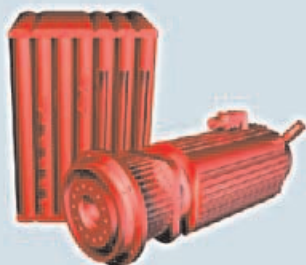




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EURODRIVE



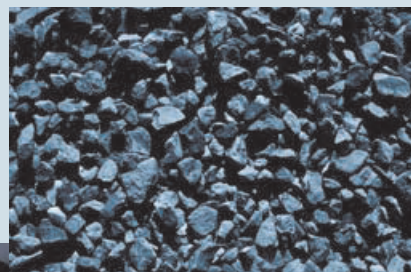
CMP40/50/63 **Synchronous Servomotors**

DB250000

Edition 04/2006

11413816 / EN

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

SEW-EURODRIVE							
76646 Bruchsal / Germany							
Type	CMP50S/BP/KTY/RH1M /SB						
No.	02.1221234388.0001.06				3~ IEC34		
M ₀	1.3	Nm	I ₀	1.7	A	IP	65
n _N	6,000	r/min	I _{max}	9.0	A	Iso.cl.	F
f _N	300	Hz	U _{max}	400	V	IM	M4
Brake	24 V	3,1 Nm	Rectifier				
Gear unit	M _{amax}	Nm	n _{max}	/	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

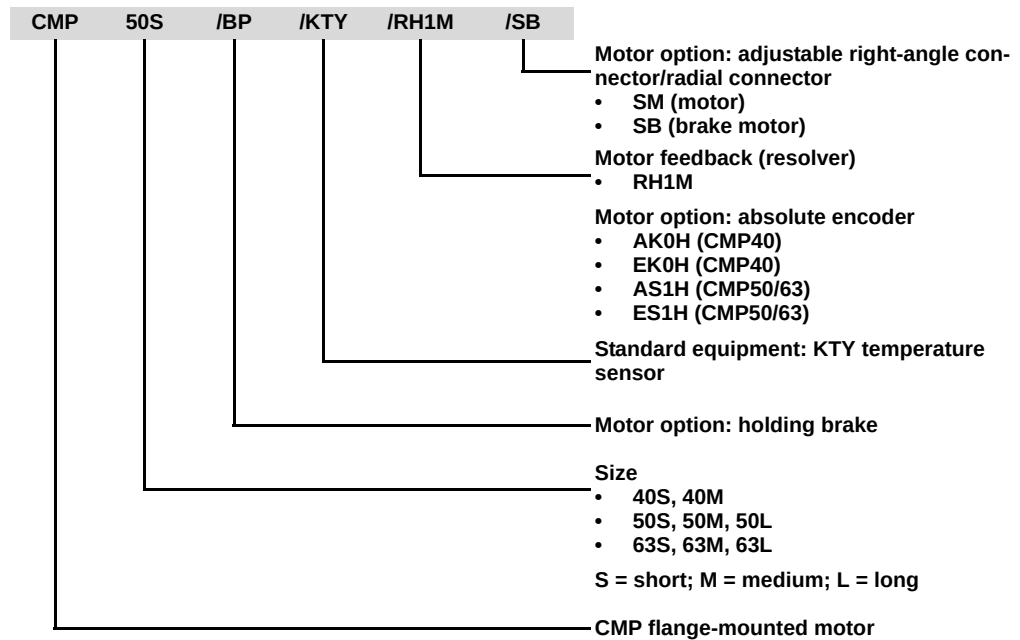
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Unit Information

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



76646 Bruchsal / Germany

Type PSF121 CMP50S/BP/KTY/RH1M /SB

No. 01.1236534388.0001.06 3~IEC34

M₀ 1.3 Nm I₀ 1.7 A IP 65

n_N 6,000 r/min I_{max} 9.0 A Iso.cl. F

f_N 300 Hz U_{max} 400 V IM M4

Brake 24 V 3.1 Nm Rectifier

Gear unit M_{amax} 35 Nm n_{max} 1,600 / 8,000 r/min

i :1 Weight 3.8 kg

Lubricant: Miner. oil 0.1 l

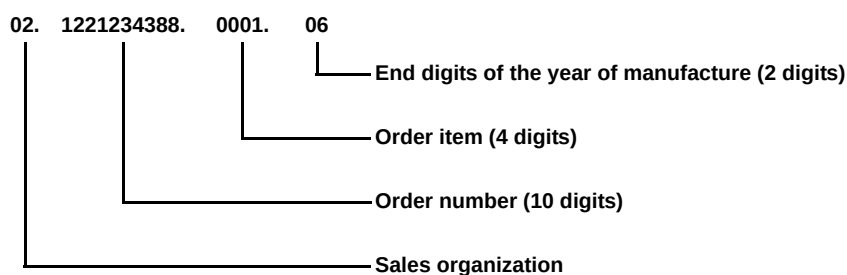
1332 749 6 Permanent magnet Made in Germany

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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.



58808axx

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

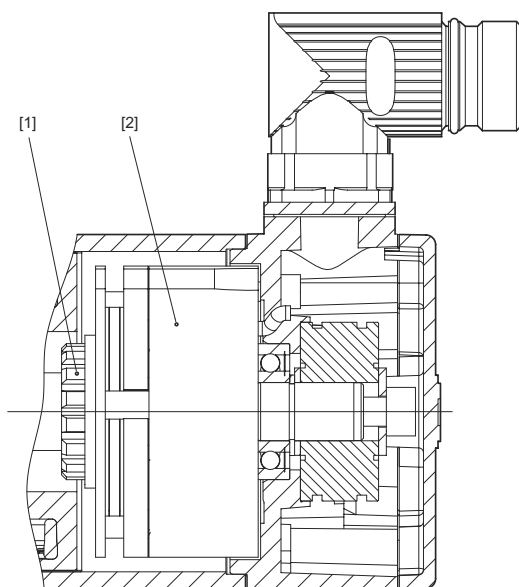
**Principle
structure of the
BP holding brake
for CMP40/50/63**


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} .

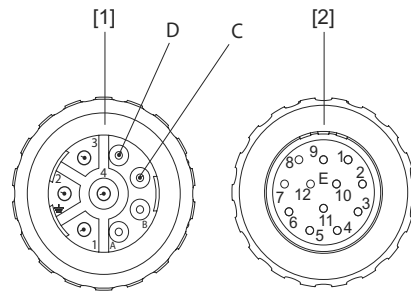
Brake type	Motor type	U_N [V _{DC}]	I_B [A]	M_{B1} [Nm]	M_{B2} [Nm]	W [kJ]	W_{ges} [MJ]	t_1 [10 ⁻³ s]	t_2 [10 ⁻³ s]	P_B [W]	R_B
BP1	CMP40	24	0.29	0.95	–	0.4	1	20	10	7	84
BP4	CMP50S	24	0.42	3.1	4.3	0.6	1.5	40	10	10	54
	CMP50M/L			4.3	3.1						
BP9	CMP63S	24	0.67	7	9.3	1.0	2.5	60	10	16	35
	CMP63M/L			9.3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



59047axx

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 $\pm 10\%$	82Ω
Output resistance $\pm 10\%$	68Ω
Max. electrical fault	$\pm 6'$
Temperature range	-20°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® encoder

SEW-EURODRIVE offers Hiperface® encoders as an alternative to resolvers.

EK0H / AK0H
(CMP40)



Type	EK0H 0199 742 4	AK0H 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 min^{-1}	9000 min^{-1}
Connection	12-pin round connector	
Temperature range	-20°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 _{SS} 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 ² (DIN IEC 68-2-6)	
Maximum speed	9000 min ⁻¹	6000 min ⁻¹
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 Motor size	VR	
	CMP50	CMP63
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 ³ /h	80 m ³ /h
Ambient temperature	0 ... + 60 °C	
Enclosure	IP54 / IP55	
Electrical connection	Plug connector	
Max. cable cross section	3 × 1 mm ²	
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



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
CMP50 VR kit	1333 2414
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	
CMP63 VR kit	1333 2422
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 cml.
- 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

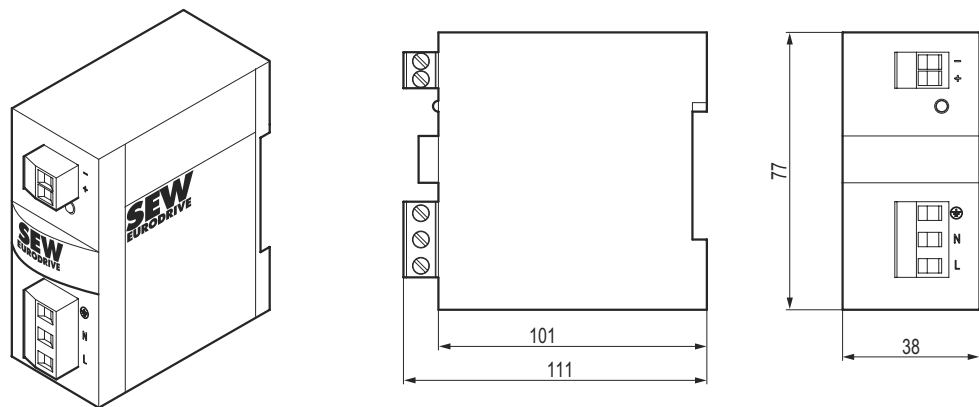
Output: DC 24 V; 2.5 A (40 °C)

DC 24 V; 2.0 A (55 °C)

Connection: Terminal screws 1.5 ... 2.5 mm², 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..

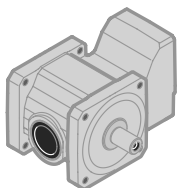
2.6 Assignment to the low backlash servo gear units BSF../PSF..

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.

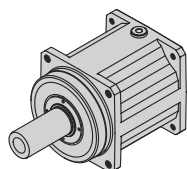
BSF.. gear unit



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							
	100							
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							

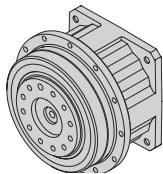


Unit Information

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

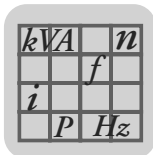
Gear unit type	i	CMP40M	CMP50S	CMP50M	CMP50L	CMP63S	CMP63M	CMP63L
PSF321	3						63.6	90.3
	4						84.7	120.4
	5						105.9	150.5
	7				106.7	76.9	148.3	168
	10			102	121	109.9		
PSF322	16		82.4	153	153	153	153	
	20		103	169	169	169	169	
	25		128.7	169	169	169	169	
	28		144.1	145	145	145		
	35		169	169	169	169		
	40		142					
	49		168	168		168		
	70		168					
	100		121					
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		
	100		270	270	270	270		
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
	100				500	500	500	
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

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

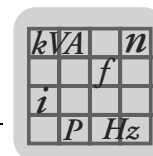
3.1 Mechanical/electrical characteristics

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	- CMP40 ≤ 2 % M₀ - CMP50 ≤ 1.5 % M₀ - CMP63 ≤ 1.5 % M₀	

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



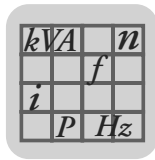
3.3 Motor data of the CMP servomotors

n_N [min ⁻¹]	Motor	M_0 [Nm]	I_0 [A]	M_{max} [Nm]	I_{max} [A]	M_{0VR} [Nm]	I_{0VR} [A]	J_{mot} [kgcm ²]	J_{bmot} [kgcm ²]	M_{B1} [Nm]	M_{B2} [Nm]	L_1 [mH]	R_1 Ω	U_{p0} cold [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_{0VR}	Static torque with forced cooling fan
I_{0VR}	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 ⁻¹



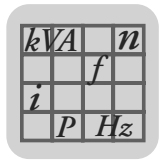
To avoid the low start-up losses during motor operation at low temperatures, SEW-EURODRIVE recommends warming up the motor winding using a current supply. Please contact SEW-EURODRIVE for more information.



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 ⁻¹]	Motor	$I_{\max}$:	MOVIDRIVE® B												
			005	008	011	014	0015	022	030	040	055	075	110	150	220
			4.0 [A]	4.8 [A]	6.2 [A]	8.0 [A]	6.0 [A]	8.25 [A]	10.5 [A]	14.3 [A]	18.8 [A]	24.0 [A]	36.0 [A]	48.0 [A]	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

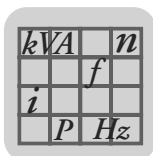


3.5 Inverter assignment to MOVIAXIS® MX

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

n_N [min ⁻¹]	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
3000	CMP40S	$I_{\max}$ [% $\times I_N$]	250	153					
		$M_{\max}$ [Nm]	1.7	1.9					
	CMP40M	$I_{\max}$ [% $\times I_N$]	250	150					
		$M_{\max}$ [Nm]	3.4	3.8					
	CMP50S	$I_{\max}$ [% $\times I_N$]	250	128					
		$M_{\max}$ [Nm]	5.1	5.2					
	CMP50M	$I_{\max}$ [% $\times I_N$]	250	240					
		$M_{\max}$ [Nm]	6.5	10.3					
	CMP50L	$I_{\max}$ [% $\times I_N$]	250	250	170				
		$M_{\max}$ [Nm]	7.2	12.7	15.4				
	CMP63S	$I_{\max}$ [% $\times I_N$]	250	250	161				
		$M_{\max}$ [Nm]	6.2	9.9	11.1				
4500	CMP40S	$I_{\max}$ [% $\times I_N$]	250	153					
		$M_{\max}$ [Nm]	1.7	1.9					
	CMP40M	$I_{\max}$ [% $\times I_N$]	250	150					
		$M_{\max}$ [Nm]	3.4	3.8					
	CMP50S	$I_{\max}$ [% $\times I_N$]	250	175					
		$M_{\max}$ [Nm]	4.2	5.2					
	CMP50M	$I_{\max}$ [% $\times I_N$]	250	250	164				
		$M_{\max}$ [Nm]	5	8.7	10.3				
	CMP50L	$I_{\max}$ [% $\times I_N$]		250	244				
		$M_{\max}$ [Nm]		9.6	15.4				
	CMP63S	$I_{\max}$ [% $\times I_N$]		250	229				
		$M_{\max}$ [Nm]		8	11.1				
	CMP63M	$I_{\max}$ [% $\times I_N$]			250	250	203		
		$M_{\max}$ [Nm]			15.8	19.4	20.3		
	CMP63L	$I_{\max}$ [% $\times I_N$]			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 ⁻¹]	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

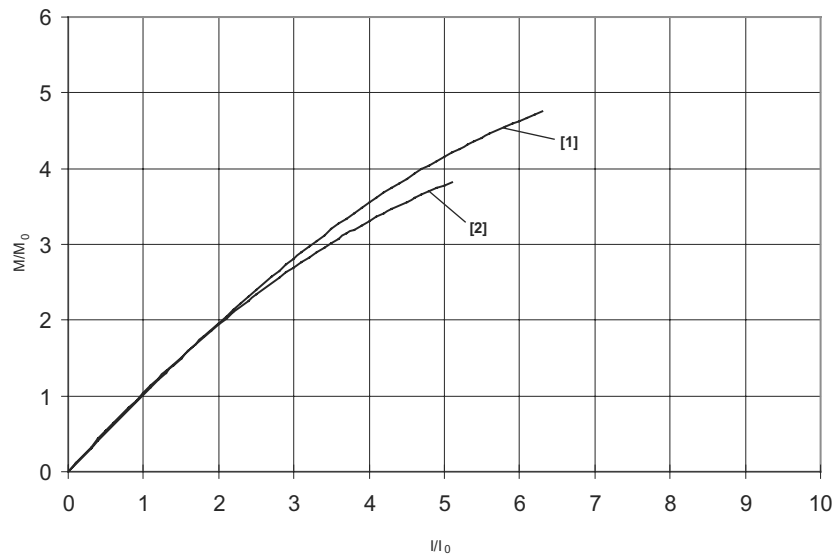


Figure 9: Torque/current characteristic curve for CMP40S/M

58573AXX

- [1] CMP40M
- [2] CMP40S

CMP50S / M / L

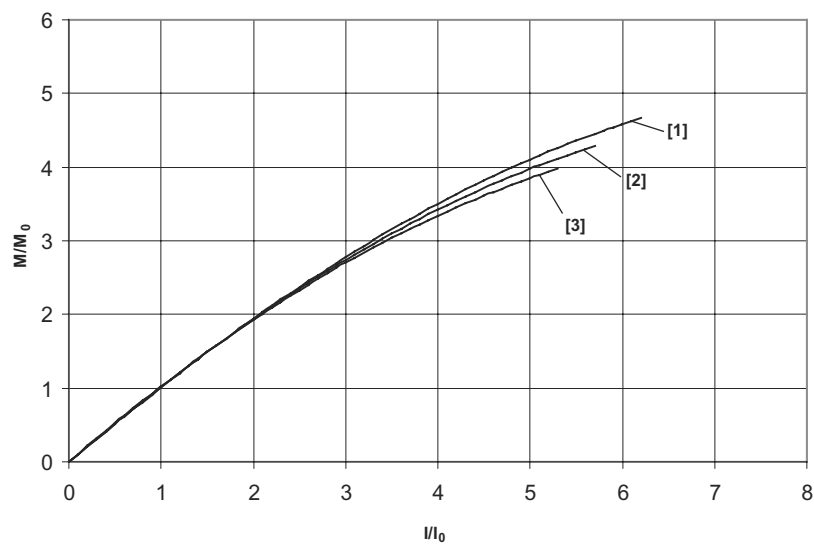
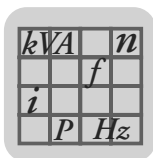


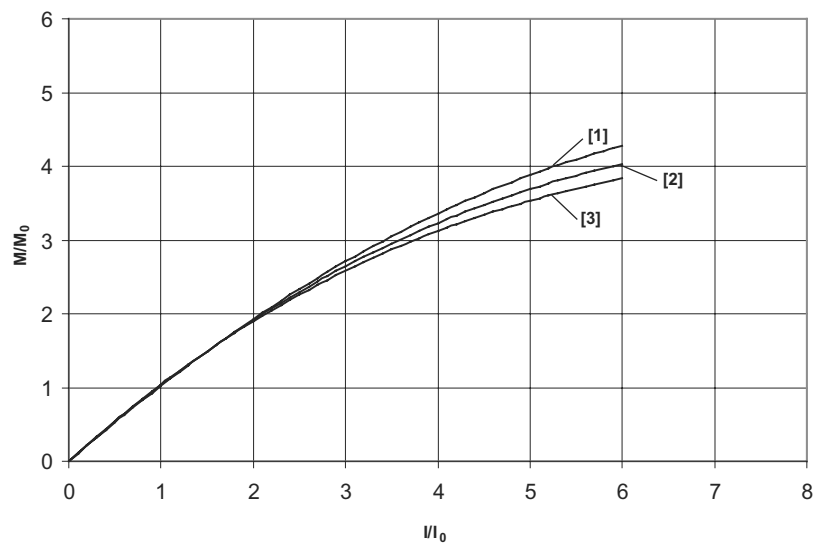
Figure 10: Torque/current characteristic curve for CMP50S/M/L

58574AXX

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



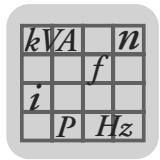
CMP63S / M / L



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 $n_N=6000 \text{ min}^{-1}$

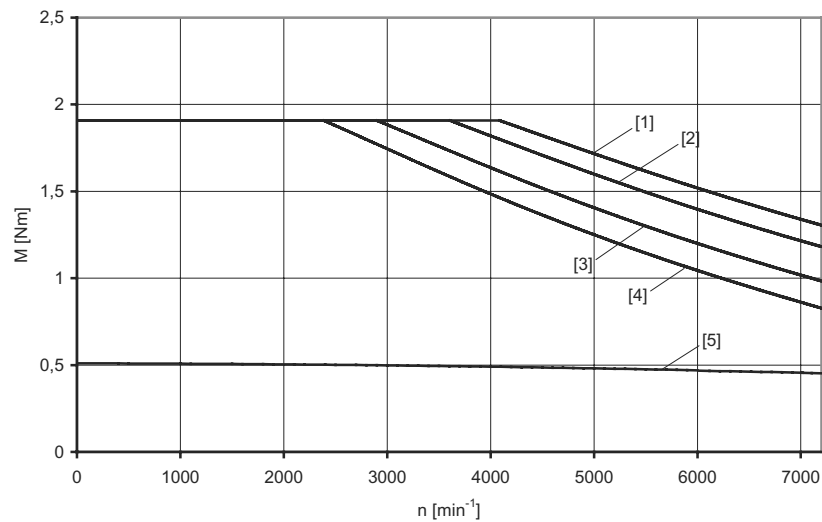
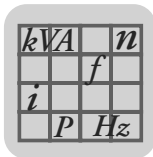
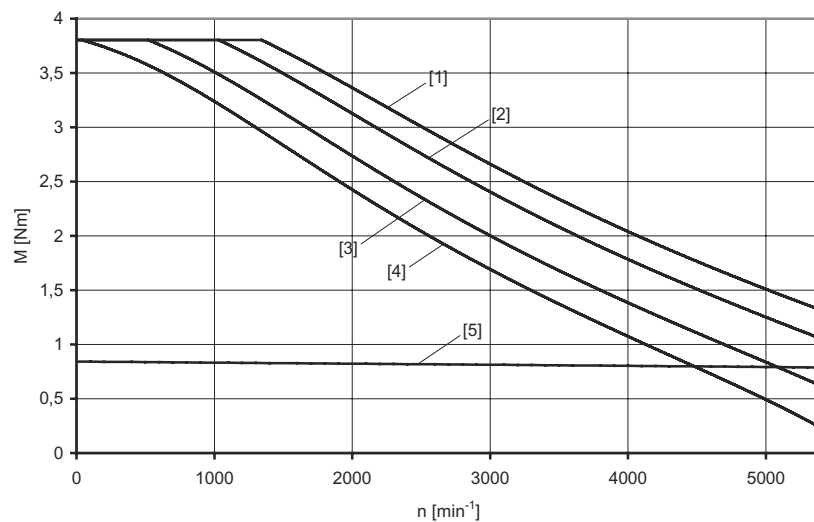


Figure 12: Dynamic and thermal limit characteristic curve for CMP40S $n_N=6000 \text{ min}^{-1}$

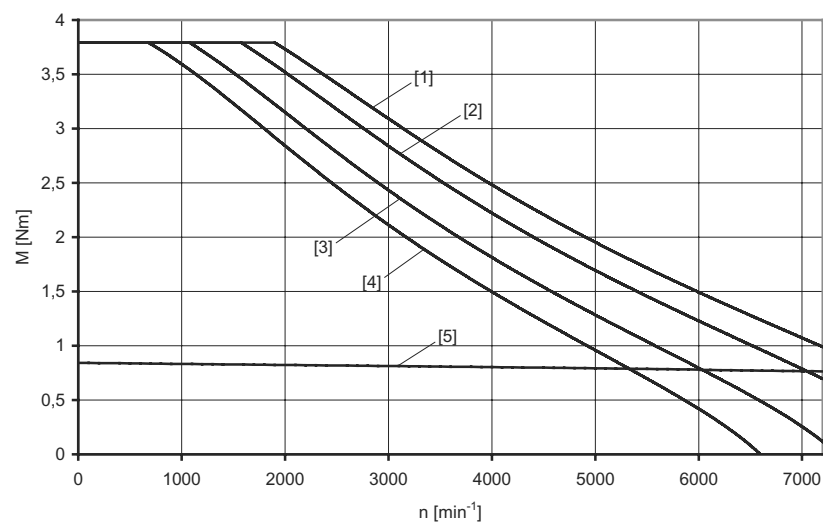
58442axx

- [1] M_{dynamic} (n) 500 V
- [2] M_{dynamic} (n) 460 V
- [3] M_{dynamic} (n) 400 V
- [4] M_{dynamic} (n) 360 V
- [5] M S1_{thermal} (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 $n_N=3000 \text{ min}^{-1}$

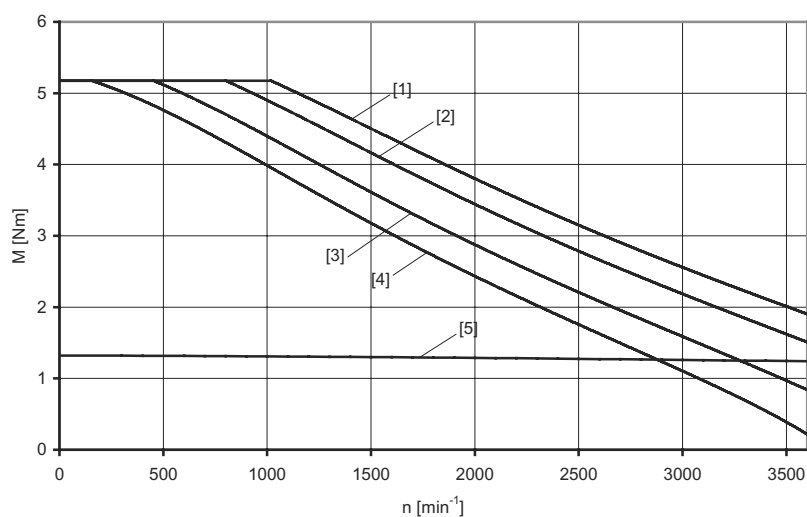


Figure 15: Dynamic and thermal limit characteristic curve for CMP50S $n_N=3000 \text{ min}^{-1}$

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 $n_N=4500 \text{ min}^{-1}$

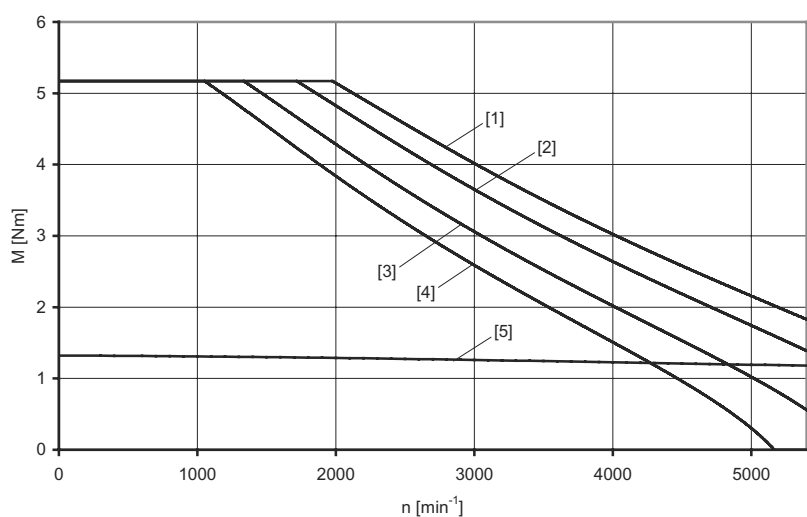
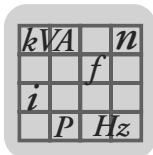


Figure 16: Dynamic and thermal limit characteristic curve for CMP50S $n_N=4500 \text{ min}^{-1}$

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 $n_N=6000 \text{ min}^{-1}$

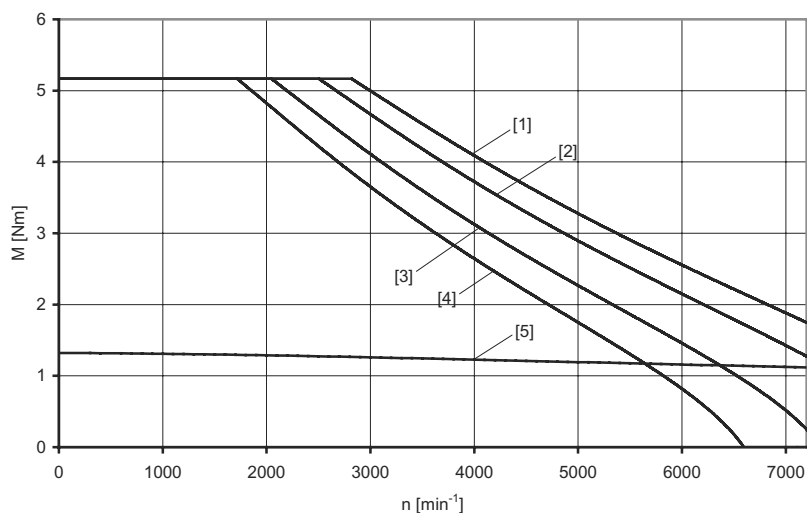


Figure 17: Dynamic and thermal limit characteristic curve for CMP50S $n_N=6000 \text{ min}^{-1}$

58437axx

- [1] $M_{\text{dynamic}}(n) 500 \text{ V}$
- [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 CMP50M $n_N=3000 \text{ min}^{-1}$

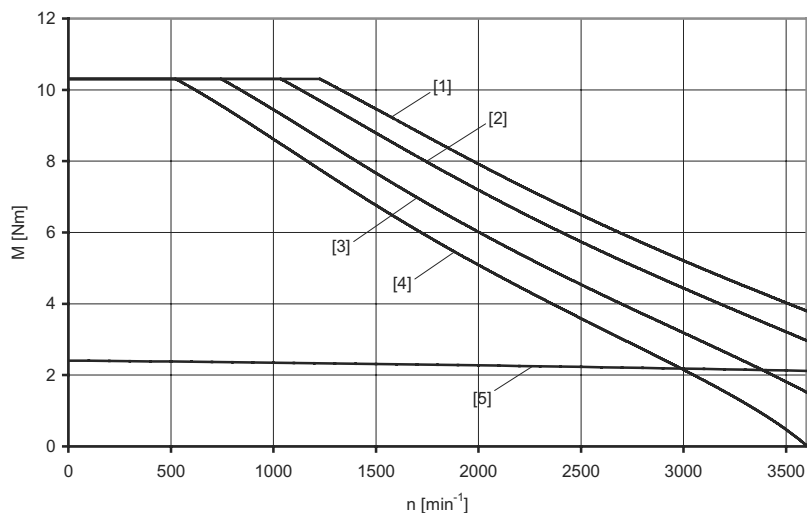


Figure 18: Dynamic and thermal limit characteristic curve for CMP50M $n_N=3000 \text{ min}^{-1}$

58436axx

- [1] $M_{\text{dynamic}}(n) 500 \text{ V}$
- [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 CMP50M $n_N=4500 \text{ min}^{-1}$

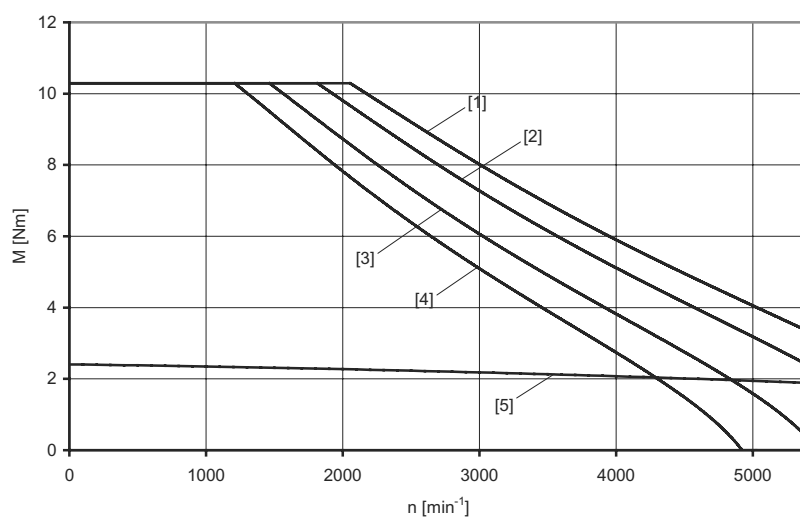


Figure 19: Dynamic and thermal limit characteristic curve for CMP50M $n_N=4500 \text{ min}^{-1}$

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] $M S1_{\text{thermal}}(\text{derating})$

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

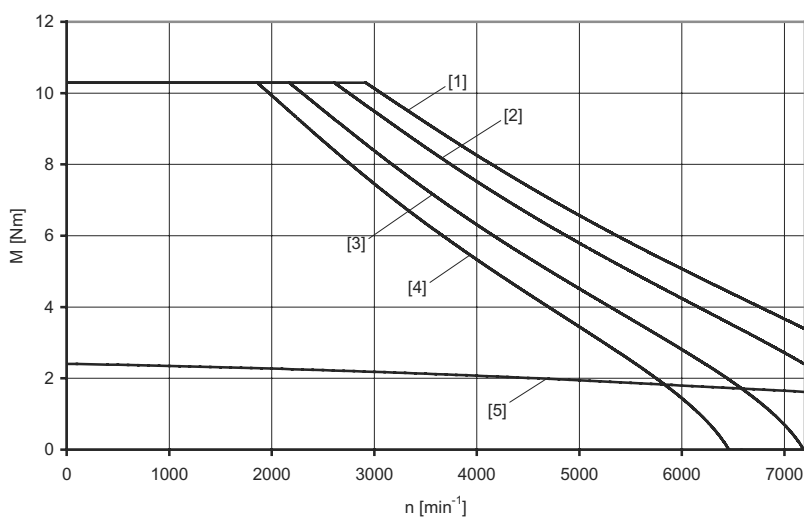
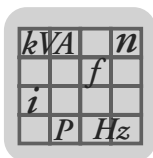
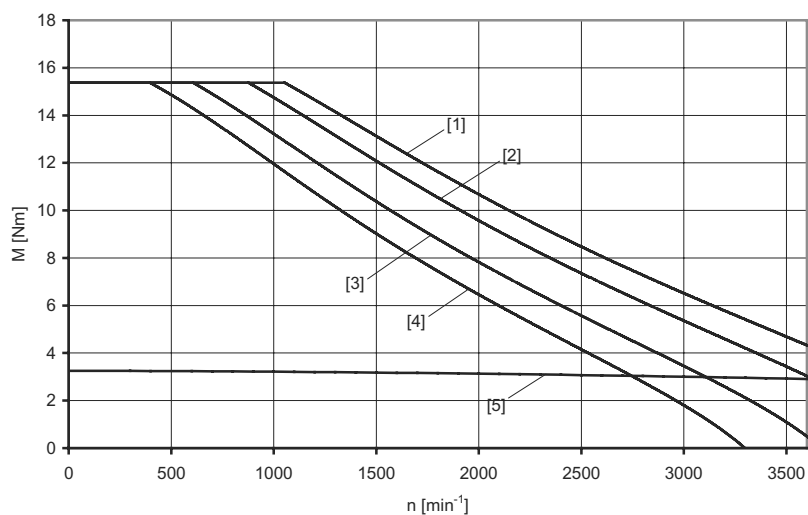


Figure 20: Dynamic and thermal limit characteristic curve for CMP50M $n_N=6000 \text{ min}^{-1}$

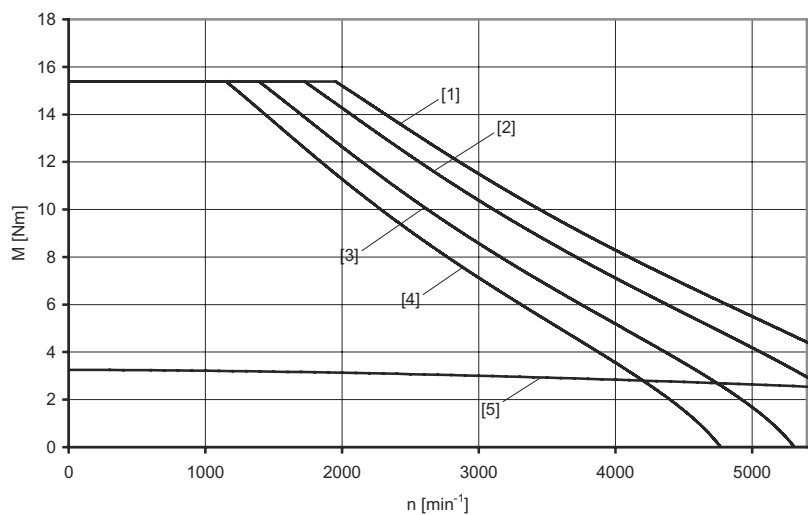
58434axx

- [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] $M S1_{\text{thermal}}(\text{derating})$


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] $M_{\text{dynamic}}(n) 500 \text{ V}$
- [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 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] $M_{\text{dynamic}}(n) 500 \text{ V}$
- [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 CMP50L $n_N=6000 \text{ min}^{-1}$

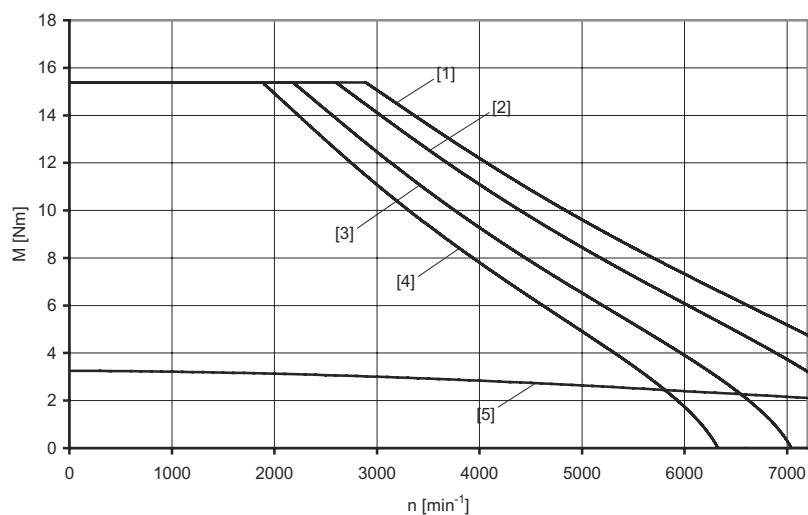


Figure 23: Dynamic and thermal limit characteristic curve for CMP50L $n_N=6000 \text{ min}^{-1}$

58431axx

- [1] $M_{\text{dynamic}}(n) 500 \text{ V}$
- [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] $M S1_{\text{thermal}}(\text{derating})$

Thermal limit characteristic curve for CMP50 / VR

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

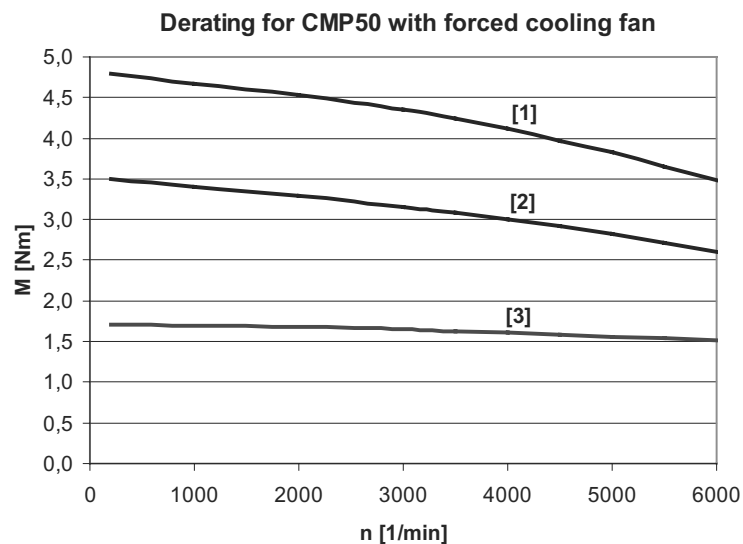
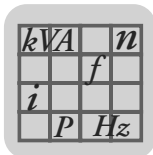


Figure 24: Thermal limit characteristic curve for CMP50 with forced cooling fan

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 $n_N=3000 \text{ min}^{-1}$

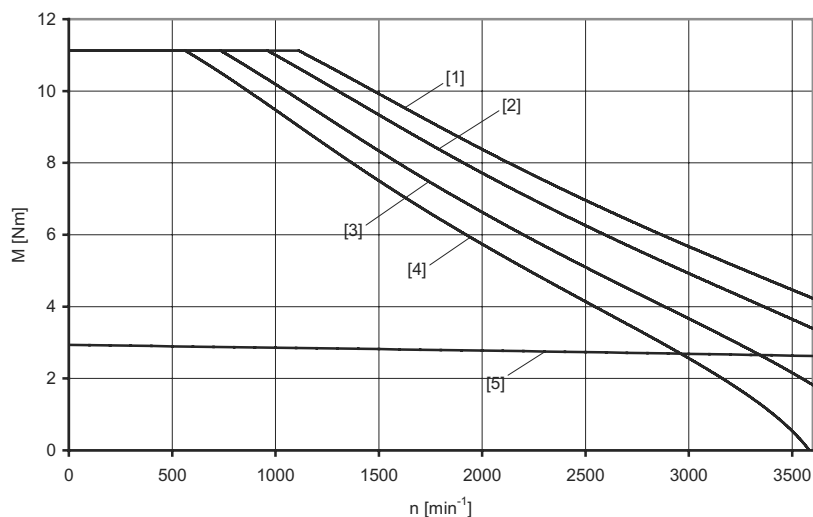


Figure 25: Dynamic and thermal limit characteristic curve for CMP63S $n_N=3000 \text{ min}^{-1}$

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 $n_N=4500 \text{ min}^{-1}$

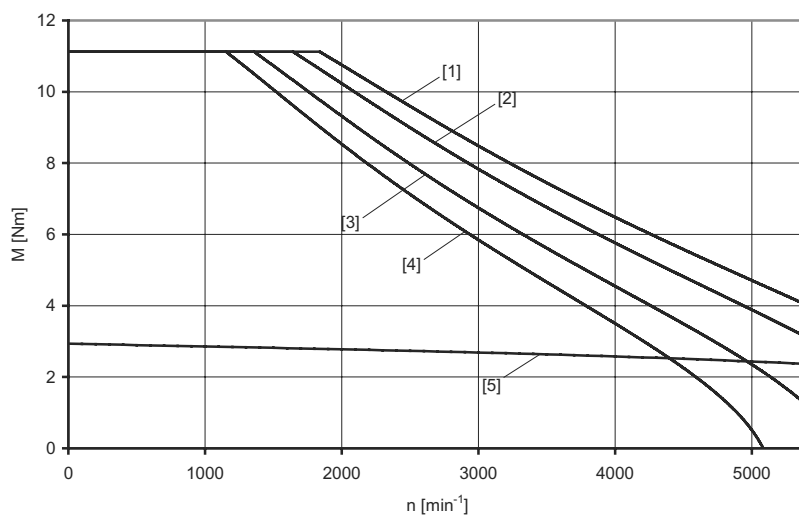


Figure 26: Dynamic and thermal limit characteristic curve for CMP63S $n_N=4500 \text{ min}^{-1}$

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 $n_N=6000 \text{ min}^{-1}$

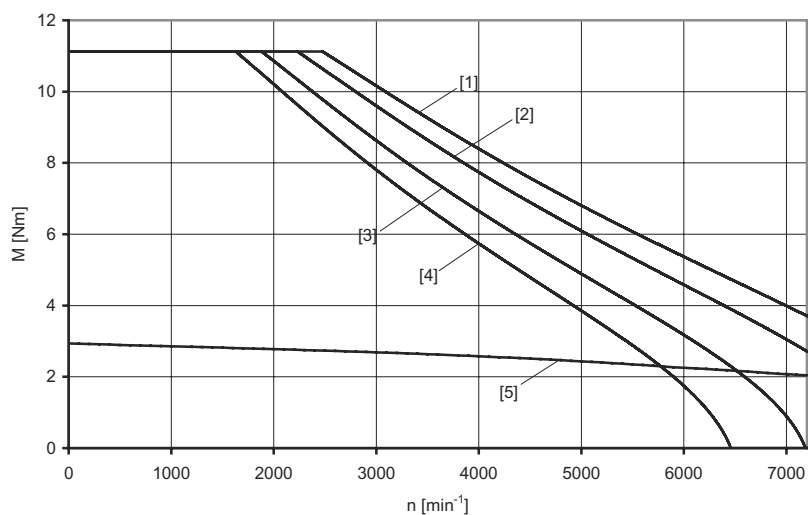


Figure 27: Dynamic and thermal limit characteristic curve for CMP63S $n_N=6000 \text{ min}^{-1}$

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 $n_N=3000 \text{ min}^{-1}$

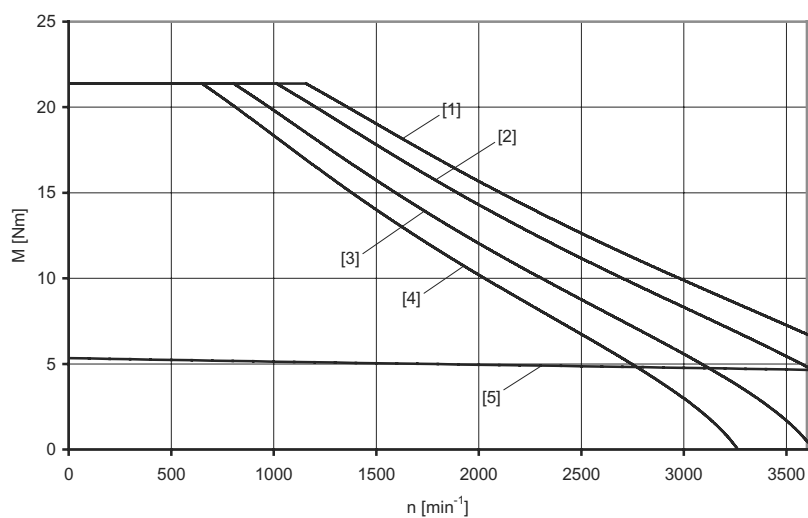
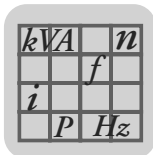


Figure 28: Dynamic and thermal limit characteristic curve for CMP63M $n_N=3000 \text{ min}^{-1}$

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)



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

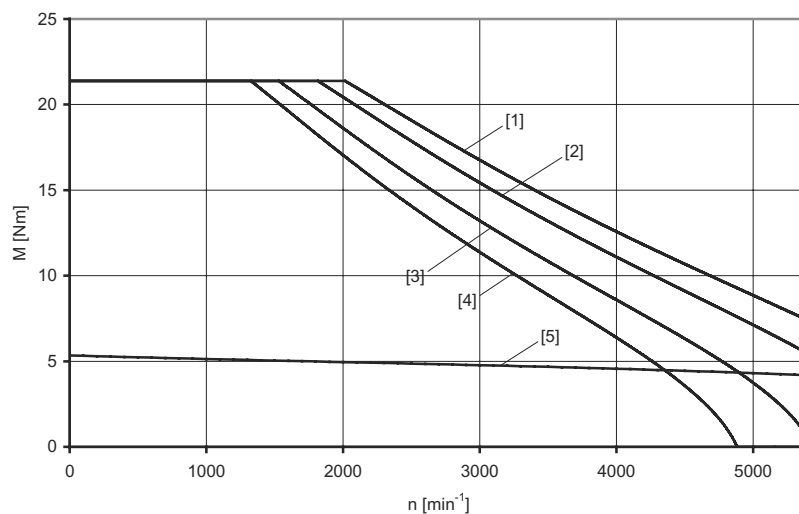


Figure 29: Dynamic and thermal limit characteristic curve for CMP63M $n_N=4500 \text{ min}^{-1}$

58410axx

- [1] $M_{\text{dynamic}}(n) \text{ 500 V}$
- [2] $M_{\text{dynamic}}(n) \text{ 460 V}$
- [3] $M_{\text{dynamic}}(n) \text{ 400 V}$
- [4] $M_{\text{dynamic}}(n) \text{ 360 V}$
- [5] $M \text{ S1}_{\text{thermal}} \text{ (derating)}$

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

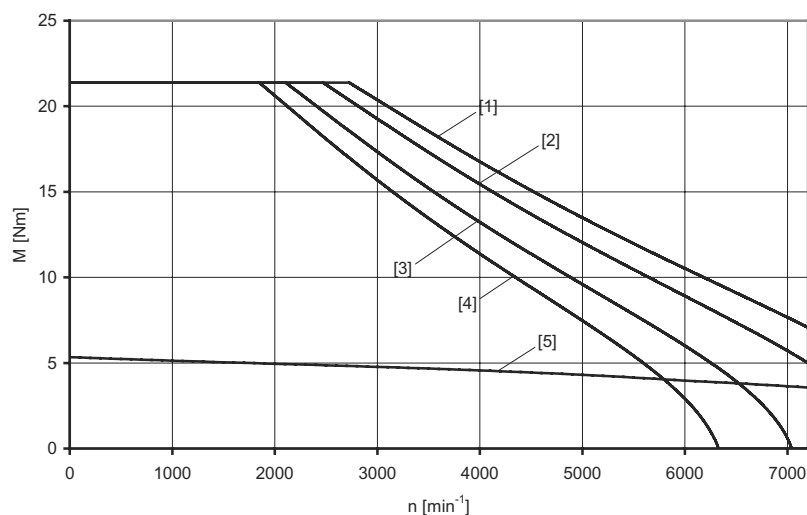


Figure 30: Dynamic and thermal limit characteristic curve for CMP63M $n_N=6000 \text{ min}^{-1}$

58409axx

- [1] $M_{\text{dynamic}}(n) \text{ 500 V}$
- [2] $M_{\text{dynamic}}(n) \text{ 460 V}$
- [3] $M_{\text{dynamic}}(n) \text{ 400 V}$
- [4] $M_{\text{dynamic}}(n) \text{ 360 V}$
- [5] $M \text{ S1}_{\text{thermal}} \text{ (derating)}$

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

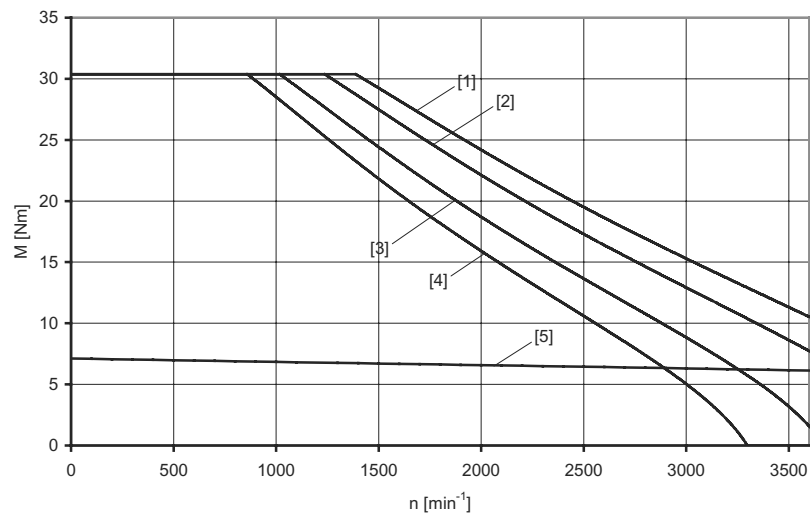


Figure 31: Dynamic and thermal limit characteristic curve for CMP63L $n_N=3000 \text{ min}^{-1}$

58408axx

- [1] $M_{\text{dynamic}}(n) \text{ 500 V}$
- [2] $M_{\text{dynamic}}(n) \text{ 460 V}$
- [3] $M_{\text{dynamic}}(n) \text{ 400 V}$
- [4] $M_{\text{dynamic}}(n) \text{ 360 V}$
- [5] $M \text{ S1}_{\text{thermal}} \text{ (derating)}$

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

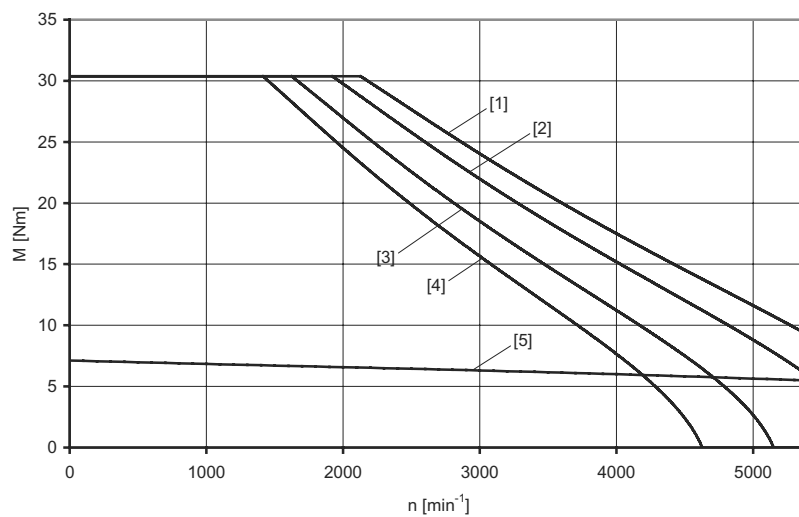
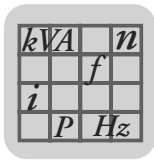


Figure 32: Dynamic and thermal limit characteristic curve for CMP63L $n_N=4500 \text{ min}^{-1}$

58407axx

- [1] $M_{\text{dynamic}}(n) \text{ 500 V}$
- [2] $M_{\text{dynamic}}(n) \text{ 460 V}$
- [3] $M_{\text{dynamic}}(n) \text{ 400 V}$
- [4] $M_{\text{dynamic}}(n) \text{ 360 V}$
- [5] $M \text{ S1}_{\text{thermal}} \text{ (derating)}$



Technical Data

Dynamic and thermal limit characteristic curve (derating)

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

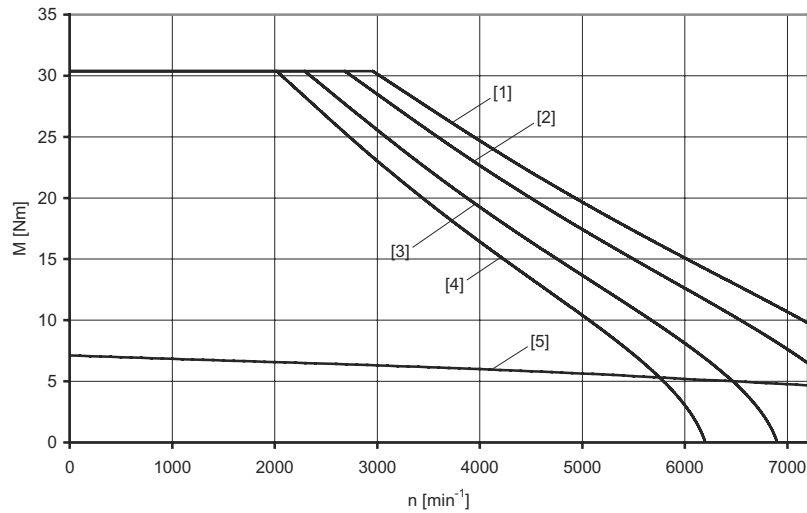


Figure 33: Dynamic and thermal limit characteristic curve for CMP63L $n_N=6000 \text{ min}^{-1}$

58406axx

- [1] $M_{\text{dynamic}}(n) 500 \text{ V}$
- [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] $M_{\text{S1_thermal}}(\text{derating})$

Thermal limit characteristic curve for CMP63 / VR

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

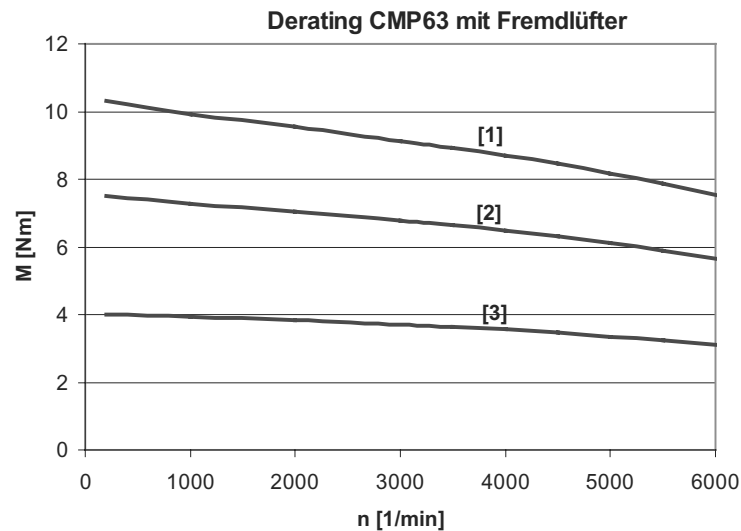
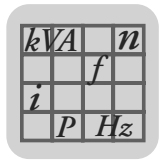


Figure 34: Thermal limit characteristic curve for CMP63 with forced cooling fan

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

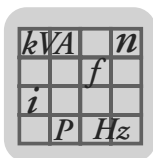
The following applies for determining a first approximation of a random thermal limit curve: The thermal limit curve for higher ambient temperatures must be reduced in all points (speed-related limit torque) by ΔM_{TH} :

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

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

58657AXX

ΔM_{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]

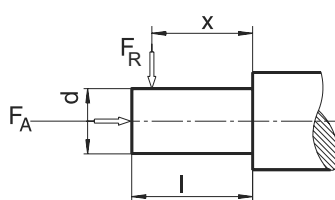


3.8 Overhung and axial loads

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



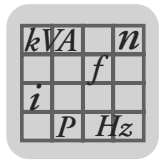
05590AXX

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 ¹⁾ [min ⁻¹]			
		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 over-
hung load for
CMP40S**

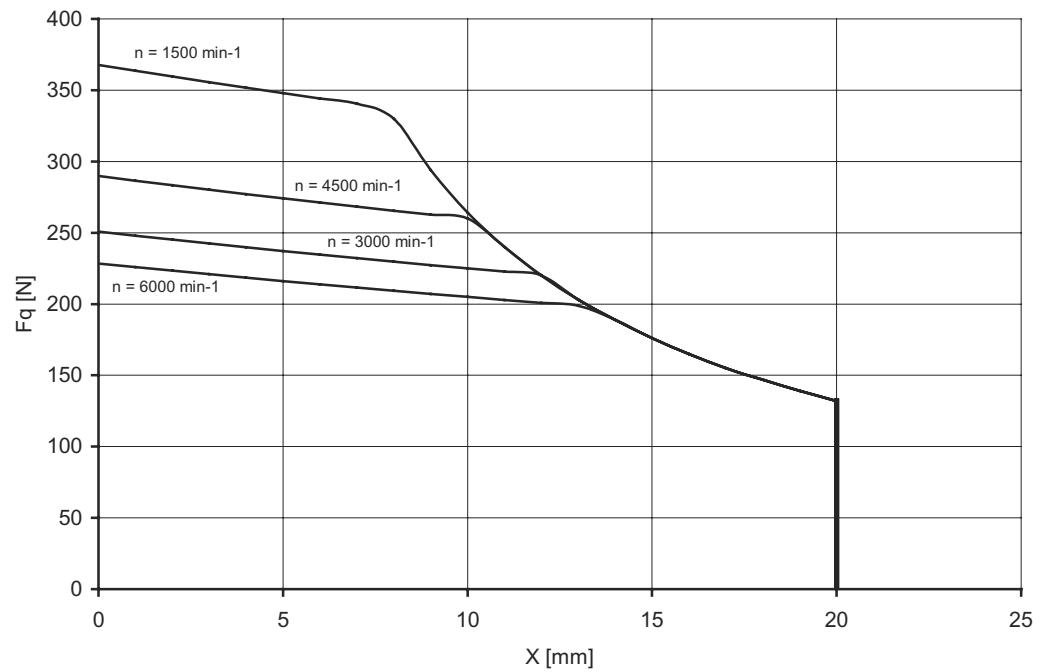


Figure 36: CMP40S, permitted overhung load at position X

58648axx

**Permitted over-
hung load for
CMP40M**

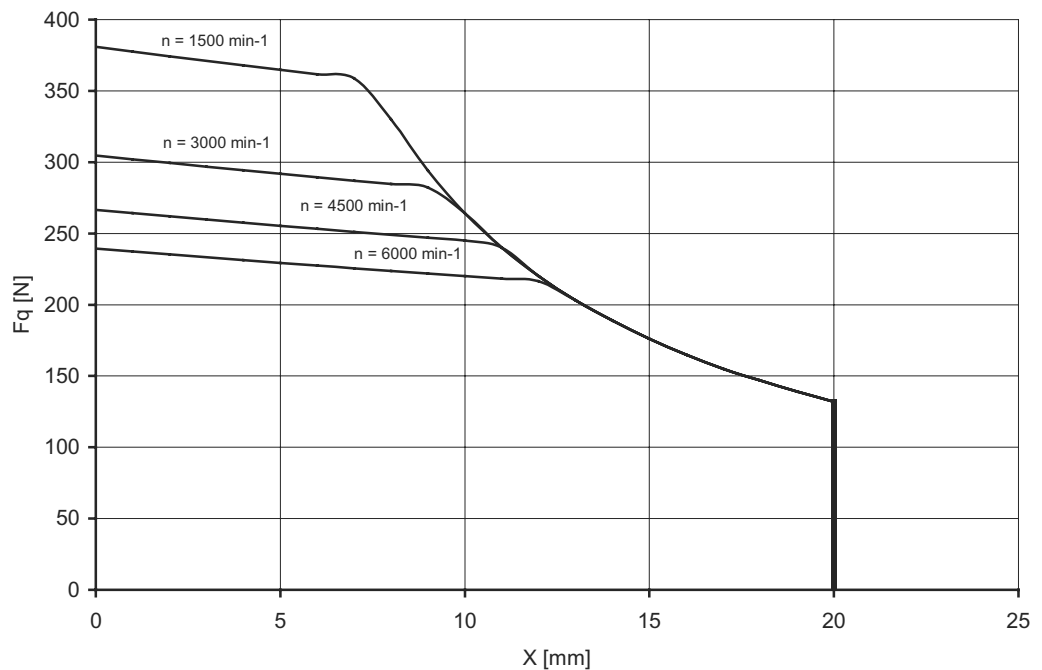
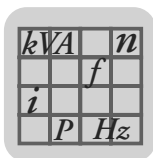


Figure 37: CMP40M, permitted overhung load at position X

58649axx



Permitted overhung load for CMP50S

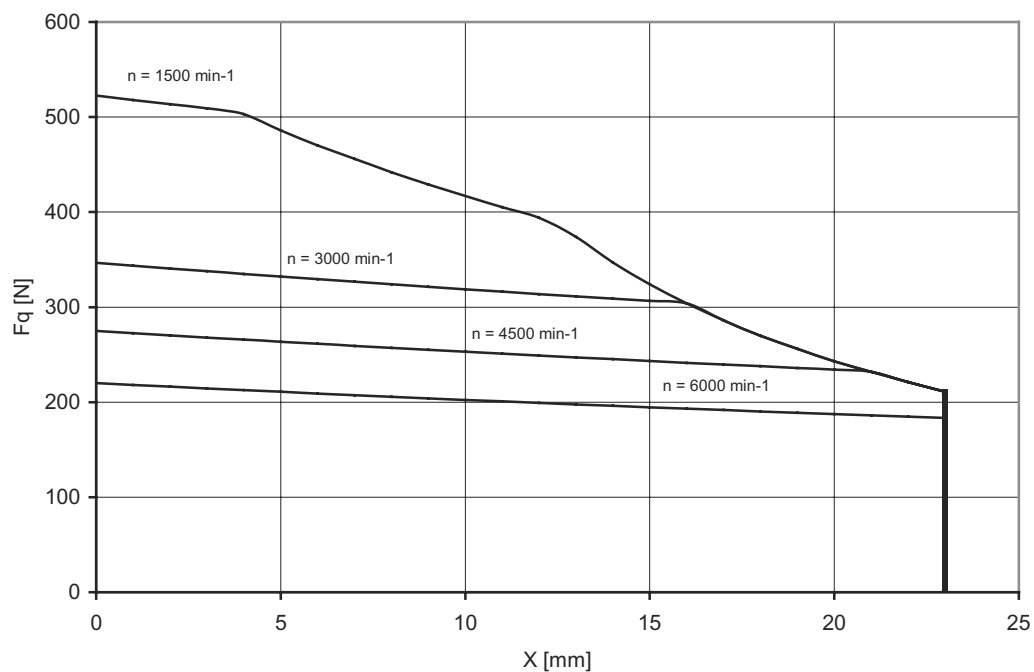


Figure 38: CMP50S, permitted overhung load at position X

58650axx

Permitted overhung load for CMP50M

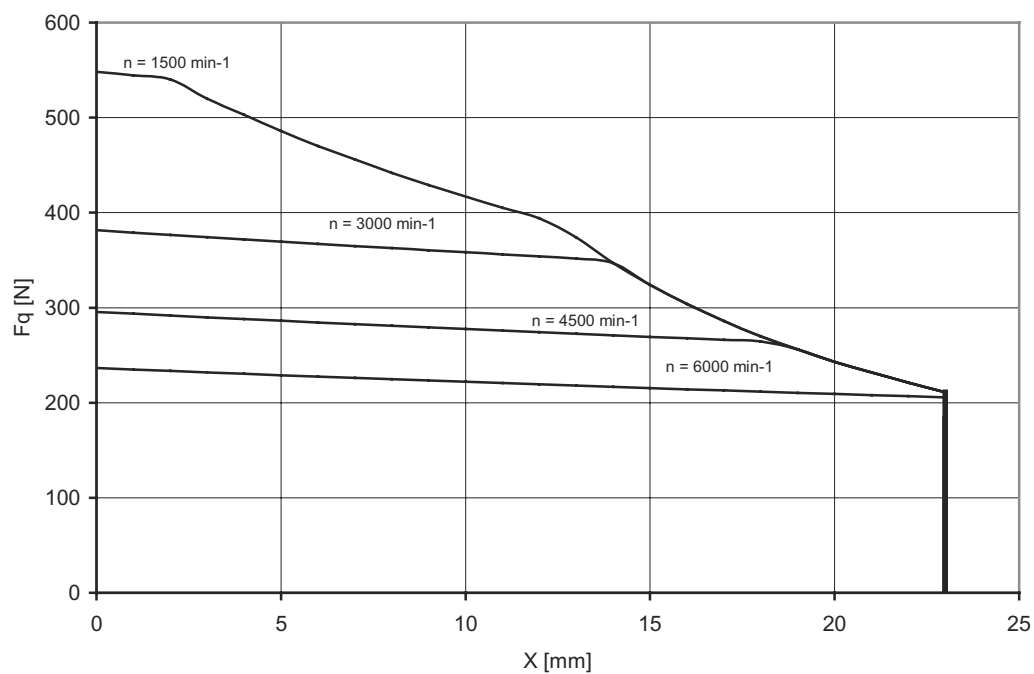


Figure 39: CMP50M, permitted overhung load at position X

58651axx

Permitted overhung load for CMP50L

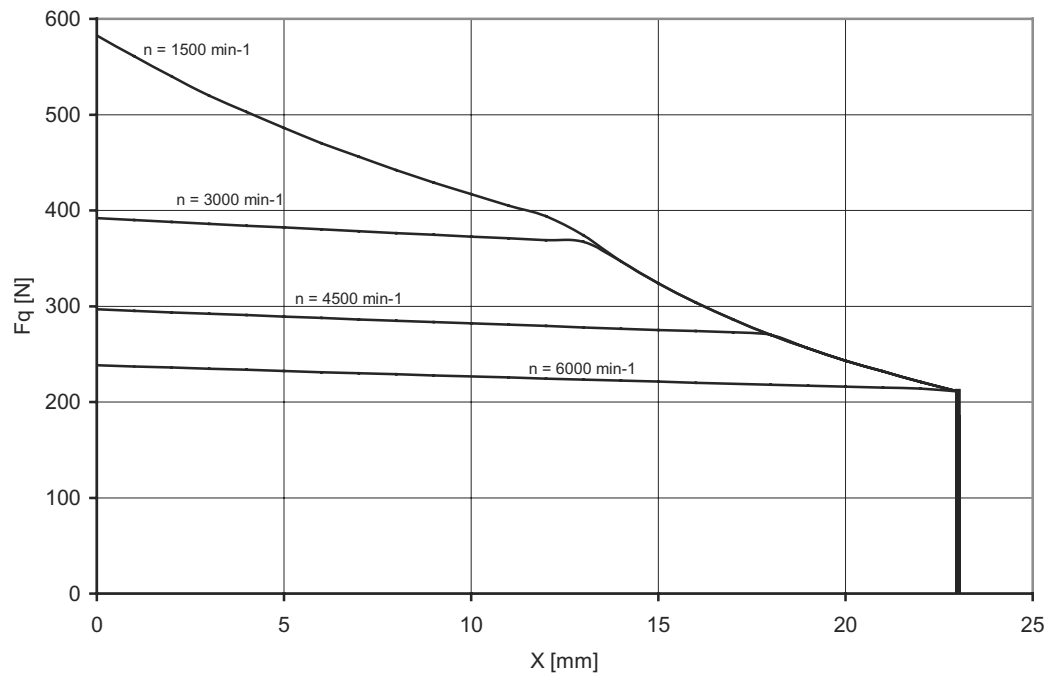


Figure 40: CMP50L, permitted overhung load at position X

58652axx

Permitted overhung load for CMP63S

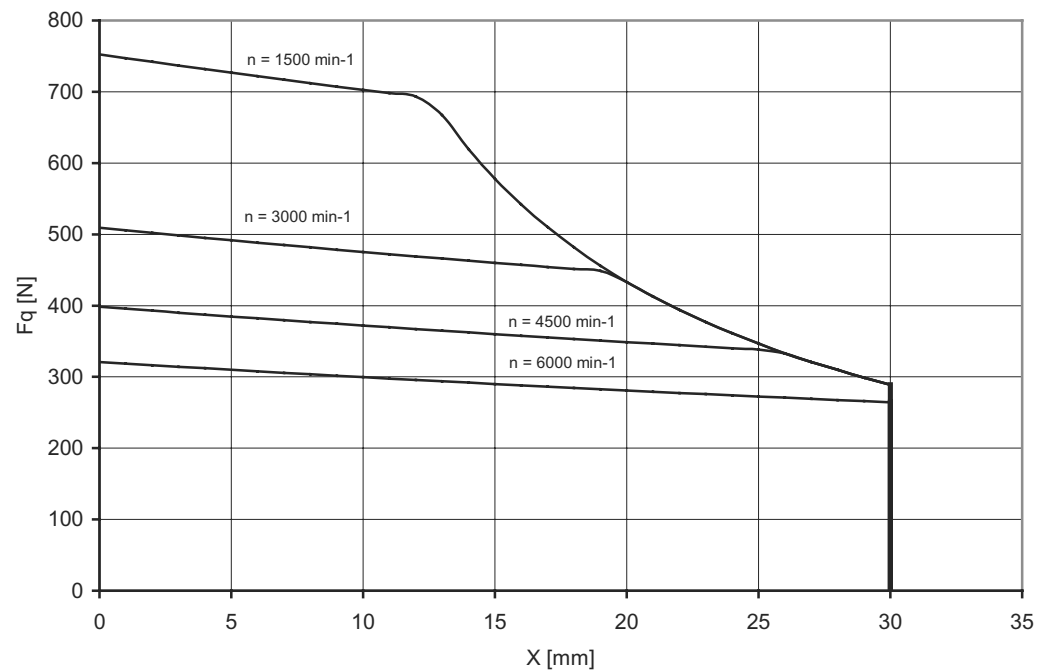
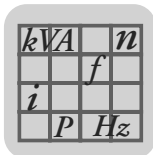


Figure 41: CMP63S, permitted overhung load at position X

58653axx



Technical Data

Overhung and axial loads

Permitted overhung load for CMP63M

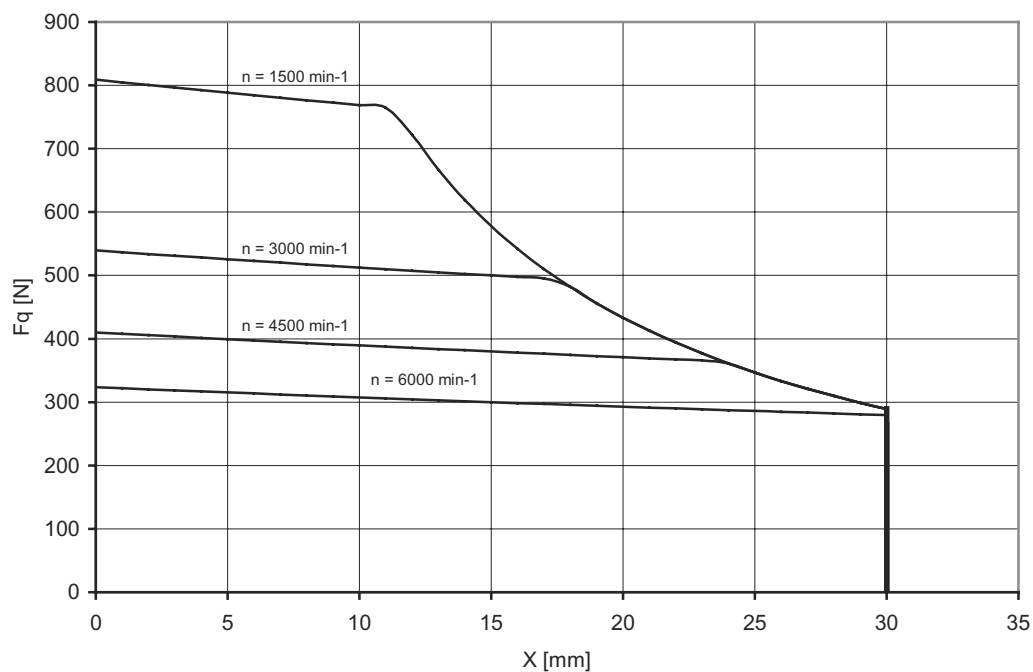


Figure 42: CMP63M, permitted overhung load at position X

58654axx

Permitted overhung load for CMP63L

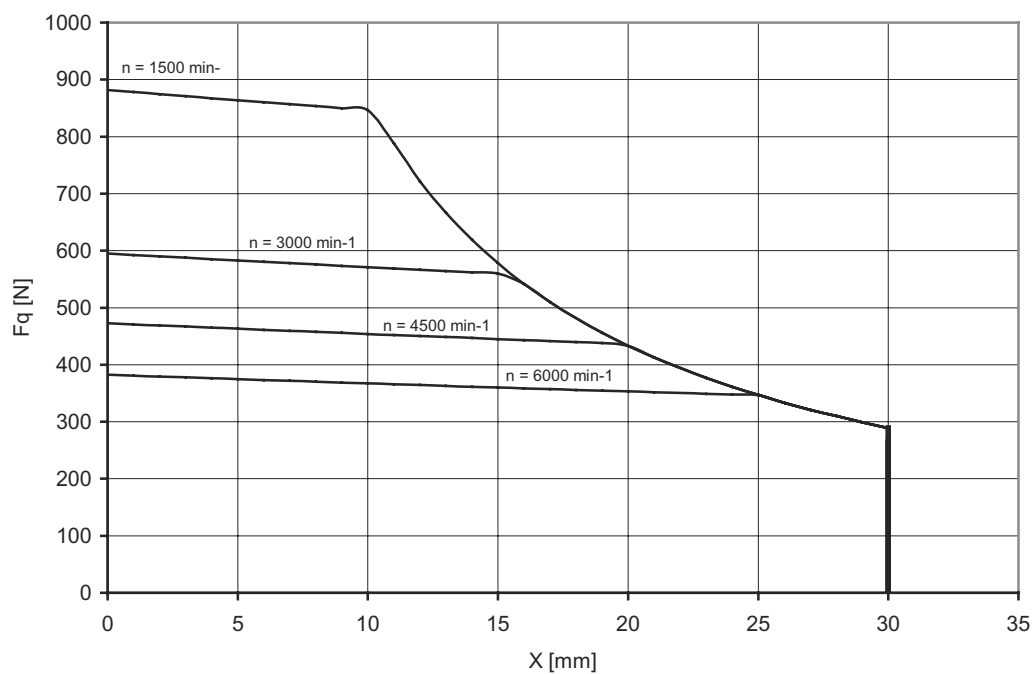


Figure 43: CMP63L, permitted overhung load at position X

58655axx

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.

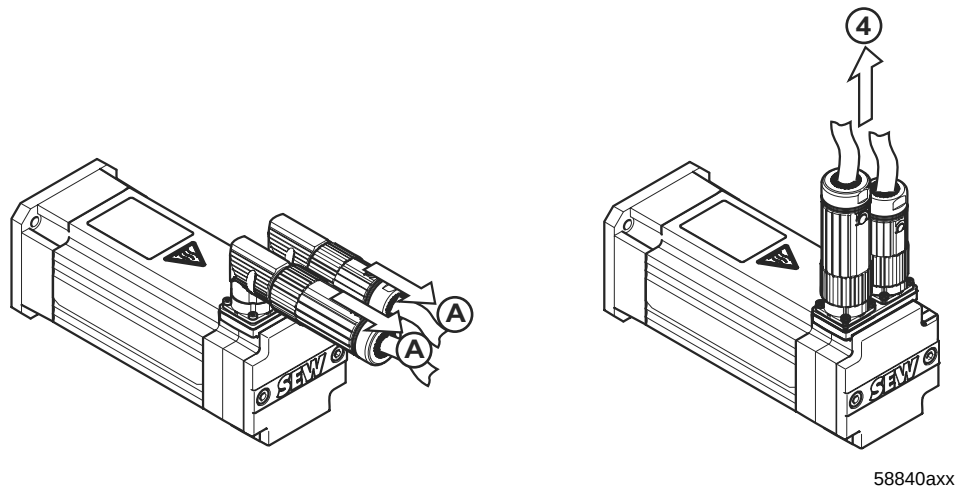


Figure 44: Connector positions

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.

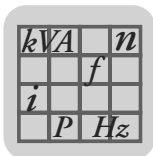


The connector should only be rotated to install and connect the motor. Do not turn the connector regularly once it has been installed.



Figure 45: Positions of the adjustable connectors

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



3.10 Dimension drawings for servomotors

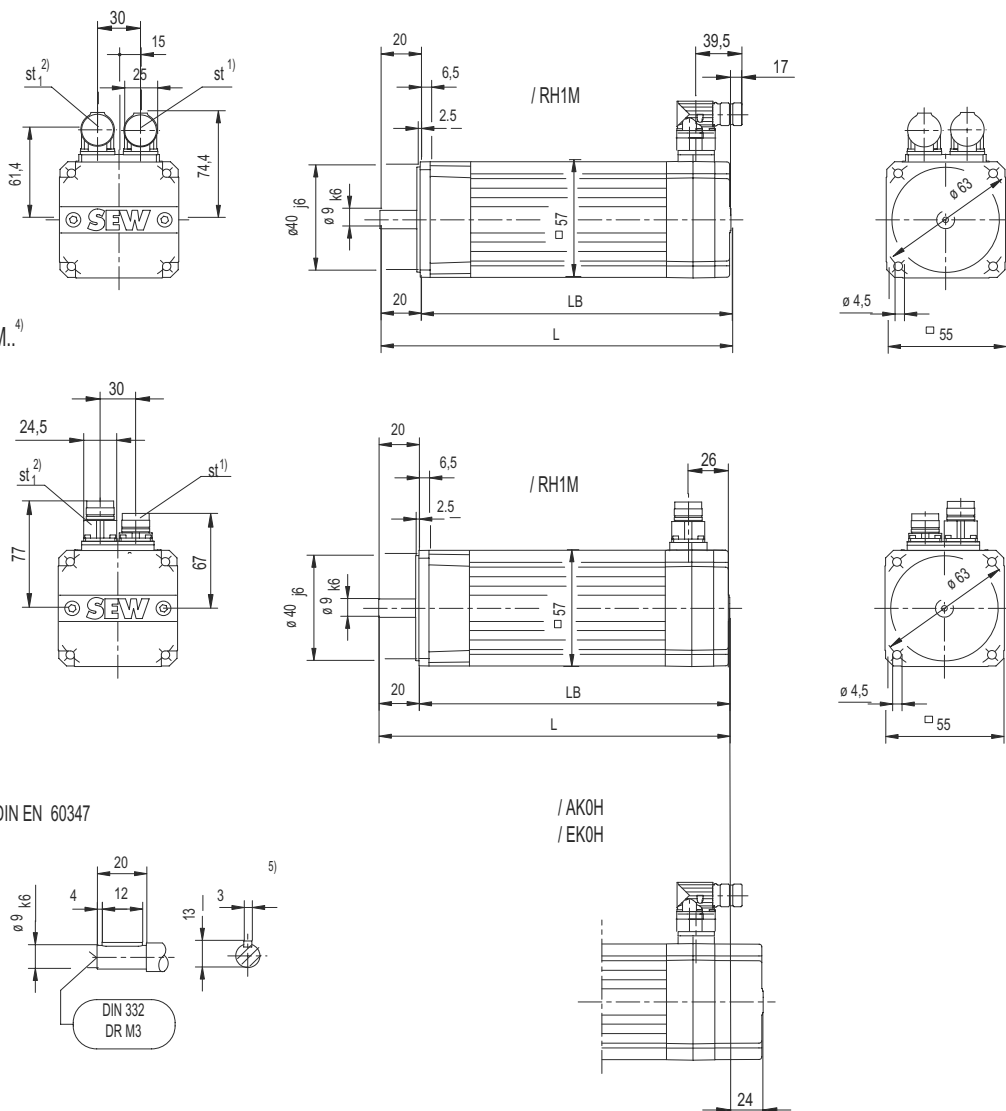
3.10.1 CMP40S/M synchronous servomotors

CMP40S/M

08 002 01 04

SM..³⁾SM..⁴⁾

DIN EN 60347



	CMP40S..	CMP40M..
L	143	169
LB	123	149
st ¹⁾	9 ... 14	9 ... 14
st ²⁾	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

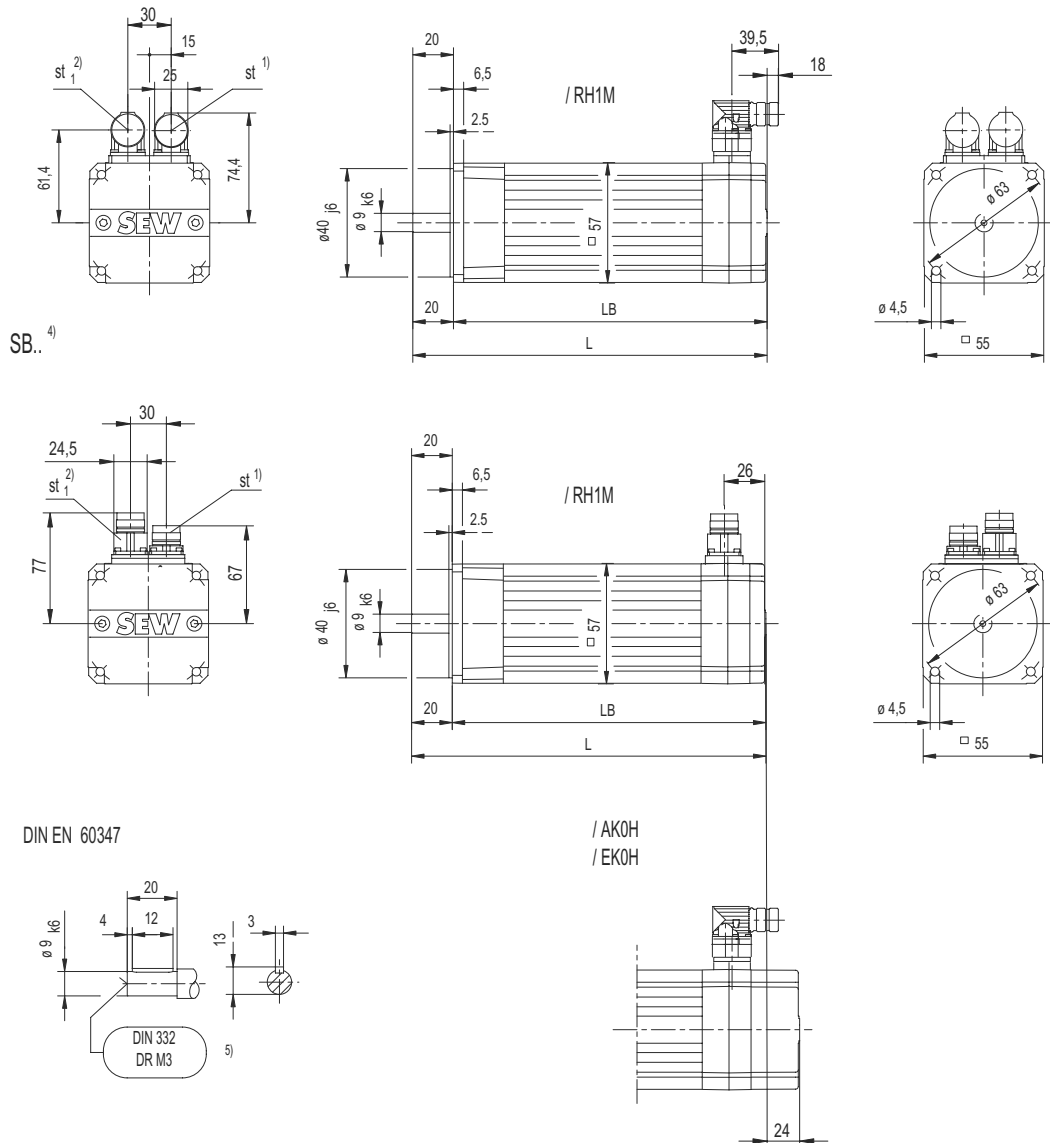
5) Thread only for shaft ends with key

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

CMP40S/M/BP

09 060 01 05

SB..³⁾



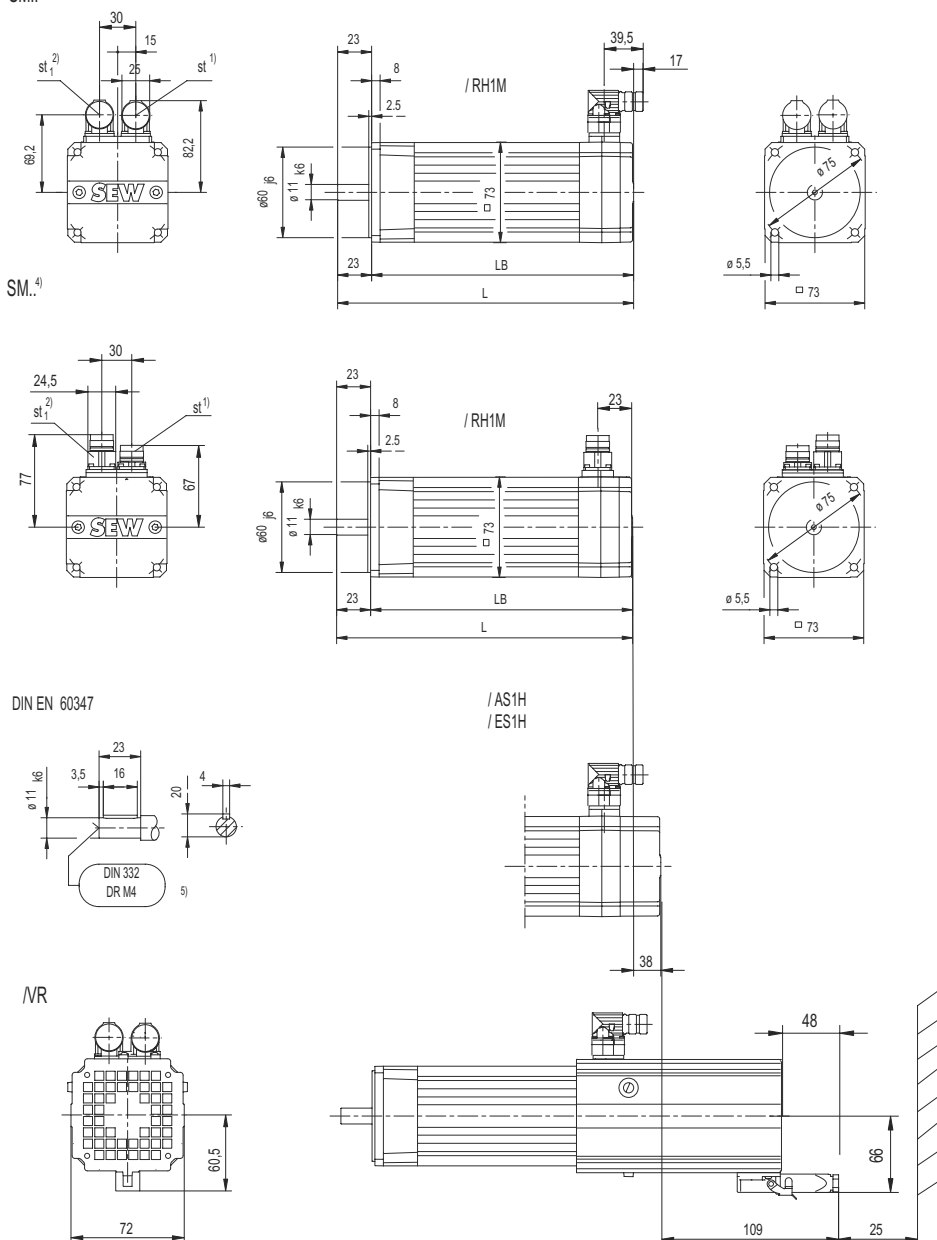
	CMP40S/BP	CMP40M/BP
L	172	198
LB	152	178
st ¹⁾	9 ... 14	9 ... 14
st ²⁾	6 ... 10	6 ... 10

- 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...³⁾

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

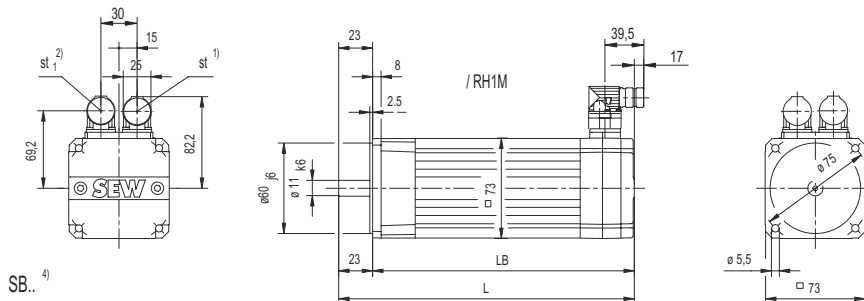
- 1) Cable clamping area for adjustable, radial power connector
- 2) Cable clamping area for adjustable, radial signal connector
- 3) Adjustable, right-angle connector
- 4) Radial connector
- 5) Thread only for shaft ends with key

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

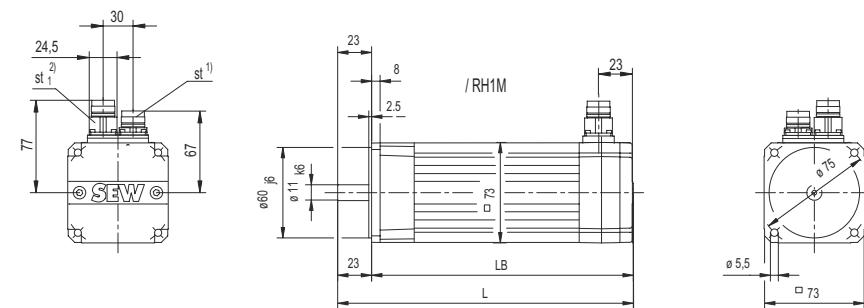
CMP50S/M/L/BP

09 062 01 05

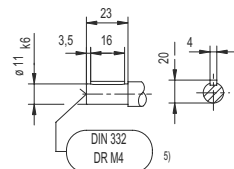
SB..³⁾



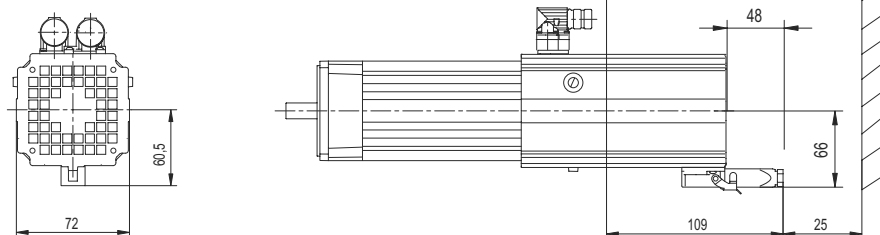
SB.. 4/



DIN EN 60347

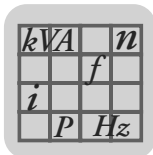
/ AS1H
/ ES1H

NR



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

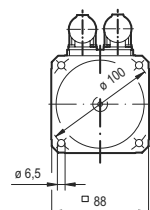
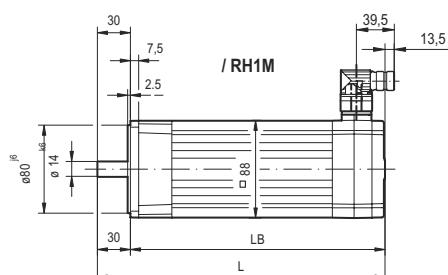
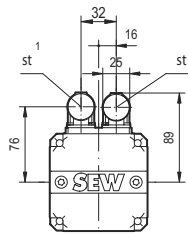
Dimension drawings for servomotors

3.10.5 CMP63S/M/L synchronous servomotors

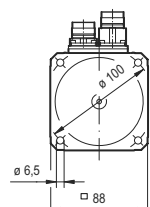
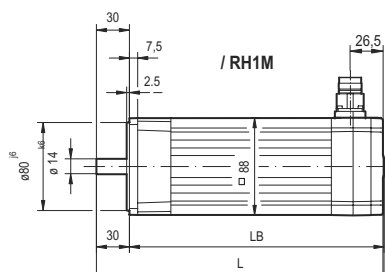
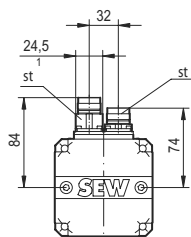
CMP63S/M/L

08 004 01 04

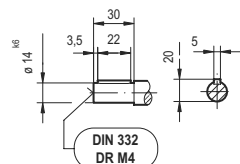
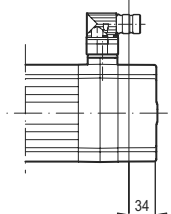
SM..



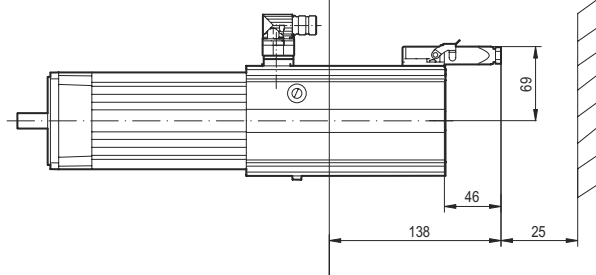
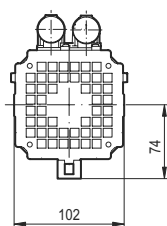
SM..



DIN EN 60347

/ AS1H
/ ES1H

/VR



	CMP63S..	CMP63M..	CMP63L..
L	212	262	312
LB	182	232	282
st ¹⁾	9 ... 14	9 ... 14	9 ... 14
st ₁ ²⁾	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

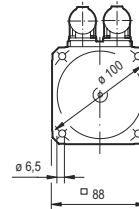
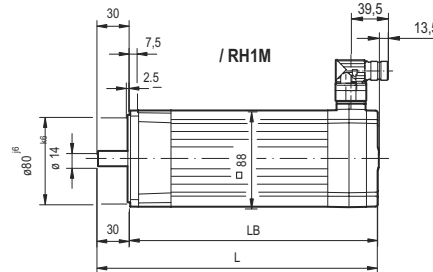
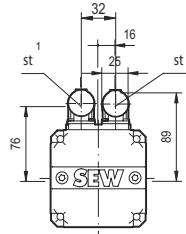
5) Thread only for shaft ends with key

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

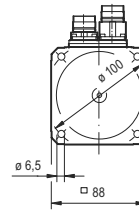
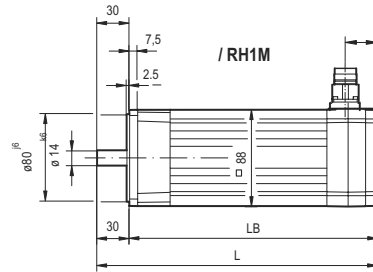
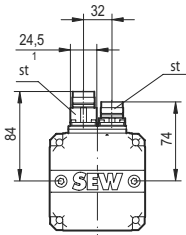
CMP63S/M/L/BP

09 063 01 05

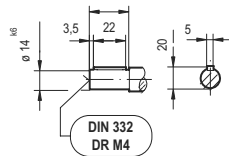
SB..



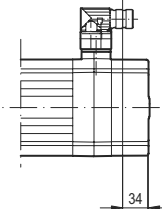
SB..



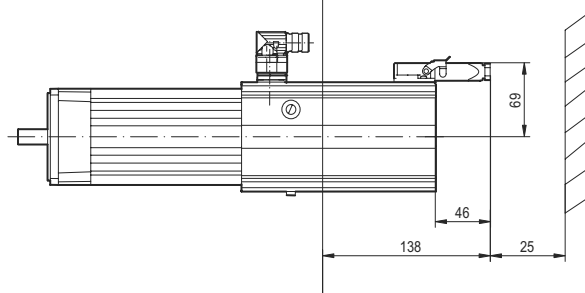
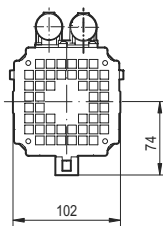
DIN EN 60347



/ AS1H
/ ES1H



/VR



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

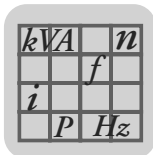
1) Cable clamping area for adjustable, radial power connector brake

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

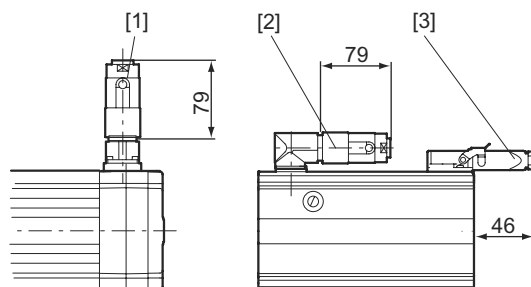
3) Adjustable, right-angle connector

4) Radial connector

5) Thread only for shaft ends with key



3.10.7 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

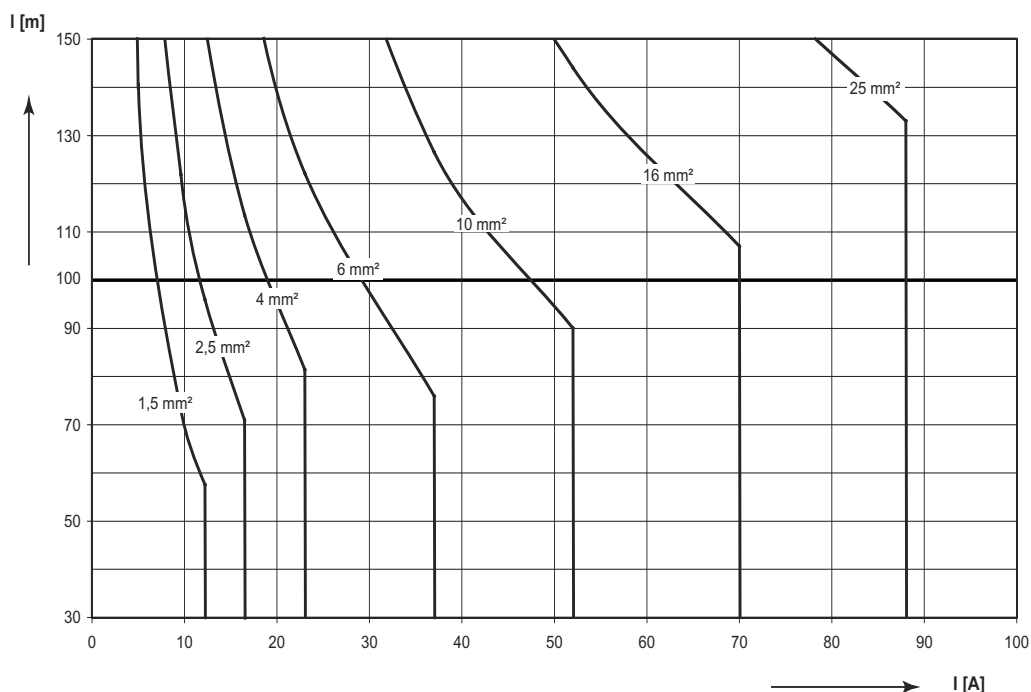


Figure 47: Minimum required cable cross section depending on cable length l [m] and current I [A] 54038AXX

Hybrid cables with cross sections of 1.5 mm² to 10 mm² can be ordered from SEW-EURODRIVE.

Cable load through
current I in [A]
according to EN
60204-1 table 5,
ambient
temperature 40 °C

Cable cross section [mm²]	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

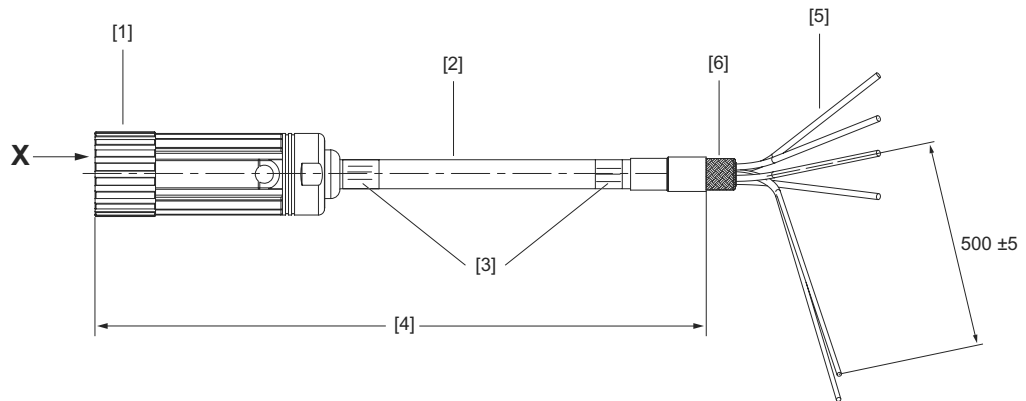
These data are merely recommended values and are **no substitute for the detailed project planning** of the cables depending on the concrete application considering the applicable regulations.

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



54069AXX

Figure 48: Motor cable for CMP motor

- [1] Connector: Intercontec BSTA 078
- [2] SEW-EURODRIVE logo printed on cable
- [3] Nameplate
- [4] Cable length ≤ 10 m: +200 mm tolerance
Cable length ≥ 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 ² , insulated 4 x M6 U-shaped cable lugs 1.5 mm ²
2	4 x conductor end sleeves 2.5 mm ² , insulated 4 x M6 U-shaped cable lugs 2.5 mm ²
3	4 x conductor end sleeves 4 mm ² , insulated 4 x M6 U-shaped cable lugs 4 mm ²



4.3.2 Motor cable

Structure of the motor cable

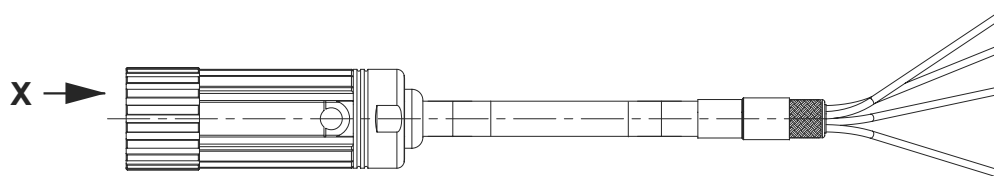


Figure 49: CMP motor cable

54619AXX

Pin assignment of the motor cable

Plug connector	Contact	Cable core color	Assigned	Extra
BSTA 078 View X	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	$4 \times 1.5 \text{ mm}^2$	0590 4544	Fixed routing
SM 11	$4 \times 1.5 \text{ mm}^2$	0590 6245	Cable carrier installation
SM12	$4 \times 2.5 \text{ mm}^2$	0590 4552	Fixed routing
SM12	$4 \times 2.5 \text{ mm}^2$	0590 6253	Cable carrier installation
SM14	$4 \times 4 \text{ mm}^2$	0590 4560	Fixed routing
SM14	$4 \times 4 \text{ mm}^2$	0590 4803	Cable carrier installation



Diagram of the motor extension cable

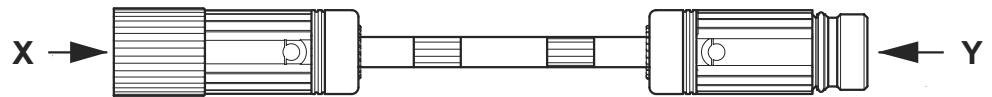
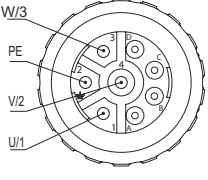
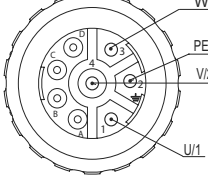


Figure 50: Motor extension cable

54878AXX

Pin assignment of the motor extension cable

Plug connector	Contact	Cable core color	Assigned	Contact	Plug connector
BSTA 078  View X	1	(BK/WH) Black with white lettering U, V, W	U	1	BKUA 199  View Y
	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 ²	1333 2547	Cable carrier installation
SM12	4 × 2.5 mm ²	1333 2465	Cable carrier installation
SM14	4 × 4 mm ²	1333 2473	Cable carrier installation



4.3.3 Brake motor cable

Diagram of the brake motor cable

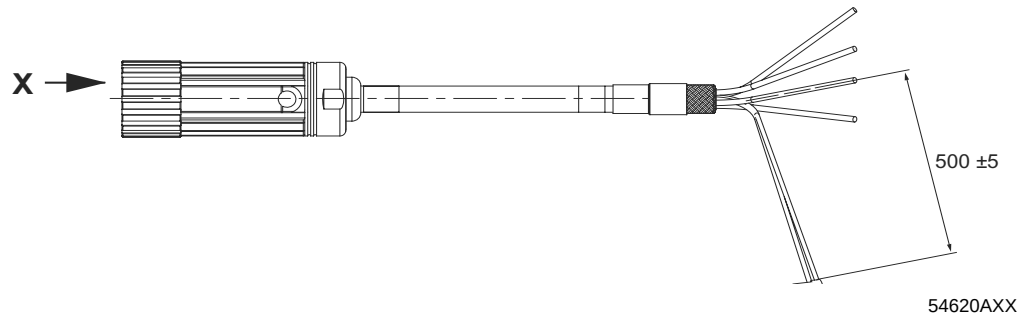


Figure 51: CMP brake motor cable

Pin assignment of the brake motor cable

Plug connector	Contact	Cable core color	Assigned	Extra
BSTA 078 View X	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	$4 \times 1.5 \text{ mm}^2 + 2 \times 1 \text{ mm}^2$	1332 4853	Fixed routing
SB 11	$4 \times 1.5 \text{ mm}^2 + 2 \times 1 \text{ mm}^2$	1333 1221	Cable carrier installation
SB12	$4 \times 2.5 \text{ mm}^2 + 2 \times 1 \text{ mm}^2$	1333 2139	Fixed routing
SB12	$4 \times 2.5 \text{ mm}^2 + 2 \times 1 \text{ mm}^2$	1333 2155	Cable carrier installation
SB14	$4 \times 4 \text{ mm}^2 + 2 \times 1 \text{ mm}^2$	1333 2147	Fixed routing
SB14	$4 \times 4 \text{ mm}^2 + 2 \times 1 \text{ mm}^2$	1333 2163	Cable carrier installation



Brake motor extension cable

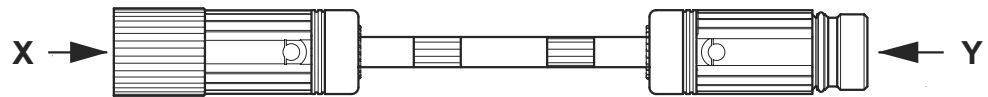
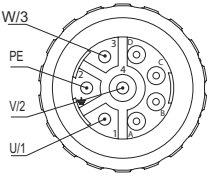
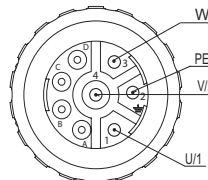


Figure 52: Brake motor extension cable

54878AXX

Pin assignment of the brake motor extension cable

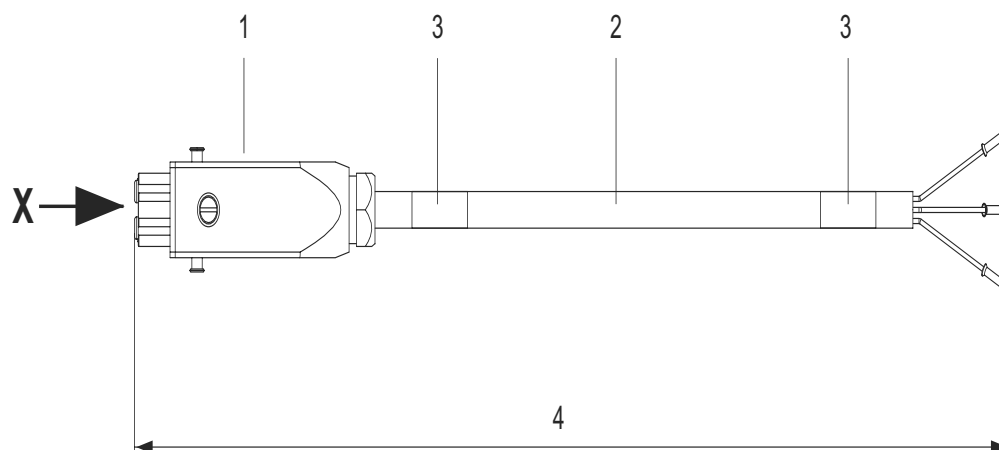
Plug connector	Contact	Cable core color	Assigned	Contact	Plug connector
BSTA 078  View X	1	(BK/WH) Black with white lettering U, V, W	U	1	BKUA 199  View Y
	4		V	4	
	3		W	3	
	2	(GN/YE) Green / Yellow	PE	2	
	A	–	Unas-igned	A	
	B	–	Unas-igned	B	
	C	(BK/WH) Black with white lettering 1, 2, 3	2	C	
	D		1	D	

Plug connector type	Number of cores and line cross section	Part number	Installation type
SB11	$4 \times 1.5 \text{ mm}^2 + 2 \times 1 \text{ mm}^2$	1333 2481	Cable carrier installation
SM12	$4 \times 2.5 \text{ mm}^2 + 2 \times 1 \text{ mm}^2$	1333 2503	Cable carrier installation
SM14	$4 \times 4 \text{ mm}^2 + 2 \times 1 \text{ mm}^2$	1333 2511	Cable carrier installation



4.3.4 Cable for VR forced cooling fan

Diagram of cable for VR forced cooling fan

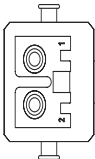


54649AXX

Figure 53: Cable for VR forced cooling fan

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

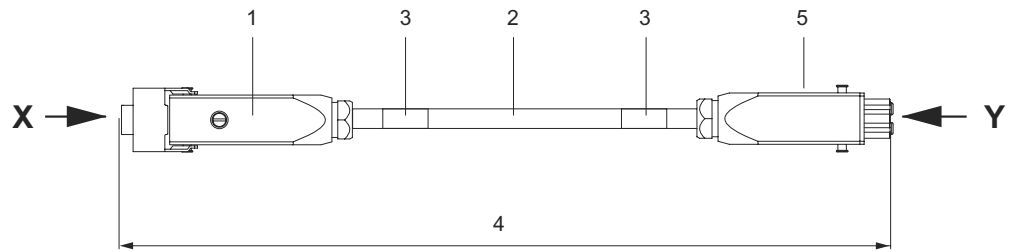
Pin assignment of cable for the VR forced cooling fan

STAK 200 plug connector	Contact	Core identification	Assigned	Contact	Connection type
Connector with two socket contacts  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

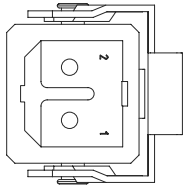
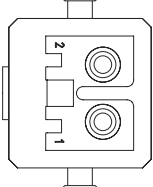


54646AXX

Figure 54: Extension cable for VR forced cooling fan

- [1] Connector: STAS 200
- [2] Printed on connector: SEW-EURODRIVE
- [3] Nameplate
- [4] Cable length ≤ 5 m: Tolerance +200 mm
Cable length ≥ 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  View X	1	First digit	24 V +	1	Connector with two socket contacts  View Y
	2	Second digit	0 V	2	

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	$3 \times 1 \text{ mm}^2$	0198 4985



4.4 Feedback cable

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

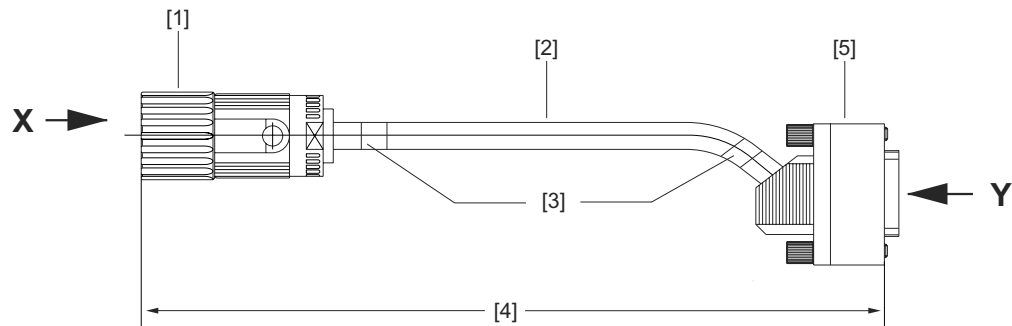


Figure 55: Resolver plug connector

- [1] Connector: Intercontec ASTA
- [2] Printed on connector: SEW-EURODRIVE
- [3] Nameplate
- [4] Cable length ≤ 10 m: Tolerance +200 mm
Cable length ≥ 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 ≤ 10 m: 200 mm tolerance
- Cable length ≥ 10 m: + 2 % tolerance

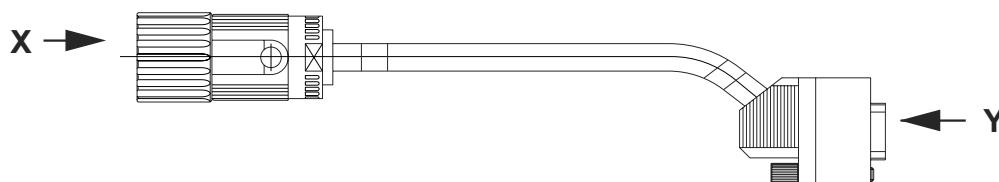


Refer to the system manual of the servo inverter for information on how to determine the maximum cable length. Make sure that an EMC-compliant environment is maintained during project planning.



4.4.2 RH.M resolver cable

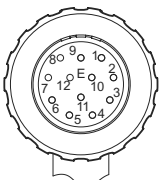
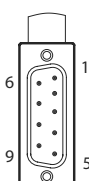
Structure of the resolver cable plug connector RH.M for MOVIDRIVE® MDX60B/61B



54704AXX

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

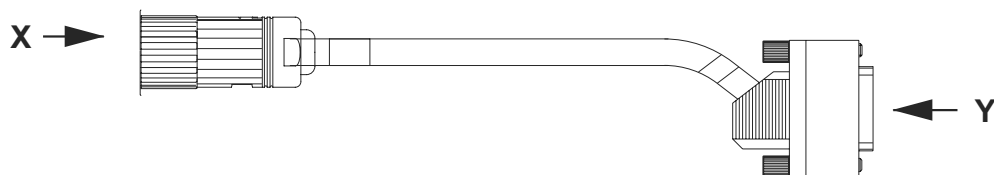
Pin assignment of the resolver cable RH.M for MOVIDRIVE® MDX60B/61B

Motor connection end		Description	Cable core color	Description	Connection MOVIDRIVE® MDX..B	
Plug connector	Contact no.				Contact no.	Plug connector
ASTA 021FR 198 921 9 12-pin with socket contacts  View X	1	R1 (reference +)	(PK) Pink	R1 (reference +)	3	Sub-D 9-pin  View Y
	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



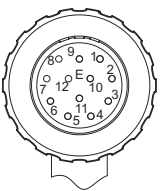
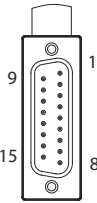
Structure of the resolver cable plug connector RH.M for MOVIAXIS® MX



54629AXX

Figure 57: Resolver cable plug connector MOVIAXIS® MX

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  View X	1	R1 (reference +)	(PK) Pink	R1 (reference +)	5	Sub-D 15-pin  View Y
	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 ¹⁾	TF/KTY +	14	
	10	TF/KTY -	(WH) White / (BK) Black ¹⁾	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

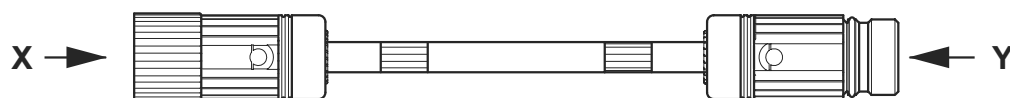
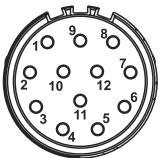
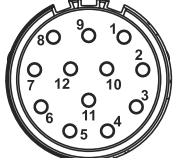


Figure 58: Extension cable for resolver RH.M

54630AXX

Pin assignment of the extension cable for resolver RH.M

Plug connector	Contact no.	Description	Cable core color	Description	Contact no.	Plug connector
ASTA 021FR 198 673 2 12-pin with socket contacts  View X	1	R1 (reference +)	(PK) Pink	R1 (reference +)	1	AKUA 020MR 199 647 9 12-pin with pin contacts  View Y
	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 ¹⁾	TF/KTY +	9	
	10	TF/KTY -	(WH) White / (BK) Black ¹⁾	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 ²	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

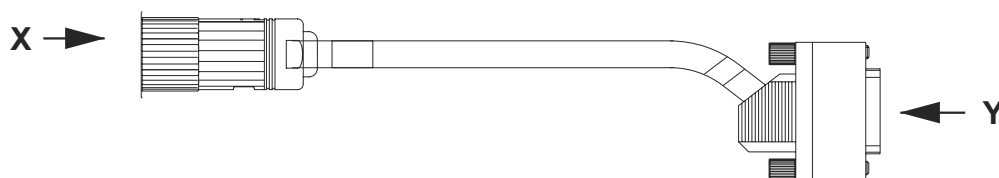
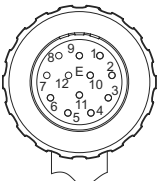
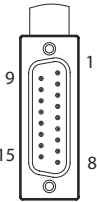


Figure 59: HIPERFACE® encoder cable for plug connector

54629AXX

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
ASTA 021FR 198 921 9 12-pin with socket contacts  View X	1	Unassigned	Unassigned	Unassigned	3	Sub-D 15-pole  View Y
	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 ¹⁾	GND	8	
	12	U _s	(RD/BU) Red/Blue ¹⁾	U _s	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

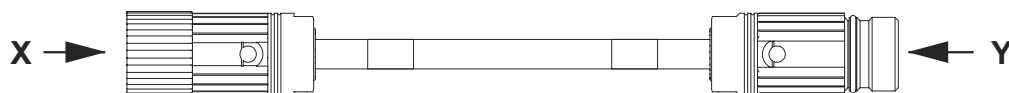
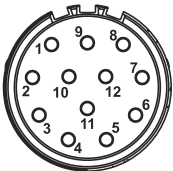
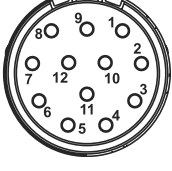


Figure 60: Extension cable for HIPERFACE® encoder

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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
ASTA 021FR 198 673 2 12-pin with socket contacts  View X	1	Unassigned	–	Unassigned	1	AKUA 020MR 199 647 9 12-pin with pin contacts  View Y
	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 _s	(RD/BU) Red/Blue / (GY) Gray	U _s	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 ²	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 ²	0198 6740
		4 x 2.5 mm ²	0198 6740
		4 x 4 mm ²	0199 1639
	Brake motor cable	4 x 1.5 mm ² + 2 x 1 mm ²	0198 6740
		4 x 2.5 mm ² + 2 x 1 mm ²	0198 6740
		4 x 4 mm ² + 2 x 1 mm ²	0199 1639
Hiperface cable	Motor cable	4 x 1.5 mm ²	0198 6740
		4 x 2.5 mm ²	0198 6740
		4 x 4 mm ²	0199 1639
	Brake motor cable	4 x 1.5 mm ² + 2 x 1 mm ²	0198 6740
		4 x 2.5 mm ² + 2 x 1 mm ²	0198 6740
		4 x 4 mm ² + 2 x 1 mm ²	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		$4 \times 1.5 \text{ mm}^2$	$4 \times 2.5 \text{ mm}^2$	$4 \times 4 \text{ mm}^2$
Manufacturer	Unit	Lapp		
Manufacturer designation		PVC / C / TPE		
Operating voltage U_0 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 ²	4 x 2.5 mm ²	4 x 4 mm ²
Manufacturer	Unit	Nexans		
Manufacturer designation		PSL(LC)C11Y-J 4 x ... mm ²		PSL11YC11Y-J 4 x ... mm ²
Operating voltage U ₀ 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 ²]	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		$4 \times 1.5 \text{ mm}^2 + 3 \times 1 \text{ mm}^2$	$4 \times 2.5 \text{ mm}^2 + 3 \times 1 \text{ mm}^2$	$4 \times 4 \text{ mm}^2 + 3 \times 1 \text{ mm}^2$
Manufacturer		Lapp		
	Unit			
Manufacturer designation		PVC / C / TPE		
Operating voltage U_0 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 ² + 3 x 1 mm ²	4 x 2.5 mm ² + 3 x 1 mm ²	4 x 4 mm ² + 3 x 1 mm ²
Manufacturer		Nexans		
	Unit			
Manufacturer designation		PSL(LC)C11Y-J 4x... +3A.../C		PSL11YC11Y-J 4x... +3A.../C
Operating voltage U ₀ 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 ²]	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 ²	5 x 2 x 0.25 mm ²	3 x 1 mm ²
Manufacturer		Lapp		
	Unit			
Manufacturer designation		TPE/CY		Ölflex 110 Classic
Operating voltage U ₀ 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-extinguish- ing		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 ²	5 x 2 x 0.25 mm ²	3 x 1 mm ²
Manufacturer		Nexans		
	Unit			
Manufacturer designation		SSL11YC11Y ... x 2 x 0.25		PSL 3 x 1.0
Operating voltage U ₀ 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 ²]	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 ²	019 245 7	
	Brake contact 1mm Ø Core cross section 0.06 ... 1 mm ²	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 ¹⁾	Insulator	019 248 1	

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



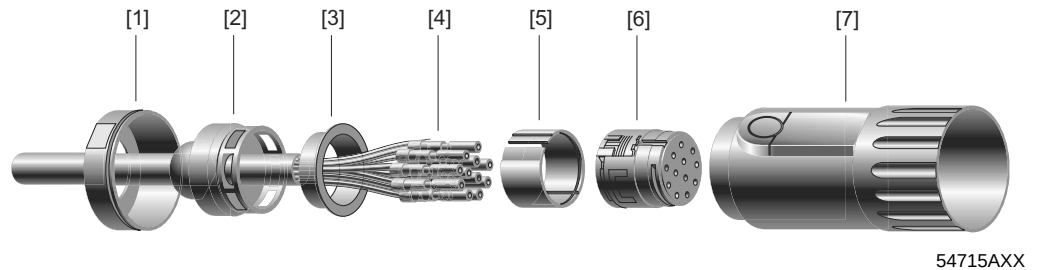
Hybrid Cables

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.



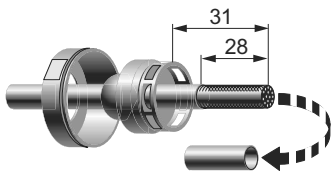
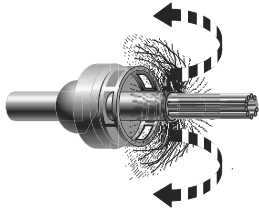
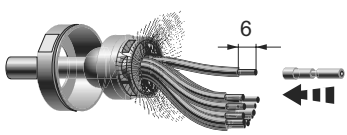
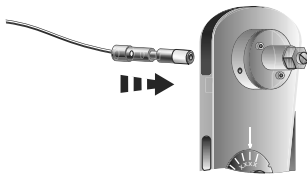
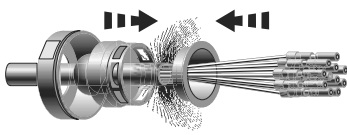
- [1] Screw fitting
- [2] Seal with strain relief
- [3] Shield ring
- [4] Socket contacts
- [5] Insulating sleeve
- [6] Insulator
- [7] Connector housing



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



4.8.2 Assembly instructions for plug connectors

1		Pull the screw fitting and seal with strain relief 31 mm over the cable.
2		Strip 28 mm of cable insulation off the end of the cable
3		Fold back the braid shield and fan it out
4		- Strip 6 mm insulation off the leads - Push the socket contacts onto the ends of the leads
5		- 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]. - Set the press thickness [B] to 24 on the crimping tool.
6		- Insert a lead with socket contact in the crimping tool and press the tool fully together. The tool then opens automatically. - Repeat this procedure for each lead.
7		Pull the shield over the leads and press it against the seal.



Hybrid Cables

Assembling resolver/HIPERFACE® plug connectors

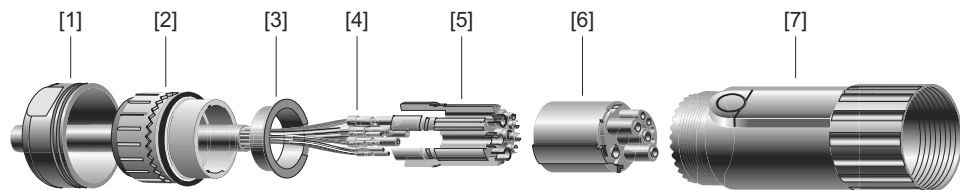
8		Turn the shield ring until the braid shield is flush with the shield ring.
9		Pull the insulator apart evenly by about 1 mm.
10		Insert the socket contacts into the insulator.
11		Press the insulator together until you hear a "click."
12		- Fold open the insulating sleeve. - Position the side of the 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. - Press the insulating sleeve together until it engages. - Insert the insulator into the connector housing in the middle position.
13		- Fix the connector housing with a wrench and use a second wrench to tighten the screw fitting. [A] = Fix in place



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

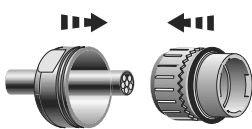
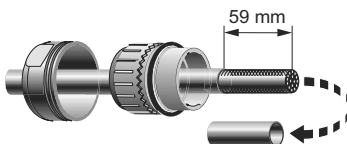
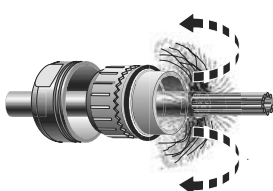
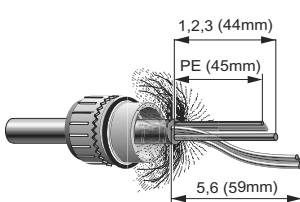
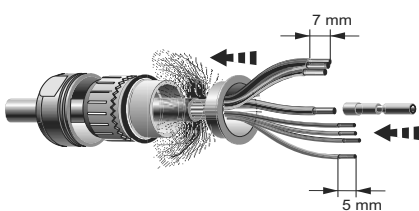
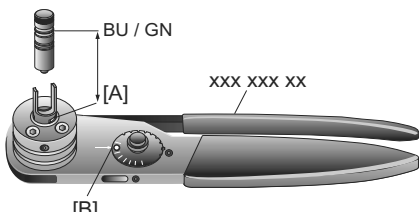
- [1] Screw fitting
- [2] Seal with strain relief
- [3] Shield ring
- [4] Socket contacts
- [5] Insulating sleeve
- [6] Insulator
- [7] Connector housing



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



4.9.2 Assembly instructions for the power connector

1		Pull the screw fitting and the seal with strain relief over the cable.															
2		Strip 59 mm of cable insulation off the end of the cable.															
3		Fold back the braid shield and fan it out.															
4		- Shorten the power leads (1, 2 and 3) to 44 mm. - Shorten the PE lead (GN/YE) to 45 mm. - Do not short lead pair 5 and 6. - Cut off lead pair 7 and 8 flush with the end of the cable.															
5		- Pull the shield over the leads. - Strip 7 mm of insulation off leads 1, 2, 3 and PE. - Strip 5 mm of insulation of leads 5 and 6.															
6		- Insert the positioning tool in the crimping tool until the marking (color) appears in the view window [A] appears (see table below). - Set the press thickness [B] on the crimping tool according to the table. <table><tr><th>Lead</th><th>a [mm²]</th><th>Positioning tool Part number xxx xxx x</th><th>Marking (color)</th><th>Press thickness</th></tr><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></table>	Lead	a [mm ²]	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 ²]	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													
7		- Insert a lead with socket contact in the crimping tool and press the tool fully together. The tool then opens automatically. - Repeat this procedure for each lead in accordance with the table in step 6.															



8		Open the insulating sleeve.
9		- Insert the middle socket contact into the insulator as shown in the wiring diagram in section 5.3. - Close the insulating sleeve until it clicks shut. - Insert the remaining socket contacts into the insulator as shown in the wiring diagram in section 5.3.
10		- Shorten the braid shield as shown. - 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.
11		Insert the insulator into the connector housing until the seal rests against its stop in the connector housing.
12		- Fix the connector housing with a wrench and use a second wrench to tighten the screw fitting. [A] = Fix in place



5 Appendix

5.1 Cable dimensions to AWG

AWG stands for **A**merican **W**ire **G**auge 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 ²
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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	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. 7188 Honeyman Street Delta. B.C. V4G 1 E2	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger Street LaSalle, Quebec H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 a.peluso@sew-eurodrive.ca



Address Directory

Canada			
Additional addresses for service in Canada provided on request!			
Chile			
Assembly Sales Service	Santiago de Chile	SEW-EURODRIVE CHILE LTDA. Las Encinas 1295 Parque Industrial Valle Grande LAMP RCH-Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 75770-00 Fax +56 2 75770-01 ventas@sew-eurodrive.cl
China			
Production Assembly Sales Service	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 46, 7th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25322611 gm-tianjin@sew-eurodrive.cn http://www.sew.com.cn
Assembly Sales Service	Suzhou	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021 P. R. China	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew.com.cn
	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530 P. R. China	Tel. +86 20 82267890 Fax +86 20 82267891 sewguangzhou@sew.com.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141 P. R. China	Tel. +86 24 22521596 Fax +86 24 22521579 shenyang@sew.com.cn
Colombia			
Assembly Sales Service	Bogotá	SEW-EURODRIVE COLOMBIA LTDA. Calle 22 No. 132-60 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 sewcol@sew-eurodrive.com.co
Croatia			
Sales Service	Zagreb	KOMPEKS d. o. o. PIT Erdödy 4 II HR 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@net.hr
Czech Republic			
Sales	Praha	SEW-EURODRIVE CZ S.R.O. Business Centrum Praha Luná 591 CZ-16000 Praha 6 - Vokovice	Tel. +420 220121236 Fax +420 220121237 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
Technical Offices	Brno	SEW-EURODRIVE CZ S.R.O. Krenova 52 CZ -60200 Brno	Tel. +420 543256151 + 543256163 Fax +420 543256845
	Hradec Kralove	SEW-EURODRIVE CZ S.R.O. Technická Kancelar - vychodni Cechy Svermova CZ-53374 Horni Jeleni	Tel. +420 466673711 Fax +420 466673634
	Klatovy	SEW-EURODRIVE CZ S.R.O. Technical Office Klatovy Kollarova 528 CZ-33901 Klatovy 3	Tel. +420 376310729 Fax +420 376310725
Denmark			
Assembly Sales Service	Kopenhagen	SEW-EURODRIVE A/S Geminivej 28-30, P.O. Box 100 DK-2670 Greve	Tel. +45 43 9585-00 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk



Denmark			
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	Helsingør	SEW-EURODRIVE A/S Rørmøvej 2 DK-3140 Ålsgårde	Tel. +45 49 7557-00 Fax +45 49 7558-00
	Odense	SEW-EURODRIVE A/S Lindelyvej 29, Nr. Søby DK-5792 Arslev	Tel. +45 65 9020-70 Fax +45 65 9023-09
Egypt			
Sales Service	Cairo	Copam Egypt for Engineering & Agencies 33 El Hegaz ST, Heliopolis, Cairo	Tel. +20 2 2566-299 + 1 23143088 Fax +20 2 2594-757 copam@datum.com.eg
Estonia			
Sales	Tallin	ALAS-KUUL AS Paldiski mnt.125 EE 0006 Tallin	Tel. +372 6593230 Fax +372 6593231 veiko.soots@alas-kuul.ee
Finland			
Assembly Sales Service	Lahti	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
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			
Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. Beckbridge Industrial Estate P.O. Box No.1 GB-Normanton, West- Yorkshire WF6 1QR	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
Technical Offices	London	SEW-EURODRIVE Ltd. 764 Finchely Road, Temple Fortune GB-London N.W.11 7TH	Tel. +44 20 8458-8949 Fax +44 20 8458-7417
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	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 http://www.boznos.gr 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			
Sales Service	Budapest	SEW-EURODRIVE Kft. H-1037 Budapest Kunigunda u. 18	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 office@sew-eurodrive.hu
Iceland			
Sales	Reykjavik	Vélaverk ehf. Bólholti 8, 3h. IS - 105 Reykjavik	Tel. +354 568 3536 Fax +354 568 3537 info@velaverk.is
India			
Assembly Sales Service	Baroda	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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	Calcutta	SEW EURODRIVE INDIA PVT. LTD. Juthika Apartment, Flat No. B1 11/1, Sunny Park Calcutta - 700 019	Tel. +91 33 24615820 Fax +91 33 24615826 sewcal@cal.vsnl.net.in
	Chennai	SEW-EURODRIVE India Private Limited F2, 1st Floor, Sarvamangala Indira New No. 67, Bazullah Road Chennai - 600 017	Tel. +91 44 28144461 Fax +91 44 28144463 saleschen@seweurodriveindia.com
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	Mumbai	SEW-EURODRIVE India Private Limited 312 A, 3rd Floor, Acme Plaza Andheri Kurla Road, Andheri (E) Mumbai	Tel. +91 22 28348440 Fax +91 22 28217858 salesmumbai@seweurodriveindia.com
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	Pune	SEW-EURODRIVE India Private Limited 206, Metro House 7 Mangaldas Road Pune 411001, Maharashtra	Tel. +91 20 26111054 Fax +91 20 26132337 salespune@seweurodriveindia.com
Indonesia			
Technical Office	Jakarta	SEW-EURODRIVE Pte Ltd. Jakarta Liaison Office, Menara Graha Kencana Jl. Perjuangan No. 88, LT 3 B, Kebun Jeruk, Jakarta 11530	Tel. +62 21 5359066 Fax +62 21 5363686
Ireland			
Sales Service	Dublin	Alpert Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458



Israel			
Sales	Tel-Aviv	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 lirazhandasa@barak-online.net
Italy			
Assembly Sales Service	Milano	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
Technical Offices	Bologna	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
	Caserta	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
	Firenze	RIMA Via Einstein, 14 I-50013 Campi Bisenzio (Firenze)	Tel. +39 055 898 58-21 Fax +39 055 898 58-30
	Pescara	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
	Torino	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Filiale Torino c.so Unione Sovietica 612/15 - int. C I-11035 Torino	Tel. +39 011 3473780 Fax +39 011 3473783
	Verona	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via P. Sgulmero, 27/A I-37132 Verona	Tel. +39 045 97-7722 Fax +39 045 97-6079
Ivory Coast			
Sales	Abidjan	SICA Ste industrielle et commerciale pour l'Afrique 165, Bld de Marseille B.P. 2323, Abidjan 08	Tel. +225 2579-44 Fax +225 2584-36
Japan			
Assembly Sales Service	Toyoda-cho	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 sewjapan@sew-eurodrive.co.jp
Technical Offices	Fukuoka	SEW-EURODRIVE JAPAN CO., LTD. C-go, 5th-floor, Yakuin-Hiruzu-Bldg. 1-5-11, Yakuin, Chuo-ku Fukuoka, 810-0022	Tel. +81 92 713-6955 Fax +81 92 713-6860 sewkyushu@jasmine.ocn.ne.jp
	Osaka	SEW-EURODRIVE JAPAN CO., LTD. B-Space EIRAI Bldg., 3rd Floor 1-6-9 Kyomachibori, Nishi-ku, Osaka, 550-0003	Tel. +81 6 6444--8330 Fax +81 6 6444--8338 sewosaka@crocus.ocn.ne.jp
	Tokyo	SEW-EURODRIVE JAPAN CO., LTD. Izumi-Bldg, 5 F 3-2-15 Misaki-cho Chiyoda-ku, Tokyo 101-0061	Tel. +81 3 3239-0469 Fax +81 3 3239-0943 sewtokyo@basil.ocn.ne.jp
Korea			
Assembly Sales Service	Ansan-City	SEW-EURODRIVE KOREA CO., LTD. B 601-4, Banweol Industrial Estate Unit 1048-4, Shingil-Dong Ansan 425-120	Tel. +82 31 492-8051 Fax +82 31 492-8056 master@sew-korea.co.kr
	Busan	SEW-EURODRIVE KOREA Co., Ltd. No. 1720 - 11, Songjeong - dong Gangseo-ku Busan 618-270	Tel. +82 51 832-0204 Fax +82 51 832-0230 master@sew-korea.co.kr



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	DaeJeon	SEW-EURODRIVE KOREA Co., Ltd. No. 2017, Hongin officetel 536-9, Bongmyung-dong, Yusung-ku Daejeon 305-301	Tel. +82 42 828-6461 Fax +82 42 828-6463 sewdaejeon@netsgo.com
	Kwangju	SEW-EURODRIVE KOREA Co., Ltd. 4fl., Shinhyun B/D 96-16 Unam-dong, Buk-ku Kwangju 500-170	Tel. +82 62 511-9172 Fax +82 62 511-9174 sewkwangju@netsgo.com
	Seoul	SEW-EURODRIVE KOREA Co., Ltd. No.1104 Sunkyung officetel 106-4 Kuro 6-dong, Kuro-ku Seoul 152-054	Tel. +82 2 862-8051 Fax +82 2 862-8199 sewseoul@netsgo.com
Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C LV-1073 Riga	Tel. +371 7139386 Fax +371 7139386 info@alas-kuul.ee
Lebanon			
Sales	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 4947-86 +961 1 4982-72 +961 3 2745-39 Fax +961 1 4949-71 gacar@beirut.com
Lithuania			
Sales	Alytus	UAB Irseva Naujoji 19 LT-62175 Alytus	Tel. +370 315 79204 Fax +370 315 56175 info@irseva.lt http://www.sew-eurodrive.lt
Luxembourg			
Assembly Sales Service	Brüssel	CARON-VECTOR S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.caron-vector.be info@caron-vector.be
Macedonia			
Sales	Skopje	SGS-Skopje / Macedonia "Teodosij Sinactaski" 66 91000 Skopje / Macedonia	Tel. +389 2 385 466 Fax +389 2 384 390 sgs@mol.com.mk
Malaysia			
Assembly Sales Service	Johore	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Technical Offices	Kota Kinabalu	SEW-EURODRIVE Sdn Bhd (Kota Kinabalu Branch) Lot No. 2,1st Floor, Inanam Baru Phase III, Miles 5.1 /2, Jalan Tuaran, Inanam 89350 Kota Kinabalu Sabah, Malaysia	Tel. +60 88 424792 Fax +60 88 424807
	Kuala Lumpur	SEW-EURODRIVE Sdn. Bhd. No. 2, Jalan Anggerik Mokara 31/46 Kota Kemuning Seksyen 31 40460 Shah Alam Selangor Darul Ehsan	Tel. +60 3 5229633 Fax +60 3 5229622 sewpjy@po.jaring.my



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	Penang	SEW-EURODRIVE Sdn. Bhd. No. 38, Jalan Bawal Kimsar Garden 13700 Prai, Penang	Tel. +60 4 3999349 Fax +60 4 3999348 seweurodrive@po.jaring.my
Mexico			
Assembly Sales Service	Queretaro	SEW-EURODRIVE, Sales and Distribution, S. A. de C. V. Privada Tequisquiapan No. 102 Parque Ind. Queretaro C. P. 76220 Queretaro, Mexico	Tel. +52 442 1030-300 Fax +52 442 1030-301 scmexico@seweurodrive.com.mx
Morocco			
Sales	Casablanca	S. R. M. Société de Réalisations Mécaniques 5, rue Emir Abdelkader 05 Casablanca	Tel. +212 2 6186-69 + 6186-70 + 6186-71 Fax +212 2 6215-88 srm@marocnet.net.ma
Netherlands			
Assembly Sales Service	Rotterdam	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 http://www.vector.nu info@vector.nu
New Zealand			
Assembly Sales Service	Auckland	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 sales@sew-eurodrive.co.nz
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 10 Settlers Crescent, Ferryroad Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Technical Office	Palmerston North	SEW-EURODRIVE NEW ZEALAND LTD. C/-Grant Shearman, RD 5, Aronui Road Palmerston North	Tel. +64 6 355-2165 Fax +64 6 355-2316 sales@sew-eurodrive.co.nz
Norway			
Assembly Sales Service	Moss	SEW-EURODRIVE A/S Solgaard skog 71 N-1599 Moss	Tel. +47 69 241-020 Fax +47 69 241-040 sew@sew-eurodrive.no
Pakistan			
Technical Office	Karachi	SEW-EURODRIVE Pte. Ltd. Karachi Liaison Office A/3, 1st Floor, Central Commercial Area Sultan Ahmed Shah Road Block 7/8, K.C.H.S. Union Ltd., Karachi	Tel. +92 21 4529369 Fax +92 21 4547365 seweurodrive@cyber.net.pk
Peru			
Assembly Sales Service	Lima	SEW DEL PERU MOTORES REDUCTORES S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 sewperu@sew-eurodrive.com.pe



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Poland			
Assembly Sales Service	Lodz	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 PL-92-518 Lodz	Tel. +48 42 67710-90 Fax +48 42 67710-99 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
Technical Office	Katowice	SEW-EURODRIVE Polska Sp.z.o.o. ul. Nad Jeziozem 87 PL-43-100 Tychy	Tel. +48 32 2175026 + 32 2175027 Fax +48 32 2277910
	Bydgoszcz	SEW-EURODRIVE Polska Sp.z.o.o. ul. Fordonska 246 PL-85-959 Bydgoszcz	Tel. +48 52 3606590 Fax +48 52 3606591
	Szczecinek	SEW-EURODRIVE Polska Sp.z.o.o. ul. Mickiewicza 2 pok. 36 PL-78-400 Szczecinek	Tel. +48 94 3728820 Fax +48 94 3728821
Portugal			
Assembly Sales Service	Coimbra	SEW-EURODRIVE, LDA. Apartado 15 P-3050-901 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt info sew@sew-eurodrive.pt
Technical Offices	Lisboa	Tertir Edifício Lisboa Gabinete 119 P-2615 Alverca do Ribatejo	Tel. +351 21 958-0198 Fax +351 21 958-0245 esc.lisboa@sew-eurodrive.pt
	Porto	Av. D. Afonso Henriques, 1196 - 1º - sala 102 Edifício ACIA P- 4450-016 Matosinhos	Tel. +351 229 350 383 Fax +351 229 350 384 MobilTel. +351 9 332559110 esc.porto@sew-eurodrive.pt
Romania			
Sales Service	Bucuresti	Sialco Trading SRL str. Madrid nr.4 011785 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro
Russia			
Assembly Sales Service	St. Petersburg	ZAO SEW-EURODRIVE P.O. Box 36 195220 St. Petersburg Russia	Tel. +7 812 3332522 +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru
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	Novosibirsk	ZAO SEW-EURODRIVE pr. K Marksa, d.30 RUS-630087 Novosibirsk	Tel. +7 383 3350200 Fax +7 383 3462544 nso@sew-eurodrive.ru
Senegal			
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Slovakia			
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	Zilina	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
	Banská Bystrica	SEW-Eurodrive SK s.r.o. Rudlovská cesta 85 SK-97411 Banská Bystrica	Tel. +421 48 414 6564 Fax +421 48 414 6566 sew@sew-eurodrive.sk
Slovenia			
Sales Service	Celje	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			
Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 494-3104 dross@sew.co.za
	Capetown	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442 Cape Town	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 dswanepoel@sew.co.za
	Durban	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
	Nelspruit	SEW-EURODRIVE (PTY) LTD. 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za
	Port Elizabeth	SEW-EURODRIVE PTY LTD. 5 b Lindsay Road Neave Township 6000 Port Elizabeth	Tel. +27 41 453-0303 Fax +27 41 453-0305 dswanepoel@sew.co.za
Technical Offices	Richards Bay	SEW-EURODRIVE PTY LTD. 25 Eagle Industrial Park Alton Richards Bay P.O. Box 458 Richards Bay 3900	Tel. +27 35 797-3805 Fax +27 35 797-3819 dtait@sew.co.za
Spain			
Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 9 4431 84-70 Fax +34 9 4431 84-71 sew.spain@sew-eurodrive.es
Technical Offices	Barcelona	Delegación Barcelona Avenida Francesc Macià 40-44 Oficina 3.1 E-08206 Sabadell (Barcelona)	Tel. +34 9 37 162200 Fax +34 9 37 233007



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Sri Lanka			
Sales	Colombo	SM International (Pte) Ltd 254, Galle Raod Colombo 4, Sri Lanka	Tel. +94 1 2584887 Fax +94 1 2582981
Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442-00 Fax +46 36 3442-80 http://www.sew-eurodrive.se info@sew-eurodrive.se
Technical Offices	Göteborg	SEW-EURODRIVE AB Gustaf Werners gata 8 S-42131 Västra Frölunda	Tel. +46 31 70968-80 Fax +46 31 70968-93
	Malmö	SEW-EURODRIVE AB Borrgatan 5 S-21124 Malmö	Tel. +46 40 68064-80 Fax +46 40 68064-93
	Stockholm	SEW-EURODRIVE AB Björkholmsvägen 10 S-14125 Huddinge	Tel. +46 8 44986-80 Fax +46 8 44986-93
	Skellefteå	SEW-EURODRIVE AB Trädgårdsgatan 8 S-93131 Skellefteå	Tel. +46 910 7153-80 Fax +46 910 7153-93
Switzerland			
Assembly Sales Service	Basel	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch
Technical Offices	Rhaetian Switzerland	André Gerber Es Perreyres CH-1436 Chamblon	Tel. +41 24 445 3850 Fax +41 24 445 4887
	Bern / Solothurn	Rudolf Bühler Muntersweg 5 CH-2540 Grenchen	Tel. +41 32 652 2339 Fax +41 32 652 2331
	Central Switzerland and Ticino	Beat Lütolf Baumacher 11 CH-6244 Nebikon	Tel. +41 62 756 4780 Fax +41 62 756 4786
	Zürich	René Rothenbühler Nörgelbach 7 CH-8493 Saland	Tel. +41 52 386 3150 Fax +41 52 386 3213
	Bodensee and East Switzerland	Markus Künzle Eichweg 4 CH-9403 Goldbach	Tel. +41 71 845 2808 Fax +41 71 845 2809
Taiwan (R.O.C.)			
Sales	Nan Tou	Ting Shou Trading Co., Ltd. No. 55 Kung Yeh N. Road Industrial District Nan Tou 540	Tel. +886 49 255353 Fax +886 49 257878
	Taipei	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



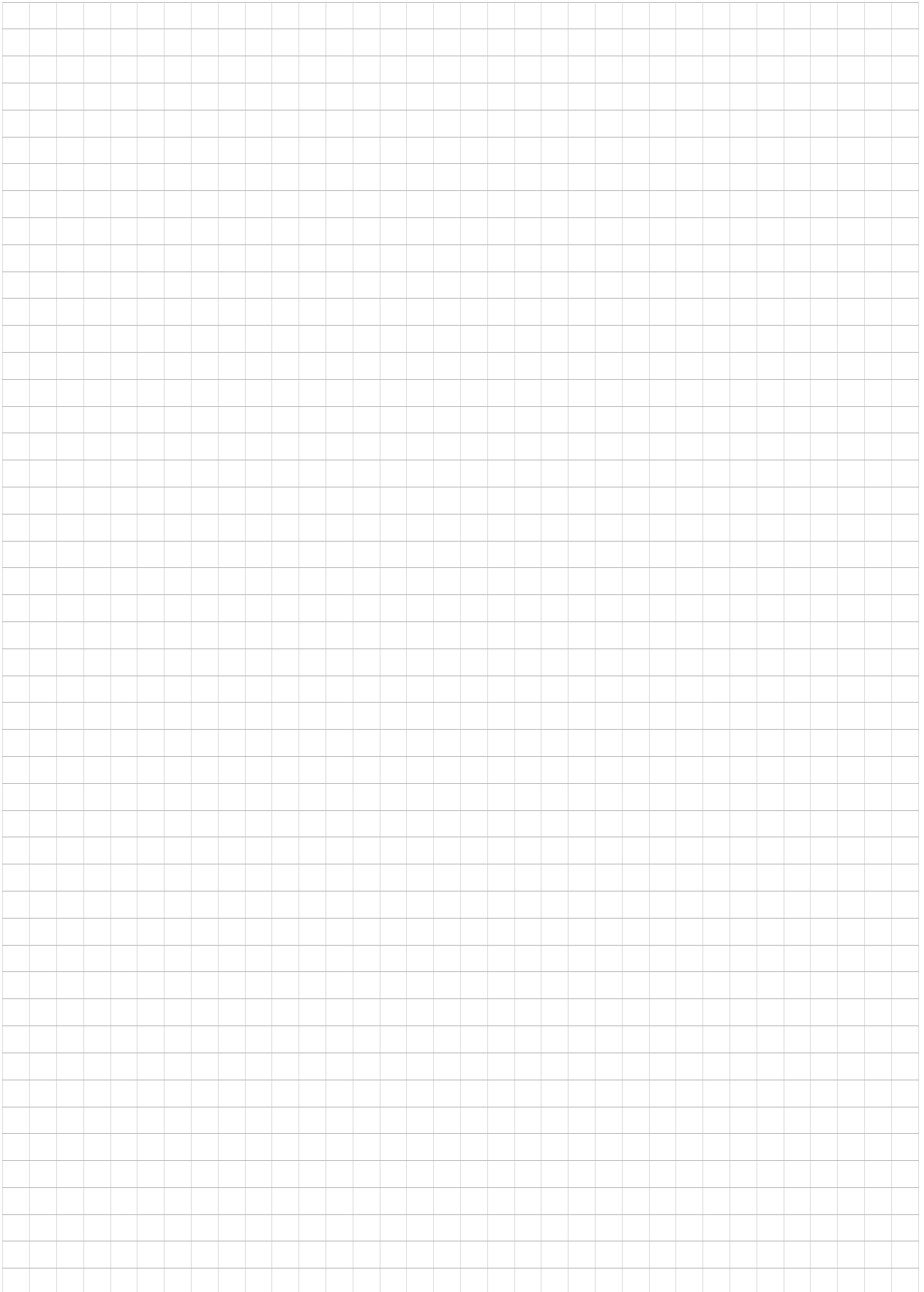
Thailand			
Assembly Sales Service	Chon Buri	SEW-EURODRIVE (Thailand) Ltd. Bangpakong Industrial Park 2 700/456, Moo.7, Tambol Donhuaroh Muang District Chon Buri 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.co.th
Technical Offices	Bangkok	SEW-EURODRIVE PTE LTD Bangkok Liaison 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
	Hadyai	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
	Khonkaen	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
	Lampang	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			
Sales	Tunis	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			
Assembly Sales Service	Istanbul	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
Technical Offices	Ankara	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
	Bursa	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
	Izmir	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			
Sales Service	Dnepropetrovsk	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			
Sales	Montevideo	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

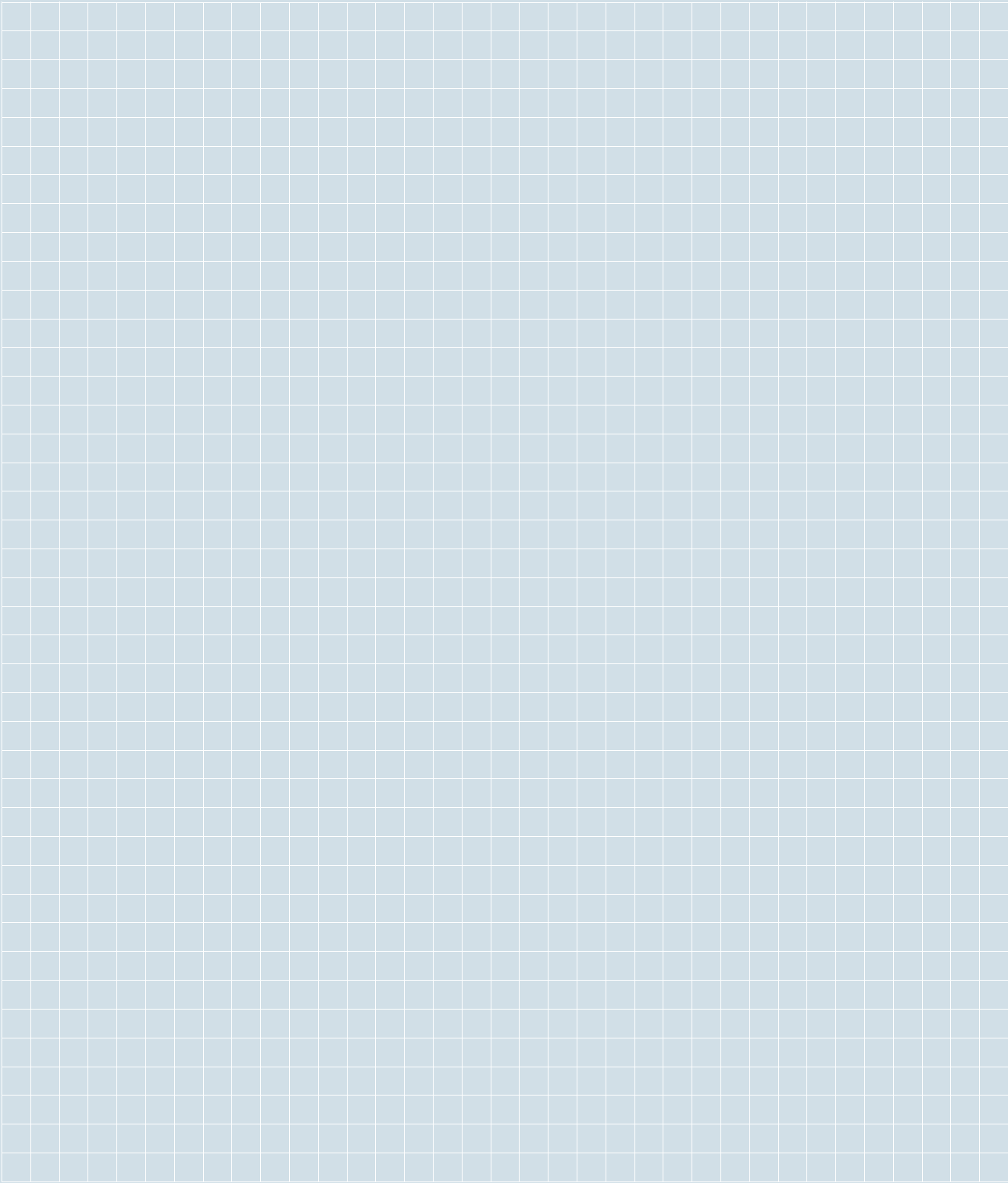


Address Directory

USA			
Production Assembly Sales Service	Greenville	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 http://www.seweurodrive.com cslyman@seweurodrive.com
	San Francisco	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, California 94544-7101	Tel. +1 510 487-3560 Fax +1 510 487-6381 cshayward@seweurodrive.com
	Philadelphia/PA	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Dayton	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 440-3799 cstroy@seweurodrive.com
	Dallas	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
Additional addresses for service in the USA provided on request!			
Venezuela			
Assembly Sales Service	Valencia	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia, Estado Carabobo	Tel. +58 241 832-9804 Fax +58 241 838-6275 sewventas@cantv.net sewfinanzas@cantv.net







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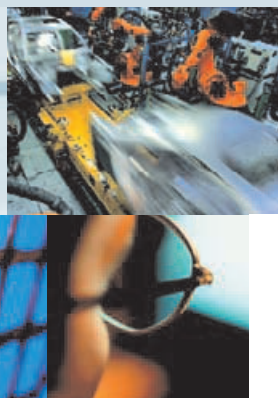
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