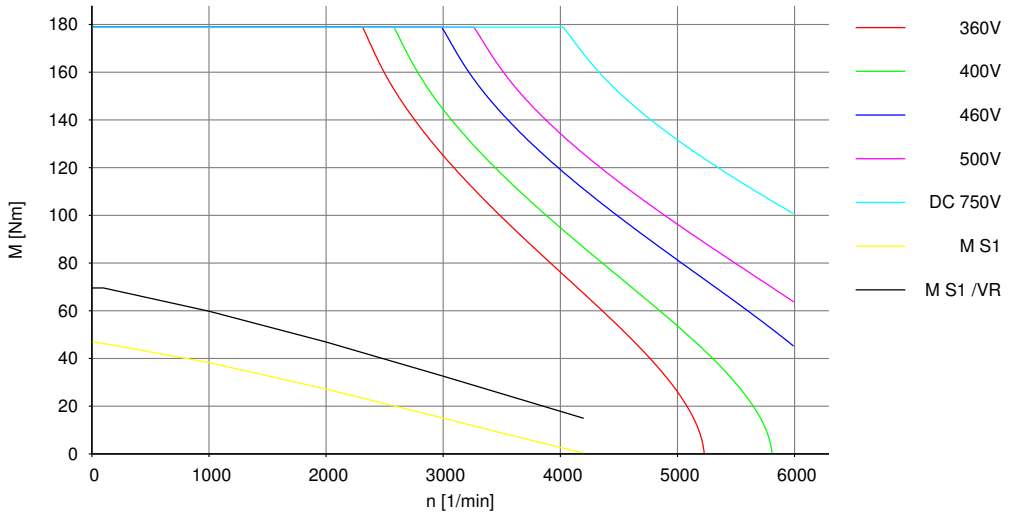
8.6.43 CMP.100L 4500 min^{-1}



13818460043

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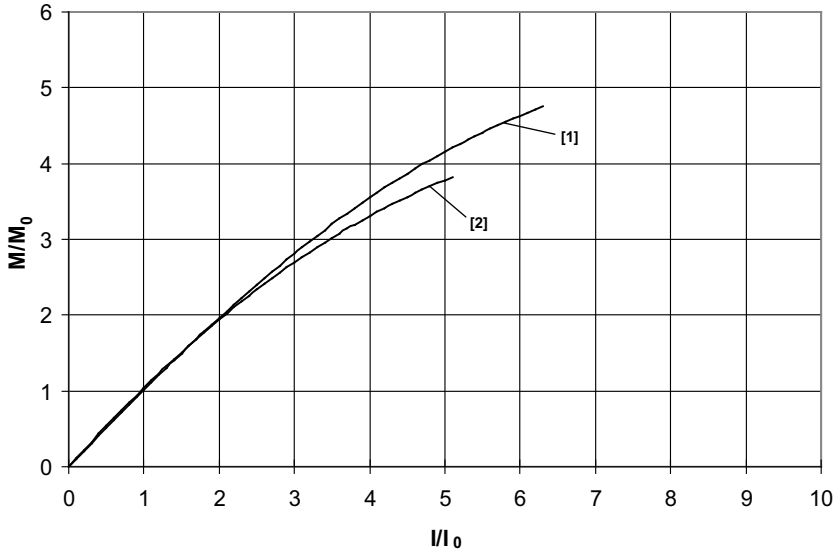
8.7 Torque-current characteristics

INFORMATION

The permitted maximum current I_{max} of the motor must not exceed three times the standstill current I_0 ($I_{max} \leq 3 \times I_0$).

For gearmotors, the limit value M_{apk} must be considered when setting the current limit, see chapter ""Setting the current limit" (→ 🗎 52)".

8.7.1 CMP40S/M



4800432779

[1] CMP40M
[2] CMP40S

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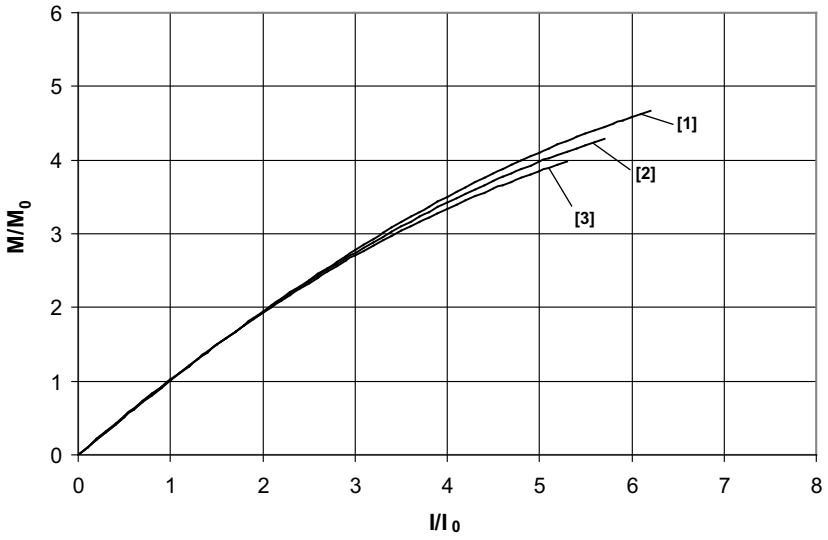
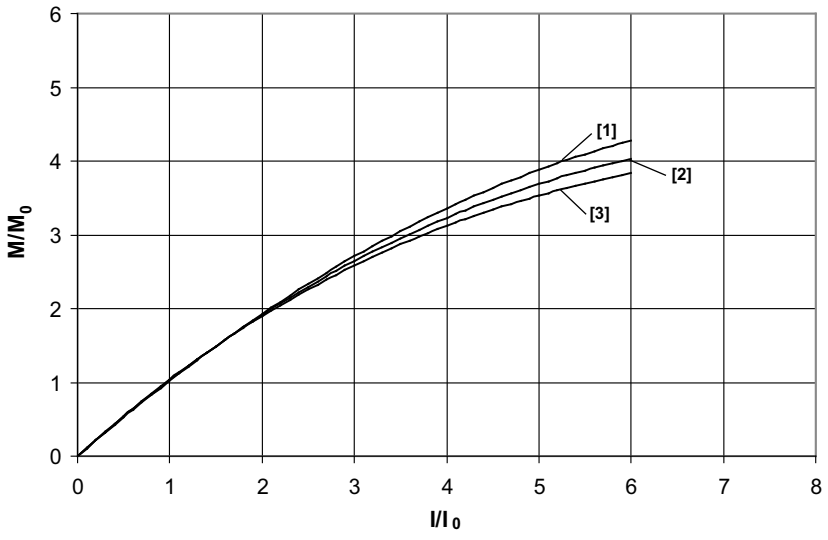
8.7.2 CMP50S/M/L



4800435467

[1] CMP50L
[2] CMP50M
[3] CMP50S

8.7.3 CMP63S/M/L



4800438155

[1] CMP63L
[2] CMP63M
[3] CMP63S

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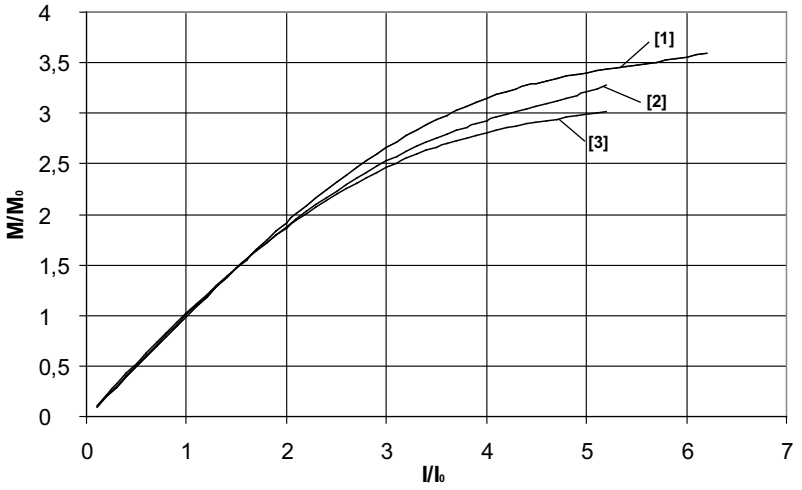
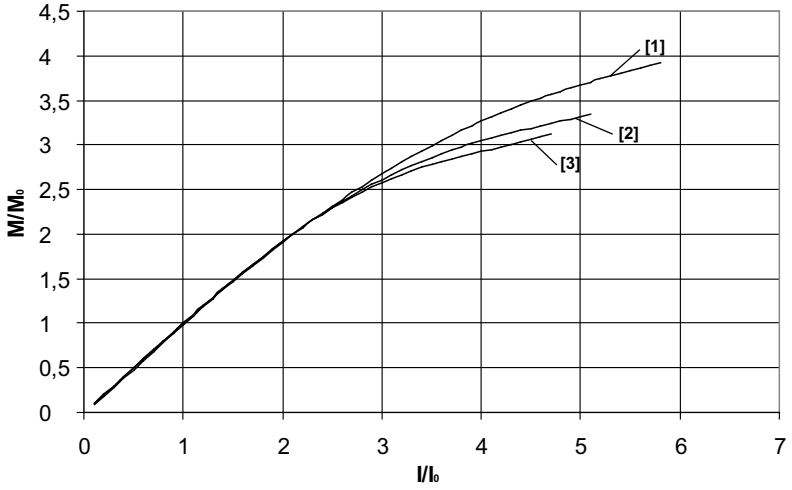
8.7.4 CMP.71S/M/L



4802079243

[1] CMP.71L
[2] CMP.71M
[3] CMP.71S

8.7.5 CMP.80S/M/L



4802081931

[1] CMP.80L
[2] CMP.80M
[3] CMP.80S

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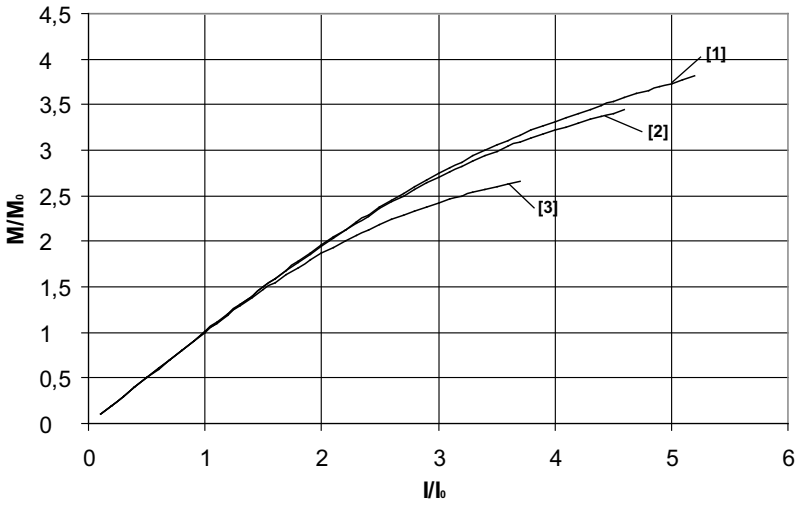
8.7.6 CMP.100S/M/L



4802084619

[1] CMP.100L
[2] CMP.100M
[3] CMP.100S

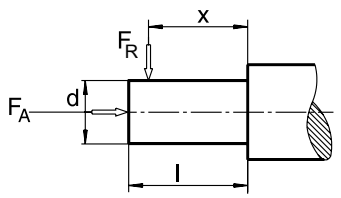
8.8 Overhung and axial loads

The following overhung loads are determined by subjecting the shaft to a load with the nominal torque (rated torque).

The permitted overhung loads F_R at point x are determined via the following diagrams. "x" is the distance between the shaft shoulder and the force application.

The diagrams are based on the following nominal bearing service life:

Motor type	Nominal bearing service life
CMP40	L_{10h} = 25000 h
CMP50	L_{10h} = 25000 h
CMP63	L_{10h} = 20000 h
CMP.71	L_{10h} = 25000 h
CMP.80	L_{10h} = 25000 h
CMP.100	L_{10h} = 25000 h



4795970187

8.8.1 Used ball bearing types (standard)

The following table shows the used ball bearing types:

Motor type	A-side bearing	B-side bearing
CMP40	6002-2Z-C3	6001-2Z-C3
CMP50	6004-2Z-C3	6001-2Z-C3
CMP63	6005-2Z-C3	6003-2Z-C3
CMP.71	6206-2Z-J-C3	6202-2Z-J-C3
CMP.80	6307-2Z-J-C3	6304-2Z-J-C3
CMP100	6309-2Z-J-C3	6304-2Z-J-C3
CMPZ100, CMP100 /BP	6309-2Z-J-C3	6205-2Z-J-C3

The grease fill and the bearing sealing can vary depending on the operational environment.

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8.8.2 Permitted overhung and axial loads

CMP40 – 63

Motor type	$F_{R\,max}$ in N	Mean speed[1] in 1/min			
	F_A in N	1500	3000	4500	6000
CMP40S	$F_{R\,max}$	330	260	225	205
	F_A	109	86	74	68
CMP40M	$F_{R\,max}$	350	280	245	220
	F_A	116	92	81	73
CMP50S	$F_{R\,max}$	475	315	250	200
	F_A	157	104	83	66
CMP50M	$F_{R\,max}$	510	355	275	220
	F_A	168	117	91	73
CMP50L	$F_{R\,max}$	550	370	280	225
	F_A	182	122	92	74
CMP63S	$F_{R\,max}$	680	460	360	290
	F_A	224	152	119	96
CMP63M	$F_{R\,max}$	750	500	380	300
	F_A	248	165	125	99
CMP63L	$F_{R\,max}$	830	560	445	360
	F_A	274	185	147	119

1) The mean speed must be determined, for example, from the travel diagram.

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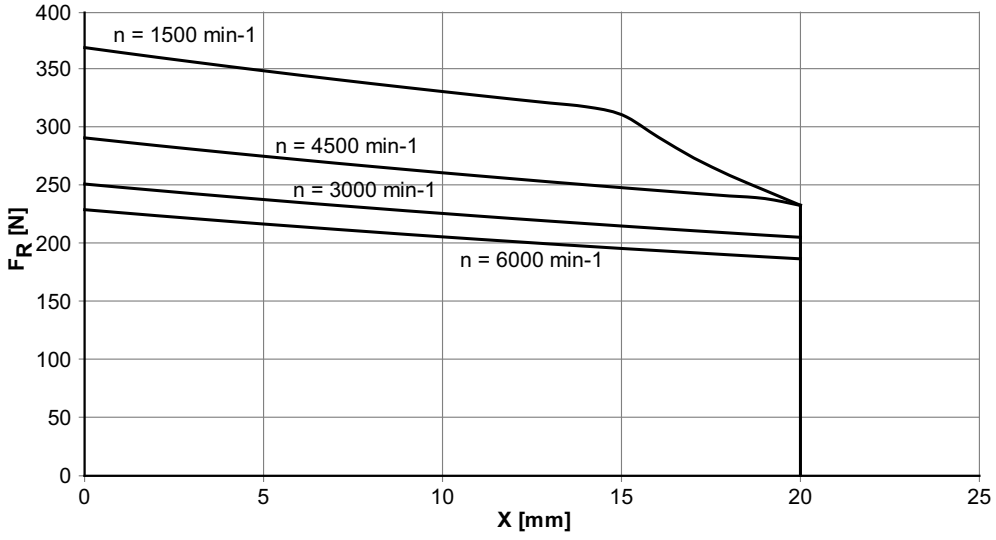
CMP.71 – CMP.100, CMP112

Motor type	$F_{R\,max}$ in N	Mean speed[1] in 1/min			
	F_A in N	2000	3000	4500	6000
CMP.71S	$F_{R\,max}$	953	832	724	636
	F_A	318	277	240	212
CMP.71M	$F_{R\,max}$	1018	888	747	659
	F_A	340	296	250	219
CMP.71L	$F_{R\,max}$	1101	928	777	681
	F_A	367	309	258	227
CMP.80S	$F_{R\,max}$	1666	1454	1270	1132
	F_A	555	485	423	377
CMP.80M	$F_{R\,max}$	1782	1555	1325	1169
	F_A	594	518	442	390
CMP.80L	$F_{R\,max}$	1928	1635	1372	1208
	F_A	643	544	457	402
CMP.100S	$F_{R\,max}$	2708	2364	2064	–
	F_A	903	788	688	–
CMP.100M	$F_{R\,max}$	2882	2515	2195	–
	F_A	961	838	732	–
CMP.100L	$F_{R\,max}$	3099	2694	2278	–
	F_A	1033	897	759	–

1) The mean speed must be determined, for example, from the travel diagram.

Permitted overhung load for CMP40S



9007204050713867

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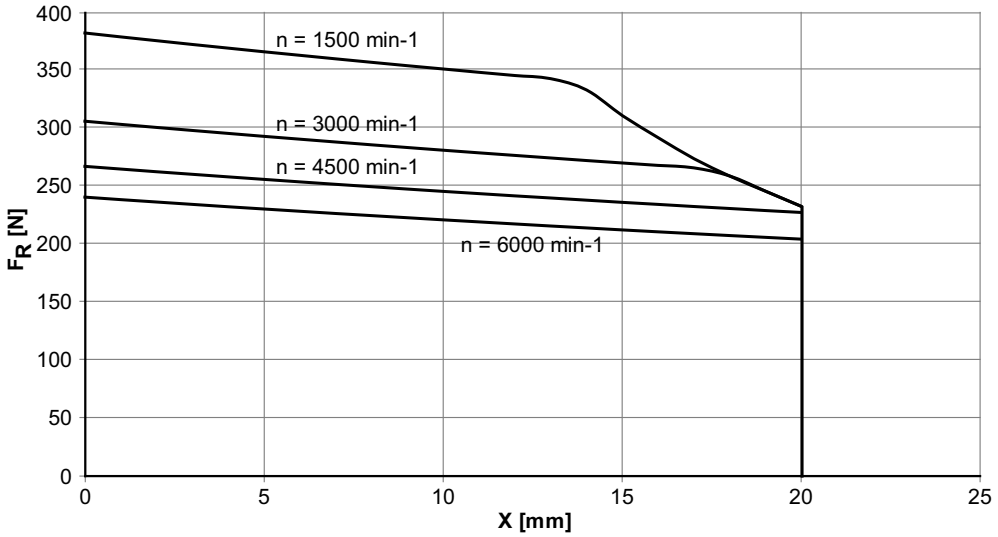
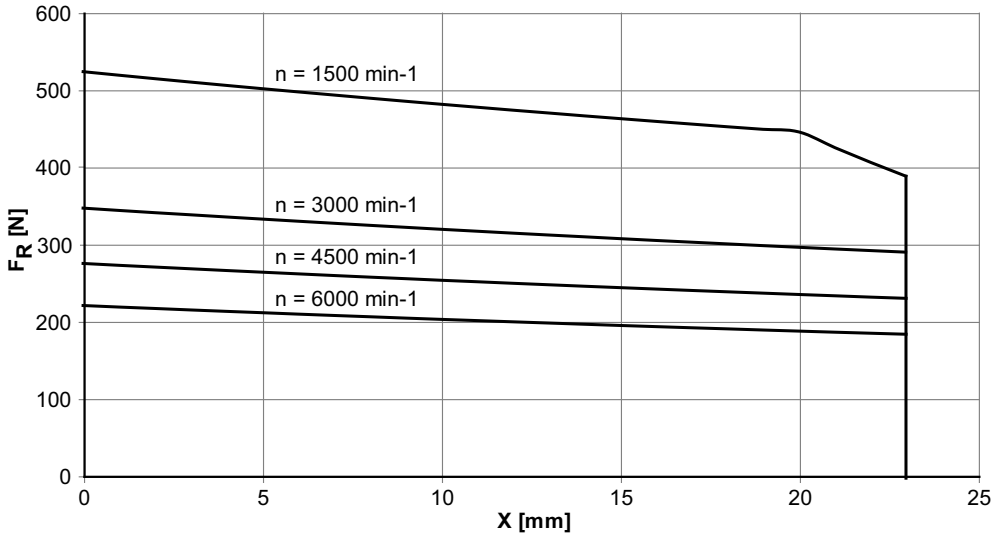
Permitted overhung load for CMP40M



9007204050716555

Permitted overhung load for CMP50S



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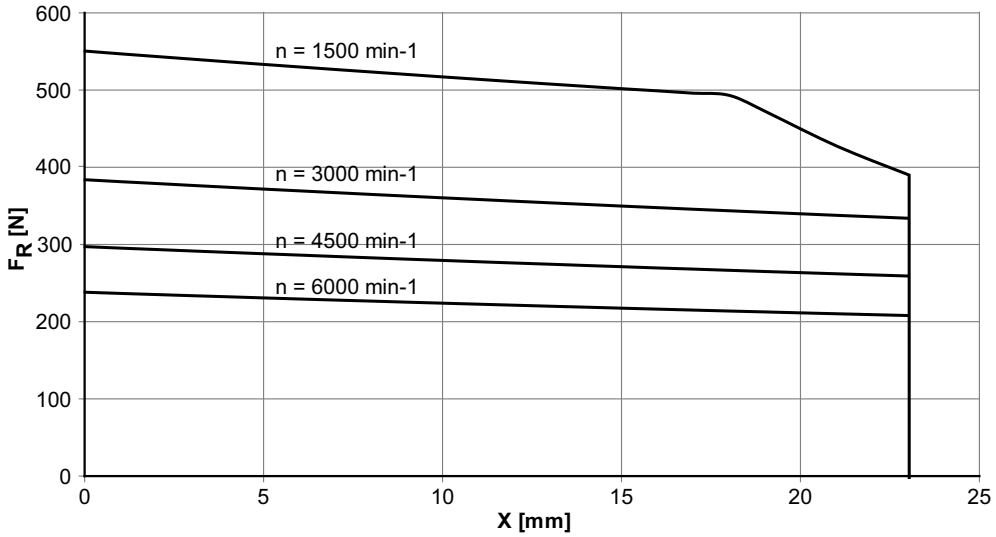
Permitted overhung load for CMP50M



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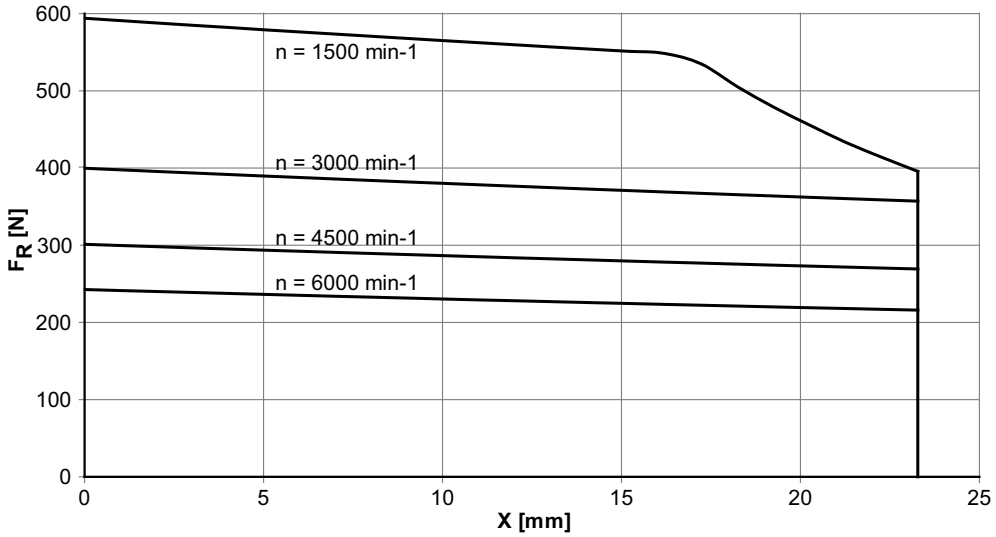
Permitted overhung load for CMP50L



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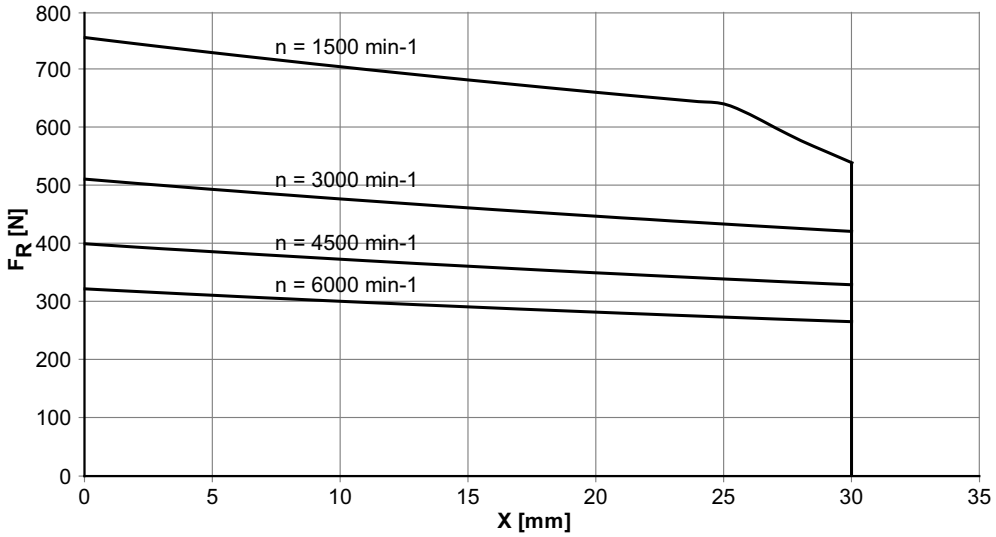
21926786/EN – 09/2015

Permitted overhung load for CMP63S



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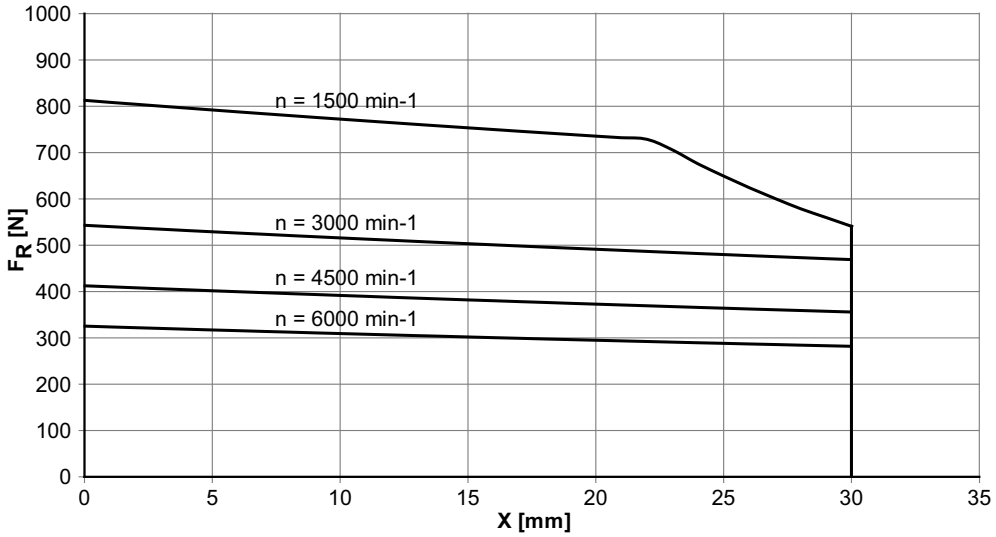
Permitted overhung load for CMP63M



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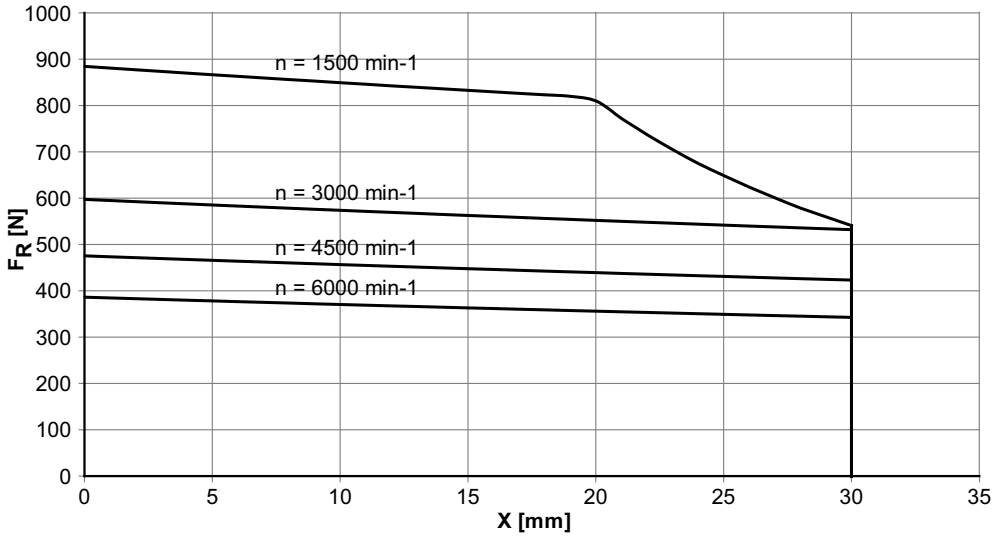
21926786/EN – 09/2015

Permitted overhung load for CMP63L



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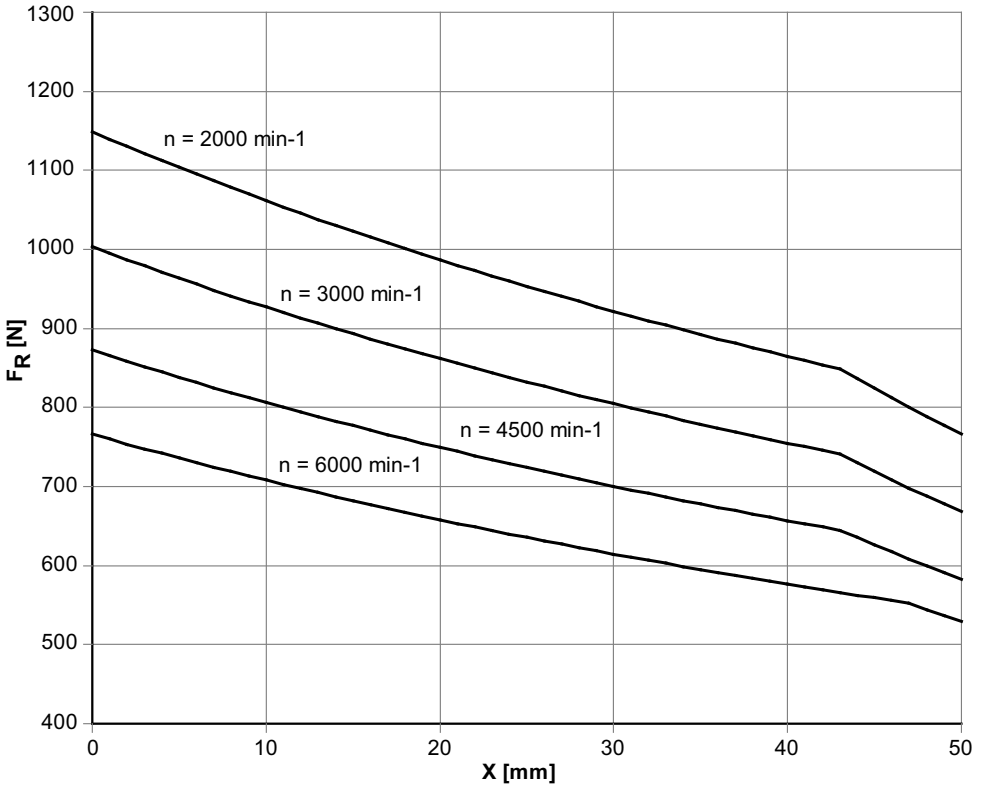
Permitted overhung load for CMP.71S



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21926786/EN – 09/2015

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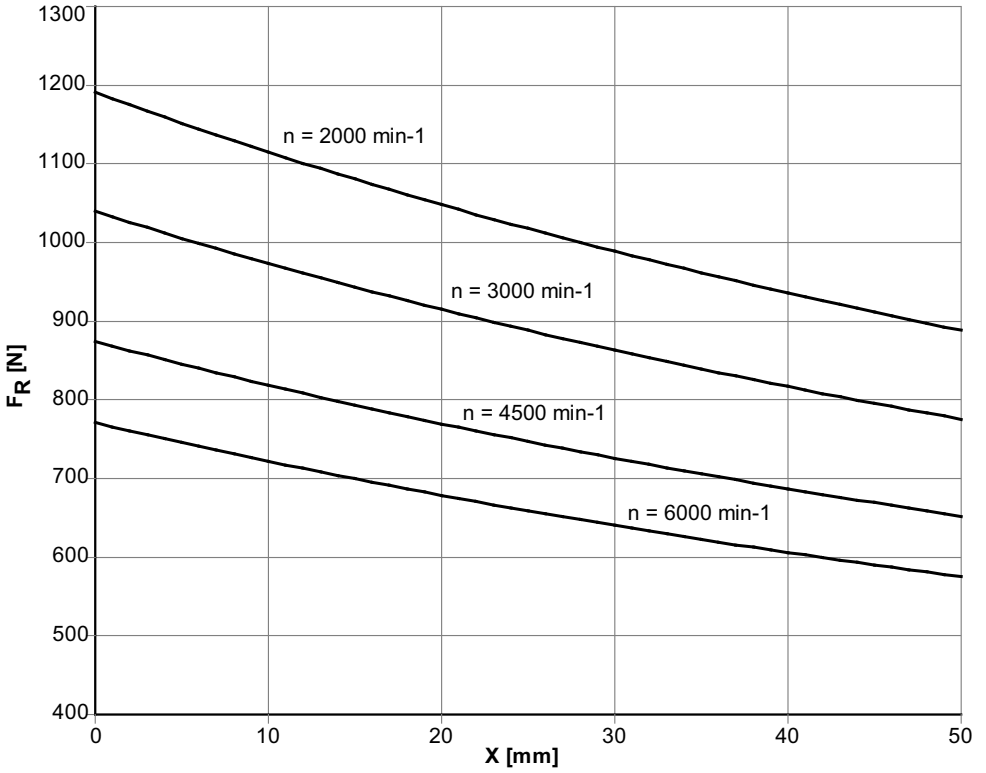

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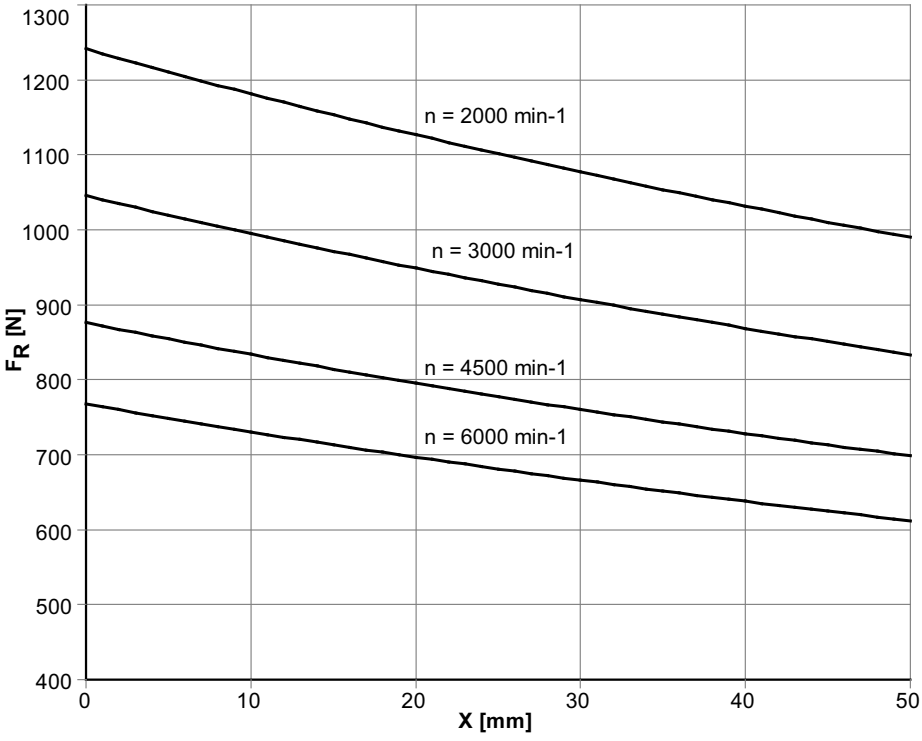
Permitted overhung load for CMP.71L



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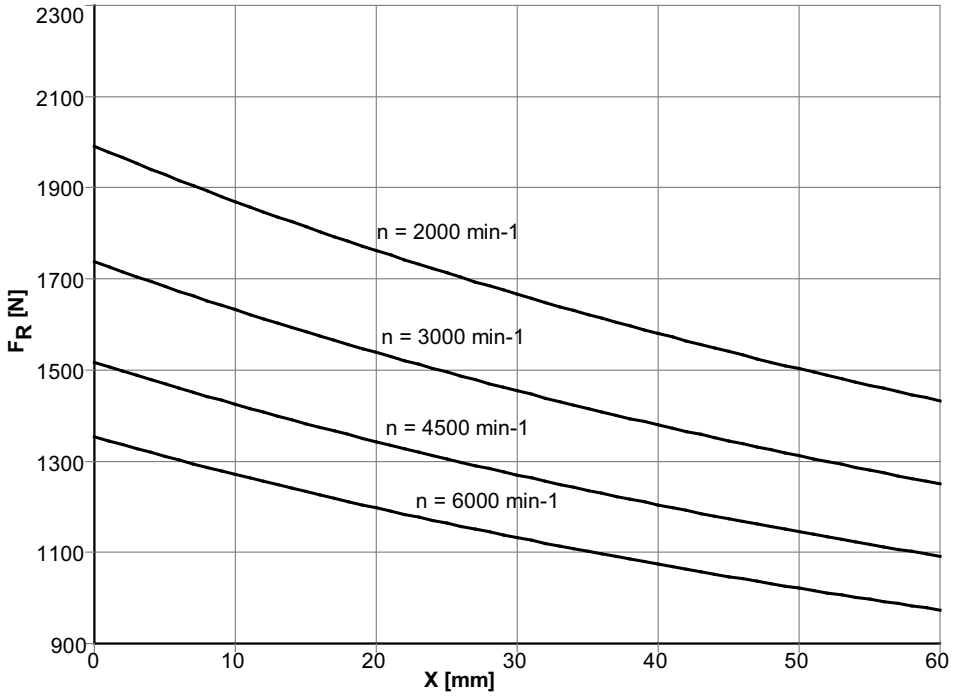
21926786/EN – 09/2015

Permitted overhung load for CMP.80S



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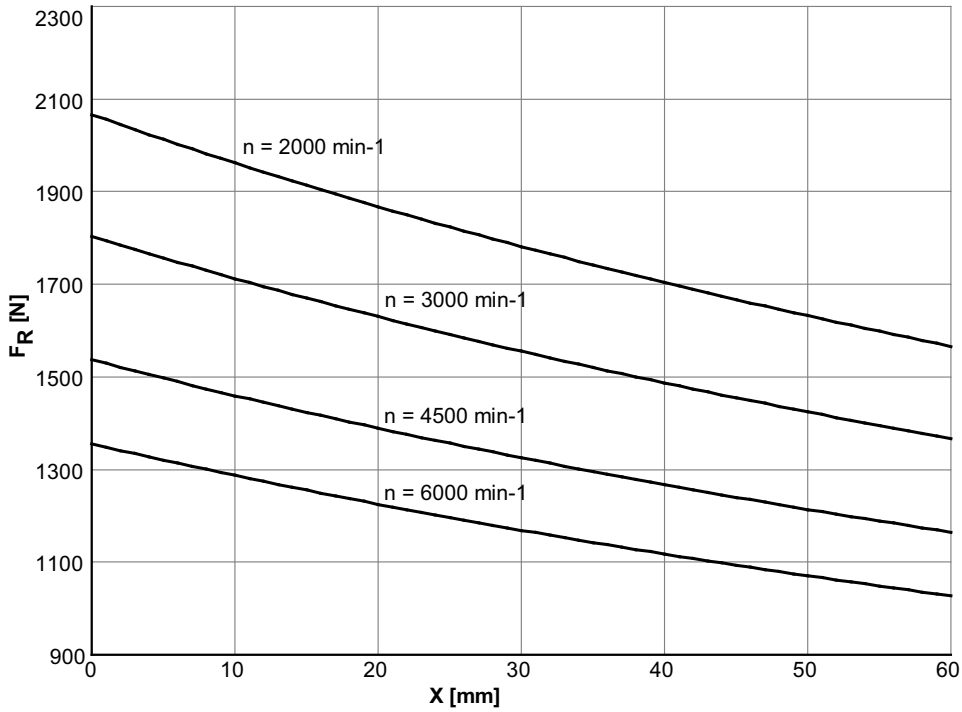
Permitted overhung load for CMP.80M



9007204050746123

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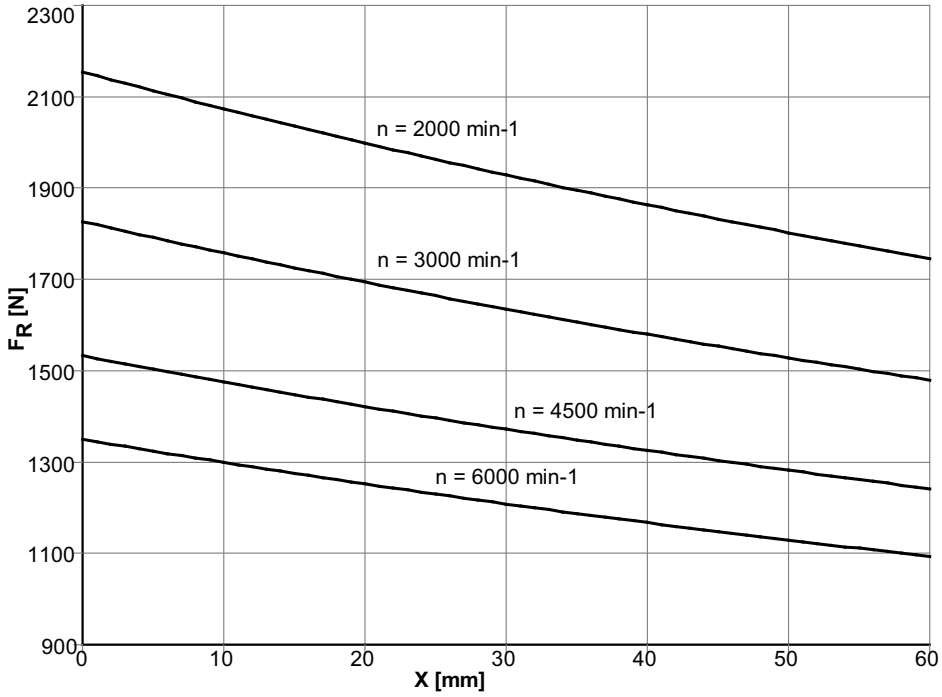

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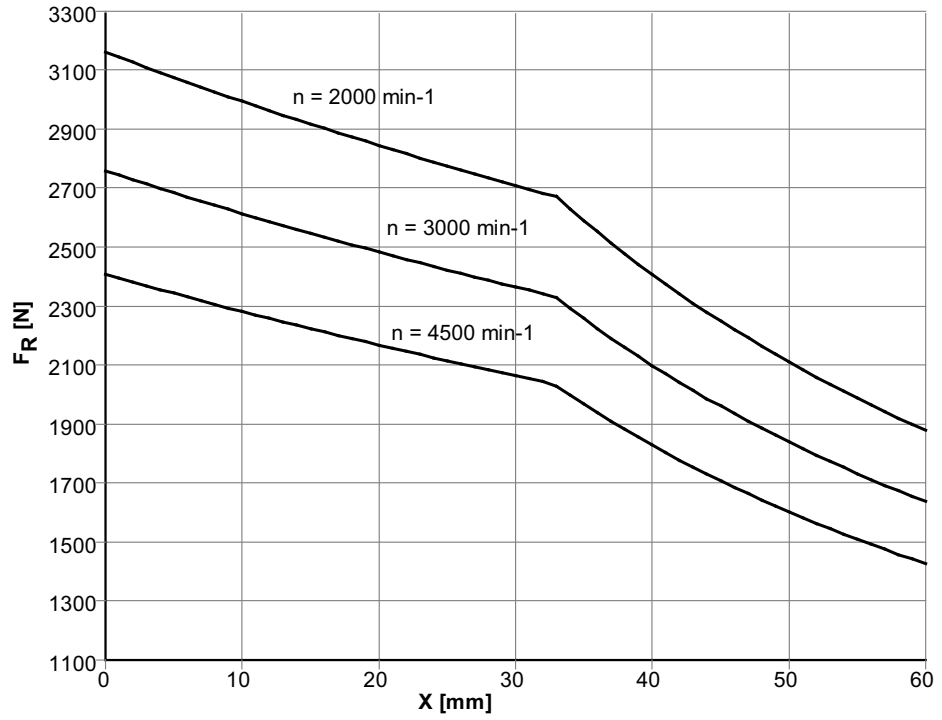

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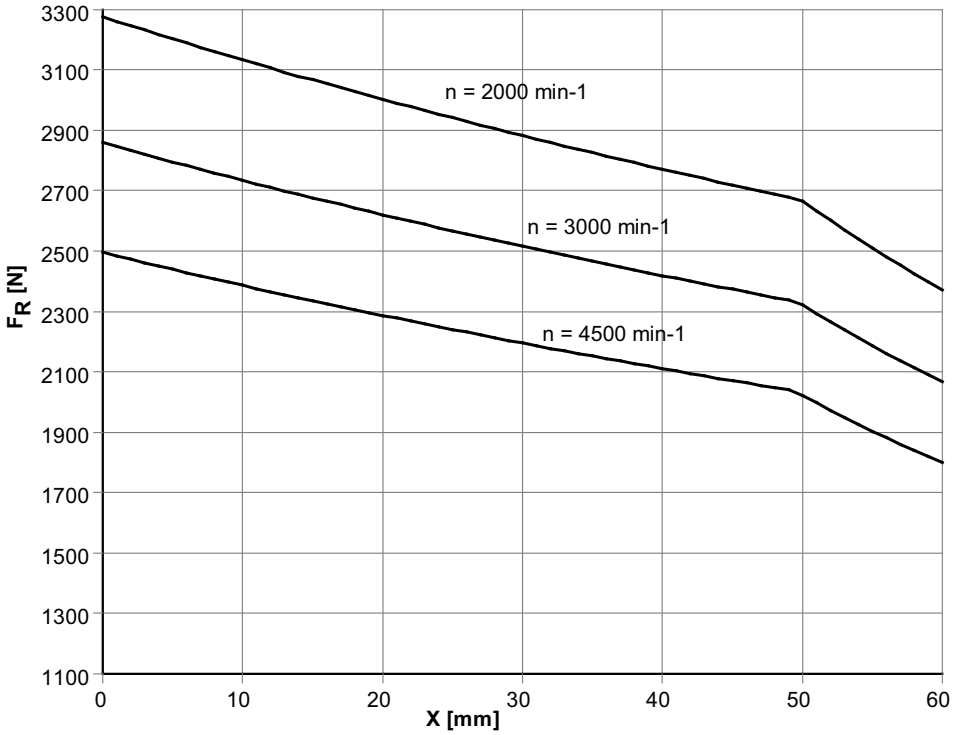

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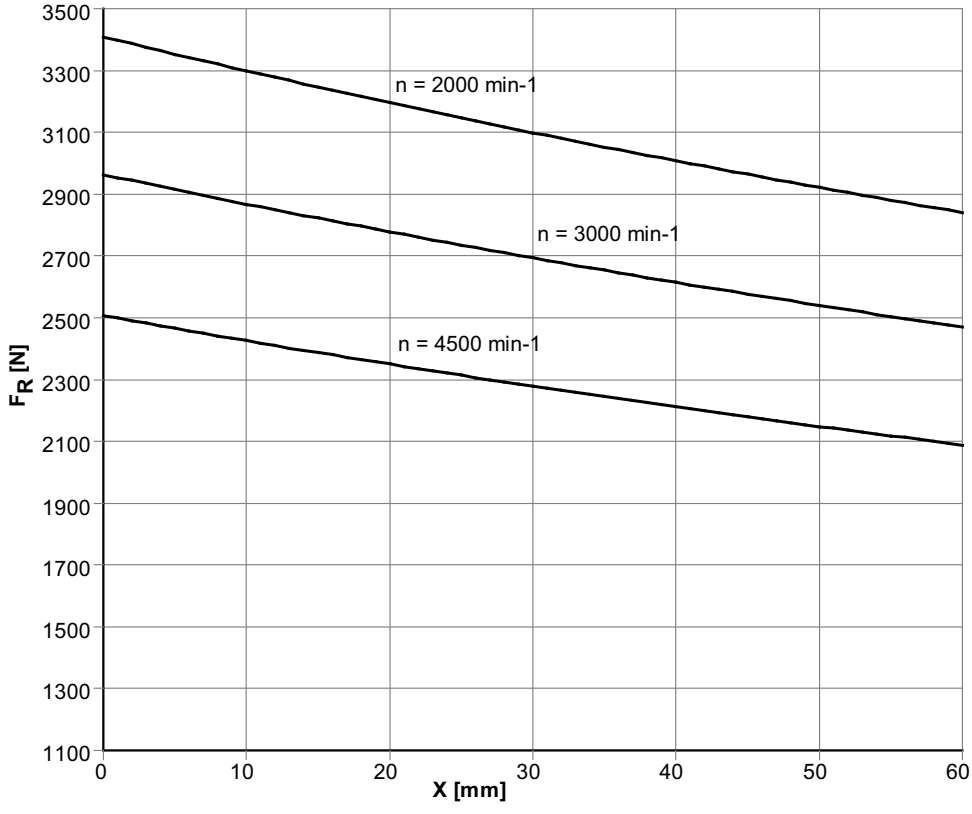

9007204050756875

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9 Malfunctions

9.1 Motor malfunctions

Fault	Possible cause	Measure
Motor does not start up	Supply cable interrupted	Check connections, correct if necessary
	Fuse blown	Replace fuse
	Motor protection tripped	Check motor protection for correct setting, correct fault if necessary
	Servo inverter faulty, overloaded, incorrectly wired or incorrectly set	Check servo inverter, check wiring
Incorrect direction of rotation	Servomotor connected incorrectly	Check servo inverter, check setpoints
Servomotor hums and has high current consumption	Drive is blocked	Check drive
	Brake does not release	See chapter "Brake malfunctions" (→ 🗎 132)"
	Encoder cable malfunction	Check encoder cable
	Servo inverter setting incorrect	Check servo inverter
Servomotor heats up excessively (measure temperature, significantly higher than 110 °C)	Overload	Measure power, use larger servomotor or reduce load if necessary, check travel profile
	Ambient temperature too high	Observe permitted temperature range
	Insufficient cooling	Correct cooling air supply or clear cooling air passages
	Nominal duty cycle (S1 to S10, EN 60034) exceeded, e.g. caused by excessive effective torque	Adjust the rated operating mode of the servomotor to the operating conditions; consult an expert to determine the correct drive if need be
	Servo inverter not optimized	Check servo inverter
Running noise on motor	Bearing damage	Contact SEW-EURODRIVE.
		Replace the servomotor
	Vibration of rotating parts	Rectify cause, possible imbalance

NOTICE

Destruction of the motor due to multiple acknowledgements of a motor protection fault.

Damage to property, damage to the motor

- Do not acknowledge a motor protection fault more than once. If an acknowledged motor protection fault occurs again shortly after the acknowledgement, you must first determine the cause for the fault and remedy it.

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9.2 Brake malfunctions

9.2.1 BP/BK brake

Fault	Possible cause	Measure
Brake does not release	Brake connected incorrectly	Check brake connection
	Max. permitted working air gap exceeded because brake lining worn down	Contact SEW-EURODRIVE.
		Motor/brake replacement by SEW-EURODRIVE.
	Incorrect voltage at brake control unit, e.g. voltage drop in the supply cable > 10 %	Check voltage at motor connection: Ensure correct connection voltage; check cable cross section
	Brake coil has interturn short circuit or a short circuit to frame	Contact SEW-EURODRIVE.
	Brake lining worn	Contact SEW-EURODRIVE.
		Motor/brake replacement by SEW-EURODRIVE.
Motor does not brake/stop.	Incorrect braking torque	Contact SEW-EURODRIVE.
		Motor/brake replacement by SEW-EURODRIVE.
Noise/squeaking near the brake	Brake parameters set incorrectly in the inverter	Check brake release and application times

9.2.2 BY brake

Fault	Possible cause	Measure
Brake does not release	Brake control unit failed	Install a new brake control system, check internal resistance and insulation of brake coil, check switchgear
	Brake connected incorrectly	Check brake connection
	Max. permitted working air gap exceeded because brake lining worn down	Contact SEW-EURODRIVE.
	Brake coil has interturn short circuit or a short circuit to frame	Check switchgear
		Complete brake with brake control must be replaced. Contact SEW-EURODRIVE.
	Brake lining worn	Contact SEW-EURODRIVE.
Motor does not brake/stop.	Brake spring replacement	Contact SEW-EURODRIVE.
	Manual brake release device not set correctly	Set the setting nuts correctly
Brake is applied with time lag	Brake is switched on AC voltage side	Switch both, the DC and AC voltage sides; observe wiring diagram
Noise/squeaking near the brake	Brake parameters set incorrectly in the inverter	Check brake release and application times

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9.3 Malfunctions when operating with a frequency inverter

INFORMATION

The symptoms described in chapter "Motor malfunctions" may also occur when the motor is operated with a frequency inverter. Please refer to the inverter operating instructions for the meaning of the problems that occur and to find information about rectifying the problems.

Have the following information available if you require assistance from the SEW-EURODRIVE Service:

- Complete nameplate data.
- Type and extent of the malfunction.
- Time the interference occurred and any accompanying circumstances.
- Assumed cause.

9.4 Customer service

Please have the following information to hand if you require the assistance of our customer service:

- Complete nameplate data.
- Type and extent of the interference.
- Time the interference occurred and any accompanying circumstances.
- Assumed cause.

9.5 Disposal

This product consists of:

- Iron
- Aluminum
- Copper
- Plastics
- Electronic components

Dispose of all components in accordance with applicable regulations.

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10 Appendix

10.1 Key project planning for brakes

The data of the application must be known for projecting a brake. The abbreviations used for project planning are summarized in the following table:

Designation	Meaning	Unit
η_G	Efficiency of the gear unit	
J_{ext}	External mass moment of inertia (in relation to motor shaft)	kgm^2
J_{Mot}	Mass moment of inertia of the motor	kgm^2
M_{1max}	Maximum dynamic braking torque in case of emergency switching off	Nm
$M_{1m,\ 100\ °C}$	Minimal averaged dynamic braking torque in case of emergency switching off at 100 °C	Nm
$M_{2,\ 20\ °C}$	Nominal torque for slipping brake disk (relative speed between brake disk and friction surface: 1 m/s) at 20 °C	Nm
$M_{4,\ 100\ °C}$	Minimum static braking torque (holding torque) at 100 °C	Nm
$M_{aEmergOff}$	Maximum permitted emergency switching off torque of the gear unit	Nm
i	Gear unit reduction ratio	
M_L	Static load torque, in relation to motor shaft	Nm
n	Motor speed	rpm
n_m	Motor speed, from application or travel diagram	rpm
n_D	Increase of motor speed until brake application	rpm
$n_{m\ EmergStop}$	Real emergency stop speed, relevant for check	rpm
s_b	Stopping distance	mm
t_2	Brake application time	s
t_B	Braking time	s
t_r	Response time or signal transmit time	s
v	Speed	m/s
W_1	Permitted braking work per braking operation	J
W_2	Permitted braking work per hour	J

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10.2 Declaration of conformity

EC Declaration of Conformity

Translation of the original text **901730212**

SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal

declares under sole responsibility that the

motors of the series	**CMP40...** **CMP50...** **CMP63...** **CMP71...** **CMP80...** **CMP100...** **CMPZ71...** **CMPZ80...** **CMPZ100...**
variant	**/II 3D or /II3 GD**
Category	**3D** **3G**
Designation	**II3D Ex tc IIIC T150°C X Dc** **II3D Ex tc IIIC T150°C Dc** **II3G Ex nA IIC T3 X Gc** **II3G Ex nA IIC T3 Gc**
are in conformity with	
ATEX Directive	**94/9/EC**
Applied harmonized standards:	**EN 60079-0:2009** **EN 60079-15:2010** **EN 60079-31:2009**

Bruchsal	**09.02.2015**	Johann Soder	
Place	Date	Managing Director Technology	a) b)

a) Authorized representative for issuing this declaration on behalf of the manufacturer
b) Authorized representative for compiling the technical documents with same address as manufacturer

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11 Address list

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	Drive Service Hotline / 24 Hour Service		Tel. 01924 896911
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Sales	Jakarta	PT. Cahaya Sukses Abadi Komplek Rukan Puri Mutiara Blok A no 99, Sunter Jakarta 14350	Tel. +62 21 65310599 Fax +62 21 65310600 csajkt@cbn.net.id
	Jakarta	PT. Agrindo Putra Lestari JL.Pantai Indah Selatan, Komplek Sentra Industri Terpadu, Pantai indah Kapuk Tahap III, Blok E No. 27 Jakarta 14470	Tel. +62 21 2921-8899 Fax +62 21 2921-8988 aplindo@indosat.net.id http://www.aplindo.com
	Medan	PT. Serumpun Indah Lestari Jl.Pulau Solor no. 8, Kawasan Industri Medan II Medan 20252	Tel. +62 61 687 1221 Fax +62 61 6871429 / +62 61 6871458 / +62 61 30008041 sil@serumpunindah.com serumpunindah@yahoo.com http://www.serumpunindah.com
	Surabaya	PT. TRIAGRI JAYA ABADI Jl. Sukosemolo No. 63, Galaxi Bumi Permai G6 No. 11 Surabaya 60111	Tel. +62 31 5990128 Fax +62 31 5962666 sales@triagri.co.id http://www.triagri.co.id
	Surabaya	CV. Multi Mas Jl. Raden Saleh 43A Kav. 18 Surabaya 60174	Tel. +62 31 5458589 Fax +62 31 5317220 sianhwa@sby.centrin.net.id http://www.cvmultimas.com

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Ireland			
Sales Service	Dublin	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 http://www.alperton.ie info@alperton.ie
Israel			
Sales	Tel Aviv	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il
Italy			
Assembly Sales Service	Solaro	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 I-20020 Solaro (Milano)	Tel. +39 02 96 9801 Fax +39 02 96 79 97 81 http://www.sew-eurodrive.it sewit@sew-eurodrive.it
Ivory Coast			
Sales	Abidjan	SEW-EURODRIVE SARL Ivory Coast Rue des Pècheurs, Zone 3 26 BP 916 Abidjan 26	Tel. +225 21 21 81 05 Fax +225 21 25 30 47 info@sew-eurodrive.ci http://www.sew-eurodrive.ci
Japan			
Assembly Sales Service	Iwata	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp hamamatsu@sew-eurodrive.co.jp
Kazakhstan			
Sales	Almaty	SEW-EURODRIVE LLP 291-291A, Tole bi street 050031, Almaty	Tel. +7 (727) 350 5156 Fax +7 (727) 350 5156 http://www.sew-eurodrive.kz sew@sew-eurodrive.kz
	Tashkent	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
	Ulaanbaatar	SEW-EURODRIVE LLP Representative office in Mongolia Suite 407, Tushig Centre Seoul street 23, Sukhbaatar district, Ulaanbaatar 14250	Tel. +976-77109997 Fax +976-77109997 http://www.sew-eurodrive.mn sew@sew-eurodrive.mn
Kenya			
is supported by Tanzania			
Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C LV-1073 Riga	Tel. +371 6 7139253 Fax +371 6 7139386 http://www.alas-kuul.lv info@alas-kuul.com
Lebanon			
Sales (Lebanon)	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb
Sales (Jordan, Kuwait , Saudi Arabia, Syria)	Beirut	Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 http://www.medrives.com info@medrives.com

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Lithuania			
Sales	Alytus	UAB Irseva Statybininku 106C LT-63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 http://www.irseva.lt irmantas@irseva.lt
Luxembourg			
Assembly Sales Service	Brussels	SEW-EURODRIVE n.v./s.a. Researchpark Haasrode 1060 Evenementenlaan 7 BE-3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.lu info@sew-eurodrive.be
Macedonia			
Sales	Skopje	Boznos DOOEL Dime Anicin 2A/7A 1000 Skopje	Tel. +389 23256553 Fax +389 23256554 http://www.boznos.mk
Madagascar			
Sales	Antananarivo	Ocean Trade BP21bis. Andraharo Antananarivo 101 Madagascar	Tel. +261 20 2330303 Fax +261 20 2330330 oceantrabp@moov.mg
Malaysia			
Assembly Sales Service	Johor	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Mexiko			
Assembly Sales Service	Quéretaro	SEW-EURODRIVE MEXICO SA DE CV SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Quéretaro C.P. 76220 Quéretaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Mongolia			
Technical Office	Ulaanbaatar	SEW-EURODRIVE LLP Representative office in Mongolia Suite 407, Tushig Centre Seoul street 23, Sukhbaatar district, Ulaanbaatar 14250	Tel. +976-77109997 Fax +976-77109997 http://www.sew-eurodrive.mn sew@sew-eurodrive.mn
Morocco			
Sales Service	Mohammedia	SEW-EURODRIVE SARL 2 bis, Rue Al Jahid 28810 Mohammedia	Tel. +212 523 32 27 80/81 Fax +212 523 32 27 89 http://www.sew-eurodrive.ma sew@sew-eurodrive.ma
Namibia			
Sales	Swakopmund	DB Mining & Industrial Services Einstein Street Strauss Industrial Park Unit1 Swakopmund	Tel. +264 64 462 738 Fax +264 64 462 734 anton@dbminingnam.com
Netherlands			
Assembly Sales Service	Rotterdam	SEW-EURODRIVE B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 Service: 0800-SEWHELP http://www.sew-eurodrive.nl info@sew-eurodrive.nl
New Zealand			
Assembly Sales Service	Auckland	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 http://www.sew-eurodrive.co.nz sales@sew-eurodrive.co.nz

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New Zealand			
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 30 Lodestar Avenue, Wigram Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Nigeria			
Sales	Lagos	Greenpeg Nig. Ltd Plot 296A, Adeyemo Akapo Str. Omole GRA Ikeja Lagos-Nigeria	Tel. +234-701-821-9200-1 http://www.greenpegltd.com bolaji.adekunle@greenpegltd.com
Norway			
Assembly Sales Service	Moss	SEW-EURODRIVE A/S Solgaard skog 71 N-1599 Moss	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no
Pakistan			
Sales	Karachi	Industrial Power Drives Al-Fatah Chamber A/3, 1st Floor Central Commercial Area, Sultan Ahmed Shah Road, Block 7/8, Karachi	Tel. +92 21 452 9369 Fax +92-21-454 7365 seweurodrive@cyber.net.pk
Paraguay			
Sales	Fernando de la Mora	SEW-EURODRIVE PARAGUAY S.R.L De la Victoria 112, Esquina nueva Asunción Departamento Central Fernando de la Mora, Barrio Bernardino	Tel. +595 991 519695 Fax +595 21 3285539 sewpy@sew-eurodrive.com.py
Peru			
Assembly Sales Service	Lima	SEW EURODRIVE DEL PERU S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe
Philippines			
Sales	Makati	P.T. Cerna Corporation 4137 Ponte St., Brgy. Sta. Cruz Makati City 1205	Tel. +63 2 519 6214 Fax +63 2 890 2802 mech_drive_sys@ptcerna.com http://www.ptcerna.com
Poland			
Assembly Sales Service	Łódź	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 PL-92-518 Łódź	Tel. +48 42 293 00 00 Fax +48 42 293 00 49 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
	Service	Tel. +48 42 293 0030 Fax +48 42 293 0043	24 Hour Service Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl
Portugal			
Assembly Sales Service	Coimbra	SEW-EURODRIVE, LDA. Av. da Fonte Nova, n.º 86 P-3050-379 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt
Romania			
Sales Service	Bucharest	Sialco Trading SRL str. Brazilia nr. 36 011783 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro
Russia			
Assembly Sales Service	St. Petersburg	ЗАО «СЕВ-ЕВРОДРАЙФ» а. я. 36 195220 Санкт-Петербург	Tel. +7 812 3332522 / +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru
Sambia			

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Senegal			
Sales	Dakar	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 338 494 770 Fax +221 338 494 771 http://www.senemeca.com senemeca@senemeca.sn
Serbia			
Sales	Belgrade	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor SRB-11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.rs
Singapore			
Assembly Sales Service	Singapore	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com
Slovakia			
Sales	Bratislava	SEW-Eurodrive SK s.r.o. Rybničná 40 SK-831 06 Bratislava	Tel.+421 2 33595 202, 217, 201 Fax +421 2 33595 200 http://www.sew-eurodrive.sk sew@sew-eurodrive.sk
	Košice	SEW-Eurodrive SK s.r.o. Slovenská ulica 26 SK-040 01 Košice	Tel. +421 55 671 2245 Fax +421 55 671 2254 Mobile +421 907 671 976 sew@sew-eurodrive.sk
Slovenia			
Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. UI. XIV. divizije 14 SLO - 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net
South Africa			
Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 248-7289 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 bgriffiths@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 48 Prospecton Road Isipingo Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 902 3815 Fax +27 31 902 3826 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PROPRIETARY) LIMITED 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za
South Korea			
Assembly Sales Service	Ansan	SEW-EURODRIVE KOREA CO., LTD. 7, Dangjaengi-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Zip 425-839	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-eurodrive.kr master.korea@sew-eurodrive.com
	Busan	SEW-EURODRIVE KOREA CO., LTD. 28, Noksansandan 262-ro 50beon-gil, Gangseo-gu, Busan, Zip 618-820	Tel. +82 51 832-0204 Fax +82 51 832-0230

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Spain			
Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 Fax +34 94 43184-71 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es
Sri Lanka			
Sales	Colombo	SM International (Pte) Ltd 254, Galle Raod Colombo 4, Sri Lanka	Tel. +94 1 2584887 Fax +94 1 2582981
Swaziland			
Sales	Manzini	C G Trading Co. (Pty) Ltd PO Box 2960 Manzini M200	Tel. +268 2 518 6343 Fax +268 2 518 5033 engineering@cgtrading.co.sz
Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 S-553 03 Jönköping Box 3100 S-550 03 Jönköping	Tel. +46 36 34 42 00 Fax +46 36 34 42 80 http://www.sew-eurodrive.se jonkoping@sew.se
Switzerland			
Assembly Sales Service	Basel	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch
Taiwan			
Sales	Taipei	Ting Shou Trading Co., Ltd. 6F-3, No. 267, Sec. 2 Tung Huw S. Road Taipei	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
	Nan Tou	Ting Shou Trading Co., Ltd. No. 55 Kung Yeh N. Road Industrial District Nan Tou 540	Tel. +886 49 255353 Fax +886 49 257878 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
Tanzania			
Sales	Daressalam	SEW-EURODRIVE PTY LIMITED TANZANIA Plot 52, Regent Estate PO Box 106274 Dar Es Salaam	Tel. +255 0 22 277 5780 Fax +255 0 22 277 5788 http://www.sew-eurodrive.co.tz central.mailbox@sew.co.tz
Thailand			
Assembly Sales Service	Chonburi	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com
Tunisia			
Sales	Tunis	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 79 40 88 77 Fax +216 79 40 88 66 http://www.tms.com.tn tms@tms.com.tn
Turkey			
Assembly Sales Service	Kocaeli-Gebze	SEW-EURODRİVE Hareket Sistemleri San. Ve TIC. Ltd. Sti Gebze Organize Sanayi Böl. 400 Sok No. 401 41480 Gebze Kocaeli	Tel. +90 262 9991000 04 Fax +90 262 9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr
Ukraine			
Assembly Sales Service	Dnipropetrovsk	ООО «СЕВ-Евродрайв» ул. Рабочая, 23-В, офис 409 49008 Днепропетровск	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua

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United Arab Emirates			
Sales Service	Sharjah	Copam Middle East (FZC) Sharjah Airport International Free Zone P.O. Box 120709 Sharjah	Tel. +971 6 5578-488 Fax +971 6 5578-499 copam_me@eim.ae
Uruguay			
Assembly Sales	Montevideo	SEW-EURODRIVE Uruguay, S. A. Jose Serrato 3569 Esqina Corumbe CP 12000 Montevideo	Tel. +598 2 21181-89 Fax +598 2 21181-90 sewuy@sew-eurodrive.com.uy
USA			
Production Assembly Sales Service	Southeast Region	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Production +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly Sales Service	Northeast Region	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 332-0038 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Additional addresses for service in USA provided on request!		
Uzbekistan			
Technical Office	Tashkent	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
Venezuela			
Assembly Sales Service	Valencia	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia, Estado Carabobo	Tel. +58 241 832-9804 Fax +58 241 838-6275 http://www.sew-eurodrive.com.ve ventas@sew-eurodrive.com.ve sewfinanzas@cantv.net
Vietnam			
Sales	Ho Chi Minh City	Nam Trung Co., Ltd Huế - South Vietnam / Construction Materials 250 Binh Duong Avenue, Thu Dau Mot Town, Binh Duong Province HCM office: 91 Tran Minh Quyen Street District 10, Ho Chi Minh City	Tel. +84 8 8301026 Fax +84 8 8392223 khanh-nguyen@namtrung.com.vn http://www.namtrung.com.vn
	Hanoi	MICO LTD Quảng Trị - North Vietnam / All sectors except Construction Materials 8th Floor, Ocean Park Building, 01 Dao Duy Anh St, Ha Noi, Viet Nam	Tel. +84 4 39386666 Fax +84 4 3938 6888 nam_ph@micogroup.com.vn http://www.micogroup.com.vn

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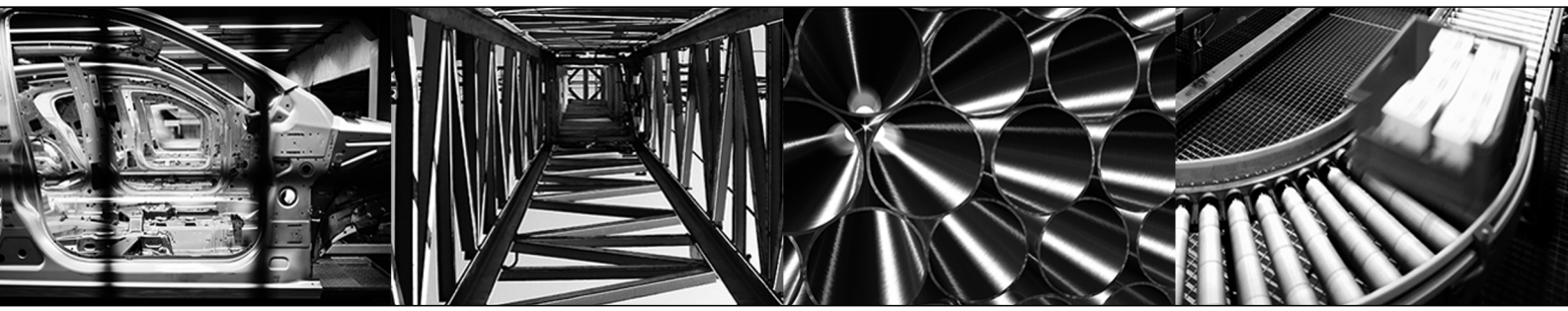

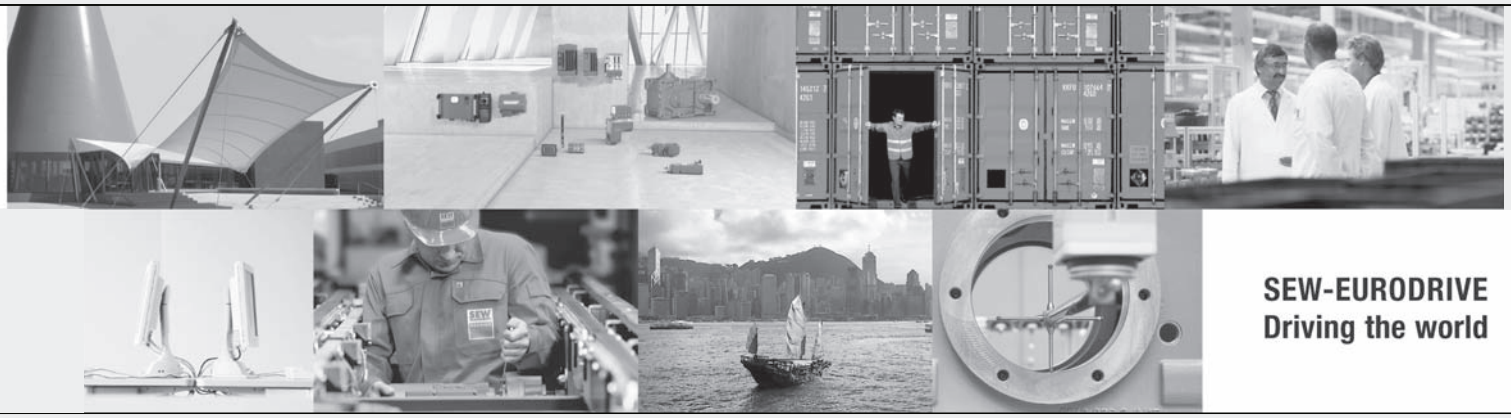

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Driving the world

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