

Latest News



Synchronous Servomotors CMP40 – 100 in Encoderless Design

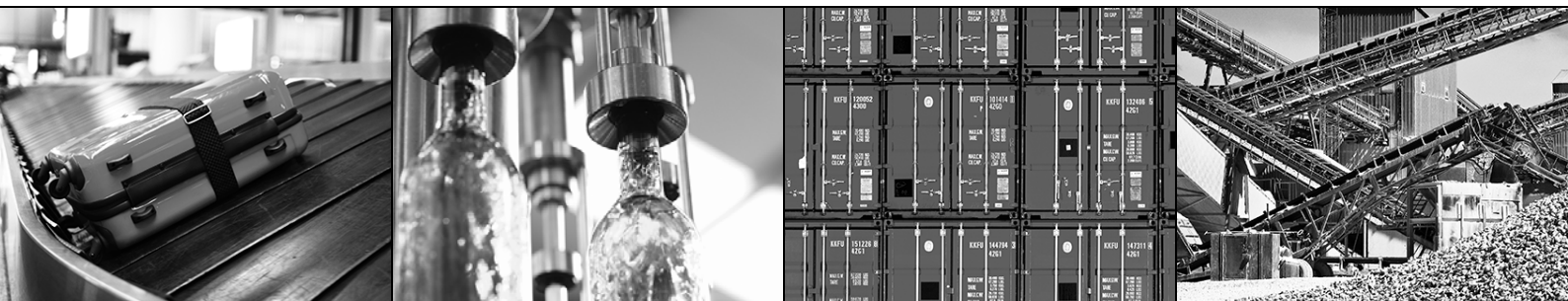




Table of contents

1.	Market situation	4
1.1.	Target industries	4
1.2.	Target applications.....	4
2.	The product.....	5
2.1.	Product characteristics.....	5
2.2.	Distinction between the standard and encoderless designs of the CMP(Z) motors.....	6
2.3.	Motor structure	7
2.4.	Nameplate and type designation	8
2.5.	Additional feature of encoderless CMP(Z) motors.....	8
2.6.	Summary of the features.....	9
3.	Technical data for CMP(Z)40 – 100 encoderless design	10
3.1.	Motor data for CMP(Z)40 – 100 encoderless design.....	10
3.2.	PT1000 thermal motor protection	15
3.3.	Connection technology	16
3.4.	Prefabricated hybrid cables	20
3.5.	Dimension drawings of CMP servomotors, encoderless design	29
4.	Project planning and startup.....	40
4.1.	Encoderless control mode ELSM [®] (MOVIDRIVE [®] modular)	40
4.2.	Encoderless control mode PMVC (MOVITRAC [®] LTP-B)	42
5.	Contact persons	44



1. Market situation

In order to be able to operate synchronous servomotors at their optimum operating point and with the maximum torque yield, the rotor position of the motor must be known at all times. In the past, the position of the rotor (actual rotor position) had to be recorded using a suitable encoder system in order to do this. Thanks to powerful electronics and advanced control modes, it is now also technically possible to determine the rotor position of servomotors without using an additional and cost-intensive encoder system.

In order to take this development into account in the future, encoderless designs of the CMP40 – 100 and CMPZ71 – 100 motors from SEW-EURODRIVE are also available. As well as the said encoder system, there is also no need for the encoder connection at the motor and also the separate encoder line with these motors. The encoderless CMP motors are only equipped with a single hybrid connector (SH1/SHB). This hybrid connector can be rotated by 360° (infinitely variable) and is attached in a central position at the B-side of the motor.

By using a combination of single-cable connecting technology and suitable hybrid cables, both the amount of space that is needed and the cost of installation and wiring work can be reduced significantly compared to conventional two-cable connecting technology.

1.1. Target industries

The use of encoderless CMP motors is particularly suitable for the following applications:

- Wood processing machines
- Handling systems
- Transport systems
- Glass processing machines
- Plastic processing machines

1.2. Target applications

The use of encoderless CMP motors from SEW-EURODRIVE is particularly suitable for applications in which the following characteristics are present or required:

- Little installation space required in the system
- Highly efficient drives (in comparison to asynchronous technology)
- Low assembly and installation cost (single-cable technology)
- Low nominal speed range
- Fan-less operation (e.g. clean room)
- Gear unit attachment directly or with adapter



2. The product

Encoderless design of the synchronous servomotors CMP40 – 100 and CMPZ71 – 100 from SEW-EURODRIVE.



The encoderless design of the CMP motors supplements the existing range of highly dynamic synchronous servomotors with a space-saving and cost-optimized design. Because of the omission of the encoder system and the use of the single-cable technology, the cost of assembly and installation can be significantly reduced compared to the standard design, and new cost saving potential can be realized.

2.1. Product characteristics

The following product features characterize the encoderless design of the CMP(Z) motors from SEW-EURODRIVE.

	Characteristic	Customer benefit
Customer's perspective	- No more encoder costs - Short design - Motor with housing - B5 flange for direct mounting - Direct mounting for servo gear units - PK (PT1000) as thermal motor protection in combination with inverter series MOVI-C® and MOVITRAC® LTP-B. - Simplified installation due to use of single-cable technology - Prefabricated hybrid cables	- Low space requirement - High energy efficiency - Cost-optimized, flexible servomotor system for many applications - Set-up and maintenance are cost-effective and time saving - SEW-EURODRIVE is single-source supplier - Low-noise operation (no fan)



2.2. Distinction between the standard and encoderless designs of the CMP(Z) motors

			
Feedback system		Standard: Resolvers Optional: Absolute encoder	None
Electr. nameplate		Yes	No
Motor size		40, 50, 63, 71, 80, 100, 112	40, 50, 63, 71, 80, 100
Speed classes	min ⁻¹	2000/3000/4500/6000	2000/3000/4500/6000
System voltage	V	230/400	400
M₀	Nm	0.5 – 95.0	0.5 – 47.0
M_{pk}	Nm	1.9 – 320.0	1.9 – 178.0 ¹
Optional forced cooling fan		Yes	No
Thermal motor protection		Standard: KTY or PK Optional: TF	Standard: PK (PT1000)
Connection technology		2x plug connectors (M23, M40, M58) Terminal box	1x hybrid connector (M23, M40)
Optional brake		BK permanent magnet brake Spring-loaded brake BP Spring-loaded brake BY	BK permanent magnet brake Spring-loaded brake BP Spring-loaded brake BY
Gear unit mounting 7 series		Direct/adaptor	Direct/adaptor
Gear unit mounting Servo gear unit		Direct/adaptor	Direct/adaptor
UL/CSA approval		UL/CSA	In preparation

¹ Depending on the control mode that is used, the dynamic limit torque M_{pk} may be restricted in the encoderless design of the CMP motors.



2.3. Motor structure

2.3.1. Schematic representations of the CMP(Z) motors in an encoderless design

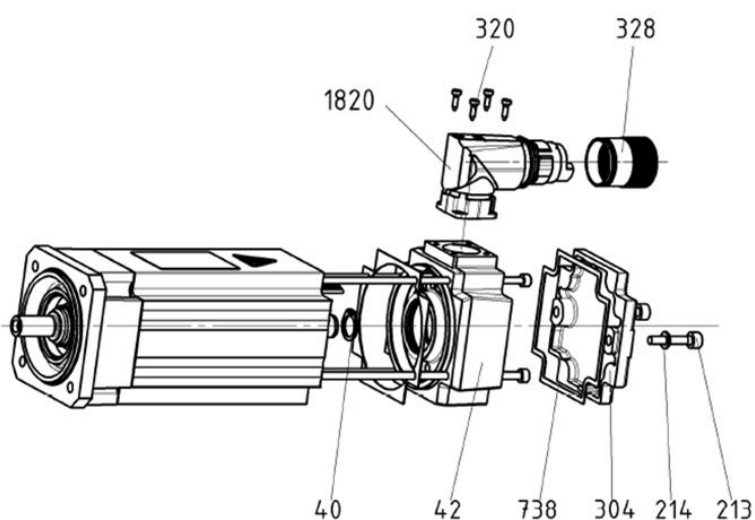


INFORMATION

The following illustration is to explain the general structure. Differences are possible depending on the motor size and design

The following illustration shows the design of an encoderless CMP50.

CMP50/PK/SH1



[40]	Retaining ring
[42]	B-side endshield
[213]	Cap screw
[214]	Sealing ring
[304]	Housing cover
[320]	Screw for securing connector
[328]	Cap
[738]	Gasket
[1820]	Connector housing SH1

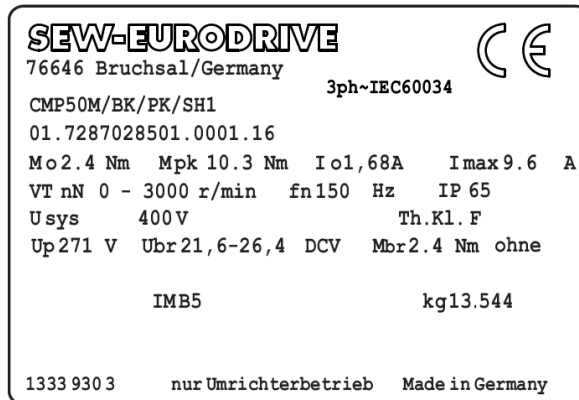


The product

2.4. Nameplate and type designation

2.4.1. Encoderless CMP(Z) motor nameplate

Example: Nameplate for synchronous brakemotor CMP50M/BK/PK/SH1



17424365195

2.4.2. Type designation for encoderless CMP(Z) motor

The following diagram shows an example of a type designation:

CMP50M/BK/PK/SH1	
CMP50	CMP motor, size 50
M	Length M (medium)
/BK	Permanent magnet brake BK (optional)
/PK	PK temperature sensor
/SH1	Hybrid connector SH1 (M23)

2.5. Additional feature of encoderless CMP(Z) motors

2.5.1. Temperature sensor / temperature detection

Designation	Option
/PK	Temperature sensor (standard)



INFORMATION

The encoderless CMP(Z) motors are exclusively available with the PK (PT1000) temperature sensor.



2.5.2. Brakes

Designation	Option
/BK	24 V permanent magnet brake (CMP40 – 63)
/BP	24 V spring-loaded brake (CMP71 – 100)
/BY	Spring-loaded brake with increased working capacity (CMPZ71 – 100)
/HR	Manual brake release of the BY brake, automatic disengaging function

2.5.3. Connection variants

Designation	Option
/SH1	M23 hybrid connector, socket on the motor side only
/SHB	M40 hybrid connector, socket on the motor side only

2.6. Summary of the features

2.6.1. Basic design

- Version with smooth shaft
- Hybrid connector with aligning facility
- Prefabricated hybrid cables with plug connectors available
- Motors are in ISO class "F"
- Thermal motor protection PK as standard
- Protection class IP65 as standard
- The standard paint color is RAL 9005 black
- Rated speeds are 2000, 3000, 4500 and 6000 1/min
- Voltage classes: 400 V

2.6.2. Optional designs

- Design with key
- 24 V permanent magnet brake BK (CMP40 – 63)
- 24 V spring-loaded brake BP (CMP71 – 100)
- Spring-loaded brake BY with working capacity (CMPZ71 – 100) with the following brake voltages: DC 24 V, AC 110 V, 230 V, 400 V, 460 V
- IP66 degree of protection
- OS1 – OS4 painting
- UL, CSA approval



3. Technical data for CMP(Z)40 – 100 encoderless design

3.1. Motor data for CMP(Z)40 – 100 encoderless design

The technical data for the encoderless design of the CMP(Z)40 – 100 motors corresponds to the values for the standard motors.

3.1.1. Key to the technical data

n_N	rated speed
M_0	standstill torque (thermal continuous torque at low speeds)
I_0	standstill current
M_{pk}	dynamic limit torque
I_{max}	maximum permitted motor current
J_{mot}	mass moment of inertia of the motor
J_{bmot}	mass moment of inertia of the brakemotor
m_{mot}	motor weight
m_{bmot}	brakemotor weight
$M_{4,100^\circ C}$	minimum holding torque of brake at 100 °C

3.1.2. Synchronous servomotors CMP40 – 100; 400 V system voltage

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	M_{pk} Nm	I_{max} A	M_{mot} kg	J_{mot} 10-4 kgm ²
2000	CMP71S	6.4	3.4	19.2	17	7	3.1
	CMP71M	9.4	5	30.8	26	8.4	4.2
	CMP71L	13.1	6.3	46.9	39	11.4	6.3
	CMP80S	13.4	6.9	42.1	33	12.8	9
	CMP80M	18.7	9.3	62.6	48	16.5	12.1
	CMP80L	27.5	12.5	107	72	21.4	18.3
	CMP100S	25.5	13.3	68.3	49	19.8	20.3
	CMP100M	31	14.7	108	69	24.8	27.2
	CMP100L	47	21.8	179	113	34.6	40.9



n_N min^{-1}	Motor	M_0 Nm	I_0 A	M_{pk} Nm	I_{max} A	M_{mot} kg	J_{mot} 10^{-4} kgm^2
3000	CMP40S	0.5	1.2	1.9	6.1	1.3	0.1
	CMP40M	0.8	0.95	3.8	6	1.6	0.15
	CMP50S	1.3	0.96	5.2	5.1	2.3	0.42
	CMP50M	2.4	1.68	10.3	9.6	3.3	0.67
	CMP50L	3.3	2.2	15.4	13.6	4.1	0.92
	CMP63S	2.9	2.15	11.1	12.9	4	1.2
	CMP63M	5.3	3.6	21.4	21.6	5.7	1.9
	CMP63L	7.1	4.95	30.4	29.7	7.5	2.7
	CMP71S	6.4	4.9	19.2	25	7	3.1
	CMP71M	9.4	7.5	30.8	39	8.4	4.2
	CMP71L	13.1	9.4	46.9	58	11.4	6.3
	CMP80S	13.4	10	42.1	47	12.8	9
	CMP80M	18.7	13.4	62.6	69	16.5	12.1
	CMP80L	27.5	18.7	107	107	21.4	18.3
	CMP100S	25.5	19.6	68.3	73	19.8	20.3
	CMP100M	31	21.8	108	102	24.8	27.2
	CMP100L	47	32.3	179	167	34.6	40.9

n_N min^{-1}	Motor	M_0 Nm	I_0 A	M_{pk} Nm	I_{max} A	m_{mot} kg	J_{mot} 10^{-4} kgm^2
4500	CMP40S	0.5	1.2	1.9	6.1	1.3	0.1
	CMP40M	0.8	0.95	3.8	6	1.6	0.15
	CMP50S	1.3	1.32	5.2	7	2.3	0.42
	CMP50M	2.4	2.3	10.3	13.1	3.3	0.67
	CMP50L	3.3	3.15	15.4	19.5	4.1	0.92
	CMP63S	2.9	3.05	11.1	18.3	4	1.2
	CMP63M	5.3	5.4	21.4	32.4	5.7	1.9
	CMP63L	7.1	6.9	30.4	41.4	7.5	2.7
	CMP71S	6.4	7.3	19.2	38	7	3.1
	CMP71M	9.4	10.9	30.8	57	8.4	4.2
	CMP71L	13.1	14.1	46.9	87	11.4	6.3
	CMP80S	13.4	15.3	42.1	73	12.8	9
	CMP80M	18.7	20.1	62.6	103	16.5	12.1
	CMP80L	27.5	27.8	107	159	21.4	18.3
	CMP100S	25.5	30	68.3	111	19.8	20.3
	CMP100M	31	33.1	108	154	24.8	27.2
	CMP100L	47	48.4	179	251	34.6	40.9



Technical data for CMP(Z)40 – 100 encoderless design

n_N min^{-1}	Motor	M_0 Nm	I_0 A	M_{pk} Nm	I_{max} A	m_{mot} kg	J_{mot} 10^{-4} kgm^2
6000	CMP40S	0.5	1.2	1.9	6.1	1.3	0.1
	CMP40M	0.8	1.1	3.8	6.9	1.6	0.15
	CMP50S	1.3	1.7	5.2	9	2.3	0.42
	CMP50M	2.4	3	10.3	17.1	3.3	0.67
	CMP50L	3.3	4.2	15.4	26	4.1	0.92
	CMP63S	2.9	3.9	11.1	23.4	4	1.2
	CMP63M	5.3	6.9	21.4	41.4	5.7	1.9
	CMP63L	7.1	9.3	30.4	55.8	7.5	2.7
	CMP71S	6.4	9.6	19.2	50	7	3.1
	CMP71M	9.4	14.7	30.8	76	8.4	4.2
	CMP71L	13.1	18.8	46.9	115	11.4	6.3
	CMP80S	13.4	20	42.1	95	12.8	9
	CMP80M	18.7	26.4	62.6	135	16.5	12.1
	CMP80L	27.5	37.6	107	215	21.4	18.3

Brake type	Motor	M_0 Nm	M_{pk} Nm	m_{bmot} kg	J_{bmot} 10^{-4} kgm^2	$M_{4,100^\circ\text{C}}$ Nm	
BK	CMP40S	0.5	1.9	1.6	0.17	1.9	-
	CMP40M	0.8	3.8	1.9	0.22	1.9	-
	CMP50S	1.3	5.2	2.7	0.49	2.4	-
	CMP50M	2.4	10.3	3.7	0.74	2.4	-
	CMP50L	3.3	15.4	4.6	1.26	3.9	-
	CMP63S	2.9	11.1	4.6	1.5	3.8	-
	CMP63M	5.3	21.4	6.5	2.41	7.1	-
	CMP63L	7.1	30.4	8.3	3.15	7.1	-

Brake type	Motor	M_0 Nm	M_{pk} Nm	m_{bmot} kg	J_{bmot} 10^{-4} kgm^2	$M_{4,100^\circ\text{C}}$ Nm	
BP	CMP71S	6.4	19.2	9	3.5	4.2	8.4
	CMP71M	9.4	30.8	10.4	4.6	4.2	8.4
	CMP71L	13.1	46.9	13.4	6.7	4.2	8.4
	CMP80S	13.4	42.1	16.8	10.3	9.6	18.6
	CMP80M	18.7	62.6	20.5	13.4	9.6	18.6
	CMP80L	27.5	107	24.4	19.6	9.6	18.6
	CMP100S	25.5	68.3	22.8	22	14.4	28.2
	CMP100M	31	108	27.8	29	14.4	28.2
	CMP100L	47	179	37.6	42.7	14.4	28.2



3.1.3. Synchronous servomotors CMPZ71 - 100; 400 V system voltage

n_N min^{-1}	Motor	M_0 Nm	I_0 A	M_{pk} Nm	I_{max} A	m_{mot} kg	J_{mot} 10^{-4} kgm^2
2000	CMPZ71S	6.4	3.4	19.2	17	8.6	9.4
	CMPZ71M	9.4	5	30.8	26	10	10.5
	CMPZ71L	13.1	6.3	46.9	39	13	12.6
	CMPZ80S	13.4	6.9	42.1	33	15.8	27.4
	CMPZ80M	18.7	9.3	62.6	48	19.5	30.5
	CMPZ80L	27.5	12.5	107	72	24.4	36.7
	CMPZ100S	25.5	13.3	68.3	49	24.2	80.5
	CMPZ100M	31	14.7	108	69	29.2	87.4
	CMPZ100L	47	21.8	179	113	39	101

n_N min^{-1}	Motor	M_0 Nm	I_0 A	M_{pk} Nm	I_{max} A	m_{mot} kg	J_{mot} 10^{-4} kgm^2
3000	CMPZ71S	6.4	4.9	19.2	25	8.6	9.4
	CMPZ71M	9.4	7.5	30.8	39	10	10.5
	CMPZ71L	13.1	9.4	46.9	58	13	12.6
	CMPZ80S	13.4	10	42.1	47	15.8	27.4
	CMPZ80M	18.7	13.4	62.6	69	19.5	30.5
	CMPZ80L	27.5	18.7	107	107	24.4	36.7
	CMPZ100S	25.5	19.6	68.3	73	24.2	80.5
	CMPZ100M	31	21.8	108	102	29.2	87.4
	CMPZ100L	47	32.3	179	167	39	101

n_N min^{-1}	Motor	M_0 Nm	I_0 A	M_{pk} Nm	I_{max} A	m_{mot} kg	J_{mot} 10^{-4} kgm^2
4500	CMPZ71S	6.4	7.3	19.2	38	8.6	9.4
	CMPZ71M	9.4	10.9	30.8	57	10	10.5
	CMPZ71L	13.1	14.1	46.9	87	13	12.6
	CMPZ80S	13.4	15.3	42.1	73	15.8	27.4
	CMPZ80M	18.7	20.1	62.6	103	19.5	30.5
	CMPZ80L	27.5	27.8	107	159	24.4	36.7
	CMPZ100S	25.5	30	68.3	111	24.2	80.5
	CMPZ100M	31	33.1	108	154	29.2	87.4
	CMPZ100L	47	48.4	179	251	39	101



Technical data for CMP(Z)40 – 100 encoderless design

n_N min^{-1}	Motor	M_0 Nm	I_0 A	M_{pk} Nm	I_{max} A	m_{mot} kg	J_{mot} 10^{-4} kgm^2
6000	CMPZ71S	6.4	9.6	19.2	50	8.6	9.4
	CMPZ71M	9.4	14.7	30.8	76	10	10.5
	CMPZ71L	13.1	18.8	46.9	115	13	12.6
	CMPZ80S	13.4	20	42.1	95	15.8	27.4
	CMPZ80M	18.7	26.4	62.6	135	19.5	30.5
	CMPZ80L	27.5	37.6	107	215	24.4	36.7

Brake type	Motor	M_0 Nm	M_{pk} Nm	m_{bmot} kg	J_{bmot} 10^{-4} kgm^2	$M_{4,100^\circ\text{C}}$ Nm			
BY	CMPZ71S	6.4	19.2	11.2	11.1	4.2	6	8.4	12
	CMPZ71M	9.4	30.8	12.6	12.2	4.2	6	8.4	12
	CMPZ71L	13.1	46.9	15.6	14.3	4.2	6	8.4	12
	CMPZ80S	13.4	42.1	20.8	31.2	8.4	12	16.8	24
	CMPZ80M	18.7	62.6	24.5	34.3	8.4	12	16.8	24
	CMPZ80L	27.5	107	29.4	40.5	8.4	12	16.8	24
	CMPZ100S	25.5	68.3	34.7	84.9	16.8	24	33	48
	CMPZ100M	31	108	39.7	91.8	16.8	24	33	48
	CMPZ100L	47	179	49.5	105	16.8	24	33	48

INFORMATION



M_0 is the thermal continuous torque for speeds between 5 and 200 revolutions per minute.

The permitted continuous torque at standstill is 90 % of M_0 .



3.2. PT1000 thermal motor protection

Type designation /PK

3.2.1. Description

Thermal motor protection prevents the motor from overheating and consequently from being damaged. A temperature sensor only protects indirectly, since it only determines a sensor value which first needs to be analytically examined.

The /PK option consists of a PT1000 platinum sensor, which is installed in one of the 3 motor windings.

Unlike the KTY semiconductor sensor, the platinum sensor has an almost linear characteristic curve and is more accurate. In combination with a frequency inverter containing the thermal model of the motor, the frequency inverter can also provide a motor protection function because of the /PK.

3.2.2. Technical data

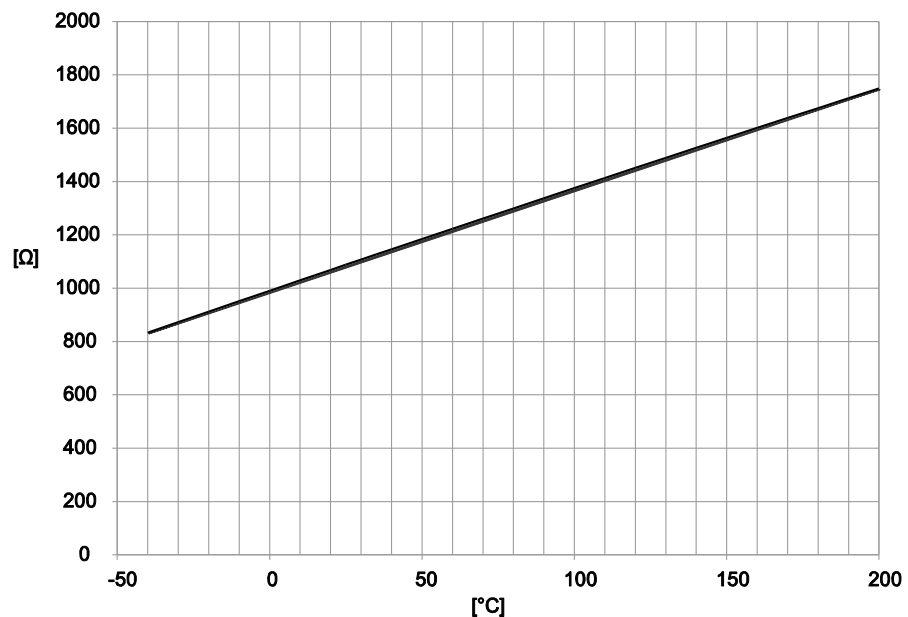
The PT1000 temperature sensor continuously detects the motor temperature.

Technical data	PT1000
Connection	Red - black
Total resistance at 20 – 25 °C	1050 Ω < R < 1150 Ω
Test current	< 3 mA

INFORMATION



The temperature sensor is unipolar, meaning that the result of the measurement is not affected if the cables are switched.





3.3. Connection technology

3.3.1. Possible plug connectors for encoderless design of the CMP motors

The encoderless CMP motors are equipped with the SH1 (M23) or SHB (M40) hybrid connector, which has an aligning facility.



[1]

[1] Hybrid connector SH1 (M23)



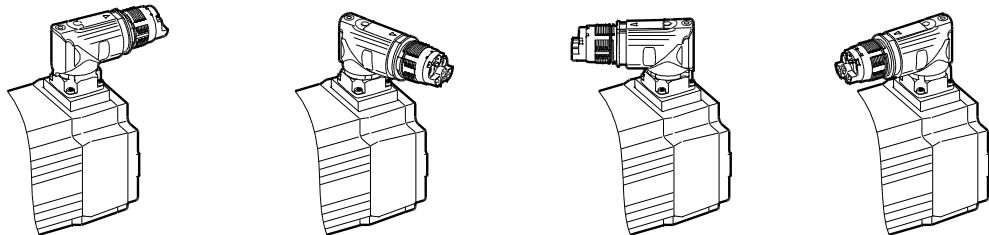
[2]

[2] Hybrid connector SHB (M40)

3.3.2. Possible connector positions

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

The following figure depicts the different connector alignments.



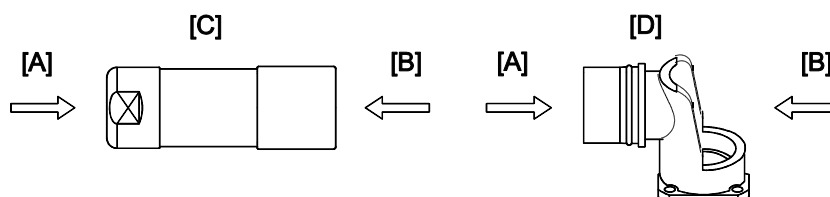


3.3.3. Connector assignment

Motor type	Rated speed	Plug connector with /without brake
CMP40S/M	3000/4500/6000	SH1
CMP50S/M/L	3000/4500/6000	SH1
CMP63SS/M/L	3000/4500/6000	SH1
CMP71S/M/L	2000/3000/4500/6000	SH1
CMP80S/M	2000/3000/4500	SH1
CMP80S/M	6000	SHB
CMP80L	2000/3000	SH1
CMP80L	4500/6000	SHB
CMP100S/M	2000/3000	SH1
CMP100S/M	4500	SHB
CMP100L	2000/3000/4500	SHB

3.3.4. Wiring diagrams

Key

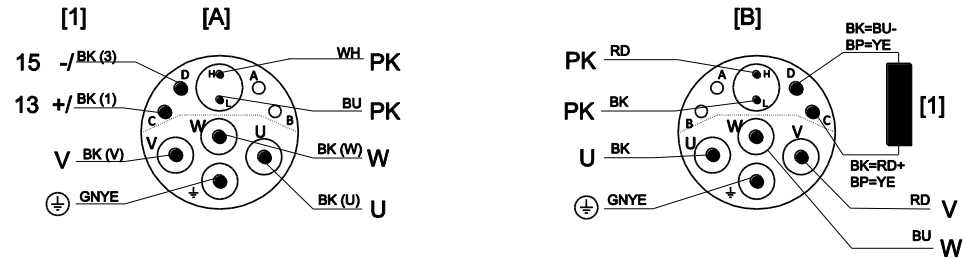


- [A] View A
- [B] View B
- [C] Customer connector with socket contacts
- [D] Flange socket with pin contacts installed at the factory



Connection of SH1 power plug connector (M23)

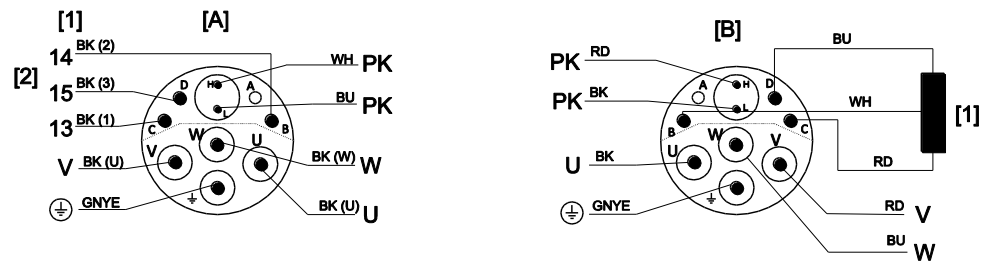
Wiring diagram with/without BP/BK brake



[1] BP/BK brake (optional)

Connection of SH1 power plug connector (M23)

Wiring diagram with/without BY brake

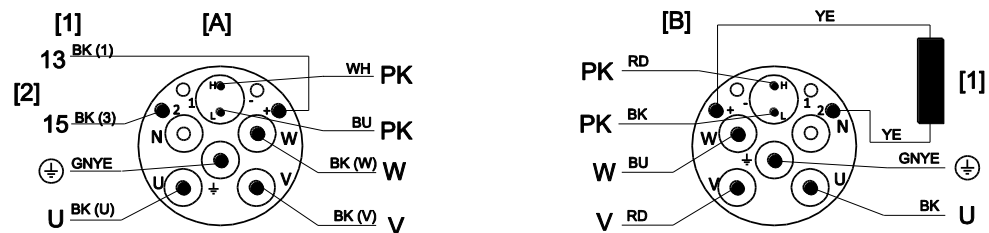


[1] BY brake (optional)

[2] Connection to rectifier from SEW-EURODRIVE according to operating instructions

Connection of SHB (M40) power plug connectors

Wiring diagram with/without BP brake



[1] BP brake (optional)

[2] Connection to rectifier from SEW-EURODRIVE according to operating instructions



Connection of SHB (M40) power plug connectors

Wiring diagram with/without BY brake

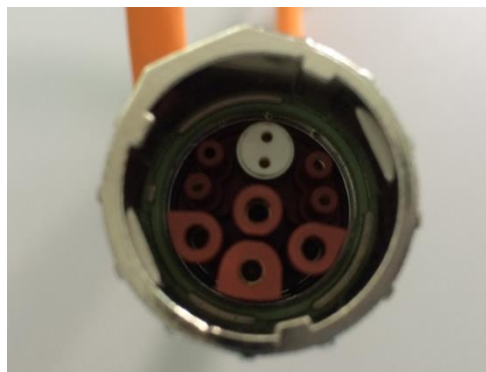


- [1] BY brake (optional)
- [2] Connection to rectifier from SEW-EURODRIVE according to operating instructions. For BY.D connection 14 is omitted.



3.4. Prefabricated hybrid cables

Prefabricated hybrid cables with a core cross-section of 1.5 mm^2 to 10 mm^2 are available for the encoderless CMP(Z) model series. The hybrid cables are suitable for connecting motors and also brakemotors.



The plug connectors used in the hybrid cables have their own coding from SEW-EURODRIVE. For this reason, both the cables and the plug connectors are (currently) only available from SEW-EURODRIVE.

Hybrid cable: Motor/brakemotor

Installation type	Connection		Thread size	Connector type	Cross section	Part number
	From	to				
trailing	Motor Brakemotor	Control cabinet	M23	SH11	$4 \times 1.5 + 3 \times 1 + 2 \times 0.34$	18191290
				SH12	$4 \times 2.5 + 3 \times 1 + 2 \times 0.34$	18191304
				SH14	$4 \times 4 + 3 \times 1 + 2 \times 0.34$	18191312
			M40	SHB6	$4 \times 6 + 3 \times 1.5 + 2 \times 0.34$	18191320
				SHB10	$4 \times 10 + 3 \times 1.5 + 2 \times 0.34$	18191339

Hybrid cable: Extension

Installation type	Connection		Thread size	Connector type	Cross section	Part number
	From	to				
trailing	Extension		M23	SH11	$4 \times 1.5 + 3 \times 1 + 2 \times 0.34$	18191347
				SH12	$4 \times 2.5 + 3 \times 1 + 2 \times 0.34$	18191355
				SH14	$4 \times 4 + 3 \times 1 + 2 \times 0.34$	18191363
			M40	SHB6	$4 \times 6 + 3 \times 1.5 + 2 \times 0.34$	18191371
				SHB10	$4 \times 10 + 3 \times 1.5 + 2 \times 0.34$	18191398



3.4.1. Cable assignment of the encoderless design of the CMP(Z)

CMP. motors without brake

Motor	Rated speed	Core cross section	Plug connector	Max. cable length	Part number	
CMP..	min ⁻¹	mm ²		m	Cable carrier installation	Cable carrier extension ²
40S	3000 – 6000	4×1.5	SH1	100	18191290	18191347
40M	3000 – 6000	4×1.5	SH1	100	18191290	18191347
50S	3000 – 6000	4×1.5	SH1	100	18191290	18191347
50M	3000 – 6000	4×1.5	SH1	100	18191290	18191347
50L	3000 – 6000	4×1.5	SH1	100	18191290	18191347
63S	3000 – 6000	4×1.5	SH1	100	18191290	18191347
63M	3000 – 6000	4×1.5	SH1	100	18191290	18191347
63L	3000 – 6000	4×1.5	SH1	75	18191290	18191347
63L	6000	4×2.5	SH1	100	18191304	18191355
71S	2000 – 3000	4×1.5	SH1	100	18191290	18191347
71S	4500	4×1.5	SH1	95	18191290	18191347
71S	4500	4×2.5	SH1	100	18191304	18191355
71S	6000	4×1.5	SH1	70	18191290	18191347
71S	6000	4×2.5	SH1	100	18191304	18191355
71M	2000	4×1.5	SH1	100	18191290	18191347
71M	3000	4×1.5	SH1	90	18191290	18191347
71M	3000	4×2.5	SH1	100	18191304	18191355
71M	4500	4×1.5	SH1	65	18191290	18191347
71M	4500	4×2.5	SH1	100	18191304	18191355
71M	6000	4×2.5	SH1	80	18191304	18191355
71M	6000	4×4	SH1	100	18191312	18191363
71L	2000	4×1.5	SH1	100	18191290	18191347
71L	3000	4×1.5	SH1	80	18191290	18191347
71L	3000	4×2.5	SH1	100	18191304	18191355
71L	4500	4×2.5	SH1	85	18191304	18191355
71L	4500	4×4	SH1	100	18191312	18191363
71L	6000	4×4	SH1	100	18191312	18191363
80S	2000	4×1.5	SH1	100	18191290	18191347
80S	3000	4×1.5	SH1	70	18191290	18191347
80S	3000	4×2.5	SH1	100	18191304	18191355
80S	4500	4×2.5	SH1	80	18191304	18191355
80S	4500	4×4	SH1	100	18191312	18191363
80S	6000	4×4	SH1	95	18191312	18191363
80S	6000	4×6	SHB	100	18191320	18191371
80M	2000	4×1.5	SH1	75	18191290	18191347
80M	2000	4×2.5	SH1	100	18191304	18191355

² Only trailing extension cables are currently available



Technical data for CMP(Z)40 – 100 encoderless design

Motor	Rated speed	Core cross section	Plug connector	Max. cable length	Part number	
80M	3000	4×2.5	SH1	90	18191304	18191355
80M	3000	4×4	SH1	100	18191312	18191363
80M	4500	4×4	SH1	95	18191312	18191363
80M	4500 – 6000	4×6	SHB	100	18191320	18191371
80L	2000	4×2.5	SH1	90	18191304	18191355
80L	2000 – 3000	4×4	SH1	100	18191312	18191363
80L	4500	4×6	SHB	100	18191320	18191371
80L	6000	4×10	SHB	100	18191339	18191398
100S	2000	4×2.5	SH1	85	18191304	18191355
100S	2000	4×4	SH1	100	18191312	18191363
100S	3000	4×4	SH1	95	18191312	18191363
100S	3000	4×6	SHB	100	18191320	18191371
100S	4500	4×6	SHB	98	18191320	18191371
100S	4500	4×10	SHB	100	18191339	18191398
100M	2000	4×2.5	SH1	75	18191304	18191355
100M	2000	4×4	SH1	100	18191312	18191363
100M	3000	4×4	SH1	85	18191312	18191363
100M	3000	4×6	SHB	100	18191320	18191371
100M	4500	4×6	SHB	90	18191320	18191371
100M	4500	4×10	SHB	100	18191339	18191398
100L	2000	4×6	SHB	100	18191320	18191371
100L	3000	4×6	SHB	90	18191320	18191371
100L	3000	4×10	SHB	100	18191339	18191398
100L	4500	4×10	SHB	98	18191339	18191398



CMP. motors with brake

Motor	Rated speed	Brake	Core cross section	Plug connector	Max. cable length	Part number	
CMP..	min ⁻¹		mm ²		m	Cable carrier installation	Cable carrier extension ³
40S	3000 – 6000	BK	4×1.5 + 3×1	SH1	100	18191290	18191347
40M	3000 – 6000	BK	4×1.5 + 3×1	SH1	100	18191290	18191347
50S	3000 – 6000	BK	4×1.5 + 3×1	SH1	100	18191290	18191347
50M	3000 – 6000	BK	4×1.5 + 3×1	SH1	100	18191290	18191347
50L	3000 – 6000	BK	4×1.5 + 3×1	SH1	100	18191290	18191347
63S	3000 – 6000	BK	4×1.5 + 3×1	SH1	100	18191290	18191347
63M	3000 – 6000	BK	4×1.5 + 3×1	SH1	100	18191290	18191347
63L	3000 – 6000	BK	4×1.5 + 3×1	SH1	75	18191290	18191347
63L	6000	BK	4×2.5 + 3×1	SH1	100	18191304	18191355
71S	2000 – 4500	BP	4×1.5 + 3×1	SH1	80	18191290	18191347
71S	4500	BP	4×2.5 + 3×1	SH1	80	18191304	18191355
71S	6000	BP	4×1.5 + 3×1	SH1	70	18191290	18191347
71S	6000	BP	4×2.5 + 3×1	SH1	80	18191304	18191355
71M	2000 – 3000	BP	4×1.5 + 3×1	SH1	80	18191290	18191347
71M	3000	BP	4×2.5 + 3×1	SH1	80	18191304	18191355
71M	4500	BP	4×1.5 + 3×1	SH1	65	18191290	18191347
71M	4500 – 6000	BP	4×2.5 + 3×1	SH1	80	18191304	18191355
71M	6000	BP	4×4 + 3×1	SH1	80	18191312	18191363
71L	2000 – 3000	BP	4×1.5 + 3×1	SH1	80	18191290	18191347
71L	3000 – 4500	BP	4×2.5 + 3×1	SH1	80	18191304	18191355
71M	4500 – 6000	BP	4×4 + 3×1	SH1	80	18191312	18191363
80S	2000 – 3000	BP	4×1.5 + 3×1	SH1	55	18191290	18191347
80S	3000 – 4500	BP	4×2.5 + 3×1	SH1	55	18191304	18191355
80S	4500	BP	4×4 + 3×1	SH1	55	18191312	18191363
80M	2000	BP	4×1.5 + 3×1	SH1	55	18191290	18191347
80M	2000 – 3000	BP	4×2.5 + 3×1	SH1	55	18191304	18191355
80M	3000 – 4500	BP	4×4 + 3×1	SH1	55	18191312	18191363
80M	4500	BP	4×6 + 3×1.5	SHB	85	18191320	18191371
80L	2000	BP	4×2.5 + 3×1	SH1	55	18191304	18191355
80L	2000 – 3000	BP	4×4 + 3×1	SH1	55	18191312	18191363
80L	4500	BP	4×6 + 3×1.5	SHB	85	18191320	18191371
100S	2000	BP	4×2.5 + 3×1	SH1	45	18191304	18191355
100S	2000 – 3000	BP	4×4 + 3×1	SH1	45	18191312	18191363
100S	3000 – 4500	BP	4×6 + 3×1.5	SHB	70	18191320	18191371
100S	4500	BP	4×10 + 3×1.5	SHB	70	18191339	18191398
100M	2000	BP	4×2.5 + 3×1	SH1	45	18191304	18191355
100M	2000 – 3000	BP	4×4 + 3×1	SH1	45	18191312	18191363

³ Only trailing extension cables are currently available



Technical data for CMP(Z)40 – 100 encoderless design

Motor	Rated speed	Brake	Core cross section	Plug connector	Max. cable length	Part number	
100M	3000 – 4500	BP	4×6 + 3×1.5	SHB	70	18191320	18191371
100M	4500	BP	4×10 + 3×1.5	SHB	70	18191339	18191398
100L	2000 – 3000	BP	4×6 + 3×1.5	SHB	70	18191320	18191371
100L	3000 – 4500	BP	4×10 + 3×1.5	SHB	70	18191339	18191398



CMPZ motors without brake

Motor	Rated speed	Core cross section	Plug connector	Max.cable length	Part number	
CMPZ	min ⁻¹	mm ²		m	Cable carrier installation	Cable carrier extension ⁴
71S	2000 – 3000	4×1.5 + 3×1	SH1	100	18191290	18191347
71S	4500	4×1.5 + 3×1	SH1	96	18191290	18191347
71S	4500	4×2.5 + 3×1	SH1	100	18191304	18191355
71S	6000	4×1.5 + 3×1	SH1	73	18191290	18191347
71S	6000	4×2.5 + 3×1	SH1	100	18191304	18191355
71M	2000	4×1.5 + 3×1	SH1	100	18191290	18191347
71M	3000	4×1.5 + 3×1	SH1	93	18191290	18191347
71M	3000	4×2.5 + 3×1	SH1	100	18191304	18191355
71M	4500	4×1.5 + 3×1	SH1	64	18191290	18191347
71M	4500	4×2.5 + 3×1	SH1	100	18191304	18191355
71M	6000	4×2.5 + 3×1	SH1	79	18191304	18191355
71M	6000	4×4 + 3×1	SH1	100	18191312	18191363
71L	2000	4×1.5 + 3×1	SH1	100	18191290	18191347
71L	3000	4×1.5 + 3×1	SH1	74	18191290	18191347
71L	3000	4×2.5 + 3×1	SH1	100	18191304	18191355
71L	4500	4×2.5 + 3×1	SH1	83	18191304	18191355
71L	4500 – 6000	4×4 + 3×1	SH1	100	18191312	18191363
80S	2000	4×1.5 + 3×1	SH1	100	18191290	18191347
80S	3000	4×1.5 + 3×1	SH1	70	18191290	18191347
80S	3000	4×2.5 + 3×1	SH1	100 (75)	18191304	18191355
80S	4500	4×2.5 + 3×1	SH1	76 (75)	18191304	18191355
80S	6000	4×4 + 3×1	SH1	100 (75)	18191312	18191363
80M	2000	4×1.5 + 3×1	SH1	75	18191290	18191347
80M	2000	4×2.5 + 3×1	SH1	100	18191304	18191355
80M	3000	4×2.5 + 3×1	SH1	87 (75)	18191304	18191355
80M	3000	4×4 + 3×1	SH1	100 (75)	18191312	18191363
80M	4500	4×4 + 3×1	SH1	93 (75)	18191312	18191363
80M	4500	4×6 + 3×1.5	SHB	100	18191320	18191371
80L	2000	4×2.5 + 3×1	SH1	93	18191304	18191355
80L	2000	4×4 + 3×1	SH1	100	18191312	18191363
80L	3000	4×4 + 3×1	SH1	100 (75)	18191312	18191363
80L	4500	4×6 + 3×1.5	SHB	100	18191320	18191371
100S	2000	4×2.5 + 3×1	SH1	88	18191304	18191355
100S	2000	4×4 + 3×1	SH1	100	18191312	18191363
100S	3000	4×4 + 3×1	SH1	95 (55)	18191312	18191363
100S	3000	4×6 + 3×1.5	SHB	100 (80)	18191320	18191371
100S	4500	4×6 + 3×1.5	SHB	93 (80)	18191320	18191371

⁴ Only trailing extension cables are currently available



Technical data for CMP(Z)40 – 100 encoderless design

Motor	Rated speed	Core cross section	Plug connector	Max.cable length	Part number	
100S	4500	4×10 + 3×1.5	SHB	100 (80)	18191339	18191398
100M	2000	4×2.5 + 3×1	SH1	79	18191304	18191355
100M	2000	4×4 + 3×1	SH1	100	18191312	18191363
100M	3000	4×4 + 3×1	SH1	85 (55)	18191312	18191363
100M	3000	4×6 + 3×1.5	SHB	100 (80)	18191320	18191371
100M	4500	4×6 + 3×1.5	SHB	84 (80)	18191320	18191371
100M	4500	4×10 + 3×1.5	SHB	100 (80)	18191339	18191398
100L	2000	4×4 + 3×1	SH1	85	18191312	18191363
100L	2000	4×6 + 3×1.5	SHB	100	18191320	18191371
100L	3000	4×6 + 3×1.5	SHB	87 (80)	18191320	18191371
100L	3000	4×10 + 3×1.5	SHB	100 (80)	18191339	18191398
100L	4500	4×10 + 3×1.5	SHB	96 (80)	18191339	18191398



CMPZ motors with brake

Motor	Rated speed	Brake	Core cross section	Plug connect- or	Max. cable length	Part number	
CMPZ	min ⁻¹		mm ²		m	Cable carrier installation	Cable carrier extension ⁵
71S	2000 – 3000	BY	4×1.5 + 3×1	SH1	100	18191290	18191347
71S	4500	BY	4×1.5 + 3×1	SH1	96	18191290	18191347
71S	4500	BY	4×2.5 + 3×1	SH1	100	18191304	18191355
71S	6000	BY	4×1.5 + 3×1	SH1	73	18191290	18191347
71S	6000	BY	4×2.5 + 3×1	SH1	100	18191304	18191355
71M	2000	BY	4×1.5 + 3×1	SH1	100	18191290	18191347
71M	3000	BY	4×1.5 + 3×1	SH1	93	18191290	18191347
71M	3000	BY	4×2.5 + 3×1	SH1	100	18191304	18191355
71M	4500	BY	4×1.5 + 3×1	SH1	64	18191290	18191347
71M	4500	BY	4×2.5 + 3×1	SH1	100	18191304	18191355
71M	6000	BY	4×2.5 + 3×1	SH1	79	18191304	18191355
71M	6000	BY	4×4 + 3×1	SH1	100	18191312	18191363
71L	2000	BY	4×1.5 + 3×1	SH1	100	18191290	18191347
71L	3000	BY	4×1.5 + 3×1	SH1	74	18191290	18191347
71L	3000	BY	4×2.5 + 3×1	SH1	100	18191304	18191355
71L	4500	BY	4×2.5 + 3×1	SH1	83	18191304	18191355
71L	4500 – 6000	BY	4×4 + 3×1	SH1	100	18191312	18191363
80S	2000	BY	4×1.5 + 3×1	SH1	100	18191290	18191347
80S	3000	BY	4×1.5 + 3×1	SH1	70	18191290	18191347
80S	3000	BY	4×2.5 + 3×1	SH1	100 (75)	18191304	18191355
80S	4500	BY	4×2.5 + 3×1	SH1	76 (75)	18191304	18191355
80S	6000	BY	4×4 + 3×1	SH1	100 (75)	18191312	18191363
80M	2000	BY	4×1.5 + 3×1	SH1	75	18191290	18191347
80M	2000	BY	4×2.5 + 3×1	SH1	100	18191304	18191355
80M	3000	BY	4×2.5 + 3×1	SH1	87 (75)	18191304	18191355
80M	3000	BY	4×4 + 3×1	SH1	100 (75)	18191312	18191363
80M	4500	BY	4×4 + 3×1	SH1	93 (75)	18191312	18191363
80M	4500	BY	4×6 + 3×1.5	SHB	100	18191320	18191371
80L	2000	BY	4×2.5 + 3×1	SH1	93	18191304	18191355
80L	2000	BY	4×4 + 3×1	SH1	100	18191312	18191363
80L	3000	BY	4×4 + 3×1	SH1	100 (75)	18191312	18191363
80L	4500	BY	4×6 + 3×1.5	SHB	100	18191320	18191371
100S	2000	BY	4×2.5 + 3×1	SH1	88	18191304	18191355
100S	2000	BY	4×4 + 3×1	SH1	100	18191312	18191363
100S	3000	BY	4×4 + 3×1	SH1	95 (55)	18191312	18191363
100S	3000	BY	4×6 + 3×1.5	SHB	100 (80)	18191320	18191371
100S	4500	BY	4×6 + 3×1.5	SHB	93 (80)	18191320	18191371

⁵ Only trailing extension cables are currently available



Technical data for CMP(Z)40 – 100 encoderless design

Motor	Rated speed	Brake	Core cross section	Plug connector	Max. cable length	Part number	
100S	4500	BY	4×10 + 3×1.5	SHB	100 (80)	18191339	18191398
100M	2000	BY	4×2.5 + 3×1	SH1	79	18191304	18191355
100M	2000	BY	4×4 + 3×1	SH1	100	18191312	18191363
100M	3000	BY	4×4 + 3×1	SH1	85 (55)	18191312	18191363
100M	3000	BY	4×6 + 3×1.5	SHB	100 (80)	18191320	18191371
100M	4500	BY	4×6 + 3×1.5	SHB	84 (80)	18191320	18191371
100M	4500	BY	4×10 + 3×1.5	SHB	100 (80)	18191339	18191398
100L	2000	BY	4×4 + 3×1	SH1	85	18191312	18191363
100L	2000	BY	4×6 + 3×1.5	SHB	100	18191320	18191371
100L	3000	BY	4×6 + 3×1.5	SHB	87 (80)	18191320	18191371
100L	3000	BY	4×10 + 3×1.5	SHB	100 (80)	18191339	18191398
100L	4500	BY	4×10 + 3×1.5	SHB	96 (80)	18191339	18191398



3.5. Dimension drawings of CMP servomotors, encoderless design

INFORMATION

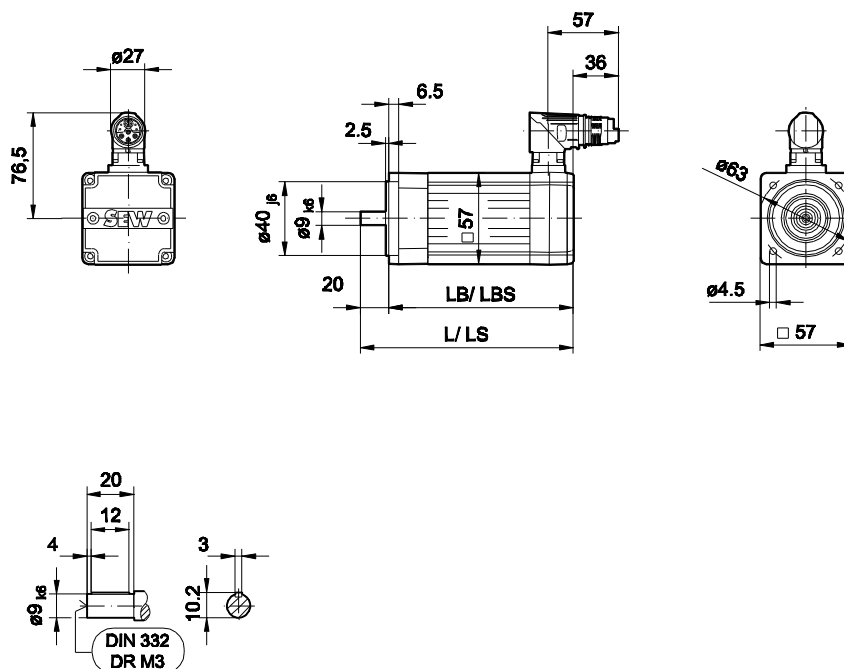


As standard, the motors are supplied with smooth shaft. Shaft end with key is an optional design.

CMP40 S/M
CMP40 S/M BK

08 740 00 15

/SH1



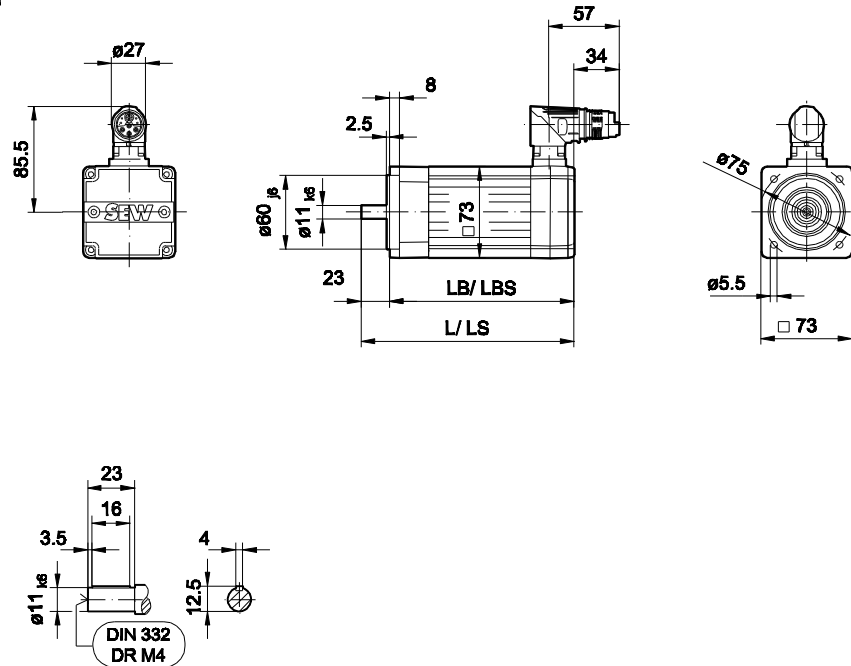
	LB	L	LBS	LS
CMP40S	122,5	142,5	-	-
CMP40M	148,5	168,5	-	-
CMP40S/ BK	-	-	152	172
CMP40M/ BK	-	-	178	198



CMP50 S/M/L
CMP50 S/M/L BK

08 800 00 16

/SH1



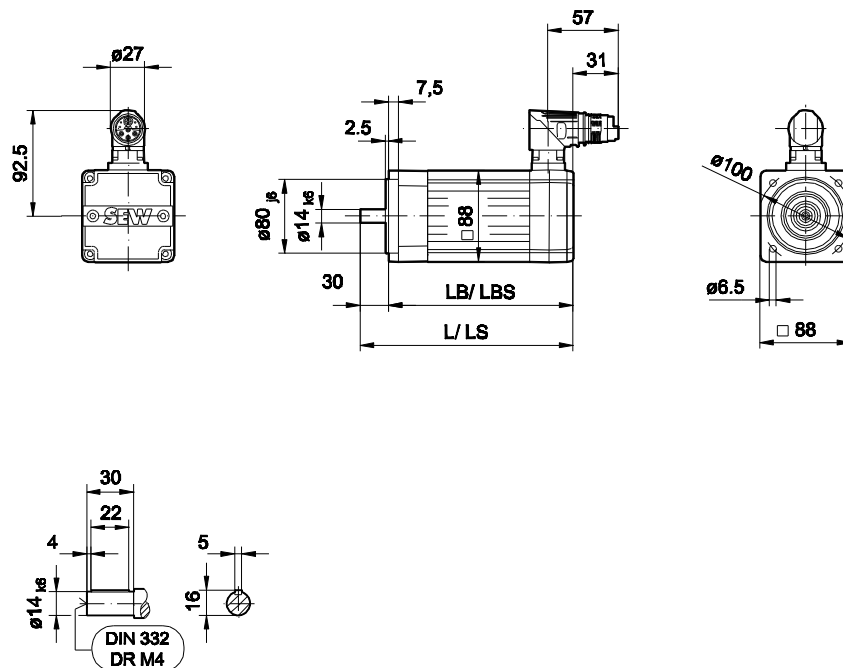
	LB	L	LBS	LS
CMP50S	150,5	173,5	-	-
CMP50M	189,5	212,5	-	-
CMP50L	228,5	251,5	-	-
CMP50S/ BK	-	-	179	202
CMP50M/ BK	-	-	218	241
CMP50L/ BK	-	-	257	280



CMP63 S/M/L
CMP63 S/M/L BK

08 801 00 16

/SH1



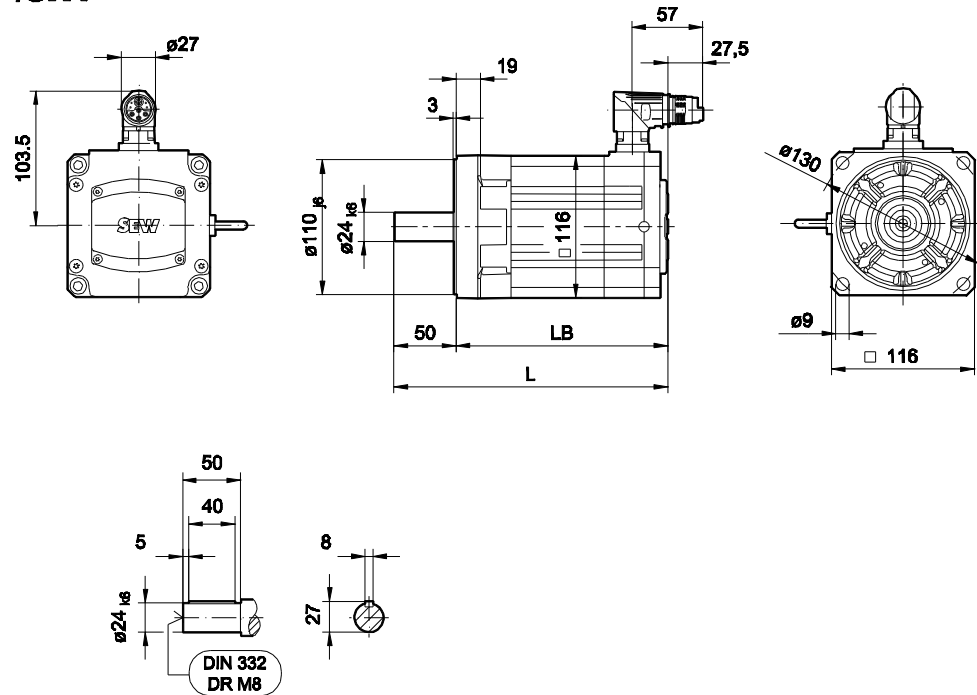
	LB	L	LBS	LS
CMP63S	182	212	-	-
CMP63M	232	262	-	-
CMP63L	282	312	-	-
CMP63S/ BK	-	-	210	240
CMP63M/ BK	-	-	260	290
CMP63L/ BK	-	-	310	340



CMP71 S/M/L

08 802 00 16

/SH1



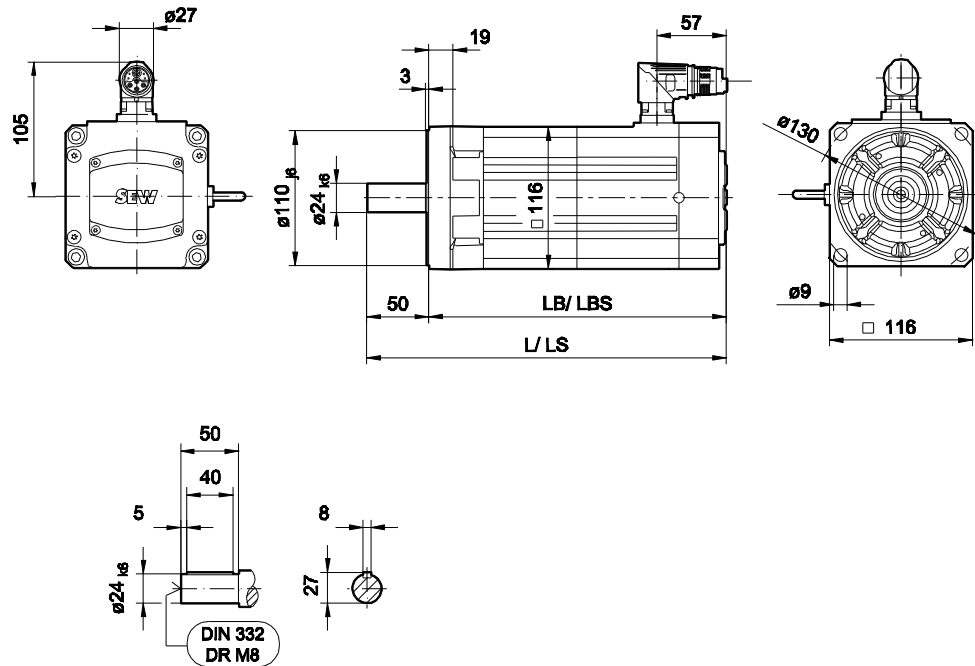
	LB	L
CMP71S	170	220
CMP71M	195	245
CMP71L	245	295



CMPZ71 S/M/L
CMP71 S/M/L /BP

08 803 00 16

/SH1



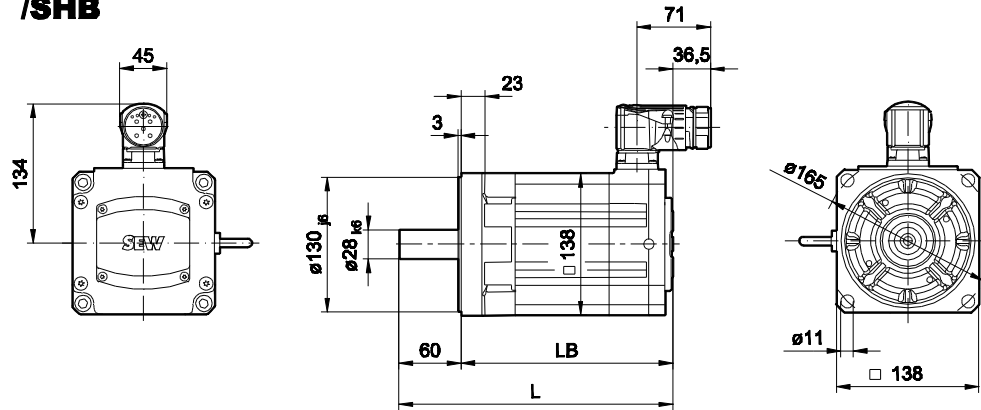
	LB	L	LBS	LS
CMPZ71S	235	285	-	-
CMPZ71M	260	310	-	-
CMPZ71L	310	360	-	-
CMP71S/BP	-	-	235	285
CMP71M/BP	-	-	260	310
CMP71L/BP	-	-	310	360



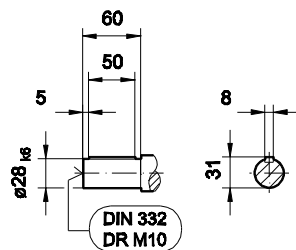
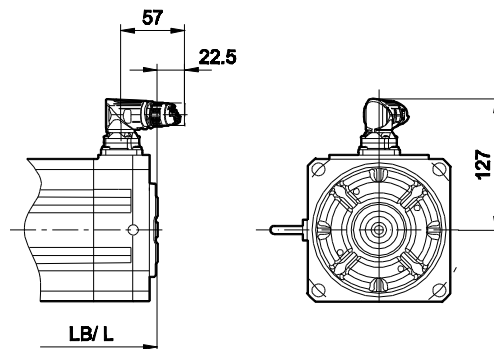
CMP80 S/M/L

08 804 00 16

/SHB



/SH1



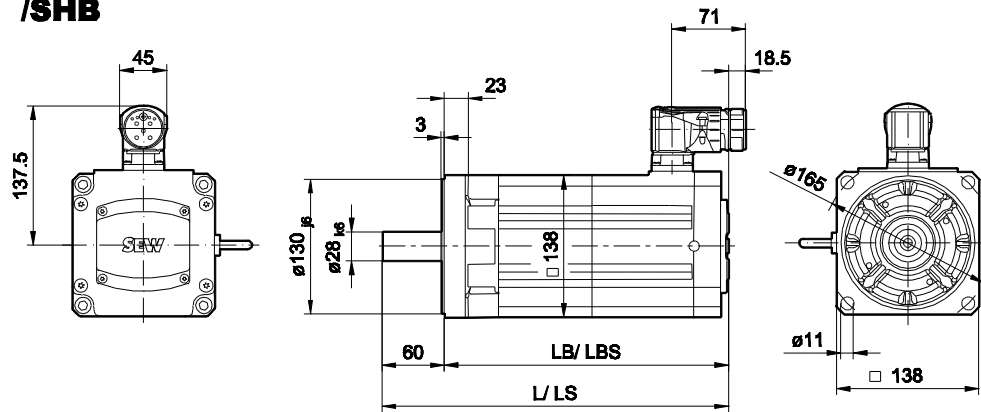
	LB	L
CMP80S	204	264
CMP80M	238	298
CMP80L	306	366



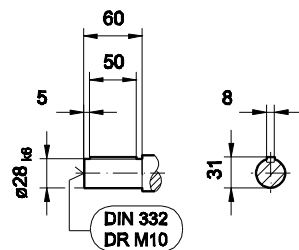
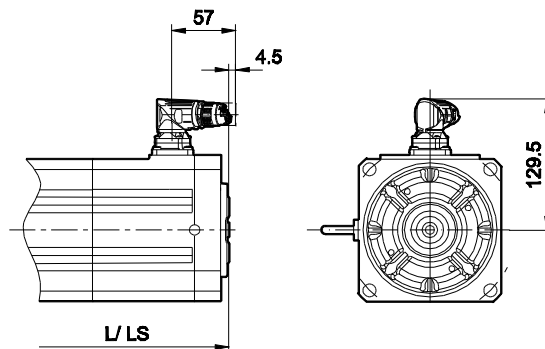
CMPZ80 S/M/L
CMP80 S/M/L /BP

08 805 00 16

/SHB



/SH1



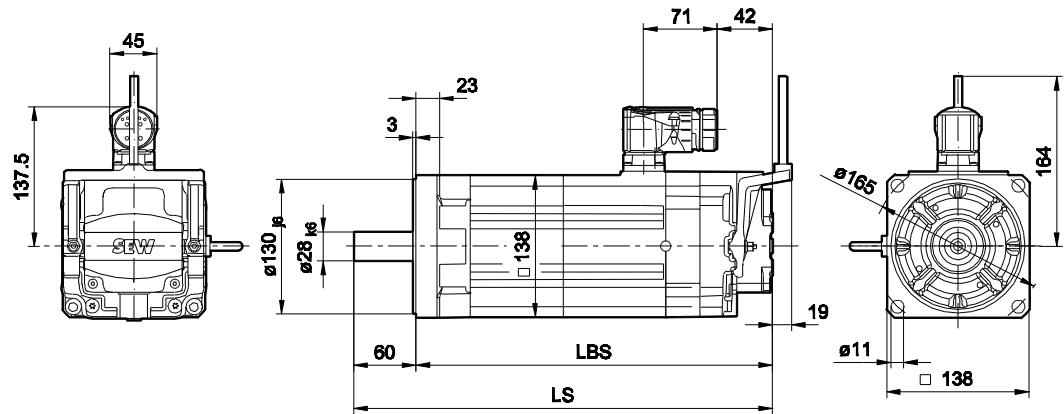
	LB	L	LBS	LS
CMPZ80S	282	342	-	-
CMPZ80M	316	376	-	-
CMPZ80L	384	444	-	-
CMP80S/BP	-	-	282	342
CMP80M/BP	-	-	316	376
CMP80L/BP	-	-	384	444



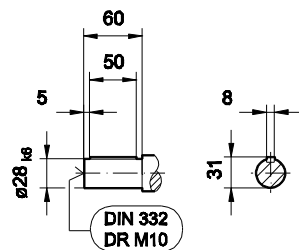
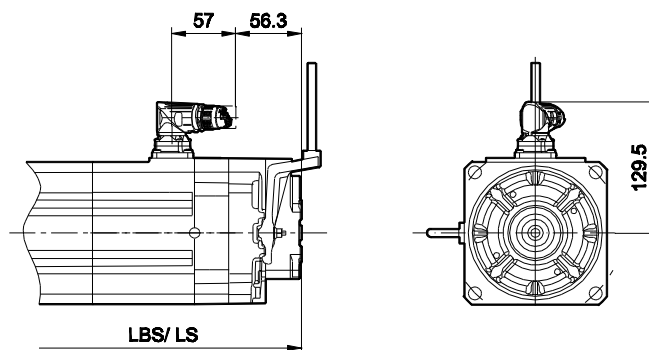
CMPZ80 S/M/L /BY

09 022 00 16

/SHB



/SH1



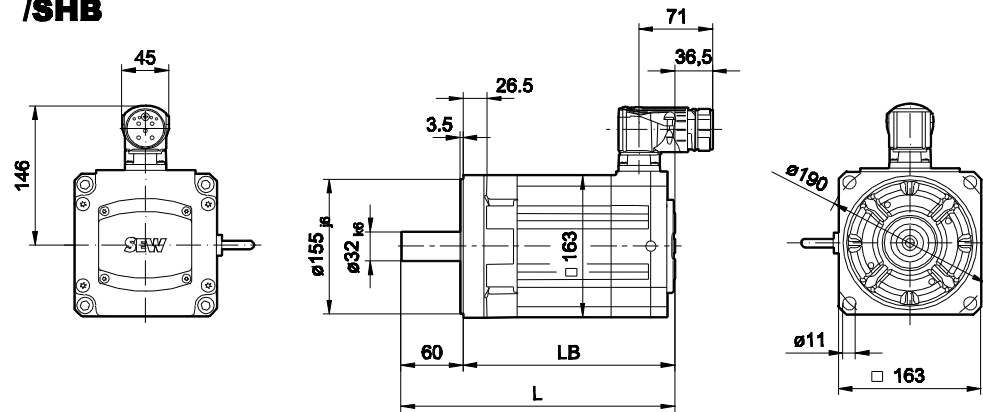
	LBS	LS
CMPZ80S/BY	342	402
CMPZ80M/BY	376	436
CMPZ80L/BY	444	504



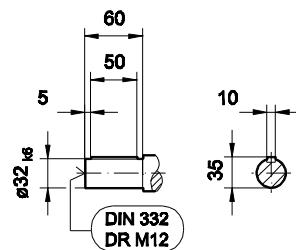
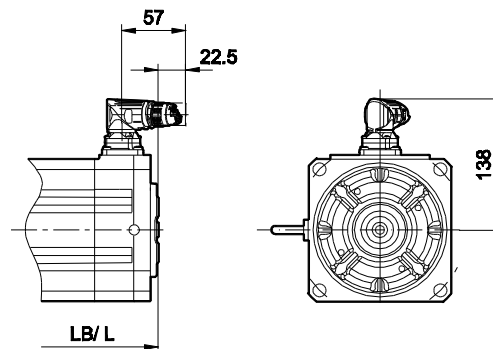
CMP100 S/M/L

08 806 00 16

/SHB



/SH1



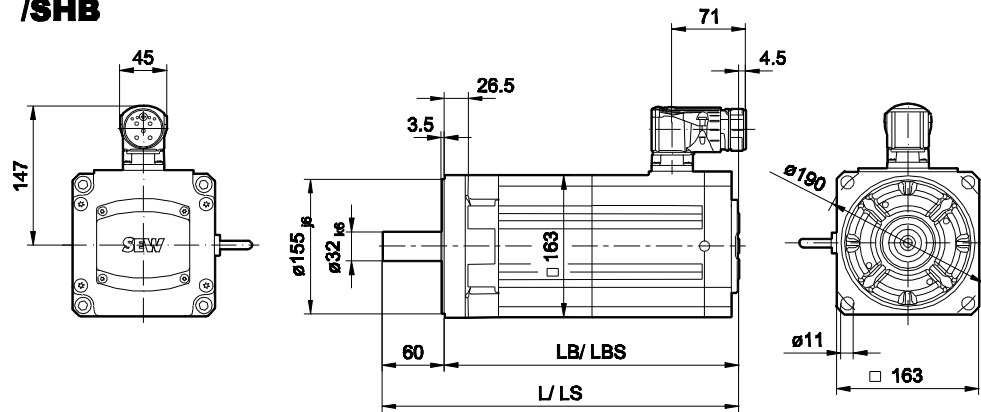
	LB	L
CMP100S	230	290
CMP100M	270	330
CMP100L	350	410



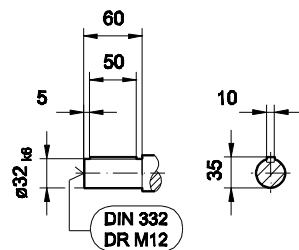
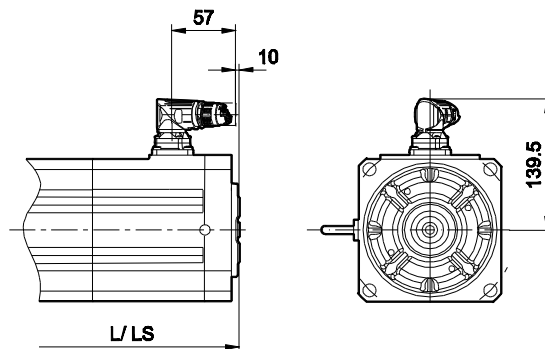
CMPZ100 S/M/L
CMP100 S/M/L /BP

08 807 00 16

/SHB



/SH1



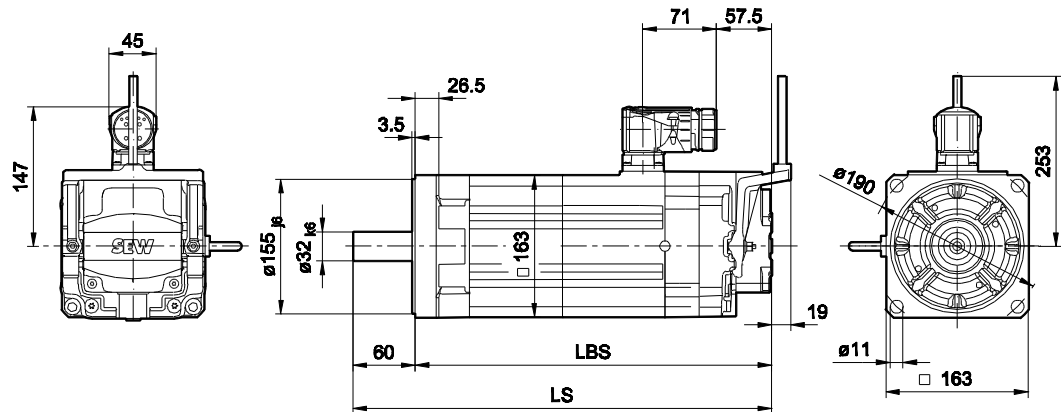
	LB	L	LBS	LS
CMPZ100S	326	386	-	-
CMPZ100M	366	426	-	-
CMPZ100L	446	506	-	-
CMP100S/BP	-	-	326	386
CMP100M/BP	-	-	366	426
CMP100L/BP	-	-	446	506



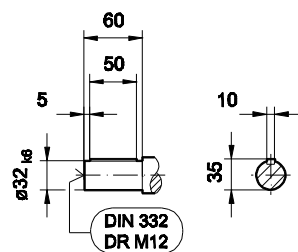
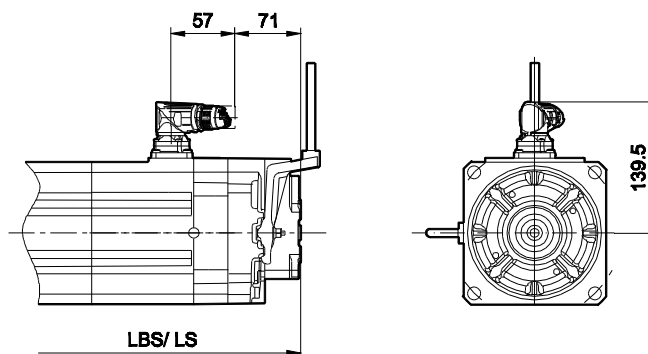
CMPZ100 S/M/L /BY

09 023 00 16

/SHB



/SH1



	LBS	LS
CMPZ100S/BY	387	447
CMPZ100M/BY	427	487
CMPZ100L/BY	507	567



4. Project planning and startup

In comparison to servo applications with encoder feedback, synchronous motors with an open control loop with the encoderless ELSM[®] and PMVC control modes must be calculated and designed in a different way.

INFORMATION



Lifting gear applications are basically not permitted with the ELSM[®] and PMVC encoderless control modes! Multi-motor operation and group operation are not possible.

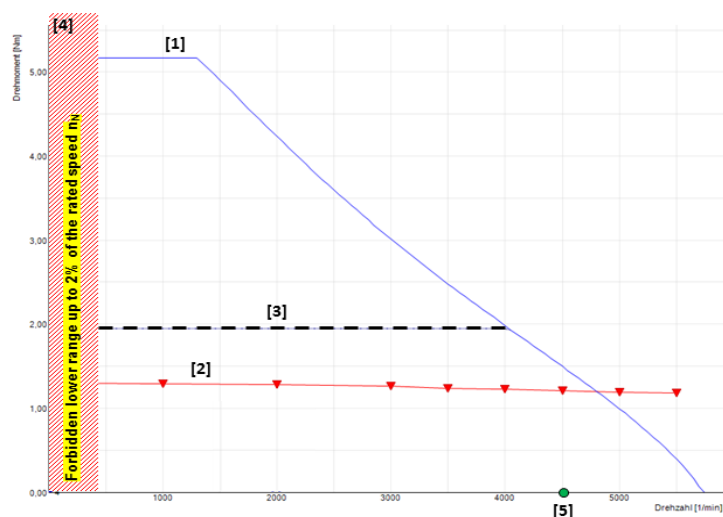
4.1. Encoderless control mode ELSM[®] (MOVIDRIVE[®] modular)

The MOVIDRIVE[®] modular inverter series has the ELSM[®] (EncoderLess Synchronous Machine) encoderless control mode, with which servomotors can be operated independently of the system voltage (230 V AC/400 V AC) without an encoder using speed control. The control mode has a flying start function for synchronizing with the rotating motor.

4.1.1. Project planning procedure for CMP(Z) motors using the ELSM[®] control mode

When planning the encoderless CMP(Z) motors using the ELSM[®] control mode, the following planning specifications must be adhered to:

1. The dynamic limit torque M_{pk} of the CMP motors [1] is limited [3] to 1.5 times the standstill torque M_0 [2].
2. A lower speed range [4] is introduced that may only be passed through. A continuous operating point is not permitted in this range. This speed range is calculated from < 2% of the rated speed n_N [5].



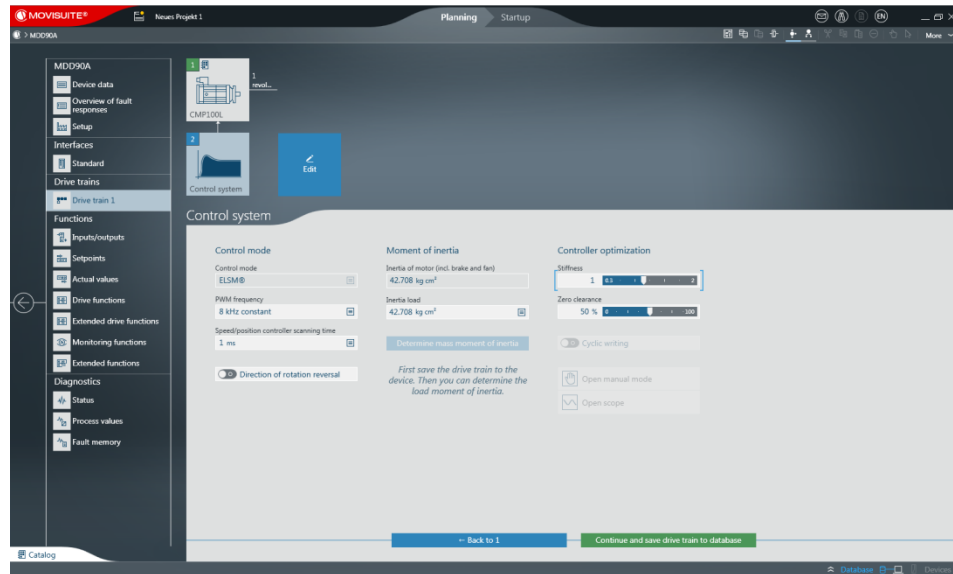
- [1] Dynamic limit torque M_{pk}
- [2] Standstill torque M_0
- [3] Limitation of the dynamic limit torque $M_{pk} = 1.5 \times M_0$
- [4] Forbidden lower range
- [5] Rated speed n_N



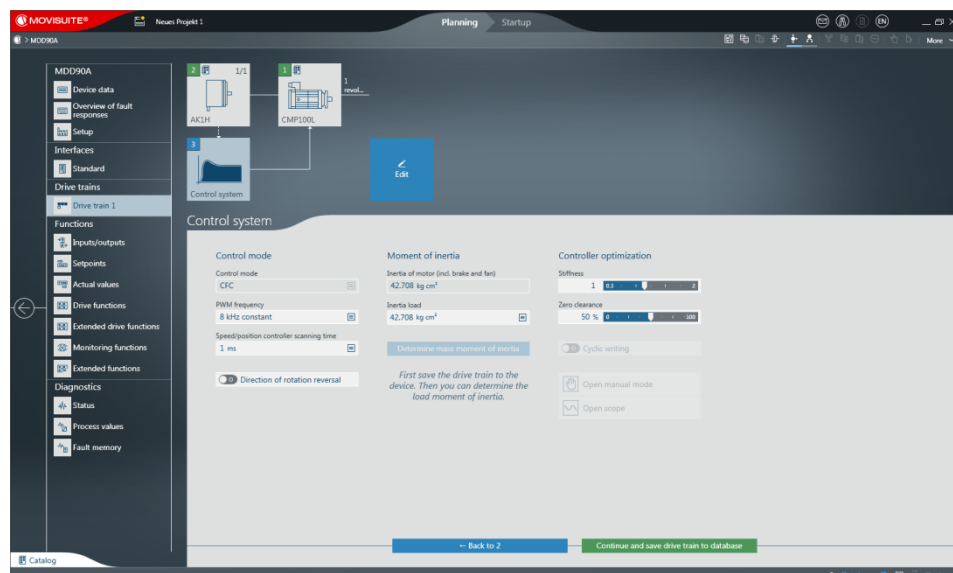
4.1.2. Startup

Startup in the ELSM[®] control mode for MOVIDRIVE[®] modular takes place in the MOVISUITE[®] engineering software. Within the scope of the drive train definition, it is selected whether or not the CMP(Z) motor has an encoder.

If an encoder is selected, the control mode automatically sets itself to "ELSM[®]". The ELSM[®] settings are made directly in the "Controller" window. No other settings are needed.



If an encoder has been selected, the "ELSM[®]" selection is not available. The control mode is set to "CFC".





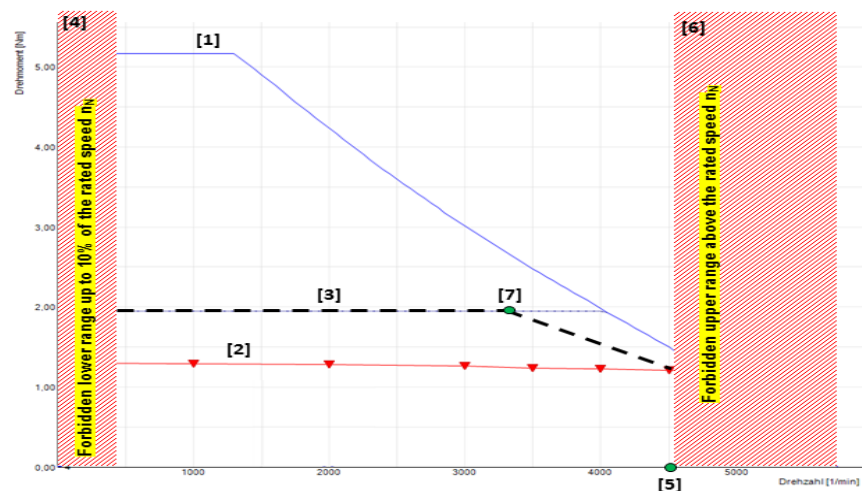
4.2. Encoderless control mode PMVC (MOVITRAC® LTP-B)

The MOVITRAC® LTP-B modular inverter series has the PMVC (**P**ermanent **M**agnet **V**ector **C**ontrol) encoderless control mode, with which servomotors can be operated independently of the system voltage (230 V AC/400 V AC) without an encoder using speed control.

4.2.1. Project planning procedure for CMP(Z) motors using the PMVC control mode

When planning the encoderless CMP(Z) motors using the PMVC control mode, the following planning specifications must be adhered to:

1. The dynamic limit torque M_{pk} of the CMP motors [1] is limited [3] to 1.5 times the standstill torque M_0 [2].
3. A lower speed range [4] is introduced that may only be passed through. A continuous operating point is not permitted in this range. This speed range is calculated from < 10% of the rated speed n_N [5].
4. An upper speed range is also introduced [6]. This starts when the rated speed n_N [5] is reached. Operation above the rated speed is basically possible, but no defined torque can be specified.
5. The transition point of the dynamic limit torque M_{pk} [7] is 75 % of the rated speed n_N . After this, a linear drop-off of the dynamic torque M_{pk} takes place, and the value of the standstill torque M_0 is reached at the rated speed n_N .



- [1] Dynamic limit torque M_{pk}
- [2] Standstill torque M_0
- [3] Limitation of the dynamic limit torque $M_{pk} = 1.5 \times M_0$
- [4] Forbidden lower range
- [5] Rated speed n_N
- [6] Forbidden upper range
- [7] Transition point of dynamic limit torque = 75% of rated speed n_N



4.2.2. Startup of CMP(Z) motors using the PMVC control mode

1. Connect the motor to the frequency inverter. During the connection, adhere to the nominal motor voltage.
2. Enter the motor data indicated on the motor nameplate
 - P1-07 = EMF → With synchronous motors, P1-07 is not used to set the system voltage, but the internal voltage at the nominal speed. Motor voltage.
 - P1-08 = rated current of the motor
 - P1-09 = rated frequency of the motor
 - P1-10 = rated speed of the motor
 - P1-14 = 201 (extended parameter menu)
 - P4-01 = 3 (PM speed control)
 - P2-24 = PWM frequency (at least 8-16 kHz).
3. Set the maximum and minimum speed using P1-01 and P1-02.
4. Set the acceleration and deceleration ramps using P1-03 and P1-04.
5. Start the automatic motor measurement procedure "Auto Tune" as described in chapter "Auto Tune".
6. If required, adjust P7-10 to optimize the control behavior.

In case of unexpected motor control problems, check or set the following:

- To achieve a higher torque in the lower speed range, the parameters P7-14 and P7-15 must be increased. Note that the motor may heat up significantly due to the increased current flow.
- If an O torque error message is issued in the initial starting torque, a fault-free startup is usually performed after a frequency inverter reset.
- Sometimes it may be required to align the rotor of motors with higher inertia before the start.. The premagnetization time P7-12 as well as the field strength during the premagnetization time can be slightly adjusted up or down in P7-14.

In rare cases, it can be helpful to compare the parameters determined in the automatic motor measurement procedure to the parameters of the motor data. Correct them if necessary. Note that the values may deviate in case of long motor cables.

No repeated measuring procedure is required:

- P7-01 = stator resistance of the motor (Rphase-phase or $2 \times R1$ (20 °C))
- P7-02 = 0 (Rotor resistance of the motor)
- P7-03 = Stator inductance (Lsd)
- P7-06 = Stator inductance (Lsq).



5. Contact persons

Business Unit	Department	Employee	Phone
Product management	BUC-BD GM	Alexander Leicht	+49 7251 75-2494
Product / application	BUC-PA G	Christof Völkel	+49 7251 75-2487
Training	BUC-KM	Wolfgang Beck	+49 7251 75-3934
Marketing	CCL	Rene Will	+49 7251 75-2500
Documentation	BUC-KM T	Stephan Schneider	+49 7251 75-2510



SEW-EURODRIVE
Driving the world

SEW
EURODRIVE

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

→ www.sew-eurodrive.com