SEW EURODRIVE

Operating Instructions

Explosion-Proof Synchronous Servomotors

CMP40 – 63, CMP.71 – 100

Edition 01/2014

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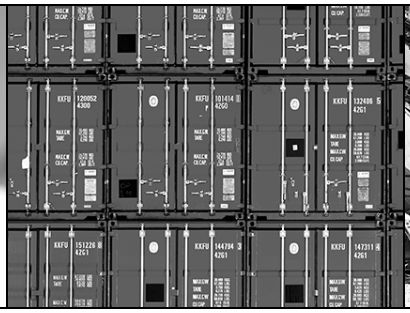


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1 General information

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 system and its operation, as well as persons who work independently on the unit, have read through the entire documentation and understood it. If you are unclear about any of the information in this documentation, or if you require further information, contact SEW-EURODRIVE.

1.2 Structure of the safety notes

1.2.1 Meaning of signal words

The following table shows the 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
INFORMATION ON EXPLOSION PROTECTION	Important note on explosion protection	Removal 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 danger symbols used either indicate a general hazard or a specific hazard.

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

⚠ SIGNAL WORD

Type and source of hazard.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the hazard.

1.2.3 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

A requirement of fault-free operation and fulfillment of any rights to claim under limited warranty is that you adhere to the information in the documentation. You should therefore read the documentation before you start working with the unit!

1.4 Exclusion of liability

You must comply with the information contained in this documentation to ensure safe operation and 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, any liability for defects is excluded.

1.5 Copyright

1.6 Product names and trademarks

All 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.

2 Safety notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The operator must ensure that the basic safety notes are read and adhered to. 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: CMP motors. If using gearmotors, also refer to the safety notes in the corresponding operating instructions for:

- Gear unit

Also observe the supplementary safety notes in the individual sections of this documentation.

2.2 General information

⚠ WARNING

Danger of fatal injury or risk of injury during the operation of motors or gearmotors caused by live, bare (in the event of open connectors/terminal boxes) and movable or rotating parts.

Risk of burns caused by hot surfaces

Severe or fatal injuries

- All work related to transport, storage, installation, assembly, connection, startup, maintenance and repair may only be carried out by qualified personnel.
- For transport, storage, installation, assembly, connection, startup, maintenance and repair it is important that you adhere to the information in the following documents:
  - The warning and safety signs on the motor/gearmotor,
  - All the project planning documents, startup instructions and wiring diagrams related to the drive
  - The specific regulations and requirements for the system
  - The national/regional regulations governing safety and the prevention of accidents
- Never install damaged products.
- Never operate or energize the unit without the necessary protection covers or housing.
- Use the unit only for its intended purpose.
- Make sure the unit is installed and operated properly.

INFORMATION

In the event of damage caused by transport, submit a complaint to the shipping company immediately.

This documentation provides additional information.

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 further areas of transportation, storage, operation and waste disposal must only be carried out by persons who are trained appropriately.

All qualified personnel must wear appropriate protective clothing.

2.4 Designated use

The electric motors for hazardous locations 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).

NOTES ON EXPLOSION PROTECTION

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

Air-cooled types are dimensioned for ambient temperatures from -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:

- guideline 94/9/EC
- EN 60079-31: Electrical apparatus for use in atmospheres containing combustible dust, protected by "t" housing
- EN 60079-0: Electrical apparatus for potentially explosive atmospheres: General requirements
- EN 60034: Rotating electrical machines
- EN 60079-15: Design, testing and designation of electric equipment in protection type "n"

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 any damage that may have occurred in transit as soon as you receive the delivery. Inform the shipping company immediately about any damage. It may be necessary to preclude startup.

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

The installed lifting 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 two 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 required. Reattach these in the 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.

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 network 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" (page 23).

2.9 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!

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 DIN IEC 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 any 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 DIN EN / IEC 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 (DIN EN / IEC 60079-15)
≤ 500 V	5 mm

The terminal 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 water-proof. 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" chapter (page 28).

2.10 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.

2.10.1 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.

2.10.2 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.

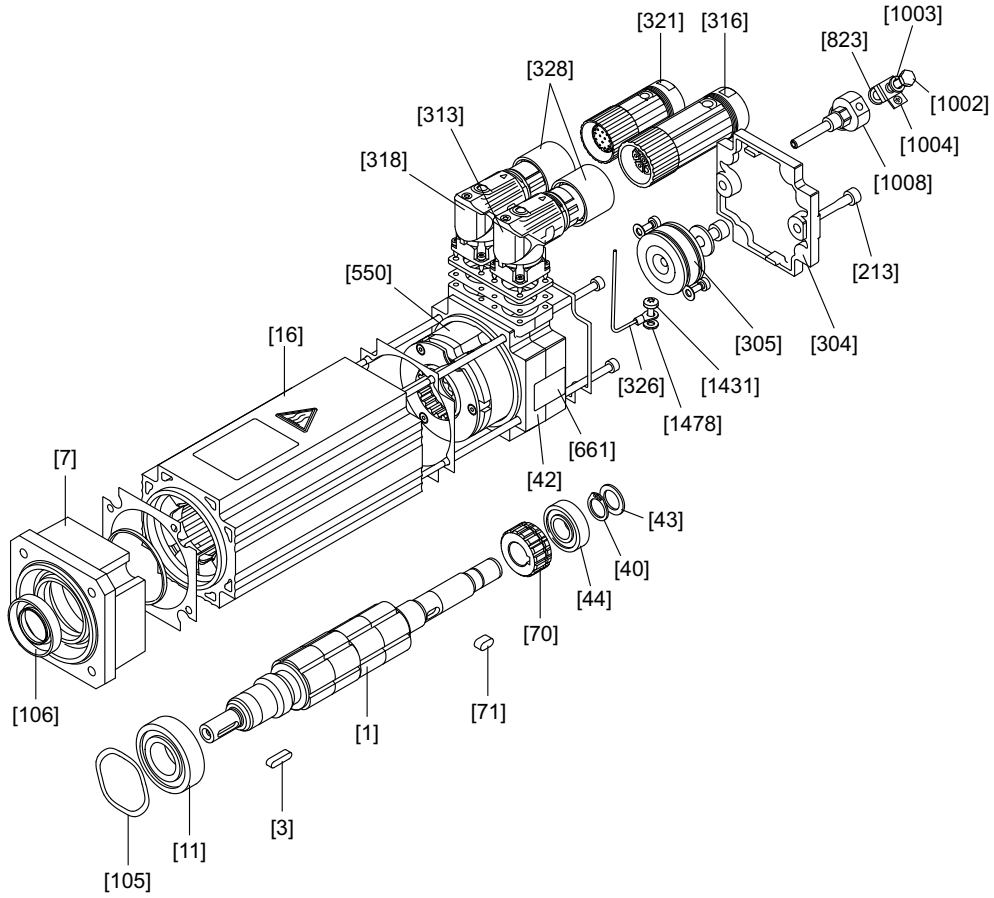
3 Scope of delivery and motor dvesign

3.1 Basic design of the explosion-proof CMP synchronous servomotor

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.

3.1.1 CMP40 – CMP63 /BP



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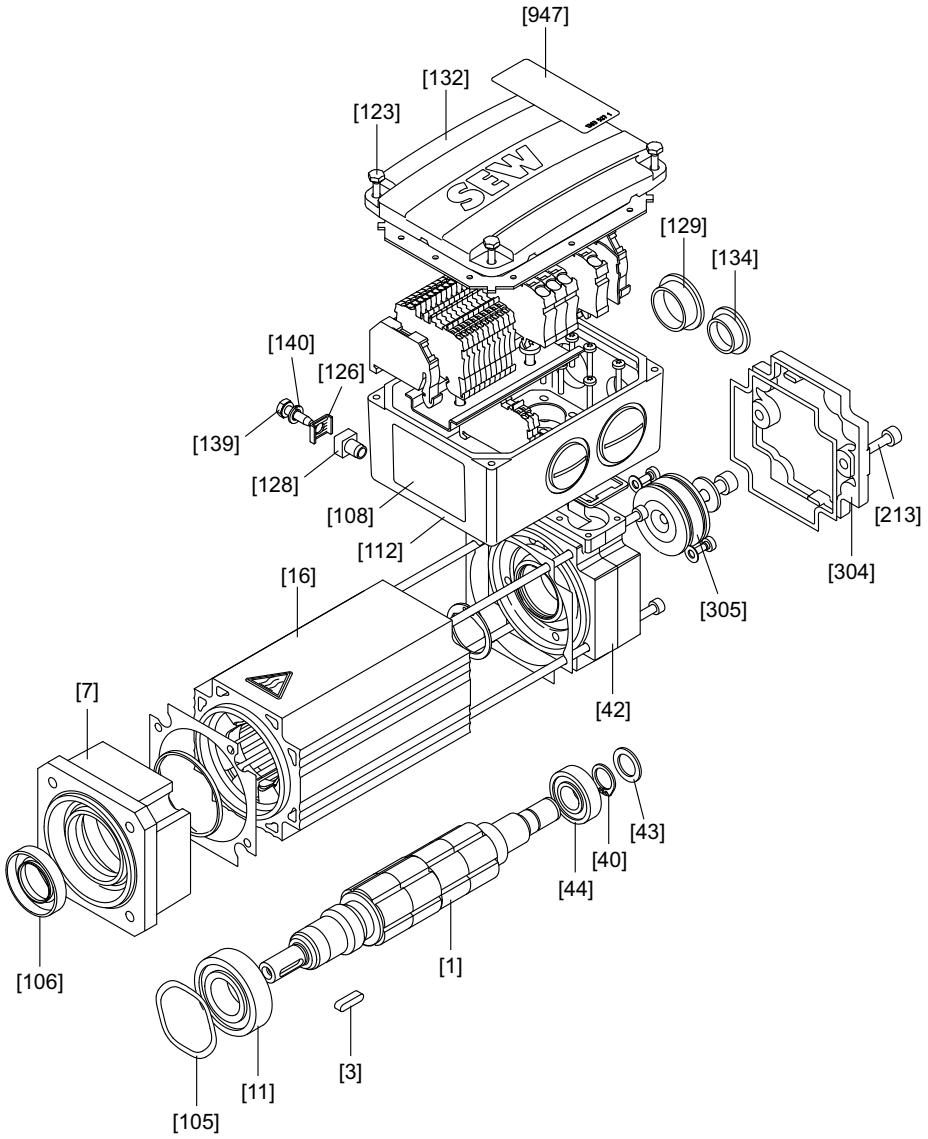
[1]	Rotor	[105]	Shim	[550]	Disk brake
[3]	Key	[106]	Oil seal	[661]	Sticker
[7]	Flanged endshield	[213]	Cap screw	[823]	Washer
[11]	Grooved ball bearing	[304]	Housing cover	[1002]	Hex head screw
[16]	Stator	[305]	Resolver	[1003]	Lock washer
[40]	Retaining ring	[313]	Flange socket	[1004]	Terminal clip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

3.1.2 CMP50 – CMP63 /KK



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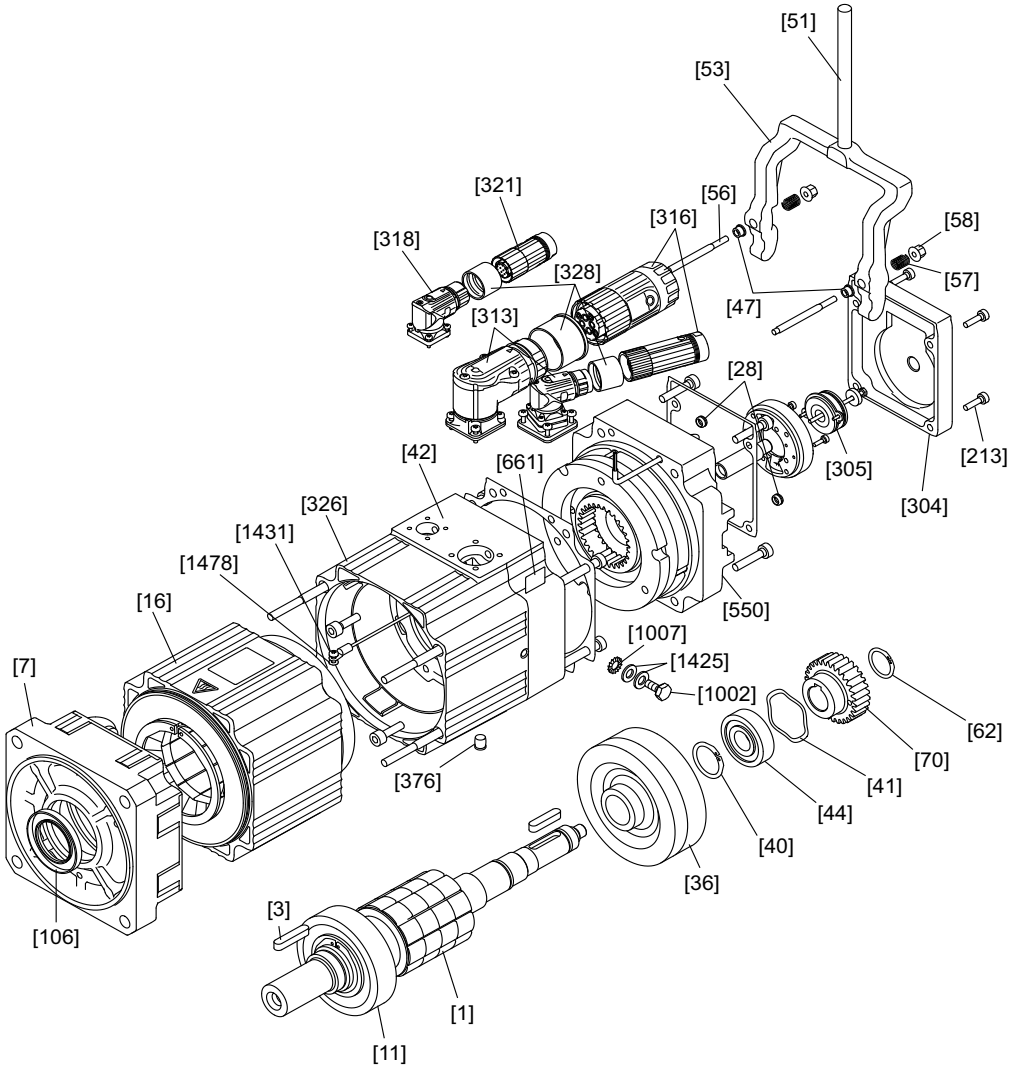
[1]	Rotor	[105]	Shim	[134]	Screw plug
[3]	Key	[106]	Oil seal	[139]	Screw
[7]	Flanged endshield	[108]	Nameplate	[140]	Lock washer
[11]	Grooved ball bearing	[112]	Terminal box lower part	[213]	Cap screw
[16]	Stator	[123]	Screw	[304]	Housing cover
[40]	Retaining ring	[126]	Terminal clip	[305]	Resolver
[42]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

3.1.3 CMPZ71 – CMPZ100 /BY



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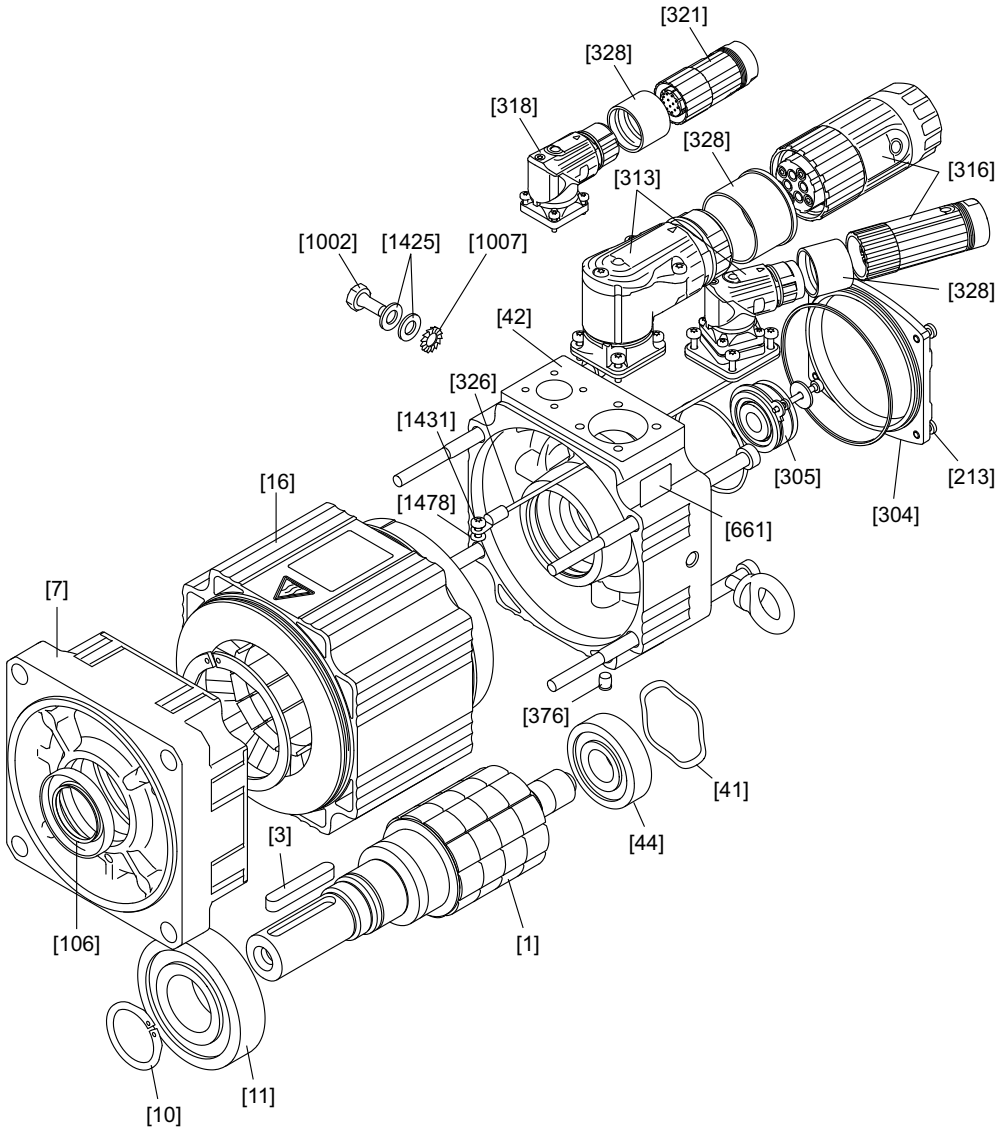
[1]	Rotor	[53]	Release lever	[321]	Complete plug connector
[3]	Key	[56]	Stud	[326]	Cable
[7]	Flanged endshield	[57]	Tension spring	[328]	Protection cap
[11]	Grooved ball bearing	[58]	Hex nut	[376]	Closing plug
[16]	Stator	[62]	Retaining ring	[550]	Disk brake
[28]	Closing cap	[70]	Driver	[661]	Sticker
[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]	Grooved ball bearing	[318]	Flange socket	[1478]	Washer
[47]	Sealing element	[316]	Complete plug connector		
[51]	Hand lever				

3.1.4 CMP71 – CMP100



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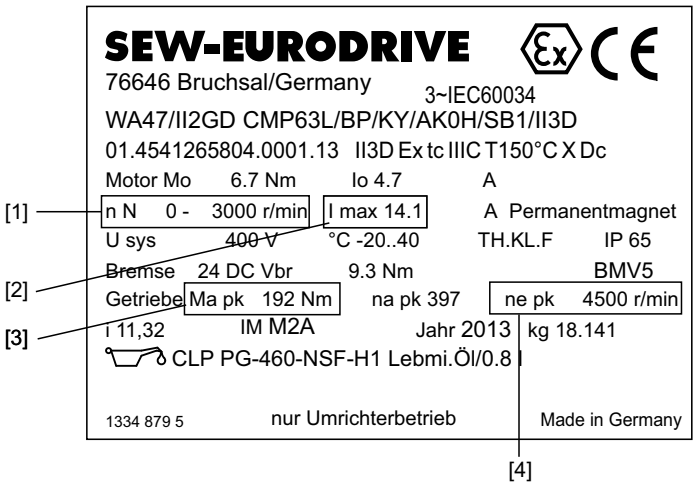
[1]	Rotor	[213]	Cap screw	[376]	Closing plug
[3]	Key	[304]	Housing cover	[661]	Sticker
[7]	Flanged endshield	[305]	Resolver	[1002]	Hex head screw
[10]	Retaining ring	[313]	Flange socket	[1007]	Serrated lock washer
[11]	Grooved ball bearing	[318]	Flange socket	[1425]	Washer
[16]	Stator	[316]	Complete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

3.2 Nameplate and type designation

3.2.1 Nameplate on the servomotor

Example: Nameplate of explosion-proof CMP synchronous servomotor



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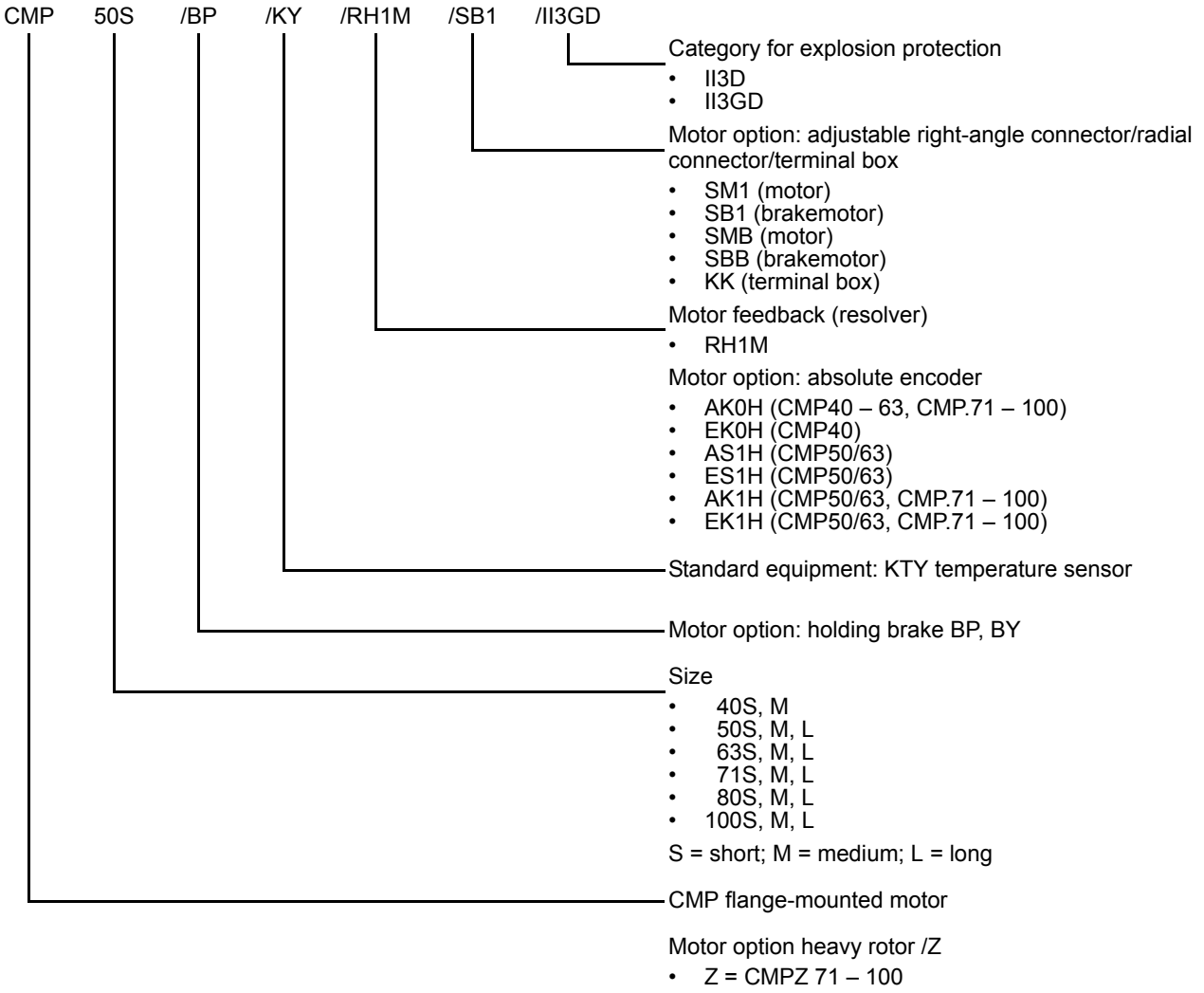
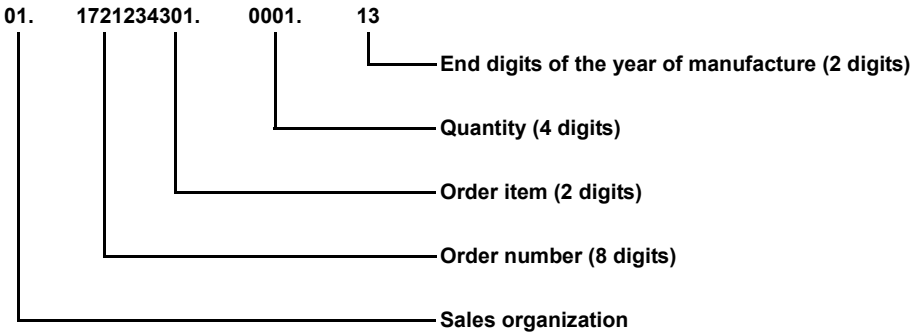
[1] Rated speed
[2] Maximum permitted current
[3] Maximum permitted output torque for short-time duty
[4] Maximum permitted input speed for short-time duty

3.2.2 CMP servomotor type designation



3.2.3 Serial number



3.3 Optional equipment

3.3.1 Mechanical attachments

Designation	Option
/BP	Holding brake for CMP40 – 63
/BY	Working brake for CMPZ71 – 100
/HR	BY manual brake release for CMPZ71 – 100, automatic disengaging function

3.3.2 Temperature sensor / temperature detection

Designation	Option
/KY	Temperature sensor (standard)

3.3.3 Encoder

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

3.3.4 Connection variants

Designation	Option
/SM1	M23 motor plug connector, socket on motor end only, pluggable motor and encoder cables (standard)
/SMB	M40 motor plug connector, socket on motor end only, pluggable motor and encoder cables (standard)
/SB1	M23 brakemotor plug connector, socket on motor end only, pluggable motor and encoder cables (standard)
/SBB	M40 brakemotor plug connector, socket on motor end only, pluggable motor and encoder cables (standard)
/KK	Terminal box for CMP50/63, CMP.71 – 100, pluggable motor and encoder cable

3.4 Designations for explosion protection

With the revision of the explosion protection standards, new designations have been implemented internationally (IEC), the so-called **E**quipment **P**rotection **L**evels (EPL). Parallel to the explosion protection categories, these levels specify the applicability of the devices according to the zone categorization of the potentially explosive atmospheres.

With the revision of EN 60079-0 issued in 2010, the EPL were also adopted by European standards.

The following table shows the assignment of the EPL to the zones:

Gas			Dust		
EPL :	**Category:**	**Use in zone:**	**EPL:**	**Category:**	**Use in zone:**
Ga	1G	0	**Da**	1D	20
Gb	2G	1	**Db**	2D	21
Gc	3G	2	**Dc**	3D	22

With the revision of the IEC 60079 "electrical apparatus for potentially explosive atmospheres" the dust explosion protection has been integrated in this set of standards as part 31. The separate dust standard IEC 61241-1 has become invalid with the release of IEC 60079-31 in November 2008.

The international standard IEC 60079 was harmonized as EN standard with the same number and the same content in 2010.

The equipment group III for dust has also been implemented as part of this integration. Thus there are 3 equipment groups in international standards:

Equipment group	Equipment for the use
I	In mine openings with a risk of firedamp (underground mining)
II	In areas with potentially explosive gas/air mixtures
III	In areas with potentially explosive dust/air mixtures

In addition, the new equipment group III has been split up into three subgroups "A", "B" and "C" depending on the type of dust:

Equipment group	Suitable for atmospheres with	Minimum degree of protection IP (x = placeholder)
IIIA	Inflammable lint	5x
IIIB	Non-conducting dust	5x
IIIC	Conducting dust	6x

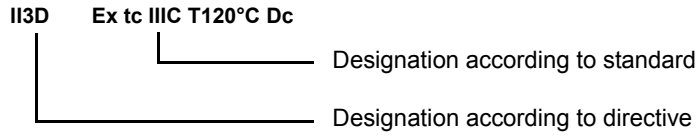
The specific values of equipment groups IIIA to IIIC for the dust/air mixture correspond to the previous designation IIA to IIC for gas/air mixtures.

Previously, the designation IIA to IIC has only be used for motors in EX-d design (flameproof). Now, the designation of motors of a protection type with increased safety "e" is changed from II (without letter) to IIA, IIB, or IIC. This implies demands on the prevention of electrostatic charge of plastic surfaces, e.g. fans and coated, metal surfaces.

The standard changes described above also cause a change of the EX designation of motors that must also be specified on the motor nameplate. The following table lists some examples:

Range	Previous designation	New designation	
		(ATEX)	(IECEx)
	(until 2010)	(since 2010)	(since 2010)
With explosive gas/air mixtures	II2G Ex e II T3	II2G Ex e IIC T3 Gb	Ex e IIC T3 Gb
	II3G Ex nA II T3	II3G Ex nA IIC T3 Gc	Ex nA IIC T3 Gc
With explosive dust/air mixtures	II2D Ex tD A21 IP65 T120°C	II2D Ex tb IIIC T120°C Db	Ex tb IIIC T120°C Db
	II3D Ex tD A22 IP54 T120°C	II3D Ex tc IIIB T120°C Dc	Ex tc IIIB T120°C Dc
	II3D Ex tD A22 IP65 T120°C	II3D Ex tc IIIC T120°C Dc	Ex tc IIIC T120°C Dc

With the designation of the explosion protection, you have to distinguish between the designation according to Directive, e.g. II3D, and the designation according to standard, e.g. Ex tc IIIC T120°C Dc.



Equipment sold within the scope of the European Directive 94/9/EC must show the designation according to Directive 94/9/EC in addition to the standard designation. It is important to note that the directive designation (e.g. with II) and the standard designation (e.g. with III) are two different designations.

Keep in mind that "II" according to the directive defines the equipment group, whereas "II" in connection with the letters A, B, and C is the standard designation for the environment in which the drive is operated.

Since equipment group II of the Directive includes both gas and dust atmospheres, a motor can have the directive designation II3D and the standard designation IIIC, for example.

The goal of the new standard designation is to clearly and explicitly specify the zone and the mixture that the individual drive is approved for.

4 Mechanical installation

⚠ CAUTION

Adhere to the safety notes in section 2 during installation.

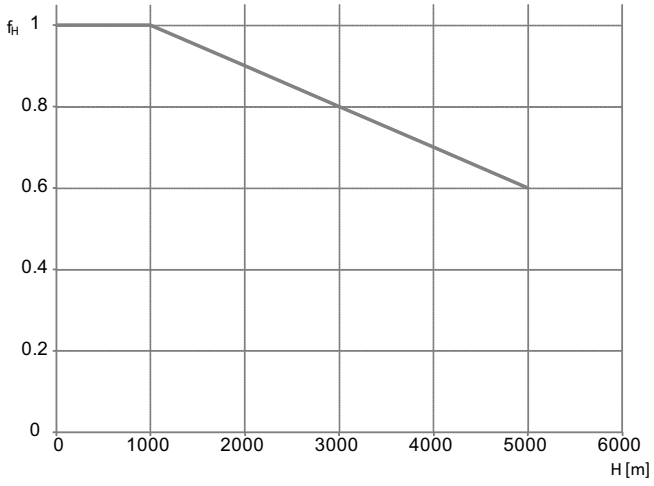
4.1 Required tools/resources

- Standard tools
- Mounting device
- Operation with conductor end sleeves: Crimping tool and conductor end sleeves
- Crimping tool 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 above MSL, otherwise the drive must be designed to meet the special environmental 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.

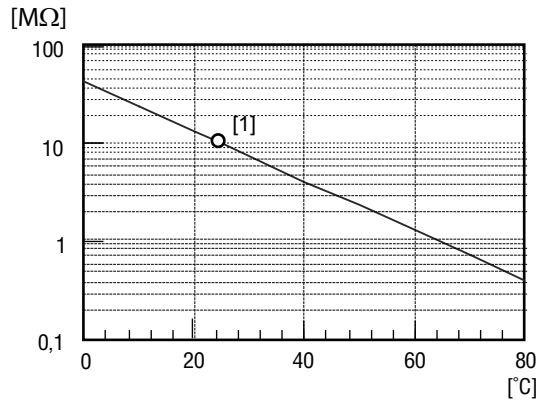
4.3.1 Long-term storage of servomotors

- 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)

4.3.2 Insulation resistance too low

INFORMATION

Insulation resistance too low:

Servomotor has absorbed moisture.

Measure: Send the servomotor to the SEW-EURODRIVE Service with a description of the fault.

4.3.3 Coating

NOTE ON EXPLOSION PROTECTION

SEW-EURODRIVE delivers the drives with a coating that complies with the requirements regarding the prevention of electrostatic charge according to EN / IEC 60079-0. If you recoat the motors or gearmotors, you have to observe the requirements regarding the prevention of electrostatic charge according to EN / IEC 60079-0 .

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 (page 78).
- 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

NOTE ON EXPLOSION PROTECTION

- If using belt pulleys/toothed belt pulleys:
  - Only use belts that do not build up an electrostatic charge.
  - Do not exceed the maximum permitted overhung load (page 78).

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 (protection canopy).

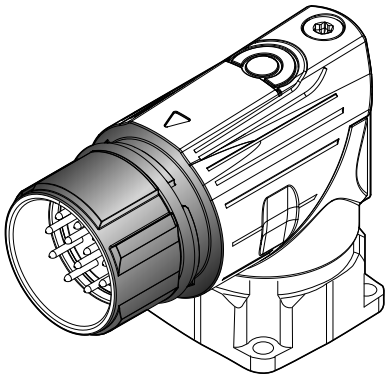
4.4.4 Installation in environments with a relative humidity of ≥ 60 %

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 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 • Center bore in accordance with DIN 332, shape DR	Centering shoulder tolerance in accordance with EN 50347 • ISO j6

4.6 Plug connection, special conditions

NOTE ON EXPLOSION PROTECTION

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).

5 Electrical installation

5.1 General information

⚠ DANGER

Danger of 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 plug while it is energized.

INFORMATION

A bag containing the following information is attached to the servomotor:

- Safety notes
- Wiring diagram

Observe these notes.

5.2 Additional regulations for potentially explosive atmospheres

NOTE ON EXPLOSION PROTECTION

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).

NOTE ON EXPLOSION PROTECTION

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.

Make sure that the corresponding servo inverter is safely disconnected from the supply system and the auxiliary power supply.

NOTE ON EXPLOSION PROTECTION

Observe the information regarding the thermal motor protection in chapter "Thermal motor protection" (page 50).

5.3 Ambient conditions during operation

5.3.1 Ambient temperature

The ambient temperature must correspond with the information on the nameplate and on the order confirmation. If the ambient temperature according to the nameplate is > 50 °C, it is essential that the cables and cable glands used are suited for temperatures ≥ 90 °C.

5.3.2 Hazardous radiation

Motors must not be exposed to hazardous radiation (such as ionizing radiation). Consult 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 about explosion protection

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

Motor category	Area of operation
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 3GD.

5.3.5 Degree of protection IP65

SEW-EURODRIVE servomotors in category 3D and 3GD are supplied with degree of protection IP65.

5.3.6 Temperature class / surface temperature

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

5.3.7 Protection against impermissibly high surface temperatures

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

NOTE ON EXPLOSION PROTECTION

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.

This is why, during startup and after any changes to the inverter parameters, you must check that the temperature model of the servo inverter is activated. This is the only way for the drive to be switched off if an overtemperature is detected.

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, consult SEW-EURODRIVE. The necessary temperature model is stored in the MOVIDRIVE® and MOVIAXIS® inverters from SEW. In addition to the stored temperature model, the current actual temperature must be constantly evaluated.

The motor may only be restarted after the fault that tripped the temperature sensor has been eliminated.

NOTICE

Acknowledging a motor protection error repeatedly can destroy the motor.

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:
  - Rated motor current
  - The applicable installation instructions
  - The requirements of the place of installation

5.4.2 Wiring diagrams of plug connectors

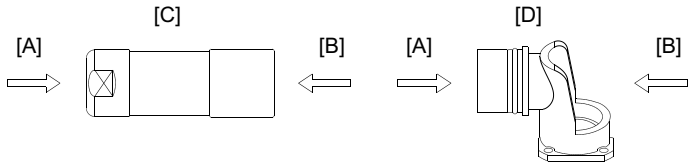
INFORMATION

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



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

SM1/SB1 power connector (M23)

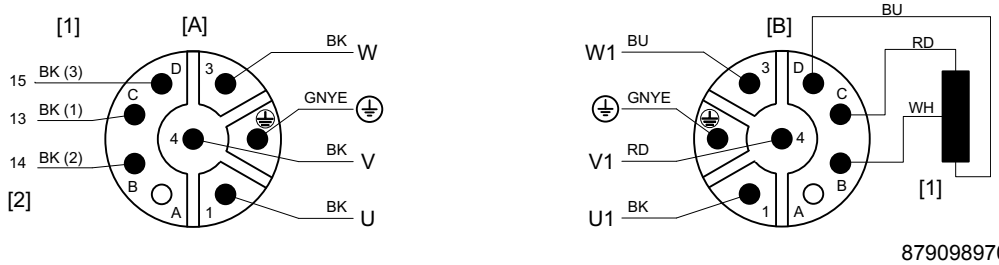
Wiring diagram with/without BP brake

8790987787

[1] BP brake (optional)

SM1/SB1 power connector (M23)

Wiring diagram with/without BY brake

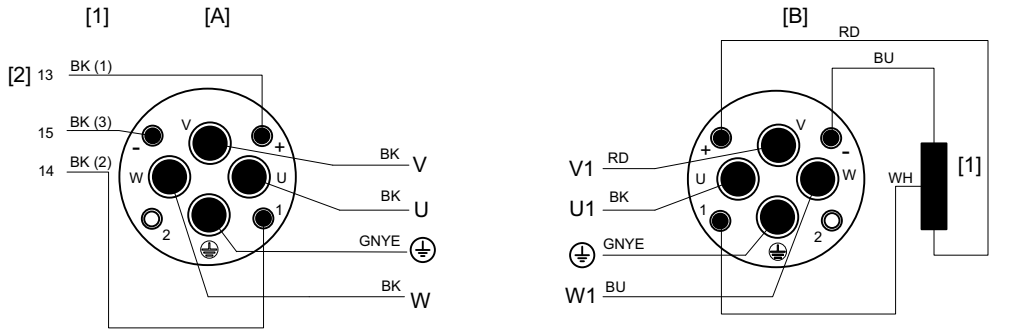


8790989707

[1] BY brake (optional)

Connection of SMB/SBB power plug connector (M40)

Wiring diagram with/without BY brake



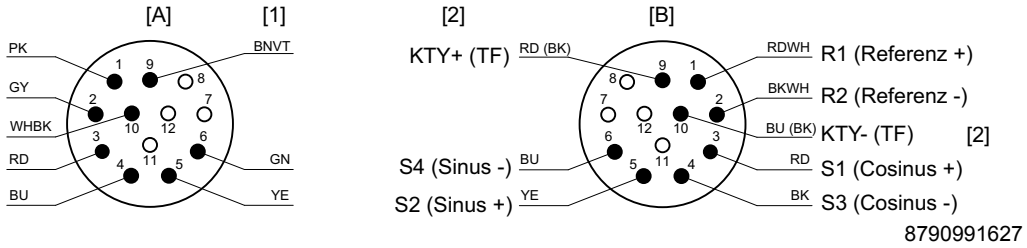
8791078027

[1] BY brake (optional)

[2] Connection to SEW rectifier according to operating instructions. For BY.D, connection 14 is omitted.

Wiring diagram for RH1M resolver signal plug connectors

Wiring diagram



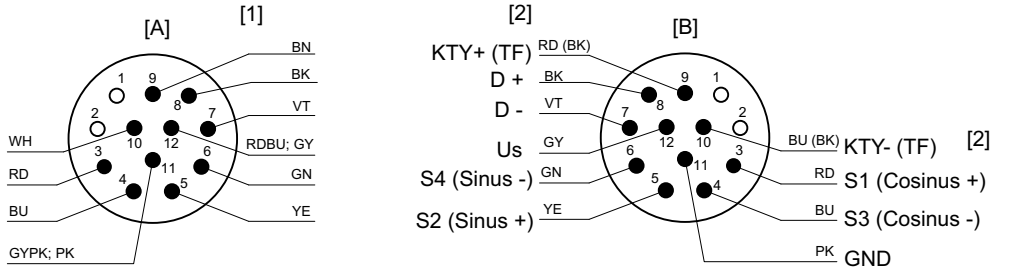
[1] Shield connected to the metal housing of the connector. Color coding according to SEW cable
[2] KTY+ (RD), KTY-(BU), optional TF (BK)

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	–	–

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

Wiring diagram



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

Pin assignment of plug connector lower part

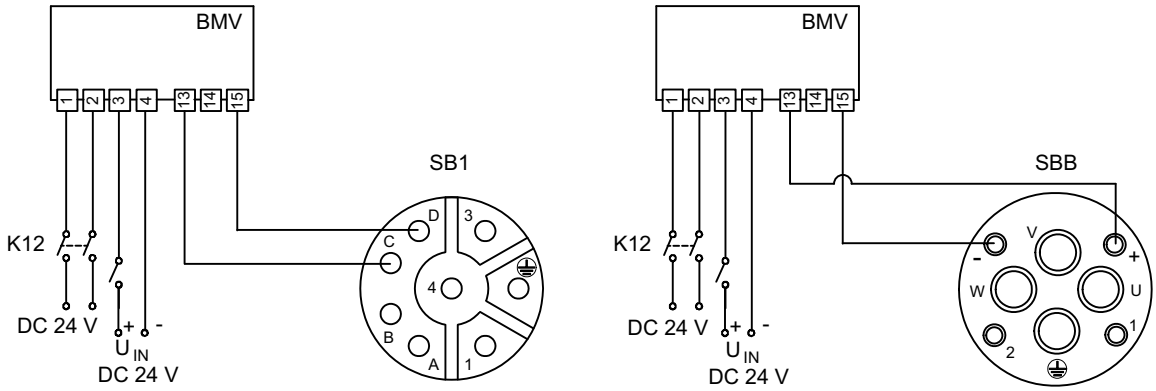
Pin	Color code	Connection
1	–	–
2	–	–
3	RD	S1 (cosine +)
4	BU	S3 (cosine –)
5	YE	S2 (sine +)
6	GN	S4 (sine –)
7	VT	D –
8	BK	D +
9	RD	KTY +
10	BU	KTY –
11	PK	Voltage reference (GND)
12	GY	Supply voltage Vs

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.

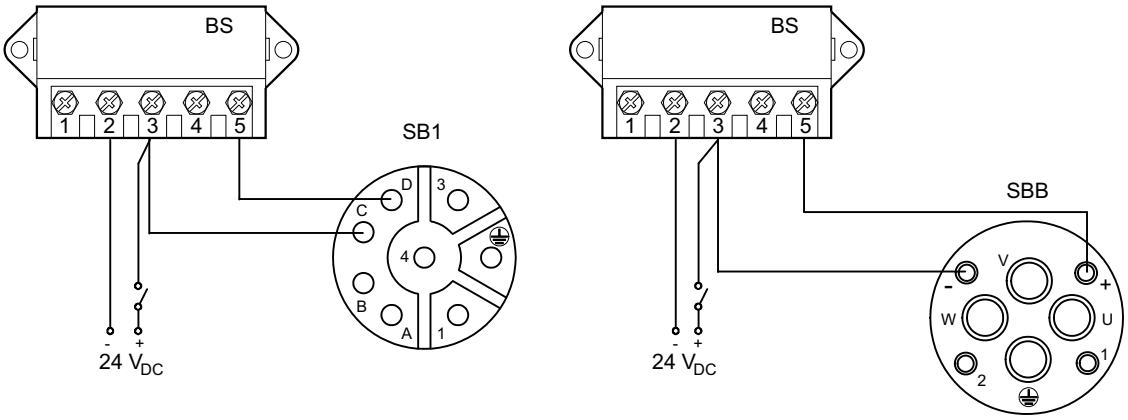
If the system complies with the specifications for direct brake control, then a BP brake can also be controlled directly via the brake output of a MOVIAXIS® servo inverter.

BMV brake controller



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

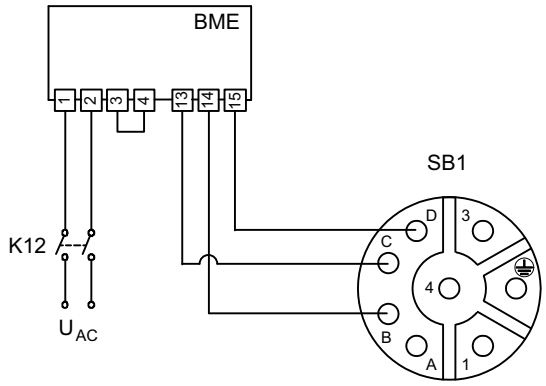
BS brake contactor

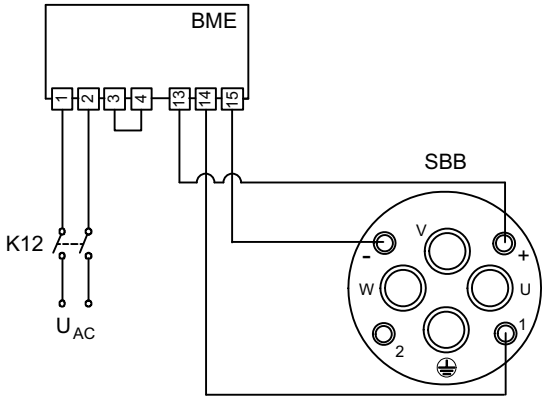


Wiring diagrams of the brake control – BY brake

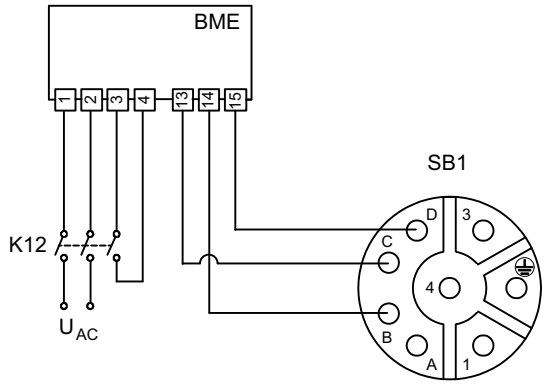
BME brake rectifier

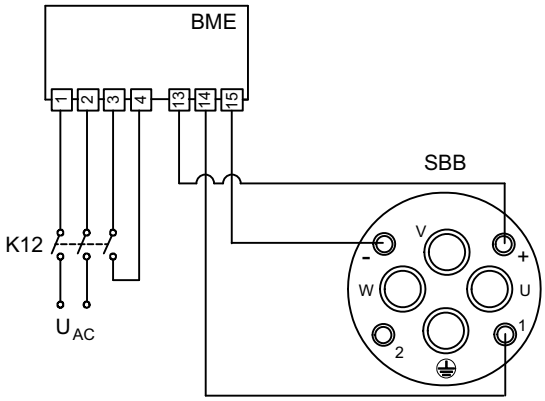
Cut-off in the AC circuit / standard application of the brake with SB1, SBB.





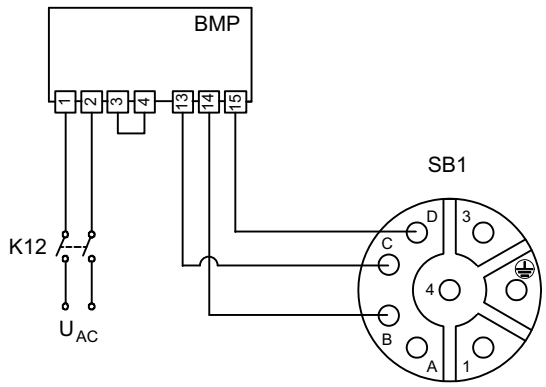
Cut-off in the DC and AC circuits / rapid application of the brake with SB1, SBB.

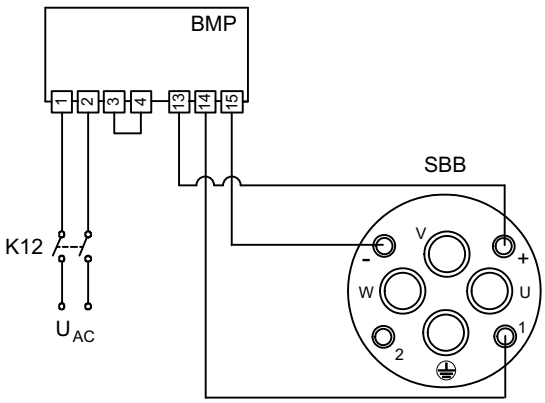




BMP brake rectifier

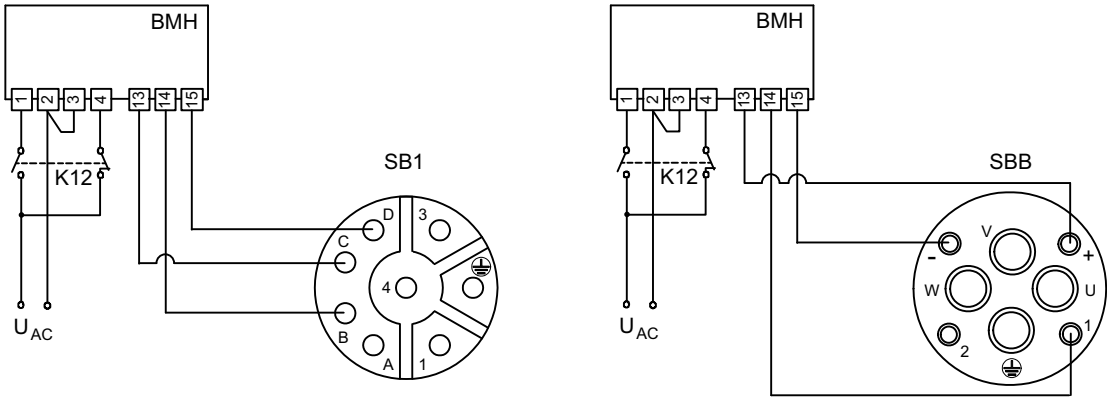
Cut-off in the DC and AC circuits / rapid application of the brake / integrated voltage relay with SB1 and SBB.



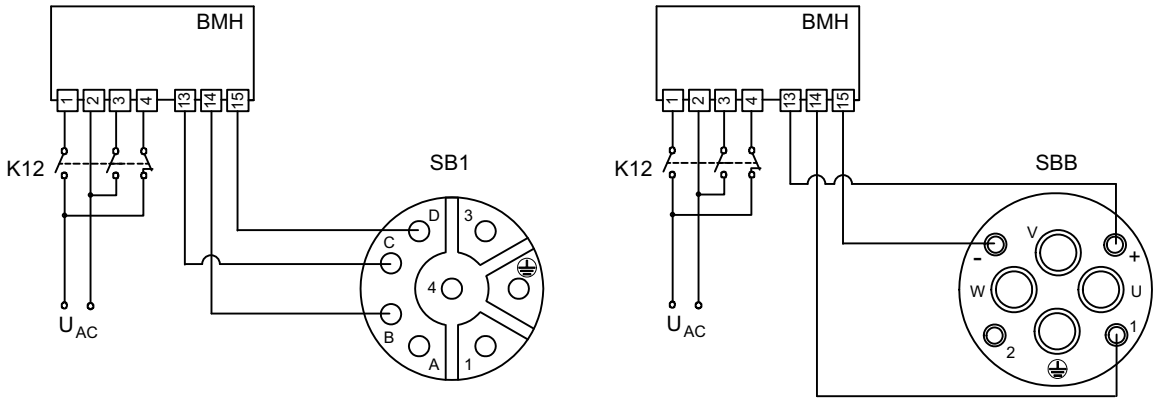


BMH brake rectifier

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

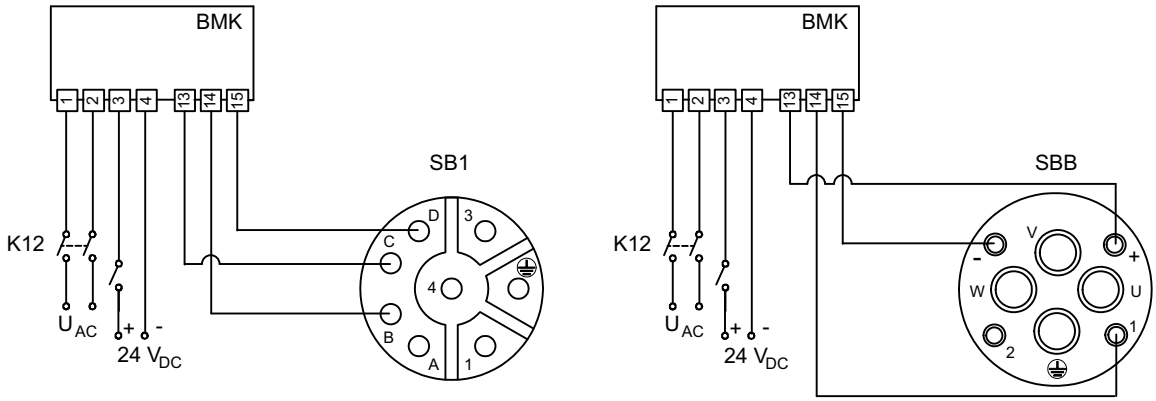


Cut-off in the DC and AC circuits / rapid application of the brake with SB1 and SBB.



BMK brake controller

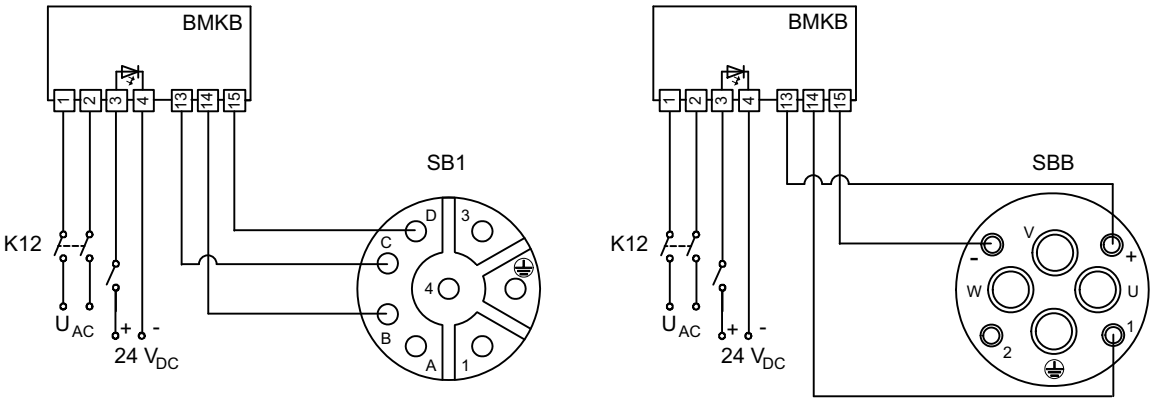
Cut-off in the DC and AC circuits / rapid application of the brake / integrated voltage relay / DC24 V control input integrated with SB1 and SBB.



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

BMKB brake controller

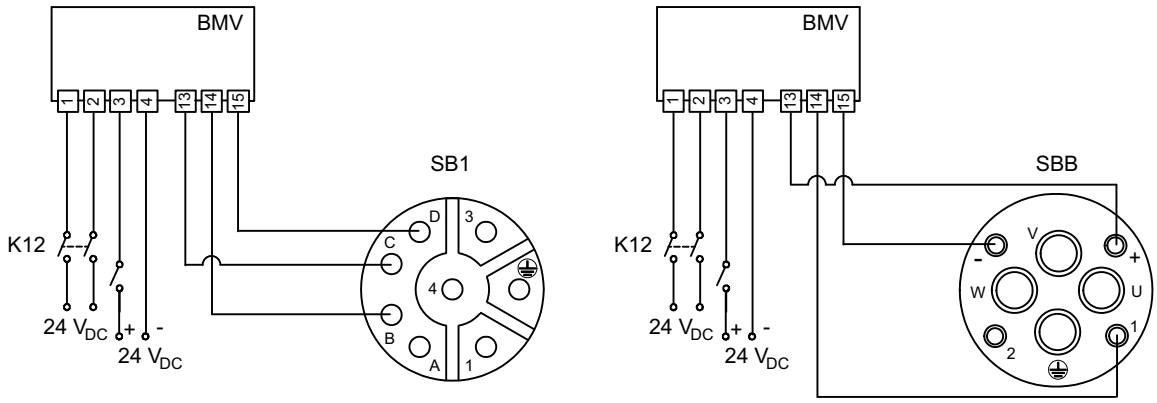
Cut-off in the DC and AC circuits / rapid application of the brake / integrated voltage relay / DC24 V control input integrated / LED ready for operation display with SB1 and SBB.



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

BMV brake controller

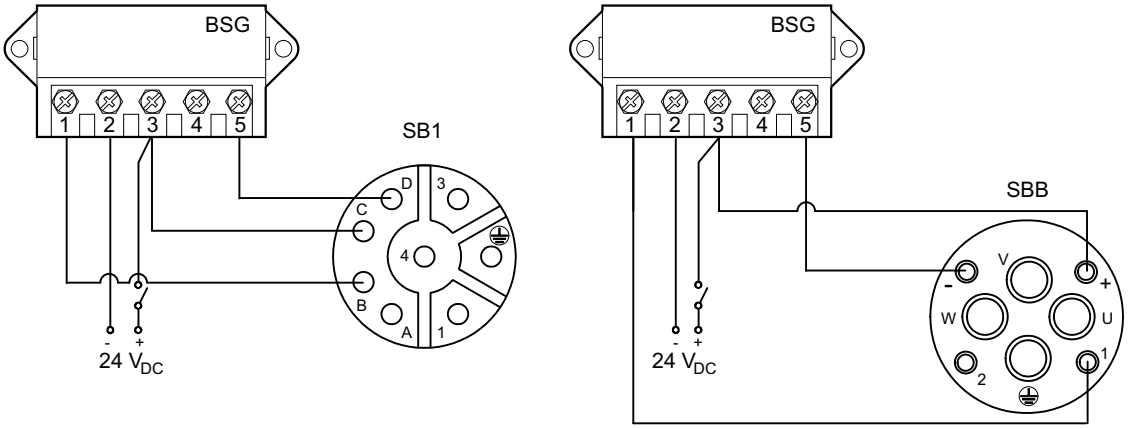
Cut-off in the DC and AC circuits / rapid application of the brake / DC24 V control input integrated with SB1 and SBB.



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

BSG brake control unit

For DC 24 V supply with SB1 and SBB.



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).

NOTE ON EXPLOSION PROTECTION

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.

Note the following when plugging in the power and signal connectors:

- 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.

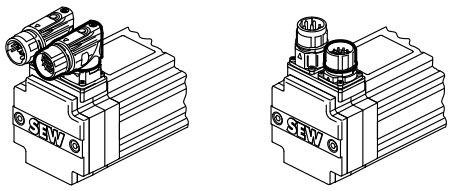
5.5.1 Connector positions

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.

CMP40 – CMP63: SM1/SB1 plug connector

Adjustable | Radial



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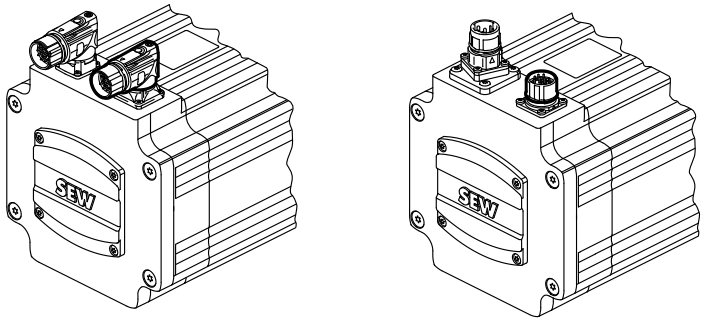
CMP.71 – CMP.100: SM1/SB1 plug connector

Adjustable | Radial



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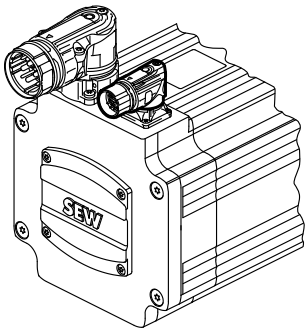
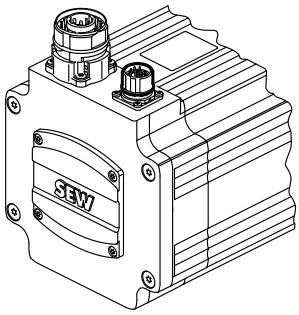
CMP.71 – CMP.100: SMB/SBB plug connector

Adjustable



Radial



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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.

Adjustable connectors (examples)

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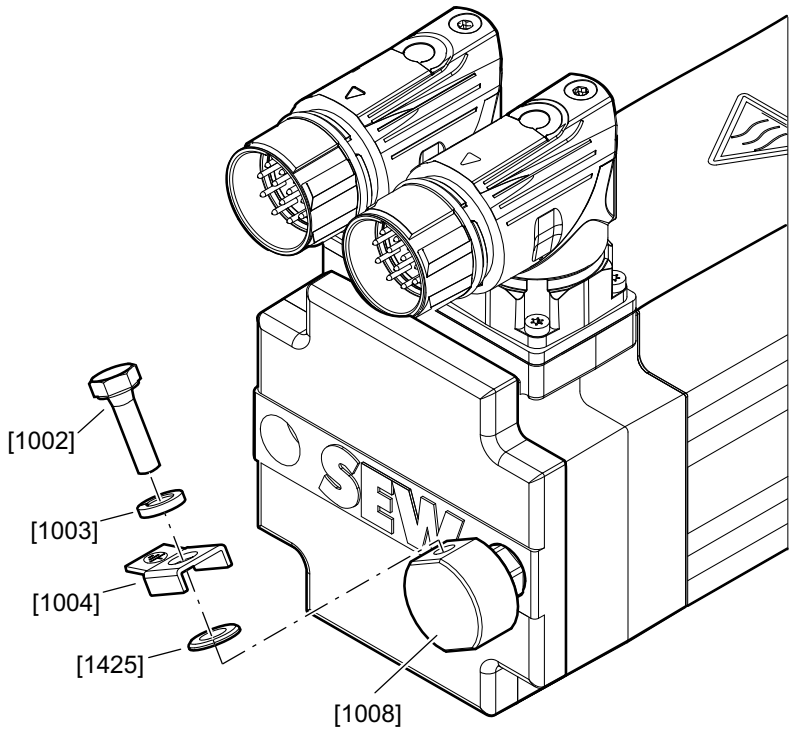
5.6 Equipotential bonding

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



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

NOTICE

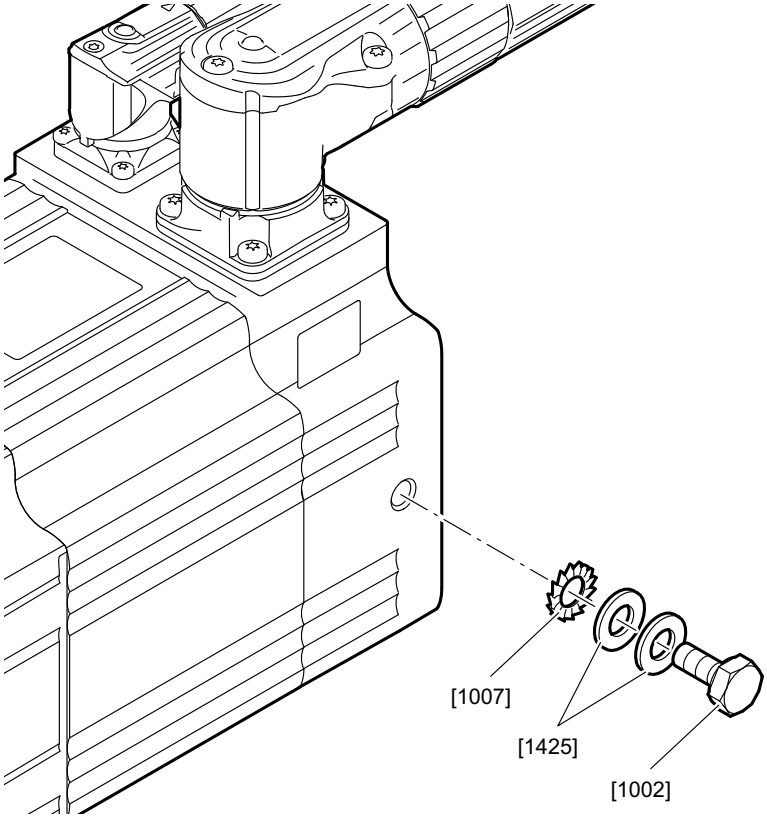
Loss of degree of protection and grounding if ground stud [1008] is rotated.

Do not rotate the ground stud [1008].

INFORMATION

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

5.6.2 CMP.71 – 100 with plug connector option



9777576331

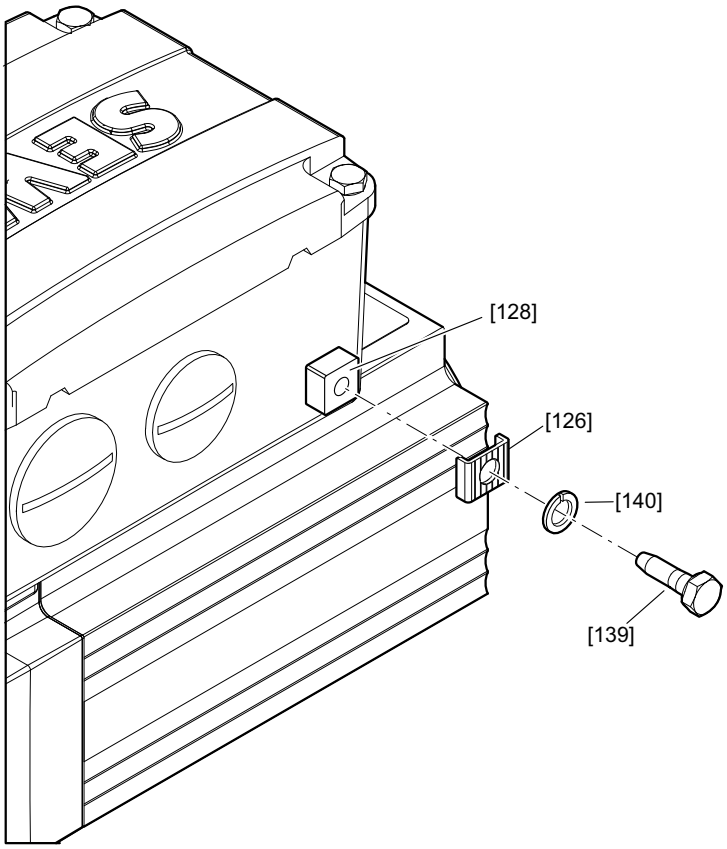
[1002] Hex head screw
[1007] Serrated lock washer
[1425] Washer

INFORMATION

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

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

5.6.3 CMP40 – 63 with terminal box option



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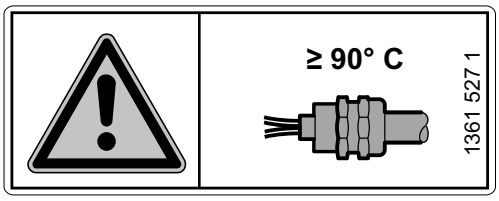
[126]	Terminal clip	[139]	Screw
[128]	Grounding terminal	[140]	Lock washer

INFORMATION

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

5.7 Terminal box connection



Note the following when connecting the KK terminal box option:

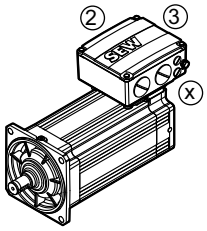
The used cables and cable entries must have a temperature resistance of min. 90 °C.

5.7.1 Notes regarding the connection of the power and signal cables via the 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 three sides.

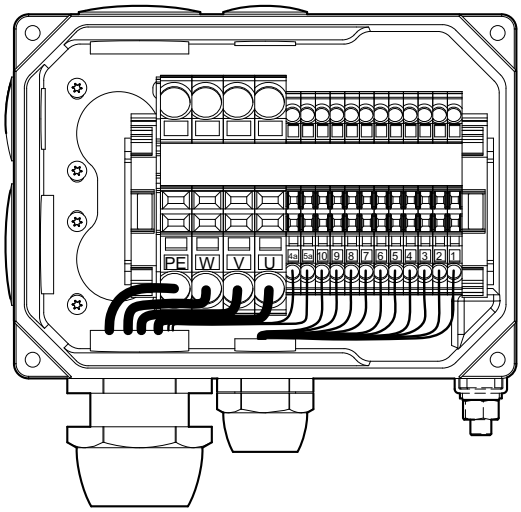
5.7.2 Connecting the motor and encoder system via KK terminal box

- 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

Connection of CMP50 and CMP63



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	Protective earth

BP brake

Auxiliary terminal contacts	Core identification	BMV brake rectifier connection	BS brake controller connection
4a	(BK/WH) Black with white lettering 1, 2, 3	13	3
5a		15	5

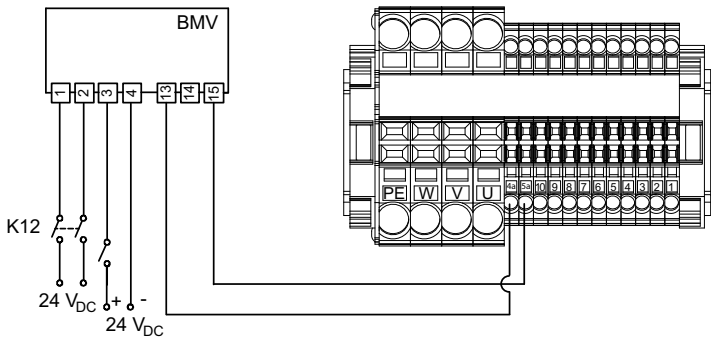
The brake has a standard supply voltage of DC 24 V.

Signal

Resolver				Encoder			
1	RD/WH	ref +	Reference	1	RD	cos +	Cosine
2	BK/WH	ref -		2	BU	ref cos	Reference
3	RD	cos +	Cosine	3	YE	sin+	Sine
4	BK	cos -		4	GN	ref sin	Reference
5	YE	sin+	Sine	5	VT	D -	DATA
6	BU	sin -		6	BK	D +	DATA
7		-	-	7	PK	GND	Ground
8		-	-	8	GY	Us	Supply voltage
9	RD(BK)	KTY + / (TF)	Motor protection	9	RD(BK)	KTY + / (TF)	Motor protection
10	BU(BK)	KTY - / (TF)		10	BU(BK)	KTY - / (TF)	

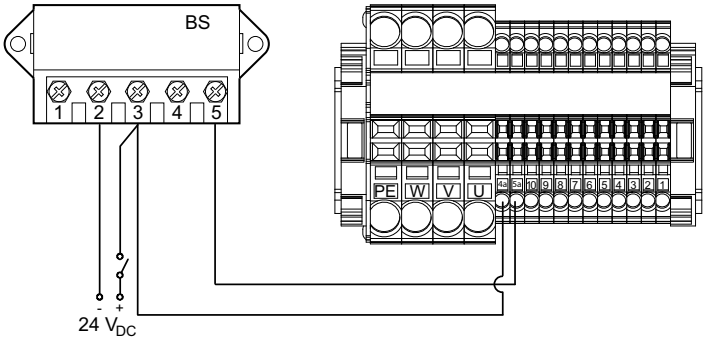
5.7.3 Wiring diagrams

BMV brake controller – CMP50, CMP63



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

BS brake contactor – CMP50, CMP63



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

NOTICE

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.

NOTICE

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.

5.9.1 Prefabricated cables

Pre-fabricated 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. The tightening torque must be adjusted to the cable.

5.10 Thermal motor protection

NOTE ON EXPLOSION PROTECTION

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 SEW inverters. This motor model must match the respective servomotor (page 30).

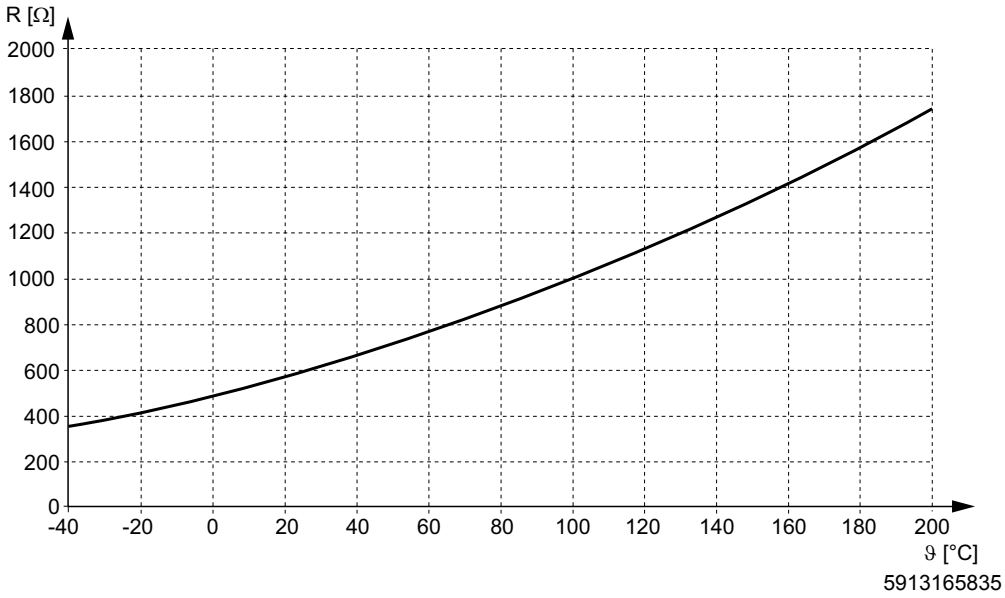
5.10.1 KTY temperature sensor

NOTICE

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

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

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.



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

6 Startup

6.1 Prerequisites for startup

⚠ DANGER

Danger of 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.

INFORMATION

The rated speed of the servomotor in a gearmotor can be higher than the permitted, input speed of the gear unit. Set the maximum speed on the servo inverter. For information on the procedure, refer to the documentation of the inverter.

6.1.1 Before startup

NOTE ON EXPLOSION PROTECTION

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 drive must be undamaged and not blocked.
- The measures stipulated in chapter "Preliminary work" (page 24) 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.

6.1.2 During startup

- The servomotor must run correctly (no overload, no unwanted speed fluctuations, no loud noises, etc.).
- In case of problems, refer to chapter "Malfunctions" (page 110) first.

6.2 Parameter setting on the servo inverter

6.2.1 General information

NOTE ON EXPLOSION PROTECTION

Install the servo inverter outside the potentially explosive atmosphere.

Observe the relevant operating instructions for servo inverter startup.

NOTE ON EXPLOSION PROTECTION

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

Activate the thermal motor protection during startup. Observe the information regarding thermal motor protection in chapter "Thermal motor protection" (page 50).

6.2.2 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 chapter "Nameplate" (page 17).

6.2.3 Setting the current limit

The current limit settings in the frequency inverter limit the max. motor torque M_{pk}.

When making the settings, observe the max. motor torque M_{pk}, I_{max}, the gear unit limit value Ma_{pk} for combinations with gear units, and the max. application torque. The current limit is set to the lowest value. These data are listed on the nameplate, see chapter "Nameplate" (page 17).

6.3 Setting the temperature protection parameters

After each new startup procedure, you must check wheter the following parameters are activated:

- 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, consult SEW-EURODRIVE. The necessary temperature model is stored in the MOVIDRIVE® and MOVIAXIS® inverters from SEW. In addition to the stored temperature model, the current actual temperature must be constantly evaluated.

6.4 Inverter operation in categories II3D and II3GD

6.4.1 Using servomotors in category II3GD

NOTE ON EXPLOSION PROTECTION

The following applies:

- Use as category II3D unit in zone 22
- Use as category II3GD unit in both zone 2 and zone 22

6.4.2 Conditions for safe operation

General information

NOTE ON EXPLOSION PROTECTION

Install the servo inverter outside the potentially explosive atmosphere.

Servomotor/inverter combination

- The listed servomotor/inverter combinations are recommended for category II3GD servomotors. Servo inverters that have similar values with respect to output current and output voltage (EN 60079-15) can also be used. See chapter "Thermal motor protection" (page 50).
- The listed servomotor/inverter combinations are recommended for category II3D servomotors. If you want to operate category II3D servomotors on other servo inverters, the maximum speeds/frequencies, the thermal motor protection as well as the thermal torque limiting characteristic curves must also be observed. In addition, we strongly recommend you use a frequency inverter matching the respective power rating.

Temperature class and surface temperature

- The maximum surface temperature of II3D servomotors is 150 °C.
- II3GD servomotors are in temperature class T3 and have a maximum surface temperature of 150 °C.

Protection against excessive temperature

See chapter "Protection against impermissibly high surface temperatures" (page 30).

Overvoltage at the motor terminals

The overvoltage at the motor connections must be limited to < 1700 V. To do so, limit the input voltage at the servo inverter to 500 V.

If a reliable calculation of the voltage at the motor connections is not possible, the voltage peaks have to measured with suitable equipment after startup, using the rated load of the drive, if possible.

Unplugging the plug connectors

NOTE ON EXPLOSION PROTECTION

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.

Make sure that the corresponding servo inverter is safely disconnected from the supply system and the auxiliary power supply.

7 Inspection/maintenance

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

Before re-startup of the servomotor, make sure that all regulations are complied with and document this with a label on the servomotor or a written test report.

NOTE ON EXPLOSION PROTECTION

- Maintenance and repair work must always be performed by SEW-EURODRIVE or repair workshops for electrical drives.
- Use only original spare parts from the relevant and valid spare parts lists; otherwise, the explosion-poof approval for the servomotor 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 deposits > 5 mm.
- Explosion protection is largely dependent on the IP enclosure. 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 tests 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 / IEC 60079-0, see chapter "Painting" (page 25).

⚠ DANGER

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

Danger 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.

⚠ 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

Only use original spare parts, otherwise the servomotor can be damaged.

Possible damage to property.

- Only use genuine spare parts in accordance with the valid parts list.

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.

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 rolling bearing and change if necessary • Replacing the oil seal • Clean cooling air ducts
Drive	• Varies (depending on external factors)	• Touch up or renew the surface/anti-corrosion coating
BP 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. Consult SEW-EURODRIVE for further information. • Contact SEW Service if maintenance is necessary.
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.

7.1.1 Cleaning

Excessive dirt, dust or shavings 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 dissipation 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

INFORMATION

Only SEW service staff, repair workshops or plants that have the necessary expertise may repair or modify the brake.

NOTICE

A lack of maintenance may result in damage to the encoder.

Destruction of the encoder.

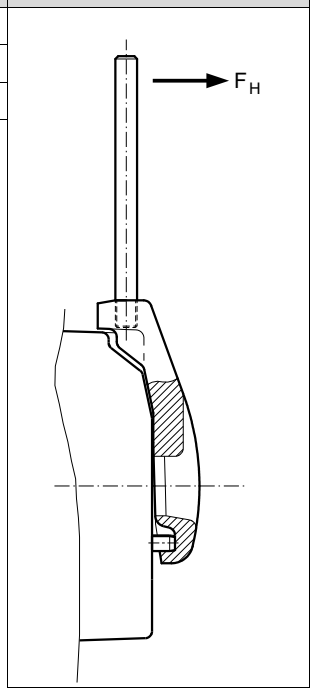
- The BY brake, which is designed as a working brake, must be inspected and serviced every 3000 operating hours, depending on the load conditions.

7.2.1 Braking torques

Brake type	Braking work until Maintenance	Pressure plate order number	Braking torque settings				
			Braking torque	Type and number of brake springs		Order number of brake springs	
	10^6 J		Nm	Normal	Red	Normal	Red
BY2	35	1645 0450	20	6	-	0186 6621	0183 7427
			14	4	2		
		1645 0965	10	3	-		
			7	2	2		
BY4	50	1644 5856	40	6	-	0186 663X	0184 0037
			28	4	2		
		1644 7840	20	3	-		
			14	2	2		
BY8	60	1644 4876	80	6	-	1644 6011	1644 6038
			55	4	2		
		1644 7859	40	3	-		
			28	2	2		

7.2.2 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.

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

8 Technical data

8.1 Motor data of explosion-proof CMP synchronous servomotors

n_N	Rated speed
n_{max}	Maximum permitted motor 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	Magnet wheel voltage at 1000 rpm
J_{mot}	Mass moment of inertia of the motor
J_{bmot}	Mass moment of inertia of the brakemotor
m	Mass
m_{bmot}	Mass of the brakemotor

8.1.1 CMP40 – 63 with BP brake

n_N	Motor	M_0	M_{pk}	I_0	I_{max}	m_{mot}	J_{mot}	m_{bmot}	J_{bmot}	L1	R1	V_{p0} cold	n_{max}	Number of poles
rpm	II3GD	Nm	Nm	A	A	kg	10^{-4}kgm^2	kg	10^{-4}kgm^2	mH	Ω	V	rpm	
3000	**CMP40S**	0.49	1.33	1.18	3.5	1.3	0.10	1.7	0.13	23	11.90	27.5	4500	6
	CMP40M	0.8	2.25	0.95	2.9	1.6	0.15	2.0	0.18	46	19.90	56.3		
	CMP50S	1.3	3.5	0.96	2.9	2.3	0.42	2.9	0.48	71	22.50	86.3		
	CMP50M	2.3	6.3	1.61	4.8	3.3	0.67	3.9	0.73	38.5	10.00	90.3		
	CMP50L	3.3	9.2	2.2	6.6	4.1	0.92	4.7	0.98	30.5	7.40	98.2		
	CMP63S	2.78	7.3	2.06	6.2	4.0	1.15	5.0	1.49	36.5	6.80	90.1		
	CMP63M	5.11	13.6	3.47	10.4	5.7	1.92	6.7	2.26	22	3.55	100		
	CMP63L	6.74	18.5	4.7	14.1	7.5	2.69	8.5	3.03	14.2	2.05	99.9		
4500	**CMP40S**	0.49	1.33	1.18	3.5	1.3	0.10	1.7	0.13	23	11.90	27.5		
	CMP40M	0.8	2.25	0.95	2.9	1.6	0.15	2.0	0.18	46	19.90	56.3		
	CMP50S	1.3	3.5	1.32	4	2.3	0.42	2.9	0.48	37	11.60	62.4		
	CMP50M	2.3	6.3	2.2	6.6	3.3	0.67	3.9	0.73	20.5	5.30	66.3		
	CMP50L	3.3	9.2	3.15	9.5	4.1	0.92	4.7	0.98	14.6	3.55	68		
	CMP63S	2.78	7.3	2.92	8.8	4.0	1.15	5.0	1.49	18.3	3.35	63.9		
	CMP63M	5.11	13.6	5.21	15.6	5.7	1.92	6.7	2.26	9.8	1.48	67		
	CMP63L	6.74	18.5	6.55	19.7	7.5	2.69	8.5	3.03	7.2	1.07	71.1		

8.1.2 CMP71 – 100 without brake

n_N	Motor	M_0	M_{pk}	I_0	I_{max}	m_{mot}	J_{mot}	L1	R1	V_{p0} cold	n_{max}	Number of poles
rpm	II3GD	Nm	Nm	A	A	kg	10^{-4}kgm^2	mH	Ω	V	rpm	
	CMP71S	6.4	15.8	3.4	10.2	7	3.13	33.5	3.50	128		
	CMP71M	9.4	23.5	5	15	8.4	4.17	21.5	1.87	127		
	CMP71L	13.1	34.5	6.3	18.9	11.4	6.27	16.2	1.20	142		
	CMP80S	13.4	34.5	6.9	20.5	12.8	9	15.3	1.10	133		
2000	**CMP80M**	18.7	49	9.3	28	16.5	2.12	10.5	0.69	136		
	CMP80L	27.5	73	12.5	37.5	21.4	18.32	7.6	0.44	149		
	CMP100S	25.5	62	13.3	40	19.8	20.30	8.5	0.44	130		
	CMP100M	31	84	14.7	44	24.8	27.20	6.6	0.30	141		
	CMP100L	47	129	21.8	65	34.6	40.95	4.15	0.17	145		
	CMP71S	6.4	15.8	4.9	14.7	7	3.13	15.7	1.48	87.5		
	CMP71M	9.4	23.5	7.5	22.5	8.4	4.17	9.7	0.81	85.3		
	CMP71L	13.1	34.5	9.4	28	11.4	6.27	7.3	0.56	95.7		
	CMP80S	13.4	34.5	10	30	12.8	9	7.2	0.54	91.1		
3000	**CMP80M**	18.7	49	13.4	40	16.5	12.12	5	0.35	94.3	4500	10
	CMP80L	27.5	73	18.7	56	21.4	18.32	3.35	0.21	99.2		
	CMP100S	25.5	62	19.6	59	19.8	20.30	3.9	0.22	88		
	CMP100M	31	84	21.8	65	24.8	27.20	3.05	0.14	95.5		
	CMP100L	47	129	32.3	97	34.6	40.95	1.9	0.08	98		
	CMP71S	6.4	15.8	7.3	22	7	3.13	7.1	0.72	58.7		
	CMP71M	9.4	23.5	10.9	32.5	8.4	4.17	4.55	0.39	58.3		
	CMP71L	13.1	34.5	14.1	42.5	11.4	6.27	3.25	0.24	63.8		
	CMP80S	13.4	34.5	15.3	46	12.8	9	3.05	0.22	59.4		
4500	**CMP80M**	18.7	49	20.1	60	16.5	12.12	2.25	0.15	62.9		
	CMP80L	27.5	73	27.8	83	21.4	18.32	1.54	0.09	67		
	CMP100S	25.5	62	30	90	19.8	20.30	1.68	0.09	57.7		
	CMP100M	31	84	33.1	99	24.8	27.20	1.32	0.07	62.9		
	CMP100L	47	129	48.4	145	34.6	40.95	0.84	0.04	65.3		

8.1.3 CMPZ71 – 100 with BY brake

n_N	Motor	M_0	M_{pk}	I_0	I_{max}	m_{mot}	J_{mot}	m_{bmot}	J_{bmot}	L1	R1	V_{p0} cold	n_{max}	Number of poles
rpm	II3GD	Nm	Nm	A	A	kg	10^{-4}kgm^2	kg	10^{-4}kgm^2	mH	Ω	V	rpm	
	CMPZ71S	6.4	15.8	3.4	10.2	8.6	9.41	11.2	11.13	33.5	3.50	128		
	CMPZ71M	9.4	23.5	5	15	10	10.46	12.6	12.18	21.5	1.87	127		
	CMPZ71L	13.1	34.5	6.3	18.9	13	12.56	15.6	14.28	16.2	1.20	142		
	CMPZ80S	13.4	34.5	6.9	20.5	15.8	27.40	20.8	31.17	15.3	11.00	133		
2000	**CMPZ80M**	18.7	49	9.3	28	19.5	30.52	24.5	34.29	10.5	0.69	136		
	CMPZ80L	27.5	73	12.5	37.5	24.4	36.73	29.4	40.50	7.6	0.44	149		
	CMPZ100S	25.5	62	13.3	40	24.2	80.47	34.7	84.90	8.5	0.44	130		
	CMPZ100M	31	84	14.7	44	29.2	87.37	39.7	91.80	6.6	0.30	141		
	CMPZ100L	47	129	21.8	65	39	101.12	49.5	105.56	4.15	0.17	145		
	CMPZ71S	6.4	15.8	4.9	14.7	8.6	9.41	11.2	11.13	15.7	1.48	87.5		
	CMPZ71M	9.4	23.5	7.5	22.5	10	10.46	12.6	12.18	9.7	0.81	85.3		
	CMPZ71L	13.1	34.5	9.4	28	13	12.56	15.6	14.28	7.3	0.56	95.7		
	CMPZ80S	13.4	34.5	10	30	15.8	27.40	20.8	31.17	7.2	0.54	91.1		
3000	**CMPZ80M**	18.7	49	13.4	40	19.5	30.52	24.5	34.29	5	0.35	94.3	4500	10
	CMPZ80L	27.5	73	18.7	56	24.4	36.73	29.4	40.50	3.35	0.21	99.2		
	CMPZ100S	25.5	62	19.6	59	24.2	80.47	34.7	84.90	3.9	0.22	88		
	CMPZ100M	31	84	21.8	65	29.2	87.37	39.7	91.80	3.05	0.14	95.5		
	CMPZ100L	47	129	32.3	97	39	101.12	49.5	105.56	1.9	0.08	98		
	CMPZ71S	6.4	15.8	7.3	22	8.6	9.41	11.2	11.13	7.1	0.72	58.7		
	CMPZ71M	9.4	23.5	10.9	32.5	10	10.46	12.6	12.18	4.55	0.39	58.3		
	CMPZ71L	13.1	34.5	14.1	42.5	13	12.56	15.6	14.28	3.25	0.24	63.8		
	CMPZ80S	13.4	34.5	15.3	46	15.8	27.40	20.8	31.17	3.05	0.22	59.4		
4500	**CMPZ80M**	18.7	49	20.1	60	19.5	30.52	24.5	34.29	2.25	0.15	62.9		
	CMPZ80L	27.5	73	27.8	83	24.4	36.73	29.4	40.50	1.54	0.09	67		
	CMPZ100S	25.5	62	30	90	24.2	80.47	34.7	84.90	1.68	0.09	57.7		
	CMPZ100M	31	84	33.1	99	29.2	87.37	39.7	91.80	1.32	0.07	62.9		
	CMPZ100L	47	129	48.4	145	39	101.12	49.5	105.56	0.84	0.04	65.3		

8.2 BP brake

8.2.1 Brake 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 [Nm] M_{B1} Nm	M_2 [Nm] M_{B2} 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 Nominal torque for slipping brake disk (relative speed between brake disk and friction surface: 1 m/s)

M_{B1} Preferred braking torque

M_{B2} Optional braking torque

8.2.2 Response and application times

Brake type	t_1 ms	t_2 ms
BP01	30	15
BP04	60	15
BP09	60	15

t_1 = Response time

t_2 = 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.

8.2.3 Operating currents for BP brakes

	BP01	BP04	BP09
maximum braking torque 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

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.

8.2.4 Resistance values of BP brake coils

	BP01	BP04	BP09
maximum braking torque 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

R Coil resistance at 20 °C
V_N Nominal voltage (nominal voltage range)

8.3 BY brake

8.3.1 Operating frequency

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

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

8.3.2 Brake 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 [Nm]		Speed class
		M_{B1} Nm	M_{B2} Nm	
CMPZ71S	BY2	14	10	2000, 3000, 4500
CMPZ71M/L		20	14	
CMPZ80S	BY4	28	20	2000, 3000, 4500
CMPZ80M/L		40	28	
CMPZ100S	BY8	55	40	2000, 3000, 4500
CMPZ100M/L		80	55	

M_2 Nominal torque for slipping brake disk (relative speed between brake disk and friction surface: 1 m/s)
M_{B1} Preferred braking torque
M_{B2} Optional braking torque

8.3.3 Response and application times

Brake type	t_1 ms	t_2 ms	t_3 ms
BY2	25	23	130
BY4	30	17	110
BY8	55	25	210

t_1 Response time
t_2 AC/DC application time
t_3 Application time AC

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.

8.3.4 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 = accelerator current, I_H = holding current
- Holding current I_H
- Nominal voltage V_N

The accelerator current I_B (= inrush current) only flows for a short time (ca. 120 ms) when the brake is released or during voltage dips below 70 % of rated voltage.

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

	BY2	BY4	BY8
Maximum braking torque 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	–

I_H Holding current, r.m.s. value in the supply cable to the SEW brake rectifier
I_G Direct current with direct DC voltage supply
V_N Nominal voltage (nominal voltage range)

8.3.5 Resistance values of BY brake coils

	BY2	BY4	BY8
maximum braking torque 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

R_B Resistance of accelerator coil at 20 °C
R_T Coil section resistance at 20°C
V_N Nominal voltage (nominal voltage range)

8.4 Inverter assignment

8.4.1 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 rpm

Motor			MOVIDRIVE® assignment								
			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	1.33	1.33	1.33						
		(lb in)	(11.8)	(11.8)	(11.8)						
CMP40M	I_{max}	% I_N	145	121							
	M_{pk}	Nm	2.25	2.25							
		(lb in)	(19.9)	(19.9)							
CMP50S	I_{max}	% I_N	145	121							
	M_{pk}	Nm	3.50	3.50							
		(lb in)	(31.0)	(31.0)							
CMP50M	I_{max}	% I_N	200	200	155	120	120				
	M_{pk}	Nm	5.42	6.30	6.30	6.30	6.30				
		(lb in)	(48.0)	(55.8)	(55.8)	(55.8)	(55.8)				
CMP63S	I_{max}	% I_N	200	200	200	155	150	113			
	M_{pk}	Nm	5.16	5.97	7.30	7.30	7.08	7.30			
		(lb in)	(45.7)	(52.9)	(64.7)	(64.7)	(62.7)	(64.7)			
CMP50L	I_{max}	% I_N	200	200	200	165	150	120			
	M_{pk}	Nm	5.92	6.99	8.76	9.20	8.51	9.20			
		(lb in)	(52.4)	(61.9)	(77.6)	(81.5)	(75.4)	(81.5)			
CMP63M	I_{max}	% I_N	200	200	200	200	150	150	149	109	
	M_{pk}	Nm	6.05	7.14	8.95	11.1	8.70	11.4	13.6	13.6	
		(lb in)	(53.6)	(63.2)	(79.3)	(98.3)	(77.1)	(101)	(120)	(120)	
CMP63L	I_{max}	% I_N		200	200	200	150	150	150	148	113
	M_{pk}	Nm		7.07	8.99	11.4	8.72	11.7	14.5	18.5	18.5
		(lb in)		(62.6)	(79.6)	(101)	(77.2)	(104)	(128)	(164)	(164)

CMP40 – 63, rated speed n_N = 4500 rpm

Motor			MOVIDRIVE® assignment									
			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	1.33	1.33	1.33							
		(lb in)	(11.8)	(11.8)	(11.8)							
CMP40M	I_{max}	% I_N	145	121								
	M_{pk}	Nm	2.25	2.25								
		(lb in)	(19.9)	(19.9)								
CMP50S	I_{max}	% I_N	200	167	129							
	M_{pk}	Nm	3.50	3.50	3.50							
		(lb in)	(31.0)	(31.0)	(31.0)							
CMP50M	I_{max}	% I_N	200	200	200	165	150	120				
	M_{pk}	Nm	4.10	4.83	6.03	6.30	5.87	6.30				
		(lb in)	(36.3)	(42.8)	(53.4)	(55.8)	(52.0)	(55.8)				
CMP63S	I_{max}	% I_N	200	200	200	200	150	150	126			
	M_{pk}	Nm	3.83	4.48	5.55	6.76	5.40	6.92	7.30			
		(lb in)	(33.9)	(39.7)	(49.2)	(59.9)	(47.8)	(61.3)	(64.7)			
CMP50L	I_{max}	% I_N	200	200	200	200	150	150	136			
	M_{pk}	Nm	4.22	5.02	6.36	8.00	6.18	8.22	9.20			
		(lb in)	(37.4)	(44.5)	(56.3)	(70.9)	(54.7)	(72.8)	(81.5)			
CMP63M	I_{max}	% I_N			200	200	150	150	150	150	125	
	M_{pk}	Nm			6.23	7.84	6.05	8.05	9.92	12.7	13.6	
		(lb in)			(55.2)	(69.4)	(53.6)	(71.3)	(87.9)	(112)	(120)	
CMP63L	I_{max}	% I_N				200	150	150	150	150	150	123
	M_{pk}	Nm				8.37	6.38	8.61	10.8	14.1	17.8	18.5
		(lb in)				(74.1)	(56.5)	(76.3)	(95.7)	(125)	(158)	(164)

CMP.71 – 100, rated speed n_N = 2000 rpm

Motor			MOVIDRIVE® assignment													
			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	6.47	7.64	9.58	11.8	9.34	12.1	14.4	15.8						
		(lb in)	(57.3)	(67.7)	(84.8)	(105)	(82.7)	(107)	(128)	(140)						
CMP71M	I_{max}	% I_N			166	166	125	125	125	125	120					
	M_{pk}	Nm			9.63	12.3	9.37	12.7	15.7	20.1	23.5					
		(lb in)			(85.3)	(109)	(83.0)	(112)	(139)	(178)	(208)					
CMP71L	I_{max}	% I_N				166	125	125	125	125	125	118				
	M_{pk}	Nm				13.6	10.2	14.1	17.8	23.7	30.0	34.5				
		(lb in)				(120)	(90.3)	(125)	(158)	(210)	(266)	(306)				
CMP80S	I_{max}	% I_N				166	125	125	125	125	125	125				
	M_{pk}	Nm				12.7	9.48	13.2	16.9	22.7	28.7	34.0				
		(lb in)				(112)	(84.0)	(117)	(150)	(201)	(254)	(301)				
CMP80M	I_{max}	% I_N						125	125	125	125	125	117			
	M_{pk}	Nm						13.9	17.7	23.8	30.8	38.2	49.0			
		(lb in)						(123)	(157)	(211)	(273)	(338)	(434)			
CMP100S	I_{max}	% I_N							125	125	125	125	125	125		
	M_{pk}	Nm							17.0	23.0	30.0	37.6	52.2	62.0		
		(lb in)							(151)	(204)	(266)	(333)	(462)	(549)		
CMP80L	I_{max}	% I_N							125	125	125	125	125	117		
	M_{pk}	Nm							19.1	25.9	33.7	42.6	61.3	73.0		
		(lb in)							(169)	(229)	(298)	(377)	(543)	(647)		
CMP100M	I_{max}	% I_N								125	125	125	125	125		
	M_{pk}	Nm								25.0	32.9	42.0	61.4	78.0		
		(lb in)								(221)	(291)	(372)	(544)	(691)		
CMP100L	I_{max}	% I_N									125	125	125	125	125	108
	M_{pk}	Nm									34.0	43.5	64.8	85.1	117	129
		(lb in)									(301)	(385)	(574)	(754)	(1036)	(1143)

CMP.71 – 100, rated speed n_N = 3000 rpm

Motor			MOVIDRIVE® assignment													
			0014	0015	0022	0030	0040	0055	0075	0110	0150	0220	0300	0014	0370	0450
	I_n	[A]	4	4	5.5	7	9.5	12.5	16	24	32	46	60	4	73	89
	I_{max}	[A]	8	6	8.25	10.5	14.3	18.8	24	36	48	69	90	8	109.5	133.5
CMP71S	I_{max}	% I_N	166	166	125	125	125	125	118							
	M_{pk}	Nm	6.92	8.70	6.74	8.97	11.0	13.9	15.8							
		(lb in)	(61.3)	(77.1)	(59.7)	(79.4)	(97.4)	(123)	(140)							
CMP71M	I_{max}	% I_N		166	125	125	125	125	125	125						
	M_{pk}	Nm		8.33	6.32	8.62	10.9	14.4	18.2	21.9						
		(lb in)		(73.8)	(56.0)	(76.3)	(96.5)	(128)	(161)	(194)						
CMP71L	I_{max}	% I_N				125	125	125	125	125	117					
	M_{pk}	Nm				9.44	12.0	16.2	21.1	26.4	34.5					
		(lb in)				(83.6)	(106)	(143)	(187)	(234)	(306)					
CMP80S	I_{max}	% I_N				125	125	125	125	125	125					
	M_{pk}	Nm				8.98	11.5	15.8	20.7	25.9	34.5					
		(lb in)				(79.5)	(102)	(140)	(183)	(229)	(306)					
CMP80M	I_{max}	% I_N					125	125	125	125	125	125				
	M_{pk}	Nm					12.3	16.7	21.8	27.6	39.5	49.0				
		(lb in)					(109)	(148)	(193)	(244)	(350)	(434)				
CMP100S	I_{max}	% I_N							125	125	125	125	125			
	M_{pk}	Nm							20.5	26.2	38.2	48.5	61.4			
		(lb in)							(182)	(232)	(338)	(430)	(544)			
CMP80L	I_{max}	% I_N						125	125	125	125	125	122			
	M_{pk}	Nm						17.4	22.8	29.0	42.8	55.5	73.0			
		(lb in)						(154)	(202)	(257)	(379)	(492)	(647)			
CMP100M	I_{max}	% I_N							125	125	125	125	125	108		
	M_{pk}	Nm							22.2	28.4	42.5	55.8	76.1	84.0		
		(lb in)							(197)	(252)	(376)	(494)	(674)	(744)		
CMP100L	I_{max}	% I_N									125	125	125	125	125	109
	M_{pk}	Nm									44.0	58.5	82.7	105	123	129
		(lb in)									(390)	(518)	(732)	(930)	(1089)	(1143)

CMP.71 – 100, rated speed n_N = 4500 rpm

Motor			MOVIDRIVE® assignment														
			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	6.06	4.63	6.26	7.80	10.2	12.7	15.0								
		(lb in)	(53.7)	(41.0)	(55.4)	(69.1)	(90.3)	(112)	(133)								
CMP71M	I_{max}	% I_N			125	125	125	125	125	125	102						
	M_{pk}	Nm			5.98	7.58	10.2	13.1	16.3	22.4	23.5						
		(lb in)			(53.0)	(67.1)	(90.3)	(116)	(144)	(198)	(208)						
CMP71L	I_{max}	% I_N					125	125	125	125	125						
	M_{pk}	Nm					10.9	14.3	18.2	26.4	33.3						
		(lb in)					(96.5)	(127)	(161)	(234)	(295)						
CMP80S	I_{max}	% I_N					125	125	125	125	125						
	M_{pk}	Nm					10.2	13.5	17.4	25.5	31.8						
		(lb in)					(90.3)	(120)	(154)	(226)	(282)						
CMP80M	I_{max}	% I_N						125	125	125	125	125	100.0				
	M_{pk}	Nm						14.6	18.7	27.6	35.8	47.4	49.0				
		(lb in)						(129)	(166)	(244)	(317)	(420)	(434)				
CMP100S	I_{max}	% I_N							125	125	125	125	125	123	101		
	M_{pk}	Nm							17.2	25.7	33.7	46.2	56.0	62.0	62.0		
		(lb in)							(152)	(228)	(298)	(409)	(496)	(549)	(549)		
CMP80L	I_{max}	% I_N							125	125	125	125	125	114			
	M_{pk}	Nm							19.7	29.3	38.6	53.9	67.5	73.0			
		(lb in)							(174)	(260)	(342)	(477)	(598)	(647)			
CMP100M	I_{max}	% I_N								125	125	125	125	125	111		
	M_{pk}	Nm								28.1	37.4	53.0	67.2	78.8	84.0		
		(lb in)								(249)	(331)	(469)	(595)	(698)	(744)		
CMP100L	I_{max}	% I_N									125	125	125	125	125	125	112
	M_{pk}	Nm									39.2	56.2	72.6	87.2	104	119	129
		(lb in)									(347)	(498)	(643)	(772)	(921)	(1054)	(1143)

8.4.2 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 rpm

Motor			MOVIAXIS® assignment									
	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	1.33									
		(lb in)	(11.8)									
CMP40M	I_{max}	% I_N	145									
	M_{pk}	Nm	2.25									
		(lb in)	(19.9)									
CMP50S	I_{max}	% I_N	145									
	M_{pk}	Nm	3.50									
		(lb in)	(31.0)									
CMP50M	I_{max}	% I_N	240									
	M_{pk}	Nm	6.30									
		(lb in)	(55.8)									
CMP63S	I_{max}	% I_N	250	155								
	M_{pk}	Nm	6.17	7.30								
		(lb in)	(54.6)	(64.7)								
CMP50L	I_{max}	% I_N	250	165								
	M_{pk}	Nm	7.25	9.20								
		(lb in)	(64.2)	(81.5)								
CMP63M	I_{max}	% I_N		250								
	M_{pk}	Nm		13.3								
		(lb in)		(118)								
CMP63L	I_{max}	% I_N		250	176							
	M_{pk}	Nm		13.9	18.5							
		(lb in)		(123)	(164)							

CMP40 – 63, rated speed n_N = 4500 rpm

Motor			MOVIAXIS® assignment									
	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	1.33									
		(lb in)	(11.8)									
CMP40M	I_{max}	% I_N	145									
	M_{pk}	Nm	2.25									
		(lb in)	(19.9)									
CMP50S	I_{max}	% I_N	200									
	M_{pk}	Nm	3.50									
		(lb in)	(31.0)									
CMP50M	I_{max}	% I_N	250	165								
	M_{pk}	Nm	5.01	6.30								
		(lb in)	(44.4)	(55.8)								
CMP63S	I_{max}	% I_N		220								
	M_{pk}	Nm		7.30								
		(lb in)		(64.7)								
CMP50L	I_{max}	% I_N		238								
	M_{pk}	Nm		9.20								
		(lb in)		(81.5)								
CMP63M	I_{max}	% I_N		250	195							
	M_{pk}	Nm		9.52	13.6							
		(lb in)		(84.3)	(120)							
CMP63L	I_{max}	% I_N			246	164						
	M_{pk}	Nm			18.5	18.5						
		(lb in)			(164)	(164)						

CMP.71 – 100, rated speed n_N = 2000 rpm

Motor			MOVIAXIS® assignment									
	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		15.7								
		(lb in)		(139)								
CMP71M	I_{max}	% I_N		250	188							
	M_{pk}	Nm		17.6	23.5							
		(lb in)		(156)	(208)							
CMP71L	I_{max}	% I_N			236	157						
	M_{pk}	Nm			34.5	34.5						
		(lb in)			(306)	(306)						
CMP80S	I_{max}	% I_N			250	171						
	M_{pk}	Nm			34.0	34.5						
		(lb in)			(301)	(306)						
CMP80M	I_{max}	% I_N			250	233	175					
	M_{pk}	Nm			38.2	49.0	49.0					
		(lb in)			(338)	(434)	(434)					
CMP100S	I_{max}	% I_N				250	250	167				
	M_{pk}	Nm				52.2	62.0	62.0				
		(lb in)				(462)	(549)	(549)				
CMP80L	I_{max}	% I_N				250	234	156				
	M_{pk}	Nm				61.3	73.0	73.0				
		(lb in)				(543)	(647)	(647)				
CMP100M	I_{max}	% I_N				250	250	183				
	M_{pk}	Nm				61.4	78.0	84.0				
		(lb in)				(544)	(691)	(744)				
CMP100L	I_{max}	% I_N						250	203			
	M_{pk}	Nm						121	129			
		(lb in)						(1072)	(1143)			

CMP.71 – 100, rated speed n_N = 3000 rpm

Motor			MOVIAXIS® assignment									
	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		12.2								
		(lb in)		(108)								
CMP71M	I_{max}	% I_N		250	250							
	M_{pk}	Nm		12.3	21.9							
		(lb in)		(109)	(194)							
CMP71L	I_{max}	% I_N			250	233						
	M_{pk}	Nm			26.4	34.5						
		(lb in)			(234)	(306)						
CMP80S	I_{max}	% I_N			250	250						
	M_{pk}	Nm			25.9	34.5						
		(lb in)			(229)	(306)						
CMP80M	I_{max}	% I_N			250	250	250					
	M_{pk}	Nm			27.6	39.5	49.0					
		(lb in)			(244)	(350)	(434)					
CMP100S	I_{max}	% I_N				250	250	246				
	M_{pk}	Nm				38.2	48.5	62.0				
		(lb in)				(338)	(430)	(549)				
CMP80L	I_{max}	% I_N				250	250	233				
	M_{pk}	Nm				42.8	55.5	73.0				
		(lb in)				(379)	(492)	(647)				
CMP100M	I_{max}	% I_N				250	250	250				
	M_{pk}	Nm				42.5	55.8	78.7				
		(lb in)				(376)	(494)	(697)				
CMP100L	I_{max}	% I_N						250	250			
	M_{pk}	Nm						86.0	111			
		(lb in)						(762)	(983)			

CMP.71 – 100, rated speed n_N = 4500 rpm

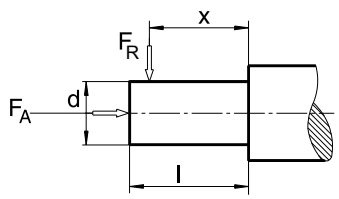
Motor			MOVIAXIS® assignment									
	Size		1			2		3		4	5	6
	I_n	[A]	2	4	8	12	16	24	32	48	64	100
	I_{max}	[A]	5	10	20	30	40	60	80	120	160	250
CMP71S	I_{max}	% I_N			250	183						
	M_{pk}	Nm			15.0	15.8						
		(lb in)			(133)	(140)						
CMP71M	I_{max}	% I_N				250	203					
	M_{pk}	Nm				22.4	23.5	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

8.5 Overhung and axial loads

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

The permitted overhung loads F_q at point x (distance from the shaft shoulder to the application point) are determined using the diagrams below. The diagrams are based on the following nominal bearing service life:

Motor type	Nominal bearing service life
CMP40	L10h = 25 000 h
CMP50	L10h = 25 000 h
CMP63	L10h = 20 000 h
CMP.71	L10h = 25 000 h
CMP.80	L10h = 25 000 h
CMP.100	L10h = 25 000 h



5914315787

8.5.1 Permitted overhung and axial loads

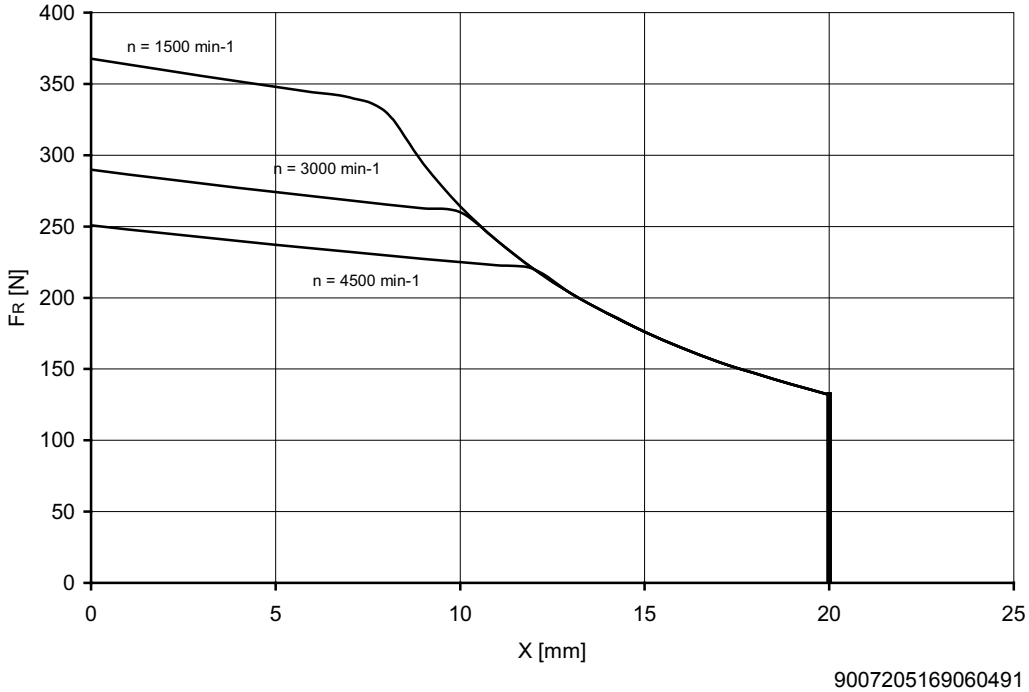
Motor type	$F_{q\,max}$ in N F_A in N	Mean speed[1] in rpm		
		1500	3000	4500
CMP40S	$F_{q\,max}$	264	260	225
	F_A	109	86	74
CMP40M	$F_{q\,max}$	264	264	245
	F_A	116	92	81
CMP50S	$F_{q\,max}$	400	315	250
	F_A	157	104	83
CMP50M	$F_{q\,max}$	400	355	275
	F_A	168	117	91
CMP50L	$F_{q\,max}$	400	370	280
	F_A	182	122	92
CMP63S	$F_{q\,max}$	578	460	360
	F_A	170	115	90
CMP63M	$F_{q\,max}$	578	500	380
	F_A	188	125	95
CMP63L	$F_{q\,max}$	578	560	445
	F_A	208	140	111

Motor type	$F_{q\,max}$ in N F_A in N	Mean speed[1] in rpm		
		1500	3000	4500
CMP.71S	$F_{q\,max}$	1050	832	724
	F_A	346	277	240
CMP.71M	$F_{q\,max}$	1121	888	747
	F_A	373	296	250
CMP.71L	$F_{q\,max}$	1213	928	777
	F_A	404	309	258
CMP.80S	$F_{q\,max}$	1834	1454	1270
	F_A	611	485	423
CMP.80M	$F_{q\,max}$	1962	1555	1325
	F_A	654	518	442
CMP.80L	$F_{q\,max}$	2124	1635	1372
	F_A	708	544	457
CMP.100S	$F_{q\,max}$	2982	2364	2064
	F_A	903	788	688
CMP.100M	$F_{q\,max}$	3174	2515	2195
	F_A	1058	838	732
CMP.100L	$F_{q\,max}$	3413	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

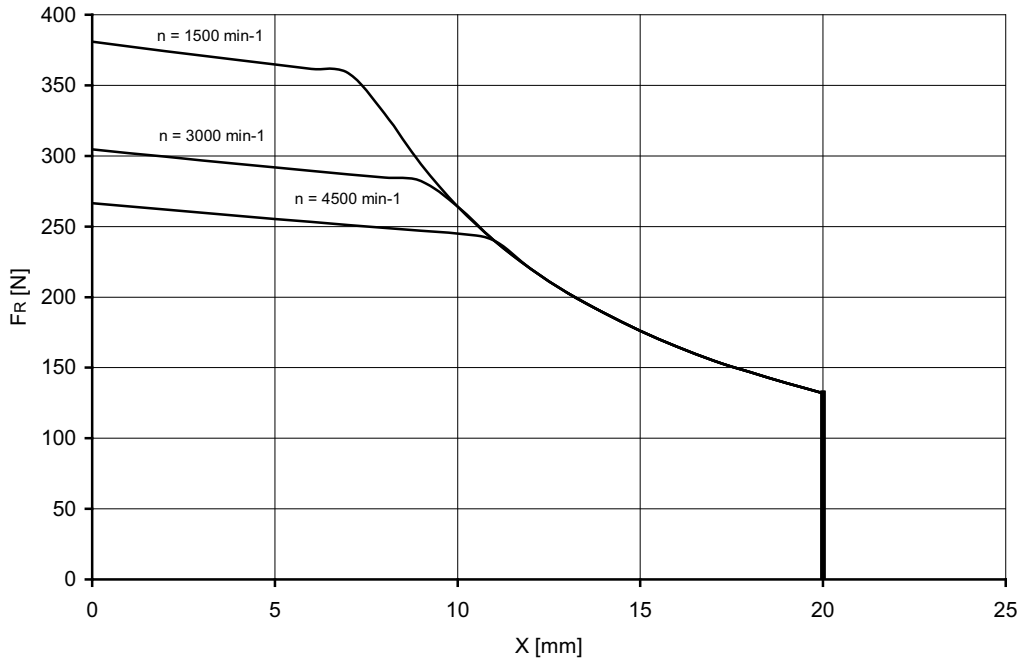
The following figure shows the permitted overhung load at point X.



9007205169060491

Permitted overhung load for CMP40M

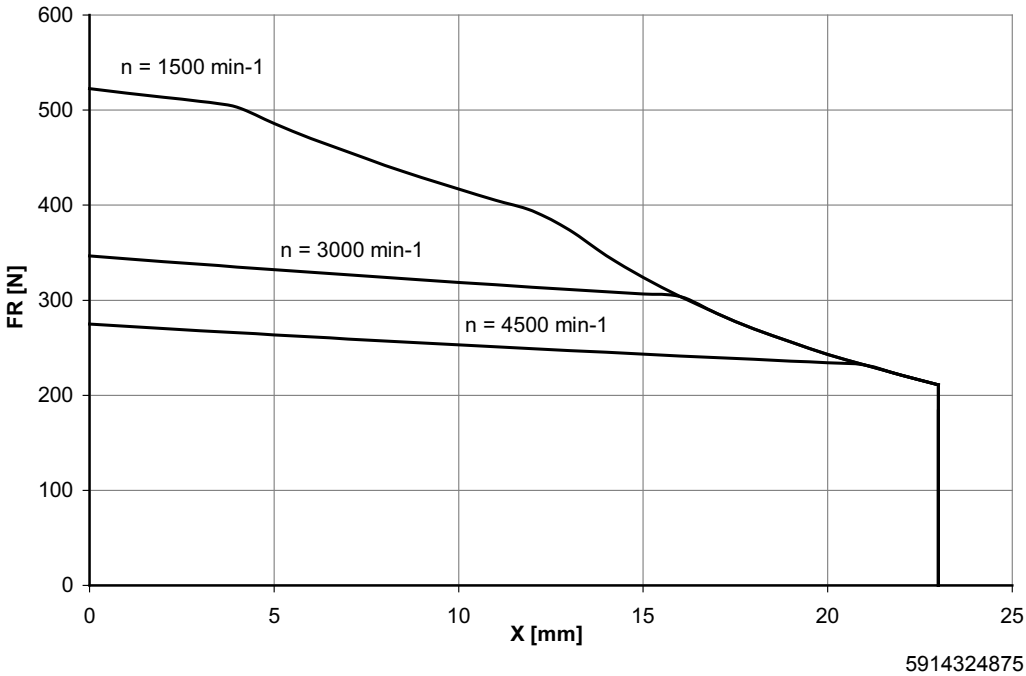
The following figure shows the permitted overhung load at point X.



5914322187

Permitted overhung load for CMP50S

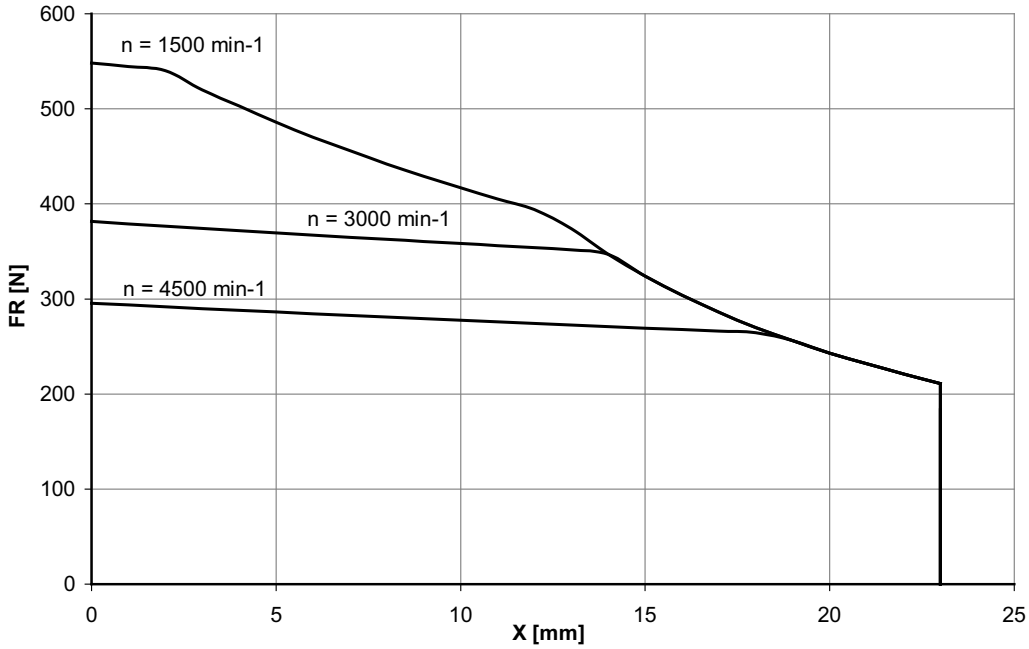
The following figure shows the permitted overhung load at point X.



5914324875

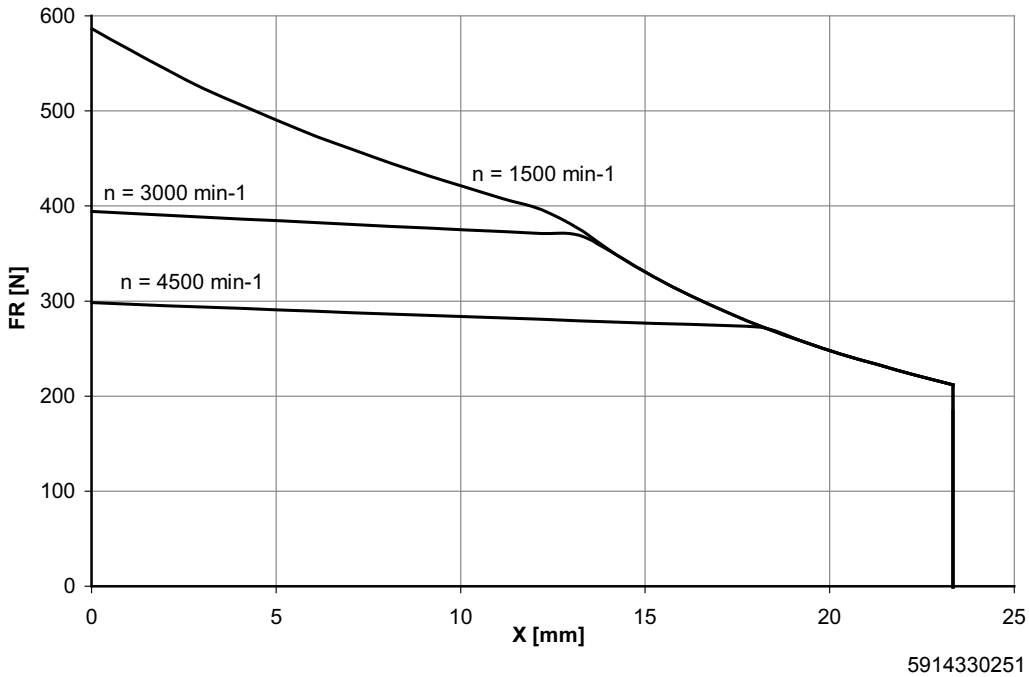
Permitted overhung load for CMP50M

The following figure shows the permitted overhung load at point X.



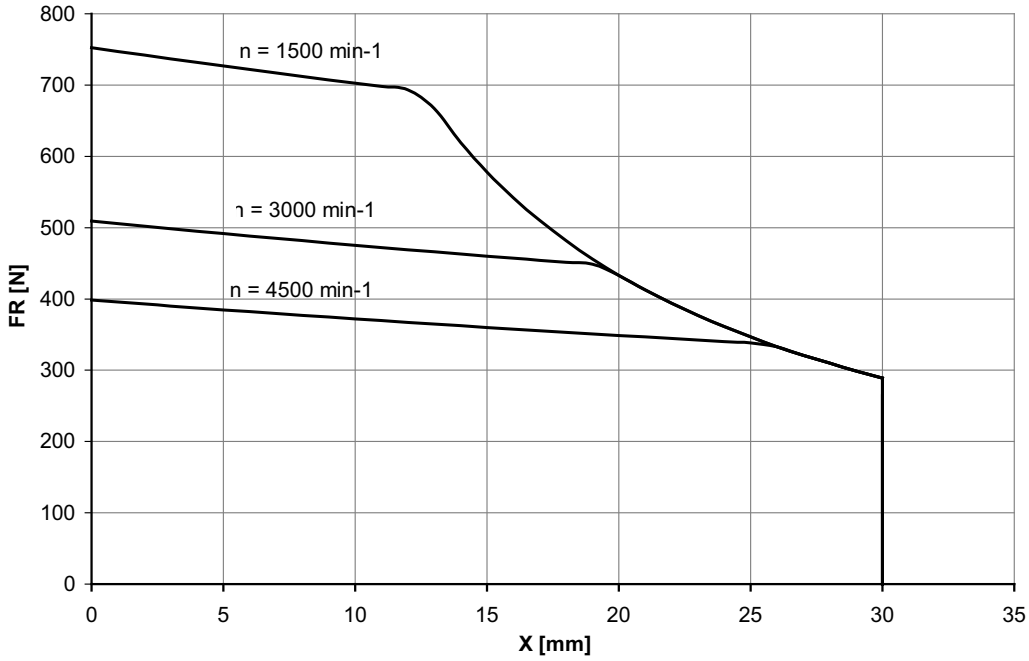
Permitted overhung load for CMP50L

The following figure shows the permitted overhung load at point X.



Permitted overhung load for CMP63S

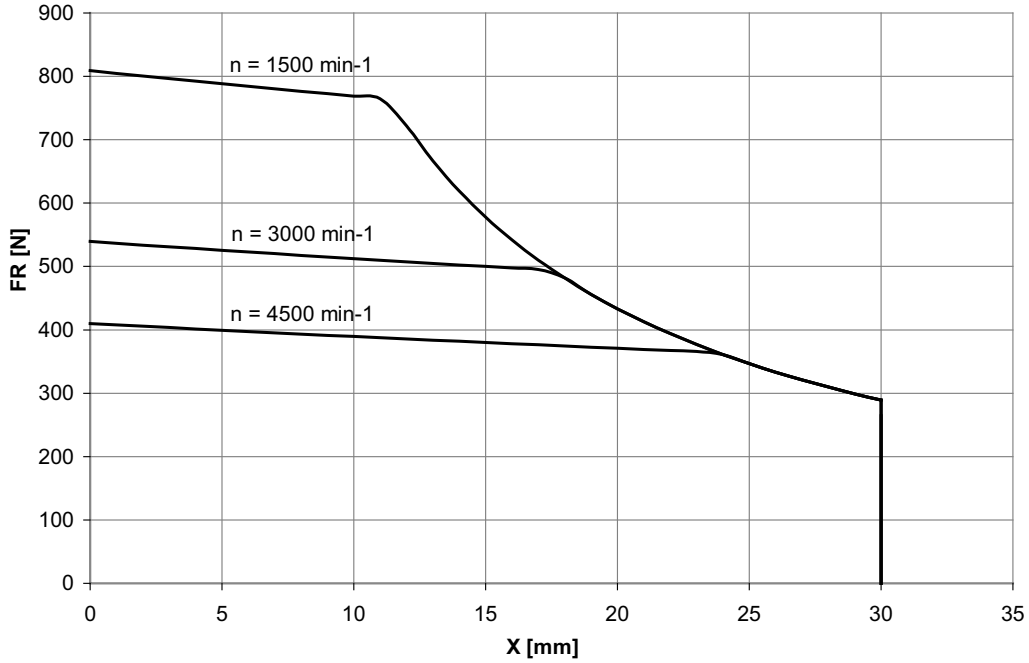
The following figure shows the permitted overhung load at point X.



5914332939

Permitted overhung load for CMP63M

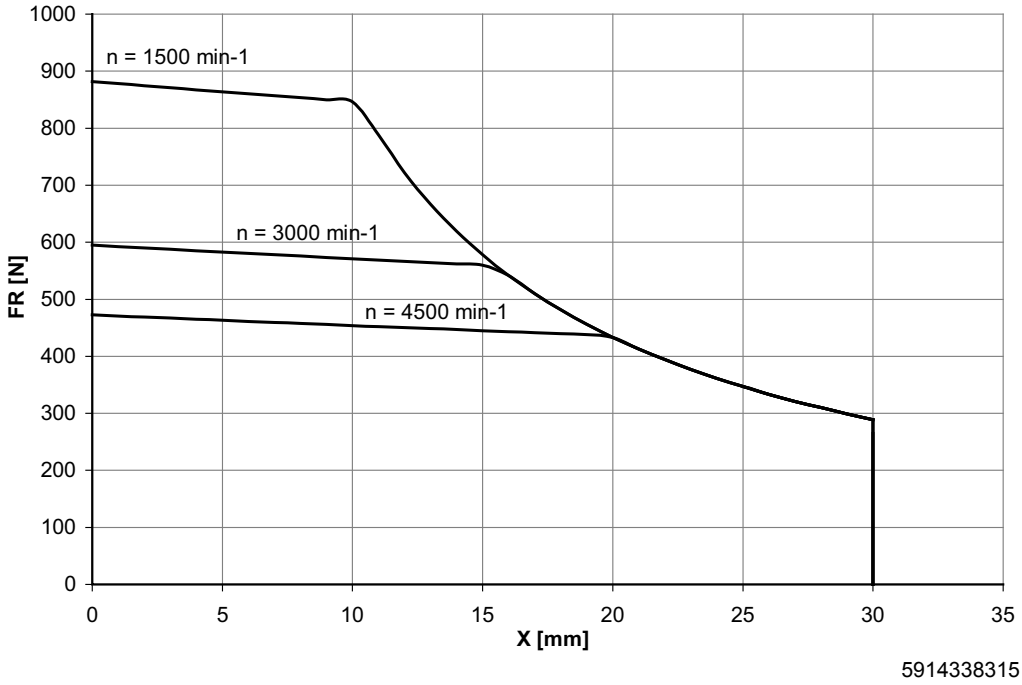
The following figure shows the permitted overhung load at point X.



5914335627

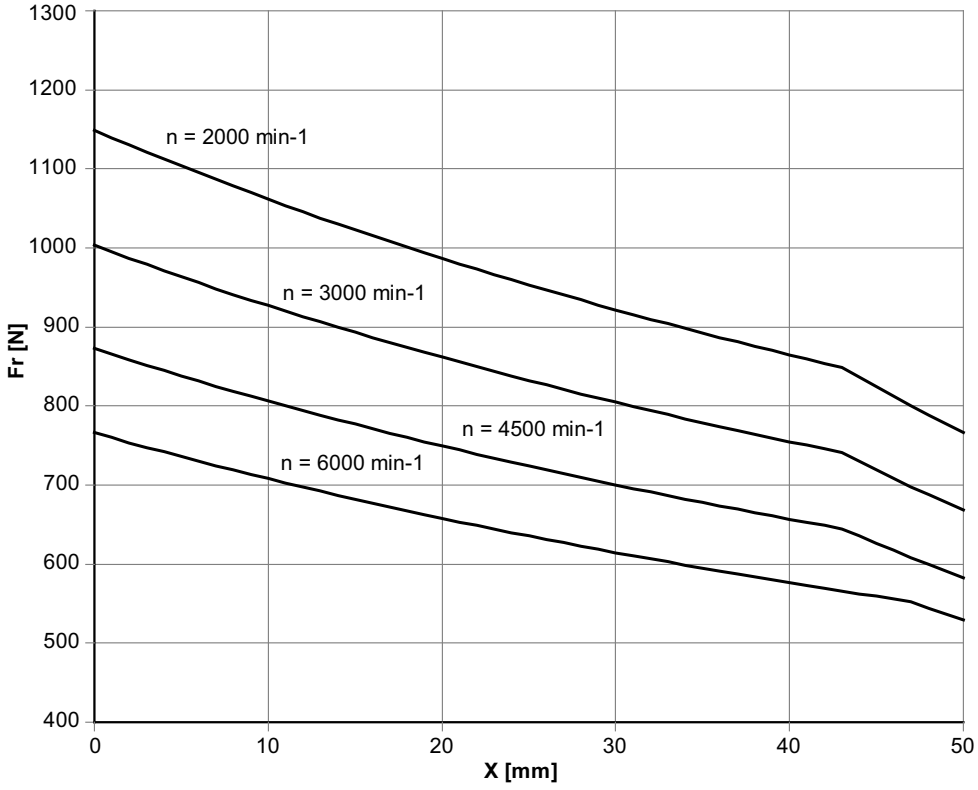
Permitted overhung load for CMP63L

The following figure shows the permitted overhung load at point X.

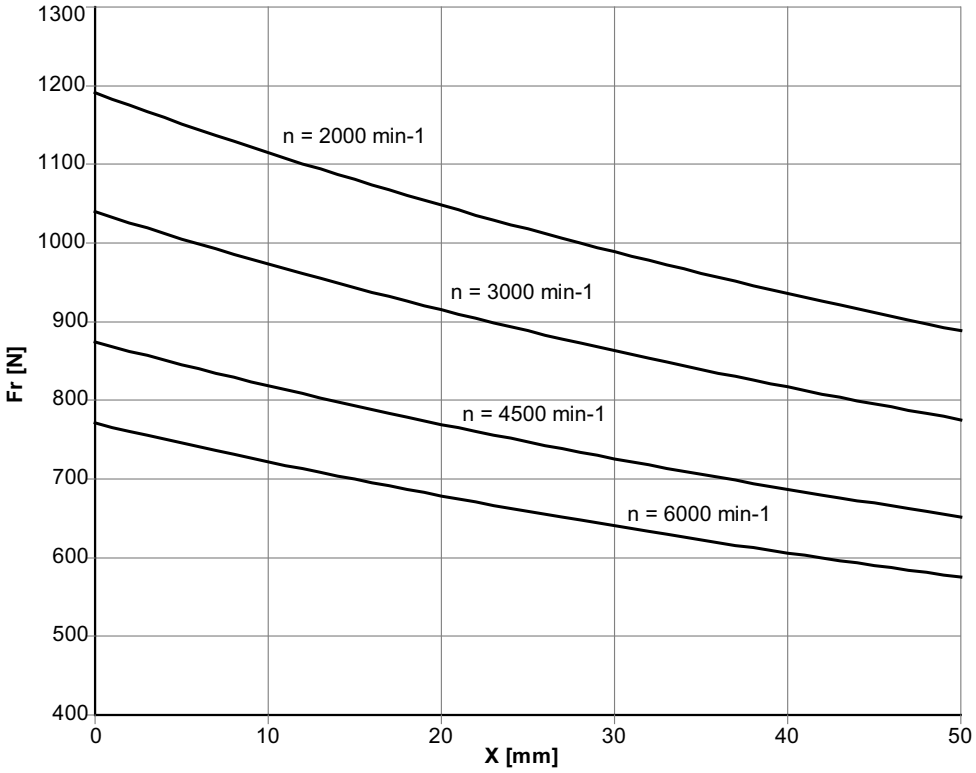


5914338315

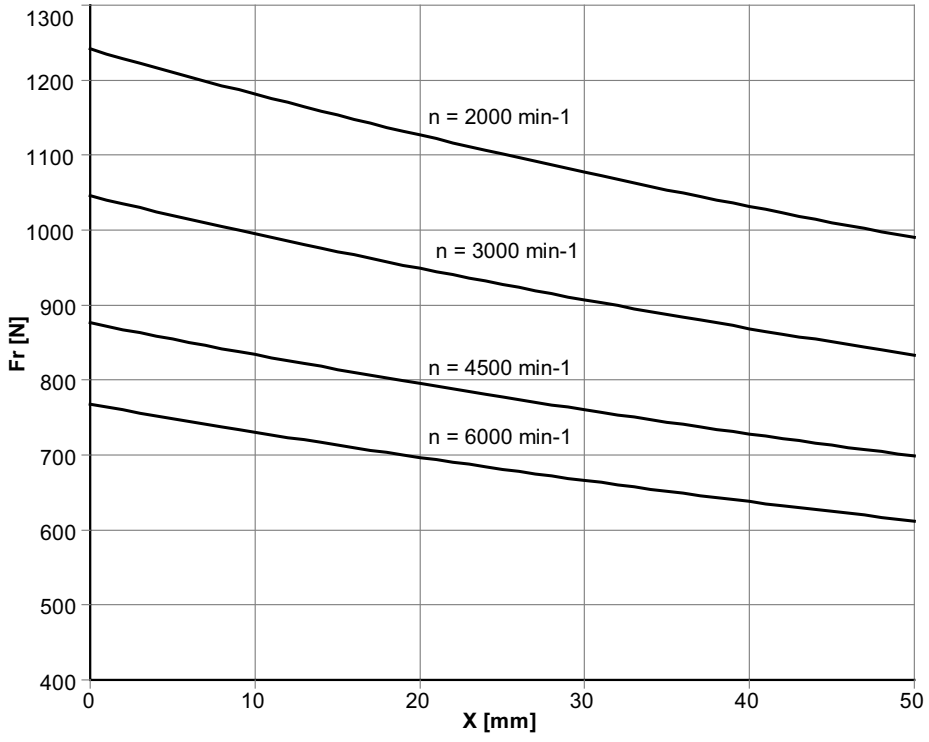
Permitted overhung load for CMP.71S



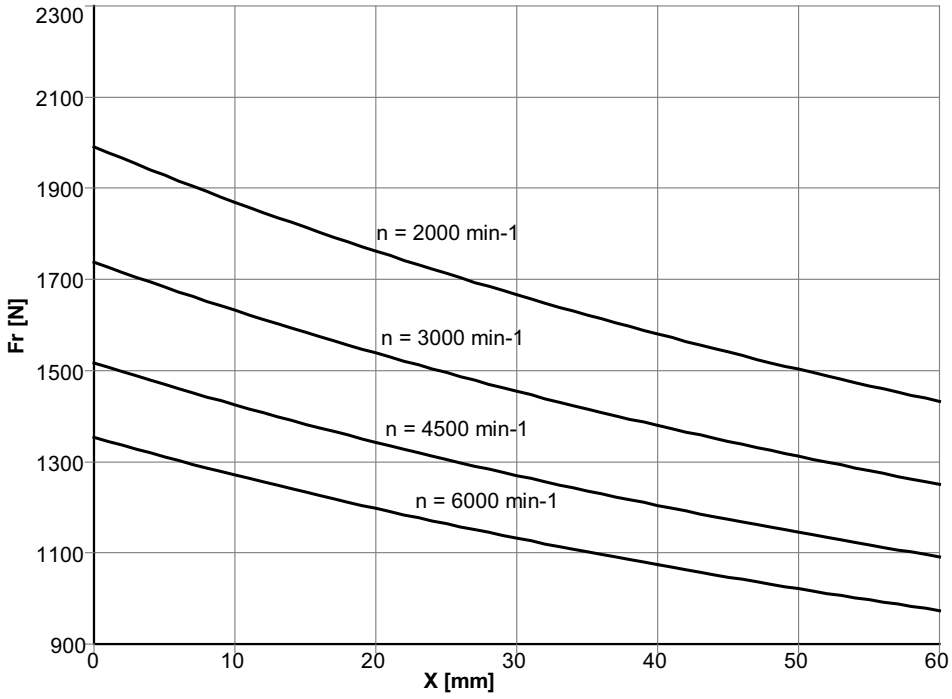
Permitted overhung load for CMP.71M



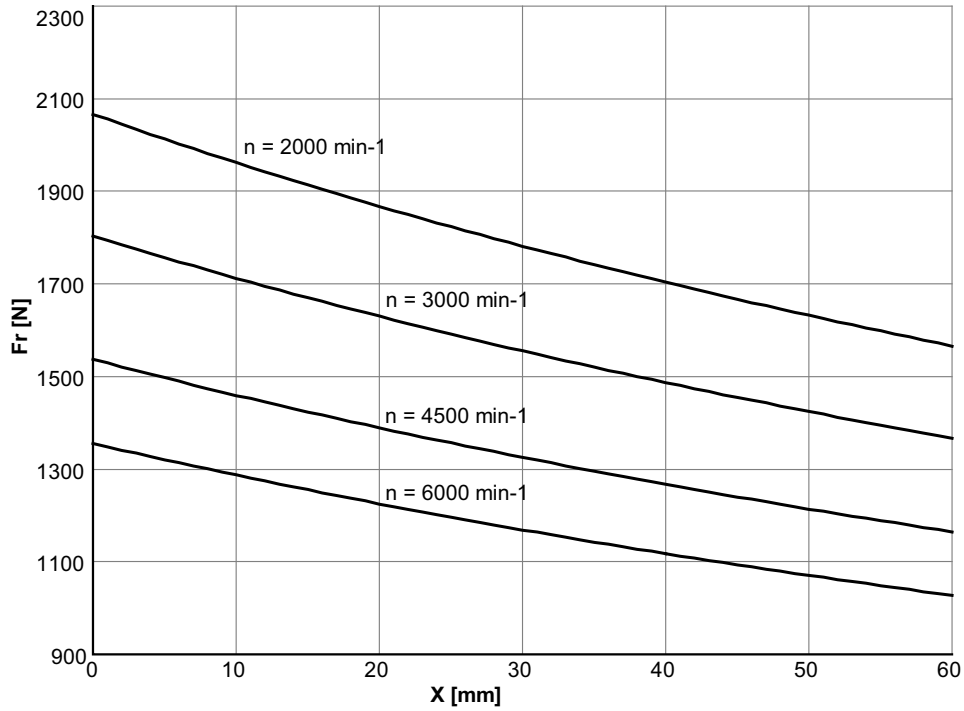
Permitted overhung load for CMP.71L



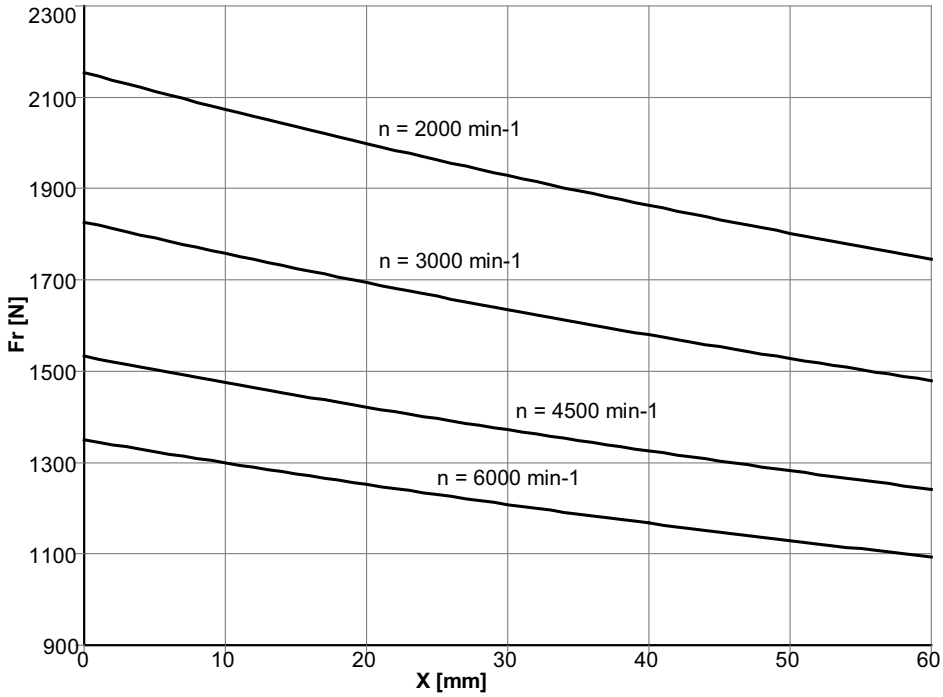
Permitted overhung load for CMP.80S



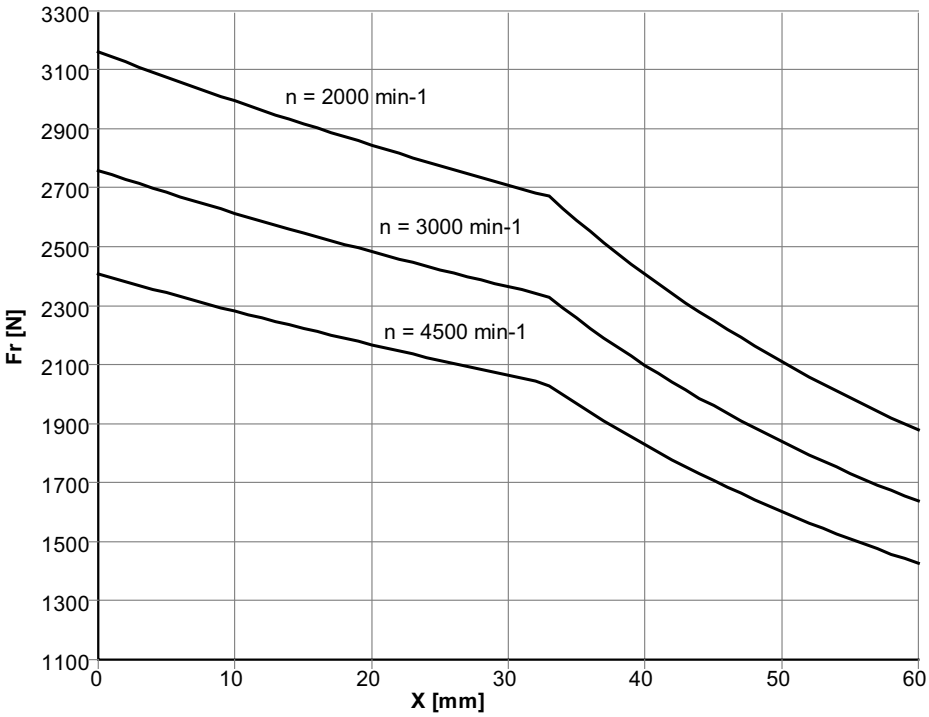
Permitted overhung load for CMP.80M



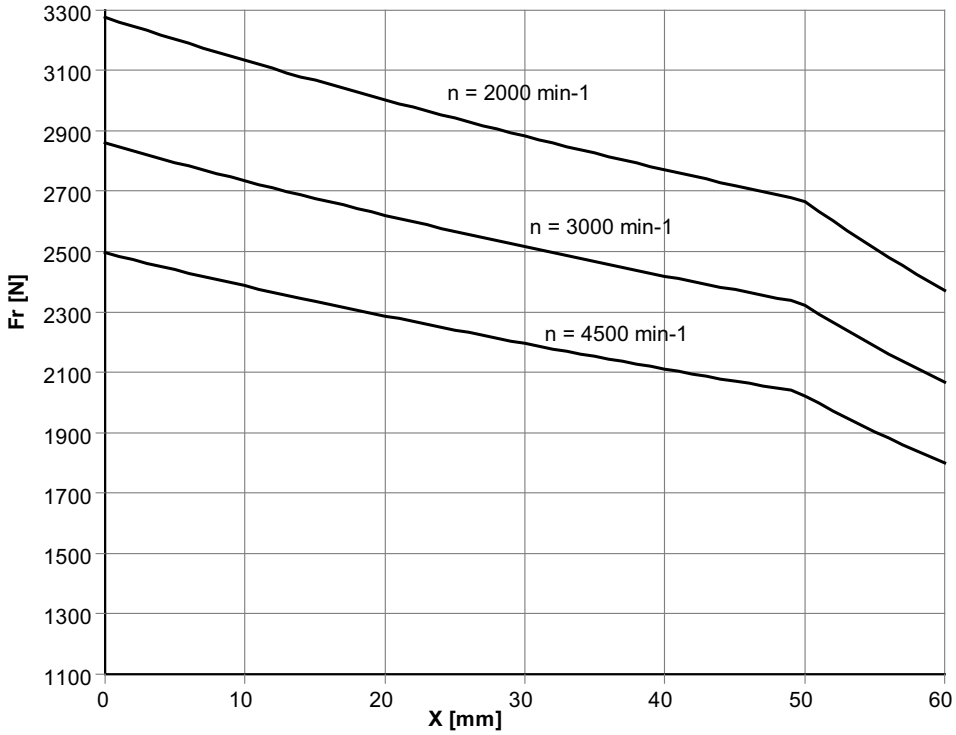
Permitted overhung load for CMP.80L



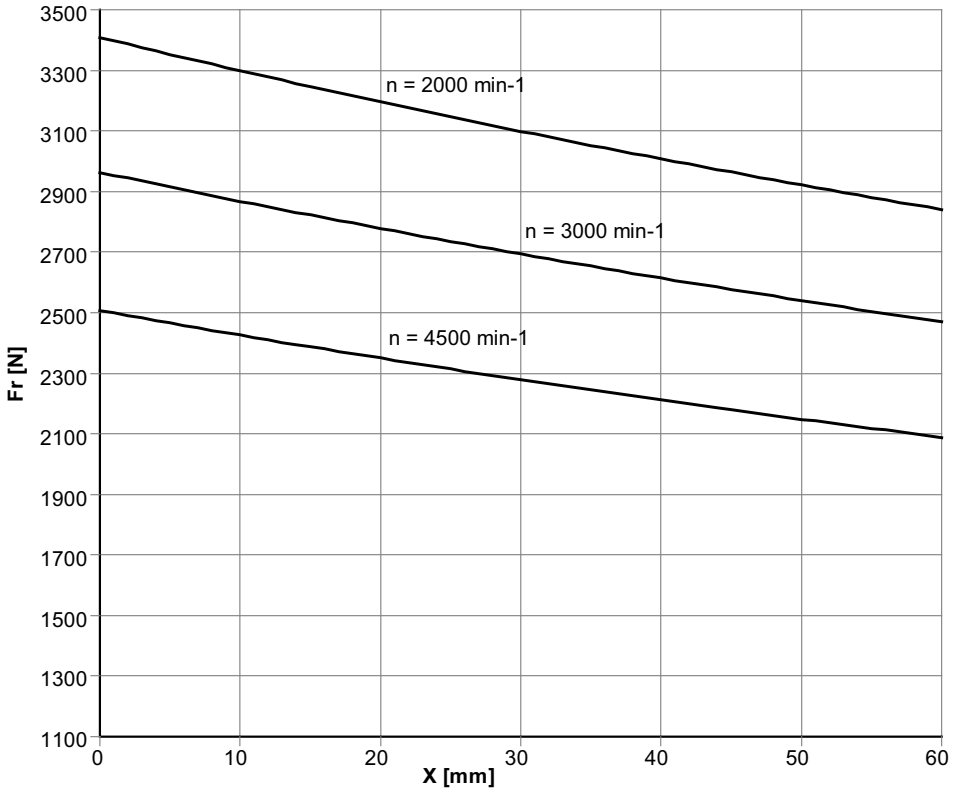
Permitted overhung load for CMP.100S



Permitted overhung load for CMP.100M



Permitted overhung load for CMP.100L

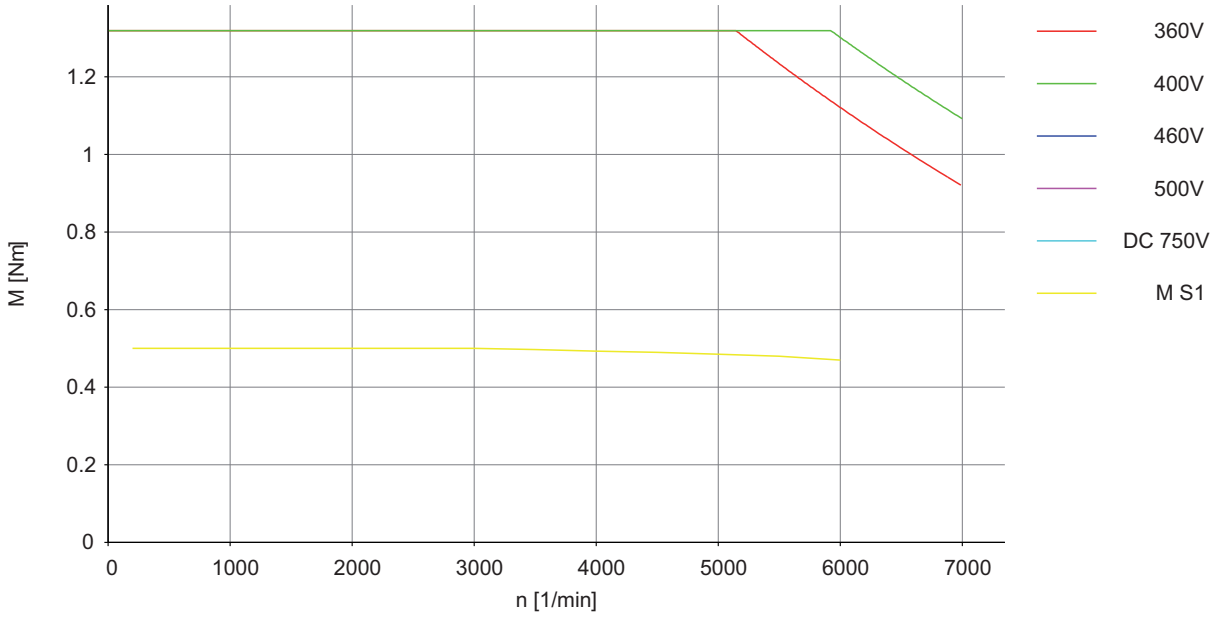


8.6 Dynamic and thermal limit characteristic curves

INFORMATION

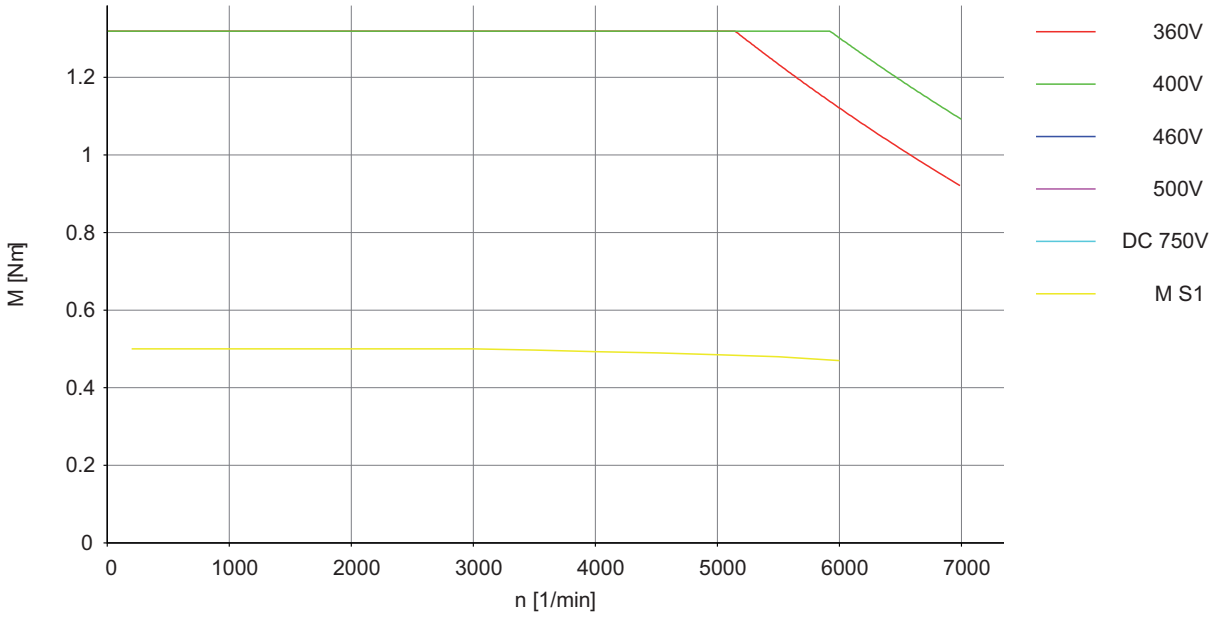
The max. permitted motor speed is n_{max} = 4500 rpm. The motors may not be operated at a higher speed.

8.6.1 CMP40S n = 3000 rpm



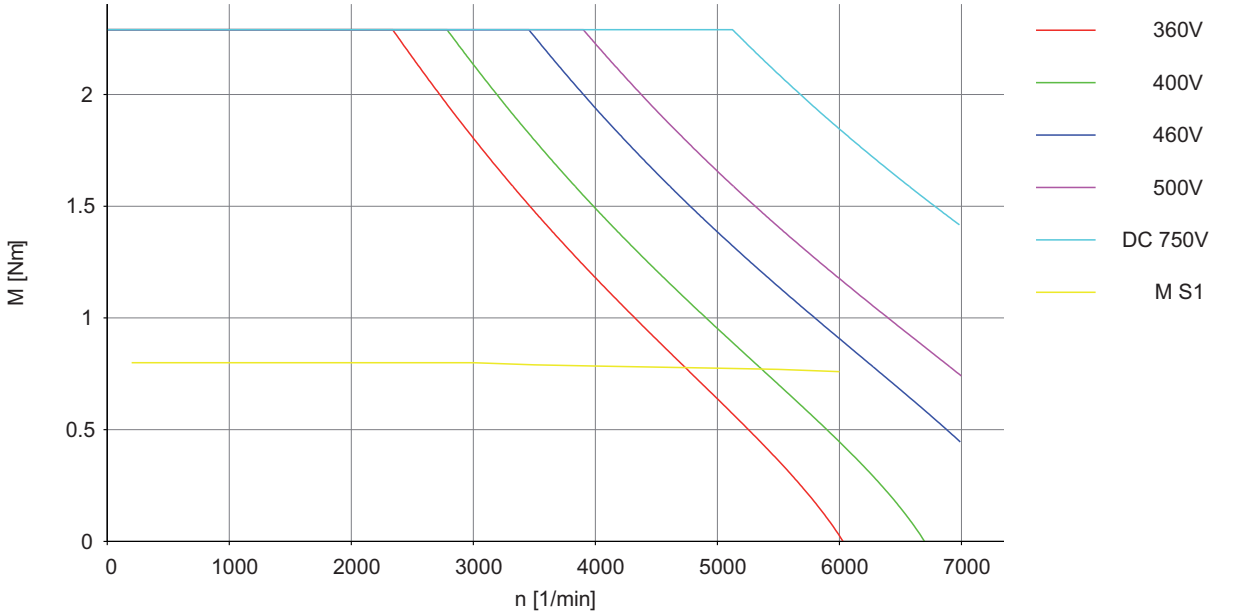
9807376011

8.6.2 CMP40S n = 4500 rpm



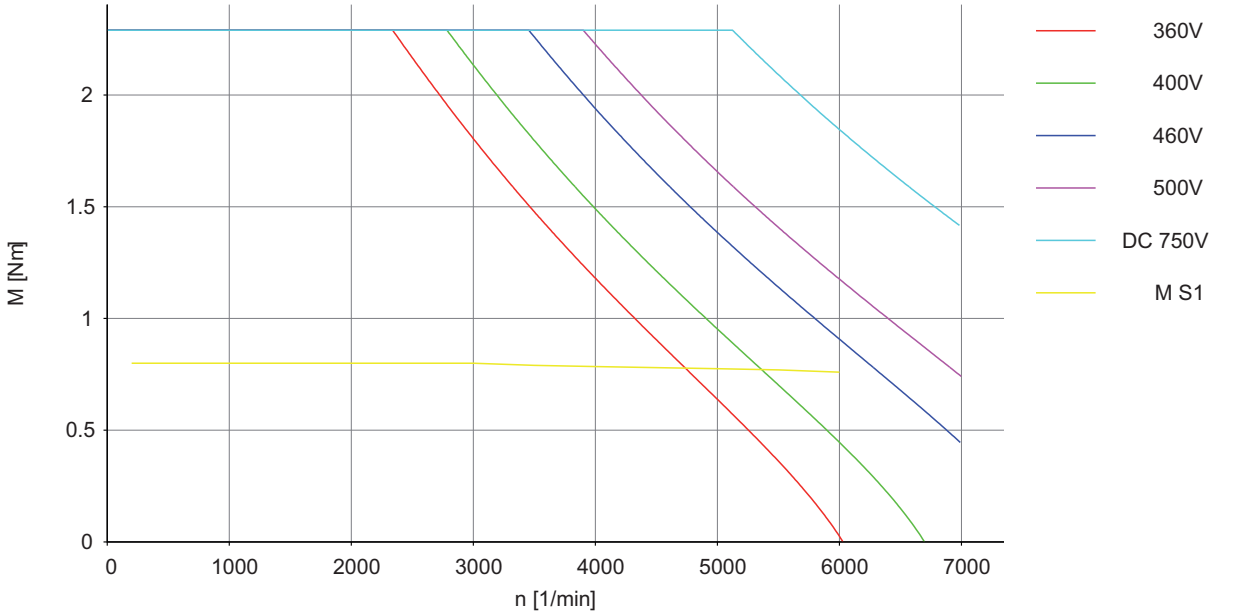
9807377931

8.6.3 CMP40M n = 3000 rpm



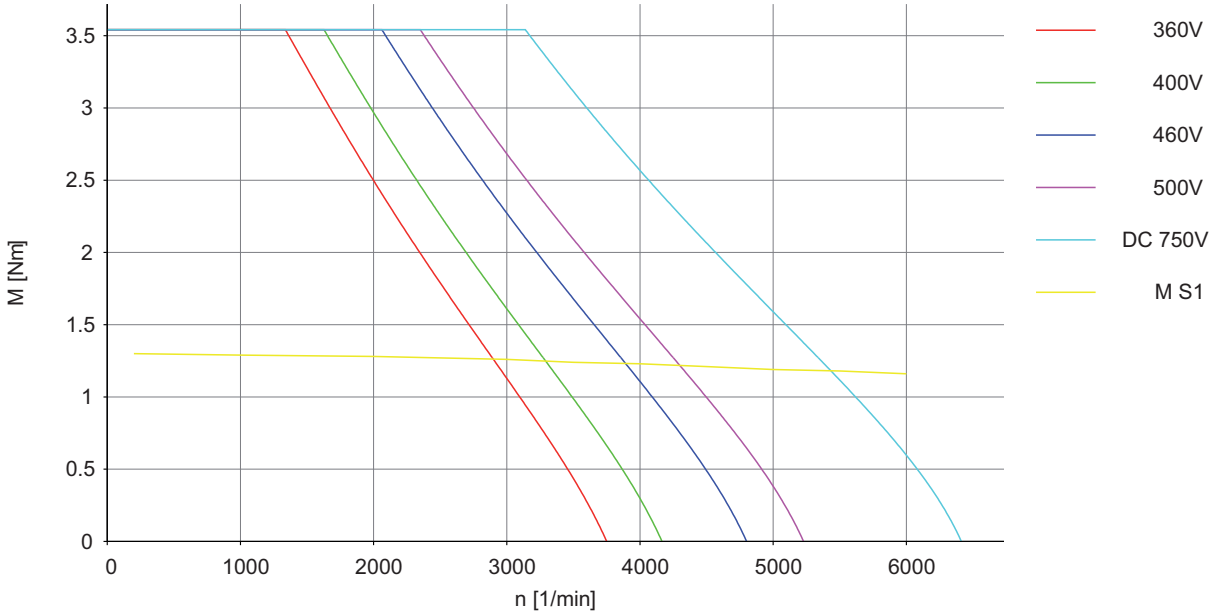
9805720971

8.6.4 CMP40M n = 4500 rpm



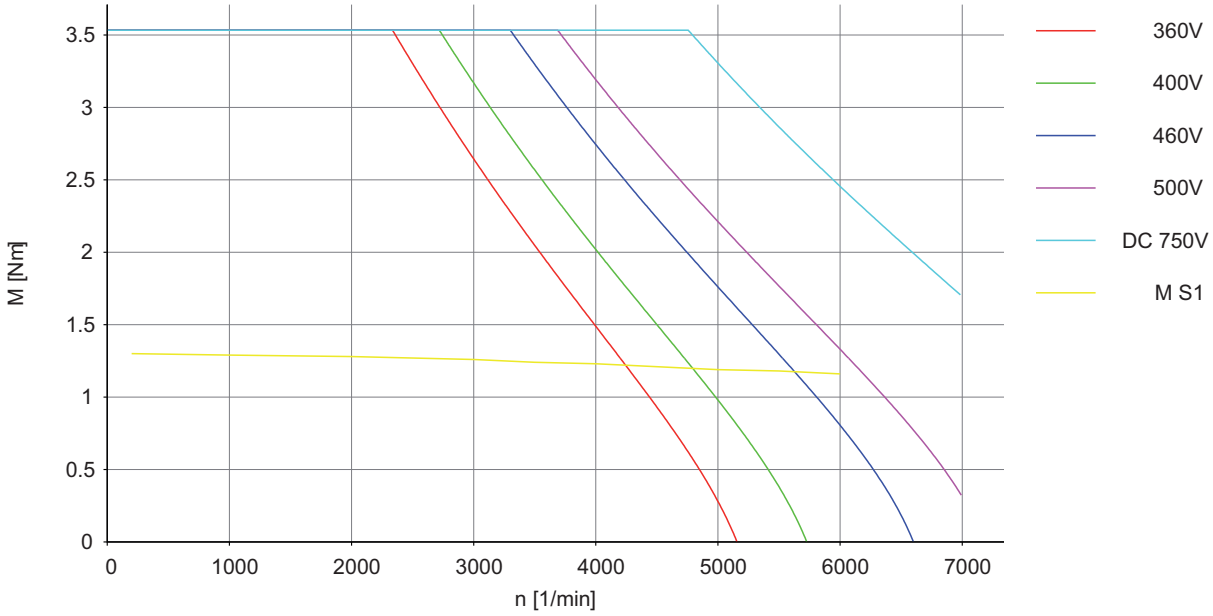
9807374091

8.6.5 CMP50S n = 3000 rpm



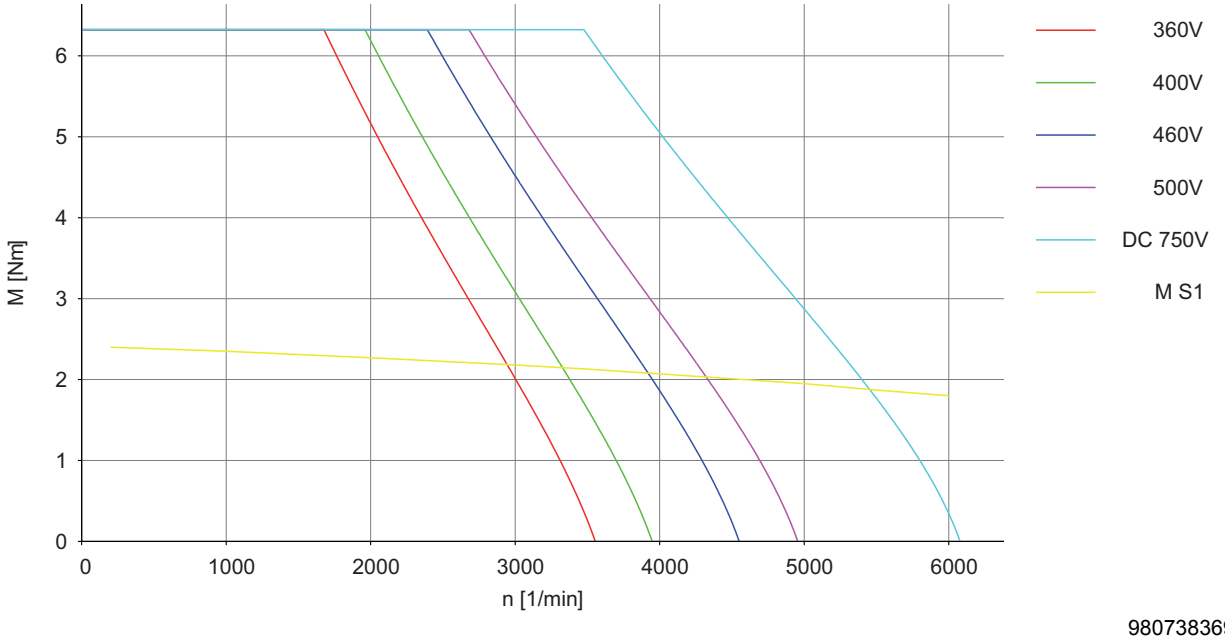
9807387531

8.6.6 CMP50S n = 4500 rpm



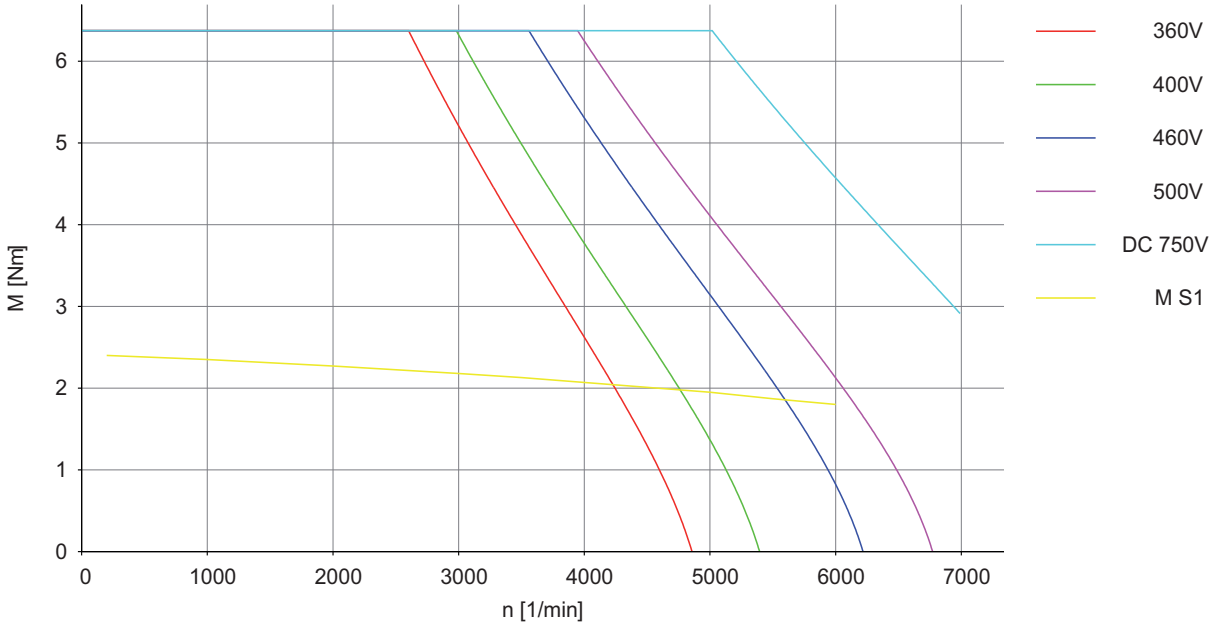
9807389451

8.6.7 CMP50M n = 3000 rpm



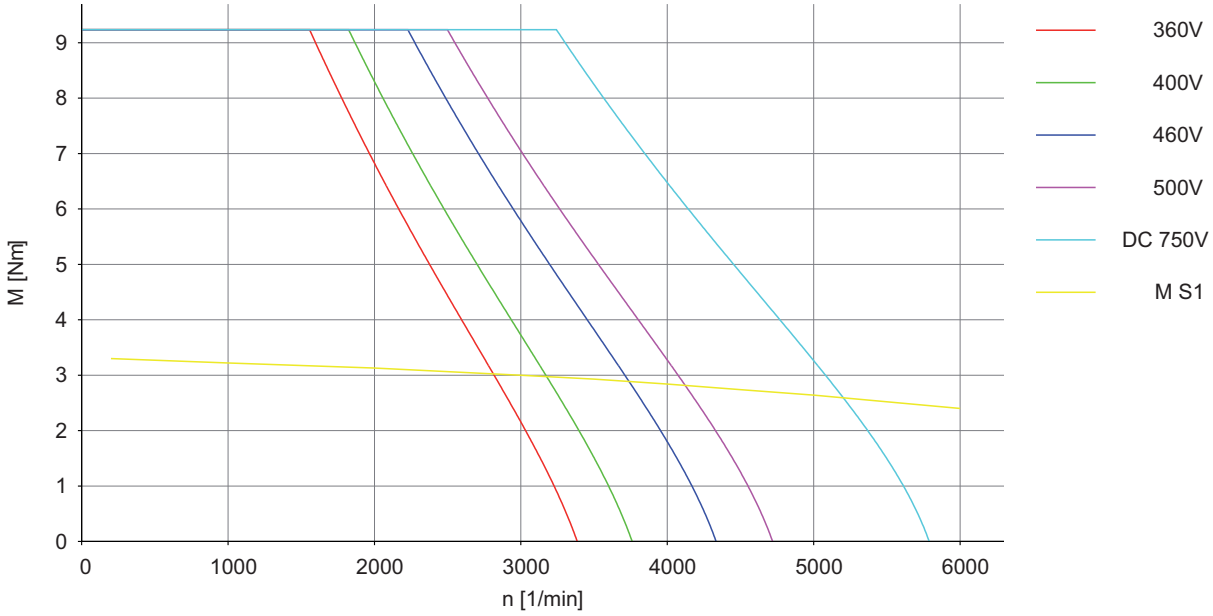
9807383691

8.6.8 CMP50M n = 4500 rpm



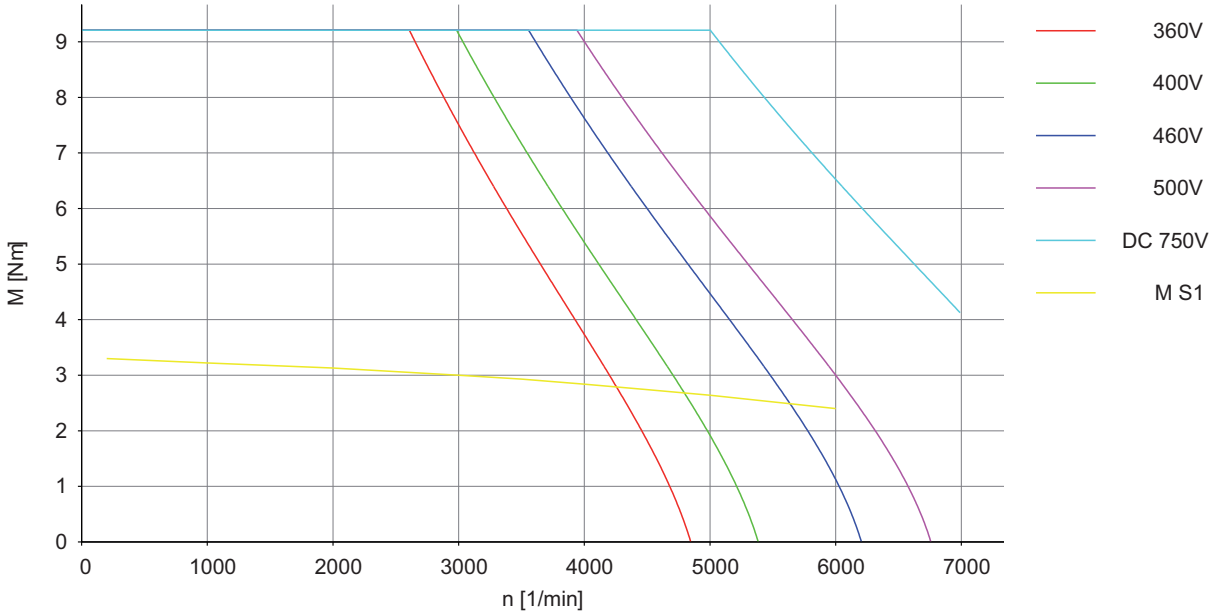
9807385611

8.6.9 CMP50L n = 3000 rpm



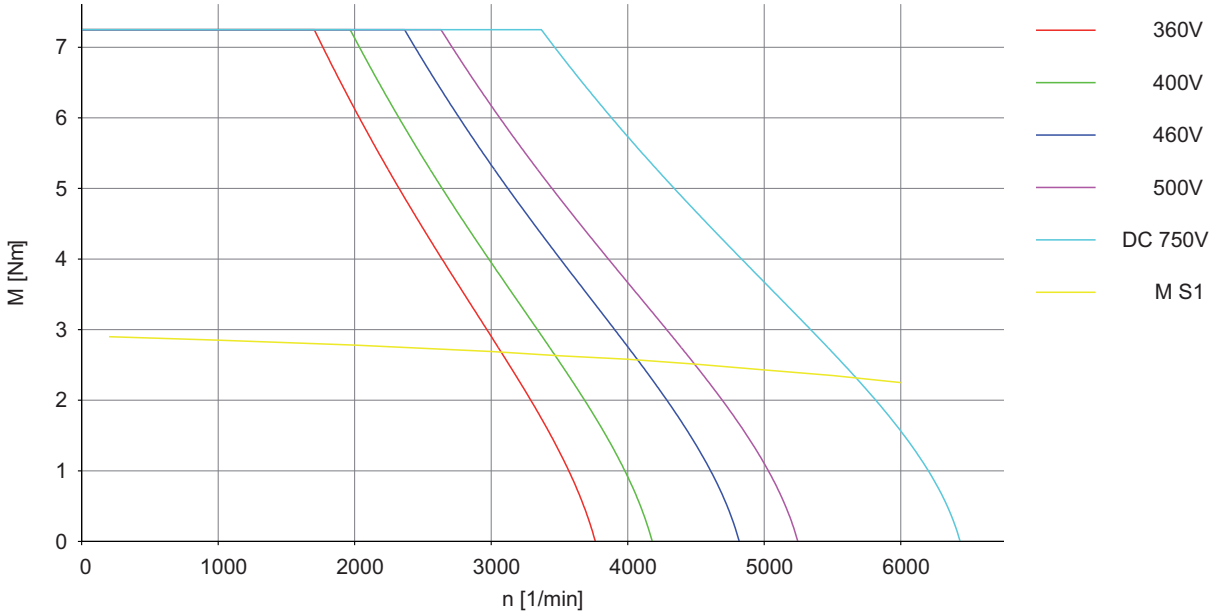
9807379851

8.6.10 CMP50L n = 4500 rpm



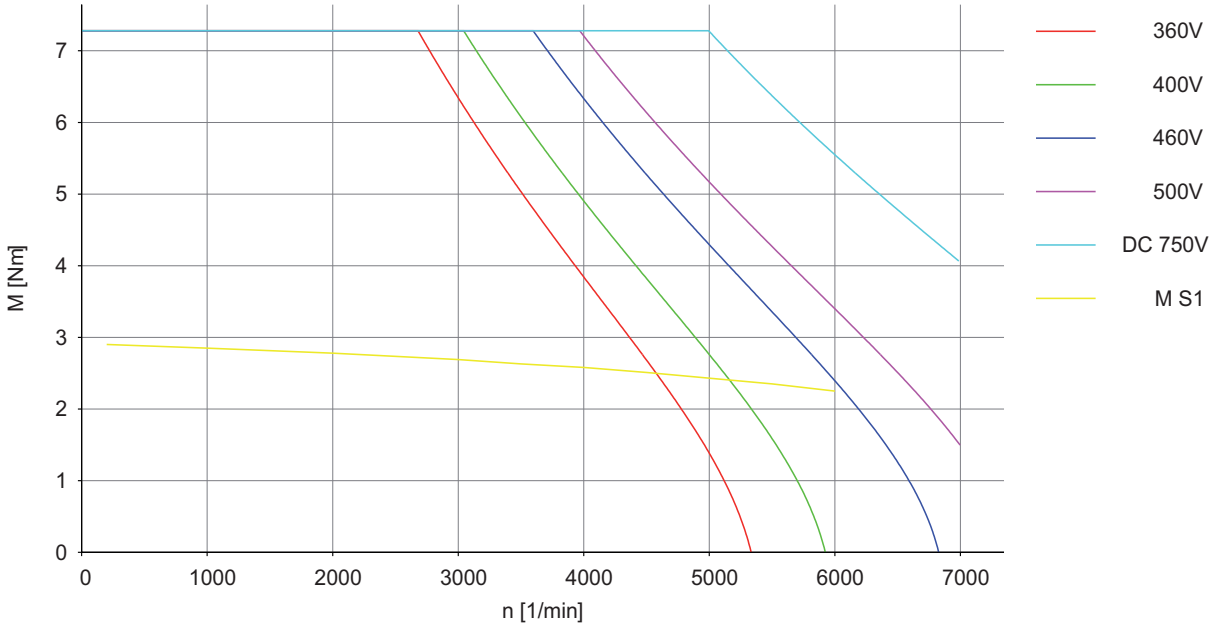
9807381771

8.6.11 CMP63S n = 3000 rpm



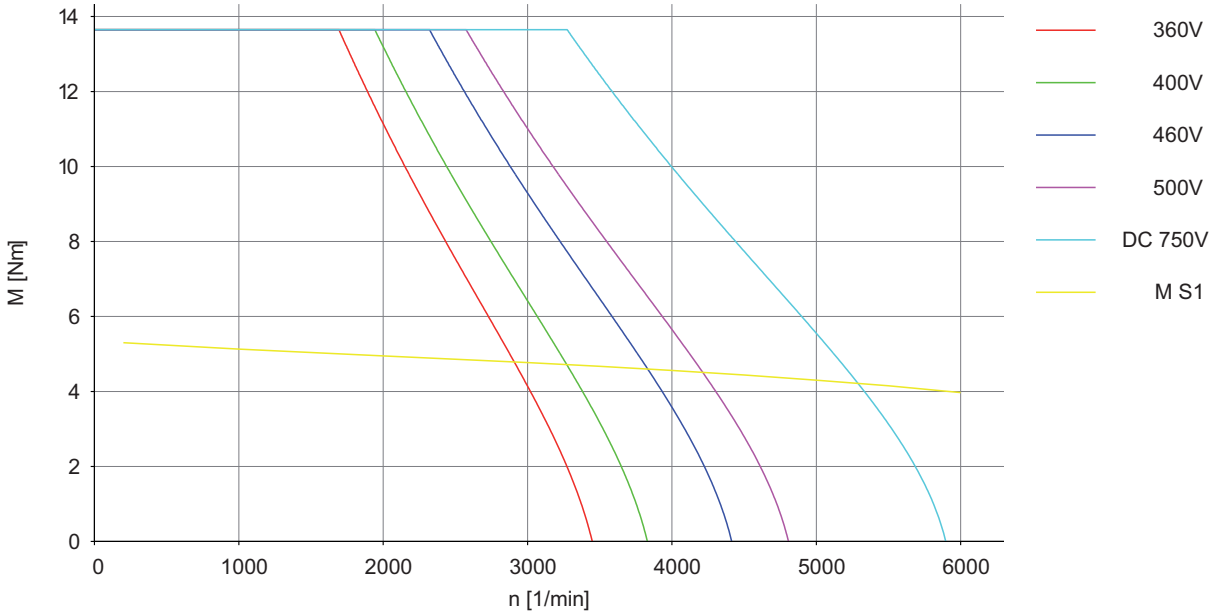
9807399051

8.6.12 CMP63S n = 4500 rpm



9807400971

8.6.13 CMP63M n = 3000 rpm



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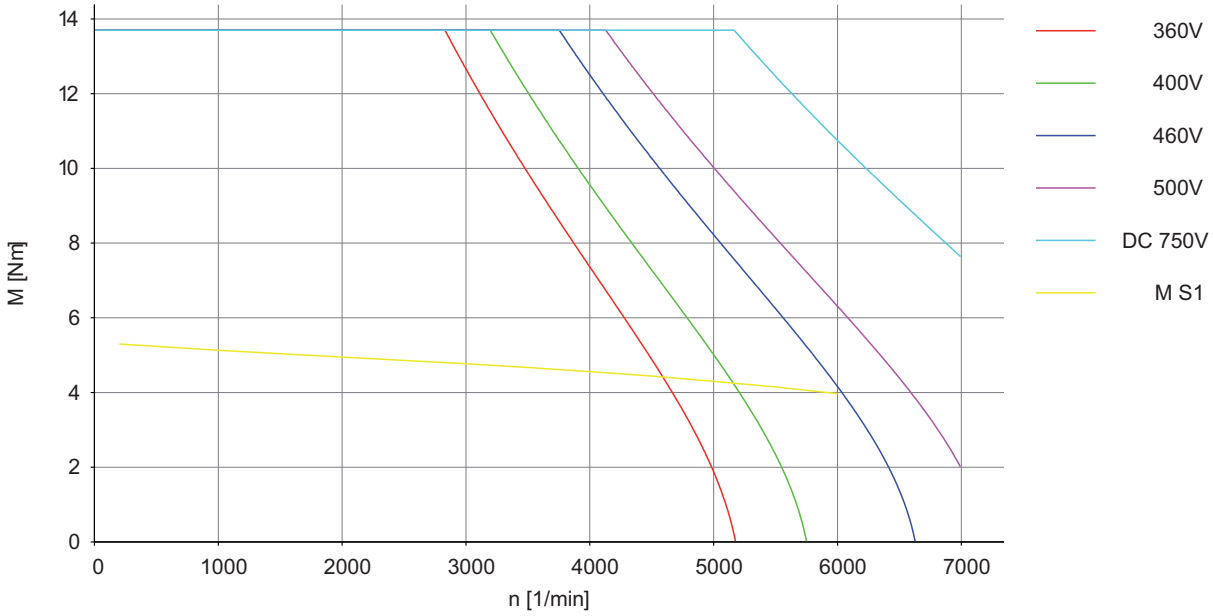

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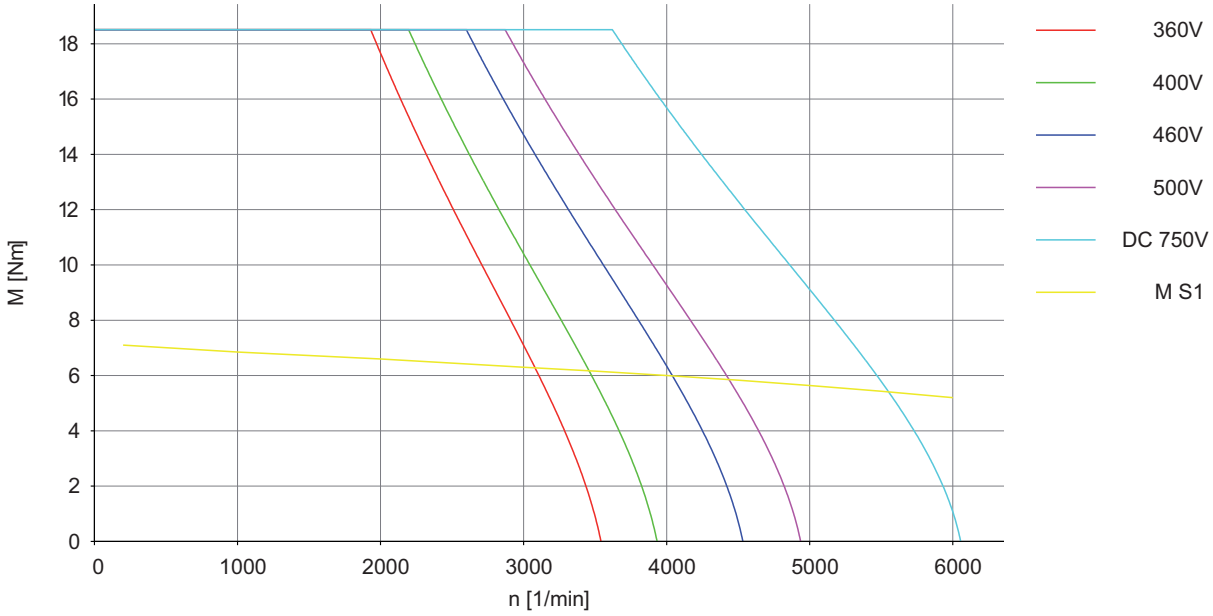

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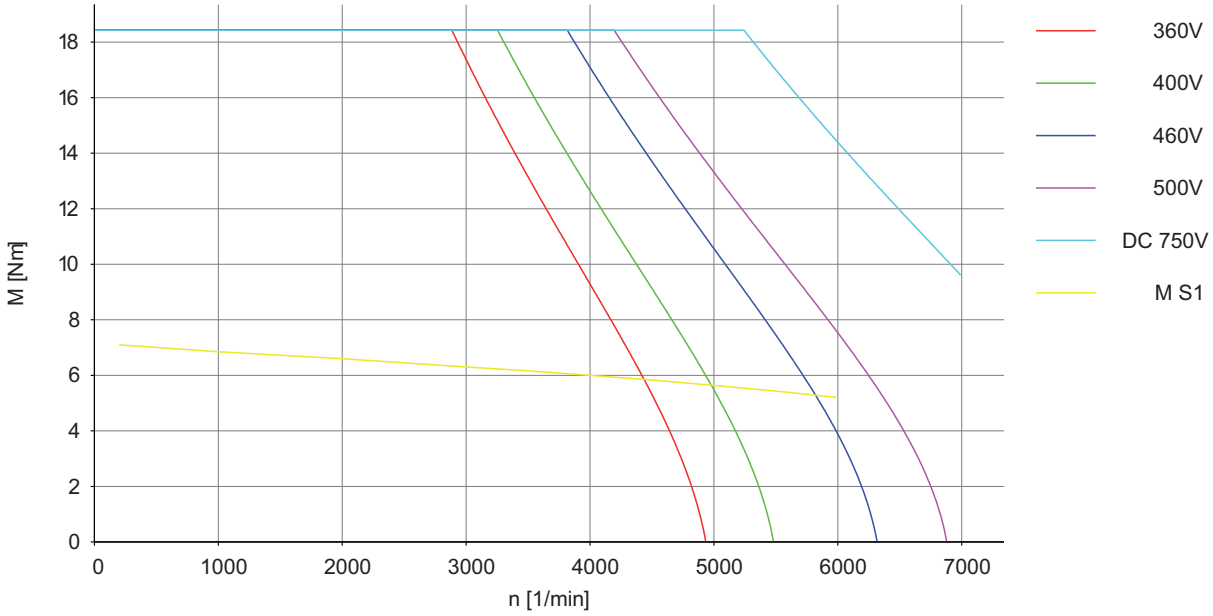

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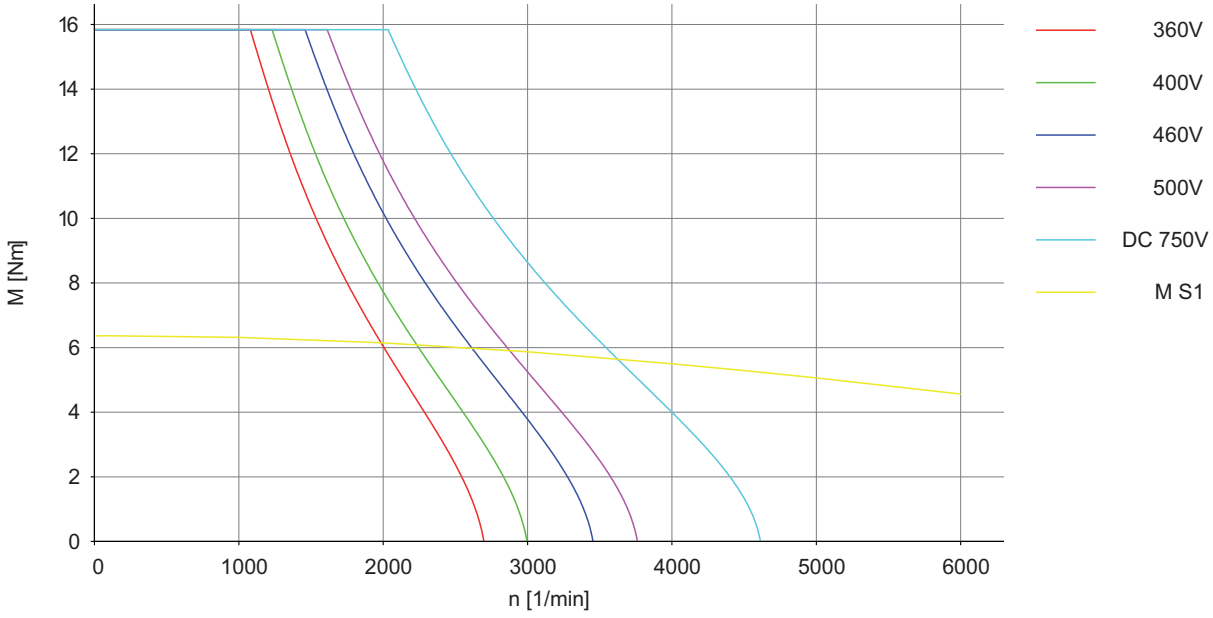
8.6.17 CMP.71S n = 2000 rpm



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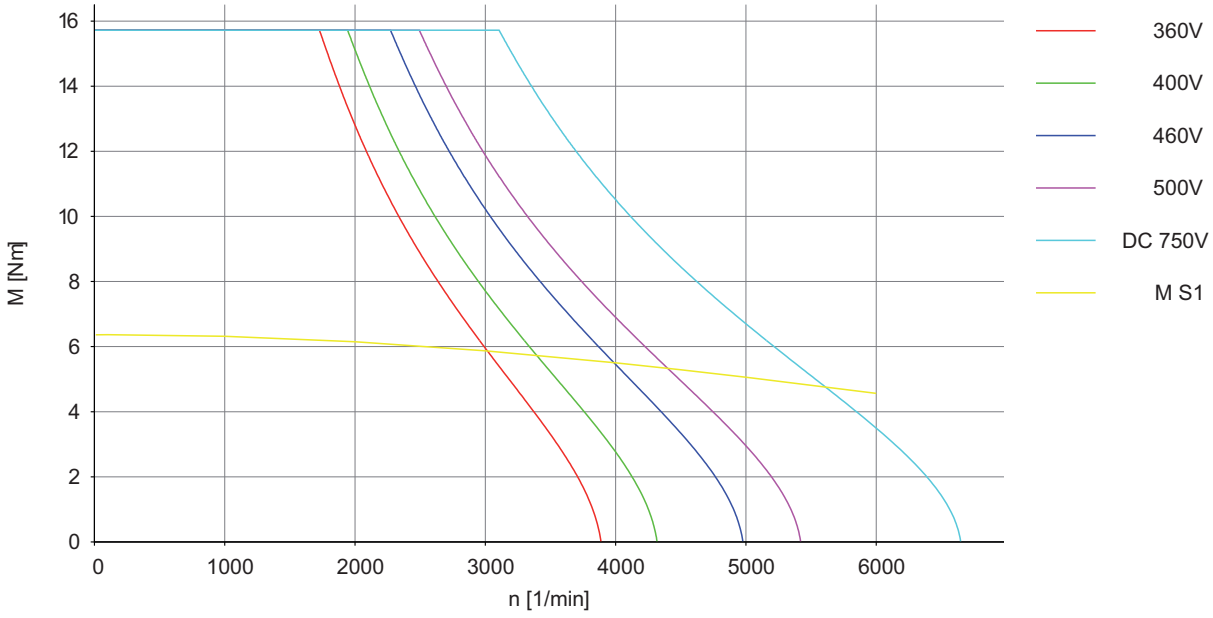

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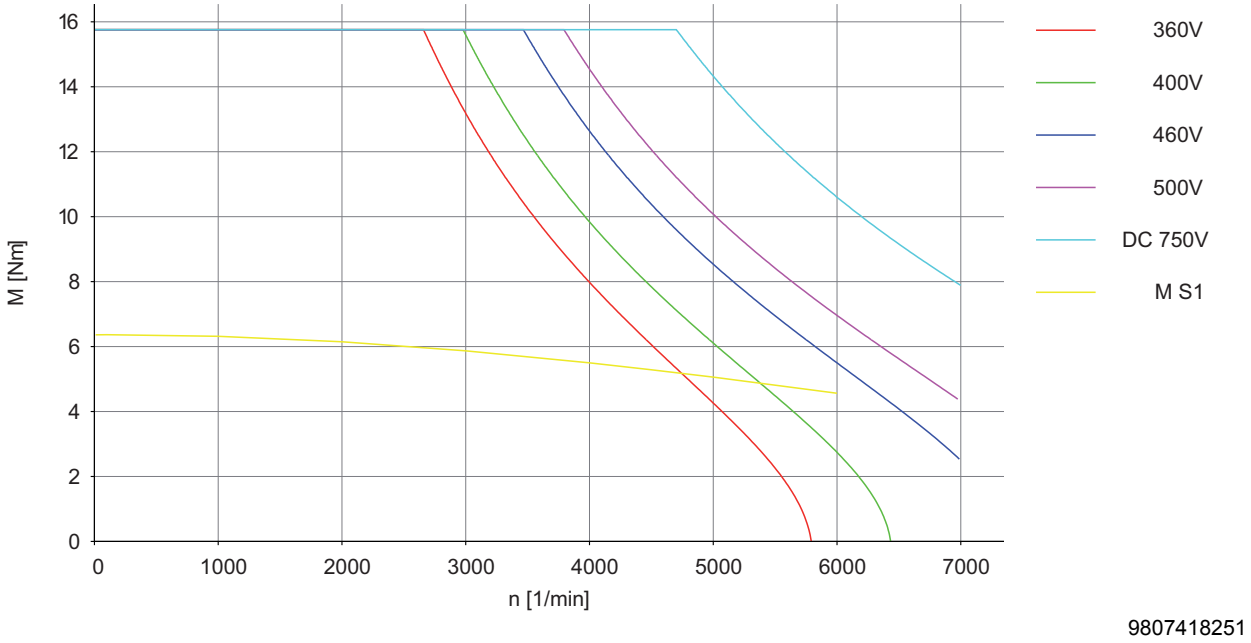
8.6.19 CMP.71S n = 4500 rpm



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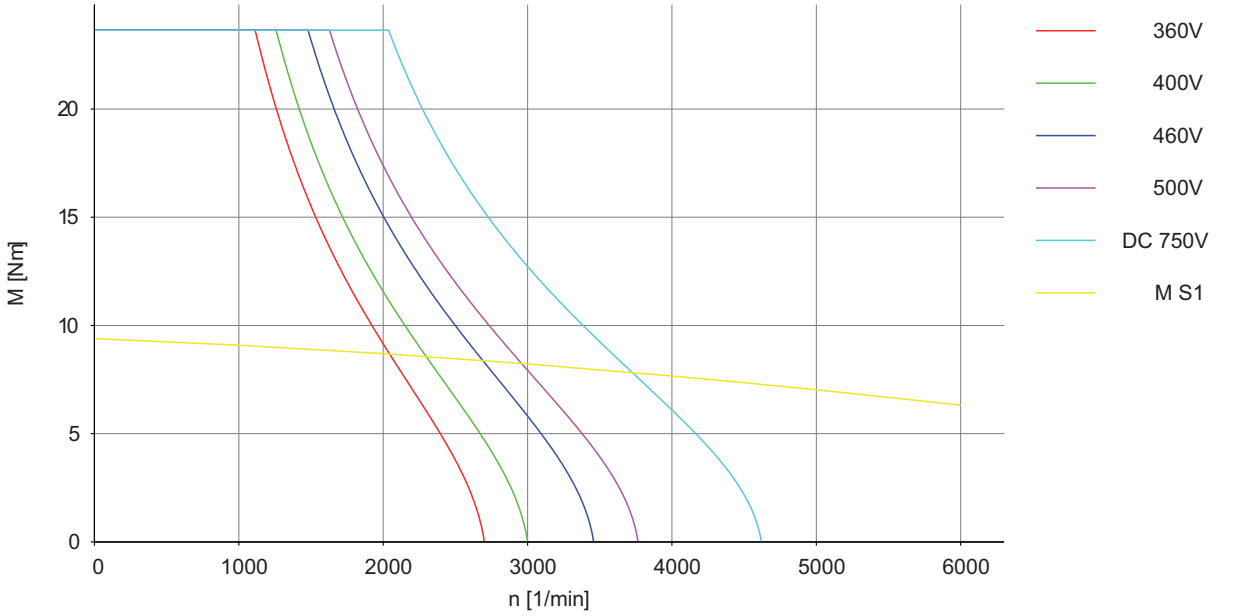

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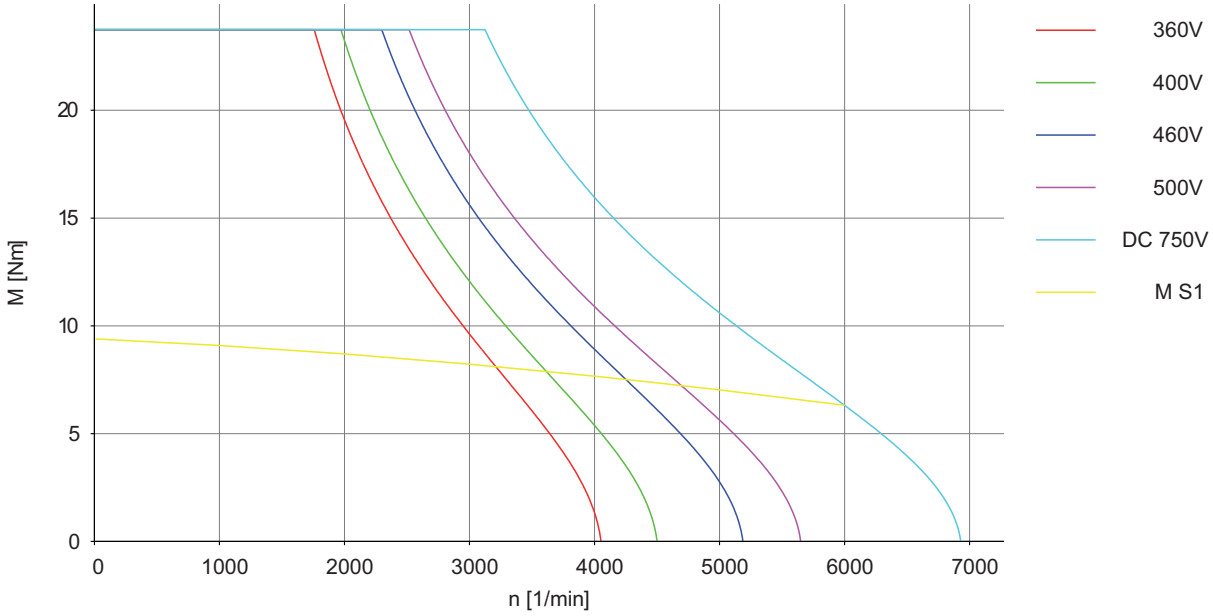

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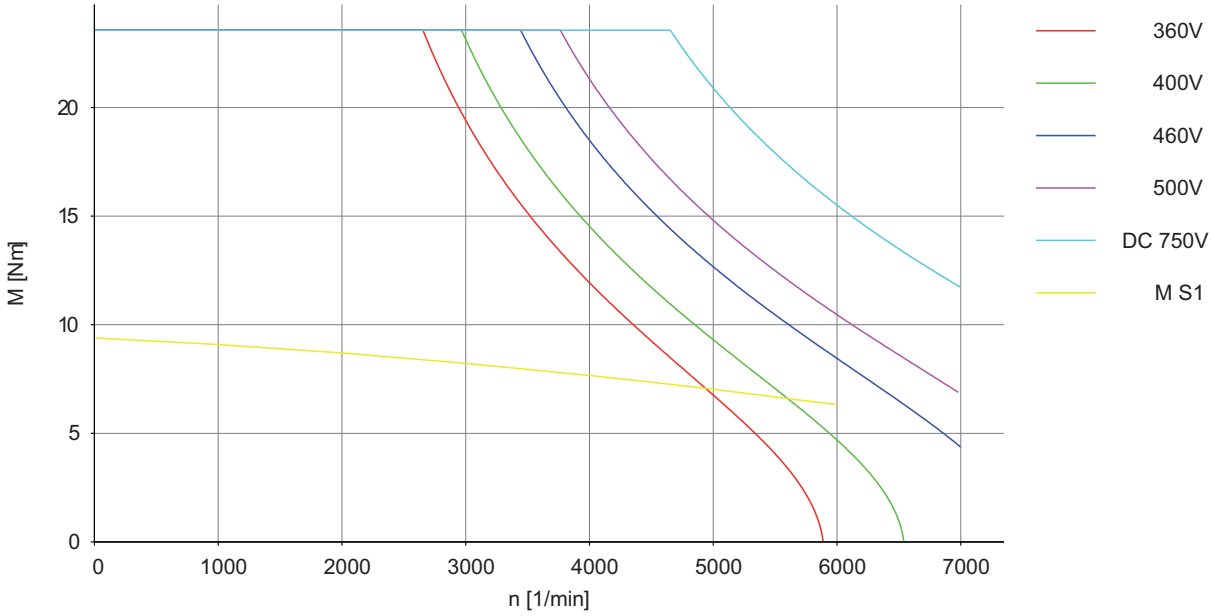

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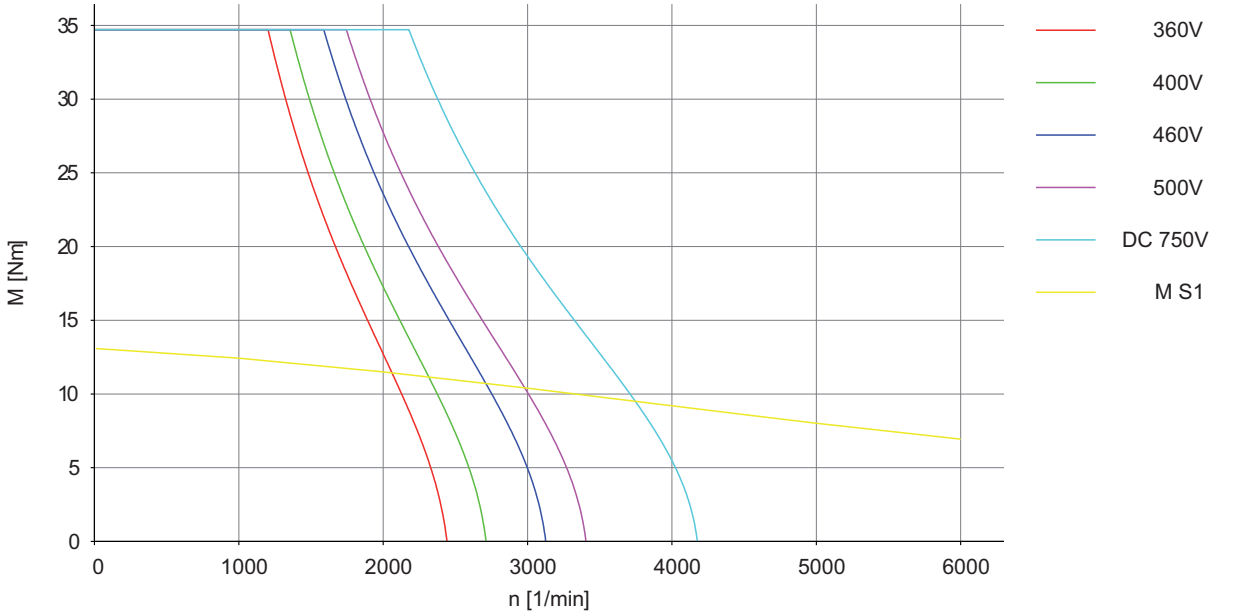

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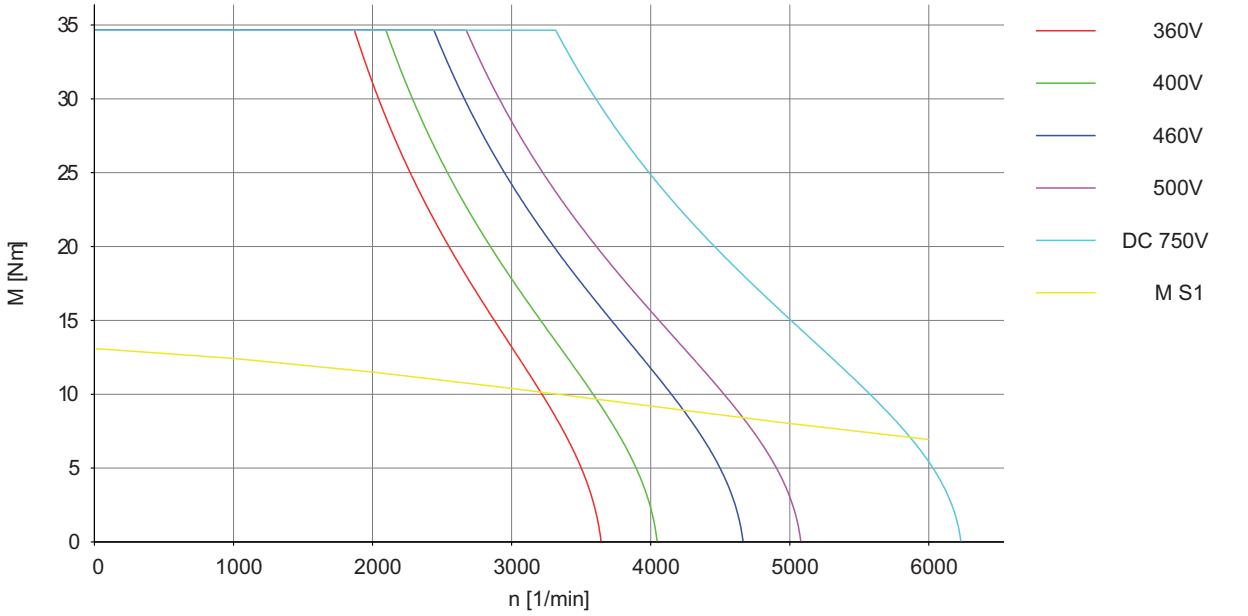

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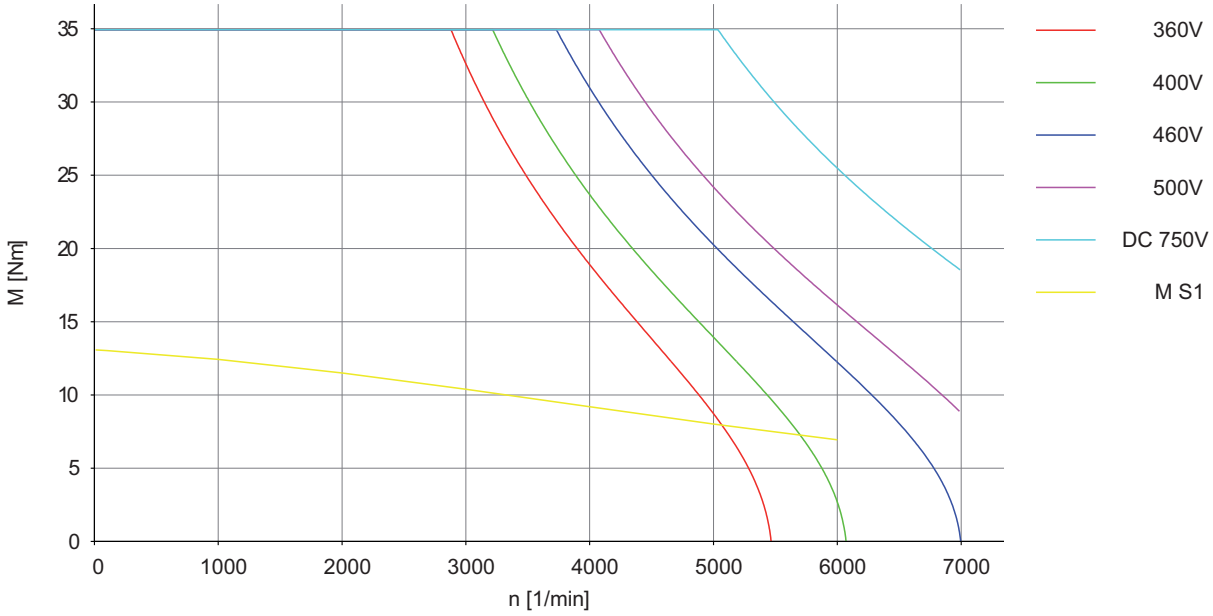

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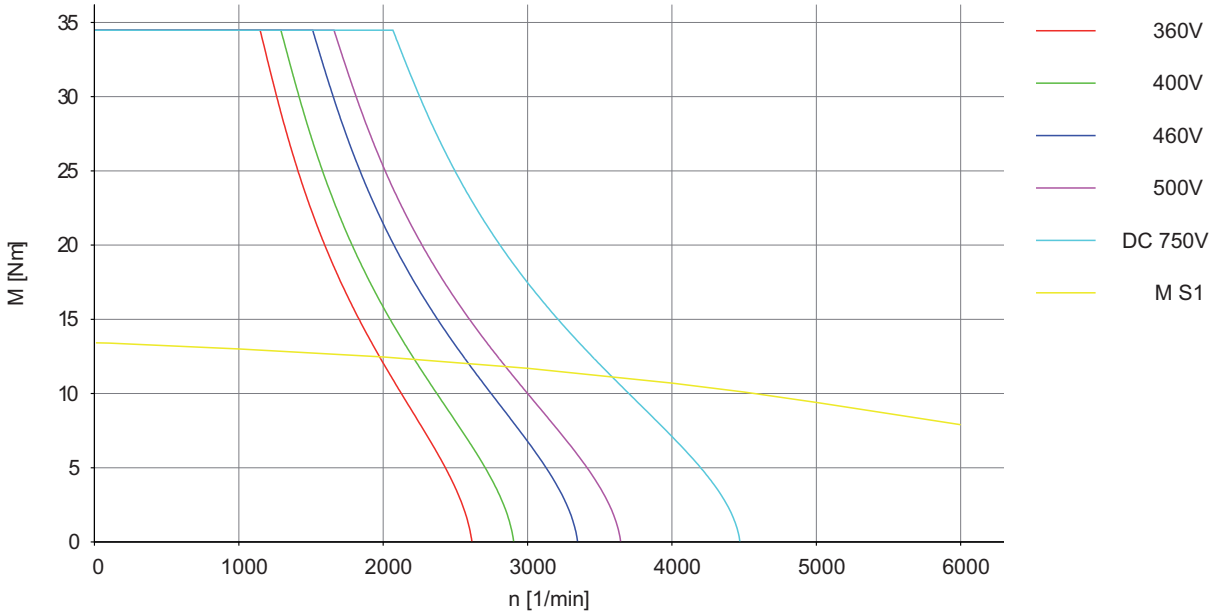

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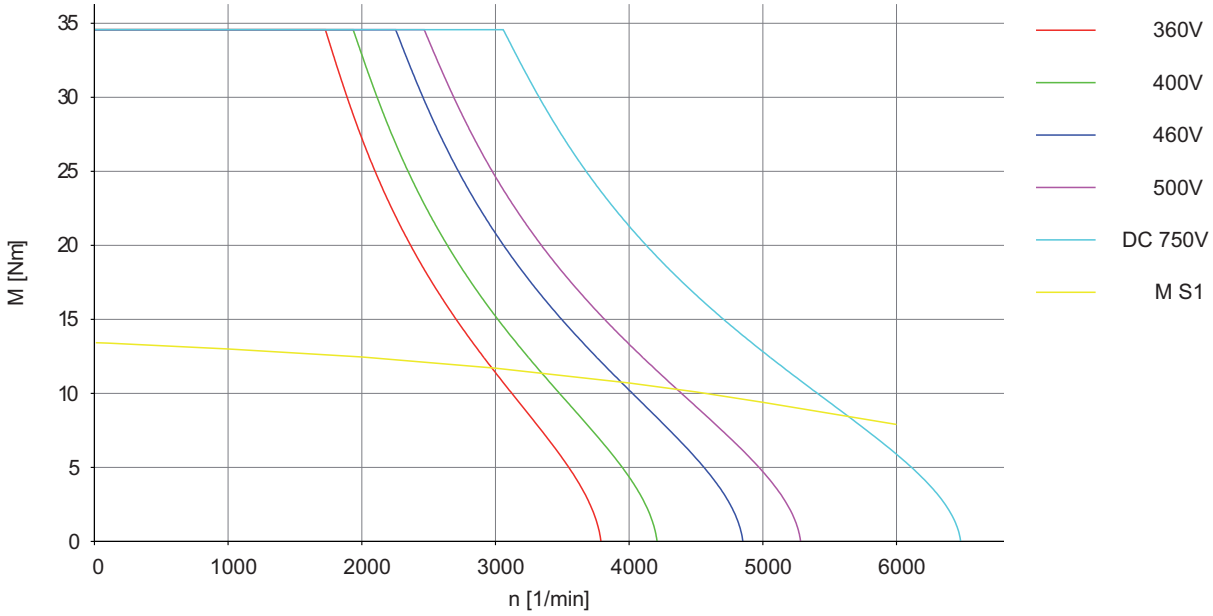

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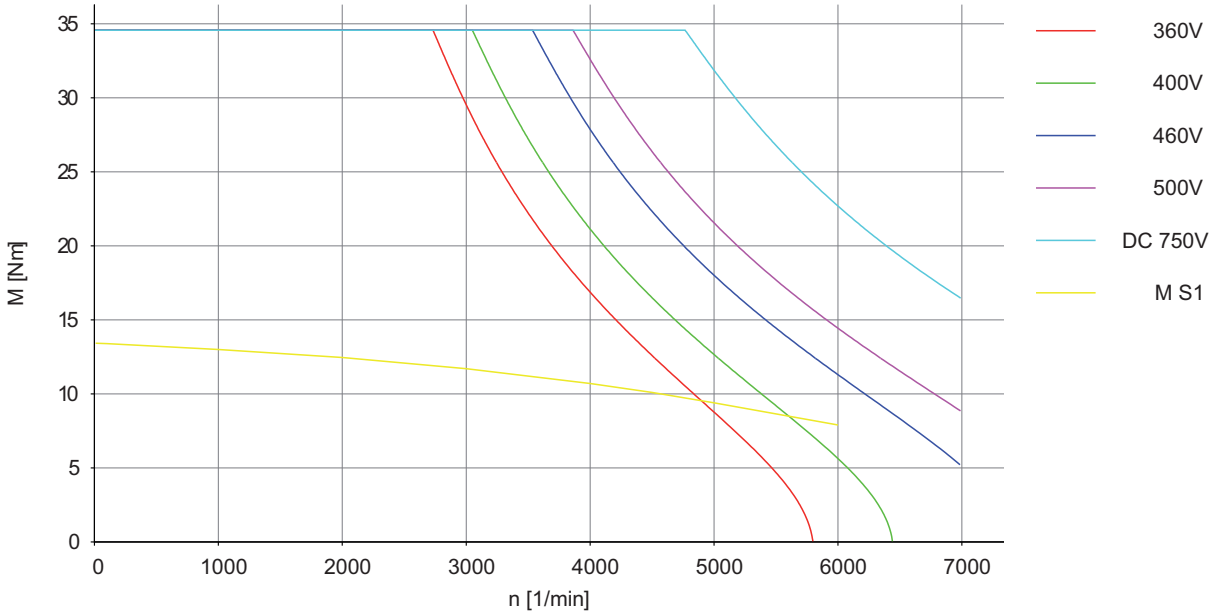

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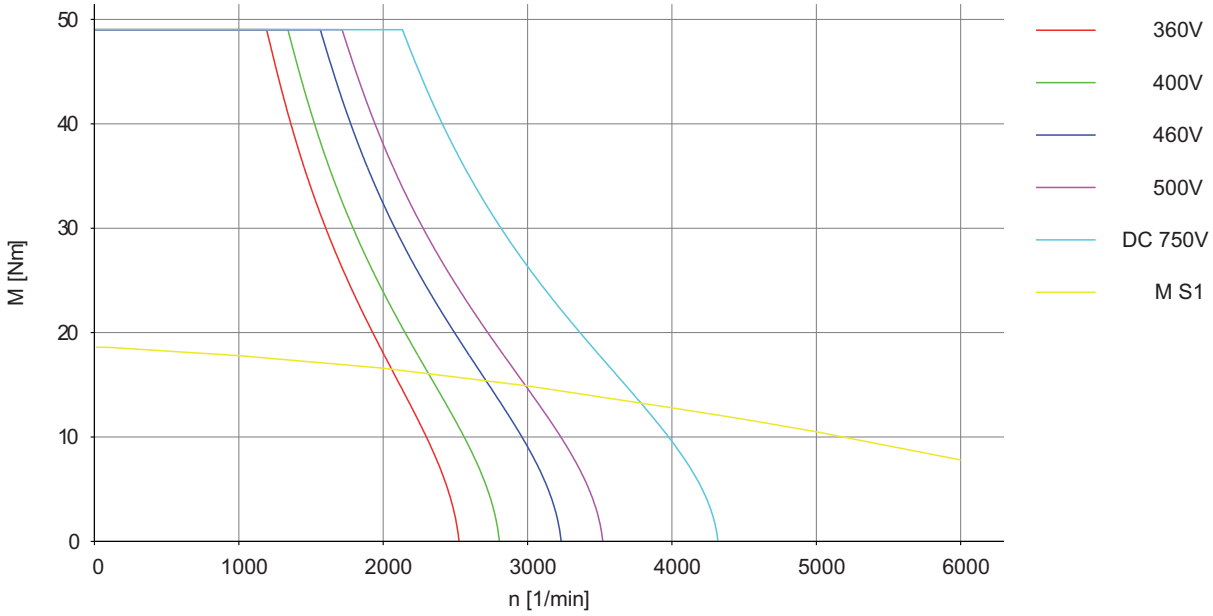

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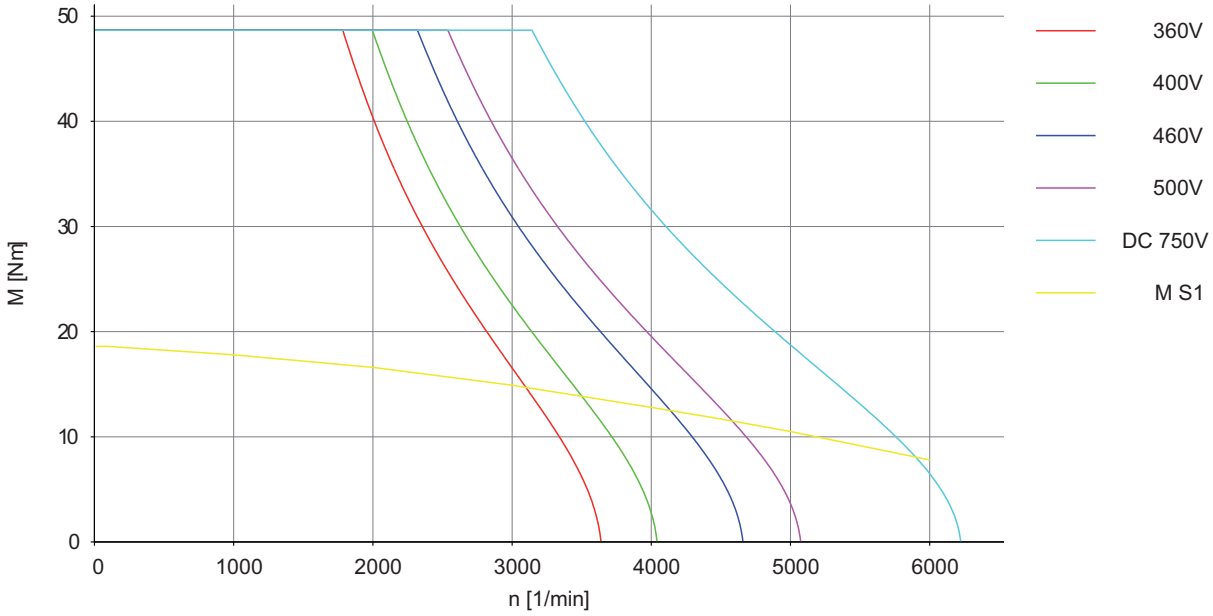

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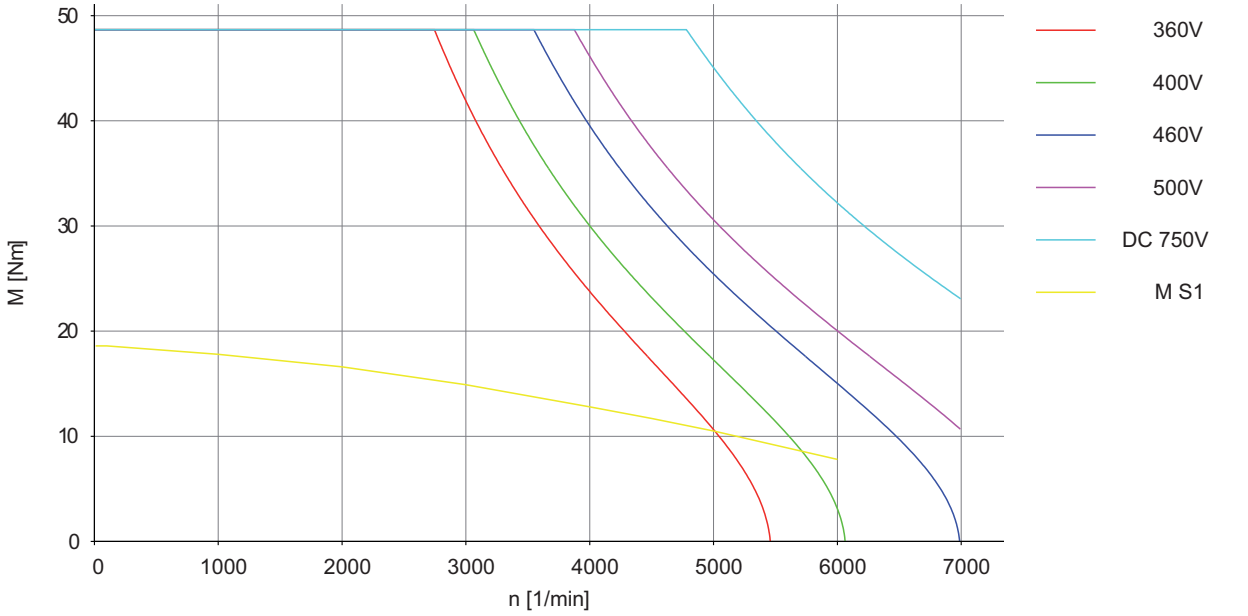

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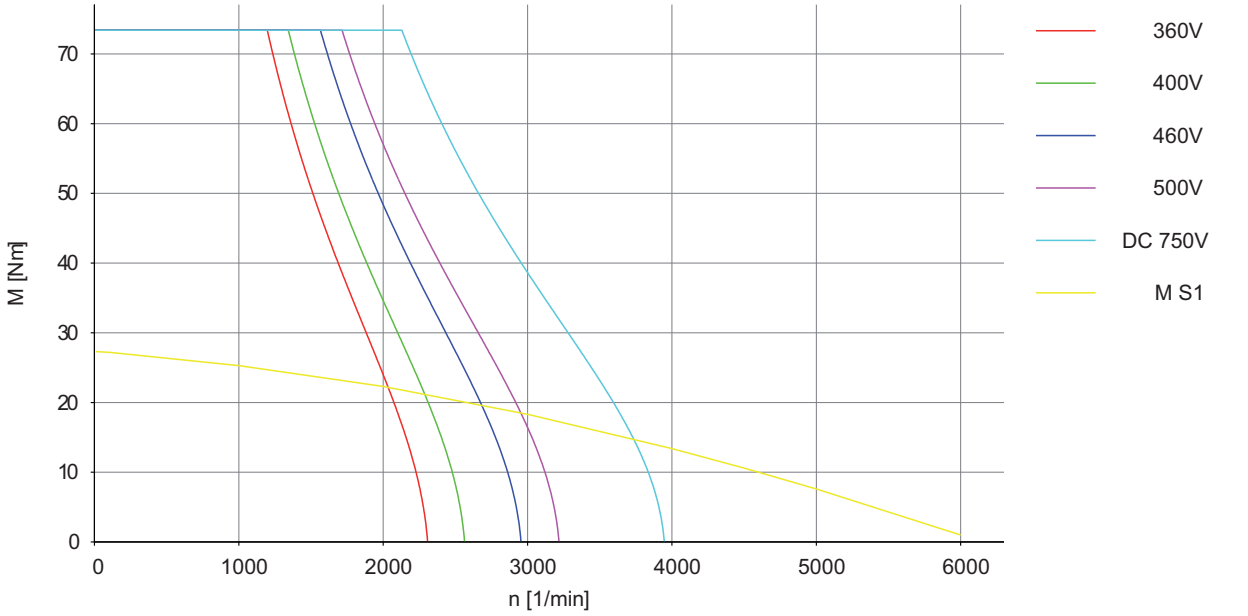

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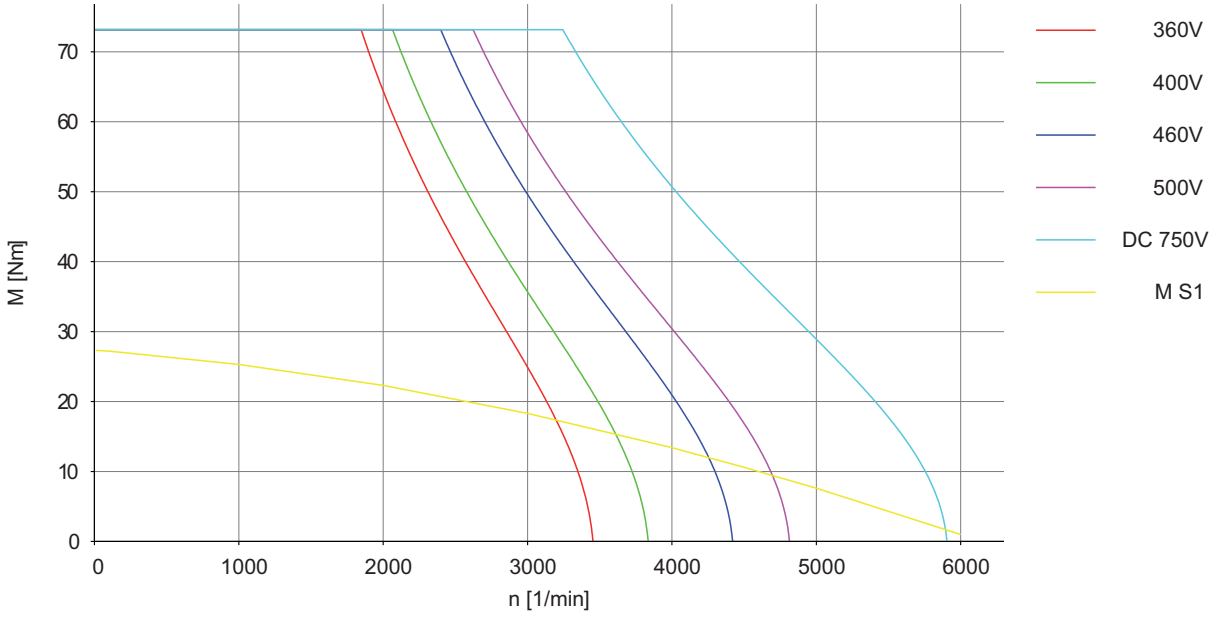

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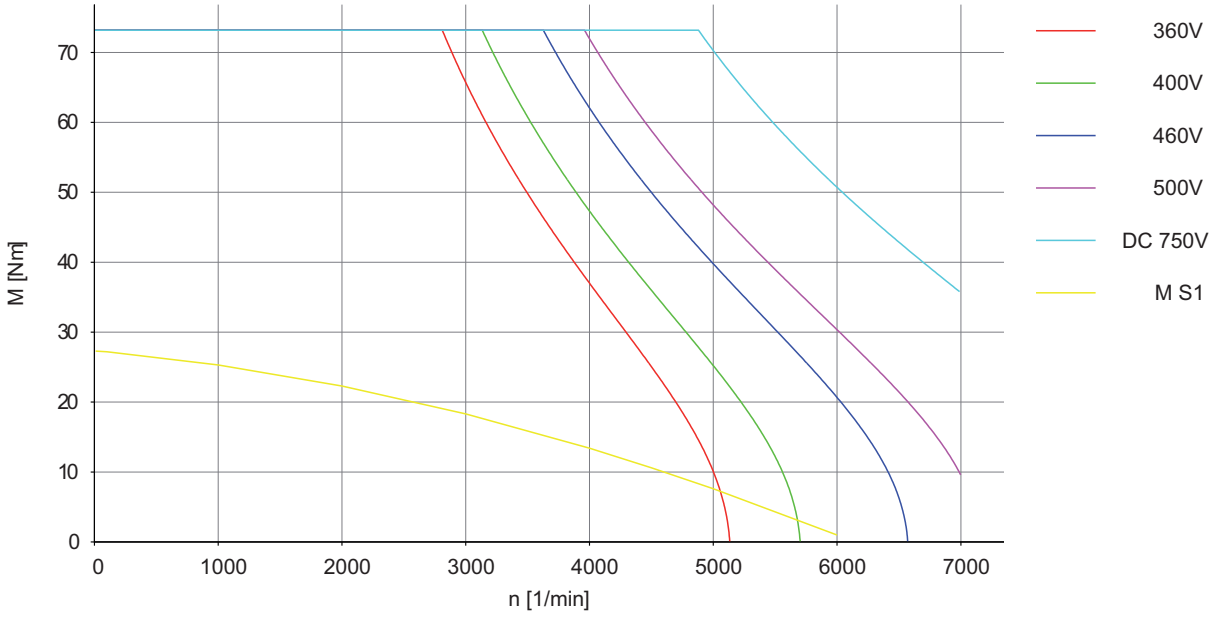

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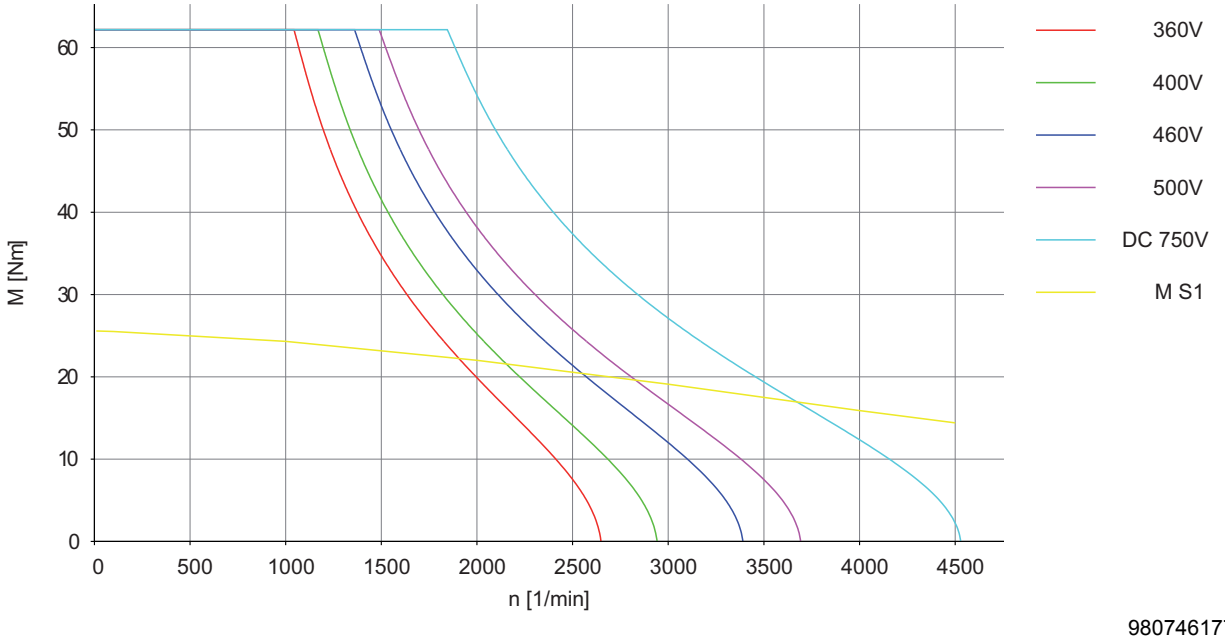

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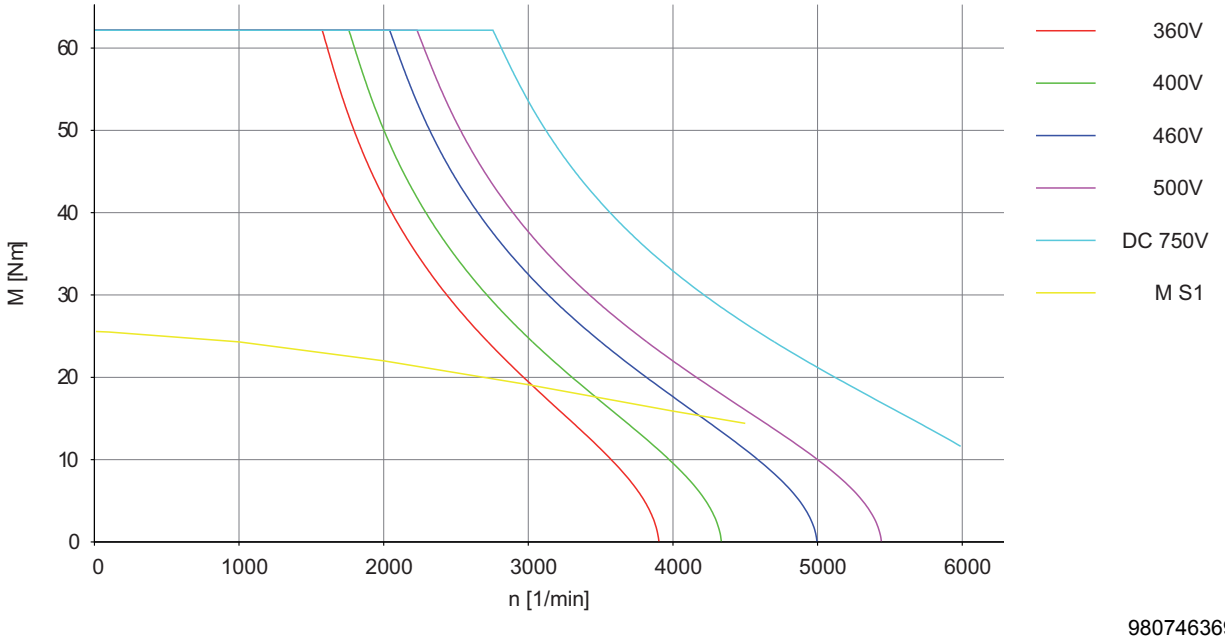

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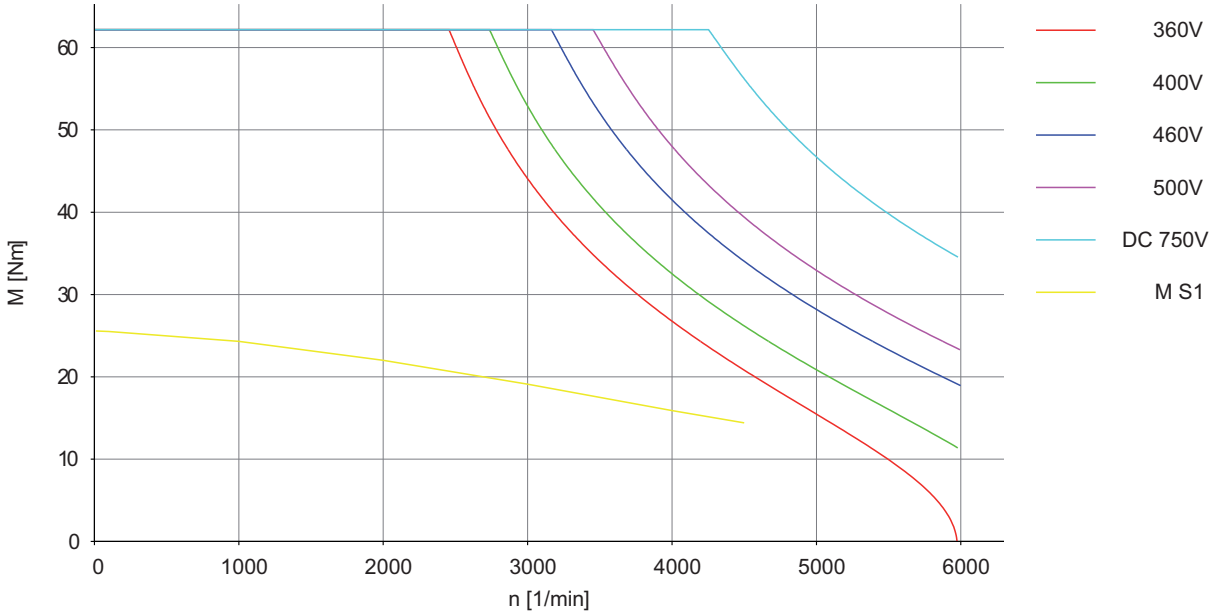

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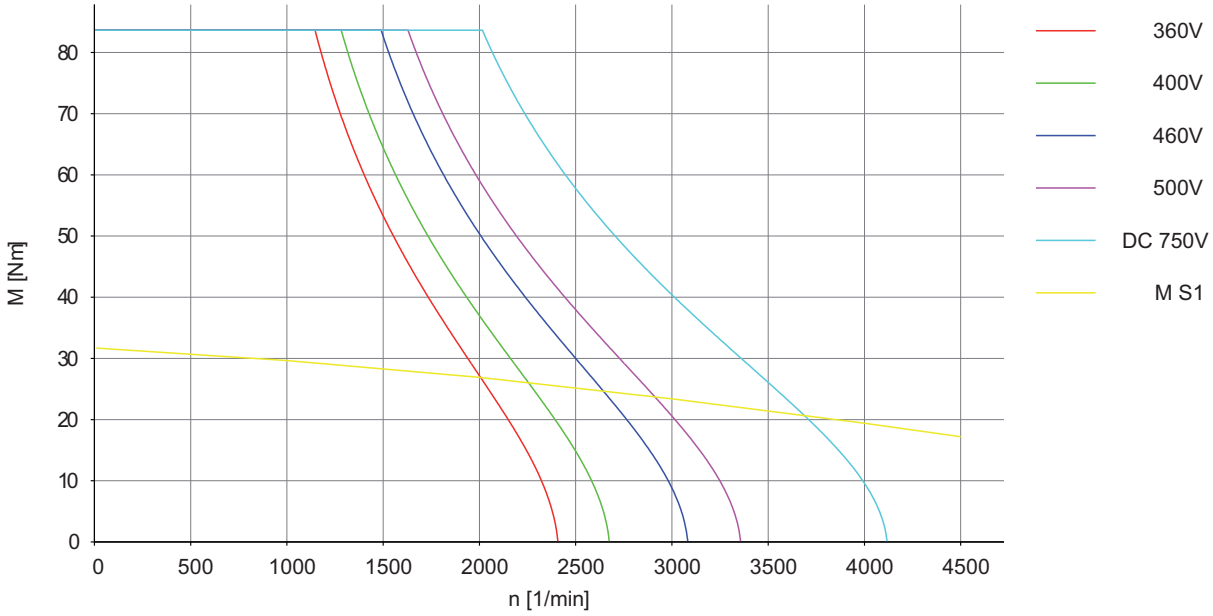

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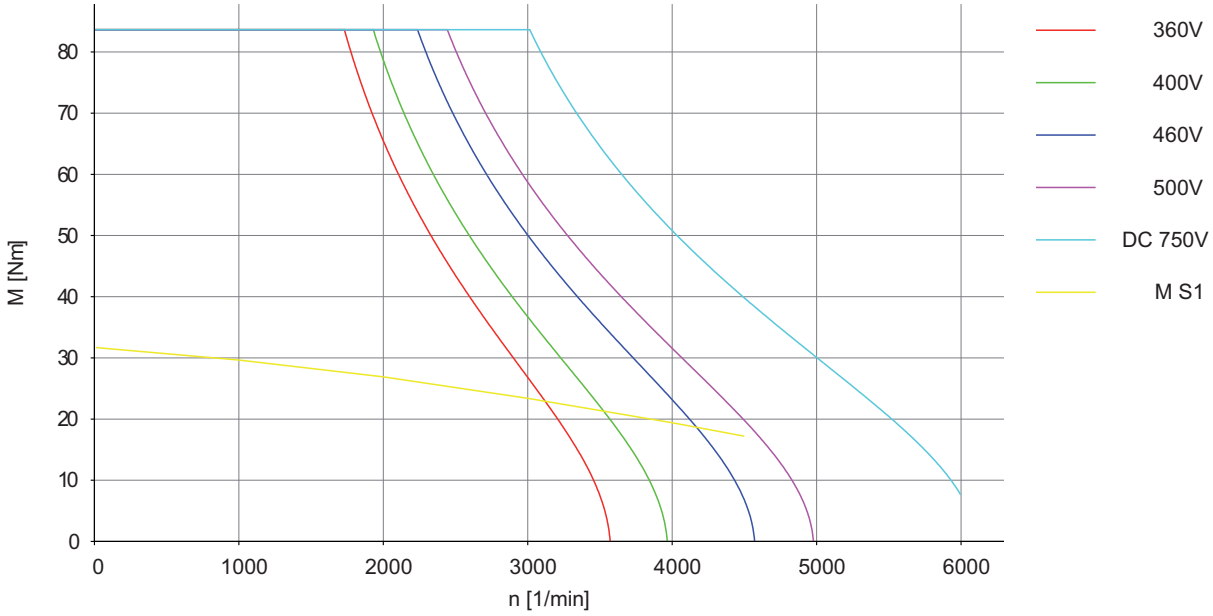

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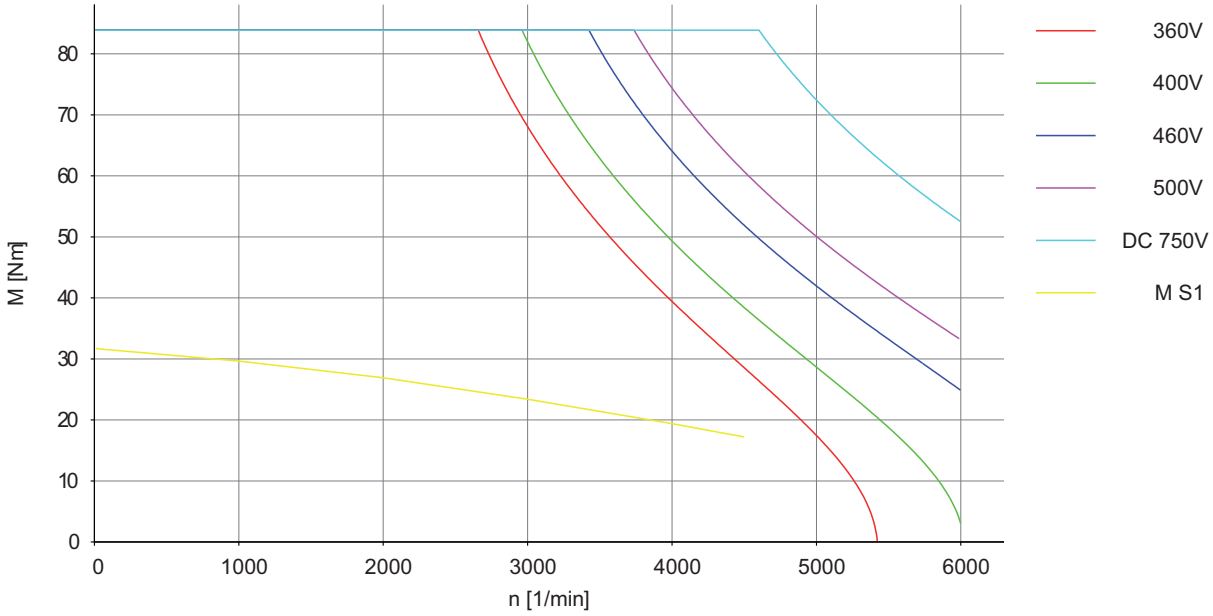

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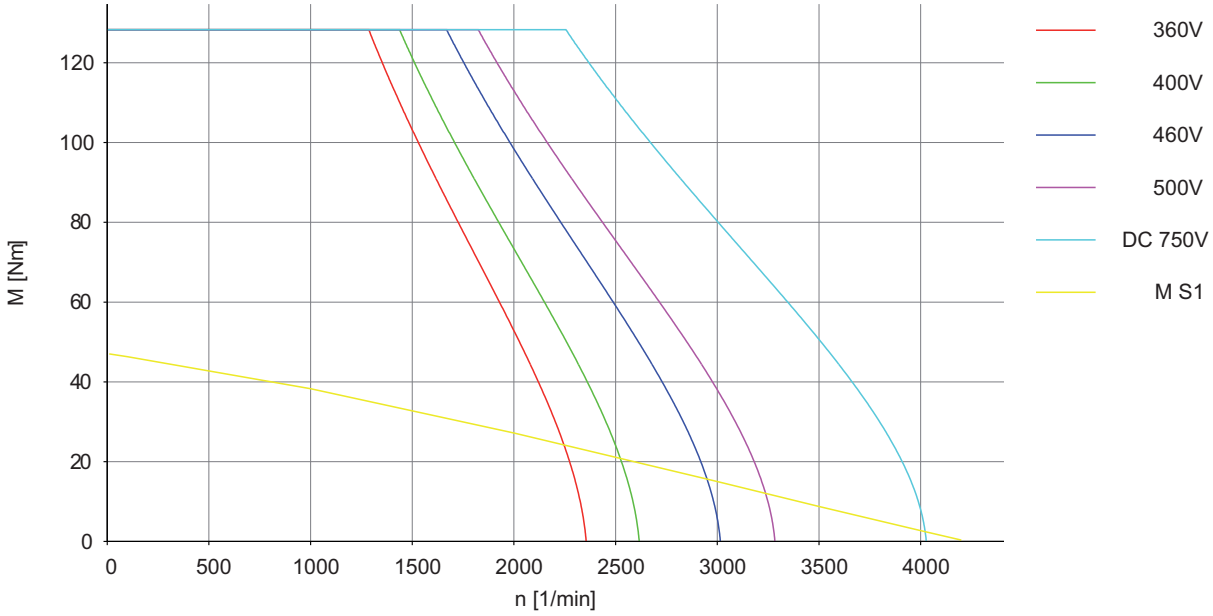
8.6.41 CMP.100L n = 2000 rpm



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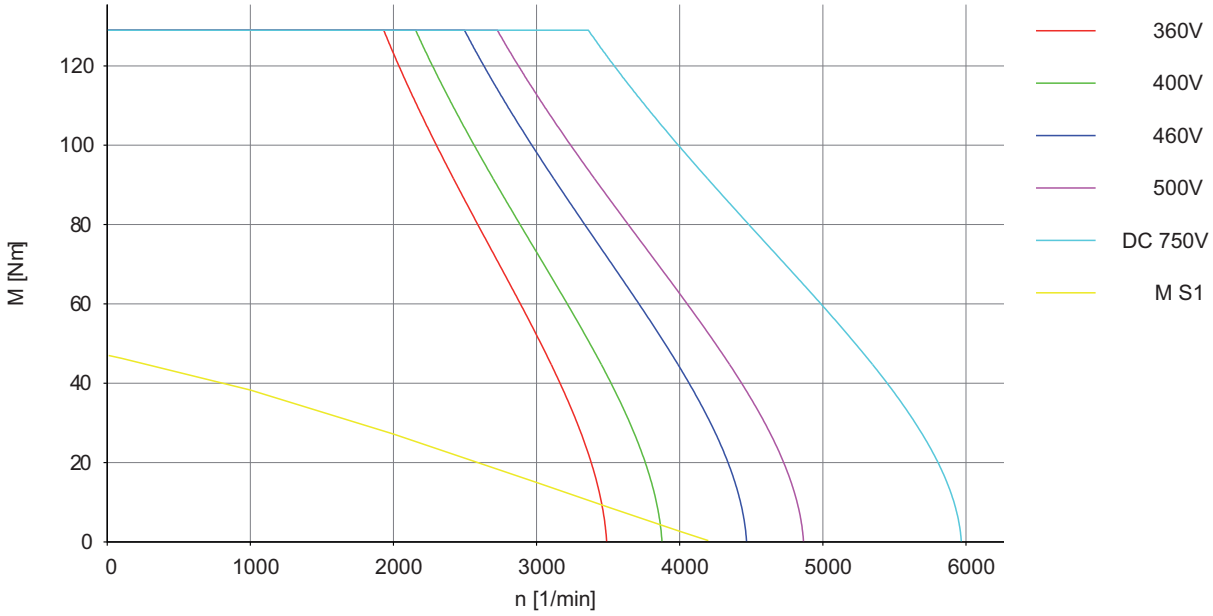
8.6.42 CMP.100L n = 3000 rpm



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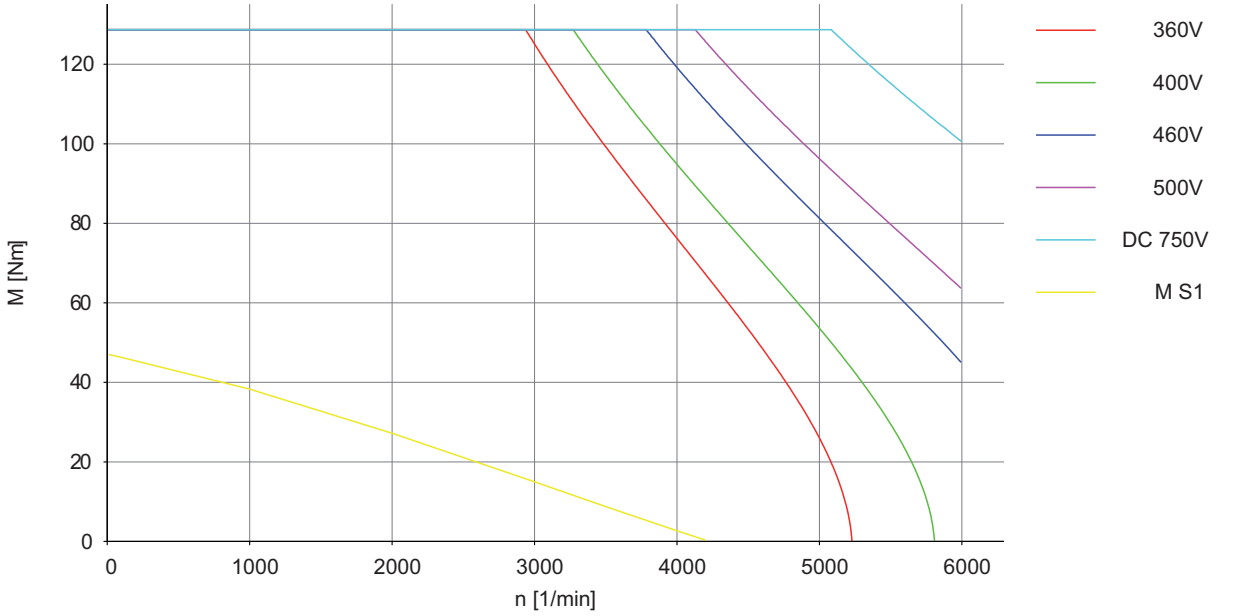

9807454091

9 Malfunctions

9.1 Motor malfunctions

Malfunction	Possible cause	Remedy
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" (page 111)
	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 a professional to determine the correct drive if need be
	Servo inverter not optimized	Check servo inverter
Running noise of the motor	Bearing damage	• Contact SEW-EURODRIVE customer service • Replace the servomotor
	Vibration of rotating parts	Rectify cause, possible imbalance

NOTICE

Acknowledging a motor protection error repeatedly can destroy the motor.

9.2 Malfunctions when operating with a frequency inverter

INFORMATION

The symptoms described in section "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 problem.
- Time the problem occurred and any accompanying circumstances.
- Assumed cause

9.3 Brake malfunctions

9.3.1 BP brake

Malfunction	Possible cause	Remedy
Brake does not release	Brake connected incorrectly	Check brake connection
	Max. permitted working air gap exceeded because brake lining worn down	• Consult SEW-EURODRIVE • Motor/brake replacement by SEW Service
	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	Consult SEW-EURODRIVE
	Brake lining worn	• Consult SEW-EURODRIVE • Motor/brake replacement by SEW Service
Motor does not brake/stop.	Incorrect braking torque.	• Consult SEW-EURODRIVE • Motor/brake replacement by SEW Service
Noise/squeaking near the brake	Brake parameters set incorrectly in the inverter	Check brake release and application times

9.3.2 BY brake

Malfunction	Possible cause	Remedy
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	Consult SEW-EURODRIVE
	Brake coil has interturn short circuit or a short circuit to frame	• Check switchgear • Replace the entire brake and brake control system (consult SEW-EURODRIVE)
	Brake lining worn	Consult SEW-EURODRIVE
Motor does not brake/stop.	Brake spring replacement	Consult 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

10 Appendix

10.1 Declaration of conformity

EC Declaration of Conformity

SEW EURODRIVE

901730012

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...**
category	**3D** **3G**
labeling	**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 60079-31:2008**

Bruchsal 05.11.12 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

9819678347

10.2 Abbreviations and type designations

Abbreviation	Definition	Meaning
DIN	**D**eutsches **I**nstitut für **N**ormung e.V. (German institute for standardization)	
EN	**E**uropäische **N**orm (European standard)	
ISO	**I**nternational **O**rganization for **S**tandardization	The ISO creates ISO standards that should be adopted unrevised by the member states.
SW	**S**chlüssel**w**eite (Wrench size)	

11 Address list

Germany			
Headquarters **Production** **Sales**	**Bruchsal**	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal P.O. Box Postfach 3023 • D-76642 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.sew-eurodrive.de sew@sew-eurodrive.de
Production / Industrial Gears	**Bruchsal**	SEW-EURODRIVE GmbH & Co KG Christian-Pähr-Str.10 D-76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-2970
Service Competence Center	**Mechanics / Mechatronics**	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 D-76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 sc-mitte@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 sc-elektronik@sew-eurodrive.de
Drive Technology Center	**North**	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 D-30823 Garbsen (near Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 sc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg 1 D-08393 Meerane (near Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 sc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 D-85551 Kirchheim (near München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 sc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 D-40764 Langenfeld (near Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 sc-west@sew-eurodrive.de
	Drive Service Hotline / 24 Hour Service		+49 800 SEWHELP +49 800 7394357
	Additional addresses for service in Germany provided on request!		

France			
Production **Sales** **Service**	**Haguenau**	SEW-USOCOME 48-54 route de Soufflenheim B. P. 20185 F-67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocome.com sew@usocome.com
Production	**Forbach**	SEW-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 F-57604 Forbach Cedex	Tel. +33 3 87 29 38 00
Assembly **Sales** **Service**	**Bordeaux**	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan - B. P. 182 F-33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09
	Lyon	SEW-USOCOME Parc d'affaires Roosevelt Rue Jacques Tati F-69120 Vaulx en Velin	Tel. +33 4 72 15 37 00 Fax +33 4 72 15 37 15
	Nantes	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles F-44140 Le Bignon	Tel. +33 2 40 78 42 00 Fax +33 2 40 78 42 20

France			
	Paris	SEW-USOCOME Zone industrielle 2 rue Denis Papin F-77390 Verneuil l'Etang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88
	Additional addresses for service in France provided on request!		

Algeria			
Sales	**Algiers**	REDUCOM Sarl 16, rue des Frères Zaghnoune Bellevue 16200 El Harrach Alger	Tel. +213 21 8214-91 Fax +213 21 8222-84 info@reducom-dz.com http://www.reducom-dz.com

Argentina			
Assembly **Sales**	**Buenos Aires**	SEW EURODRIVE ARGENTINA S.A. Ruta Panamericana Km 37.5, Lote 35 (B1619IEA) Centro Industrial Garín Prov. de Buenos Aires	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 sewar@sew-eurodrive.com.ar http://www.sew-eurodrive.com.ar

Australia			
Assembly **Sales** **Service**	**Melbourne**	SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043	Tel. +61 3 9933-1000 Fax +61 3 9933-1003 http://www.sew-eurodrive.com.au enquires@sew-eurodrive.com.au
	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164	Tel. +61 2 9725-9900 Fax +61 2 9725-9905 enquires@sew-eurodrive.com.au

Austria			
Assembly **Sales** **Service**	**Wien**	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Strasse 24 A-1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://www.sew-eurodrive.at sew@sew-eurodrive.at

Belarus			
Sales	**Minsk**	SEW-EURODRIVE BY RybalkoStr. 26 BY-220033 Minsk	Tel.+375 17 298 47 56 / 298 47 58 Fax +375 17 298 47 54 http://www.sew.by sales@sew.by

Belgium			
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.be info@sew-eurodrive.be
Service Competence Center	**Industrial Gears**	**SEW-EURODRIVE n.v./s.a.** Rue de Parc Industriel, 31 BE-6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-wallonie@sew-eurodrive.be

Brazil			
Production **Sales** **Service**	**São Paulo**	SEW-EURODRIVE Brasil Ltda. Avenida Amâncio Gaiolli, 152 - Rodovia Presidente Dutra Km 208 Guarulhos - 07251-250 - SP SAT - SEW ATENDE - 0800 7700496	Tel. +55 11 2489-9133 Fax +55 11 2480-3328 http://www.sew-eurodrive.com.br sew@sew.com.br

Brazil			
Assembly **Sales** **Service**	**Rio Claro**	SEW-EURODRIVE Brasil Ltda. Rodovia Washington Luiz, Km 172 Condomínio Industrial Conpark Caixa Postal: 327 13501-600 – Rio Claro / SP	Tel. +55 19 3522-3100 Fax +55 19 3524-6653 montadora.rc@sew.com.br
	Joinville	SEW-EURODRIVE Brasil Ltda. Rua Dona Francisca, 12.346 – Pirabeiraba 89239-270 – Joinville / SC	Tel. +55 47 3027-6886 Fax +55 47 3027-6888 filial.sc@sew.com.br
	Indaiatuba	SEW-EURODRIVE Brasil Ltda. Estrada Municipal Jose Rubim, 205 Rodovia Santos Dumont Km 49 13347-510 - Indaiatuba / SP	Tel. +55 19 3835-8000 sew@sew.com.br

Bulgaria			
Sales	**Sofia**	BEVER-DRIVE GmbH Bogdanovetz Str.1 BG-1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@bever.bg

Cameroon			
Sales	**Douala**	Electro-Services Rue Drouot Akwa B.P. 2024 Douala	Tel. +237 33 431137 Fax +237 33 431137 electrojemba@yahoo.fr

Canada			
Assembly **Sales** **Service**	**Toronto**	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, ON L6T 3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca l.watson@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. Tilbury Industrial Park 7188 Honeyman Street Delta, BC V4G 1G1	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger Lasalle, PQ H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 a.peluso@sew-eurodrive.ca
	Additional addresses for service in Canada provided on request!		

Chile			
Assembly **Sales** **Service**	**Santiago**	SEW-EURODRIVE CHILE LTDA. Las Encinas 1295 Parque Industrial Valle Grande LAMPA RCH-Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 75770-00 Fax +56 2 75770-01 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl

China			
Production **Assembly** **Sales** **Service**	**Tianjin**	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 46, 7th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25323273 info@sew-eurodrive.cn http://www.sew-eurodrive.cn
Assembly **Sales** **Service**	**Suzhou**	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn

China			
	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530	Tel. +86 20 82267890 Fax +86 20 82267922 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn
	Wuhan	SEW-EURODRIVE (Wuhan) Co., Ltd. 10A-2, 6th Road No. 59, the 4th Quanli Road, WEDA 430056 Wuhan	Tel. +86 27 84478388 Fax +86 27 84478389 wuhan@sew-eurodrive.cn
	Xi'An	SEW-EURODRIVE (Xi'An) Co., Ltd. No. 12 Jinye 2nd Road Xi'An High-Technology Industrial Development Zone Xi'An 710065	Tel. +86 29 68686262 Fax +86 29 68686311 xian@sew-eurodrive.cn
	Additional addresses for service in China provided on request!		

Colombia			
Assembly **Sales** **Service**	**Bogotá**	SEW-EURODRIVE COLOMBIA LTDA. Calle 22 No. 132-60 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co sew@sew-eurodrive.com.co

Croatia			
Sales **Service**	**Zagreb**	KOMPEKS d. o. o. Zeleni dol 10 HR 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr

Czech Republic			
Sales **Assembly** **Service**	**Hostivice**	SEW-EURODRIVE CZ s.r.o. Floriánova 2459 253 01 Hostivice	Tel. +420 255 709 601 Fax +420 235 350 613 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
	Drive Service Hotline / 24 Hour Service	HOT-LINE +420 800 739 739 (800 SEW SEW)	**Servis:** Tel. +420 255 709 632 Fax +420 235 358 218 servis@sew-eurodrive.cz

Denmark			
Assembly **Sales** **Service**	**Copenhagen**	SEW-EURODRIVEA/S Geminivej 28-30 DK-2670 Greve	Tel. +45 43 9585-00 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk

Egypt			
Sales **Service**	**Cairo**	Copam Egypt for Engineering & Agencies 33 EI Hegaz ST, Heliopolis, Cairo	Tel. +20 2 22566-299 +1 23143088 Fax +20 2 22594-757 http://www.copam-egypt.com/ copam@datum.com.eg

Estonia			
Sales	**Tallin**	ALAS-KUUL AS Reti tee 4 EE-75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 veiko.soots@alas-kuul.ee

Finland			
Assembly **Sales** **Service**	**Hollola**	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Service	**Hollola**	SEW-EURODRIVE OY Keskikankaantie 21 FIN-15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Production **Assembly**	**Karkkila**	SEW Industrial Gears Oy Valurinkatu 6, PL 8 FI-03600 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 sew@sew.fi http://www.sew-eurodrive.fi

Gabon			
Sales	**Libreville**	ESG Electro Services Gabun Feu Rouge Lalala 1889 Libreville Gabun	Tel. +241 741059 Fax +241 741059 esg_services@yahoo.fr

Great Britain			
Assembly **Sales** **Service**	**Normanton**	SEW-EURODRIVE Ltd. DeVilliers Way Trident Park Normanton West Yorkshire WF6 1GX	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
	Drive Service Hotline / 24 Hour Service		Tel. 01924 896911

Greece			
Sales	**Athens**	Christ. Boznos & Son S.A. 12, K. Mavromichali Street P.O. Box 80136 GR-18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr

Hong Kong			
Assembly **Sales** **Service**	**Hong Kong**	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 36902200 Fax +852 36902211 contact@sew-eurodrive.hk

Hungary			
Sales **Service**	**Budapest**	SEW-EURODRIVE Kft. H-1037 Budapest Kunigunda u. 18	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 http://www.sew-eurodrive.hu office@sew-eurodrive.hu

India			
Registered Office **Assembly** **Sales** **Service**	**Vadodara**	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 3045200, +91 265 2831086 Fax +91 265 3045300, +91 265 2831087 http://www.seweurodriveindia.com salesvadodara@seweurodrivein-dia.com

India			
Assembly **Sales** **Service**	**Chennai**	SEW-EURODRIVE India Private Limited Plot No. K3/1, Sipcot Industrial Park Phase II Mambakkam Village Sriperumbudur - 602105 Kancheepuram Dist, Tamil Nadu	Tel. +91 44 37188888 Fax +91 44 37188811 saleschennai@seweurodriveindia.com

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 info@alperton.ie http://www.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 96 980 999 http://www.sew-eurodrive.it sewit@sew-eurodrive.it

Ivory Coast			
Sales	**Abidjan**	SICA Société Industrielle & Commerciale pour l'Afrique 165, Boulevard de Marseille 26 BP 1173 Abidjan 26	Tel. +225 21 25 79 44 Fax +225 21 25 88 28 sicamot@aviso.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 373855 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp

Kazakhstan			
Sales	**Almaty**	ТОО "СЕВ-ЕВРОДРАЙВ" пр.Райымбека, 348 050061 г. Алматы Республика Казахстан	Тел. +7 (727) 334 1880 Факс +7 (727) 334 1881 http://www.sew-eurodrive.kz sew@sew-eurodrive.kz

Kenya			
Sales	**Nairobi**	Barico Maintenances Ltd Kamutaga Place Commercial Street Industrial Area P.O.BOX 52217 - 00200 Nairobi	Tel. +254 20 6537094/5 Fax +254 20 6537096 info@barico.co.ke

Latvia			
Sales	**Riga**	SIA Alas-Kuul Katlakalna 11C LV-1073 Riga	Tel. +371 6 7139253 Fax +371 6 7139386 http://www.alas-kuul.com 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
		After Sales Service	service@medrives.com
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 info@medrives.com http://www.medrives.com
		After Sales Service	service@medrives.com

Lithuania			
Sales	**Alytus**	UAB Irseva Statybininku 106C LT-63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 irmantas@irseva.lt http://www.sew-eurodrive.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

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

Mexico			
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			
Sales	**Ulan Bator**	SEW-EURODRIVE Representative Office Mongolia Olympic street 8, 2nd floor Juulchin corp bldg., Sukhbaatar district, Ulaanbaatar 14253	Tel. +976-70009997 Fax +976-70009997 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 sew@sew-eurodrive.ma http://www.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 sales@dbmining.in.na

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
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 10 Settlers Crescent, Ferrymead Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz

Nigeria			
Sales	**Lagos**	EISNL Engineering Solutions and Drives Ltd Plot 9, Block A, Ikeja Industrial Estate (Ogba Scheme) Adeniyi Jones St. End Off ACME Road, Ogba, Ikeja, Lagos Nigeria	Tel. +234 (0)1 217 4332 team.sew@eisnl.com http://www.eisnl.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 sew-py@sew-eurodrive.com.py

Peru			
Assembly **Sales** **Service**	**Lima**	SEW DEL PERU MOTORES REDUCTORES 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

Poland			
Assembly **Sales** **Service**	**Lodz**	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 PL-92-518 Łódź	Tel. +48 42 676 53 00 Fax +48 42 676 53 49 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl

Poland			
	Service	Tel. +48 42 6765332 / 42 6765343 Fax +48 42 6765346	Linia serwisowa Hotline 24H Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl
Portugal			
Assembly **Sales** **Service**	**Coimbra**	SEW-EURODRIVE, LDA. Apartado 15 P-3050-901 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**	ZAO SEW-EURODRIVE P.O. Box 36 RUS-195220 St. Petersburg	Tel. +7 812 3332522 +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru
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 senemeca@sentoo.sn http://www.senemeca.com
Serbia			
Sales	**Beograd**	DIPAR d.o.o. Ustanicka 128a PC Košum, IV sprat 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 Fax +421 2 33595 200 sew@sew-eurodrive.sk http://www.sew-eurodrive.sk
	Žilina	SEW-Eurodrive SK s.r.o. Industry Park - PChZ ulica M.R.Štefánika 71 SK-010 01 Žilina	Tel. +421 41 700 2513 Fax +421 41 700 2514 sew@sew-eurodrive.sk
	Banská Bystrica	SEW-Eurodrive SK s.r.o. Rudlovská cesta 85 SK-974 11 Banská Bystrica	Tel. +421 48 414 6564 Fax +421 48 414 6566 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 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 11 494-3104 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 Cape Town	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 (PTY) LTD. 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. B 601-4, Banweol Industrial Estate #1048-4, Shingil-Dong, Danwon-Gu, Ansan-City, Kyunggi-Do Zip 425-839	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-korea.co.kr master.korea@sew-eurodrive.com
	Busan	SEW-EURODRIVE KOREA Co., Ltd. No. 1720 - 11, Songjeong - dong Gangseo-ku Busan 618-270	Tel. +82 51 832-0204 Fax +82 51 832-0230 master@sew-korea.co.kr

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

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-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442 00 Fax +46 36 3442 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

Tanzania			
Sales	**Dar es Salaam**	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 uroos@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 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	Тел. +380 56 370 3211 Факс. +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua

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

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 Manufacturing +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

USA			
	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 the USA provided on request!		

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**	**All sectors except harbor and offshore:** Nam Trung Co., Ltd 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 namtrungco@hcm.vnn.vn truongtantam@namtrung.com.vn khanh-nguyen@namtrung.com.vn
		Harbor and offshore: DUC VIET INT LTD Industrial Trading and Engineering Services A75/6B/12 Bach Dang Street, Ward 02, Tan Binh District, 70000 Ho Chi Minh City	Tel. +84 8 62969 609 Fax +84 8 62938 842 totien@ducvietint.com
	Hanoi	Nam Trung Co., Ltd R.205B Tung Duc Building 22 Lang ha Street Dong Da District, Hanoi City	Tel. +84 4 37730342 Fax +84 4 37762445 namtrunghn@hn.vnn.vn

Zambia			
Sales	**Kitwe**	EC Mining Limited Plots No. 5293 & 5294,Tangaanyika Road, Off Mutentemuko Road, Heavy Industrial Park, P.O.BOX 2337 Kitwe	Tel. +260 212 210 642 Fax +260 212 210 645 sales@ecmining.com http://www.ecmining.com

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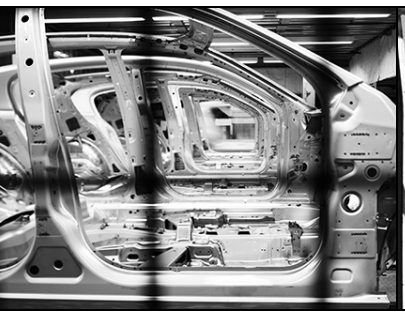

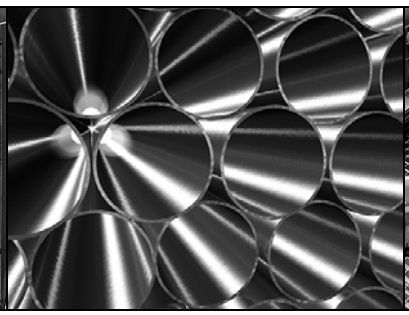


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SEW-EURODRIVE GmbH & Co KG
P.O. Box 3023
76642 BRUCHSAL
GERMANY
Phone +49 7251 75-0
Fax +49 7251 75-1970
sew@sew-eurodrive.com

➞ www.sew-eurodrive.com