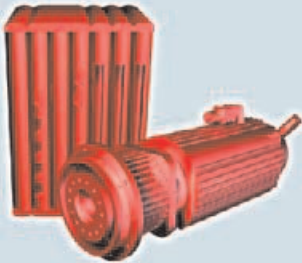
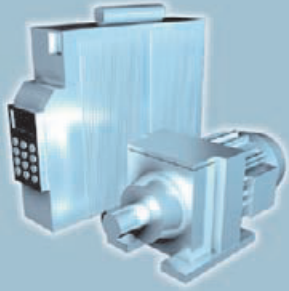




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**EURODRIVE**



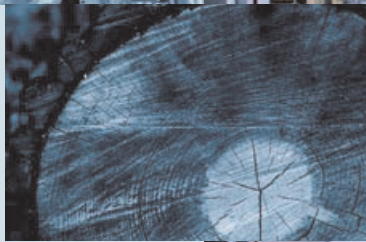
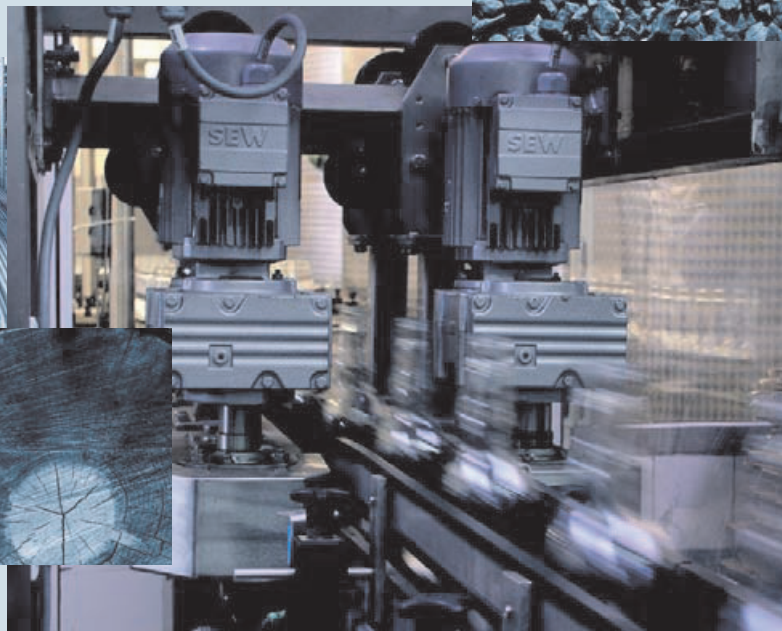
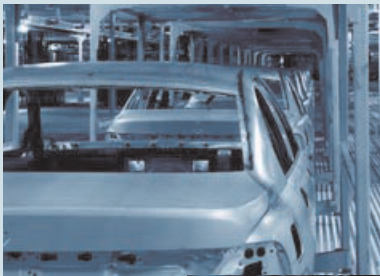
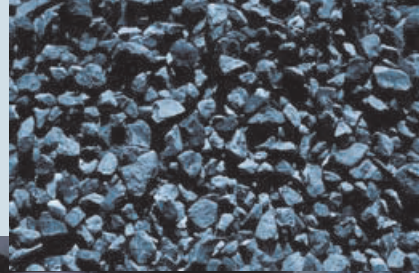
## **CMP40/50/63** **Synchronous Servomotors**

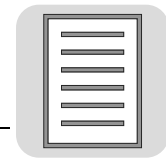
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**Catalog**





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# 1 The SEW-EURODRIVE Group of Companies

## **Introduction**

SEW-EURODRIVE is one of the leading companies in the world market for electrical drive engineering. Its global presence, extensive product range and broad spectrum of services make SEW-EURODRIVE the ideal partner for the machinery and plant construction industry when it comes to providing drive systems for demanding applications.

Based on many years of experience in the field of drive engineering, SEW-EURODRIVE develops, manufactures and sells all drives, comprising mechanical, electrical and electronic engineering components, itself.

The company headquarters are located in Bruchsal, Germany. Components for the SEW-EURODRIVE modular drive system are manufactured to the highest quality standards in production plants sited in Germany, France, Finland, the United States, Brazil and China. The individual drive systems are assembled with a consistently high quality standard and very short delivery times from stocked components in our assembly plants located in more than 30 industrialized countries all over the world. SEW-EURODRIVE sales, consulting, customer and spare parts services are available in more than 50 countries around the globe.

## **The product range**

- Gearmotors, gear units and motors
  - Helical gear units/gearmotors
  - Parallel shaft helical gear units/gearmotors
  - Helical-bevel gear units/gearmotors
  - Helical-worm gear units/gearmotors
  - Spiroplan® right-angle gearmotors
  - Planetary gearmotors
  - Industrial gear units
  - Low backlash gear units/gearmotors
  - Energy efficient motors
  - Brake motors
  - Drives for overhead trolley systems
  - Geared torque motors
  - Pole-changing gearmotors
  - Aseptic gearmotors
  
- Electronically-controlled drives
  - MOVITRAC® frequency inverters
  - MOVIDRIVE® drive inverters
  - MOVIDYN® servo controllers
  - MOVIAXIS® multi-axis servo inverter
  - Technology and communication options for the inverters
  - Asynchronous AC motors and AC gearmotors
  - Asynchronous and synchronous servomotors and geared servomotors
  - DC motors, brake motors and gearmotors
  - Asynchronous and synchronous linear motors
  
- Components for decentralized installation
  - MOVIMOT® gearmotors with integrated frequency inverter
  - MOVI-SWITCH® gearmotors with integrated switching and protection function
  - Field distributors, fieldbus interfaces



- Mechanical variable speed drives
  - VARIBLOC® wide V-belt variable speed gearmotors
  - VARIMOT® friction disc variable speed gearmotors
  
- Explosion-proof drives to ATEX 100a for category 2 and 3
  
- Services
  - Technical consulting
  - Application software
  - Seminars and training
  - Extensive technical documentation
  - International customer service

**Contents of the catalog**

This catalog describes the synchronous servomotors offered by SEW-EURODRIVE. It contains project planning notes, mounting positions, technical data, selection tables and dimension sheets.

*Additional catalogs*

- Gear units
- Gearmotors
- Low backlash planetary gear units
- MOVIMOT® gearmotors
- Geared servomotors
- DTE/DVE energy efficient motors
- Pole-changing gearmotors
- Variable speed gearmotors
- Drives for overhead trolley systems
- Explosion-proof drives
- Geared torque motors
- Planetary gearmotors
- Compact gear units
- DAS aseptic drives

## 1.1 Product names and trademarks

The brands and product names in this catalog are trademarks or registered trademarks of the titleholders.



## 2 Unit Information

### 2.1 Nameplate and unit designation

#### 2.1.1 Nameplate on the servomotor

**Example: Nameplate on the synchronous servo brake motor CMP50S / BP / KTY / RH1M / SB**

<b>SEW-EURODRIVE</b>		CE	
76646 Bruchsal / Germany			
Type	CMP50S/BP/KTY/RH1M /SB		
No.	02.1221234388.0001.06	3~	IEC34
M <sub>0</sub>	1.3 Nm	I <sub>0</sub>	1.7 A IP 65
n <sub>N</sub>	6,000 r/min	I <sub>max</sub>	9.0 A Iso.cl. F
f <sub>N</sub>	300 Hz	U <sub>max</sub>	400 V IM M4
Brake	24 V	3,1 Nm	Rectifier
Gear unit	M <sub>amax</sub>	Nm	n <sub>max</sub> / r/min
i	:1	Weight	2.9 kg
Lubricant:			
1332 749 6 Permanent magnet Made in Germany			

Figure 1: Nameplate on the CMP synchronous servo brake motor

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Figure 2: Location of the nameplate

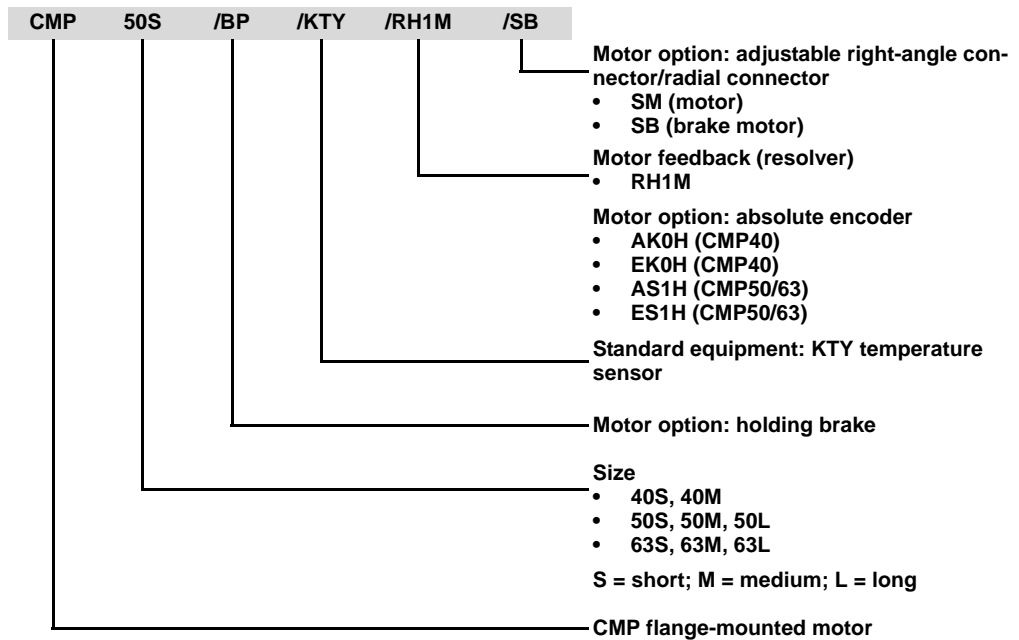
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## Unit Information

### Nameplate and unit designation

#### 2.1.2 Unit designation of the servomotor



#### 2.1.3 Nameplate on the geared servomotor

**Example: Nameplate on the synchronous geared servomotor PSF121 CMP50S / BP / KTY / RH1M / SB**

SEW-EURODRIVE		CE	
76646 Bruchsal / Germany			
Type	PSF121 CMP50S/BP/KTY/RH1M /SB		
No.	01.1236534388.0001.06	3~ IEC34	
M <sub>0</sub>	1.3 Nm	I <sub>0</sub>	1.7 A IP 65
n <sub>N</sub>	6,000 r/min	I <sub>max</sub>	9.0 A Iso.cl. F
f <sub>N</sub>	300 Hz	U <sub>max</sub>	400 V IM M4
Brake	24 V	3.1 Nm	Rectifier
Gear unit	M <sub>amax</sub> 35 Nm	n <sub>max</sub>	1,600 / 8,000 r/min
i	:1	Weight	3.8 kg
Lubricant: Miner. oil 0.1 l			
1332 749 6 Permanent magnet Made in Germany			

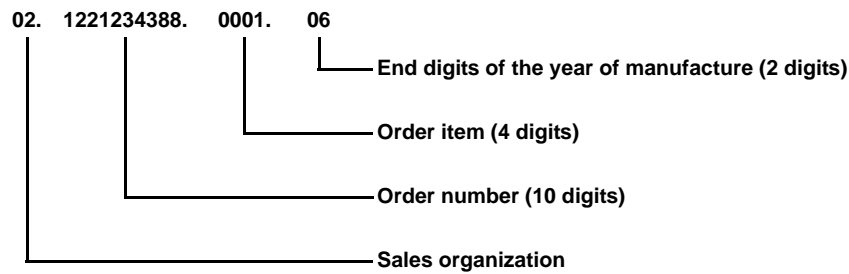
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Figure 3: Nameplate on the CMP synchronous geared servomotor with PSF gear unit

For information on the assignment of the BSF../PSF.. low-backlash gear units to CMP servomotors, see page 18.



### 2.1.4 Serial number



## 2.2 Rated data

The specific data of a synchronous servomotor are:

- Size
- Static torque
- Rated speed
- Rated voltage
- Rated current
- Maximum current
- Enclosure
- Thermal classification

This data is given on the nameplate of the motor. In accordance with IEC 34 (EN 60034), the nameplate data applies to a maximum ambient temperature of 40 °C and a maximum altitude of 1000 m above sea level.

## 2.3 Standards and regulations

Synchronous servomotors from SEW-EURODRIVE conform to the relevant standards and regulations, in particular to:

- IEC 34-1, EN 60034-1  
Rotating electrical machinery, rating and performance.
- EN 60529  
Degree of protection provided by housing (IP code).



## 2.4 Circuit breaker and protective equipment

### 2.4.1 Protective measures

Synchronous servomotors must be protected against overloads and short circuits.

Install the motors with sufficient space for air to cool them.

The surface temperature may be in excess of 100 °C during operation in accordance with thermal classification F. Therefore, measures to prevent inadvertent contact are essential.

The motors are equipped with temperature detection to protect the motor winding against overheating.

The temperature is measured using the KTY 84-130 temperature sensors, which are installed as standard. The correct model must be activated in the servo inverter to enable thermal motor protection ( $I^2t$ , effective current monitoring). For information on the procedure, refer to the documentation of the servo inverter.

### 2.4.2 EMC measures

SEW-EURODRIVE synchronous servomotors are components for installation in machinery and systems. The designer of the machine or system is responsible for complying with the EMC Directive 89/336/EEC.



Refer to the SEW publications "Drive Engineering - Practical Implementation" for detailed information on this topic.

#### **Routing brake cables**

The brake and power cables may only be routed together if either the brake cable or the power cable is shielded. We recommend that you use SEW hybrid cables, see page 57.

#### **Notes on the encoder connection**

Observe the following instructions when connecting an encoder:

- Use a shielded cable with twisted pair conductors only.
- Connect the shield to the PE potential on both ends over a large surface area.

#### **Thermal motor protection**

The cables can only be routed together if either the KTY cable or the power cable is shielded. We recommend that you use SEW hybrid cables, see page 57.



## 2.5 Motor equipment

The following motor equipment is available for CMP40 ... 63 motors:

1. SM/SB plug connector
2. BP brake
3. RH1M resolver or optional HIPERFACE® encoders EK0H/AK0H/ES1H/AS1H
4. VR forced cooling fan for CMP50 and CMP63

### 2.5.1 Plug connectors

The power or power + brake of the CMP motors are connected to the motor as standard with an adjustable, right-angle connector.

The motors can be supplied with radial connectors (power and signal) as an option.



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Figure 4: Positions of the adjustable connectors

[1] Delivery status = standard connector position "A"

### 2.5.2 Brakes

The mechanical brake is a holding brake implemented as a spring-loaded brake.

The brake has a standard supply voltage of DC 24 V and operates with one or two braking torque ratings for each motor size (CMP40, CMP50 and CMP63).

The brake cannot be retrofitted and operates without brake rectifier or brake control unit.

If the servomotors are run on servo inverters from SEW-EURODRIVE, overvoltage protection is provided.

If the servomotors are run on servo inverters from other manufacturers, overvoltage protection must be implemented by the customers themselves using, for example, varistors.

Observe the notes in the relevant operating instructions for servo inverters concerning the switching sequence of motor enable and brake control during standard operation.

### Rated speeds

The BP brake can be used for the following rated speeds:

Motor	Rated speed
CMP40	3000 / 4500 / 6000
CMP50	3000 / 4500 / 6000
CMP63	3000 / 4500

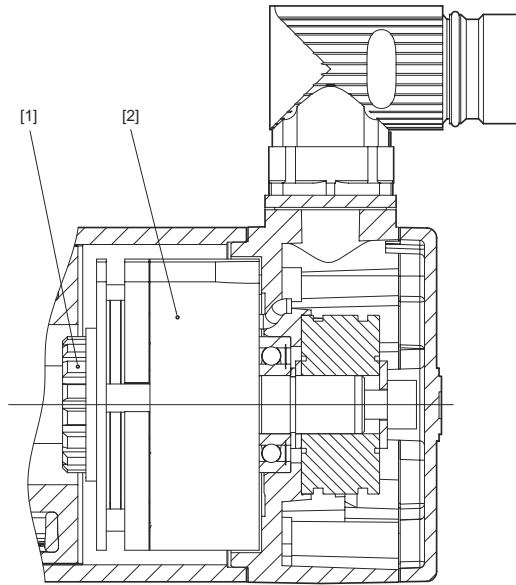

**Principle structure of the BP holding brake for CMP40/50/63**


Figure 5: Principle structure of the 24 V spring-loaded BP

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- [1] Driver  
 [2] Complete brake

**Technical data of the BP holding brake**

The table below shows the technical data of the BP holding brake. For the operating voltage, the tolerance is  $\pm 10\%$ . The type and number of brake springs determines the level of the braking torque. Unless specified otherwise in the order, the maximum braking torque  $M_{B1}$  is installed as standard. Other brake spring combinations can result in reduced braking torque values  $M_{B2}$ .

Brake type	Motor type	$U_N$ [V <sub>DC</sub> ]	$I_B$ [A]	$M_{B1}$ [Nm]	$M_{B2}$ [Nm]	W [kJ]	$W_{ges}$ [MJ]	$t_1$ [ $10^{-3}$ s]	$t_2$ [ $10^{-3}$ s]	$P_B$ [W]	$R_B$
BP1	CMP40	24	0.29	0.95	–	0.4	1	20	10	7	84
BP4	CMP50S	24	0.42	3.1	4.3	0.6	1.5	40	10	10	54
	CMP50M/L			4.3	3.1						
BP9	CMP63S	24	0.67	7	9.3	1.0	2.5	60	10	16	35
	CMP63M/L			9.3	7						

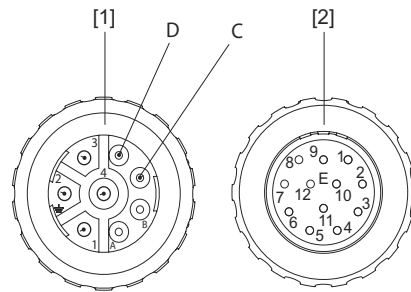
- $P_B$  Power consumption  
 $I_B$  Brake coil current at 20 °C  
 $M_{B1}$  Preferred braking torque  
 $M_{B2}$  Optional braking torque  
 W Permitted friction work per cycle  
 $t_1$  Response time  
 $t_2$  Application time  
 $U_N$  Rated voltage  
 $R_B$  Resistance  
 $W_{ges}$  Total permitted friction work

The response and application times are recommended values in relation to the maximum braking torque.

The tolerance of the braking torque is: +50 % / - 10 %.



Brake connection



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Figure 6: Brake connection

- [1] Power connection
- [2] Feedback connection
- C +24 V
- D 0 V


**2.5.3 Resolver for CMP**

Part number for RH1M	0199 031 4
No. of poles	2
Primary	Rotor
Input voltage	7 V
Input frequency	7 kHz
Gear ratio $\pm 10\%$	0.5
Phase shift $\pm 5^\circ$	$+13^\circ$
Input impedance $\pm 15\%$	$130 + j 120 \Omega$
Output impedance $\pm 15\%$	$200 + j 270 \Omega$
Input resistance $\pm 10\%$	$82 \Omega$
Output resistance $\pm 10\%$	$68 \Omega$
Max. electrical fault	$\pm 6'$
Temperature range	$-20^\circ\text{C}$ to $+40^\circ\text{C}$

SEW geared servomotors are supplied with 2-pole resolvers as standard. Further information on other resolvers is available on request.

**2.5.4 HIPERFACE<sup>®</sup> encoder**

SEW-EURODRIVE offers Hiperface<sup>®</sup> encoders as an alternative to resolvers.

**EK0H / AK0H**  
**(CMP40)**



Type	EK0H	AK0H
	0199 742 4	0199 583 9
Supply voltage	DC 7 ... 12 V polarity reversal protected	
Maximum current consumption (without load)	120 mA	
Cut-off frequency	26 kHz	
Pulses (sine cycles) per revolution	128	
Output amplitude per track	$0.8 \dots 1.1 V_{SS} \sin/\cos$	
Single-turn resolution	4096 increments/revolution (15 bit)	
Multi-turn resolution	–	4096 revolutions (12 bits)
Transmission protocol	HIPERFACE	
Serial data output	Driver to EIA RS-485	
Vibration (55...2000 Hz)	$\leq 100 \text{ m/s}^2$ (DIN IEC 68-2-6)	
Maximum speed	$12000 \text{ min}^{-1}$	$9000 \text{ min}^{-1}$
Connection	12-pin round connector	
Temperature range	$-20^\circ\text{C}$ to $+40^\circ\text{C}$	



**ES1H / AS1H  
(CMP50/63)**



Type	ES1H 1333 217 1	AS1H 1333 212 0
Supply voltage	DC 7 ... 8 ... 12 V polarity reversal protected	
Max. current consumption	140 mA	
Cut-off frequency	200 kHz	
Pulses (sine cycles) per revolution	1024	
Output amplitude per track	0.9 .. 1.1 V <sub>SS</sub> sin/cos	
Single-turn resolution	32768 increments/revolution (15 bit)	
Multi-turn resolution	–	4096 revolutions (12 bits)
Transmission protocol	HIPERFACE	
Serial data output	Driver to EIA RS-485	
Vibration (55...2000 Hz)	≤ 200 m/s <sup>2</sup> (DIN IEC 68-2-6)	
Maximum speed	9000 min <sup>-1</sup>	6000 min <sup>-1</sup>
Connection	12-pin round connector (Intercontec)	
Temperature range	-20°C to +40°C	

**2.5.5 VR forced cooling fan**

CMP50/63 synchronous servomotors can be equipped with a forced cooling fan if required. The VR forced cooling fan is available for DC 24 V.

Forced cooling fan type	VR	
	CMP50	CMP63
Motor size		
Supply voltage DC	24 V ± 10 %	24 V ± 10 %
Current consumption DC	0.15 A	0.25 A
Power consumption	3.5 W	6.0 W
Air discharge rate	56 m <sup>3</sup> /h	80 m <sup>3</sup> /h
Ambient temperature	0 ... + 60 °C	
Enclosure	IP54 / IP55	
Electrical connection	Plug connector	
Max. cable cross section	3 × 1 mm <sup>2</sup>	
Connection cable	7 mm	

**Forced cooling fan, cpl.**

Forced cooling fan for motor type	Part number
24 V, CMP50	1332 8697
24 V, CMP63	1332 7569



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Figure 7: CMP motor with forced cooling fan



## Unit Information

### Motor equipment

#### Retrofit set for CMP50/63

The CMP50/63 servomotors can also be fitted with a forced cooling fan using a retrofit set.



Only authorized personnel from SEW-EURODRIVE are permitted to install the retrofit set for the forced cooling fan for CMP50/63 motors.

Retrofit set	Part number
<b>CMP50 VR kit</b>	<b>1333 2414</b>
Cmpl. forced cooling fan for CMP50	
Machine screw M4x8-Tx-ST-A2F	
Lock washer	
Housing cover CMP50/AS1H/ES1H/RH1M	
Screw	
Washer	
Housing cover seal for CMP50	
<b>CMP63 VR kit</b>	<b>1333 2422</b>
Cmpl. forced cooling fan for CMP63	
Machine screw M4x8-Tx-ST-A2F	
Lock washer	
Housing cover CMP63/AS1H/ES1H/RH1M	
Screw	
Washer	
Housing cover seal for CMP63	

The forced cooling fan retrofit set is supplied as follows:

- Forced cooling fan cmpl.
- Accessory bag





**UWU52A  
switched-mode  
power supply**

The AC voltage type includes a VR forced cooling fan and the UWU52A switched-mode power supply.

Input: AC 100 ... 240 V; 1.04 - 0.61 A; 50 / 60 Hz

DC 110 - 300 V; 0.65 - 0.23 A

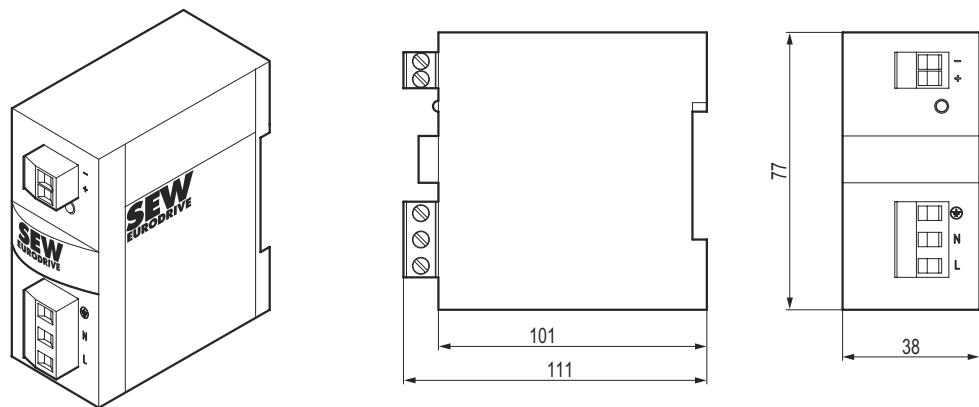
Output: DC 24 V; 2.5 A (40 °C)

DC 24 V; 2.0 A (55 °C)

Connection: Terminal screws 1.5 ... 2.5 mm<sup>2</sup>, separable.

Enclosure: IP20; attachment to EN 60715 TH35 support rail in the control cabinet.

Part number: 0188 181 7.



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Figure 8: UWU52A switched-mode power supply



## Unit Information

Assignment to the low backlash servo gear units BSF../PSF..

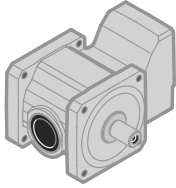
### 2.6 Assignment to the low backlash servo gear units BSF../PSF..

The following tables list the combination options for CMP servomotors and BSF../PSF.. low backlash servo gear units.



The permitted output torque  $M_a$  is given in Nm for each possible combination in the table.

**BSF.. gear unit**

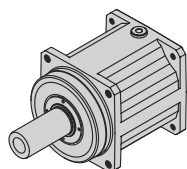


Gear unit type	i	CMP40M	CMP50S	CMP50M	CMP50L	CMP63S	CMP63M	CMP63L
BSF202	3			28.8		31.1		
	4			38.6		41.6		
	6		29.1	58.1		60		
	8		39	60		60		
	10		47.1	51		51		
	15		51	51		51		
	20		51	51				
	25		51					
BSF302	3						60.2	
	4				57.7		80.5	
	6			57.9	87	62.5	120	
	8			77.5	116.2	83.6	120	
	10			93.9	108	101.3	108	
	15		70.8	112	112	112	112	
	20		95	112	112	112	112	
	25		112	112		112		
	30		112					
BSF402	3							
	4							113.8
	6						120.3	171.5
	8				115.4		160.9	210
	10			91.9	139.2	99.3	186	186
	15			139.7	210	150.9	210	210
	20			187.8	220	202.6	220	220
	25			225	225	225	225	
		30		225		225		
BSF502	3							
	4							
	6							
	8							228
	10						192.3	275.9
	12						241	
	15						291.6	375
	20					199.7	375	375
	25					251.3	375	375
	30					303	375	
	35					354.6		



Gear unit type	i	CMP40M	CMP50S	CMP50M	CMP50L	CMP63S	CMP63M	CMP63L
BSF602	3							
	4							
	6							
	8							
	10							
	12							
	15							411.8
	20						385.8	553
	25						485.3	694.3
	30						584.8	750
	35						684.3	
40						750		

**PSF.. gear unit**



Gear unit type	i	CMP40M	CMP50S	CMP50M	CMP50L	CMP63S	CMP63M	CMP63L
PSF121	3		15.4	30.6	36			
	4		20.6	38	38			
	5		25.7	35	35			
	7	26.3	36					
	10	26						
PSF122	16	38	38					
	20	35	35					
	25	35	35					
	28	33						
	35	35						
	40	32						
	49							
	70							
PSF221	3			30.6	45.7	33	63.6	
	4				61	44	84.7	
	5			51	76.2	54.9	80	
	7			71.4	85	76.9	85	
	10		51.5					
PSF222	16	60.2	82.4	85	85			
	20	75.2	80	80	80			
	25	80	80	80				
	28	83	83					
	35	80	80					
	40	79						
	49	85	85					
	70	85						
100								



## Unit Information

Assignment to the low backlash servo gear units BSF./PSF..

Gear unit type	i	CMP40M	CMP50S	CMP50M	CMP50L	CMP63S	CMP63M	CMP63L
PSF321	3						63.6	90.3
	4						84.7	120.4
	5						105.9	150.5
	7				106.7	76.9	148.3	168
	10			102	121	109.9		
PSF322	16		82.4	153	153	153	153	
	20		103	169	169	169	169	
	25		128.7	169	169	169	169	
	28		144.1	145	145	145		
	35		169	169	169	169		
	40		142					
	49		168	168		168		
	70		168					
PSF521	3							
	4							
	5							
	7							
	10						211.9	270
PSF522	16						339	385
	20				304.9	219.8	375	375
	25			254.9	375	274.7	375	375
	28			285.5	385	307.7	385	385
	35			356.9	375	375	375	375
	40			385	385	385		
	49		252.3	360	360	360	360	360
	70		360	360	360	360		
PSF621	4							
	5							
	7							
	10							
PSF622	16							481.5
	20							601.9
	25						529.6	700
	28						593.2	745
	35				533.6		700	700
	40				609.8	439.6	745	745
	49				660	538.5	660	660
	70				660	660	660	660
PSF721	4							
	5							
	7							
	10							



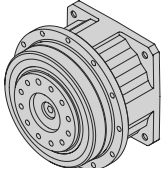
Gear unit type	i	CMP40M	CMP50S	CMP50M	CMP50L	CMP63S	CMP63M	CMP63L
PSF722	16							
	20							
	25							
	28							842.7
	35						741.5	1053.4
	40						847.4	1080
	49						1038.1	1380
	70				1067.2	769.2	1380	1380
	100				1050	1050	1050	1050
PSF821	4							
	5							
	7							
	10							
PSF822	16							
	20							
	25							
	28							
	35							
	40							
	49							1474.7
	70							2106.7
100							2060	



## Unit Information

Assignment to the low backlash servo gear units BSF./PSF..

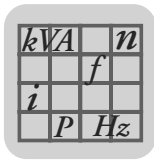
### PSBF.. gear unit



Gear unit type	i	CMP40M	CMP50S	CMP50M	CMP50L	CMP63S	CMP63M	CMP63L
PSBF221	5			51	76.2	54.9	80	
	7			71.4	85	76.9	85	
	10		51.5					
PSBF222	15							
	20	75.2	80	80	80			
	25	80	80	80				
	35	80	80					
	49	85	85					
	70	85						
	100							
PSBF321	5						105.9	150.5
	7				106.7	76.9	148.3	168
	10			102	121	109.9		
PSBF322	15			153	169	164.8	169	
	20		103	169	169	169	169	
	25		128.7	169	169	169	169	
	35		169	169	169	169		
	49		168	169		168		
	70		168					
	100		121					
PSBF521	5							
	7							
	10						211.9	270
PSBF522	15						317.8	375
	20				304.9	219.8	375	375
	25			254.9	375	274.7	375	375
	35			356.9	375	375	375	375
	49		252.3	360	360	360	360	360
	70		360	360	360	360		
	100		270	270	270	270		
PSBF621	5							
	7							
	10							
PSBF622	15							
	20							601.9
	25						529.6	700
	35				533.6		700	700
	49				660	538.5	660	660
	70				660	660	660	660
	100				500	500	500	
PSBF821	5							
	7							
	10							



Gear unit type	i	CMP40M	CMP50S	CMP50M	CMP50L	CMP63S	CMP63M	CMP63L
PSBF822	15							
	20							
	25							
	35							
	49							1474.7
	70							2106.7
	100							2060



## 3 Technical Data

### 3.1 Mechanical/electrical characteristics

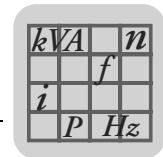
Version	CMP40 / 50 / 63	
	Standard	Optional
Enclosure	IP65	–
Thermal classification	F	–
Motor protection	KTY	–
Connection	Adjustable plug connector	Radial plug connector
Shaft end	Smooth	With key, domed type A
Ambient temperature	-20 °C to + 40 °C	–
Mounting position	270 °	Random
Standard/regulations	CE VDE	CSA (in preparation) UL (in preparation)
Noise levels (EN 60034)	Below specified value	–
Feedback	2-pole resolver	Hiperface encoder
Brake	–	BP
Cooling	Convection	Forced cooling fan for CMP50/CMP63
Vibration class	"B" to EN 60034-14	
Cogging	<ul style="list-style-type: none"> <li>• CMP40 ≤ 2 % M<sub>0</sub></li> <li>• CMP50 ≤ 1.5 % M<sub>0</sub></li> <li>• CMP63 ≤ 1.5 % M<sub>0</sub></li> </ul>	

Please contact SEW-EURODRIVE for information on additional options.

### 3.2 Weight of the motors

Motor type	Weight of the motor [kg]	Weight of the brake motor [kg]
CMP40S	1.3	1.7
CMP40M	1.6	2
CMP50S	2.3	2.9
CMP50M	3.3	3.9
CMP50L	4.1	4.7
CMP63S	4	5
CMP63M	5.7	6.7
CMP63L	7.5	8.5





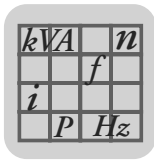
### 3.3 Motor data of the CMP servomotors

$n_N$ [min <sup>-1</sup> ]	Motor	$M_0$	$I_0$	$M_{max}$	$I_{max}$	$M_{OVR}$	$I_{OVR}$	$J_{mot}$	$J_{bmot}$	$M_{B1}$	$M_{B2}$	$L_1$	$R_1$	$U_{p0\ cold}$
		[Nm]	[A]	[Nm]	[A]	[Nm]	[A]	[kgcm <sup>2</sup> ]	[Nm]	[mH]	$\Omega$	[V]		
3000	CMP40S	0.5	1.2	1.9	6.1	-	-	0.1	0.13	0.95	--	23	11.94	27.5
	CMP40M	0.8	0.95	3.8	6.0	-	-	0.15	0.18	0.95	--	45.5	19.92	56
	CMP50S	1.3	0.96	5.2	5.1	1.7	1.25	0.42	0.48	3.1	4.3	71	22.49	86
	CMP50M	2.4	1.68	10.3	9.6	3.5	2.45	0.67	0.73	4.3	3.1	38.5	9.98	90
	CMP50L	3.3	2.2	15.4	13.6	4.8	3.2	0.92	0.99	4.3	3.1	30.5	7.41	98
	CMP63S	2.9	2.15	11.1	12.9	4	3	1.15	1.49	7	9.3	36.5	6.79	90
	CMP63M	5.3	3.6	21.4	21.6	7.5	5.1	1.92	2.26	9.3	7	22	3.57	100
	CMP63L	7.1	4.95	30.4	29.7	10.3	7.2	2.69	3.03	9.3	7	14.2	2.07	100
4500	CMP40S	0.5	1.2	1.9	6.1	-	-	0.1	0.13	0.85	--	23	11.94	27.5
	CMP40M	0.8	0.95	3.8	6.0	-	-	0.15	0.18	0.95	--	45.5	19.92	56
	CMP50S	1.3	1.32	5.2	7.0	1.7	1.7	0.42	0.48	3.1	4.3	37	11.6	62
	CMP50M	2.4	2.3	10.3	13.1	3.5	3.35	0.67	0.73	4.3	3.1	20.5	5.29	66
	CMP50L	3.3	3.15	15.4	19.5	4.8	4.6	0.92	0.99	4.3	3.1	14.6	3.56	68
	CMP63S	2.9	3.05	11.1	18.3	4	4.2	1.15	1.49	7	9.3	18.3	3.34	64
	CMP63M	5.3	5.4	21.4	32.4	7.5	7.6	1.92	2.26	9.3	7	9.8	1.49	67
	CMP63L	7.1	6.9	30.4	41.4	10.3	10	2.69	3.03	9.3	7	7.2	1.07	71
6000	CMP40S	0.5	1.2	1.9	6.1	-	-	0.1	0.13	0.95	--	23	11.94	27.5
	CMP40M	0.8	1.1	3.8	6.9	-	-	0.15	0.18	0.95	--	34	14.95	48.5
	CMP50S	1.3	1.7	5.2	9.0	1.7	2.2	0.42	0.48	3.1	4.3	22.5	7.11	48.5
	CMP50M	2.4	3	10.3	17.1	3.5	4.4	0.67	0.73	4.3	3.1	12	3.21	50.5
	CMP50L	3.3	4.2	15.4	26	4.8	6.1	0.92	0.99	4.3	3.1	8.2	1.91	51
	CMP63S	2.9	3.9	11.1	23.4	4	5.4	1.15	1.49	--	--	11.2	2.1	50
	CMP63M	5.3	6.9	21.4	41.4	7.5	9.8	1.92	2.26	--	--	5.9	0.92	52
	CMP63L	7.1	9.3	30.4	55.8	10.3	13.5	2.69	3.03	--	--	4	0.62	53

- $n_N$  Rated speed
- $M_0$  Static torque (thermal continuous torque at low speeds)
- $I_0$  Standstill current
- $M_{max}$  Maximum limit torque of the servomotors
- $I_{max}$  Maximum permitted motor current
- $M_{OVR}$  Static torque with forced cooling fan
- $I_{OVR}$  Standstill current with forced cooling fan
- $J_{mot}$  Mass moment of inertia of the motor
- $J_{bmot}$  Mass moment of inertia of the brake motor
- $M_{B1}$  Standard braking torque
- $M_{B2}$  Reduced braking torque
- $L_1$  Inductance of the winding
- $R_1$  Ohmic resistance of the winding
- $U_{p0\ cold}$  Internal voltage at 1000 min<sup>-1</sup>



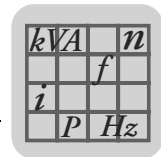
To avoid the low start-up losses during motor operation at low temperatures, SEW-EURODRIVE recommends warming up the motor winding using a current supply. Please contact SEW-EURODRIVE for more information.



### 3.4 Inverter assignment to MOVIDRIVE® MDX60B/61B

Overview of combinations for CMP servomotors, system voltage 400 V, **peak torque**  $M_{max}$  in Nm.

$n_N$ [min <sup>-1</sup> ]	Motor	$I_{max}$ :	MOVIDRIVE® B												
			005 4.0 [A]	008 4.8 [A]	011 6.2 [A]	014 8.0 [A]	0015 6.0 [A]	022 8.25 [A]	030 10.5 [A]	040 14.3 [A]	055 18.8 [A]	075 24.0 [A]	110 36.0 [A]	150 48.0 [A]	220 69.0 [A]
3000	CMP40S		1.5	1.7	1.9		1.9	1.9							
	CMP40M		3	3.3	3.8		3.8								
	CMP50S		4.5	5	5.2		5.2								
	CMP50M		5.4	6.3	7.7	9.3	7.6	9.4	10.3						
	CMP50L		5.9	6.9	8.7	10.7	8.4	11	13.1	15.4					
	CMP63S		5.2	6	7.3	8.7	7.1	8.8	10.1	11.1					
	CMP63M		6	7.1	8.9	11.1	8.7	11.3	13.7	17.0	20	21.4			
	CMP63L				9	11.3	8.7	11.6	14.4	18.6	23	27	30.4		
4500	CMP40S		1.5	1.7	1.9		1.9	1.9							
	CMP40M		3	3.3	3.8		3.8								
	CMP50S		3.5	4.1	4.8	5.2	4.7	5.2							
	CMP50M		4.1	4.8	6	7.4	5.9	7.6	9	10.3					
	CMP50L		4.2	5	6.3	7.9	6.1	8.2	10	12.7	15.1	15.4			
	CMP63S		3.8	4.5	5.6	6.8	5.4	7	8.2	9.9	11.1				
	CMP63M				6.2	7.8	6	8	9.9	12.7	15.6	18.3	21.4		
	CMP63L					8.3	6.4	8.6	10.7	14.1	17.8	21.6	28.2	30.4	
6000	CMP40S		1.5	1.7	1.9		1.9	1.9							
	CMP40M		2.6	3	3.6	3.8	3.5	3.8							
	CMP50S		2.9	3.3	4.1	4.8	4	4.9	5.2						
	CMP50M			3.8	4.8	6	4.6	6.1	7.4	9.2	10.3				
	CMP50L			3.8	4.8	6.1	4.7	6.3	7.8	10.2	12.5	14.7	15.4		
	CMP63S			3.6	4.5	5.6	4.4	5.8	6.9	8.6	10	11.1			
	CMP63M					6.3	4.8	6.5	8	10.4	13.0	15.6	20	21.4	
	CMP63L							6.5	8.1	10.8	13.8	17	23.3	28.1	30.4

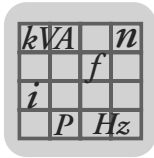


### 3.5 Inverter assignment to MOVIAXIS® MX

Overview of combinations for CMP servomotors, system voltage 400 V, peak torque  $M_{max}$  in Nm.

$n_N$ [min <sup>-1</sup> ]	Motor	$I_N$ [A] $I_{max}$ [A]	MOVIAXIS® MX							
			Size 1			BG2		BG3		
			2	4	8	12	16	24	32	
3000	CMP40S	$I_{max}$ [%x $I_N$ ]	250	153						
		$M_{max}$ [Nm]	1.7	1.9						
	CMP40M	$I_{max}$ [%x $I_N$ ]	250	150						
		$M_{max}$ [Nm]	3.4	3.8						
	CMP50S	$I_{max}$ [%x $I_N$ ]	250	128						
		$M_{max}$ [Nm]	5.1	5.2						
	CMP50M	$I_{max}$ [%x $I_N$ ]	250	240						
		$M_{max}$ [Nm]	6.5	10.3						
	CMP50L	$I_{max}$ [%x $I_N$ ]	250	250	170					
		$M_{max}$ [Nm]	7.2	12.7	15.4					
	CMP63S	$I_{max}$ [%x $I_N$ ]	250	250	161					
		$M_{max}$ [Nm]	6.2	9.9	11.1					
	CMP63M	$I_{max}$ [%x $I_N$ ]		250	250	180				
		$M_{max}$ [Nm]		13.2	20.6	21.4				
CMP63L	$I_{max}$ [%x $I_N$ ]		250	250	248					
	$M_{max}$ [Nm]		13.8	24	30.8					
4500	CMP40S	$I_{max}$ [%x $I_N$ ]	250	153						
		$M_{max}$ [Nm]	1.7	1.9						
	CMP40M	$I_{max}$ [%x $I_N$ ]	250	150						
		$M_{max}$ [Nm]	3.4	3.8						
	CMP50S	$I_{max}$ [%x $I_N$ ]	250	175						
		$M_{max}$ [Nm]	4.2	5.2						
	CMP50M	$I_{max}$ [%x $I_N$ ]	250	250	164					
		$M_{max}$ [Nm]	5	8.7	10.3					
	CMP50L	$I_{max}$ [%x $I_N$ ]		250	244					
		$M_{max}$ [Nm]		9.6	15.4					
	CMP63S	$I_{max}$ [%x $I_N$ ]		250	229					
		$M_{max}$ [Nm]		8	11.1					
	CMP63M	$I_{max}$ [%x $I_N$ ]			250	250	203			
		$M_{max}$ [Nm]			15.8	19.4	20.3			
CMP63L	$I_{max}$ [%x $I_N$ ]			250	250	250	173			
	$M_{max}$ [Nm]			17.9	23.3	26.8	27.2			

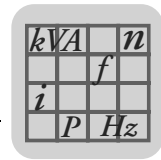
Table continued on next page.



## Technical Data

### Inverter assignment to MOVIAXIS® MX

$n_N$ [min <sup>-1</sup> ]	Motor	$I_N$ [A] $I_{max}$ [A]	MOVIAXIS® MX						
			Size 1			BG2		BG3	
			2 5	4 10	8 20	12 30	16 40	24 60	32 80
6000	CMP40S	$I_{max}$ [% $\times I_N$ ]	250	153					
		$M_{max}$ [Nm]	1.7	1.9					
	CMP40M	$I_{max}$ [% $\times I_N$ ]	250	173					
		$M_{max}$ [Nm]	2.9	3.4					
	CMP50S	$I_{max}$ [% $\times I_N$ ]	250	225					
		$M_{max}$ [Nm]	3.5	5.1					
	CMP50M	$I_{max}$ [% $\times I_N$ ]		250	241				
		$M_{max}$ [Nm]		7	9.7				
	CMP50L	$I_{max}$ [% $\times I_N$ ]		250	250	217			
		$M_{max}$ [Nm]		7.4	12.1	13.8			
	CMP63S	$I_{max}$ [% $\times I_N$ ]		250	250	195			
		$M_{max}$ [Nm]		6.9	11.1	12			
	CMP63M	$I_{max}$ [% $\times I_N$ ]			250	250	250	173	
		$M_{max}$ [Nm]			13.9	18.5	21.6	21.9	
CMP63L	$I_{max}$ [% $\times I_N$ ]			250	250	250	233		
	$M_{max}$ [Nm]			14.6	20.2	24.6	29.3		



### 3.6 Torque/current characteristic curves

#### CMP40S/M

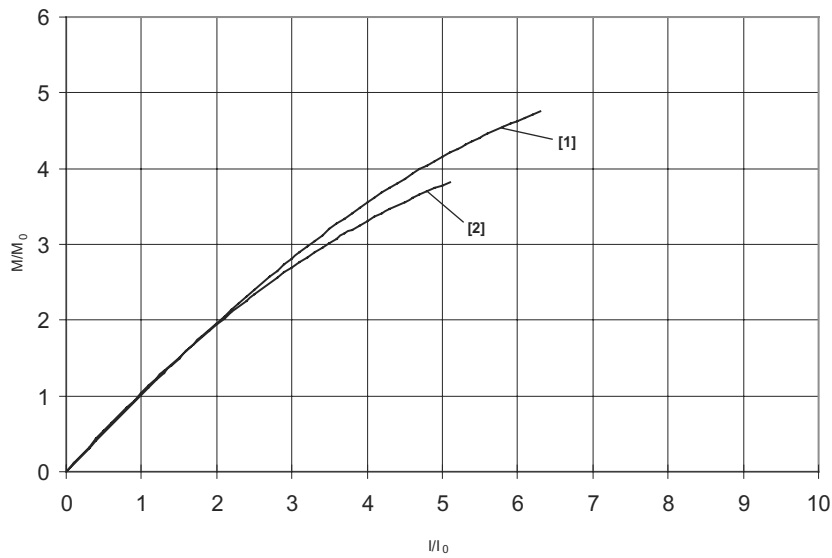


Figure 9: Torque/current characteristic curve for CMP40S/M

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- [1] CMP40M
- [2] CMP40S

#### CMP50S / M / L

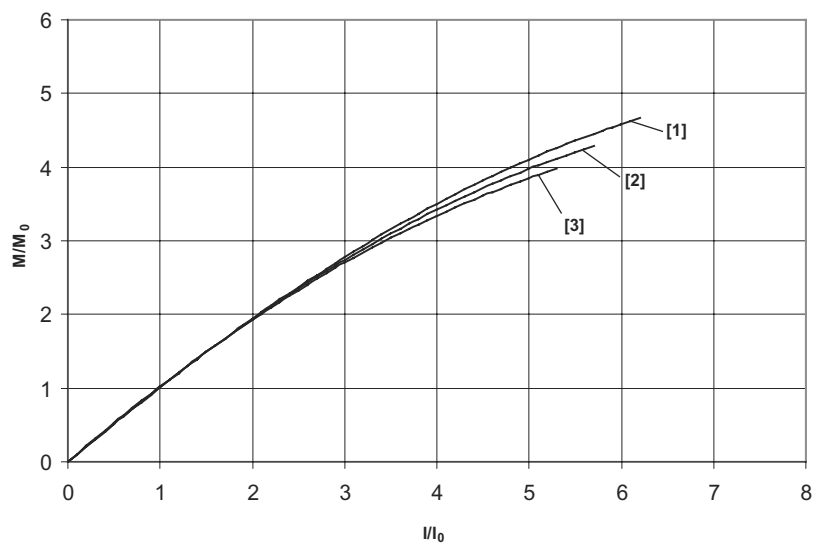
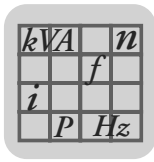


Figure 10: Torque/current characteristic curve for CMP50S/M/L

58574AXX

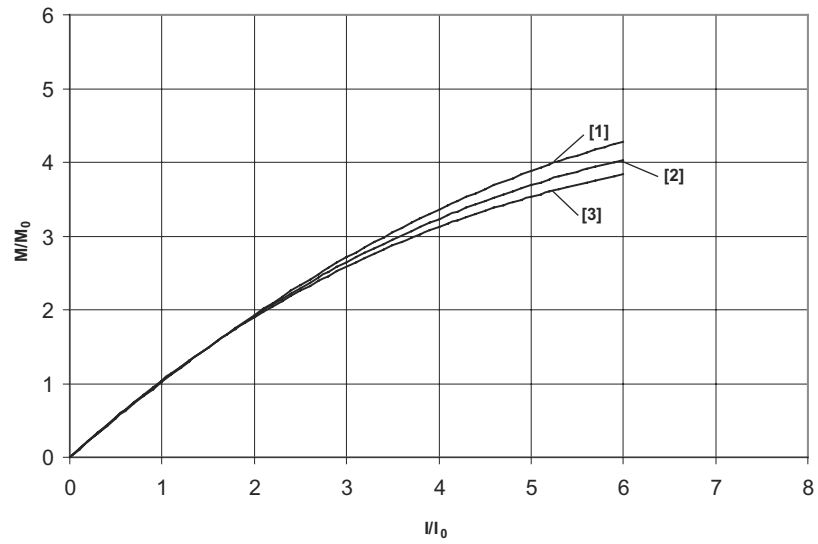
- [1] CMP50L
- [2] CMP50M
- [3] CMP50S



## Technical Data

### Torque/current characteristic curves

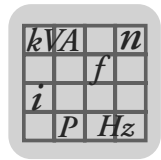
#### CMP63S / M / L



58575BXX

Figure 11: Torque/current characteristic curve for CMP63S/M/L

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



**3.7 Dynamic and thermal limit characteristic curve (derating)**

Definition:

- M = maximum dynamic torque for a maximum supply voltage on the servo inverter of 360 V, 400 V, 460 V or 500 V.
- M S1 (derating) = thermal limit characteristic curve in S1 - 100 % operation.

**Dynamic and thermal limit characteristic curve for CMP40S  $n_N=6000 \text{ min}^{-1}$**

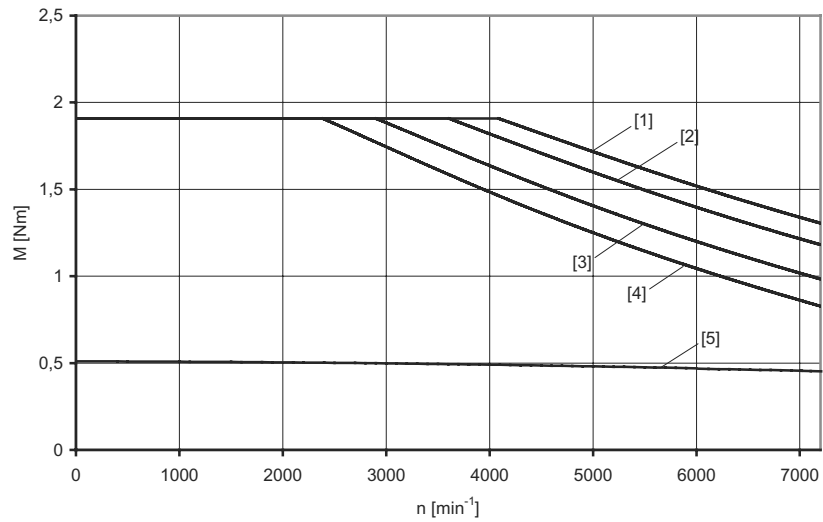
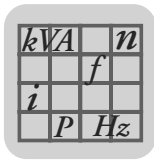


Figure 12: Dynamic and thermal limit characteristic curve for CMP40S  $n_N=6000 \text{ min}^{-1}$

58442axx

- [1]  $M_{\text{dynamic}}$  (n) 500 V
- [2]  $M_{\text{dynamic}}$  (n) 460 V
- [3]  $M_{\text{dynamic}}$  (n) 400 V
- [4]  $M_{\text{dynamic}}$  (n) 360 V
- [5]  $M_{S1_{\text{thermal}}}$  (derating)



## Technical Data

### Dynamic and thermal limit characteristic curve (derating)

#### Dynamic and thermal limit characteristic curve for CMP40M $n_N=4500 \text{ min}^{-1}$

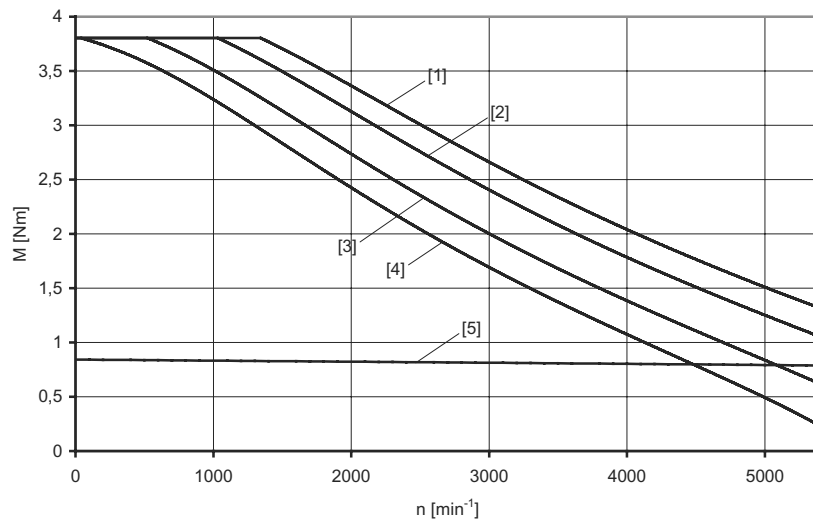


Figure 13: Dynamic and thermal limit characteristic curve for CMP40M  $n_N=4500 \text{ min}^{-1}$

58441axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M_{S1_{\text{thermal}}}$  (derating)

#### Dynamic and thermal limit characteristic curve for CMP40M $n_N=6000 \text{ min}^{-1}$

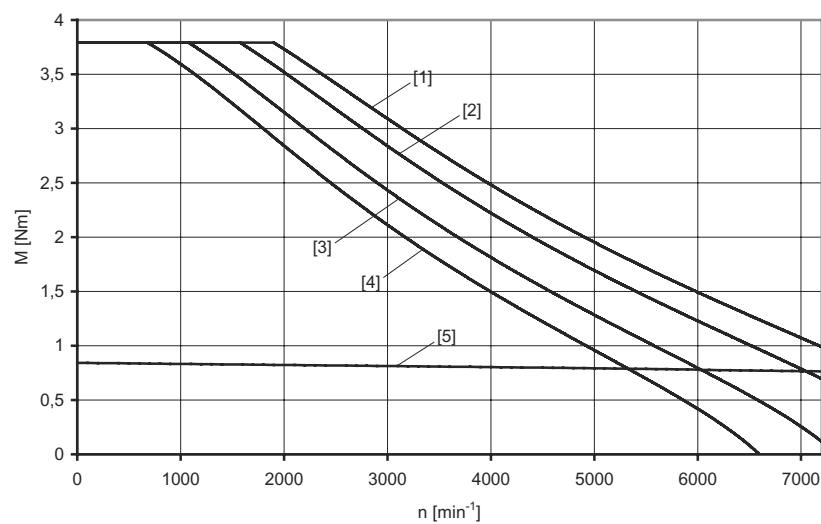
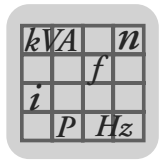


Figure 14: Dynamic and thermal limit characteristic curve for CMP40M  $n_N=6000 \text{ min}^{-1}$

58440axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M_{S1_{\text{thermal}}}$  (derating)





**Dynamic and thermal limit characteristic curve for CMP50S  $n_N=3000 \text{ min}^{-1}$**

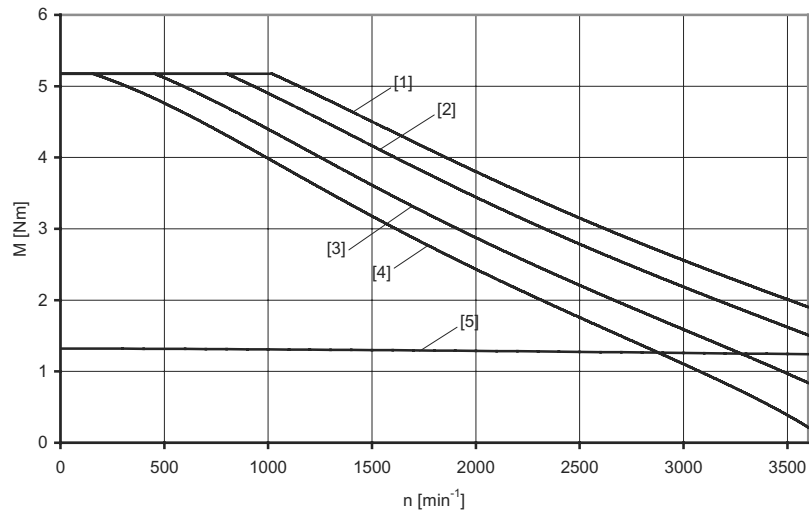


Figure 15: Dynamic and thermal limit characteristic curve for CMP50S  $n_N=3000 \text{ min}^{-1}$

57439axx

- [1]  $M_{\text{dynamic}}(n) 500 \text{ V}$
- [2]  $M_{\text{dynamic}}(n) 460 \text{ V}$
- [3]  $M_{\text{dynamic}}(n) 400 \text{ V}$
- [4]  $M_{\text{dynamic}}(n) 360 \text{ V}$
- [5]  $M S1_{\text{thermal}}(\text{derating})$

**Dynamic and thermal limit characteristic curve for CMP50S  $n_N=4500 \text{ min}^{-1}$**

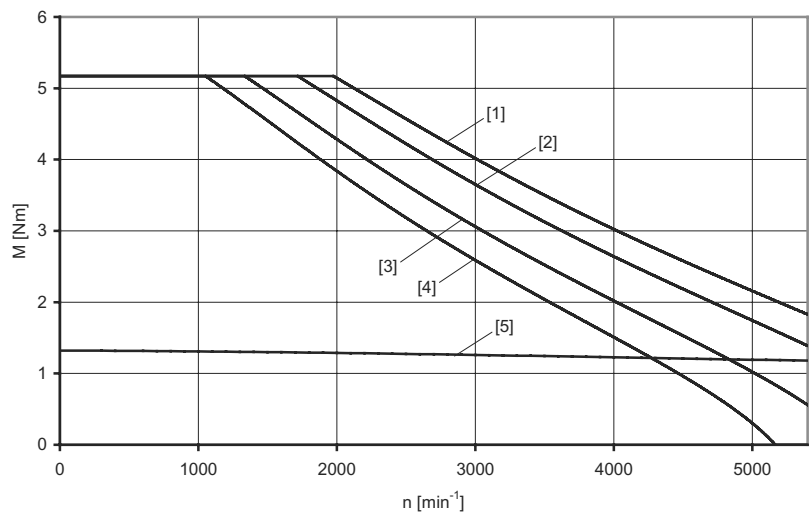
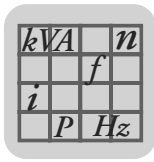


Figure 16: Dynamic and thermal limit characteristic curve for CMP50S  $n_N=4500 \text{ min}^{-1}$

58438axx

- [1]  $M_{\text{dynamic}}(n) 500 \text{ V}$
- [2]  $M_{\text{dynamic}}(n) 460 \text{ V}$
- [3]  $M_{\text{dynamic}}(n) 400 \text{ V}$
- [4]  $M_{\text{dynamic}}(n) 360 \text{ V}$
- [5]  $M S1_{\text{thermal}}(\text{derating})$



## Technical Data

### Dynamic and thermal limit characteristic curve (derating)

#### Dynamic and thermal limit characteristic curve for CMP50S $n_N=6000 \text{ min}^{-1}$

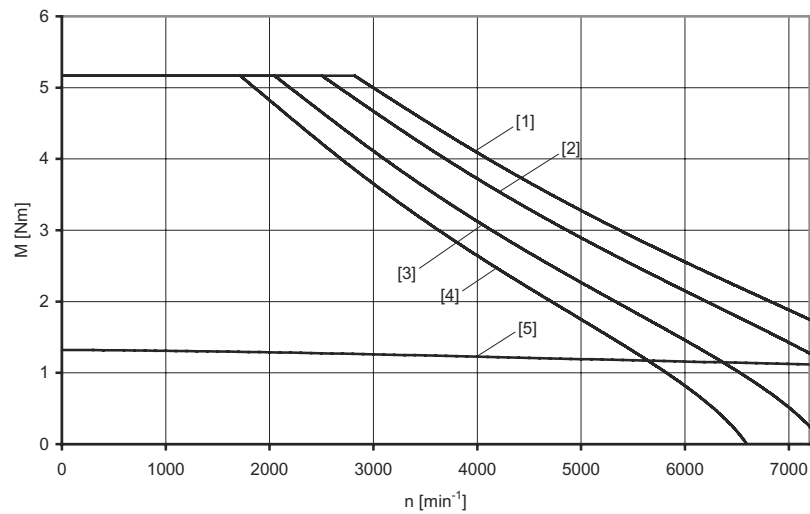


Figure 17: Dynamic and thermal limit characteristic curve for CMP50S  $n_N=6000 \text{ min}^{-1}$

58437axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M_{S1_{\text{thermal}}}$  (derating)

#### Dynamic and thermal limit characteristic curve for CMP50M $n_N=3000 \text{ min}^{-1}$

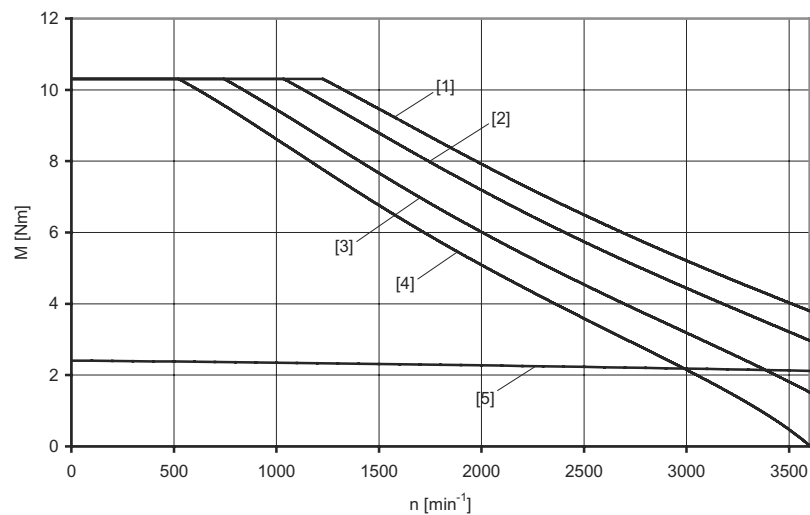
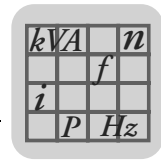


Figure 18: Dynamic and thermal limit characteristic curve for CMP50M  $n_N=3000 \text{ min}^{-1}$

58436axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M_{S1_{\text{thermal}}}$  (derating)



**Dynamic and thermal limit characteristic curve for CMP50M  $n_N=4500 \text{ min}^{-1}$**

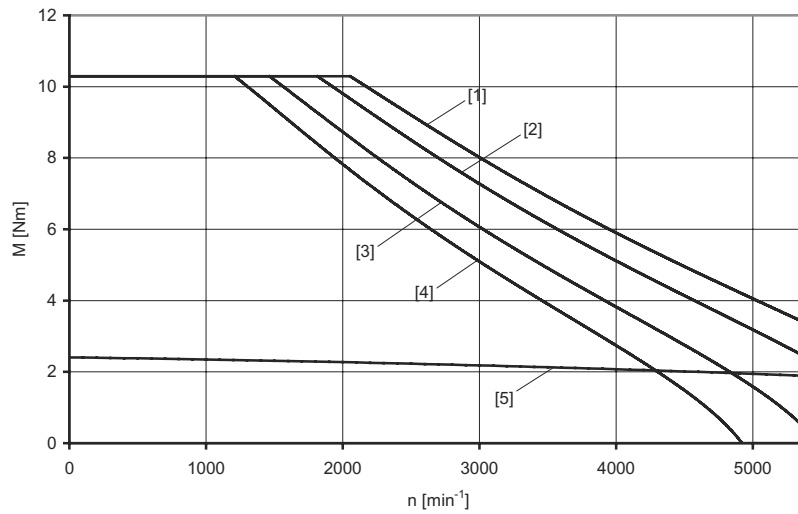


Figure 19: Dynamic and thermal limit characteristic curve for CMP50M  $n_N=4500 \text{ min}^{-1}$

58435axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M S1_{\text{thermal}}$  (derating)

**Dynamic and thermal limit characteristic curve for CMP50M  $n_N=6000 \text{ min}^{-1}$**

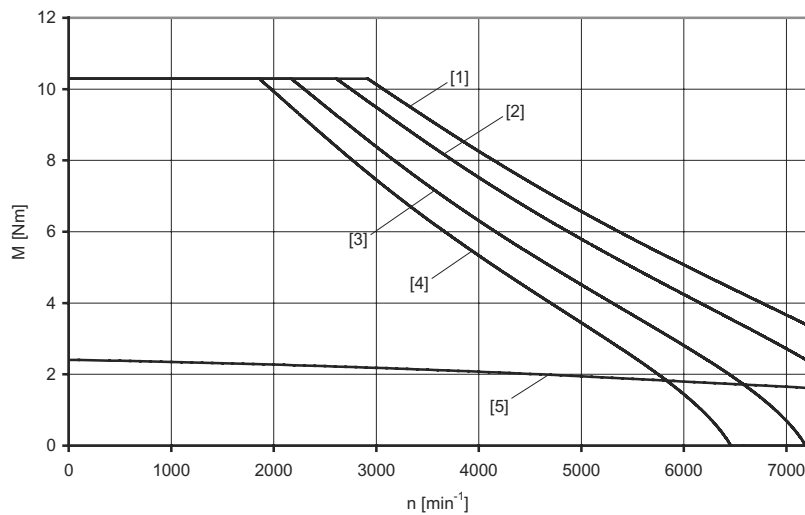
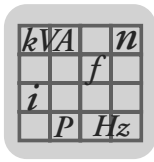
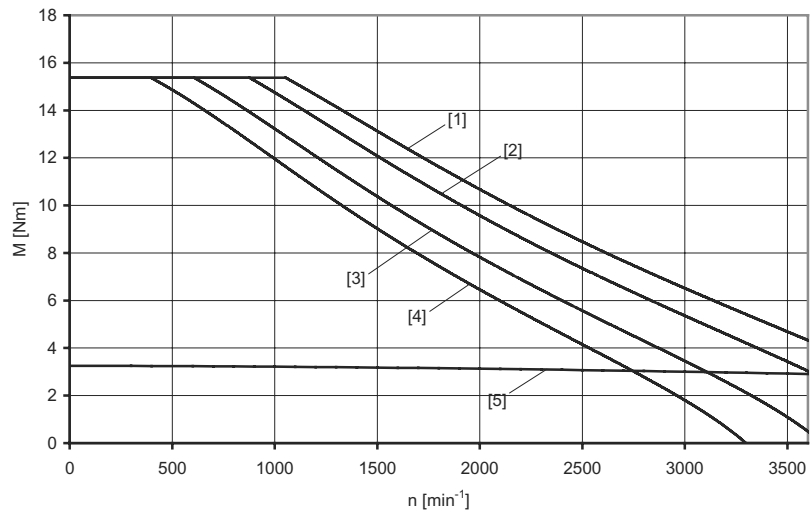


Figure 20: Dynamic and thermal limit characteristic curve for CMP50M  $n_N=6000 \text{ min}^{-1}$

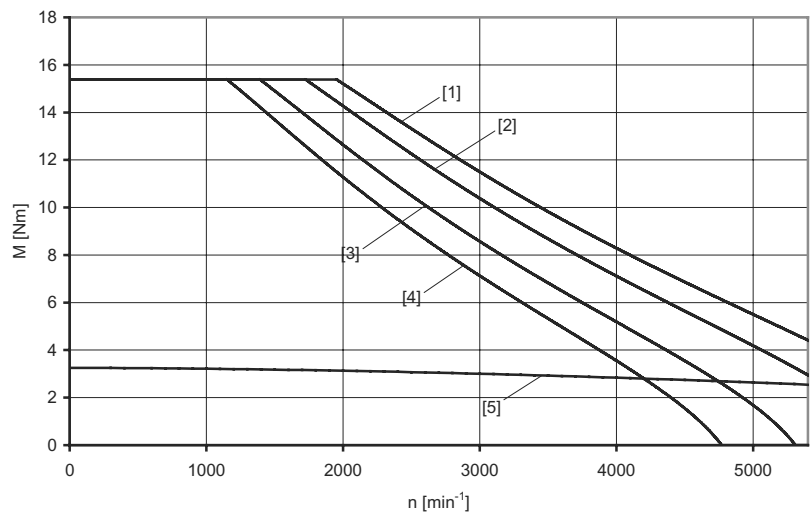
58434axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M S1_{\text{thermal}}$  (derating)


**Dynamic and thermal limit characteristic curve for CMP50L  $n_N=3000 \text{ min}^{-1}$** 

**Figure 21: Dynamic and thermal limit characteristic curve for CMP50L  $n_N=3000 \text{ min}^{-1}$** 

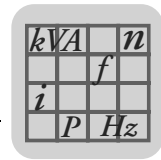
58433axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M S1_{\text{thermal}}$  (derating)

**Dynamic and thermal limit characteristic curve for CMP50L  $n_N=4500 \text{ min}^{-1}$** 

**Figure 22: Dynamic and thermal limit characteristic curve for CMP50L  $n_N=4500 \text{ min}^{-1}$** 

58432axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M S1_{\text{thermal}}$  (derating)



**Dynamic and thermal limit characteristic curve for CMP50L  $n_N=6000 \text{ min}^{-1}$**

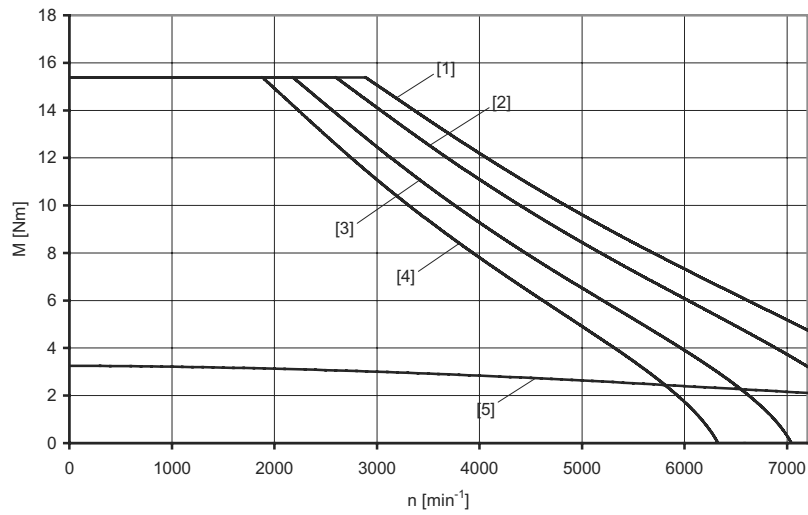


Figure 23: Dynamic and thermal limit characteristic curve for CMP50L  $n_N=6000 \text{ min}^{-1}$

58431axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M_{S1_{\text{thermal}}}$  (derating)

**Thermal limit characteristic curve for CMP50 / VR**

$\vartheta_U = -20 \dots +40 \text{ }^\circ\text{C}$

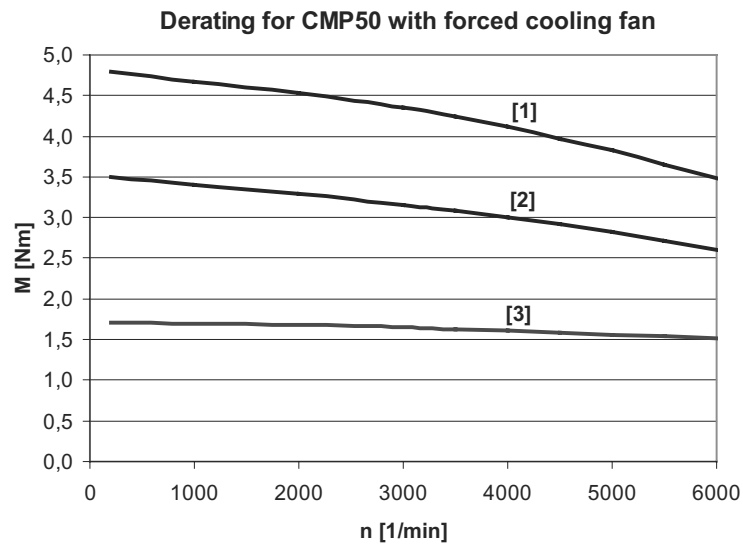
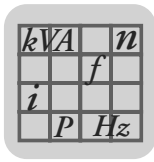


Figure 24: Thermal limit characteristic curve for CMP50 with forced cooling fan

58896aen

- [1] CMP50L / VR
- [2] CMP50M / VR
- [3] CMP50S / VR



## Technical Data

### Dynamic and thermal limit characteristic curve (derating)

#### Dynamic and thermal limit characteristic curve for CMP63S $n_N=3000 \text{ min}^{-1}$

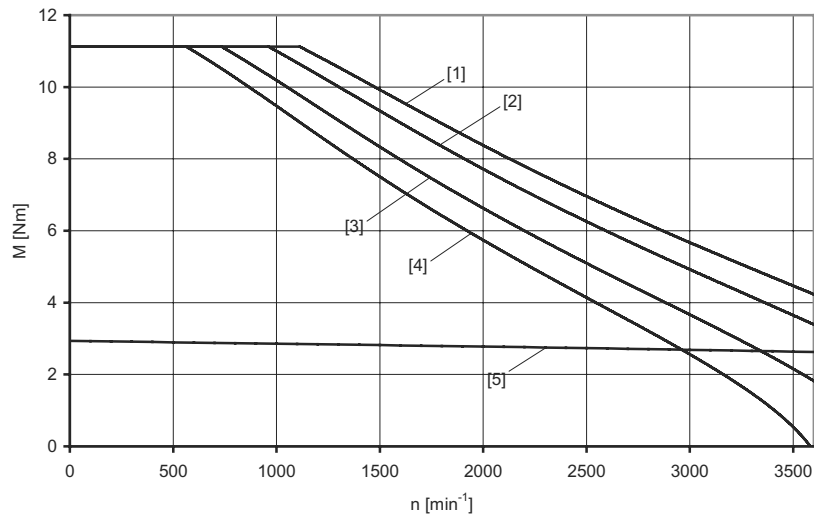


Figure 25: Dynamic and thermal limit characteristic curve for CMP63S  $n_N=3000 \text{ min}^{-1}$

58430axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M S1_{\text{thermal}}$  (derating)

#### Dynamic and thermal limit characteristic curve for CMP63S $n_N=4500 \text{ min}^{-1}$

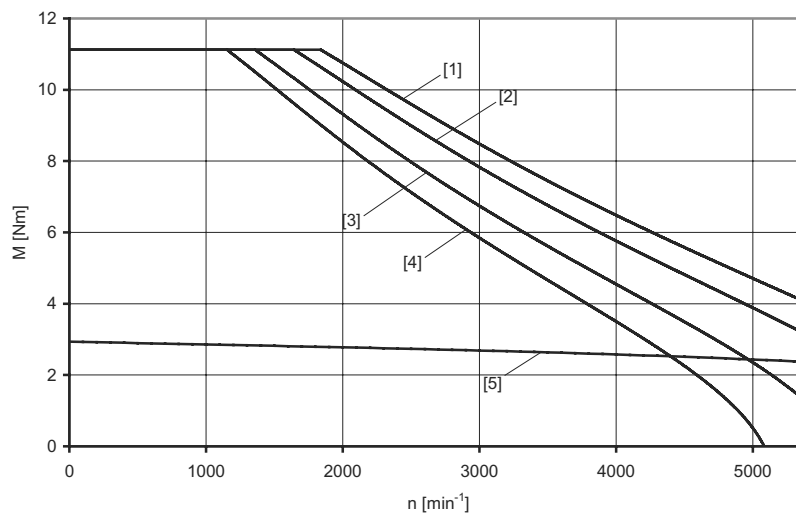
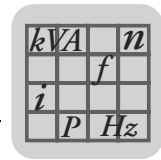


Figure 26: Dynamic and thermal limit characteristic curve for CMP63S  $n_N=4500 \text{ min}^{-1}$

58429axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M S1_{\text{thermal}}$  (derating)



**Dynamic and thermal limit characteristic curve for CMP63S  $n_N=6000 \text{ min}^{-1}$**

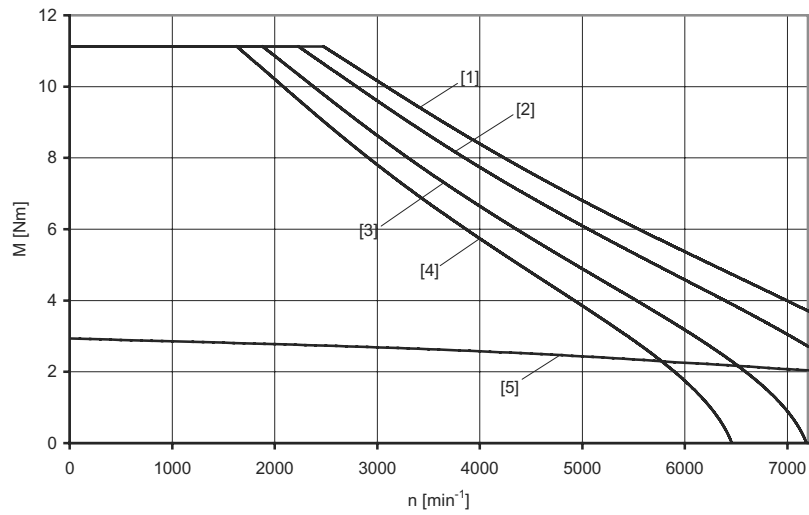


Figure 27: Dynamic and thermal limit characteristic curve for CMP63S  $n_N=6000 \text{ min}^{-1}$

58428axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M_{S1_{\text{thermal}}}$  (derating)

**Dynamic and thermal limit characteristic curve for CMP63M  $n_N=3000 \text{ min}^{-1}$**

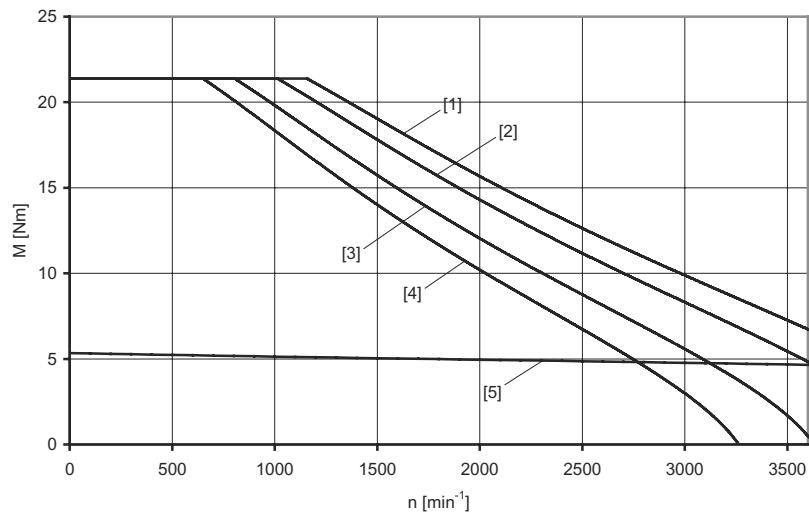
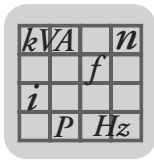


Figure 28: Dynamic and thermal limit characteristic curve for CMP63M  $n_N=3000 \text{ min}^{-1}$

58411axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M_{S1_{\text{thermal}}}$  (derating)



## Technical Data

### Dynamic and thermal limit characteristic curve (derating)

#### Dynamic and thermal limit characteristic curve for CMP63M $n_N=4500 \text{ min}^{-1}$

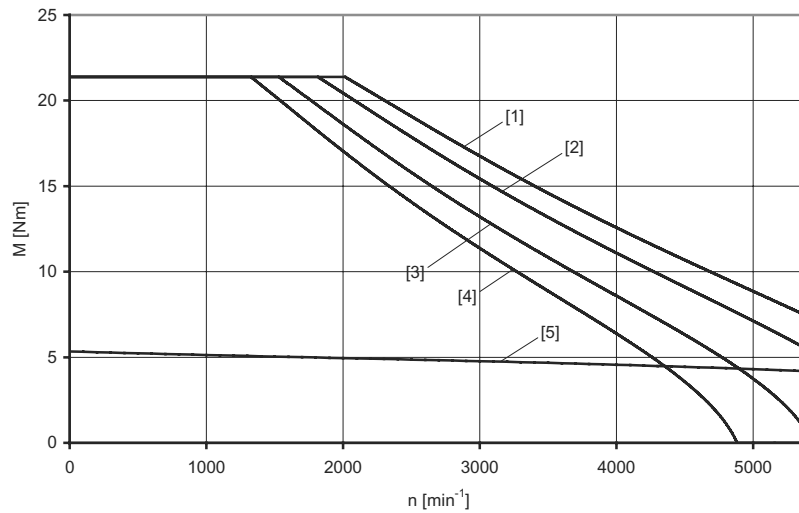


Figure 29: Dynamic and thermal limit characteristic curve for CMP63M  $n_N=4500 \text{ min}^{-1}$

58410axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M_{S1_{\text{thermal}}}$  (derating)

#### Dynamic and thermal limit characteristic curve for CMP63M $n_N=6000 \text{ min}^{-1}$

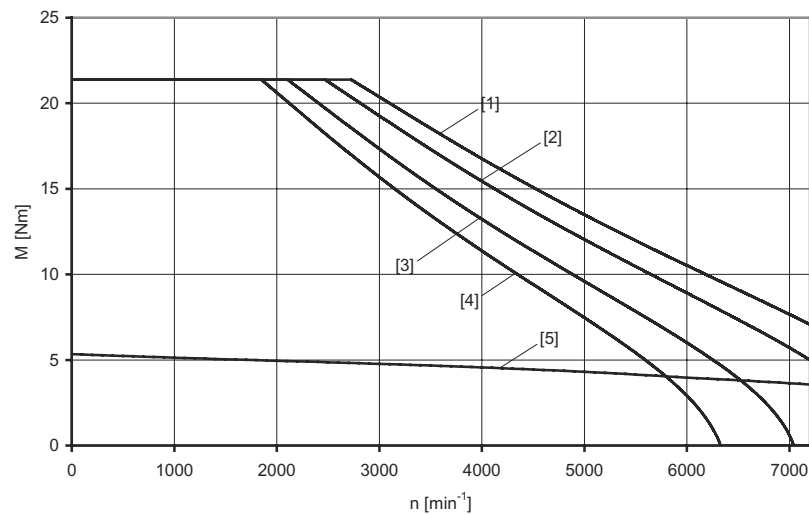
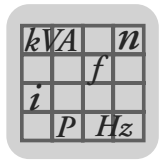


Figure 30: Dynamic and thermal limit characteristic curve for CMP63M  $n_N=6000 \text{ min}^{-1}$

58409axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M_{S1_{\text{thermal}}}$  (derating)





**Dynamic and thermal limit characteristic curve for CMP63L  $n_N=3000 \text{ min}^{-1}$**

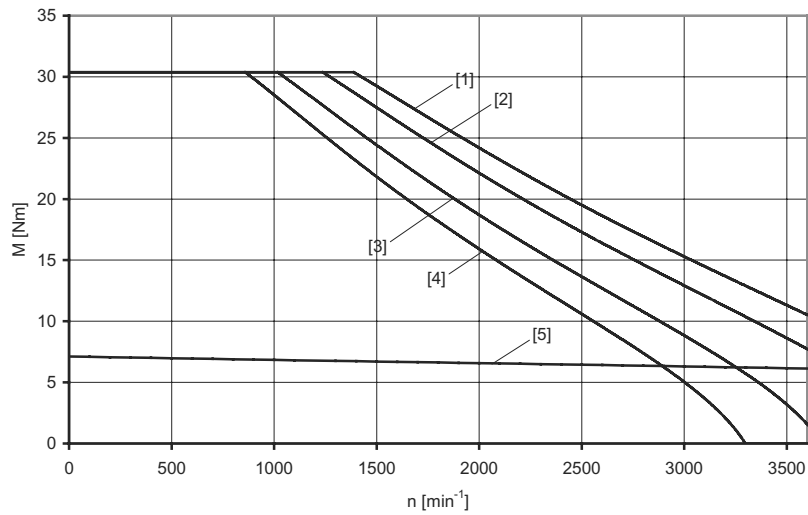


Figure 31: Dynamic and thermal limit characteristic curve for CMP63L  $n_N=3000 \text{ min}^{-1}$

58408axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M_{S1_{\text{thermal}}}$  (derating)

**Dynamic and thermal limit characteristic curve for CMP63L  $n_N=4500 \text{ min}^{-1}$**

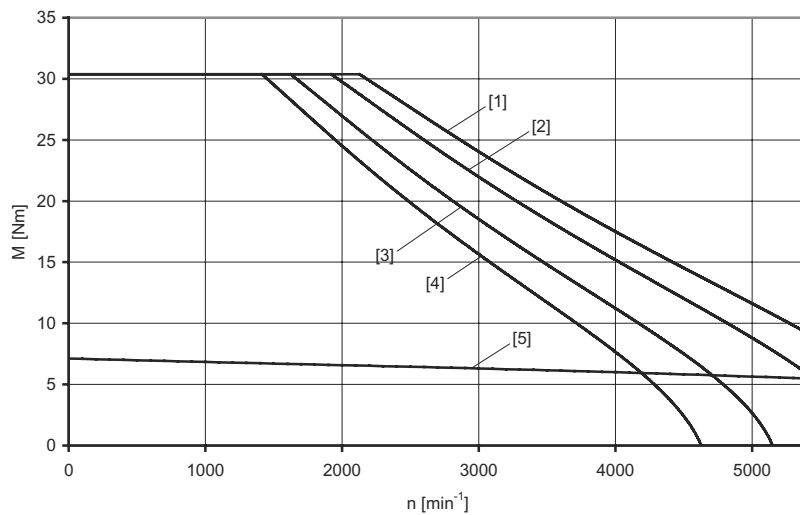
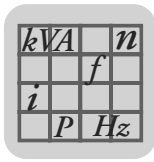


Figure 32: Dynamic and thermal limit characteristic curve for CMP63L  $n_N=4500 \text{ min}^{-1}$

58407axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M_{S1_{\text{thermal}}}$  (derating)



**Technical Data**

**Dynamic and thermal limit characteristic curve (derating)**

**Dynamic and thermal limit characteristic curve for CMP63L  $n_N=6000 \text{ min}^{-1}$**

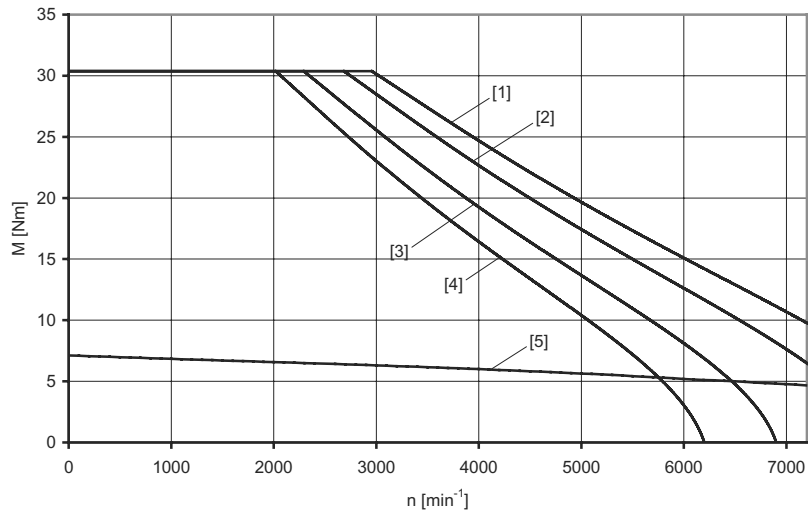


Figure 33: Dynamic and thermal limit characteristic curve for CMP63L  $n_N=6000 \text{ min}^{-1}$

58406axx

- [1]  $M_{\text{dynamic}}(n)$  500 V
- [2]  $M_{\text{dynamic}}(n)$  460 V
- [3]  $M_{\text{dynamic}}(n)$  400 V
- [4]  $M_{\text{dynamic}}(n)$  360 V
- [5]  $M_{S1_{\text{thermal}}}$  (derating)

**Thermal limit characteristic curve for CMP63 / VR**

$\vartheta_U = -20 \dots +40 \text{ }^\circ\text{C}$

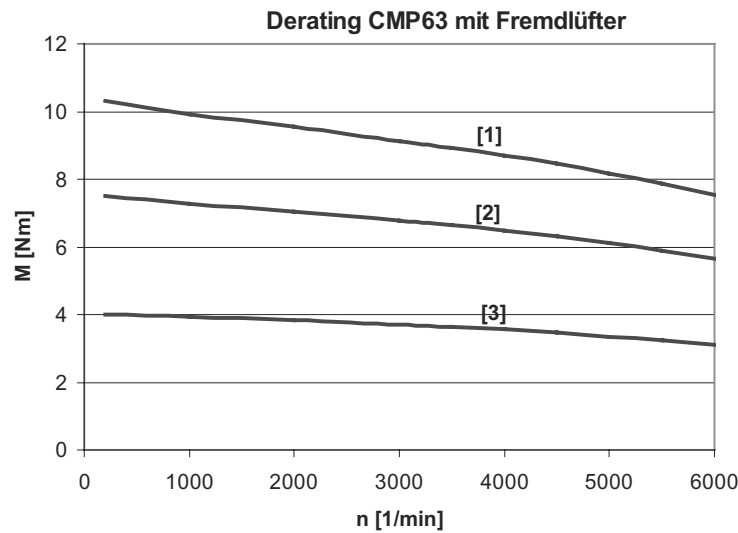
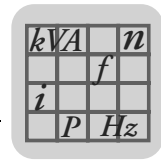


Figure 34: Thermal limit characteristic curve for CMP63 with forced cooling fan

58898axx

- [1] CMP63L / VR
- [2] CMP63M / VR
- [3] CMP63S / VR



Helical-bevel servo gearmotors and planetary servo gearmotors can be operated at **ambient temperatures of between – 20 °C and + 40 °C**. It is essential that you contact SEW-EURODRIVE if ambient temperatures exceed this temperature range.



Helical-bevel servo gearmotors and planetary servo gearmotors can be operated up to **altitudes of 1000 m above sea level**. For operation at altitudes above 1000 m above sea level, contact SEW-EURODRIVE.

**Derating for increased ambient temperature**

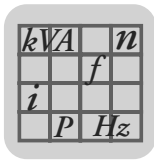
The following applies for determining a first approximation of a random thermal limit curve: The thermal limit curve for higher ambient temperatures must be reduced in all points (speed-related limit torque) by  $\Delta M_{TH}$ :

$$\Delta M_{TH} = M_{TH} \times \left( 1 - \sqrt{\frac{145 - T_U}{105}} \right)$$

$$M_{TH\_re} = M_{TH} - \Delta M_{TH}$$

58657AXX

- $\Delta M_{TH}$  Thermal limit torque [Nm] difference
- $M_{TH}$  Thermal limit torque [Nm]
- $T_U$  Ambient temperature [°C]
- $M_{TH\_re}$  Reduced thermal limit torque [Nm]

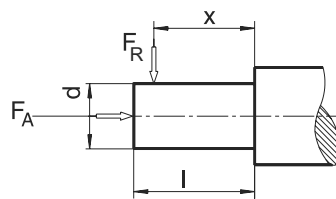


### 3.8 Overhung and axial loads

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 = 25000 h
CMP50	L10h = 25000 h
CMP63	L10h = 20,000 h



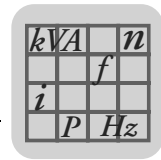
05590AXX

Figure 35: Determining the overhung load  $F_R$

#### 3.8.1 Permitted overhung and axial loads

Motor type	$F_{q \max}$ [N] $F_A$ [N]	Mean speed <sup>1)</sup> [min <sup>-1</sup> ]			
		1500	3000	4500	6000
CMP40S	$F_{q \max}$	264	260	225	205
	$F_A$	109	86	74	68
CMP40M	$F_{q \max}$	264	264	245	220
	$F_A$	116	92	81	73
CMP50S	$F_{q \max}$	400	315	250	200
	$F_A$	157	104	83	66
CMP50M	$F_{q \max}$	400	355	275	220
	$F_A$	168	117	91	73
CMP50L	$F_{q \max}$	400	370	280	225
	$F_A$	182	122	92	74
CMP63S	$F_{q \max}$	578	460	360	290
	$F_A$	170	115	90	72.5
CMP63M	$F_{q \max}$	578	500	380	300
	$F_A$	188	125	95	75
CMP63L	$F_{q \max}$	578	560	445	360
	$F_A$	208	140	111	90

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



**Permitted overhung load for CMP40S**

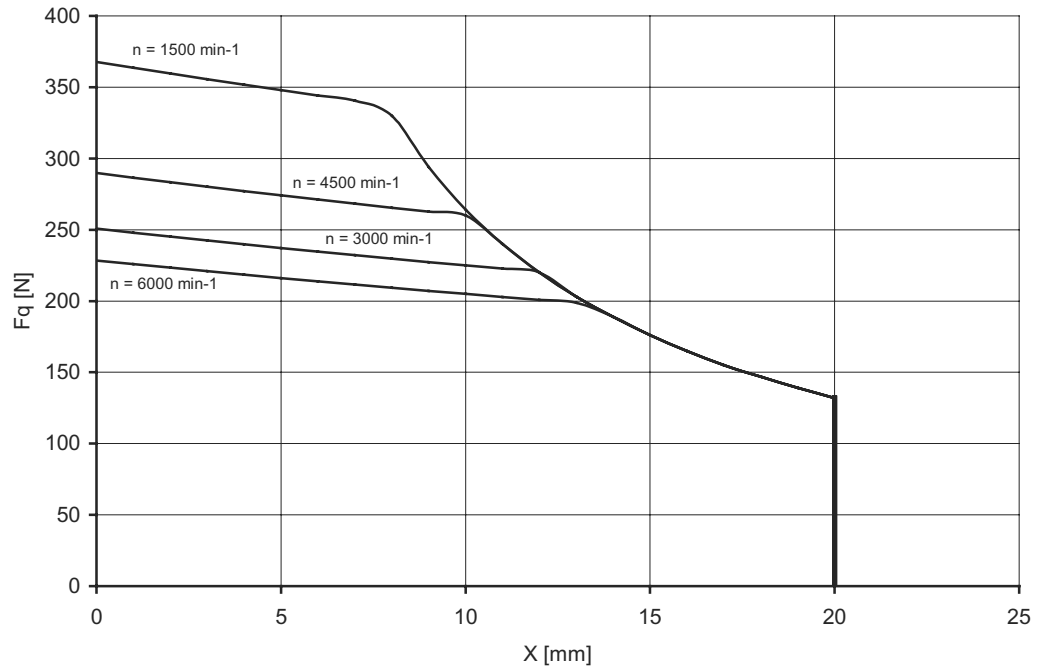


Figure 36: CMP40S, permitted overhung load at position  $X$

58648axx

**Permitted overhung load for CMP40M**

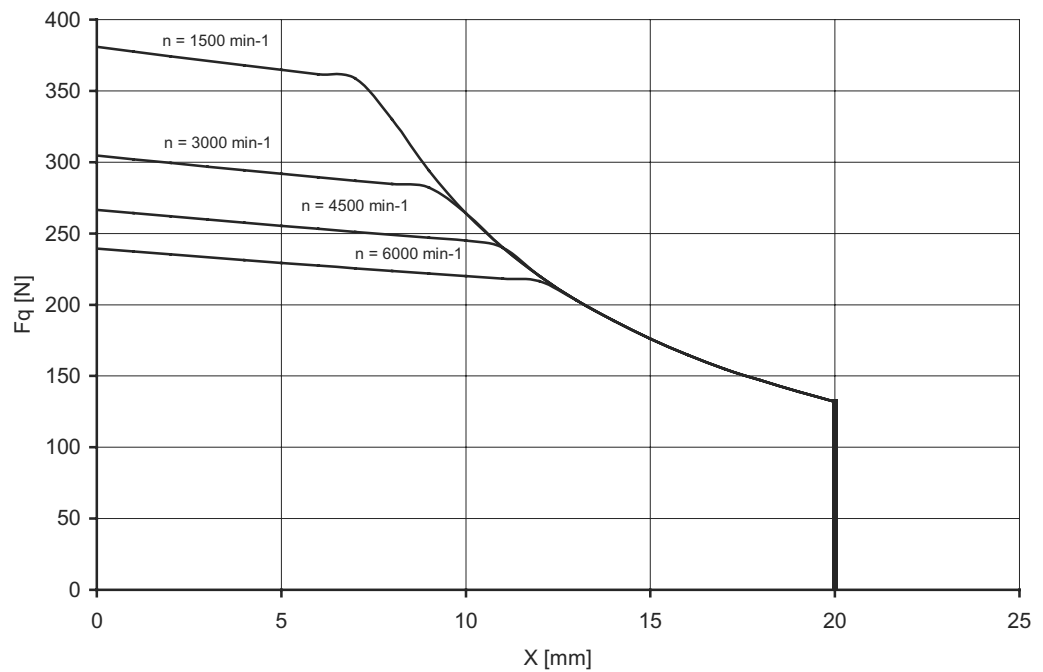
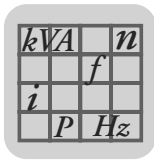


Figure 37: CMP40M, permitted overhung load at position  $X$

58649axx



**Technical Data**  
Overhung and axial loads

**Permitted overhung load for CMP50S**

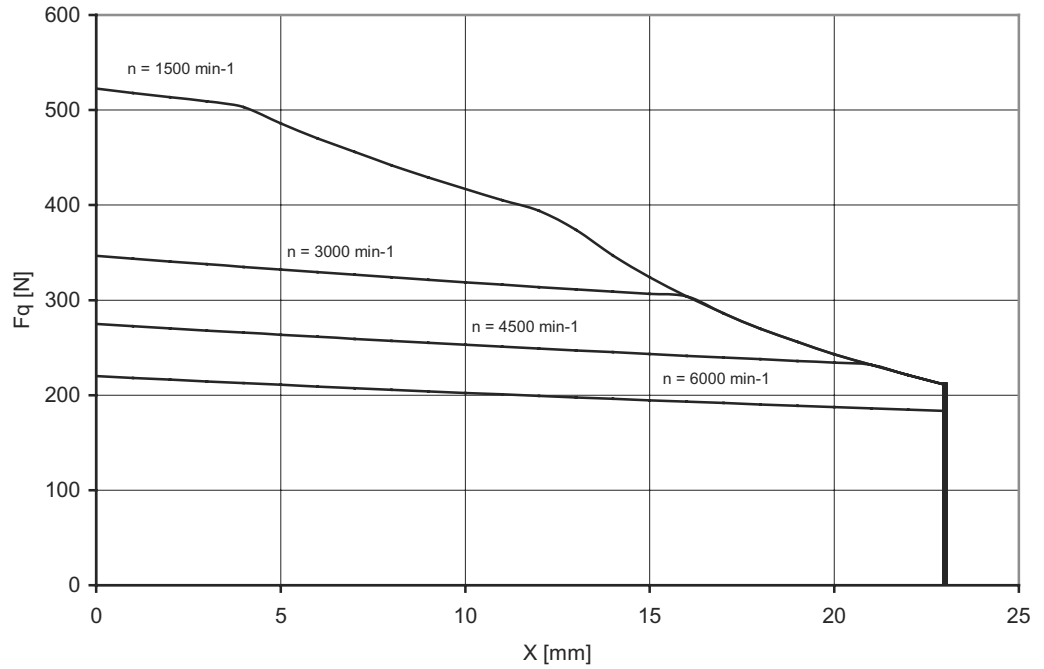


Figure 38: CMP50S, permitted overhung load at position X

58650axx

**Permitted overhung load for CMP50M**

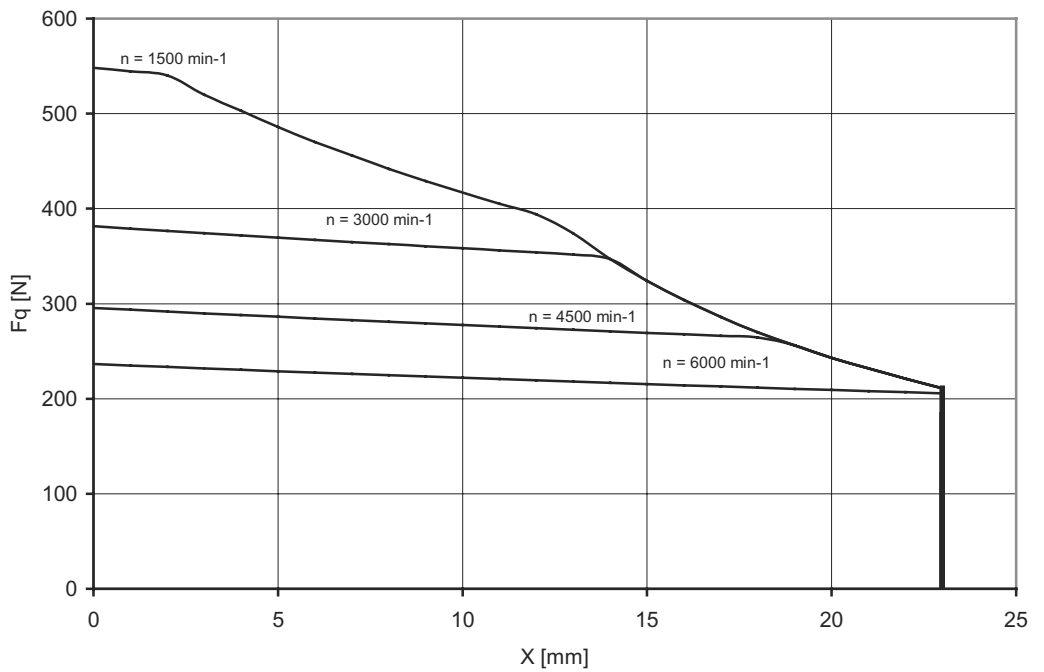
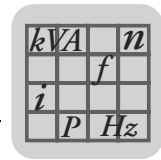
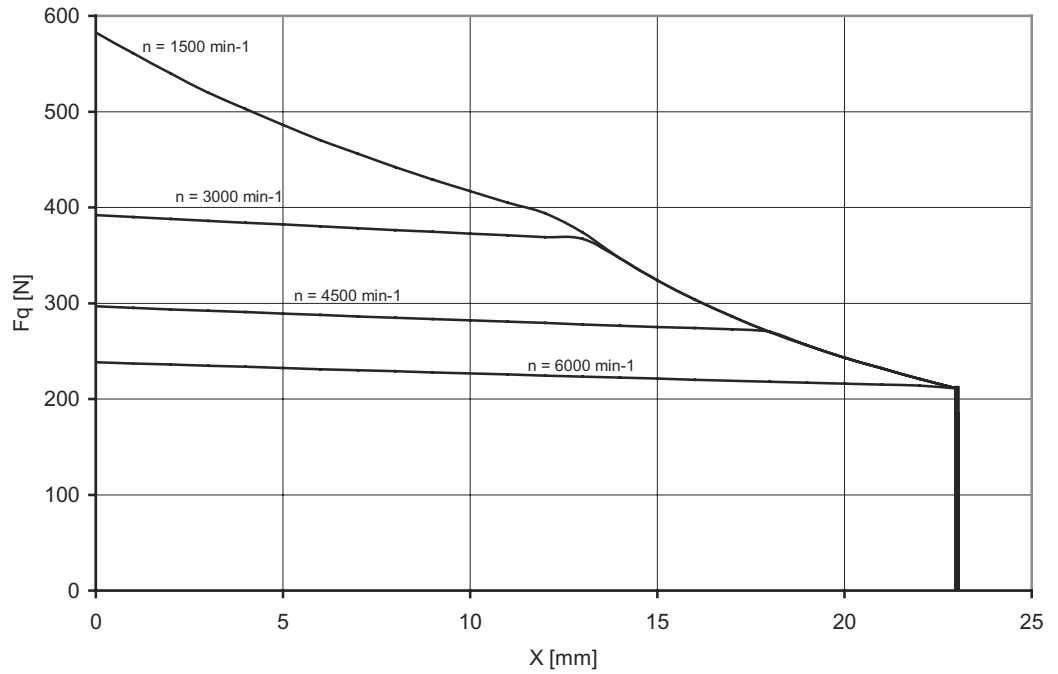


Figure 39: CMP50M, permitted overhung load at position X

58651axx



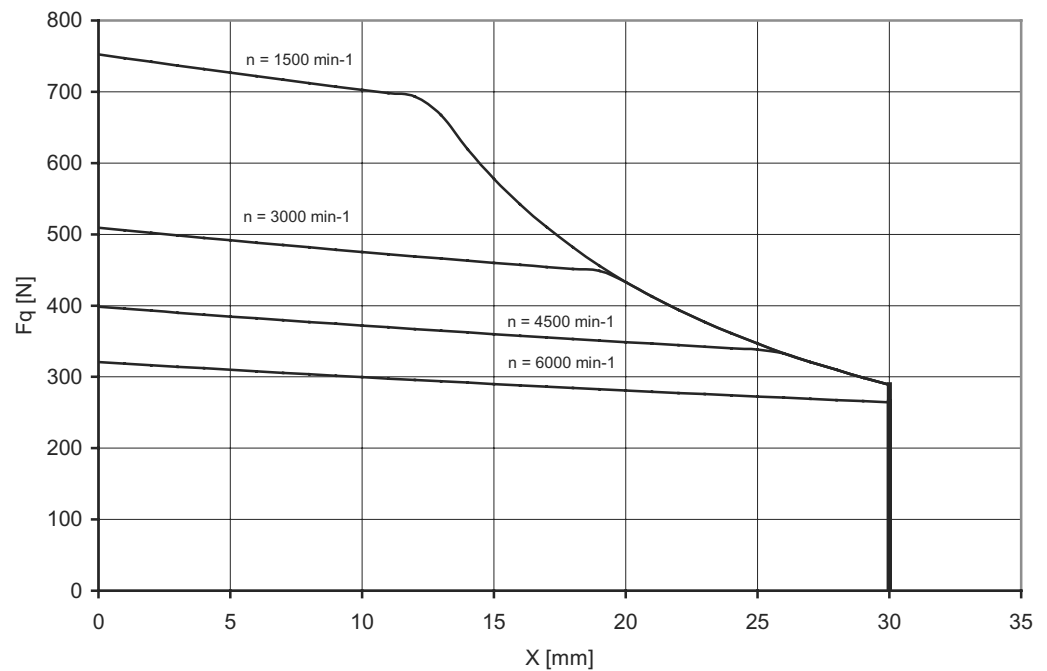
**Permitted overhung load for CMP50L**



58652axx

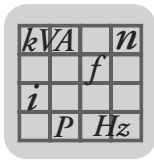
Figure 40: CMP50L, permitted overhung load at position  $X$

**Permitted overhung load for CMP63S**



58653axx

Figure 41: CMP63S, permitted overhung load at position  $X$



**Technical Data**  
Overhung and axial loads

**Permitted overhung load for CMP63M**

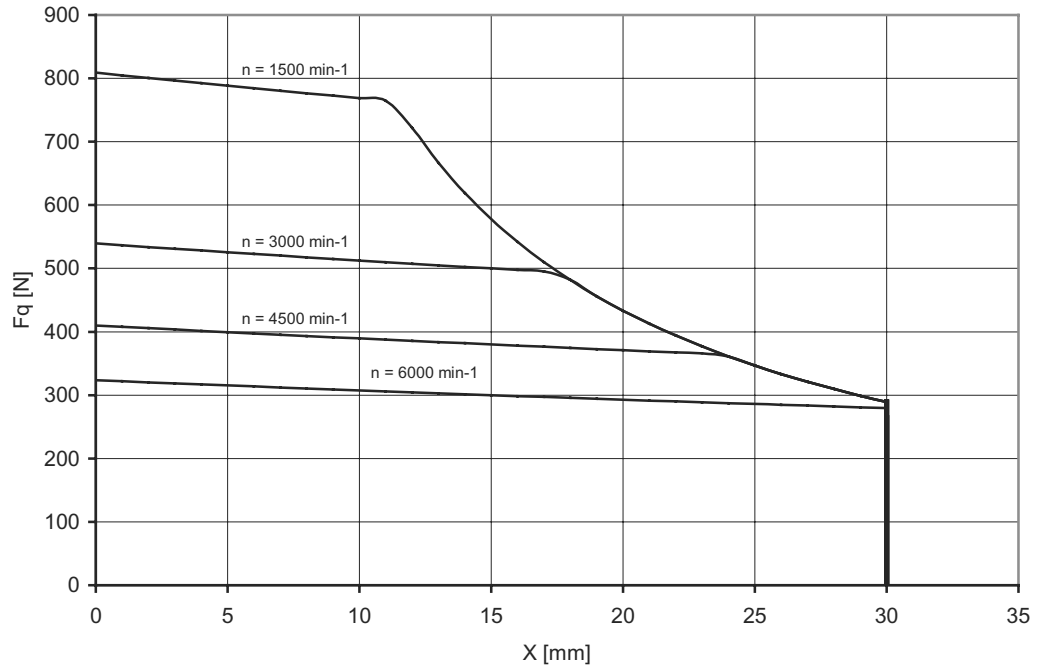


Figure 42: CMP63M, permitted overhung load at position X

58654axx

**Permitted overhung load for CMP63L**

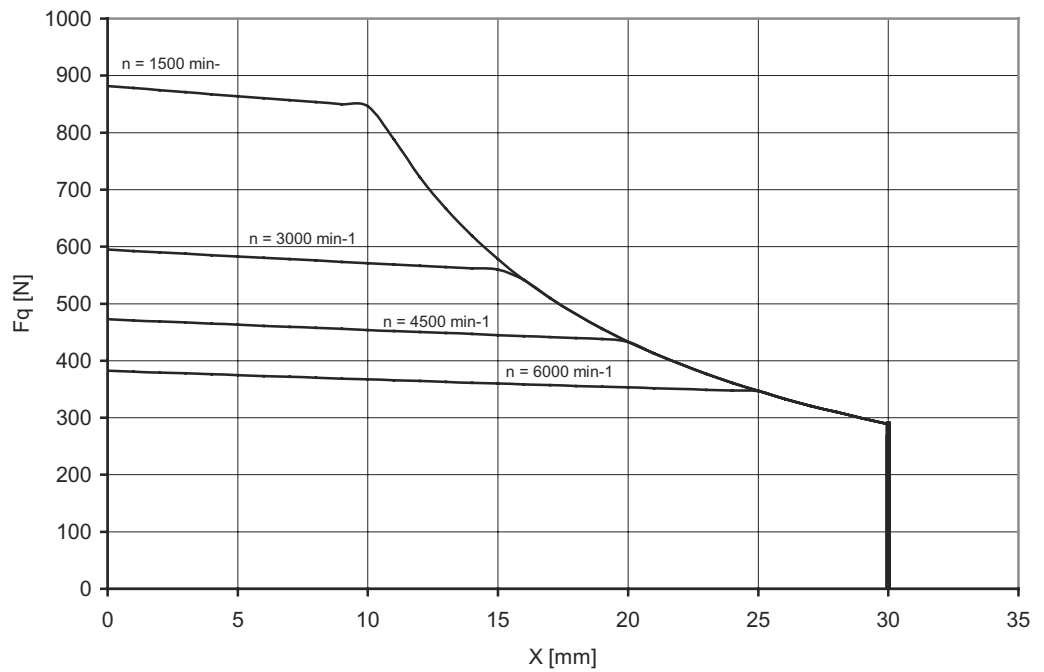


Figure 43: CMP63L, permitted overhung load at position X

58655axx



$kVA$	$n$
	$f$
$i$	
$P$	$Hz$

### 3.9 Connector positions

Position "A" has been defined for right-angle, rotatable connectors. This is the standard connector position.

Position "4" has been defined for the straight connector housing (radial output). Radial connectors are optional.

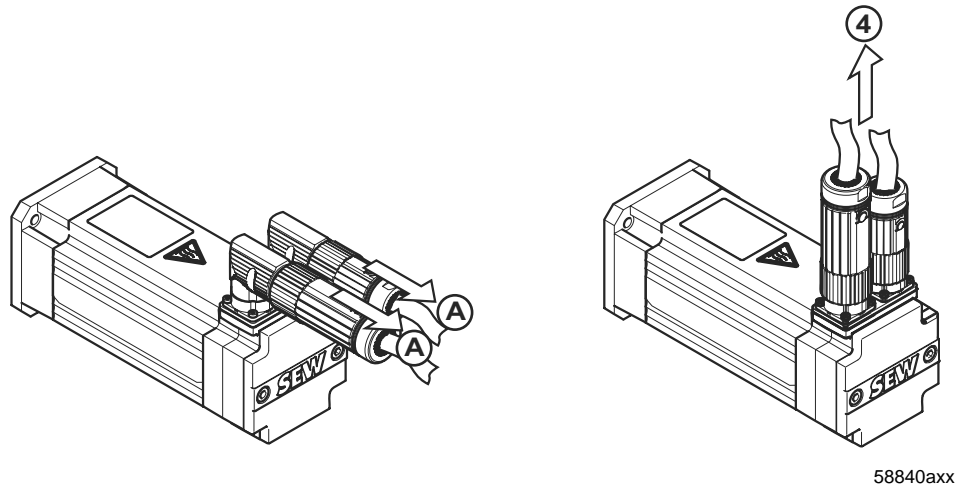


Figure 44: Connector positions

The CMP motors are supplied with right-angle connectors in position "A" as standard. The right-angle connectors can be rotated to achieve all position.



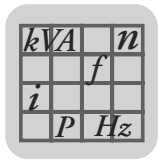
The connector should only be rotated to install and connect the motor. Do not turn the connector regularly once it has been installed.



Figure 45: Positions of the adjustable connectors

[1] Delivery status = standard connector position "A"



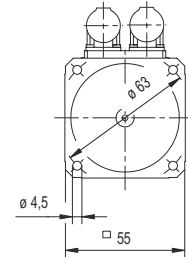
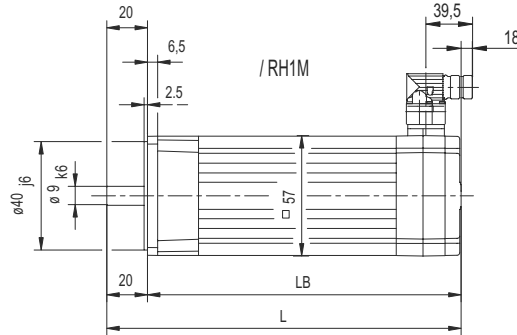
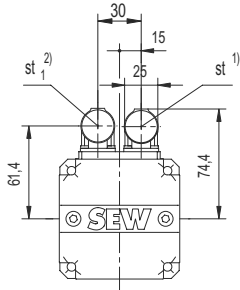


3.10.2 CMP40S/M BP synchronous servo brake motor (with 24 V holding brake)

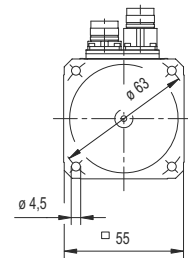
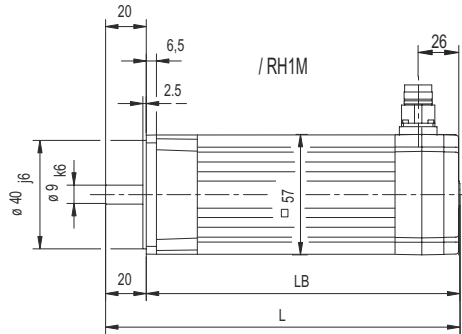
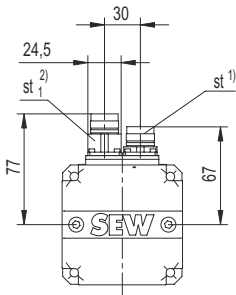
CMP40S/M/BP

09 060 01 05

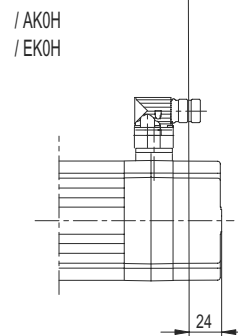
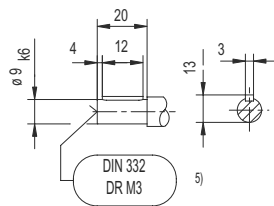
SB..<sup>3)</sup>



SB..<sup>4)</sup>

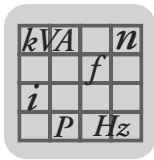


DIN EN 60347



	CMP40S/BP	CMP40M/BP
L	172	198
LB	152	178
st <sup>1)</sup>	9 ... 14	9 ... 14
st <sup>2)</sup>	6 ... 10	6 ... 10

- 1) Cable clamping area for adjustable, radial power connector brake
- 2) Cable clamping area for adjustable, radial signal connector brake
- 3) Adjustable, right-angle connector
- 4) Radial connector
- 5) Thread only for shaft ends with key

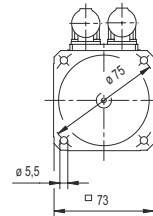
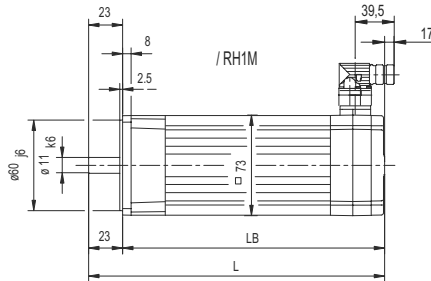
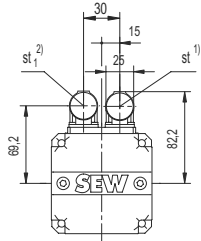


**3.10.3 CMP50S/M/L synchronous servomotors**

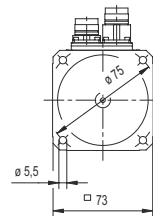
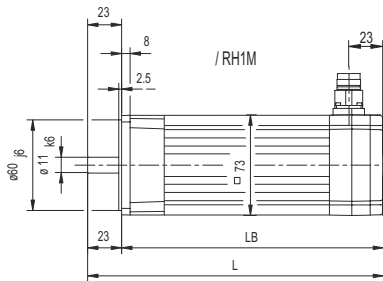
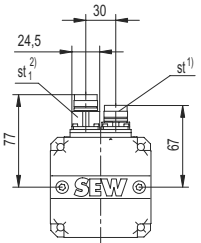
CMP50S/M/L

08 003 01 04

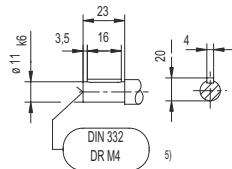
SM..<sup>3)</sup>



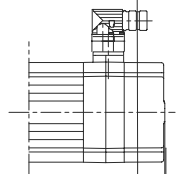
SM..<sup>4)</sup>



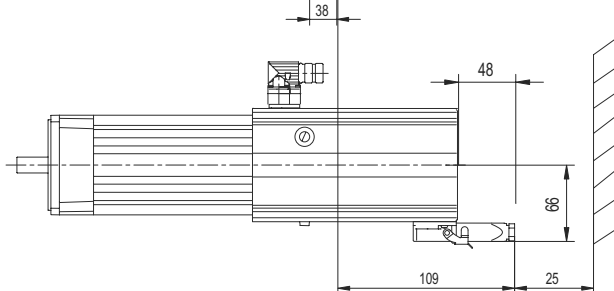
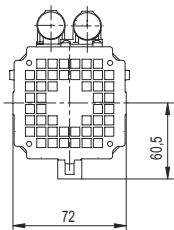
DIN EN 60347



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/ES1H

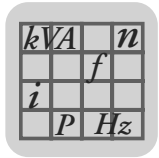


/VR



	CMP50S..	CMP50M..	CMP50L..
L	173	212	251
LB	150	189	228
st <sup>1)</sup>	9 ... 14	9 ... 14	9 ... 14
st <sup>2)</sup>	6 ... 10	6 ... 10	6 ... 10

- 1) Cable clamping area for adjustable, radial power connector
- 2) Cable clamping area for adjustable, radial signal connector
- 3) Adjustable, right-angle connector
- 4) Radial connector
- 5) Thread only for shaft ends with key

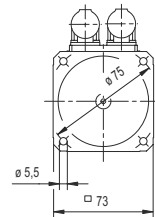
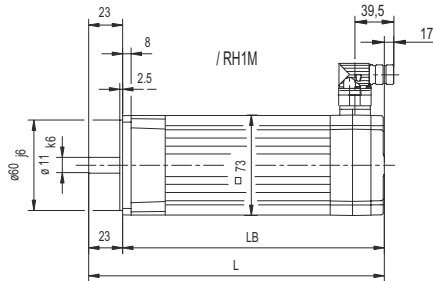
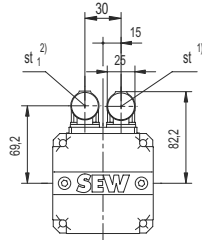


3.10.4 CMP50S/M/L BP synchronous servo brake motor (with 24 V holding brake)

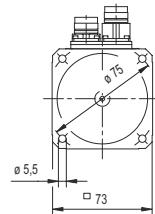
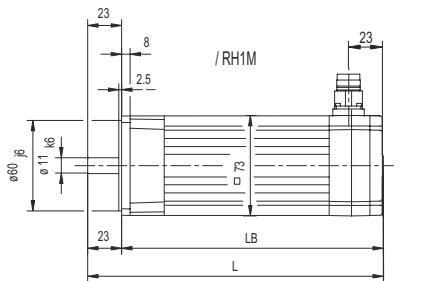
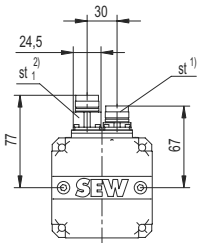
CMP50S/M/L/BP

09 062 01 05

SB..<sup>3)</sup>

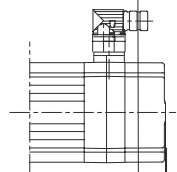
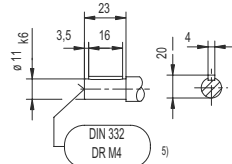


SB..<sup>4)</sup>

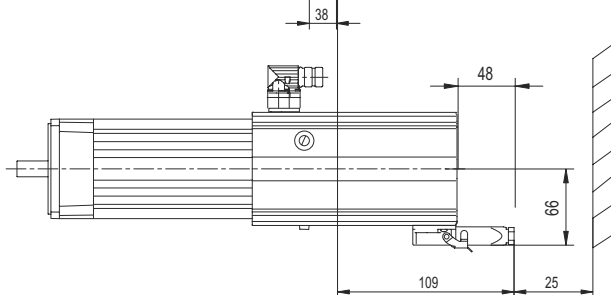
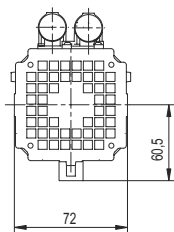


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/ES1H



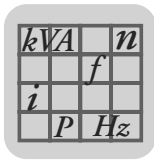
/VR



	CMP50S/BP	CMP50M/BP	CMP50L/BP
L	202	241	280
LB	179	218	257
st <sup>1)</sup>	9 ... 14	9 ... 14	9 ... 14
st <sup>2)</sup>	6 ... 10	6 ... 10	6 ... 10

- 1) Cable clamping area for adjustable, radial power connector brake
- 2) Cable clamping area for adjustable, radial signal connector brake

- 3) Adjustable, right-angle connector
- 4) Radial connector
- 5) Thread only for shaft ends with key

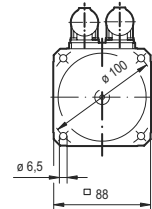
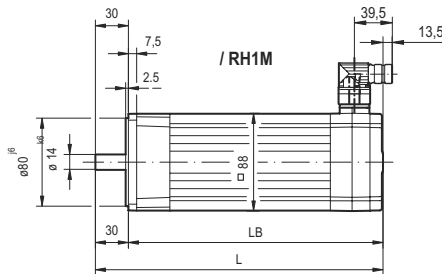
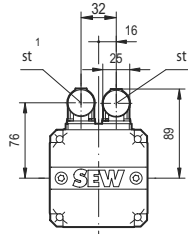


**3.10.5 CMP63S/M/L synchronous servomotors**

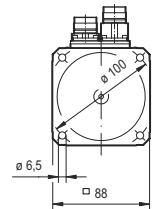
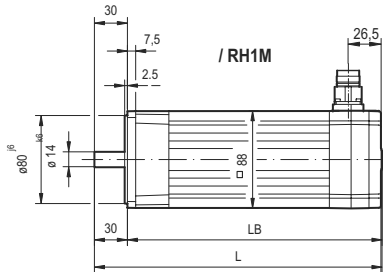
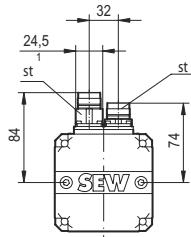
CMP63S/M/L

08 004 01 04

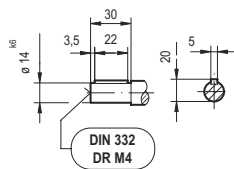
SM..



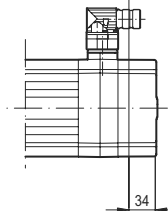
SM..



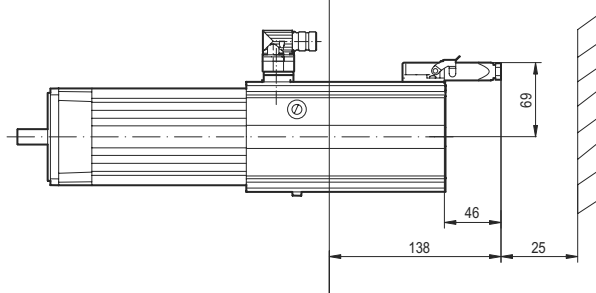
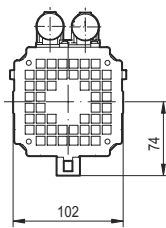
DIN EN 60347



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/ ES1H

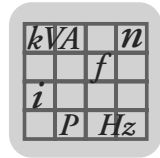


/VR



	CMP63S..	CMP63M..	CMP63L..
L	212	262	312
LB	182	232	282
st <sup>1)</sup>	9 ... 14	9 ... 14	9 ... 14
st <sub>1</sub> <sup>2)</sup>	6 ... 10	6 ... 10	6 ... 10

- 1) Cable clamping area for adjustable, radial power connector
- 2) Cable clamping area for adjustable, radial signal connector
- 3) Adjustable, right-angle connector
- 4) Radial connector
- 5) Thread only for shaft ends with key

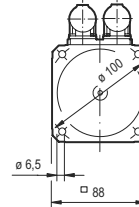
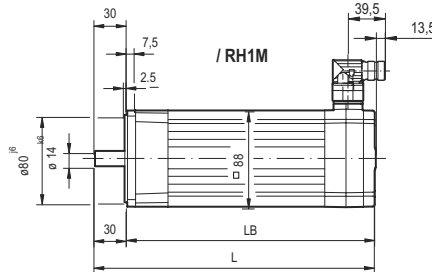
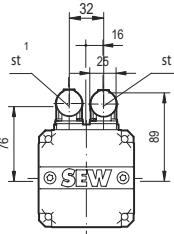


3.10.6 CMP63S/M/L BP synchronous servo brake motor (with 24 V holding brake)

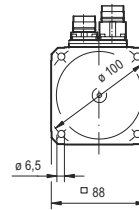
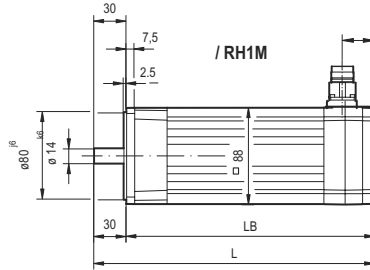
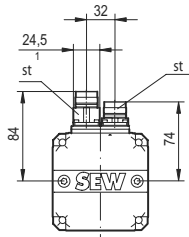
CMP63S/M/L/BP

09 063 01 05

SB..

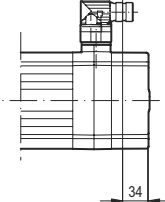
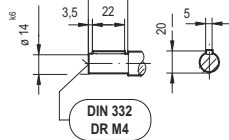


SB..

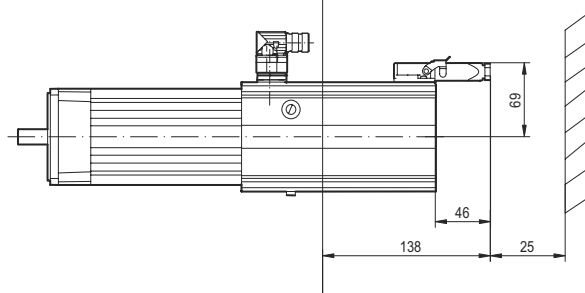
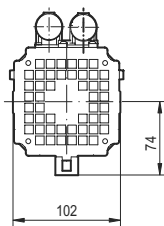


DIN EN 60347

/ AS1H  
/ ES1H



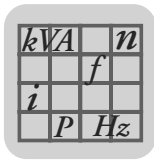
/VR



	CMP63S/BP	CMP63M/BP	CMP63L/BP
L	240	290	340
LB	210	260	310
st <sup>1)</sup>	9 ... 14	9 ... 14	9 ... 14
st <sub>1</sub> <sup>2)</sup>	6 ... 10	6 ... 10	6 ... 10

- 1) Cable clamping area for adjustable, radial power connector brake
- 2) Cable clamping area for adjustable, radial signal connector brake

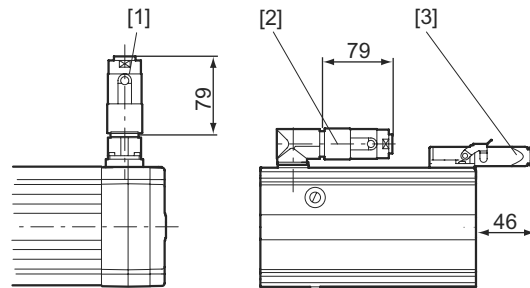
- 3) Adjustable, right-angle connector
- 4) Radial connector
- 5) Thread only for shaft ends with key



## Technical Data

Dimension drawings for servo gear units/geared servomotors

### 3.10.7 Mating connectors



59395axx

Figure 46: Mating connectors

- [1] Radial mating connector
- [2] Angled mating connector
- [3] Mating connector for forced cooling fan

### 3.11 Dimension drawings for servo gear units/geared servomotors

The dimension drawings for the servo gear units and geared servomotors can be found in the "Low Backlash Geared Servomotors (BSF.., PSF..)" catalog.





## 4 Hybrid Cables

### 4.1 Prefabricated cables

SEW-EURODRIVE offers pre-fabricated hybrid cables with plugs for straightforward and reliable motor connection. Cable and contact are connected using the crimp technique. The following cables are available in 1 m steps:

- Motor power
- Motor power + brake
- Resolver/motor protection
- Absolute encoder/motor protection
- Forced cooling fan

Cables from Lapp are used for fixed installation, cables from Nexans are used in cable carriers.

Hybrid cables are divided into:

- Power cables (motor cable, brake motor cable, extension cable)
- Feedback cables (resolver cable, encoder cable, extension cable).

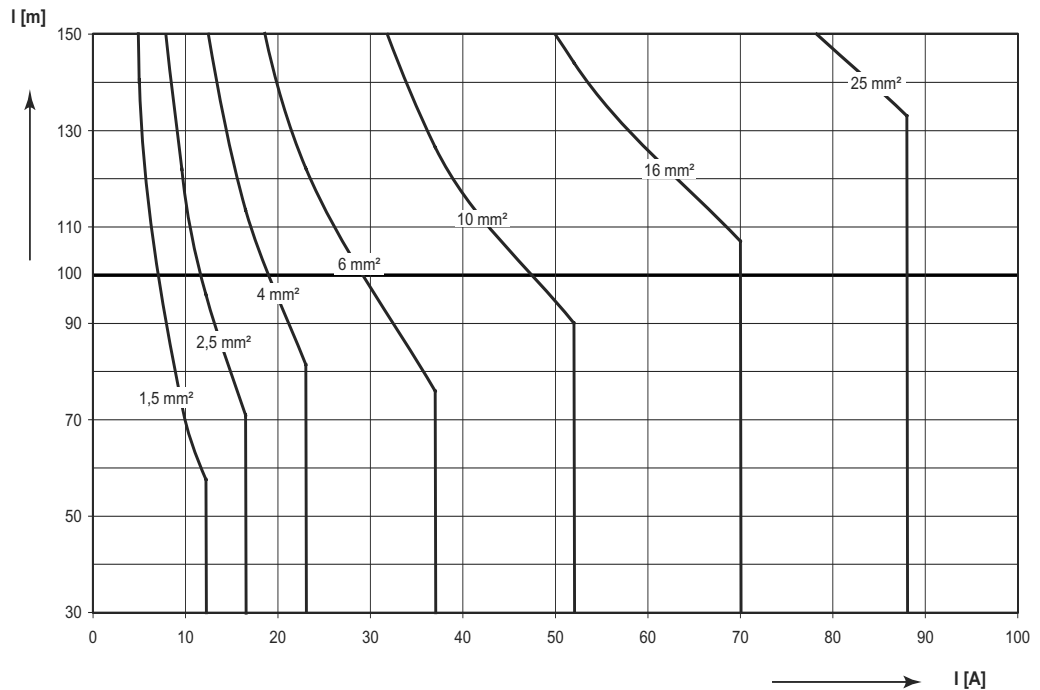




## 4.2 Project planning for cable cross section

### Project planning for cable cross section

Cable dimensioning according to EN 60402



54038AXX

Figure 47: Minimum required cable cross section depending on cable length  $l$  [m] and current  $I$  [A]

Hybrid cables with cross sections of  $1.5 \text{ mm}^2$  to  $10 \text{ mm}^2$  can be ordered from SEW-EURODRIVE.

Cable load through current  $I$  in [A] according to EN 60204-1 table 5, ambient temperature  $40 \text{ }^\circ\text{C}$

Cable cross section [mm <sup>2</sup> ]	Three-core sheathed line in pipe or cable [A]	Three-core sheathed cable on top of one another on wall [A]	Three-core sheathed cable lined up next to one another horizontally [A]
1,5	12,2	15,2	16,1
2,5	16,5	21,0	22
4	23	28,0	30
6	29	36,0	37
10	40	50,0	52
16	53	66,0	70
25	67	84,0	88
35	83	104,0	114

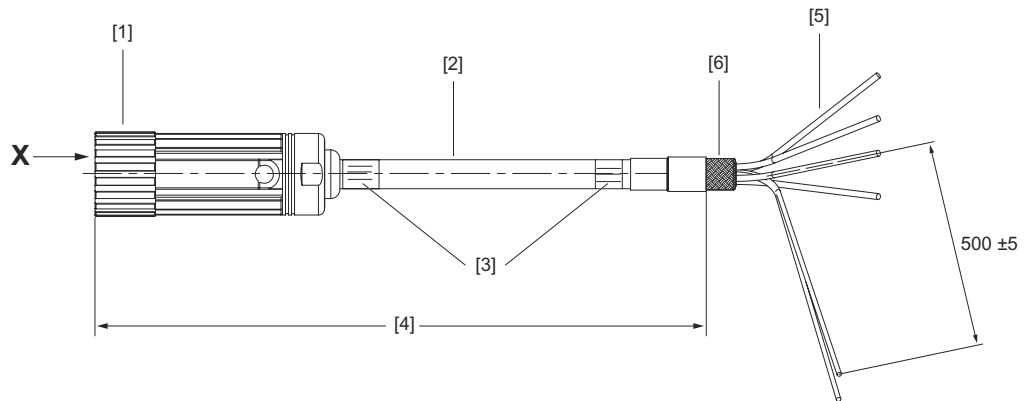
These data are merely recommended values and are **no substitute for the detailed project planning** of the cables depending on the concrete application considering the applicable regulations.

Observe the voltage drop that occurs along the cable in particular with the DC 24 V brake coil when dimensioning the cross sections for the brake cable. The accelerator current is decisive for the calculation.



### 4.3 Power cable

#### 4.3.1 Structure of the motor cable and brake motor cable



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Figure 48: Motor cable for CMP motor

- [1] Connector: Intercontec BSTA 078
- [2] SEW-EURODRIVE logo printed on cable
- [3] Nameplate
- [4] Cable length  $\leq 10$  m: +200 mm tolerance  
Cable length  $\geq 10$  m: +2 % tolerance  
Permitted line length according to the technical documents.
- [5] Pre-fabricated cable end for inverter.  
Required loose parts are supplied with the cable.
- [6] Shielding pulled back approx. 20 mm +5 mm.

#### **Prefabricated cables for motor end**

The power cables on the motor end consist of an 8-pin plug connector and socket contacts.

The shield is connected in the connector housing according to EMC requirements. All plug connectors seal the plug on the cable end with a lamellar seal and ensure cable relief according to EN 61884.

#### **Prefabricated cables for inverter end**

The individual cable cores of the power and brake power cables are exposed and the shield is prepared for connection in the control cabinet. The cable for the inverter end still has to be prefabricated. The loose parts required are supplied with the cable in a separate bag.

#### **Loose parts**

The following loose parts are supplied in accordance with the core cross sections for connection to the power terminals on the inverter:

Bag no.	Contents
1	4 x conductor end sleeves 1.5 mm <sup>2</sup> , insulated 4 x M6 U-shaped cable lugs 1.5 mm <sup>2</sup>
2	4 x conductor end sleeves 2.5 mm <sup>2</sup> , insulated 4 x M6 U-shaped cable lugs 2.5 mm <sup>2</sup>
3	4 x conductor end sleeves 4 mm <sup>2</sup> , insulated 4 x M6 U-shaped cable lugs 4 mm <sup>2</sup>



#### 4.3.2 Motor cable

##### Structure of the motor cable

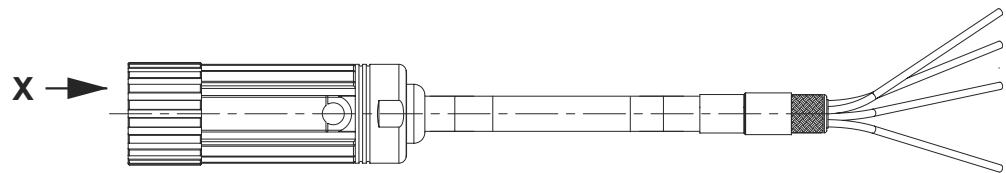
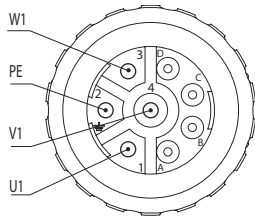


Figure 49: CMP motor cable

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##### Pin assignment of the motor cable

Plug connector	Contact	Cable core color	Assigned	Extra
<b>BSTA 078</b>  <b>View X</b>	1	(BK) Black	U	Bag of loose parts
	2	(GN/YE) Green / Yellow	PE	
	3	(BK) Black	W	
	4	(BK) Black	V	

Plug connector type	Number of cores and line cross section	Part number	Installation type
SM 11	4 × 1.5 mm <sup>2</sup>	0590 4544	Fixed routing
SM 11	4 × 1.5 mm <sup>2</sup>	0590 6245	Cable carrier installation
SM12	4 × 2.5 mm <sup>2</sup>	0590 4552	Fixed routing
SM12	4 × 2.5 mm <sup>2</sup>	0590 6253	Cable carrier installation
SM14	4 × 4 mm <sup>2</sup>	0590 4560	Fixed routing
SM14	4 × 4 mm <sup>2</sup>	0590 4803	Cable carrier installation



**Diagram of the motor extension cable**

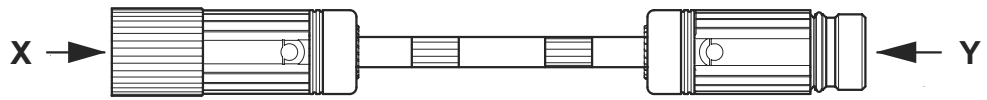
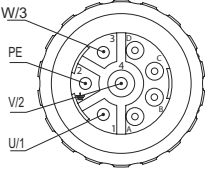
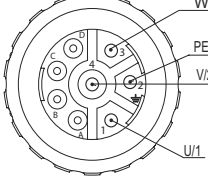


Figure 50: Motor extension cable

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**Pin assignment of the motor extension cable**

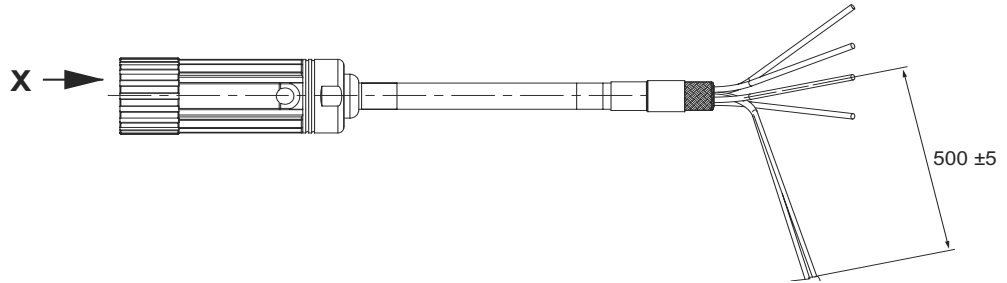
Plug connector	Contact	Cable core color	Assigned	Contact	Plug connector
<b>BSTA 078</b>  <b>View X</b>	1	(BK/WH) Black with white lettering U, V, W	U	1	<b>BKUA 199</b>  <b>View Y</b>
	4		V	4	
	3		W	3	
	2	(GR/YE) Green / Yellow	PE	2	

Plug connector type	Number of cores and line cross section	Part number	Installation type
SM11	4 × 1.5 mm <sup>2</sup>	1333 2547	Cable carrier installation
SM12	4 × 2.5 mm <sup>2</sup>	1333 2465	Cable carrier installation
SM14	4 × 4 mm <sup>2</sup>	1333 2473	Cable carrier installation



**4.3.3 Brake motor cable**

*Diagram of the brake motor cable*



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Figure 51: CMP brake motor cable

*Pin assignment of the brake motor cable*

Plug connector	Contact	Cable core color	Assigned	Extra
<b>BSTA 078</b>  <b>View X</b>	1	(BK/WH) Black with white lettering U, V, W	U	Bag of loose parts
	4		V	
	3		W	
	2	(GN/YE) Green / Yellow	PE	
	A	–	Unassigned	
	B	–	Unassigned	
	C	(BK/WH) Black with white lettering 1, 2, 3	2	
	D		1	

Plug connector type	Number of cores and line cross section	Part number	Installation type
SB 11	4 × 1.5 mm <sup>2</sup> + 2 × 1 mm <sup>2</sup>	1332 4853	Fixed routing
SB 11	4 × 1.5 mm <sup>2</sup> + 2 × 1 mm <sup>2</sup>	1333 1221	Cable carrier installation
SB12	4 × 2.5 mm <sup>2</sup> + 2 × 1 mm <sup>2</sup>	1333 2139	Fixed routing
SB12	4 × 2.5 mm <sup>2</sup> + 2 × 1 mm <sup>2</sup>	1333 2155	Cable carrier installation
SB14	4 × 4 mm <sup>2</sup> + 2 × 1 mm <sup>2</sup>	1333 2147	Fixed routing
SB14	4 × 4 mm <sup>2</sup> + 2 × 1 mm <sup>2</sup>	1333 2163	Cable carrier installation



**Brake motor extension cable**

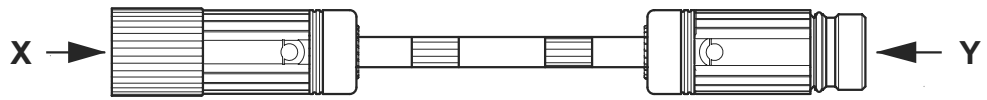
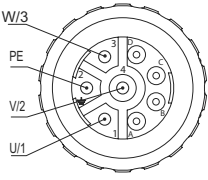
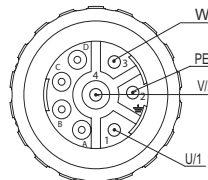


Figure 52: Brake motor extension cable

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**Pin assignment of the brake motor extension cable**

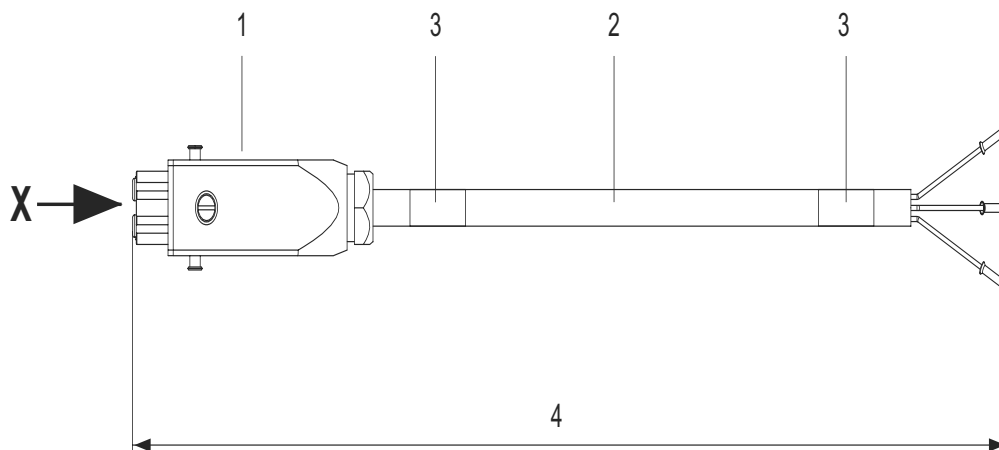
Plug connector	Contact	Cable core color	Assigned	Contact	Plug connector
<b>BSTA 078</b>  <b>View X</b>	1	(BK/WH) Black with white lettering U, V, W	U	1	<b>BKUA 199</b>  <b>View Y</b>
	4		V	4	
	3		W	3	
	2	(GN/YE) Green / Yellow	PE	2	
	A	–	Unasigned	A	
	B	–	Unasigned	B	
	C	(BK/WH) Black with white lettering 1, 2, 3	2	C	
	D		1	D	

Plug connector type	Number of cores and line cross section	Part number	Installation type
SB11	4 × 1.5 mm <sup>2</sup> + 2 × 1 mm <sup>2</sup>	1333 2481	Cable carrier installation
SM12	4 × 2.5 mm <sup>2</sup> + 2 × 1 mm <sup>2</sup>	1333 2503	Cable carrier installation
SM14	4 × 4 mm <sup>2</sup> + 2 × 1 mm <sup>2</sup>	1333 2511	Cable carrier installation



**4.3.4 Cable for VR forced cooling fan**

*Diagram of cable for VR forced cooling fan*

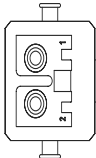


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Figure 53: Cable for VR forced cooling fan

- [1] Connector: STAK 200
- [2] Printed on connector: SEW-EURODRIVE
- [3] Nameplate
- [4] Cable length  $\leq 5$  m: Tolerance +200 mm  
Cable length  $\geq 5$  m: Tolerance +2 %  
Permitted line length according to the technical documents.

**Pin assignment of cable for the VR forced cooling fan**

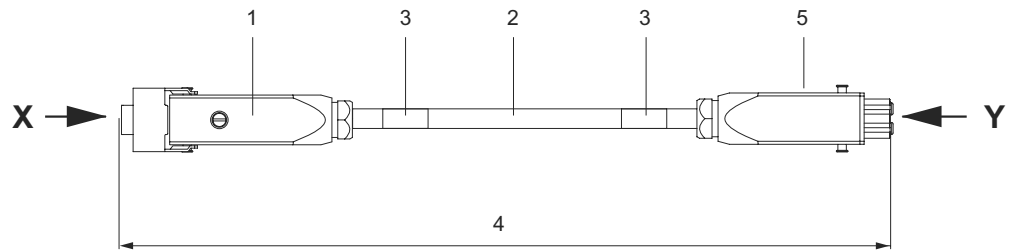
STAK 200 plug connector	Contact	Core identification	Assigned	Contact	Connection type
<b>Connector with two socket contacts</b>   View X	1	First digit	24 V +	Cut-off, length ca. 250 mm	Conductor end sleeves
	2	Second digit	0 V		

Type	Installation	Part number
CMP	Fixed routing	0198 6341
CMP	Cable carrier installation	0199 560X





**Diagram of the extension cable for the VR forced cooling fan**

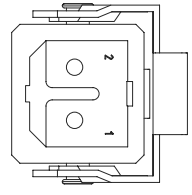
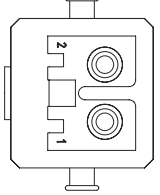


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Figure 54: Extension cable for VR forced cooling fan

- [1] Connector: STAS 200
- [2] Printed on connector: SEW-EURODRIVE
- [3] Nameplate
- [4] Cable length  $\leq 5$  m: Tolerance +200 mm  
Cable length  $\geq 5$  m: Tolerance +2 %  
Permitted line length according to the technical documents.
- [5] Socket: STAK 200

**Pin assignment of the extension cable for the VR forced cooling fan**

STAS 200 plug connector	Contact	Core identification	Assigned	Contact	Connection type STAK 200
Connector with two pin contacts	1	First digit	24 V +	1	Connector with two socket contacts
	2	Second digit	0 V	2	
 <p>View X</p>					 <p>View Y</p>

The extension cable has the same pin assignment as all other contacts.

Type	Installation	Part number
CMP	Fixed routing	0199 5618
CMP	Cable carrier installation	0199 5626

**Alternative connector for cable for the VR forced cooling fan**

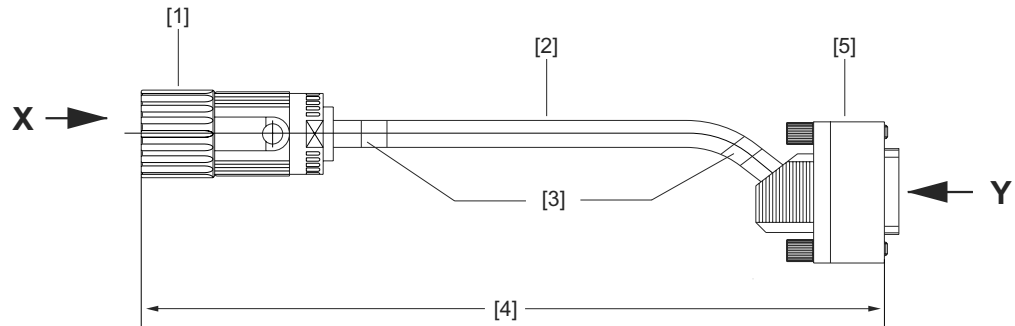
Signal plug connector with socket contacts (complete)

Type	Cross sections that can be connected	Part no.
VR	3 x 1 mm <sup>2</sup>	0198 4985



#### 4.4 Feedback cable

##### 4.4.1 Structure of the feedback cable for resolver, HIPERFACE® encoder



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Figure 55: Resolver plug connector

- [1] Connector: Intercontec ASTA
- [2] Printed on connector: SEW-EURODRIVE
- [3] Nameplate
- [4] Cable length  $\leq 10$  m: Tolerance +200 mm  
Cable length  $\geq 10$  m: Tolerance +2 %  
Permitted line length according to the technical documents.
- [5] Sub D plug

#### **Prefabricated cables for motor end**

A 12-pin EMC signal plug connector from Intercontec with socket contacts is used on the motor end for RH.M/AS1H/ES1H. The shield is connected in the connector housing according to EMC requirements. All plug connectors seal the plug on the cable end with a lamellar seal.

#### **Prefabricated cables for inverter end**

A commercial sub-D EMC connector with pin contacts is used on the inverter end. A 9-pin or 15-pin connector to suit the inverter is used.

#### **Hybrid cables**

The outer cable sheath on the motor and inverter end bears a nameplate with part number and logo of the prefabricated cable manufacturer. The ordered length and permitted tolerance are interrelated as follows:

- Cable length  $\leq 10$  m: 200 mm tolerance
- Cable length  $\geq 10$  m: + 2 % tolerance



Refer to the system manual of the servo inverter for information on how to determine the maximum cable length. Make sure that an EMC-compliant environment is maintained during project planning.



4.4.2 RH.M resolver cable

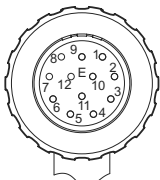
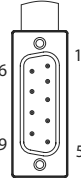
Structure of the resolver cable plug connector RH.M for MOVIDRIVE® MDX60B/61B



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Figure 56: Resolver cable plug connector MOVIDRIVE® MDX..B

Pin assignment of the resolver cable RH.M for MOVIDRIVE® MDX60B/61B

Motor connection end		Connection MOVIDRIVE® MDX..B				
Plug connector	Contact no.	Description	Cable core color	Description	Contact no.	Plug connector
<b>ASTA 021FR</b> <b>198 921 9</b> 12-pin with socket contacts  <b>View X</b>	1	R1 (reference +)	(PK) Pink	R1 (reference +)	3	<b>Sub-D</b> 9-pin  <b>View Y</b>
	2	R2 (reference -)	(GY) Gray	R2 (reference -)	8	
	3	S1 (cosine +)	(RD) Red	S1 (cosine +)	2	
	4	S3 (cosine -)	(BU) Blue	S3 (cosine -)	7	
	5	S2 (sine +)	(YE) Yellow	S2 (sine +)	1	
	6	S4 (sine -)	(GN) Green	S4 (sine -)	6	
	7	Unassigned	–	–	–	
	8	Unassigned	–	–	–	
	9	TF/KTY +	(BN) Brown / (VT) Violet	TF (KTY+)	9	
	10	TF / KTY –	(WH) White / (BK) Black	TF / KTY –	5	
	11	Unassigned	–	–	–	
	12	Unassigned	–	Unassigned	4	

Type	Installation	Part number
CMP	Fixed routing	0199 4875
CMP	Cable carrier installation	0199 3194



#### Structure of the resolver cable plug connector RH.M for MOVIAXIS® MX

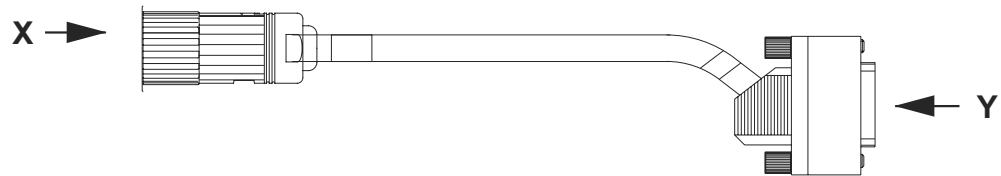
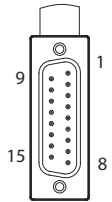


Figure 57: Resolver cable plug connector MOVIAXIS® MX

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#### Pin assignment of the resolver cable plug connector RH.M for MOVIAXIS® MX

Motor connection end					Connection MOVIAXIS® MX	
Plug connector	Contact no.	Description	Cable core color	Description	Contact no.	Plug connector
ASTA 021FR 198 921 9 12-pin with socket contacts	1	R1 (reference +)	(PK) Pink	R1 (reference +)	5	Sub-D 15-pin 
	2	R2 (reference -)	(GY) Gray	R2 (reference -)	13	
	3	S1 (cosine +)	(RD) Red	S1 (cosine +)	2	
	4	S3 (cosine -)	(BU) Blue	S3 (cosine -)	10	
	5	S2 (sine +)	(YE) Yellow	S2 (sine +)	1	
	6	S4 (sine -)	(GN) Green	S4 (sine -)	9	
	7	Unassigned	–	Unassigned	3	
	8	Unassigned	–	Unassigned	4	
	9	TF/KTY +	(BN) Brown / (VT) Violet <sup>1)</sup>	TF/KTY +	14	
	10	TF/KTY -	(WH) White / (BK) Black <sup>1)</sup>	TF/KTY -	6	
	11	Unassigned	–	Unassigned	7	
	12	Unassigned	–	Unassigned	8	
		–	–	Unassigned	11	
		–	–	Unassigned	12	
		–	–	Unassigned	15	

1) Double assignment to increase cross section

All connectors are shown with view onto the pins.

Type	Installation	Part number
CMP	Fixed routing	1332 7429
CMP	Cable carrier installation	1332 7437



**Structure of extension cable for resolver RH.M**

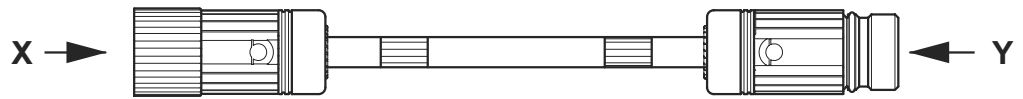
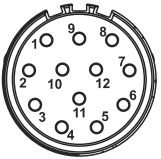
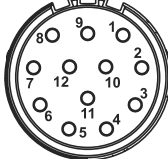


Figure 58: Extension cable for resolver RH.M

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**Pin assignment of the extension cable for resolver RH.M**

Plug connector	Contact no.	Description	Cable core color	Description	Contact no.	Plug connector
<b>ASTA 021FR</b> <b>198 673 2</b> 12-pin with socket contacts  <b>View X</b>	1	R1 (reference +)	(PK) Pink	R1 (reference +)	1	<b>AKUA 020MR</b> <b>199 647 9</b> 12-pin with pin contacts  <b>View Y</b>
	2	R1 (reference -)	(GY) Gray	R1 (reference -)	2	
	3	S1 (cosine +)	(RD) Red	S1 (cosine +)	3	
	4	S3 (cosine -)	(BU) Blue	S3 (cosine -)	4	
	5	S2 (sine +)	(YE) Yellow	S2 (sine +)	5	
	6	S4 (sine -)	(GN) Green	S4 (sine -)	6	
	7	Unassigned	–	Unassigned	7	
	8	Unassigned	–	Unassigned	8	
	9	TF/KTY +	(BN) Brown / (VT) Violet <sup>1)</sup>	TF/KTY +	9	
	10	TF/KTY -	(WH) White / (BK) Black <sup>1)</sup>	TF/KTY -	10	
	11	Unassigned	–	Unassigned	11	
	12	Unassigned	–	Unassigned	12	

1) Double assignment to increase cross section

The extension cable has the same pin assignment as all other contacts.

Type	Installation	Part number
CMP	Fixed routing	0199 5421
CMP	Cable carrier installation	0199 5413

**Alternative plug connector for resolver cable RH.M**

Signal plug connector with socket contacts (complete)

Type	Cross sections that can be connected	Part no.
RH.M	6 x 2 x 0.06 ... 1 mm <sup>2</sup>	0198 6732



**4.4.3 Cable for HIPERFACE® encoder plug connector for MOVIDRIVE® B and MOVIAXIS® MX**

**Structure of the cable for the HIPERFACE® encoder plug connector for MOVIDRIVE® B and MOVIAXIS® MX**

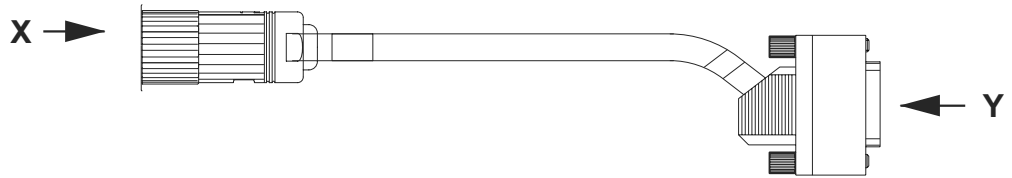
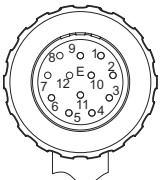
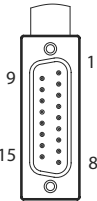


Figure 59: HIPERFACE® encoder cable for plug connector

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**Pin assignment of the cable for HIPERFACE® encoder AK0H/EK0H/AS1H/ES1H**

Motor connection end					Connection MOVIAXIS® MX MOVIDRIVE® MDX..B	
Plug connector	Contact no.	Description	Cable core color	Description	Contact no.	Plug connector
<b>ASTA 021FR</b>  <b>198 921 9</b>  12-pin with socket contacts    <b>View X</b>	1	Unassigned	Unassigned	Unassigned	3	  <b>View Y</b>
	2	Unassigned	Unassigned	Unassigned	5	
	3	S1 (cosine +)	(RD) Red	S1 (cosine +)	1	
	4	S3 (cosine -)	(BU) Blue	S3 (cosine -)	9	
	5	S2 (sine +)	(YE) Yellow	S2 (sine +)	2	
	6	S4 (sine -)	(GN) Green	S4 (sine -)	10	
	7	DATA -	(VT) Violet	DATA -	12	
	8	DATA +	(BK) Black	DATA +	4	
	9	TF/KTY +	(BN) Brown	TF/KTY +	14	
	10	TF/KTY -	(WH) White	TF/KTY -	6	
	11	GND	(GY/PK) Gray/Pink <sup>1)</sup>	GND	8	
	12	U <sub>s</sub>	(RD/BU) Red/Blue <sup>1)</sup>	U <sub>s</sub>	15	
	-	-	Unassigned	7		
	-	-	Unassigned	11		
	-	-	Unassigned	13		

1) Double assignment to increase cross section

Type	Installation	Part number
CMP	Fixed routing	1332 4535
CMP	Cable carrier installation	1332 4551



**Structure of the extension cable for HIPERFACE® encoder AK0H/EK0H/AS1H/ES1H**

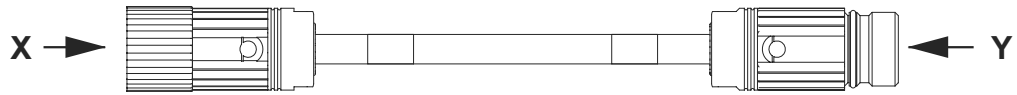
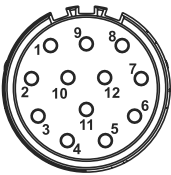
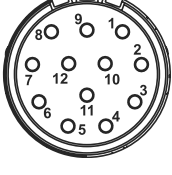


Figure 60: Extension cable for HIPERFACE® encoder

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**Pin assignment of the extension cable for HIPERFACE® encoder AK0H/EK0H/AS1H/ES1H**

Plug connector	Contact no.	Description	Cable core color	Description	Contact no.	Plug connector
<b>ASTA 021FR</b> <b>198 673 2</b> 12-pin with socket contacts  <b>View X</b>	1	Unassigned	–	Unassigned	1	<b>AKUA 020MR</b> <b>199 647 9</b> 12-pin with pin contacts  <b>View Y</b>
	2	Unassigned	–	Unassigned	2	
	3	S1 (cosine +)	(RD) Red	S1 (cosine +)	3	
	4	S3 (cosine -)	(BU) Blue	S3 (cosine -)	4	
	5	S2 (sine +)	(YE) Yellow	S2 (sine +)	5	
	6	S4 (sine -)	(GN) Green	S4 (sine -)	6	
	7	DATA -	(VT) Violet	DATA -	7	
	8	DATA +	(BK) Black	DATA +	8	
	9	TF/KTY +	(BN) Brown	TF/KTY +	9	
	10	TF/KTY -	(WH) White	TF/KTY -	10	
	11	GND	(GY/PK) (Gray/Pink) / (PK) Pink	GND	11	
	12	U <sub>s</sub>	(RD/BU) Red/Blue / (GY) Gray	U <sub>s</sub>	12	

The extension cable has the same pin assignment as all other contacts.

Type	Installation	Part number
CMP	Fixed routing	0199 5391
CMP	Cable carrier installation	0199 5405

**Alternative plug connector of the cable for HIPERFACE® encoder AK0H/EK0H/AS1H/ES1H**

Signal plug connector with socket contacts (complete)

Type	Cross sections that can be connected	Part no.
AK0H	6 x 2 x 0.06 ... 1 mm <sup>2</sup>	0198 6732
EK0H		
AS1H		
ES1H		



#### 4.5 Mating connector combinations



Mating connectors are not included in the scope of delivery and must be ordered separately. Mating connectors can be ordered regardless of the cable cross section.



Cable type		Cable cross section	Part number of the combination
Resolver cable	Motor cable	4 x 1.5 mm <sup>2</sup>	0198 6740
		4 x 2.5 mm <sup>2</sup>	0198 6740
		4 x 4 mm <sup>2</sup>	0199 1639
	Brake motor cable	4 x 1.5 mm <sup>2</sup> + 2 x 1 mm <sup>2</sup>	0198 6740
		4 x 2.5 mm <sup>2</sup> + 2 x 1 mm <sup>2</sup>	0198 6740
		4 x 4 mm <sup>2</sup> + 2 x 1 mm <sup>2</sup>	0199 1639
Hiperface cable	Motor cable	4 x 1.5 mm <sup>2</sup>	0198 6740
		4 x 2.5 mm <sup>2</sup>	0198 6740
		4 x 4 mm <sup>2</sup>	0199 1639
	Brake motor cable	4 x 1.5 mm <sup>2</sup> + 2 x 1 mm <sup>2</sup>	0198 6740
		4 x 2.5 mm <sup>2</sup> + 2 x 1 mm <sup>2</sup>	0198 6740
		4 x 4 mm <sup>2</sup> + 2 x 1 mm <sup>2</sup>	0199 1639

The complete set of the mating connector combination includes the following parts:

- Feedback/power connector
- Insulation inserts
- Contact pins
- Other accessories






## 4.6 Cable specification

### 4.6.1 Fixed installation of motor cables

Installation type		Fixed		
Cable cross sections		4 × 1.5 mm <sup>2</sup>	4 × 2.5 mm <sup>2</sup>	4 × 4 mm <sup>2</sup>
Manufacturer	Unit	Lapp		
Manufacturer designation		PVC / C / TPE		
Operating voltage U <sub>0</sub> AC	[V]	600 / 1000		
Temperature range	[°C]	fixed installation -10 to +90		
Max. temperature	[°C]	90	90	90
Min. bending radius	[mm]	44	48	56
Diameter D	[mm]	9.3 ± 0.3	10 ± 0.3	12.3 ± 0.3
Core identification		BK with lettering WH + GN/YE		
Sheath color		Orange, similar to RAL 2003		
Approval(s)		DESINA / VDE / UL		
Capacitance core/shielding	[nF / km]	135	140	150
Capacitance core/core	[nF / km]	75	85	90
Halogen free		No		
Silicone-free		Yes		
CFC-free		No		
Inner insulation (core)		TPE		
Outer insulation (sheath)		PVC		
Flame-inhibiting/self-extinguishing		No		
Conductor material		Cu		
Shielding		Tinned Cu		
Weight (cable)	[kg / km]	196	254	371



#### 4.6.2 Cable carrier installation for motor cable

Installation type		Cable carrier		
Cable cross sections		4 x 1.5 mm <sup>2</sup>	4 x 2.5 mm <sup>2</sup>	4 x 4 mm <sup>2</sup>
Manufacturer		Nexans		
	Unit			
Manufacturer designation		PSL(LC)C11Y-J 4 x ... mm <sup>2</sup>		PSL11YC11Y-J 4 x ... mm <sup>2</sup>
Operating voltage U <sub>0</sub> AC	[V]	600 / 1000		
Temperature range	[°C]	- 20 to + 60		
Max. temperature	[°C]	+ 90 (on conductor)		
Min. bending radius	[mm]	130	140	130
Diameter D	[mm]	12.3 ± 1.0	15 ± 1.5	13.1 ± 0.4
Maximum acceleration	[m/s <sup>2</sup> ]	20		
Max. velocity	[m/min]	200 at max. travel distance of 5 m		
Core identification		BK with lettering WH + GN/YE		
Sheath color		Orange similar to RAL 2003		
Approval(s)		DESINA / VDE / UL /  US		
Capacitance core/shielding	[nF/km]	95	95	170
Capacitance core/core	[nF/km]	65	65	95
Halogen free		Yes		
Silicone-free		Yes		
CFC-free		Yes		
Inner insulation (core)		Polyolefin		TPM
Outer insulation (sheath)		TPU (PUR)		
Flame-inhibiting/self-extinguishing		Yes		
Conductor material		E-Cu blank		
Shielding		Braided tinned Cu shield (optically covered > 85 %)		
Weight (cable)	[kg/km]	190	300	320




4.6.3 Fixed installation of brake power cables

Installation type		Fixed		
Cable cross sections		4 x 1.5 mm <sup>2</sup> + 3 x 1 mm <sup>2</sup>	4 x 2.5 mm <sup>2</sup> + 3 x 1 mm <sup>2</sup>	4 x 4 mm <sup>2</sup> + 3 x 1 mm <sup>2</sup>
Manufacturer		Lapp		
	Unit			
Manufacturer designation		PVC / C / TPE		
Operating voltage U <sub>0</sub> AC	[V]	600 / 1000		
Temperature range	[°C]	Fixed installation: -10 to + 90		
Max. temperature	[°C]	90	90	90
Min. bending radius	[mm]	54	57	64
Diameter D	[mm]	11.8 ± 0.4	13.4 ± 0.5	15.0 ± 0.5
Core identification		BK with lettering WH + GN/YE		
Sheath color		Orange similar to RAL 2003		
Approval(s)		DESINA / VDE / UL		
Capacitance core/shielding	[nF/km]	135	145	150
Capacitance core/core	[nF/km]	75	85	90
Halogen free		No		
Silicone-free		Yes		
CFC-free		No		
Inner insulation (core)		TPE		
Outer insulation (sheath)		PVC		
Flame-inhibiting/self-extinguishing		No		
Conductor material		Cu		
Shielding		Tinned Cu		
Weight (cable)	[kg/km]	300	370	476




#### 4.6.4 Cable carrier installation for brake power cable

Installation type		Cable carrier		
Cable cross sections		4 x 1.5 mm <sup>2</sup> + 3 x 1 mm <sup>2</sup>	4 x 2.5 mm <sup>2</sup> + 3 x 1 mm <sup>2</sup>	4 x 4 mm <sup>2</sup> + 3 x 1 mm <sup>2</sup>
Manufacturer		Nexans		
	Unit			
Manufacturer designation		PSL(LC)C11Y-J 4x... +3A.../C		PSL11YC11Y-J 4x... +3A.../C
Operating voltage U <sub>0</sub> AC	[V]	600 / 1000		
Temperature range	[°C]	- 20 to + 60		
Max. temperature	[°C]	+ 90 (conductor)		
Min. bending radius	[mm]	150	170	155
Diameter D	[mm]	15.0 ± 1.4	16.2 ± 0.7	15.3 ± 0.5
Maximum acceleration	[m/s <sup>2</sup> ]	20		
Max. velocity	[m/min]	200 at max. travel distance of 5 m		
Core identification		BK with lettering WH + GN/YE		
Sheath color		Orange similar to RAL 2003		
Approval(s)		DESINA / VDE / UL /  US		
Capacitance core/shielding	[nF/km]	105	105	170
Capacitance core/core	[nF/km]	65	65	95
Halogen free		Yes		
Silicone-free		Yes		
CFC-free		Yes		
Inner insulation (cable)		Polyolefin		TPM
Outer insulation (sheath)		TPU (PUR)		
Flame-inhibiting/self-extinguishing		Yes		
Conductor material		E-Cu blank		
Shielding		Braided tinned Cu shield (optically covered > 85 %)		
Weight (cable)	[kg/km]	280	380	410




4.6.5 Fixed installation of accessory cables

Installation type		Fixed		
Accessory designation		AK0H/EK0H AS1H/ES1H	RH.M	VR
Cable cross sections		6 x 2 x 0.25 mm <sup>2</sup>	5 x 2 x 0.25 mm <sup>2</sup>	3 x 1 mm <sup>2</sup>
Manufacturer		Lapp		
	Unit			
Manufacturer designation		TPE/CY		Ölflex 110 Classic
Operating voltage U <sub>0</sub> AC	[V]	300		300 / 500
Temperature range	[°C]	- 10 to + 80		- 30 to + 70
Max. temperature	[°C]	+ 80		+ 70
Min. bending radius	[mm]	41.5	37.5	24
Diameter D	[mm]	8.3 ± 0,3	7.5 ± 0,3	6.0 ± 0.3
Core identification		DIN 47 100		VDE 0293
Sheath color		Green, similar to RAL 6018		Silver gray, RAL 7001
Approval(s)		DESINA / VDE /  US		VDE
Capacitance core/shielding	[nF/km]	110		-
Capacitance core/core	[nF/km]	83		-
Halogen free		No		
Silicone-free		Yes		
CFC-free		No		
Inner insulation (core)		TPE		PVC
Outer insulation (sheath)		PVC		
Flame-inhibiting/self-extinguishing		No		
Conductor material		Cu blank		
Shielding		Braided tinned Cu		-
Weight (cable)	[kg/km]	131	103	65



#### 4.6.6 Cable carrier installation of accessory cables

Installation type		Cable carrier		
Accessory designation		AK0H/EK0H AS1H/ES1H	RH.M	VR
Cable cross sections		6 x 2 x 0.25 mm <sup>2</sup>	5 x 2 x 0.25 mm <sup>2</sup>	3 x 1 mm <sup>2</sup>
Manufacturer		Nexans		
	Unit			
Manufacturer designation		SSL11YC11Y ... x 2 x 0.25		PSL 3 x 1.0
Operating voltage U <sub>0</sub> AC	[V]	300		300
Temperature range	[°C]	-20 to + 60		- 30 to + 70
Max. temperature	[°C]	+90 (on conductor)		+ 90 (on conductor)
Min. bending radius	[mm]	100	95	45
Diameter D	[mm]	9.8 ± 0.2	9,5 ± 0.2	5,7 ± 0.2
Maximum acceleration	[m/s <sup>2</sup> ]	20		10
Max. velocity	[m/min]	200		50
Core identification		WH/BN, GN/YE, GY/PK, BU/RD, BK/VT, GY-PK/RD- BU	WH/BN, GN/YE, GY/PK, BU/RD, BK/VT	2 x WH with digit + 1 x GN/YE
Sheath color		Green similar to RAL 6018		Black RAL 9005
Approval(s)		DESINA / VDE /  us		VDE / UL
Capacitance core/shielding	[nF/km]	100		-
Capacitance core/core	[nF/km]	55		-
Halogen free		Yes		Yes
Silicone-free		Yes		Yes
CFC-free		Yes		Yes
Inner insulation (core)		PP		TPM
Outer insulation (sheath)		TPE-U		TPE-U
Flame-inhibiting/self-extinguish- ing		Yes		Yes
Conductor material		E-Cu blank		E-Cu blank
Shielding		Braided tinned Cu		-
Weight	[kg/km]	130	120	50



### 4.7 Crimping tools

An alternative for purchasing the prefabricated cables from SEW-EURODRIVE for motors with plug connectors is to purchase the required plug connectors.

In this case, the customers have to wire the plug connectors themselves. SEW-EURODRIVE offers the matching crimping tools to ensure correct connection of cable core and contact. Please quote the required part number in your order.

#### 4.7.1 Motor and brake motor

Tools required for assembly			
Type	for	SEW part number	Illustrations
Crimping tool		019 243 0	
Positioning tool	Motor contact 2 mm Ø Core cross section 0.5 ... 2.5 mm <sup>2</sup>	019 245 7	
	Brake contact 1 mm Ø Core cross section 0.06 ... 1 mm <sup>2</sup>	019 244 9	
Tools required for removal			
Removal tool	Motor contact 2 mm Ø	019 247 3	
	Brake contact 1 mm Ø	019 246 5	
Removal tool <sup>1)</sup>	Insulator	019 248 1	

1) The removal tool is **only required for removal on the motor end.**



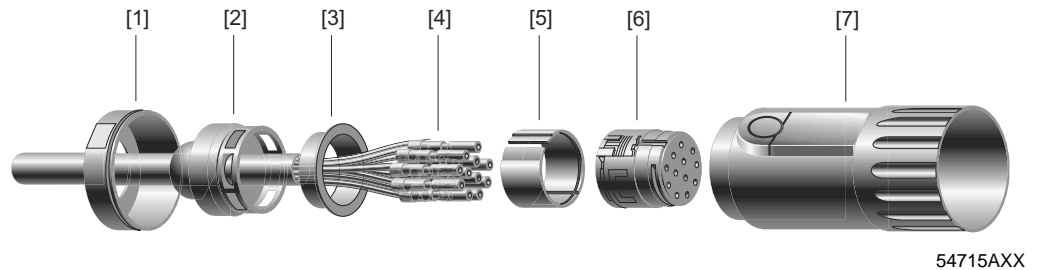
## Hybrid Cables

### Assembling resolver/HIPERFACE® plug connectors

#### 4.8 Assembling resolver/HIPERFACE® plug connectors

##### 4.8.1 Scope of delivery for plug connectors

The following parts are supplied for assembling resolver/HIPERFACE® plug connectors. The SEW part number is 198,673 2.



- [1] Screw fitting
- [2] Seal with strain relief
- [3] Shield ring
- [4] Socket contacts
- [5] Insulating sleeve
- [6] Insulator
- [7] Connector housing



Hold the cable firmly in place when tightening the cable and the connector.





4.8.2 Assembly instructions for plug connectors

1		<ul style="list-style-type: none"> <li>• Pull the screw fitting and seal with strain relief 31 mm over the cable.</li> </ul>
2		<ul style="list-style-type: none"> <li>• Strip 28 mm of cable insulation off the end of the cable</li> </ul>
3		<ul style="list-style-type: none"> <li>• Fold back the braid shield and fan it out</li> </ul>
4		<ul style="list-style-type: none"> <li>• Strip 6 mm insulation off the leads</li> <li>• Push the socket contacts onto the ends of the leads</li> </ul>
5		<ul style="list-style-type: none"> <li>• Insert the small-diameter positioning tool (SEW part number 019 244 9) into the crimping tool until the green mark appears in the view window [A].</li> <li>• Set the press thickness [B] to 24 on the crimping tool.</li> </ul>
6		<ul style="list-style-type: none"> <li>• Insert a lead with socket contact in the crimping tool and press the tool fully together. The tool then opens automatically.</li> <li>• Repeat this procedure for each lead.</li> </ul>
7		<ul style="list-style-type: none"> <li>• Pull the shield over the leads and press it against the seal.</li> </ul>



## Hybrid Cables

### Assembling resolver/HIPERFACE® plug connectors

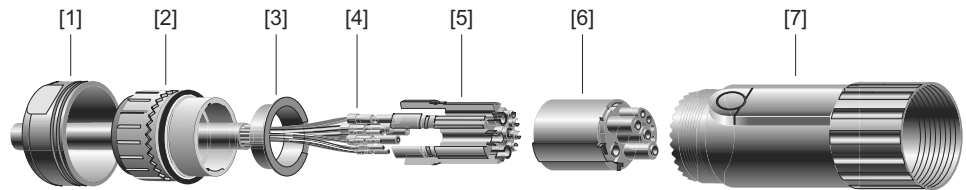
8		<ul style="list-style-type: none"> <li>• Turn the shield ring until the braid shield is flush with the shield ring.</li> </ul>
9		<ul style="list-style-type: none"> <li>• Pull the insulator apart evenly by about 1 mm.</li> </ul>
10		<ul style="list-style-type: none"> <li>• Insert the socket contacts into the insulator.</li> </ul>
11		<ul style="list-style-type: none"> <li>• Press the insulator together until you hear a "click."</li> </ul>
12		<ul style="list-style-type: none"> <li>• Fold open the insulating sleeve.</li> <li>• Position the side of the insulating sleeve with the recess against the groove in the insulator so that the opening of the insulating sleeve is pointing in the same direction as the double-headed arrow on the insulator.</li> <li>• Press the insulating sleeve together until it engages.</li> <li>• Insert the insulator into the connector housing in the middle position.</li> </ul>
13		<ul style="list-style-type: none"> <li>• Fix the connector housing with a wrench and use a second wrench to tighten the screw fitting.</li> <li>• [A] = Fix in place</li> </ul>



## 4.9 Assembling the power connector

### 4.9.1 Scope of delivery for the power connector

The following parts are supplied for assembling the power connectors. The SEW part number is 198 674 0.



56252AXX

- [1] Screw fitting
- [2] Seal with strain relief
- [3] Shield ring
- [4] Socket contacts
- [5] Insulating sleeve
- [6] Insulator
- [7] Connector housing



Hold the cable firmly in place when tightening the cable and connector.



**4.9.2 Assembly instructions for the power connector**

<p>1</p>		<ul style="list-style-type: none"> <li>• Pull the screw fitting and the seal with strain relief over the cable.</li> </ul>															
<p>2</p>		<ul style="list-style-type: none"> <li>• Strip 59 mm of cable insulation off the end of the cable.</li> </ul>															
<p>3</p>		<ul style="list-style-type: none"> <li>• Fold back the braid shield and fan it out.</li> </ul>															
<p>4</p>		<ul style="list-style-type: none"> <li>• Shorten the power leads (1, 2 and 3) to 44 mm.</li> <li>• Shorten the PE lead (GN/YE) to 45 mm.</li> <li>• Do not short lead pair 5 and 6.</li> <li>• Cut off lead pair 7 and 8 flush with the end of the cable.</li> </ul>															
<p>5</p>		<ul style="list-style-type: none"> <li>• Pull the shield over the leads.</li> <li>• Strip 7 mm of insulation off leads 1, 2, 3 and PE.</li> <li>• Strip 5 mm of insulation of leads 5 and 6.</li> </ul>															
<p>6</p>		<ul style="list-style-type: none"> <li>• Insert the positioning tool in the crimping tool until the marking (color) appears in the view window [A] appears (see table below).</li> <li>• Set the press thickness [B] on the crimping tool according to the table.</li> </ul> <table border="1" data-bbox="710 1624 1436 1809"> <thead> <tr> <th>Lead</th> <th>a [mm<sup>2</sup>]</th> <th>Positioning tool Part number xxx xxx x</th> <th>Marking (color)</th> <th>Press thickness</th> </tr> </thead> <tbody> <tr> <td>5 and 6</td> <td>0.14 ... 1.0</td> <td>019 244 9</td> <td>Green (GN)</td> <td>24</td> </tr> <tr> <td>1, 2, 3 and PE</td> <td>0.35 ... 4.0</td> <td>019 245 7</td> <td>Blue (BU)</td> <td>6</td> </tr> </tbody> </table>	Lead	a [mm <sup>2</sup> ]	Positioning tool Part number xxx xxx x	Marking (color)	Press thickness	5 and 6	0.14 ... 1.0	019 244 9	Green (GN)	24	1, 2, 3 and PE	0.35 ... 4.0	019 245 7	Blue (BU)	6
Lead	a [mm <sup>2</sup> ]	Positioning tool Part number xxx xxx x	Marking (color)	Press thickness													
5 and 6	0.14 ... 1.0	019 244 9	Green (GN)	24													
1, 2, 3 and PE	0.35 ... 4.0	019 245 7	Blue (BU)	6													
<p>7</p>		<ul style="list-style-type: none"> <li>• Insert a lead with socket contact in the crimping tool and press the tool fully together. The tool then opens automatically.</li> <li>• Repeat this procedure for each lead in accordance with the table in step 6.</li> </ul>															



8		<ul style="list-style-type: none"> <li>• Open the insulating sleeve.</li> </ul>
9		<ul style="list-style-type: none"> <li>• Insert the middle socket contact into the insulator as shown in the wiring diagram in section 5.3.</li> <li>• Close the insulating sleeve until it clicks shut.</li> <li>• Insert the remaining socket contacts into the insulator as shown in the wiring diagram in section 5.3.</li> </ul>
10		<ul style="list-style-type: none"> <li>• Shorten the braid shield as shown.</li> <li>• Insert the shield ring into the seal so that the shield and end of the cable are flush. Make sure that the braid shield is routed cleanly between the shield ring and the seal.</li> </ul>
11		<ul style="list-style-type: none"> <li>• Insert the insulator into the connector housing until the seal rests against its stop in the connector housing.</li> </ul>
12		<ul style="list-style-type: none"> <li>• Fix the connector housing with a wrench and use a second wrench to tighten the screw fitting.</li> <li>• [A] = Fix in place</li> </ul>



## 5 Appendix

### 5.1 Cable dimensions to AWG

AWG stands for **American Wire Gauge** and refers to the size of the wires. This number specifies the diameter or cross section of a wire in code. This type of cable designation is usually only used in the USA. However, the designations can also be seen in catalogs or data sheets in Europe.

AWG designation	Cross section in mm <sup>2</sup>
000000 (6/0)	185
00000 (5/0)	150
0000 (4/0)	120
000 (3/0)	90
00 (2/0)	70
0 (1/0)	50
1	50
2	35
3	25
4	25
5	16
6	16
7	10
8	10
9	6
10	6
11	4
12	4
13	2.5
14	2.5
15	2.5
16	1.5
16	1
18	1
19	0.75
20	0.5
21	0.5
22	0.34
23	0.25
24	0.2



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## Address Directory

Germany			
<b>Headquarters Production Sales</b>	<b>Bruchsal</b>	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 <a href="http://www.sew-eurodrive.de">http://www.sew-eurodrive.de</a> <a href="mailto:sew@sew-eurodrive.de">sew@sew-eurodrive.de</a>
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Technical Offices	Helsinki	SEW-EURODRIVE OY Luutnantinaukio 5C LT2 FIN-00410 Helsinki	Tel. +358 201 589-300 Fax + 358 9 5666-311
	Vaasa	SEW-EURODRIVE OY Kauppapuistikko 11 E FIN-65100 Vaasa	Tel. +358 3 589-300 Fax +358 6 3127-470
Gabon			
Sales	Libreville	Electro-Services B.P. 1889 Libreville	Tel. +241 7340-11 Fax +241 7340-12
Great Britain			
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	Midlands	SEW-EURODRIVE Ltd. 5 Sugar Brook court, Aston Road, Bromsgrove, Worcs B60 3EX	Tel. +44 1527 877-319 Fax +44 1527 575-245
	Scotland	SEW-EURODRIVE Ltd. Scottish Office No 37 Enterprise House Springkerse Business Park GB-Stirling FK7 7UF Scotland	Tel. +44 17 8647-8730 Fax +44 17 8645-0223
Greece			
Sales Service	Athen	Christ. Boznos & Son S.A. 12, Mavromichali Street P.O. Box 80136, GR-18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 <a href="http://www.boznos.gr">http://www.boznos.gr</a> info@boznos.gr
Technical Office	Thessaloniki	Christ. Boznos & Son S.A. Maiandrou 15 562 24 Evosmos, Thessaloniki	Tel. +30 2 310 7054-00 Fax +30 2 310 7055-15 info@boznos.gr



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Hungary			
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Iceland			
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India			
<b>Assembly Sales Service</b>	<b>Baroda</b>	SEW-EURODRIVE India Pvt. Ltd. Plot No. 4, Gidc Por Ramangamdi • Baroda - 391 243 Gujarat	Tel. +91 265 2831086 Fax +91 265 2831087 mdoffice@seweurodriveindia.com
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Indonesia			
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Ireland			
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Italy			
<b>Assembly Sales Service</b>	<b>Milano</b>	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 799781 sewit@sew-eurodrive.it
<b>Technical Offices</b>	<b>Bologna</b>	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Emilia,172 I-40064 Ozzano dell'Emilia (Bo)	Tel. +39 051 796-660 Fax +39 051 796-595
	<b>Caserta</b>	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Viale Carlo III Km. 23,300 I-81020 S. Nicola la Strada (Caserta)	Tel. +39 0823 450611 Fax +39 0823 421414
	<b>Firenze</b>	RIMA Via Einstein, 14 I-50013 Campi Bisenzio (Firenze)	Tel. +39 055 898 58-21 Fax +39 055 898 58-30
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Ivory Coast			
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Japan			
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Korea			
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Assembly Sales Service	Brüssel	CARON-VECTOR S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 <a href="http://www.caron-vector.be">http://www.caron-vector.be</a> info@caron-vector.be
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Mexico			
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Netherlands			
<b>Assembly Sales Service</b>	<b>Rotterdam</b>	VECTOR Aandrijftechniek B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 <a href="http://www.vector.nu">http://www.vector.nu</a> info@vector.nu
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<b>Assembly Sales Service</b>	<b>Auckland</b>	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 sales@sew-eurodrive.co.nz
	<b>Christchurch</b>	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
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Norway			
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Peru			
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	<b>Bydgoszcz</b>	SEW-EURODRIVE Polska Sp.z.o.o. ul. Fordonska 246 PL-85-959 Bydgoszcz	Tel. +48 52 3606590 Fax +48 52 3606591
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Slovakia			
<b>Sales</b>	<b>Bratislava</b>	SEW-Eurodrive SK s.r.o. Rybnicna 40 SK-83107 Bratislava	Tel. +421 2 49595201 Fax +421 2 49595200 http://www.sew.sk sew@sew-eurodrive.sk
	<b>Zilina</b>	SEW-Eurodrive SK s.r.o. ul. Vojtecha Spanyola 33 SK-010 01 Zilina	Tel. +421 41 700 2513 Fax +421 41 700 2514 sew@sew-eurodrive.sk
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Slovenia			
<b>Sales Service</b>	<b>Celje</b>	Pakman - Pogonska Tehnika d.o.o. Ul. XIV. divizije 14 SLO - 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net
South Africa			
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	<b>Durban</b>	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaceo Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700-3451 Fax +27 31 700-3847 dtait@sew.co.za
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Sweden			
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<b>Sales</b>	<b>Nan Tou</b>	Ting Shou Trading Co., Ltd. No. 55 Kung Yeh N. Road Industrial District Nan Tou 540	Tel. +886 49 255353 Fax +886 49 257878
	<b>Taipei</b>	Ting Shou Trading Co., Ltd. 6F-3, No. 267, Sec. 2 Tung Hwa South Road, Taipei	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net



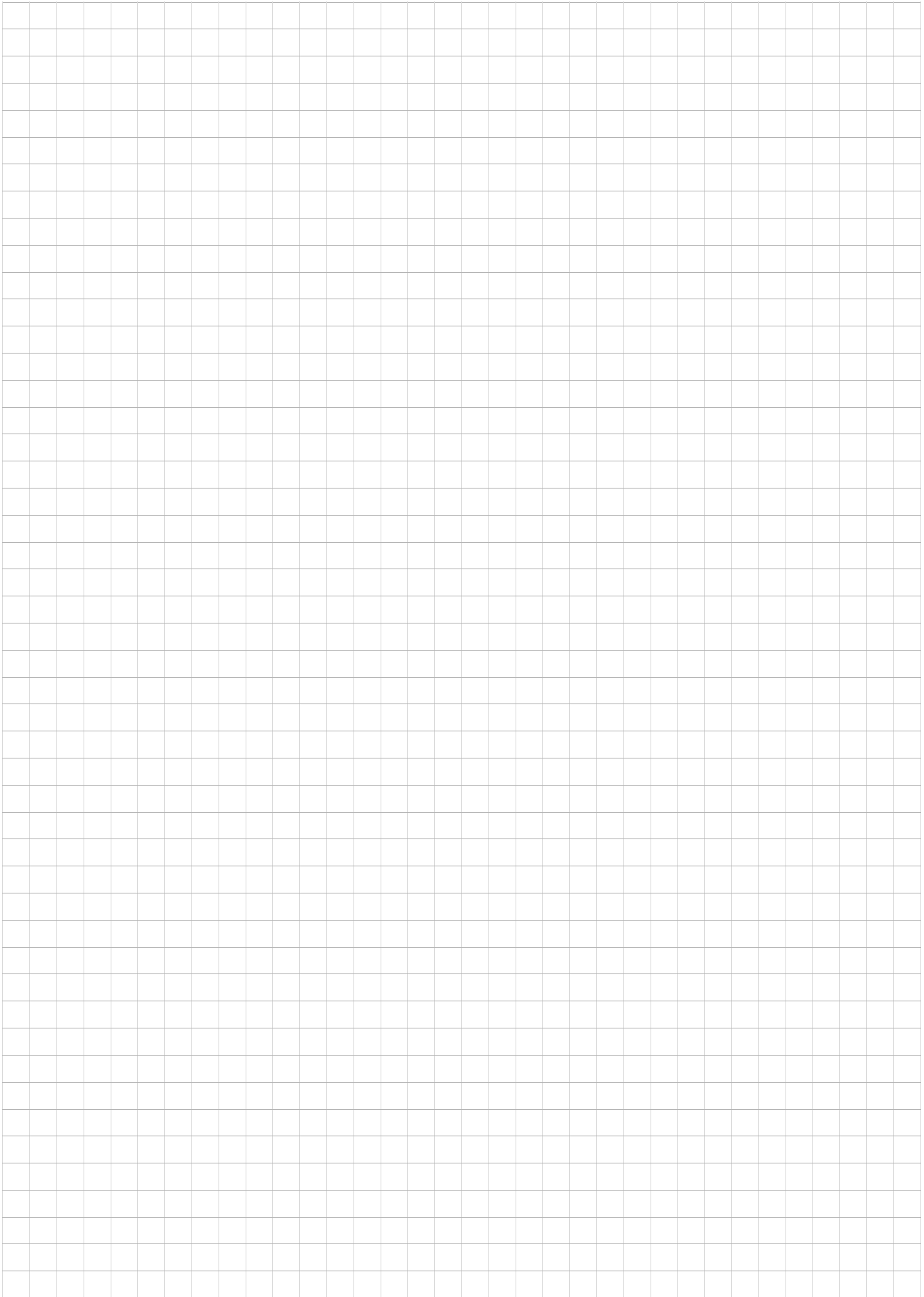
Thailand			
<b>Assembly Sales Service</b>	<b>Chon Buri</b>	SEW-EURODRIVE (Thailand) Ltd. Bangpakong Industrial Park 2 700/456, Moo.7, Tambol Donhuaroh Muang District Chon Buri 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.co.th
<b>Technical Offices</b>	<b>Bangkok</b>	SEW-EURODRIVE PTE LTD Bangkok Liaison Office 6th floor, TPS Building 1023, Phattanakarn Road Klongtan, Phrakonong, Bangkok,10110	Tel. +66 2 7178149 Fax +66 2 7178152 sewthailand@sew-eurodrive.co.th
	<b>Hadyai</b>	SEW-EURODRIVE (Thailand) Ltd. Hadyai Country Home Condominium 59/101 Soi.17/1 Rachas-Utid Road. Hadyai, Songkhla 90110	Tel. +66 74 359441 Fax +66 74 359442 sewhdy@ksc.th.com
	<b>Khonkaen</b>	SEW-EURODRIVE (Thailand) Ltd. 4th Floor, Kaow-U-HA MOTOR Bldg, 359/2, Mitraphab Road. Muang District Khonkaen 40000	Tel. +66 43 225745 Fax +66 43 324871 sewkk@cscsoms.com
	<b>Lampang</b>	SEW-EURODRIVE (Thailand) Ltd. 264 Chatchai Road, sob-tuy, Muang, Lampang 52100	Tel. +66 54 310241 Fax +66 54 310242 sewthailand@sew-eurodrive.co.th
Tunisia			
<b>Sales</b>	<b>Tunis</b>	T. M.S. Technic Marketing Service 7, rue Ibn El Heithem Z.I. SMMT 2014 Mégrine Erriadh	Tel. +216 1 4340-64 + 1 4320-29 Fax +216 1 4329-76
Turkey			
<b>Assembly Sales Service</b>	<b>Istanbul</b>	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Bagdat Cad. Koruma Cikmazi No. 3 TR-34846 Maltepe ISTANBUL	Tel. +90 216 4419163 + 216 4419164 + 216 3838014 Fax +90 216 3055867 sew@sew-eurodrive.com.tr
<b>Technical Offices</b>	<b>Ankara</b>	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Ticaret Ltd. Sirketi Özcelik Is Merkezi, 14. Sok, No. 4/42 TR-06370 Ostim/Ankara	Tel. +90 312 2868014 Fax +90 312 2868015
	<b>Bursa</b>	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Besevler Küçük Sanayi Parkoop Parçacılar Sitesi 48. Sokak No. 47 TR Nilüfer/Bursa	Tel. +90 224 443 4559 Fax +90 224 443 4558
	<b>Izmir</b>	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Ticaret Ltd. Sirketi 1203/11 Sok. No. 4/613 Hasan Atli Is Merkezi TR-35110 Yenisehir-Izmir	Tel. +90 232 4696264 Fax +90 232 4336105
Ukraine			
<b>Sales Service</b>	<b>Dnepropetrovsk</b>	SEW-EURODRIVE Str. Rabochaja 23-B, Office 409 49008 Dnepropetrovsk	Tel. +380 56 370 3211 Fax +380 56 372 2078 sew@sew-eurodrive.ua
Uruguay			
<b>Sales</b>	<b>Montevideo</b>	SEW-EURODRIVE Argentina S. A. Sucursal Uruguay German Barbato 1526 CP 11200 Montevideo	Tel. +598 2 90181-89 Fax +598 2 90181-88 sewuy@sew-eurodrive.com.uy



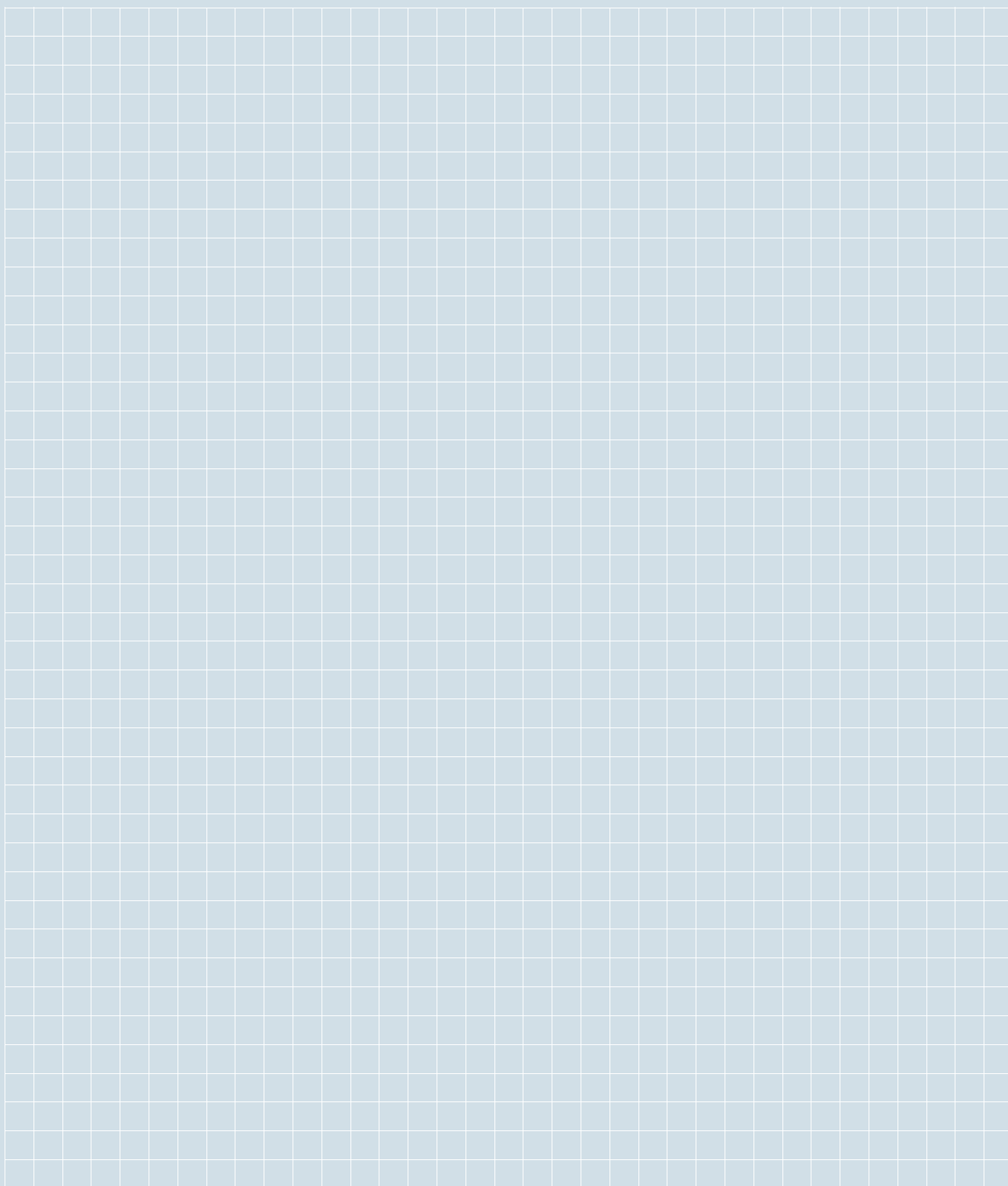
## Address Directory

USA			
<b>Production Assembly Sales Service</b>	<b>Greenville</b>	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 Manuf. +1 864 439-9948 Fax Ass. +1 864 439-0566 Telex 805 550 <a href="http://www.seweurodrive.com">http://www.seweurodrive.com</a> <a href="mailto:cslyman@seweurodrive.com">cslyman@seweurodrive.com</a>
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	<b>Philadelphia/PA</b>	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 <a href="mailto:csbridgeport@seweurodrive.com">csbridgeport@seweurodrive.com</a>
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Additional addresses for service in the USA provided on request!			
Venezuela			
<b>Assembly Sales Service</b>	<b>Valencia</b>	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 <a href="mailto:sewventas@cantv.net">sewventas@cantv.net</a> <a href="mailto:sewfinanzas@cantv.net">sewfinanzas@cantv.net</a>









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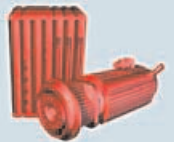


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