SEW EURODRIVE

Catalog



CFM71 – 112 Synchronous Servomotors

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1 Introduction

1.1 The SEW-EURODRIVE group of companies

1.1.1 Global presence

Driving the world – with innovative drive solutions for all industries and for every application. Products and systems from SEW-EURODRIVE are used all over the world. Be it in the automotive, building materials, food and beverage or metal-processing industry – the decision to use drive technology "made by SEW-EURODRIVE" stands for reliability for both functionality and investment.

We are represented in the most important branches of industry all over the world: with 15 manufacturing plants and 77 Drive Technology Centers worldwide as well as our customer support, which we consider an integrative service that continues our commitment to outstanding quality.

1.1.2 Always the right drive

The SEW-EURODRIVE modular concept offers millions of combinations. This wide selection enables you to choose the correct drive for all applications, each based on the required speed and torque range, available space, and ambient conditions. Gear units and gearmotors offering a unique and finely tuned performance range and the best economic prerequisites to meet your drive requirements.

The modular DR.. motor series includes the energy-efficient motor types IE1 to IE4 and was designed and constructed with all worldwide requirements for energy efficiency classes in mind. The DR.. motor easily meets the requirements for approval and certification in all relevant countries. The energy-efficient drives achieve the highest efficiency in combination with SEW-EURODRIVE gear units.

The gearmotors are electronically enhanced by MOVITRAC® frequency inverters, MOVIDRIVE® drive inverters, and MOVIAXIS® multi-axis servo inverters – a combination that blends perfectly with the existing SEW-EURODRIVE program. As is the case with the mechanical systems, all development, production, and assembly is carried out entirely by SEW-EURODRIVE. In combination with our drive electronics, these drives provide the utmost in flexibility.

Products of the servo drive system, such as low backlash servo gear units, compact servomotors, or MOVIAXIS® multi-axis servo inverters ensure precision and dynamics. From single-axis or multi-axis applications to synchronized process sequences, servo drive systems from SEW-EURODRIVE enable flexible and customized implementation of your applications.

For economical, decentralized installations, SEW-EURODRIVE offers components from its decentralized drive system, such as MOVIMOT®, the gearmotor with integrated frequency inverter, or MOVI-SWITCH®, the gearmotor with integrated switching and protection function. SEW-EURODRIVE has developed hybrid cables to provide cost-effective functional solutions, irrespective of the system philosophy or scope. The latest developments from SEW-EURODRIVE: DRC.. electronic motor, MOVIGEAR® mechatronic drive system, MOVIFIT® decentralized drive controller, MOVIPRO® decentralized drive, positioning, and application controller, as well as MOVITRANS® system components for contactless energy transfer.

Power, quality, and robustness combined in a single standard product: with SEW-EURODRIVE, powerful movements are delivered by industrial gear units with high torques. The modular concept once again ensures optimum adaptation of industrial gear units to meet a wide range of different applications.

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1.1.3 Your ideal partner

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 drive tasks in all industries and applications.

1.2 Products and systems from SEW-EURODRIVE

The products and systems by SEW-EURODRIVE are divided into the following product groups:

- Industrial gear units
- Gearmotors and frequency inverters
- Servo drive systems
- Decentralized drive systems
- MAXOLUTION®

Products and systems used in applications of several groups are listed in a separate group entitled "products and systems covering several product groups". The following tables indicate the products and systems included in the respective product group:

Industrial gear units
• X, MC, ML series helical and bevel-helical gear units • P002 – 102 series planetary gear units • XP130 – 250 series planetary gear units • P-X series planetary bevel-helical gear units • Application solutions with connections – Girth gears – Swing base – Gearmotor – Motor – Coupling – Brake – Lubrication system For conveyor drives, bucket conveyors, agitators, cooling towers, crane systems, and much more

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Gearmotors and frequency inverters		
Gear units/gearmotors	**Motors**	**Frequency inverters**
• Helical gear units / helical gearmotors • Parallel-shaft helical gear units / parallel-shaft helical gearmotors • Helical-bevel gear units / helical-bevel gearmotors • Helical-worm gear units / helical-worm gearmotors • SPIROPLAN® right-angle gearmotors • EMS drives • Geared torque motors • Pole-changing gearmotors • Variable speed gear units/variable speed gearmotors • Aseptic gearmotors • Explosion-proof gear units / gearmotors • Explosion-proof variable-speed gear units / variable-speed gearmotors	• Asynchronous AC motors / AC brakemotors • Pole-changing AC motors / AC brakemotors • Energy-efficient motors • Explosion-proof AC motors / AC brakemotors • Torque motors • Single-phase motors / single-phase brakemotors • Asynchronous linear motors	• MOVITRAC® frequency inverters • MOVI4R-U® frequency inverters • MOVIDRIVE® drive inverters • Control, technology and communication options for inverters

Servo drive systems		
Servo gear units / servo gearmotors	**Servomotors**	**Servo drive inverters / servo inverters**
• Low backlash planetary servo gear units / planetary servo gearmotors • Low backlash helical-bevel servo gear units / helical-bevel servo gearmotors • R, F, K, S, W gear units / R, F, K, S, W gearmotors • Explosion-proof servo gear units / servo gearmotors	• Asynchronous servomotors / servo brakemotors • Synchronous servomotors / servo brakemotors • Explosion-proof servomotors / servo brakemotors • Synchronous linear motors	• MOVIDRIVE® servo drive inverters • MOVIAXIS® multi-axis servo inverters • Control, technology and communication options for servo drive inverters and servo inverters

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Decentralized drive systems		
Decentralized drives	**Communication and installation**	**Contactless energy transfer system**
• DRC.. electronic motor / MOVIGEAR® mechatronic drive system – DBC – Direct Binary Communication – DAC – Direct AS-Interface Communication – DSC – Direct SBus Communication – SNI – Single Line Network Installation • MOVIMOT® gearmotors with integrated frequency inverter • MOVIMOT® motors / brakemotors with integrated frequency inverter • MOVI-SWITCH® gearmotors with integrated switching and protection functions • MOVI-SWITCH® motors and brakemotors with integrated switching and protection functions • Explosion-proof MOVIMOT® and MOVI-SWITCH® gearmotors	• Fieldbus interfaces • Field distributors for decentralized installation • MOVIFIT® product range – MOVIFIT® FDC for controlling MOVIGEAR® and DRC.. drive units – MOVIFIT® MC for controlling MOVIMOT® drives – MOVIFIT® SC with integrated electronic motor switch – MOVIFIT® FC with integrated frequency inverter • MOVIPRO® product range – MOVIPRO® SDC decentralized drive and positioning control	• MOVITRANS® system – Stationary components for energy supply – Mobile components for energy consumption – Line cables and installation material

MAXOLUTION®
• MAXOLUTION® packages for predefined application solutions • MAXOLUTION® systems for customer-specific system solutions and plants

Products and systems covering several product groups
• Operator panels • MOVI-PLC® drive-based control system • Components of the type "functional safety" • Diagnostic units

In addition to its products and systems, SEW-EURODRIVE offers a comprehensive range of services. These include:

- Technical consulting
- User software
- Seminars and training
- Extensive technical documentation
- Worldwide customer service

Visit our website at **www.sew-eurodrive.com**

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The website provides comprehensive information and services.

1.3 Documentation

1.3.1 Contents of this publication

This "CFM71 – CFM112 Synchronous Servomotors" catalog provides a detailed description of the following product groups offered by SEW-EURODRIVE:

- Synchronous servomotors of the CFM series
- Options and accessories for motors

1.3.2 Additional documentation

The following catalogs are available from SEW-EURODRIVE in addition to this "CFM71 – CFM112 Synchronous Servomotors" catalog:

- Synchronous servo gearmotors
- Asynchronous servo gearmotors
- AC motors
- Explosion-proof AC motors
- DR.. gearmotors
- Explosion-proof drives
- Geared torque motors

1.4 Product names and trademarks

All product names included in this documentation are trademarks or registered trademarks of the respective titleholders.

1.5 Copyright notice

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2 Product description

2.1 CFM.. synchronous servomotors

CFM.. servomotors feature a wide torque range, good control characteristics with high external masses, and the use of powerful working brakes.

Typical application examples of CFM.. servomotors include gantry robots, storage and retrieval systems, but also dynamic handling axes and packaging machines.

Characteristics of SEW-EURODRIVE CFM.. synchronous servomotors:

- Static torque from 5.0 to 68 Nm
- High dynamics
- High degree of protection (IP65)
- Robust encoder system (resolver)
- The optimal encoder system with sine/cosine encoder allows for a very wide setting range and absolute position detection
- High overload capability
- NeFeB magnets, permanent magnets with high magnetic flux density

CFM.. servomotors can be combined with MOVIDRIVE® inverters and MOVIAXIS® multi-axis servo inverters.

2.2 Corrosion and surface protection

2.2.1 General information

SEW-EURODRIVE offers various optional protective measures for operating motors under special environmental conditions.

These preventive measures comprise two groups:

- KS corrosion protection
- OS surface protection

For motors, optimal protection is offered through a combination of KS corrosion protection and OS surface protection.

2.2.2 KS corrosion protection

KS corrosion protection for motors comprises the following measures:

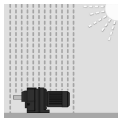
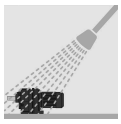
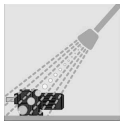
- All retaining screws that are loosened during operation are made of stainless steel.
- Various motor parts are coated with a finishing varnish.
- The flange contact surfaces and shaft ends are treated with a temporary rust preventive.
- Additional measures for brakemotors.

A sticker labeled "KORROSIONSSCHUTZ" (corrosion protection) on the motor indicates that special treatment has been applied.

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2.2.3 OS surface protection

In addition to the standard surface protection, motors and gear units are available with surface protection OS1 to OS4. The special measure "Z" is also available in addition. Special measure "Z" means that large contour recesses are filled with rubber before painting.

Surface protection[1]		Ambient conditions	Sample applications
Standard		Suitable for machines and systems within buildings and interior rooms with neutral atmospheres. Similar to corrosivity category[2] : • C1 (negligible)	• Machines and systems in the automobile industry • Transport systems in logistics • Conveyor belts at airports
OS1		Suited for environments prone to condensation and atmospheres with low humidity or contamination, such as applications outdoors under roof or with protection. According to corrosivity category[2]: • C2 (low)	• Systems in saw mills • Hall gates • Agitators and mixers
OS2		Suited for environments with high humidity or moderate atmospheric contamination, such as applications outdoors subject to direct weathering. According to corrosivity category[2]: • C3 (moderate)	• Applications in amusement parks • Funiculars and chair-lifts • Applications in gravel plants • Systems in nuclear power plants
OS3		Suitable for environments with high humidity and occasionally severe atmospheric and chemical contamination. Occasionally acidic or caustic wet cleaning. Also for applications in coastal areas with moderate salt load. According to corrosivity category[2]: • C4 (high)	• Sewage treatment plants • Port cranes • Mining applications
OS4		Suitable for environments with permanent humidity or severe atmospheric or chemical contamination. Regular acidic and caustic wet cleaning, also with chemical cleaning agents. According to corrosivity category[2]: • C5-1 (very high)	• Drives in malting plants • Wet areas in the beverage industry • Conveyor belts in the food industry

1) IP56 and IP66 motors/brakemotors are only available with OS2, OS3 or OS4 surface protection.

2) According to DIN EN ISO 12944-2, classification of ambient conditions

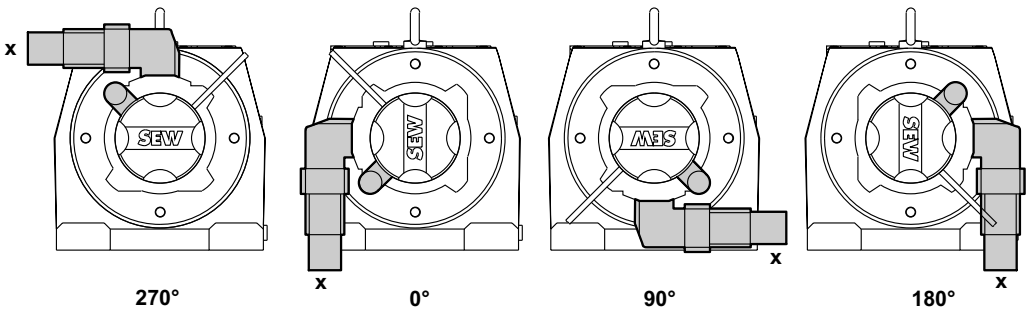
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2.3 Important order information

2.3.1 CFM.. motor plug connectors

Position of power plug connector and cable entry

Possible positions of the power plug connector are 0°, 90°, 180° or 270° as viewed onto the B-side of the motor (as viewed onto the fan end).

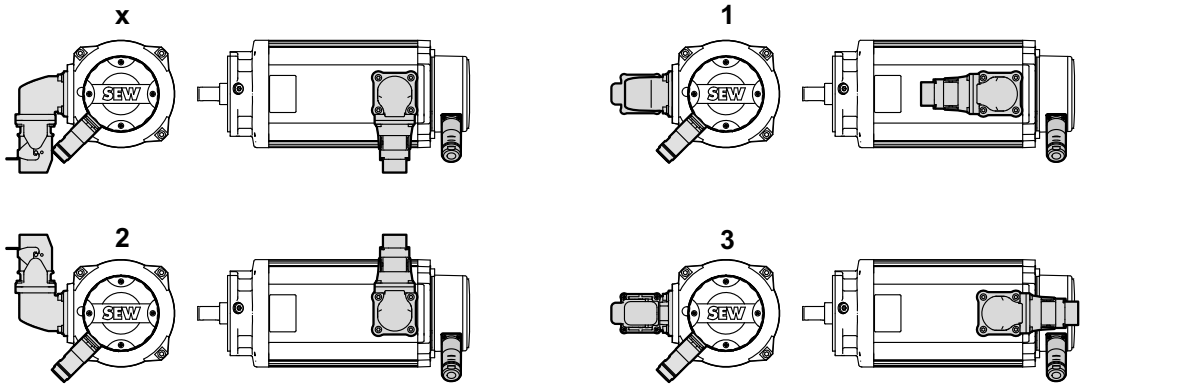


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Cable entry position

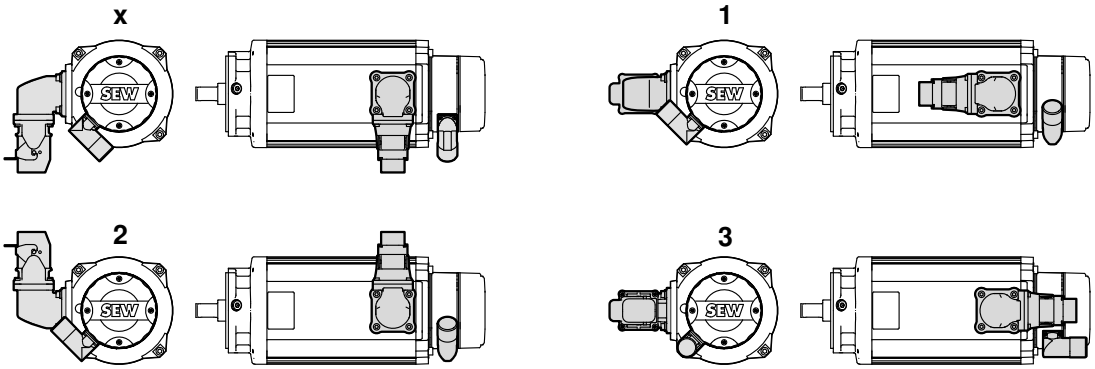
Positions "X", "1", "2" or "3" are possible with CFM.. motors ("X" = standard).

Cable entry position for CFM..S.5:



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Cable entry position for CFM..S.6:



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Unless indicated otherwise, you will receive the power plug connector type 270° position with cable entry "3" and radial encoder plug (CFM..S.5).

2.3.2 Terminal box

Position of terminal box and cable entry

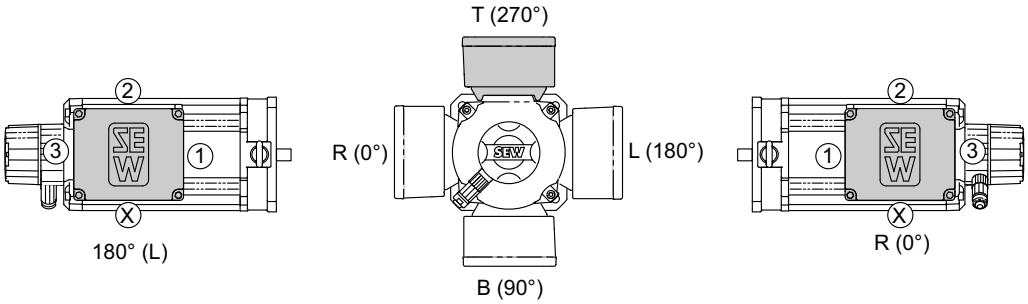
The product standard EN 60034 specifies that the following designations have to be used for motor terminal box positions:

- As viewed onto the output shaft = A-side.
- Designation as R (right), B (bottom), L (left) and T (top).

This designation applies to motors without a gear unit in mounting position B3 (= M1). For gearmotors, the previous designation is maintained.

The position of the motor terminal box has so far been specified with 0°, 90°, 180° or 270° as viewed onto the fan guard = B-side.

The following figure shows both designations. Where the mounting position of the motor changes, R, B, L and T are rotated accordingly.



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Unless indicated otherwise, you will receive the terminal box type 0° with "X" cable entry.

We recommend selecting cable entry "2" for mounting position M3 (position in which the gearmotor is mounted).

INFORMATION

The terminal box can only be rotated with the entire motor: 0°, 90° and 180°.

The terminal box has a cable entry with positions "1", "2", "3" and "X".

The CFM112H synchronous servomotor can only be ordered with terminal box.

Terminal box position	R (0°)	B (90°)	L (180°)	T (270°)
Possible cable entries	X, 2, 3	X, 2, 3	X, 1, 2	X, 2, 3

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2.4 International markets

On request, SEW-EURODRIVE supplies motors registered for various markets or certified motors with connection conditions according to the relevant regulations.

Mark	Meaning
CE	CE mark to state compliance with European guidelines, such as the Low Voltage Directive.
UR	UR logo to confirm that UL (Underwriters Laboratory) is informed about the registered components; register number by UL: E337323
MC170602 CSA	CSA mark to confirm the Canadian Standard Association (CSA) and the market conformity of AC motors
EAC	EAC mark (EurAsian Conformity) Confirms compliance with the regulations of the economic and customs union of Russia, Belarus and Kazakhstan.
013	UkrSEPRO mark (Ukrainian Certification of Products) Confirms compliance with the technical regulations of the country Ukraine.

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3 Type designation

3.1 Variants and options of the CFM.. motor series

3.1.1 Synchronous servomotors

Designation	Option
CFM...	Flange-mounted motor size 71/90/112
S - H	S = Short / M = Medium / L = Long / H = Huge

3.1.2 Mechanical attachments

Designation	Option
/BR	Disk brakes for CFM71 – 112
/HR	BY manual brake release for CFM71 – 112 automatic disengaging function

3.1.3 Temperature sensor / temperature detection

Designation	Option
/TF	Temperature sensor (standard)
/KY	Temperature sensor (optional)
/PK	Temperature sensor (optional)

3.1.4 Encoder

Designation	Option
/RH1M	Resolver (standard)
/RH1L	Resolver for brakemotors (standard)
/EK1H	Single-turn HIPERFACE® encoder, cone shaft, high resolution
/EV1Y	Single-turn HIPERFACE® encoder, solid shaft, high resolution
/AK1H	Multi-turn HIPERFACE® encoder, cone shaft, high resolution
/AV1H	Multi-turn HIPERFACE® encoder, solid shaft, high resolution
/AV1Y	Multi-turn SSI encoder, solid shaft, high resolution
/AV1A, EV1A, XV2A	Encoder mounting adapter

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3.1.5 Connection variants

Designation	Option
/SM.0	Motor plug connector, socket on motor end only
/SB.0	Brakemotor plug connector, socket on motor end only
/KK	Terminal box
/KK5	Terminal box for radial encoder
/KK6	Terminal box for axial encoder

3.1.6 Ventilation

Designation	Option
/VR	Forced cooling fan

3.1.7 Example

Example: CFM112S /BR /TF /AK1H /SB50		
Synchronous servomotor	CFM112	Flange-mounted motor size 112
Length	S	Small
Mechanical attachments	/BR	BR holding brake
Standard equipment temperature sensor	/TF	TF temperature sensor
Encoder motor option	/AK1H	Absolute encoder
Standard connection	/SB50	Plug connector

3.1.8 Example of a serial number for a servomotor

The following figure shows an example of a serial number:

Example: 01. 12212343 01. 0001. 16	
01.	Sales organization
12212343	Order number (8 digits)
01.	Order item (2 digits)
0001	Quantity (4 digits)
16	End digits of the year of manufacture (2 digits)

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4 General project planning information

4.1 Standards and regulations

4.1.1 Conformance to standards

Servo (brake)motors from SEW-EURODRIVE conform to the relevant standards and regulations, in particular to:

- IEC 60034-1, EN 60034-1

  Rotating electrical machines, rating, and performance.
- IEC 60034-2, EN 60034-2

  Rotating electrical machines, determining losses and efficiency.
- IEC 60034-9, EN 60034-9

  Rotating electrical machines, noise limits.
- IEC 60034-14, EN 60034-14

  Rotating electrical machines, vibration severity.
- EN 60529, IEC 60034-5, EN 60034-5

  IP degrees of protection for housings.
- IEC 60072

  Dimensions and performance of rotating electrical machines.
- EN 50262

  Metric threads of cable glands.
- EN 50347

  Standardized dimensions and power ranges.

4.1.2 Conformity with directives

Servo (brake)motors from SEW-EURODRIVE conform to the relevant standards and regulations, in particular to:

- EC directive 2014/35/EU ("Low Voltage Directive")
- EC directive 2006/42/EC ("Machinery Directive")
- CSA C22.2 No.100-04
- UL 1004-1
- UL 1004-6

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4.2 Circuit breaker and protective equipment

4.2.1 Preventive measures

Permanent-field synchronous servomotors must be protected against both overloads and short circuits.

The motors must be installed with sufficient space for air to cool them.

The surface temperature may exceed 100 °C during operation. The brake housing can heat up to 90 °C with released brake and deenergized motor. Provide preventive measures against inadvertent contact.

The motors are available with temperature detection (TF/KTY/PK) to protect the motor winding against overheating.

The standard equipment for these motors is **temperature sensor TF**.

TF temperature sensors comply with DIN 44081 or DIN44082. CFM71 – CFM112 motors are also available with **temperature sensors KTY/PK**.

The TF signal can be evaluated directly in the inverter when using a MOVIDRIVE® inverter.

Temperature sensors respond when the maximum permitted winding temperature is reached. Integrate the contacts of the temperature monitoring device into the monitoring circuit.

4.2.2 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 2004/108/EC. Refer to the SEW-EURODRIVE publication "Drive Engineering – Practical Implementation, Drive Planning" for detailed information about this topic.

Brakemotors

Install the brake cables of brakemotors separately from the other power cables, maintaining a distance of at least 200 mm. Joint installation is only permitted if either the brake cable or the power cable is shielded.

Encoder connection

Observe the following instructions when connecting an encoder:

- Only use a shielded cable with twisted pair conductors.
- Connect the shield to the PE potential on both ends over a large surface area.
- Route signal cables separately from power cables or brake cables (minimum distance 200 mm).

Thermal motor protection

Install the connecting lead of TF/KTY/PK separately from other power cables, maintaining a distance of at least 200 mm. Joint installation is only permitted if either the TF/KTY/PK cable or the power cable is shielded.

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5 Project planning

5.1 Drive and gear unit selection data

Determining application data

First, you require the data (mass, speed, setting range, etc.) of the machine to be driven to select the correct drive (see following table). These data help determine the required power, torque and speed. Refer to the "Drive Engineering – Practical Implementation, Project Planning" publication or the SEW Workbench project planning software for assistance.

Selecting the correct drive

After calculating the performance, speed, torque and overhung load of the drive, while considering all mechanical requirements, a suitable drive can be determined.

Application data

The data of the application must be known for selecting a drive, or must be specified by the customer.

The abbreviations used for project planning are summarized in the following table:

Designation	Meaning	Unit
φ	Rotational clearance	`
η	Gear unit efficiency for M_{apk}	
F_A	Axial load (tension and compression) on the output shaft	N
f_k	Speed ratio	
F_R	Overhung load on the output shaft	N
$F_{R_a_pk}$	Maximum permitted overhung load at the output shaft for short-time duty (load application point is the middle of the shaft end)	N
$F_{R_a_max}$	Maximum permitted overhung load at the output shaft for continuous duty (load application point is the middle of the shaft end)	N
$F_{R_e_pk}$	Maximum permitted overhung load at the input shaft for short-time duty (load application point is the middle of the shaft end)	N
$F_{R_e_max}$	Maximum permitted overhung load at the input shaft for continuous duty (load application point is the middle of the shaft end)	N
$F_{R_a_kub}$	Cubic overhung load with cubic torque M_{akub}	N
F_Z	Transmission element factor for overhung load	
H	Installation altitude	m above sea level
i	Gear unit ratio	
J_A	Mass moment of inertia of the adapter	kgm^2
J_G	Mass moment of inertia of the gear unit	kgm^2
J_{ext}	Mass moment of inertia (external) reduced on motor shaft	kgm^2
J_{mot}	Mass moment of inertia of the motor	kgm^2
J_L	Mass moment of inertia of the load	kgm^2
k	Mass moment of inertia ratio J_{ext}/J_{Mot}	
$M_1 – M_n$	Output torque in time period t_1 to t_n	Nm
M_0	Standstill torque (thermal continuous torque at low speeds)	Nm
M_{a_DYN}	Dynamic output torque assumed for the drive in project planning	Nm
M_{a_eff}	Effective torque for component testing calculated in project planning	Nm

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Designation	Meaning	Unit
M_{a_kub}	Effective torque for bearing testing calculated in project planning	Nm
M_{a_max}	Maximum permitted output torque for continuous duty	Nm
M_{a_pk}	Maximum permitted torque for short-time duty	Nm
$M_{a_EmergOff}$	Maximum permitted emergency stop torque, max. 1000 emergency stops	Nm
M_{a_th}	Effective torque for thermal testing calculated in project planning	Nm
M_B	Rated brake torque	Nm
M_{pk}	Dynamic limit torque of the servomotor	Nm
M_{eff}	Effective torque requirement (in relation to the motor)	Nm
M_{max}	Maximum output torque of the drive in project planning	Nm
ML	Mounting location (UL)	
n_{a_pk}	Maximum permitted output speed for short-time duty	1/min
n_{e_pk}	Maximum permitted input speed for short-time duty	1/min
n_{e_m}	Mean input speed	1/min
n_{a_m}	Mean output speed	1/min
n_{a_k}	Breakpoint speed (output)	1/min
n_N	Rated speed	1/min
$n_1 – n_n$	Output speed in time period t_1 to t_n	1/min
n_{etn_pk}	Maximum input speed in section	1/min
P_B	Braking power	W
P_{B_pk}	Peak braking power	W
P_{B_eff}	Effective braking power	W
P_{B_tn}	Braking power in section t_n	W
$t_1 – t_n$	Time period 1 to n	s
t_z	Cycle time	s
T_{amb}	Ambient temperature	°C
U_{sys}	System voltage, voltage of the supplying inverter	V
U_{Br}	Operating voltage of the brake	V

5.1.1 Determining the application data

It is necessary to have data on the machine to be driven (mass, speed, setting range, etc.) to project the drive correctly.

This data helps to determine the required power, torque and speed. Refer to the publication "Drive Engineering – Practical Implementation / Drive Planning" or the SEW-EURODRIVE project planning tool SEW Workbench for assistance.

5.1.2 Selecting the correct drive

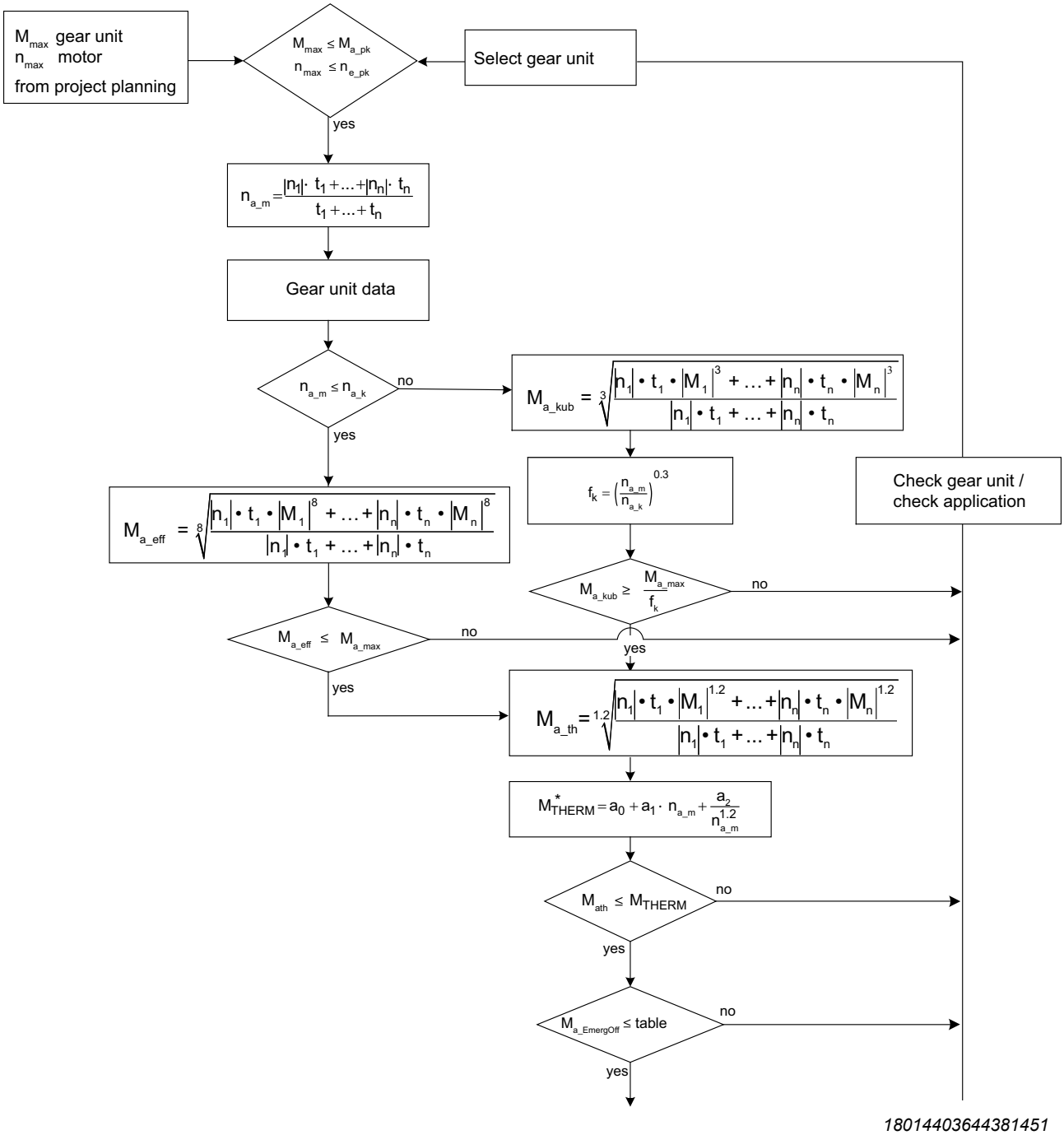
The appropriate drive can be selected once the power and speed of the drive have been calculated and with regard to mechanical requirements.

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5.2 Project planning procedure

The following flow diagram presents a schematic view of the project planning procedure for a servo gearmotor for a positioning drive in S3 duty cycle under normal operating conditions, an installation altitude of < 1000 m above sea level, and an ambient temperature range of 25 °C. Contact SEW-EURODRIVE if other conditions apply.

5.2.1 Project planning procedure: Part 1, servo gear units

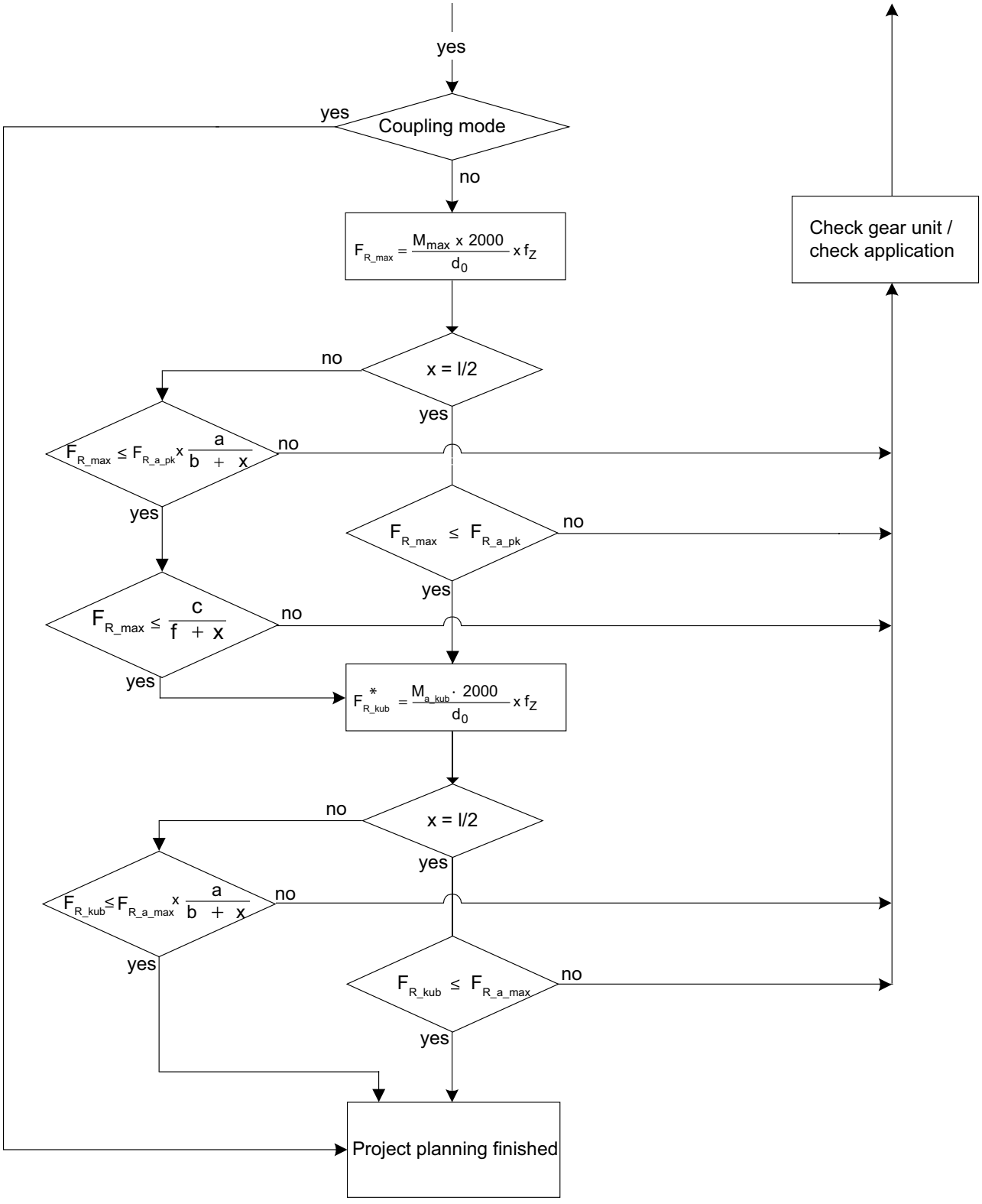


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* For thermal project planning of R, F, K, S, W gear units, please contact SEW-EURODRIVE.

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5.2.2 Project planning procedure: Part 2, servo gear units

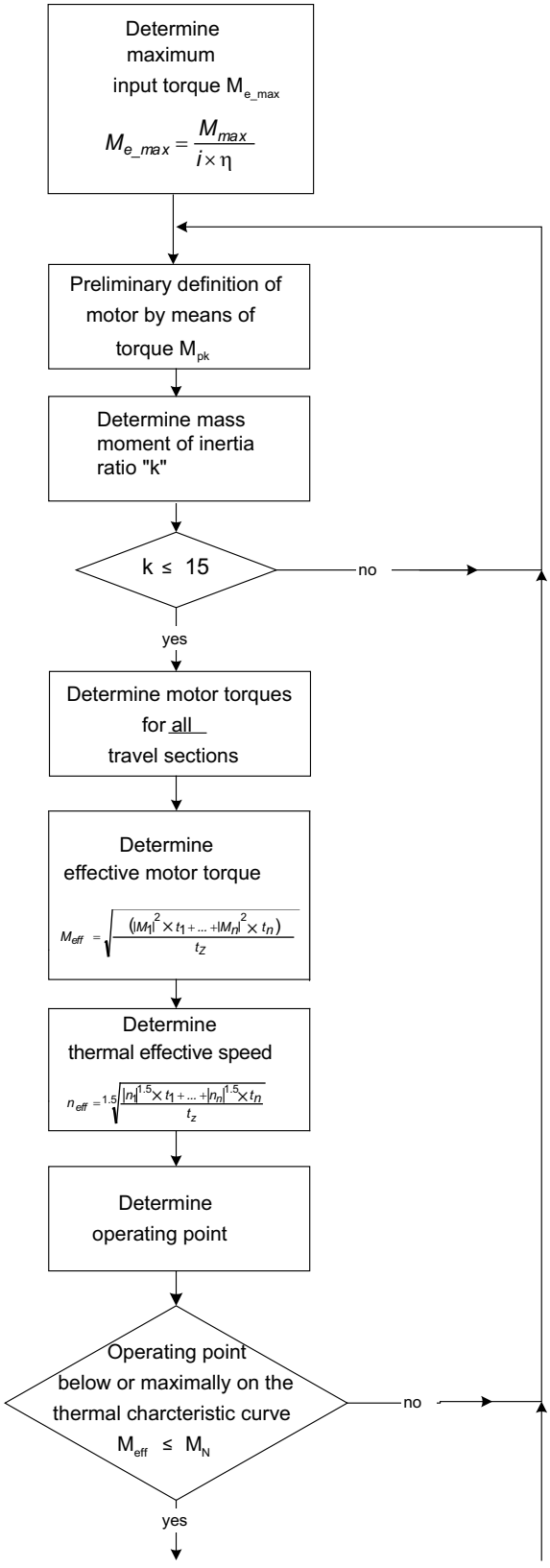


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* For preloaded drives (toothed belts, flat belts, narrow belts, and pinion/gear rack), the cubic overhung load (F_{R_Kub}) equals the maximum overhung load (F_{R_max}).

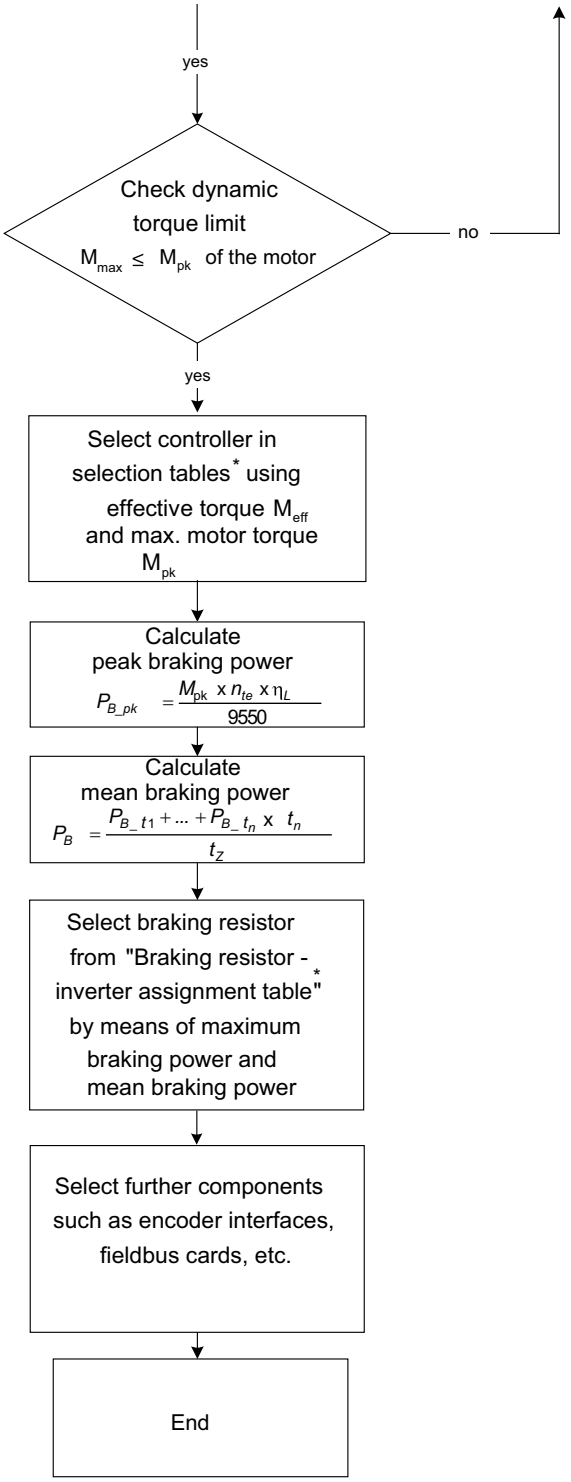
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5.2.3 Project planning procedure: Part 3, servomotors



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5.2.4 Project planning procedure: Part 4, servomotors



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* MOVIDRIVE® system manual, MOVIAXIS® system manual

For more information on the project planning of brakes, refer to the "Synchronous Servomotors" catalog (MOT2).

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5.3 Thermal characteristics

5.3.1 Notes on selecting synchronous servomotors

Project planning for a servomotor involves the following tasks for determining the thermal and dynamic load on the motor:

- Calculating the **effective operating point** for checking the thermal load on the motor.
- Calculating the **maximum operating point** for determining the motor/inverter combination.
- Determining the **mass moment of inertia ratio** J_{ext}/J_{mot} for checking the stability of speed control.

5.3.2 Procedure

- Determine the maximum speed taking account of the mass moment of inertia ratio $\mathbf{J_{ext}/J_{mot}} \leq 15$
- Maximum required torque M_{max} of the application at the corresponding speed and torque with maximum speed $\mathbf{n}_{max}$

  $\mathbf{M}_{max} \leq \mathbf{M}_{dyn_mot}$ with $\mathbf{n}_{max}$

  M_{dyn_Mot} corresponds to the maximum torque with the specific motor/inverter combination. This operating point must lie below the characteristic curve for the maximum torque of the motor/inverter combination.
- Effective torque requirement at average speed $\mathbf{n}_{eff}$ of the application (effective operating point).

  $\mathbf{M}_{eff} \leq \mathbf{M}_{n}$ with $\mathbf{n}_{eff}$

  This operating point must lie below the characteristic curve (MS1 or MS1/VR) for continuous torque to ensure thermal stability of the drive.

5.4 Operating temperatures

5.4.1 Maximum ambient temperature

Motors of the CMP.. series are designed for use in a temperature range between -20 °C and +40 °C.

5.4.2 Higher operating temperatures

CMP.. servomotors can optionally be used at a maximum ambient temperature of 60 °C.

Please contact SEW-EURODRIVE if the motors are used at higher ambient temperatures. See also chapter "Derating for increased ambient temperature" (→ 🗎 26).

INFORMATION

Operating the motor at higher ambient temperatures requires that the suitable power cable is selected.

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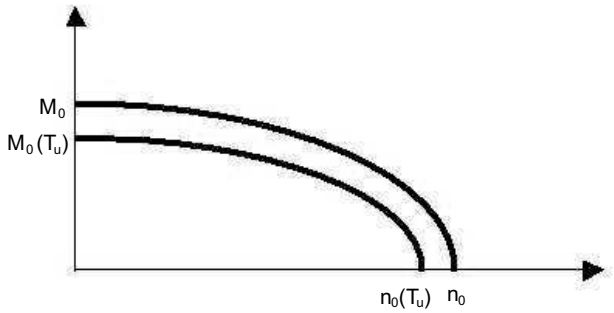
5.4.3 Cold storage application

Taking suitable measures, motors can be used for cold storage applications up to -40 °C. The temperature range from -40 °C to +10 °C is listed on the nameplate.

5.5 Derating for increased ambient temperature

For the project planning of permanent-field synchronous servomotors of the CMP.. series, the following derating applies in the ambient temperature range +40°C to +60°C:

- The thermal speed/limit torque characteristic curve is re-scaled towards the origin (minimized). The thermal operating point based on effective torque and thermally effective speed of the application must be below the re-scaled characteristic curve.



$$M_0(T_U) = M_0 \times \left(\sqrt{\frac{145°C - T_U}{105°C}} \right)$$

$$n_0(T_U) = K_e \times n_0 \times \left(\sqrt{\frac{145°C - T_U}{105°C}} \right)$$

T_U	Ambient temperature [°C]
M_0	Static torque under nominal conditions
$M_0(T_U)$	Standstill torque at increased temperature 40 °C < T_U < 60 °C
n_0	Thermal limit speed under nominal conditions
$n_0(T_U)$	Thermal limit speed at increased temperatures 40 °C < T_A < 60 °C
K_e	Encoder factor for resolver = 1; for electronic encoder (e.g. HIPEFACE® encoder) = 0.9

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5.6 Mechanical/electrical characteristics

Design	CFM71 – 112	
	Standard	**Optional**
Degree of protection	IP65	–
Thermal class	F	–
Motor protection	TF	KTY/PK
Connection	Plug connector	Terminal box
Shaft end	Smooth	With key, domed type A RZ Others on request
Ambient temperature	-20 °C to + 40 °C	-40 °C to + 10 °C
Mounting position	270 °	Any
Noise levels/(EN 60034)	Below specified value	–
Feedback	2-pole resolver	6-pole resolver 2-pole resolver [1)] Absolute encoder
Brake	–	BR
Cooling	Convection	VR forced cooling fan
2nd shaft end	–	with key
Vibration severity	"N" in accordance with EN/IEC 60034....	

1) phase-optimized

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5.7 Combination overviews of CFM.. with MOVIDRIVE®, system voltage 400 V

5.7.1 Rated speed 2000 1/min, PWM 4 kHz

Motor			Assignment to MOVIDRIVE®							
			0005	0008	0011	0014	0015	0022	0030	0040
	I_N	A	2	2.4	3.1	4	4	5.5	7	9.5
	I_{max}	A	4	4.5	6.2	8	6	8.25	10.5	14.3
CFM71S	I_{max}	% I_N	200	200	200	200	150	150	126	
	M_{pk}	Nm	8.97	10.6	13.1	15.7	12.8	16.0	16.5	
CFM71M	I_{max}	% I_N	200	200	200	200	150	150	150	126
	M_{pk}	Nm	8.88	10.6	13.4	16.6	13.0	17.0	20.2	21.5
CFM71L	I_{max}	% I_N		200	200	200	150	150	150	150
	M_{pk}	Nm		10.8	13.9	17.7	13.5	18.2	22.5	28.4
CFM90S	I_{max}	% I_N			200	200	150	150	150	150
	M_{pk}	Nm			13.9	17.9	13.5	18.5	23.3	30.8
CFM90M	I_{max}	% I_N				200	150	150	150	150
	M_{pk}	Nm				17.0	12.7	17.5	22.2	29.8
CFM90L	I_{max}	% I_N						150	150	150
	M_{pk}	Nm						17.6	22.4	30.3
CFM112S	I_{max}	% I_N						150	150	150
	M_{pk}	Nm						19.3	24.6	33.4
CFM112M	I_{max}	% I_N							150	150
	M_{pk}	Nm							24.1	32.8
CFM112L	I_{max}	% I_N								
	M_{pk}	Nm								
CFM112H	I_{max}	% I_N								
	M_{pk}	Nm								

Motor			Assignment to MOVIDRIVE®							
			0055	0075	0110	0150	0220	0300	0370	0450
	I_N	A	12.5	16	24	32	46	60	73	89
	I_{max}	A	18.8	24	36	48	69	90	109.5	133.5
CFM71S	I_{max}	% I_N								
	M_{pk}	Nm								
CFM71M	I_{max}	% I_N								
	M_{pk}	Nm								
CFM71L	I_{max}	% I_N	134							
	M_{pk}	Nm	31.4							

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Motor			Assignment to MOVIDRIVE®							
			0055	0075	0110	0150	0220	0300	0370	0450
	I_N	A	12.5	16	24	32	46	60	73	89
	I_{max}	A	18.8	24	36	48	69	90	109.5	133.5
CFM90S	I_{max}	% I_N	150	123						
	M_{pk}	Nm	38.3	39.6						
CFM90M	I_{max}	% I_N	150	150	117					
	M_{pk}	Nm	38.4	47.3	52.2					
CFM90L	I_{max}	% I_N	150	150	150	125				
	M_{pk}	Nm	39.5	49.9	70.6	75.6				
CFM112S	I_{max}	% I_N	150	150	150	125				
	M_{pk}	Nm	43.6	54.8	76.2	82.3				
CFM112M	I_{max}	% I_N	150	150	150	150	117			
	M_{pk}	Nm	43.2	54.9	79.6	100.0	108			
CFM112L	I_{max}	% I_N	150	150	150	150	150	133		
	M_{pk}	Nm	42.0	53.8	80.2	105	141	158		
CFM112H	I_{max}	% I_N		150	150	150	150	150	150	137
	M_{pk}	Nm		53.3	80.3	107	151	190	220	238

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5.7.2 Rated speed 3000 1/min, PWM 4 kHz

Motor			Assignment to MOVIDRIVE®								
			0005	0008	0011	0014	0015	0022	0030	0040	0055
	I_N	A	2	2.4	3.1	4	4	5.5	7	9.5	12.5
	I_{max}	A	4	4.5	6.2	8	6	8.25	10.5	14.3	18.8
CFM71S	I_{max}	% I_N	200	200	200	200	150	150	150	139	
	M_{pk}	Nm	6.07	7.26	9.25	11.6	8.97	11.9	14.3	16.5	
CFM71M	I_{max}	% I_N		200	200	200	150	150	150	150	138
	M_{pk}	Nm		7.46	9.58	12.2	9.28	12.5	15.5	19.5	21.5
CFM71L	I_{max}	% I_N			200	200	150	150	150	150	150
	M_{pk}	Nm			9.49	12.2	9.19	12.6	15.9	21.0	26.2
CFM90S	I_{max}	% I_N				200	150	150	150	150	150
	M_{pk}	Nm				12.1	9.07	12.5	15.8	21.3	27.5
CFM90M	I_{max}	% I_N						150	150	150	150
	M_{pk}	Nm						12.0	15.2	20.6	26.9
CFM90L	I_{max}	% I_N								150	150
	M_{pk}	Nm								20.9	27.4
CFM112S	I_{max}	% I_N								150	150
	M_{pk}	Nm								22.2	29.3
CFM112M	I_{max}	% I_N									150
	M_{pk}	Nm									28.4
CFM112L	I_{max}	% I_N									
	M_{pk}	Nm									
CFM112H	I_{max}	% I_N									
	M_{pk}	Nm									

Motor			Assignment to MOVIDRIVE®								
			0075	0110	0150	0220	0300	0370	0450	0550	0750
	I_N		16	24	32	46	60	73	89	105	130
	I_{max}		24	36	48	69	90	109.5	133.5	157.5	195
CFM71S	I_{max}	% I_N									
	M_{pk}	Nm									
CFM71M	I_{max}	% I_N									
	M_{pk}	Nm									
CFM71L	I_{max}	% I_N	150	104							
	M_{pk}	Nm	30.8	31.4							
CFM90S	I_{max}	% I_N	150	121							
	M_{pk}	Nm	34.1	39.6							

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Motor			Assignment to MOVIDRIVE®								
			0075	0110	0150	0220	0300	0370	0450	0550	0750
	I_N		16	24	32	46	60	73	89	105	130
	I_{max}		24	36	48	69	90	109.5	133.5	157.5	195
CFM90M	I_{max}	% I_N	150	150	125						
	M_{pk}	Nm	34.0	48.2	52.2						
CFM90L	I_{max}	% I_N	150	150	150	126					
	M_{pk}	Nm	34.9	51.3	65.9	75.6					
CFM112S	I_{max}	% I_N	150	150	150	130					
	M_{pk}	Nm	37.4	54.8	69.8	82.3					
CFM112M	I_{max}	% I_N	150	150	150	150	137				
	M_{pk}	Nm	36.4	54.3	71.0	96.0	108				
CFM112L	I_{max}	% I_N	150	150	150	150	150	150	135		
	M_{pk}	Nm	35.7	53.8	71.5	101	127	147	158		
CFM112H	I_{max}	% I_N		150	150	150	150	150	150	150	132
	M_{pk}	Nm		56.8	75.9	109	140	167	198	224	238

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5.7.3 Rated speed 4500 1/min, PWM 4 kHz

Motor			Assignment to MOVIDRIVE®								
			0011	0014	0015	0022	0030	0040	0055	0075	0110
	I_N	A	3.1	4	4	5.5	7	9.5	12.5	16	24
	I_{max}	A	6.2	8	6	8.25	10.5	14.3	18.8	24	36
CFM71S	I_{max}	% I_N	200	200	150	150	150	150	150	123	
	M_{pk}	Nm	6.34	8.11	6.13	8.35	10.4	13.4	16.2	16.5	
CFM71M	I_{max}	% I_N		200	150	150	150	150	150	150	108
	M_{pk}	Nm		8.09	6.08	8.34	10.5	13.9	17.5	20.7	21.5
CFM71L	I_{max}	% I_N				150	150	150	150	150	150
	M_{pk}	Nm				8.15	10.4	14.0	18.1	22.5	30.3
CFM90S	I_{max}	% I_N					150	150	150	150	150
	M_{pk}	Nm					10.4	14.1	18.5	23.5	33.7
CFM90M	I_{max}	% I_N						150	150	150	150
	M_{pk}	Nm						14.2	18.6	23.8	35.0
CFM90L	I_{max}	% I_N							150	150	150
	M_{pk}	Nm							18.3	23.4	34.9
CFM112S	I_{max}	% I_N							150	150	150
	M_{pk}	Nm							19.5	25.0	37.4
CFM112M	I_{max}	% I_N								150	150
	M_{pk}	Nm								24.8	37.3
CFM112L	I_{max}	% I_N									150
	M_{pk}	Nm									34.9
CFM112H	I_{max}	% I_N									
	M_{pk}	Nm									

Motor			Assignment to MOVIDRIVE®								
			0150	0220	0300	0370	0450	0550	0750	0900	1100
	I_N	A	32	46	60	73	89	105	130	170	200
	I_{max}	A	48	69	90	109.5	133.5	157.5	195	255	300
CFM71S	I_{max}	% I_N									
	M_{pk}	Nm									
CFM71M	I_{max}	% I_N									
	M_{pk}	Nm									
CFM71L	I_{max}	% I_N	119								
	M_{pk}	Nm	31.4								
CFM90S	I_{max}	% I_N	138								
	M_{pk}	Nm	39.6								

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Motor			Assignment to MOVIDRIVE®								
			0150	0220	0300	0370	0450	0550	0750	0900	1100
	I_N	A	32	46	60	73	89	105	130	170	200
	I_{max}	A	48	69	90	109.5	133.5	157.5	195	255	300
CFM90M	I_{max}	% I_N	150	128							
	M_{pk}	Nm	45.0	52.2							
CFM90L	I_{max}	% I_N	150	150	143						
	M_{pk}	Nm	46.0	63.7	75.6						
CFM112S	I_{max}	% I_N	150	150	150	123					
	M_{pk}	Nm	49.2	67.5	82.3	82.3					
CFM112M	I_{max}	% I_N	150	150	150	150	135				
	M_{pk}	Nm	49.6	69.9	87.8	102	108				
CFM112L	I_{max}	% I_N	150	150	150	150	150	150	142		
	M_{pk}	Nm	46.8	67.2	86.8	104	123	141	158		
CFM112H	I_{max}	% I_N		150	150	150	150	150	150	150	132
	M_{pk}	Nm		71.1	92.7	112	136	158	190	232	238

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5.7.4 Rated speed 6000 1/min, PWM 4 kHz

Motor			Assignment to MOVIDRIVE®						
			0014	0015	0022	0030	0040	0055	0075
	I_N	A	4	4	5.5	7	9.5	12.5	16
	I_{max}	A	8	6	8.25	10.5	14.3	18.8	24
CFM71S	I_{max}	% I_N	200	150	150	150	150	150	150
	M_{pk}	Nm	6.17	4.63	6.36	8.03	10.6	13.3	15.8
CFM71M	I_{max}	% I_N			150	150	150	150	150
	M_{pk}	Nm			6.41	8.15	10.9	14.1	17.2
CFM71L	I_{max}	% I_N				150	150	150	150
	M_{pk}	Nm				7.97	10.8	14.1	17.9
CFM90S	I_{max}	% I_N					150	150	150
	M_{pk}	Nm					10.8	14.2	18.2
CFM90M	I_{max}	% I_N						150	150
	M_{pk}	Nm						13.9	17.7
CFM90L	I_{max}	% I_N							150
	M_{pk}	Nm							17.2

Motor			Assignment to MOVIDRIVE®					
			0110	0150	0220	0300	0370	0450
	I_N	A	24	32	60	60	73	89
	I_{max}	A	36	48	69	90	109.5	133.5
CFM71S	I_{max}	% I_N	108					
	M_{pk}	Nm	16.5					
CFM71M	I_{max}	% I_N	142					
	M_{pk}	Nm	21.5					
CFM71L	I_{max}	% I_N	150	150	109			
	M_{pk}	Nm	25.2	30.7	31.4			
CFM90S	I_{max}	% I_N	150	150	126			
	M_{pk}	Nm	26.7	34.3	39.6			
CFM90M	I_{max}	% I_N	150	150	150	132		
	M_{pk}	Nm	26.4	34.6	47.4	52.2		
CFM90L	I_{max}	% I_N	150	150	150	150	150	133
	M_{pk}	Nm	25.7	34.1	48.3	61.3	71.7	75.6

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5.7.5 Rated speed 2000 1/min, PWM 8 kHz

Motor			Assignment to MOVIDRIVE®							
			0005	0008	0011	0014	0015	0022	0030	0040
	I_N	A	2	2.4	3.1	4	4	5.5	7	9.5
	I_{max}	A	4	4.5	6.2	8	6	8.25	10.5	14.3
CFM71S	I_{max}	% I_N	200	200	200	200	129	129	126	
	M_{pk}	Nm	8.97	10.6	13.1	15.7	11.3	14.5	16.5	
CFM71M	I_{max}	% I_N	200	200	200	200	129	129	129	126
	M_{pk}	Nm	8.88	10.6	13.4	16.6	11.3	15.1	18.2	21.5
CFM71L	I_{max}	% I_N		200	200	200	129	129	129	129
	M_{pk}	Nm		10.8	13.9	17.7	11.6	15.8	19.8	25.5
CFM90S	I_{max}	% I_N			200	200	129	129	129	129
	M_{pk}	Nm			13.9	17.9	11.6	15.9	20.2	26.9
CFM90M	I_{max}	% I_N				200	129	129	129	129
	M_{pk}	Nm				17.0	10.9	15.1	19.1	25.8
CFM90L	I_{max}	% I_N						129	129	129
	M_{pk}	Nm						15.1	19.2	26.1
CFM112S	I_{max}	% I_N						129	129	129
	M_{pk}	Nm						16.5	21.1	28.7
CFM112M	I_{max}	% I_N							129	129
	M_{pk}	Nm							20.7	28.2
CFM112L	I_{max}	% I_N								
	M_{pk}	Nm								
CFM112H	I_{max}	% I_N								
	M_{pk}	Nm								

Motor			Assignment to MOVIDRIVE®								
			0055	0075	0110	0150	0220	0300	0370	0450	0550
	I_N	A	12.5	16	24	32	46	60	73	89	105
	I_{max}	A	18.8	24	36	48	69	90	109.5	133.5	157.5
CFM71S	I_{max}	% I_N									
	M_{pk}	Nm									
CFM71M	I_{max}	% I_N									
	M_{pk}	Nm									
CFM71L	I_{max}	% I_N	129	105							
	M_{pk}	Nm	30.7	31.4							
CFM90S	I_{max}	% I_N	129	123							
	M_{pk}	Nm	34.1	39.6							

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Motor			Assignment to MOVIDRIVE®								
			0055	0075	0110	0150	0220	0300	0370	0450	0550
	I_N	A	12.5	16	24	32	46	60	73	89	105
	I_{max}	A	18.8	24	36	48	69	90	109.5	133.5	157.5
CFM90M	I_{max}	% I_N	129	129	117						
	M_{pk}	Nm	33.5	41.8	52.2						
CFM90L	I_{max}	% I_N	129	129	129	125					
	M_{pk}	Nm	34.2	43.3	62.5	75.6					
CFM112S	I_{max}	% I_N	129	129	129	125					
	M_{pk}	Nm	37.7	47.7	68.0	82.3					
CFM112M	I_{max}	% I_N	129	129	129	129	117				
	M_{pk}	Nm	37.1	47.4	69.7	89.2	108				
CFM112L	I_{max}	% I_N	129	129	129	129	129	129	110		
	M_{pk}	Nm	36.0	46.2	69.3	91.3	126	153	158		
CFM112H	I_{max}	% I_N		129	129	129	129	129	129	129	116
	M_{pk}	Nm		45.7	69.0	92.0	131	167	197	228	238

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5.7.6 Rated speed 3000 1/min, PWM 8 kHz

Motor			Assignment to MOVIDRIVE®									
			0005	0008	0011	0014	0015	0022	0030	0040	0055	0075
	I_N	A	2	2.4	3.1	4	4	5.5	7	9.5	12.5	16
	I_{max}	A	4	4.5	6.2	8	6	8.25	10.5	14.3	18.8	24
CFM71S	I_{max}	% I_N	200	200	200	200	129	129	129	129	106	
	M_{pk}	Nm	6.07	7.26	9.25	11.6	7.78	10.4	12.8	15.9	16.5	
CFM71M	I_{max}	% I_N		200	200	200	129	129	129	129	129	108
	M_{pk}	Nm		7.46	9.58	12.2	8.01	10.9	13.6	17.5	21.1	21.5
CFM71L	I_{max}	% I_N			200	200	129	129	129	129	129	129
	M_{pk}	Nm			9.49	12.2	7.90	10.9	13.8	18.3	23.3	28.0
CFM90S	I_{max}	% I_N				200	129	129	129	129	129	129
	M_{pk}	Nm				12.1	7.79	10.7	13.6	18.4	24.0	30.0
CFM90M	I_{max}	% I_N						129	129	129	129	129
	M_{pk}	Nm						10.3	13.1	17.7	23.3	29.5
CFM90L	I_{max}	% I_N								129	129	129
	M_{pk}	Nm								17.9	23.6	30.1
CFM112S	I_{max}	% I_N								129	129	129
	M_{pk}	Nm								19.1	25.2	32.2
CFM112M	I_{max}	% I_N									129	129
	M_{pk}	Nm									24.4	31.3
CFM112L	I_{max}	% I_N										129
	M_{pk}	Nm										30.7
CFM112H	I_{max}	% I_N										
	M_{pk}	Nm										

Motor			Assignment to MOVIDRIVE®								
			0110	0150	0220	0300	0370	0450	0550	0750	0900
	I_N	A	24	32	46	60	73	89	105	130	170
	I_{max}	A	36	48	69	90	109.5	133.5	157.5	195	255
CFM71S	I_{max}	% I_N									
	M_{pk}	Nm									
CFM71M	I_{max}	% I_N									
	M_{pk}	Nm									
CFM71L	I_{max}	% I_N	104								
	M_{pk}	Nm	31.4								
CFM90S	I_{max}	% I_N	121								
	M_{pk}	Nm	39.6								

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Motor			Assignment to MOVIDRIVE®								
			0110	0150	0220	0300	0370	0450	0550	0750	0900
	I_N	A	24	32	46	60	73	89	105	130	170
	I_{max}	A	36	48	69	90	109.5	133.5	157.5	195	255
CFM90M	I_{max}	% I_N	129	125							
	M_{pk}	Nm	42.7	52.2							
CFM90L	I_{max}	% I_N	129	129	126						
	M_{pk}	Nm	44.6	58.0	75.6						
CFM112S	I_{max}	% I_N	129	129	129	100.0					
	M_{pk}	Nm	47.7	61.7	81.3	82.3					
CFM112M	I_{max}	% I_N	129	129	129	129	112				
	M_{pk}	Nm	46.9	61.8	85.3	104	108				
CFM112L	I_{max}	% I_N	129	129	129	129	129	129			
	M_{pk}	Nm	46.2	61.7	87.7	112	131	152			
CFM112H	I_{max}	% I_N	129	129	129	129	129	129	129	129	101
	M_{pk}	Nm	48.7	65.2	93.8	122	146	174	200	233	238

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5.7.7 Rated speed 4500 1/min, PWM 8 kHz

Motor			Assignment to MOVIDRIVE®									
			0011	0014	0015	0022	0030	0040	0055	0075	0110	0150
	I_N	A	3.1	4	4	5.5	7	9.5	12.5	16	24	32
	I_{max}	A	6.2	8	6	8.25	10.5	14.3	18.8	24	36	48
CFM71S	I_{max}	% I_N	200	200	129	129	129	129	129	123		
	M_{pk}	Nm	6.34	8.11	5.28	7.23	9.09	11.9	14.7	16.5		
CFM71M	I_{max}	% I_N		200	129	129	129	129	129	129	108	
	M_{pk}	Nm		8.09	5.22	7.18	9.11	12.2	15.5	18.7	21.5	
CFM71L	I_{max}	% I_N				129	129	129	129	129	129	119
	M_{pk}	Nm				7.00	8.93	12.1	15.8	19.8	27.4	31.4
CFM90S	I_{max}	% I_N					129	129	129	129	129	129
	M_{pk}	Nm					8.97	12.2	16.0	20.3	29.7	37.6
CFM90M	I_{max}	% I_N						129	129	129	129	129
	M_{pk}	Nm						12.2	16.1	20.5	30.4	39.6
CFM90L	I_{max}	% I_N							129	129	129	129
	M_{pk}	Nm							15.7	20.1	30.1	39.9
CFM112S	I_{max}	% I_N							129	129	129	129
	M_{pk}	Nm							16.7	21.5	32.2	42.7
CFM112M	I_{max}	% I_N								129	129	129
	M_{pk}	Nm								21.3	32.1	42.8
CFM112L	I_{max}	% I_N									129	129
	M_{pk}	Nm									30.0	40.1
CFM112H	I_{max}	% I_N										
	M_{pk}	Nm										

Motor			Assignment to MOVIDRIVE®								
			0220	0300	0370	0450	0550	0750	0900	1100	1320
	I_N	A	46	60	73	89	105	130	170	200	250
	I_{max}	A	69	90	109.5	133.5	157.5	195	255	300	375
CFM71S	I_{max}	% I_N									
	M_{pk}	Nm									
CFM71M	I_{max}	% I_N									
	M_{pk}	Nm									
CFM71L	I_{max}	% I_N	82.6								
	M_{pk}	Nm	31.4								
CFM90S	I_{max}	% I_N	95.7								
	M_{pk}	Nm	39.6								

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Motor			Assignment to MOVIDRIVE®								
			0220	0300	0370	0450	0550	0750	0900	1100	1320
	I_N	A	46	60	73	89	105	130	170	200	250
	I_{max}	A	69	90	109.5	133.5	157.5	195	255	300	375
CFM90M	I_{max}	% I_N	128								
	M_{pk}	Nm	52.2								
CFM90L	I_{max}	% I_N	129	129	118						
	M_{pk}	Nm	55.9	69.8	75.6						
CFM112S	I_{max}	% I_N	129	129	123						
	M_{pk}	Nm	59.5	73.7	82.3						
CFM112M	I_{max}	% I_N	129	129	129	129	114				
	M_{pk}	Nm	60.8	77.4	91.0	105	108				
CFM112L	I_{max}	% I_N	129	129	129	129	129	129	108		
	M_{pk}	Nm	57.8	75.1	90.6	108	125	147	158		
CFM112H	I_{max}	% I_N	129	129	129	129	129	129	129	129	106
	M_{pk}	Nm	61.0	79.8	97.0	118	138	167	208	234	238

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5.7.8 Rated speed 6000 1/min, PWM 8 kHz

Motor			Assignment to MOVIDRIVE®						
			0014	0015	0022	0030	0040	0055	0075
	I_N	A	4	4	5.5	7	9.5	12.5	16
	I_{max}	A	8	6	8.25	10.5	14.3	18.8	24
CFM71S	I_{max}	% I_N	200	129	129	129	129	129	129
	M_{pk}	Nm	6.17	3.98	5.47	6.94	9.28	11.8	14.3
CFM71M	I_{max}	% I_N			129	129	129	129	129
	M_{pk}	Nm			5.51	7.02	9.48	12.3	15.3
CFM71L	I_{max}	% I_N				129	129	129	129
	M_{pk}	Nm				6.85	9.31	12.2	15.5
CFM90S	I_{max}	% I_N					129	129	129
	M_{pk}	Nm					9.32	12.3	15.7
CFM90M	I_{max}	% I_N						129	129
	M_{pk}	Nm						11.9	15.3
CFM90L	I_{max}	% I_N							129
	M_{pk}	Nm							14.7

Motor			Assignment to MOVIDRIVE®						
			0110	0150	0220	0300	0370	0450	0550
	I_N	A	24	32	46	60	73	89	105
	I_{max}	A	36	48	69	90	109.5	133.5	157.5
CFM71S	I_{max}	% I_N	108						
	M_{pk}	Nm	16.5						
CFM71M	I_{max}	% I_N	129	106					
	M_{pk}	Nm	20.6	21.5					
CFM71L	I_{max}	% I_N	129	129	109				
	M_{pk}	Nm	22.3	27.9	31.4				
CFM90S	I_{max}	% I_N	129	129	126				
	M_{pk}	Nm	23.2	30.2	39.6				
CFM90M	I_{max}	% I_N	129	129	129	129	108		
	M_{pk}	Nm	22.8	30.1	41.9	51.5	52.2		
CFM90L	I_{max}	% I_N	129	129	129	129	129	129	112
	M_{pk}	Nm	22.1	29.4	41.9	53.7	63.6	74.1	75.6

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5.8 Combination overviews of CFM.. with MOVIDRIVE®, system voltage 230 V

5.8.1 Rated speed 2000 1/min, PWM 4 kHz

Motor			Assignment to MOVIDRIVE®								
			0015	0022	0037	0055	0075	0110	0150	0220	0300
	I_N	A	7.3	8.6	14.5	22	29	42	54	80	95
	I_{max}	A	11	12.9	21.8	33	43.5	63	81	120	143
CFM71S	I_{max}	% I_N	150	150	109						
	M_{pk}	Nm	12.9	14.6	16.5						
CFM71M	I_{max}	% I_N	150	150	145						
	M_{pk}	Nm	13.4	15.4	21.5						
CFM71L	I_{max}	% I_N	150	150	150	134					
	M_{pk}	Nm	14.0	16.3	25.6	31.4					
CFM90S	I_{max}	% I_N	150	150	150	150	121				
	M_{pk}	Nm	13.9	16.3	26.9	38.1	39.6				
CFM90M	I_{max}	% I_N	150	150	150	150	150	115			
	M_{pk}	Nm	13.2	15.6	26.1	38.5	48.5	52.2			
CFM90L	I_{max}	% I_N		150	150	150	150	150	126		
	M_{pk}	Nm		15.9	26.8	40.3	52.2	71.3	75.6		
CFM112S	I_{max}	% I_N			150	150	150	150	133		
	M_{pk}	Nm			28.3	42.7	55.1	74.7	82.3		
CFM112M	I_{max}	% I_N			150	150	150	150	150	122	
	M_{pk}	Nm			27.5	41.9	54.9	77.1	94.8	108	
CFM112L	I_{max}	% I_N				150	150	150	150	150	149
	M_{pk}	Nm				41.6	54.9	79.1	100	139	158
CFM112H	I_{max}	% I_N					150	150	150	150	150
	M_{pk}	Nm					56.7	82.4	106	153	178

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5.8.2 Rated speed 3000 1/min, PWM 4 kHz

Motor			Assignment to MOVIDRIVE®								
			0015	0022	0037	0055	0075	0110	0150	0220	0300
	I_N	A	7.3	8.6	14.5	22	29	42	54	80	95
	I_{max}	A	11	12.9	21.8	33	43.5	63	81	120	143
CFM71S	I_{max}	% I_N	150	150	150	107					
	M_{pk}	Nm	9.15	10.6	15.8	16.5					
CFM71M	I_{max}	% I_N	150	150	150	139					
	M_{pk}	Nm	9.58	11.2	17.6	21.5					
CFM71L	I_{max}	% I_N	150	150	150	150	150	106			
	M_{pk}	Nm	9.36	11.0	18.2	25.8	31.0	31.4			
CFM90S	I_{max}	% I_N	150	150	150	150	150	121			
	M_{pk}	Nm	9.51	11.2	18.8	27.8	35.3	39.6			
CFM90M	I_{max}	% I_N			150	150	150	150	130		
	M_{pk}	Nm			18.3	27.5	35.6	48.8	52.2		
CFM90L	I_{max}	% I_N			150	150	150	150	150	128	
	M_{pk}	Nm			18.0	27.2	35.7	50.8	63.4	75.6	
CFM112S	I_{max}	% I_N			150	150	150	150	150	135	
	M_{pk}	Nm			18.8	28.7	37.7	53.4	66.3	82.3	
CFM112M	I_{max}	% I_N				150	150	150	150	150	147
	M_{pk}	Nm				29.3	38.6	55.6	70.3	97.4	108
CFM112L	I_{max}	% I_N					150	150	150	150	150
	M_{pk}	Nm					40.5	58.8	75.4	109	126
CFM112H	I_{max}	% I_N						150	150	150	150
	M_{pk}	Nm						58.5	75.5	111	131

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5.8.3 Rated speed 4500 1/min, PWM 4 kHz

Motor			Assignment to MOVIDRIVE®								
			0015	0022	0037	0055	0075	0110	0150	0220	0300
	I_N	A	7.3	8.6	14.5	22	29	42	54	80	95
	I_{max}	A	11	12.9	21.8	33	43.5	63	81	120	143
CFM71S	I_{max}	% I_N	150	150	150	150	117				
	M_{pk}	Nm	6.45	7.56	12.1	16.3	16.5				
CFM71M	I_{max}	% I_N	150	150	150	150	150	107			
	M_{pk}	Nm	6.48	7.63	12.6	17.8	21.4	21.5			
CFM71L	I_{max}	% I_N		150	150	150	150	150	126		
	M_{pk}	Nm		7.15	12.1	17.9	22.8	29.9	31.4		
CFM90S	I_{max}	% I_N			150	150	150	150	141		
	M_{pk}	Nm			12.7	19.1	24.9	34.5	39.6		
CFM90M	I_{max}	% I_N			150	150	150	150	150	130	
	M_{pk}	Nm			12.2	18.6	24.3	34.6	43.2	52.2	
CFM90L	I_{max}	% I_N				150	150	150	150	150	150
	M_{pk}	Nm				17.8	23.5	33.9	43.2	61.7	70.8
CFM112S	I_{max}	% I_N				150	150	150	150	150	150
	M_{pk}	Nm				20.0	26.5	38.2	48.6	68.3	77.7
CFM112M	I_{max}	% I_N					150	150	150	150	150
	M_{pk}	Nm					24.9	36.3	46.6	67.7	78.9

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5.8.4 Rated speed 6000 1/min, PWM 4 kHz

Motor			Assignment to MOVIDRIVE®								
			0015	**0022**	**0037**	**0055**	**0075**	**0110**	**0150**	**0220**	**0300**
	I_N	**A**	**7.3**	**8.6**	**14.5**	**22**	**29**	**42**	**54**	**80**	**95**
	I_{max}	**A**	**11**	**12.9**	**21.8**	**33**	**43.5**	**63**	**81**	**120**	**143**
CFM71S	I_{max}	% I_N	150	150	150	150	150	111			
	M_{pk}	Nm	4.74	5.58	9.23	13.2	16.0	16.5			
CFM71M	I_{max}	% I_N	150	150	150	150	150	133			
	M_{pk}	Nm	5.19	6.12	10.2	14.9	18.6	21.5			
CFM71L	I_{max}	% I_N			150	150	150	150	150	108	
	M_{pk}	Nm			9.60	14.5	18.7	25.6	30.3	31.4	
CFM90S	I_{max}	% I_N			150	150	150	150	150	118	
	M_{pk}	Nm			10.2	15.5	20.2	28.6	35.4	39.6	
CFM90M	I_{max}	% I_N				150	150	150	150	150	150
	M_{pk}	Nm				13.1	17.2	24.8	31.5	44.7	51.0
CFM90L	I_{max}	% I_N					150	150	150	150	150
	M_{pk}	Nm					18.0	26.0	33.3	48.6	56.8

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5.8.5 Rated speed 2000 1/min, PWM 8 kHz

Motor			Assignment to MOVIDRIVE®								
			0015	0022	0037	0055	0075	0110	0150	0220	0300
	I_N	A	7.3	8.6	14.5	22	29	42	54	80	95
	I_{max}	A	11	12.9	21.8	33	43.5	63	81	120	143
CFM71S	I_{max}	% I_N	129	129	109						
	M_{pk}	Nm	11.4	13.1	16.5						
CFM71M	I_{max}	% I_N	129	129	129	95.5					
	M_{pk}	Nm	11.7	13.6	20.3	21.5					
CFM71L	I_{max}	% I_N	129	129	129	129	102				
	M_{pk}	Nm	12.1	14.1	22.7	30.7	31.4				
CFM90S	I_{max}	% I_N	129	129	129	129	121				
	M_{pk}	Nm	11.9	14.0	23.3	33.9	39.6				
CFM90M	I_{max}	% I_N	129	129	129	129	129	115			
	M_{pk}	Nm	11.4	13.4	22.5	33.6	43.0	52.2			
CFM90L	I_{max}	% I_N		129	129	129	129	129	126		
	M_{pk}	Nm		13.7	23.1	34.8	45.4	63.2	75.6		
CFM112S	I_{max}	% I_N			129	129	129	129	129	90.0	
	M_{pk}	Nm			24.3	36.9	48.0	66.5	80.1	82.3	
CFM112M	I_{max}	% I_N			129	129	129	129	129	122	
	M_{pk}	Nm			23.6	36.0	47.4	67.4	84.0	108	
CFM112L	I_{max}	% I_N				129	129	129	129	129	129
	M_{pk}	Nm				35.7	47.2	68.3	87.1	124	141
CFM112H	I_{max}	% I_N					129	129	129	129	129
	M_{pk}	Nm					48.7	70.8	91.1	133	156

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5.8.6 Rated speed 3000 1/min, PWM 8 kHz

Motor			Assignment to MOVIDRIVE®								
			0015	0022	0037	0055	0075	0110	0150	0220	0300
	I_N	A	7.3	8.6	14.5	22	29	42	54	80	95
	I_{max}	A	11	12.9	21.8	33	43.5	63	81	120	143
CFM71S	I_{max}	% I_N	129	129	129	107					
	M_{pk}	Nm	7.94	9.26	14.3	16.5					
CFM71M	I_{max}	% I_N	129	129	129	129	105				
	M_{pk}	Nm	8.27	9.70	15.6	21.0	21.5				
CFM71L	I_{max}	% I_N	129	129	129	129	129	106			
	M_{pk}	Nm	8.05	9.49	15.8	22.9	28.3	31.4			
CFM90S	I_{max}	% I_N	129	129	129	129	129	121			
	M_{pk}	Nm	8.18	9.64	16.2	24.2	31.1	39.6			
CFM90M	I_{max}	% I_N			129	129	129	129	129		
	M_{pk}	Nm			15.7	23.7	31.0	43.2	52.2		
CFM90L	I_{max}	% I_N			129	129	129	129	129	128	
	M_{pk}	Nm			15.5	23.5	30.8	44.1	55.6	75.6	
CFM112S	I_{max}	% I_N			129	129	129	129	129	129	114
	M_{pk}	Nm			16.1	24.6	32.5	46.5	58.4	79.5	82.3
CFM112M	I_{max}	% I_N				129	129	129	129	129	129
	M_{pk}	Nm				25.1	33.2	48.0	61.1	86.6	98.9
CFM112L	I_{max}	% I_N					129	129	129	129	129
	M_{pk}	Nm					34.8	50.6	65.0	94.8	111
CFM112H	I_{max}	% I_N						129	129	129	129
	M_{pk}	Nm						50.2	64.8	96.1	114

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5.8.7 Rated speed 4500 1/min, PWM 8 kHz

Motor			Assignment to MOVIDRIVE®								
			0015	0022	0037	0055	0075	0110	0150	0220	0300
	I_N	A	7.3	8.6	14.5	22	29	42	54	80	95
	I_{max}	A	11	12.9	21.8	33	43.5	63	81	120	143
CFM71S	I_{max}	% I_N	129	129	129	129	117				
	M_{pk}	Nm	5.56	6.53	10.7	14.8	16.5				
CFM71M	I_{max}	% I_N	129	129	129	129	129	107			
	M_{pk}	Nm	5.57	6.56	10.9	15.8	19.5	21.5			
CFM71L	I_{max}	% I_N		129	129	129	129	129	126	85.0	
	M_{pk}	Nm		6.14	10.4	15.6	20.1	27.1	31.4	31.4	
CFM90S	I_{max}	% I_N			129	129	129	129	129	95.0	
	M_{pk}	Nm			10.9	16.5	21.6	30.4	37.3	39.6	
CFM90M	I_{max}	% I_N			129	129	129	129	129	129	109
	M_{pk}	Nm			10.5	16.0	21.0	30.1	37.9	52.1	52.2
CFM90L	I_{max}	% I_N				129	129	129	129	129	129
	M_{pk}	Nm				15.3	20.2	29.2	37.4	54.1	62.8
CFM112S	I_{max}	% I_N				129	129	129	129	129	129
	M_{pk}	Nm				17.2	22.7	33.0	42.1	60.3	69.5
CFM112M	I_{max}	% I_N					129	129	129	129	129
	M_{pk}	Nm					21.4	31.2	40.1	58.8	69.0

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5.8.8 Rated speed 6000 1/min, PWM 8 kHz

Motor			Assignment to MOVIDRIVE®								
			0015	**0022**	**0037**	**0055**	**0075**	**0110**	**0150**	**0220**	**0300**
	I_N	**A**	**7.3**	**8.6**	**14.5**	**22**	**29**	**42**	**54**	**80**	**95**
	I_{max}	**A**	**11**	**12.9**	**21.8**	**33**	**43.5**	**63**	**81**	**120**	**143**
CFM71S	I_{max}	% I_N	129	129	129	129	129	111			
	M_{pk}	Nm	4.07	4.80	8.01	11.7	14.5	16.5			
CFM71M	I_{max}	% I_N	129	129	129	129	129	129	104		
	M_{pk}	Nm	4.46	5.26	8.84	13.1	16.6	21.4	21.5		
CFM71L	I_{max}	% I_N			129	129	129	129	129	108	
	M_{pk}	Nm			8.26	12.5	16.3	22.7	27.5	31.4	
CFM90S	I_{max}	% I_N			129	129	129	129	129	118	
	M_{pk}	Nm			8.78	13.3	17.5	24.9	31.3	39.6	
CFM90M	I_{max}	% I_N				129	129	129	129	129	129
	M_{pk}	Nm				11.2	14.8	21.4	27.3	39.3	45.5
CFM90L	I_{max}	% I_N					129	129	129	129	129
	M_{pk}	Nm					15.5	22.4	28.7	42.1	49.5

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5.9 Combination overviews of CFM.. with MOVIAXIS®, system voltage 400 V

5.9.1 Rated speed 2000 1/min, PWM 4 kHz

Motor			Assignment to MOVIAXIS®									
	Size		1			2		3		4	5	6
	I_N	A	2	4	8	12	16	24	32	48	64	100
	I_{max}	A	5	10	20	30	40	60	80	120	160	250
CFM71S	I_{max}	% I_N	250	220								
	M_{pk}	Nm	11.0	16.5								
CFM71M	I_{max}	% I_N		250								
	M_{pk}	Nm		19.6								
CFM71L	I_{max}	% I_N		250	210							
	M_{pk}	Nm		21.6	31.4							
CFM90S	I_{max}	% I_N		250	245							
	M_{pk}	Nm		22.2	39.6							
CFM90M	I_{max}	% I_N			250	233	175					
	M_{pk}	Nm			40.7	52.2	52.2					
CFM90L	I_{max}	% I_N			250	250	250					
	M_{pk}	Nm			42.1	60.9	75.6					
CFM112S	I_{max}	% I_N			250	250	250	167				
	M_{pk}	Nm			46.3	66.3	82.3	82.3				
CFM112M	I_{max}	% I_N				250	250	225				
	M_{pk}	Nm				67.7	86.9	108				
CFM112L	I_{max}	% I_N					250	250	250			
	M_{pk}	Nm					88.6	127	158			
CFM112H	I_{max}	% I_N						250	250	250		
	M_{pk}	Nm						132	172	235		

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5.9.2 Rated speed 3000 1/min, PWM 4 kHz

Motor			Assignment to MOVIAXIS®									
	Size		1			2		3		4	5	6
	I_N	A	2	4	8	12	16	24	32	48	64	100
	I_{max}	A	5	10	20	30	40	60	80	120	160	250
CFM71S	I_{max}	% I_N		250								
	M_{pk}	Nm		13.8								
CFM71M	I_{max}	% I_N		250	215							
	M_{pk}	Nm		14.9	21.5							
CFM71L	I_{max}	% I_N			250	208						
	M_{pk}	Nm			27.4	31.4						
CFM90S	I_{max}	% I_N			250	242	181					
	M_{pk}	Nm			29.2	39.6	39.6					
CFM90M	I_{max}	% I_N			250	250	250	167				
	M_{pk}	Nm			28.6	41.5	52.2	52.2				
CFM90L	I_{max}	% I_N				250	250	242				
	M_{pk}	Nm				43.3	56.5	75.6				
CFM112S	I_{max}	% I_N				250	250	250				
	M_{pk}	Nm				46.3	60.1	82.3				
CFM112M	I_{max}	% I_N					250	250	250			
	M_{pk}	Nm					60.0	86.1	107			
CFM112L	I_{max}	% I_N						250	250	250		
	M_{pk}	Nm						88.6	115	158		
CFM112H	I_{max}	% I_N							250	250	250	172
	M_{pk}	Nm							126	181	226	238

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5.9.3 Rated speed 4500 1/min, PWM 4 kHz

Motor			Assignment to MOVIAXIS®									
	Size		1			2		3		4	5	6
	I_N	A	2	4	8	12	16	24	32	48	64	100
	I_{max}	A	5	10	20	30	40	60	80	120	160	250
CFM71S	I_{max}	% I_N		250	245							
	M_{pk}	Nm		9.97	16.5							
CFM71M	I_{max}	% I_N			250	217						
	M_{pk}	Nm			18.3	21.5						
CFM71L	I_{max}	% I_N			250	250	238					
	M_{pk}	Nm			19.2	26.8	31.4					
CFM90S	I_{max}	% I_N				250	250	183				
	M_{pk}	Nm				28.8	36.7	39.6				
CFM90M	I_{max}	% I_N				250	250	246				
	M_{pk}	Nm				29.5	38.5	52.2				
CFM90L	I_{max}	% I_N						250	250	179		
	M_{pk}	Nm						56.5	71.5	75.6		
CFM112S	I_{max}	% I_N						250	250	188		
	M_{pk}	Nm						60.1	75.5	82.3		
CFM112M	I_{max}	% I_N						250	250	250		
	M_{pk}	Nm						61.4	79.6	108		
CFM112L	I_{max}	% I_N							250	250	250	184
	M_{pk}	Nm							77.6	113	142	158
CFM112H	I_{max}	% I_N								250	250	250
	M_{pk}	Nm								123	160	229

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5.9.4 Rated speed 6000 1/min, PWM 4 kHz

Motor			Assignment to MOVIAXIS®									
	Size		1			2		3		4	5	6
	I_N	A	2	4	8	12	16	24	32	48	64	100
	I_{max}	A	5	10	20	30	40	60	80	120	160	250
CFM71S	I_{max}	% I_N			250	217						
	M_{pk}	Nm			14.0	16.5						
CFM71M	I_{max}	% I_N			250	250	212					
	M_{pk}	Nm			14.9	20.2	21.5					
CFM71L	I_{max}	% I_N				250	250	208				
	M_{pk}	Nm				21.8	27.3	31.4				
CFM90S	I_{max}	% I_N				250	250	242				
	M_{pk}	Nm				22.5	29.4	39.6				
CFM90M	I_{max}	% I_N					250	250	247			
	M_{pk}	Nm					29.2	42.2	52.2			
CFM90L	I_{max}	% I_N						250	250	246		
	M_{pk}	Nm						42.3	55.3	75.6		

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5.9.5 Rated speed 2000 1/min, PWM 8 kHz

Motor			Assignment to MOVIAXIS®									
	Size		1			2		3		4	5	6
	I_N	A	2	4	8	12	16	24	32	48	64	100
	I_{max}	A	5	10	20	30	40	60	80	120	160	250
CFM71S	I_{max}	% I_N	250	220								
	M_{pk}	Nm	11.0	16.5								
CFM71M	I_{max}	% I_N		250								
	M_pk	Nm		19.6								
CFM71L	I_{max}	% I_N		250	210							
	M_{pk}	Nm		21.6	31.4							
CFM90S	I_{max}	% I_N		250	245							
	M_{pk}	Nm		22.2	39.6							
CFM90M	I_{max}	% I_N			250	233	175					
	M_{pk}	Nm			40.7	52.2	52.2					
CFM90L	I_{max}	% I_N			250	250	250					
	M_{pk}	Nm			42.1	60.9	75.6					
CFM112S	I_{max}	% I_N			250	250	250	167				
	M_{pk}	Nm			46.3	66.3	82.3	82.3				
CFM112M	I_{max}	% I_N				250	250	225	169			
	M_{pk}	Nm				67.7	86.9	108	108			
CFM112L	I_{max}	% I_N					250	250	250	167		
	M_{pk}	Nm					88.6	127	158	158		
CFM112H	I_{max}	% I_N						250	250	250	191	
	M_{pk}	Nm						132	172	235	238	

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5.9.6 Rated speed 3000 1/min, PWM 8 kHz

Motor			Assignment to MOVIAXIS®									
	Size		1			2		3		4	5	6
	I_N	A	2	4	8	12	16	24	32	48	64	100
	I_{max}	A	5	10	20	30	40	60	80	120	160	250
CFM71S	I_{max}	% I_N		250								
	M_{pk}	Nm		13.8								
CFM71M	I_{max}	% I_N		250	215							
	M_{pk}	Nm		14.9	21.5							
CFM71L	I_{max}	% I_N			250	208						
	M_{pk}	Nm			27.4	31.4						
CFM90S	I_{max}	% I_N			250	242	181					
	M_{pk}	Nm			29.2	39.6	39.6					
CFM90M	I_{max}	% I_N			250	250	250	167				
	M_{pk}	Nm			28.6	41.5	52.2	52.2				
CFM90L	I_{max}	% I_N				250	250	242	181			
	M_{pk}	Nm				43.3	56.5	75.6	75.6			
CFM112S	I_{max}	% I_N				250	250	250	188			
	M_{pk}	Nm				46.3	60.1	82.3	82.3			
CFM112M	I_{max}	% I_N					250	250	250	171		
	M_{pk}	Nm					60.0	86.1	107	108		
CFM112L	I_{max}	% I_N						250	250	250	188	
	M_{pk}	Nm						88.6	115	158	158	
CFM112H	I_{max}	% I_N								250	250	172
	M_{pk}	Nm								181	226	238

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5.9.7 Rated speed 4500 1/min, PWM 8 kHz

Motor			Assignment to MOVIAXIS®									
	Size		1			2		3		4	5	6
	I_N	A	2	4	8	12	16	24	32	48	64	100
	I_{max}	A	5	10	20	30	40	60	80	120	160	250
CFM71S	I_{max}	% I_N		250	245							
	M_{pk}	Nm		9.97	16.5							
CFM71M	I_{max}	% I_N			250	217						
	M_{pk}	Nm			18.3	21.5						
CFM71L	I_{max}	% I_N			250	250	238					
	M_{pk}	Nm			19.2	26.8	31.4					
CFM90S	I_{max}	% I_N				250	250	183				
	M_{pk}	Nm				28.8	36.7	39.6				
CFM90M	I_{max}	% I_N				250	250	246	184			
	M_{pk}	Nm				29.5	38.5	52.2	52.2			
CFM90L	I_{max}	% I_N						250	250	179		
	M_{pk}	Nm						56.5	71.5	75.6		
CFM112S	I_{max}	% I_N						250	250	188		
	M_{pk}	Nm						60.1	75.5	82.3		
CFM112M	I_{max}	% I_N						250	250	250	188	
	M_{pk}	Nm						61.4	79.6	108	108	
CFM112L	I_{max}	% I_N								250	250	184
	M_{pk}	Nm								113	142	158
CFM112H	I_{max}	% I_N									250	250
	M_{pk}	Nm									160	229

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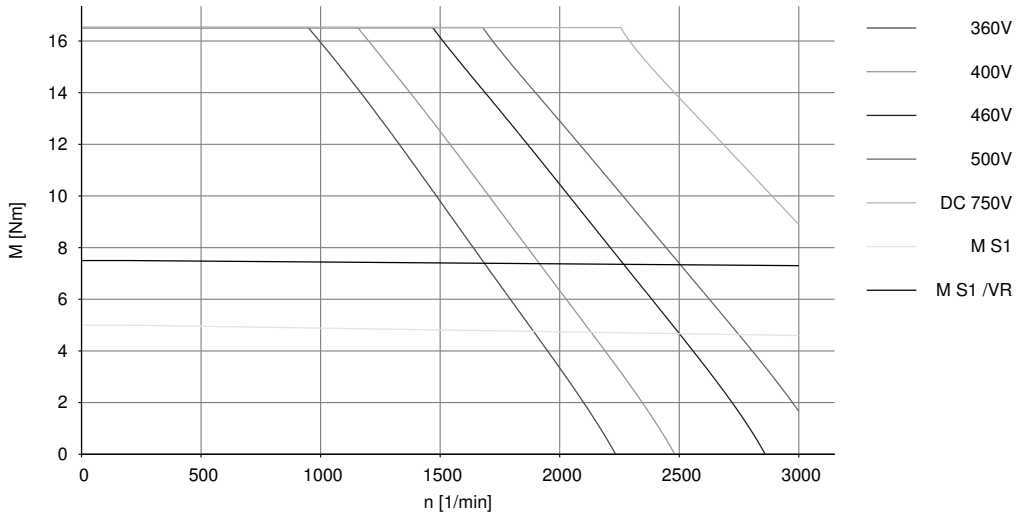
5.9.8 Rated speed 6000 1/min, PWM 8 kHz

Motor			Assignment to MOVIAXIS®									
	Size		1			2		3		4	5	6
	I_N	A	2	4	8	12	16	24	32	48	64	100
	I_{max}	A	5	10	20	30	40	60	80	120	160	250
CFM71S	I_{max}	% I_N			250	217						
	M_{pk}	Nm			14.0	16.5						
CFM71M	I_{max}	% I_N			250	250	212					
	M_{pk}	Nm			14.9	20.2	21.5					
CFM71L	I_{max}	% I_N				250	250	208				
	M_{pk}	Nm				21.8	27.3	31.4				
CFM90S	I_{max}	% I_N				250	250	242	181			
	M_{pk}	Nm				22.5	29.4	39.6	39.6			
CFM90M	I_{max}	% I_N					250	250	247			
	M_{pk}	Nm					29.2	42.2	52.2			
CFM90L	I_{max}	% I_N						250	250	246	184	
	M_{pk}	Nm						42.3	55.3	75.6	75.6	

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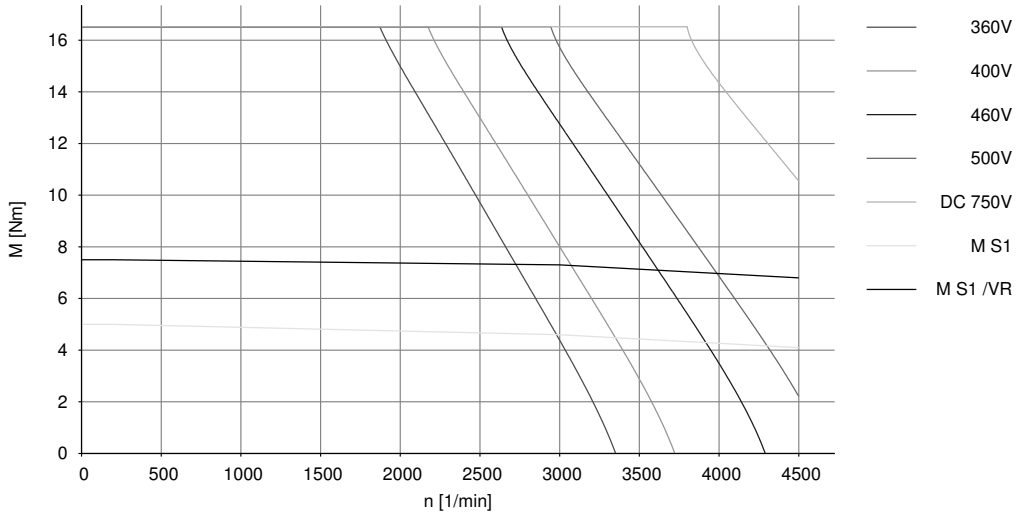
5.10 Dynamic and thermal limit characteristic curves, system voltage 400 V

5.10.1 CFM71S 2000 1/min



14458207115

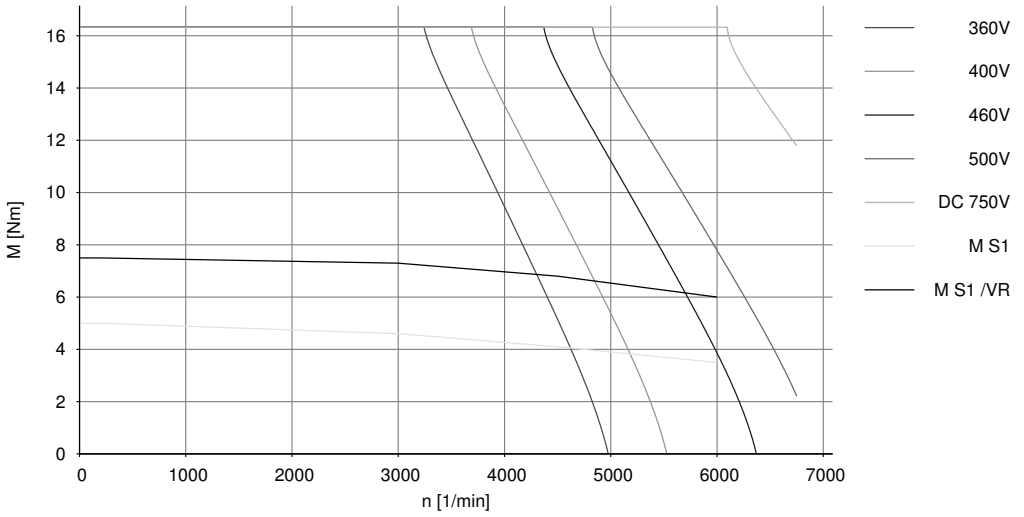
5.10.2 CFM71S 3000 1/min



14458209547

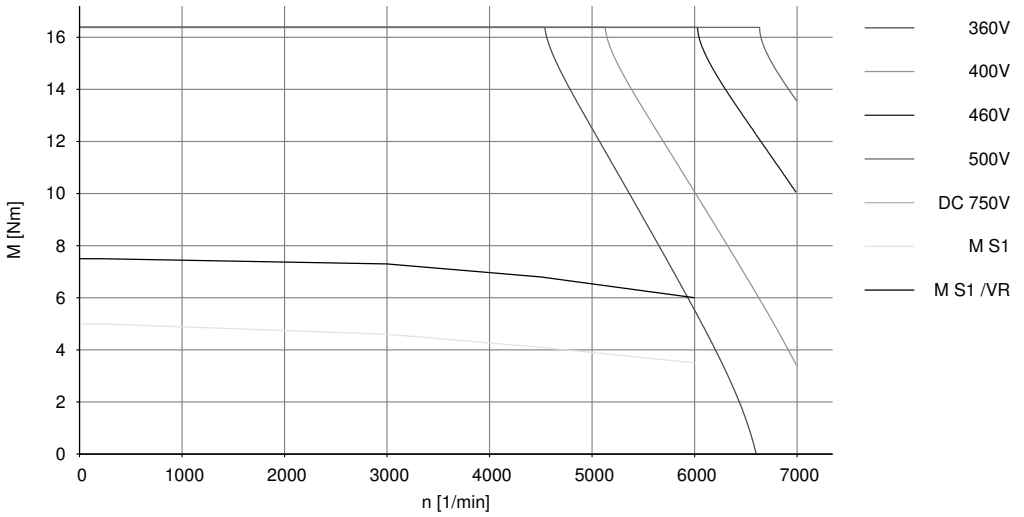
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5.10.3 CFM71S 4500 1/min



14458211979

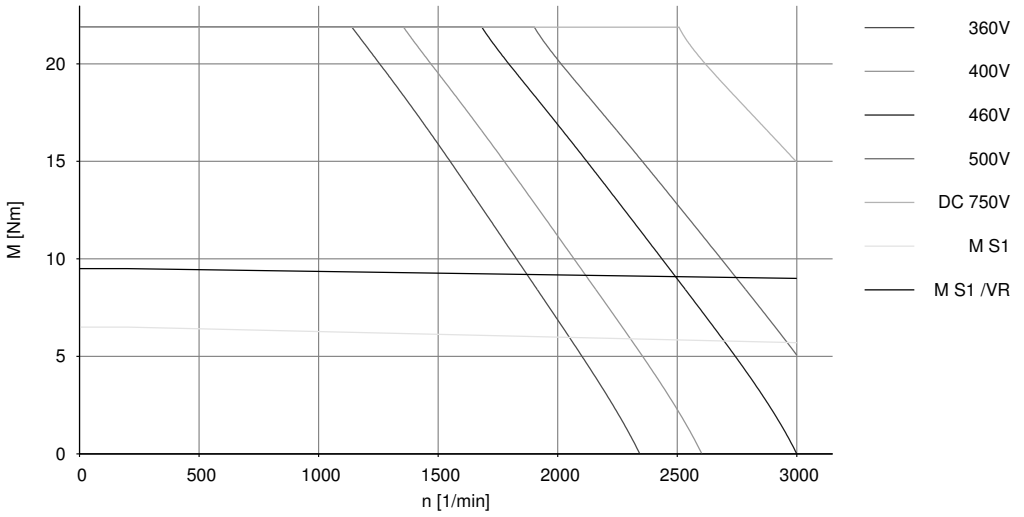
5.10.4 CFM71S 6000 1/min



14458214411

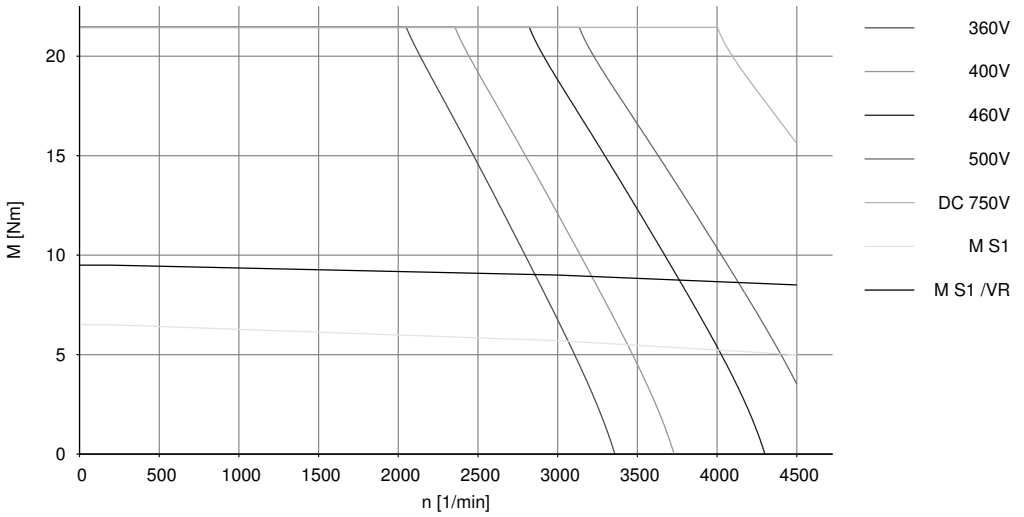
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5.10.5 CFM71M 2000 1/min



14458197387

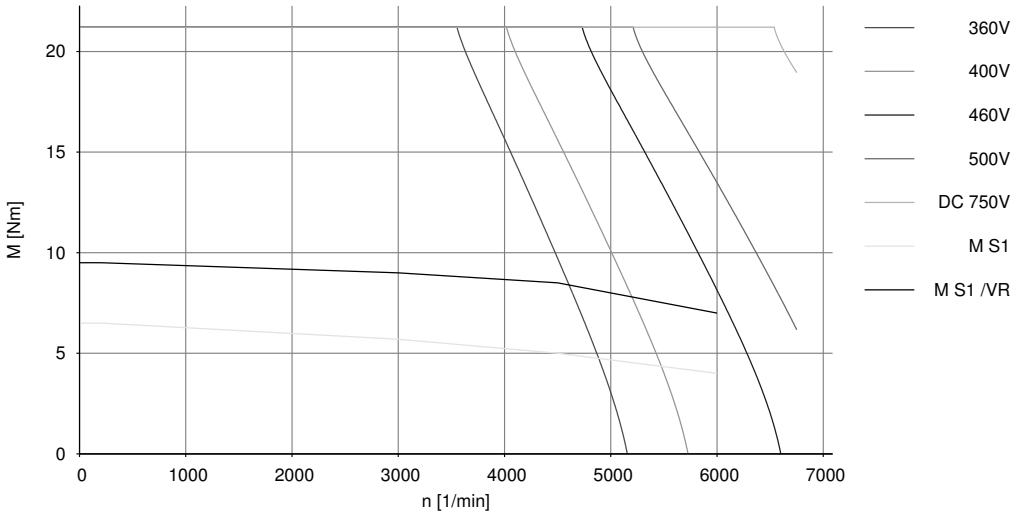
5.10.6 CFM71M 3000 1/min



14458199819

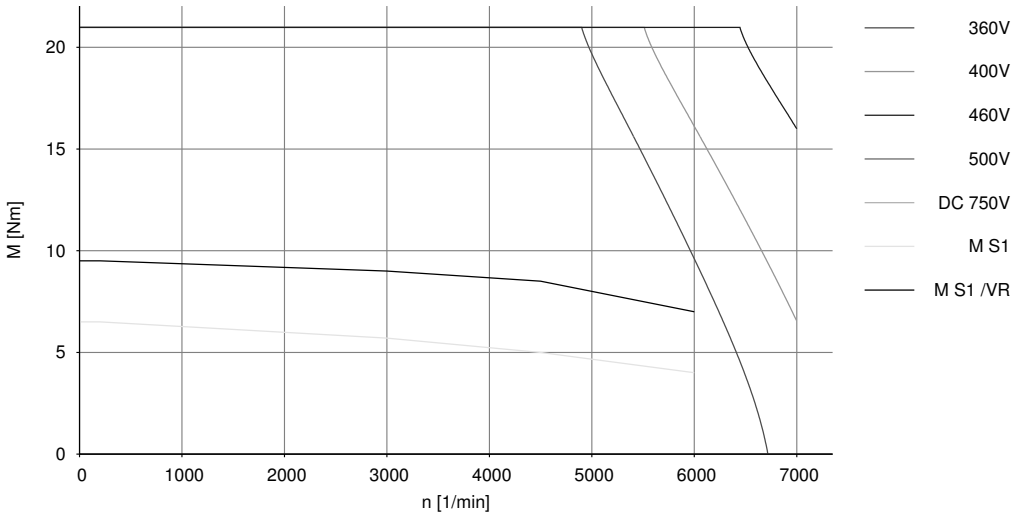
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5.10.7 CFM71M 4500 1/min



14458202251

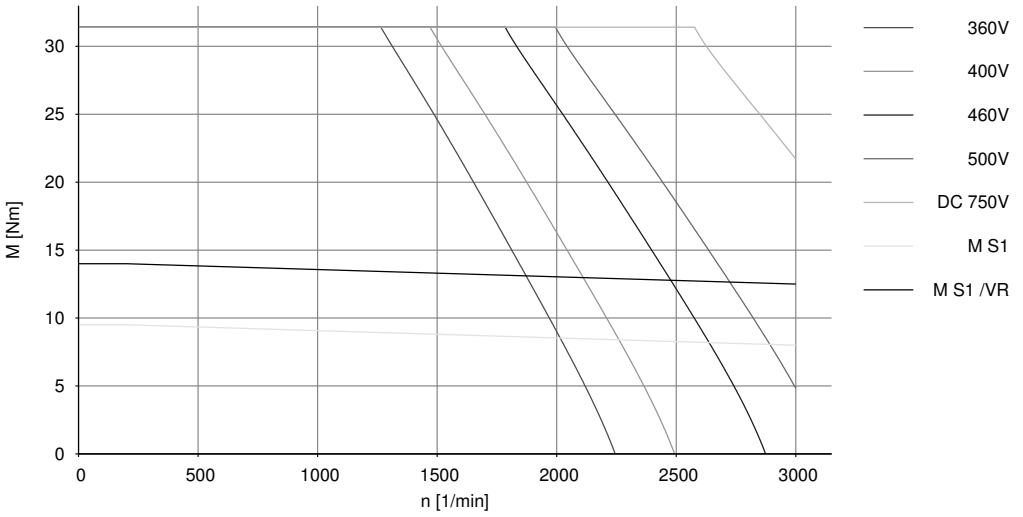
5.10.8 CFM71M 6000 1/min



14458204683

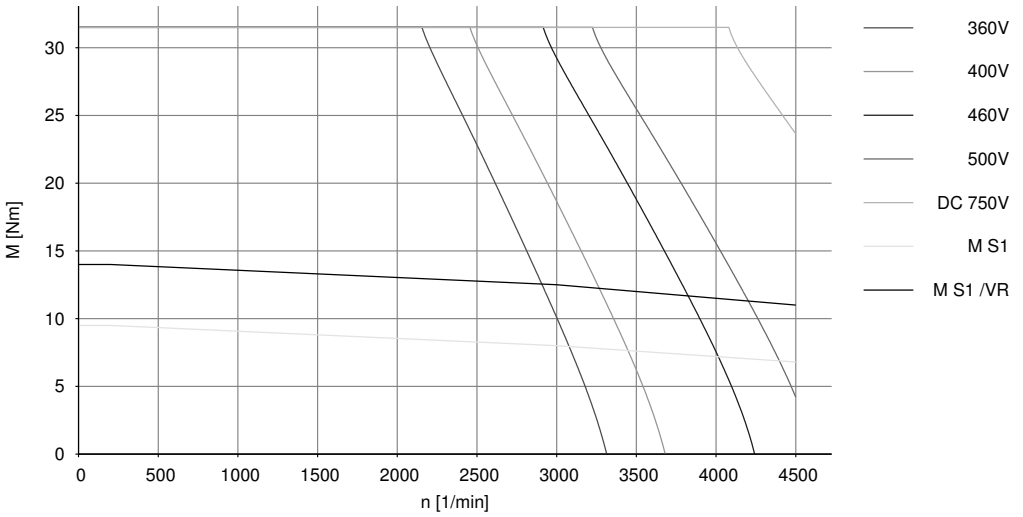
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5.10.9 CFM71L 2000 1/min



14458187659

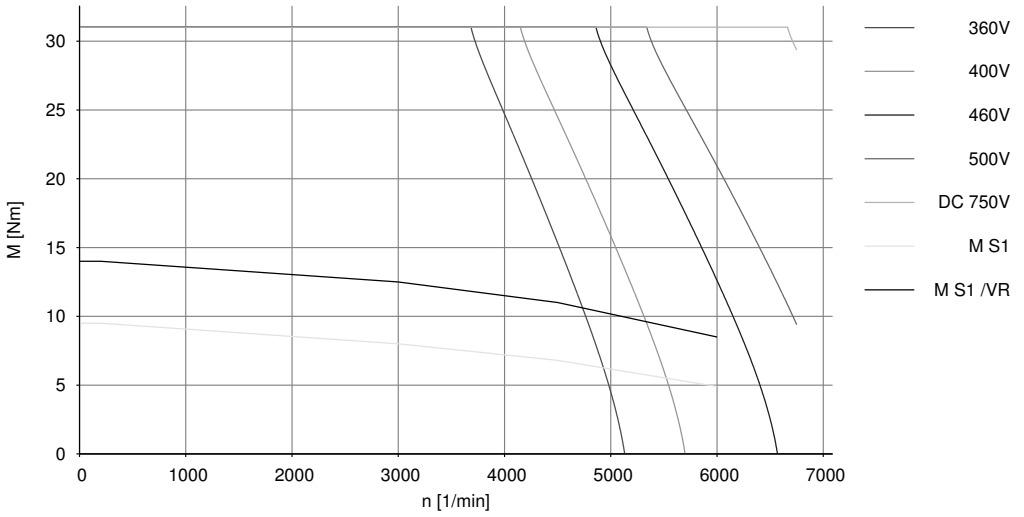
5.10.10 CFM71L 3000 1/min



14458190091

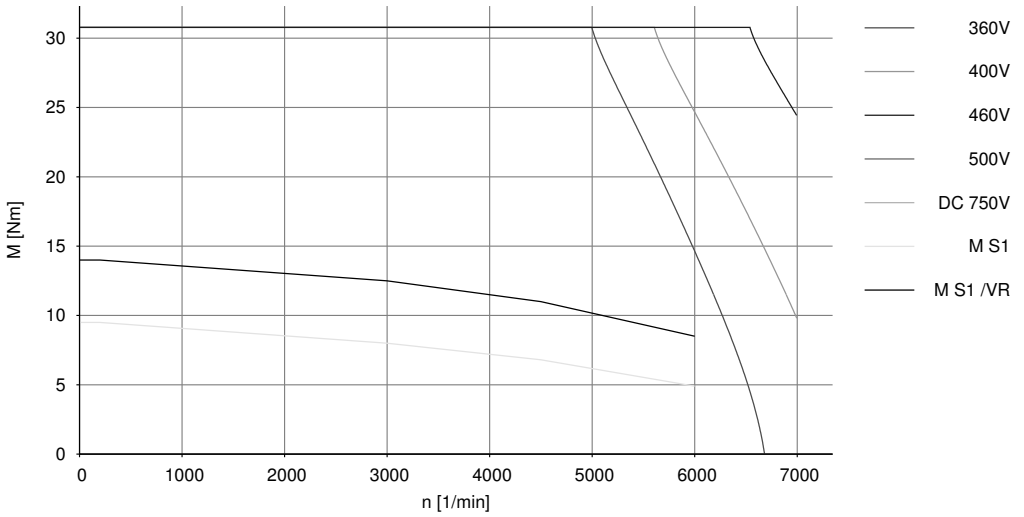
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5.10.11 CFM71L 4500 1/min



14458192523

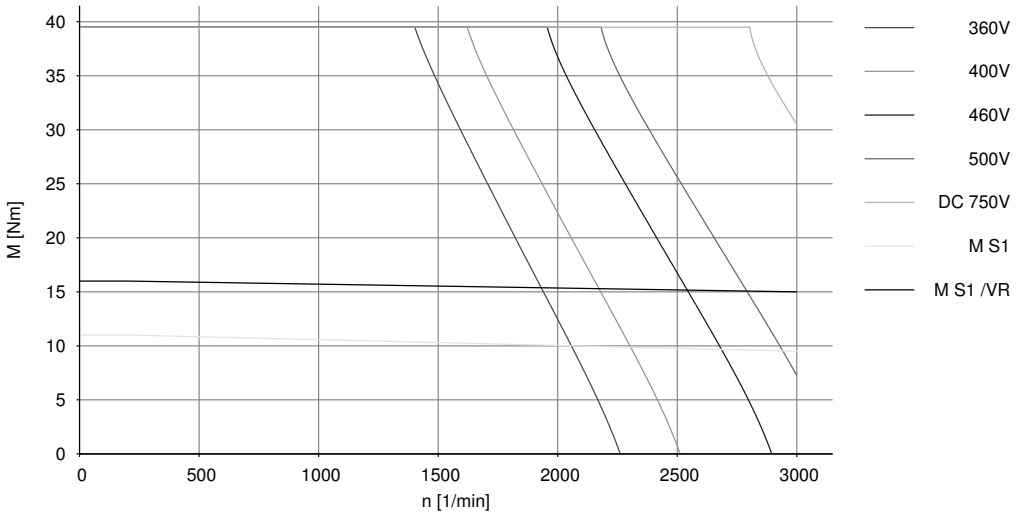
5.10.12 CFM71L 6000 1/min



14458194955

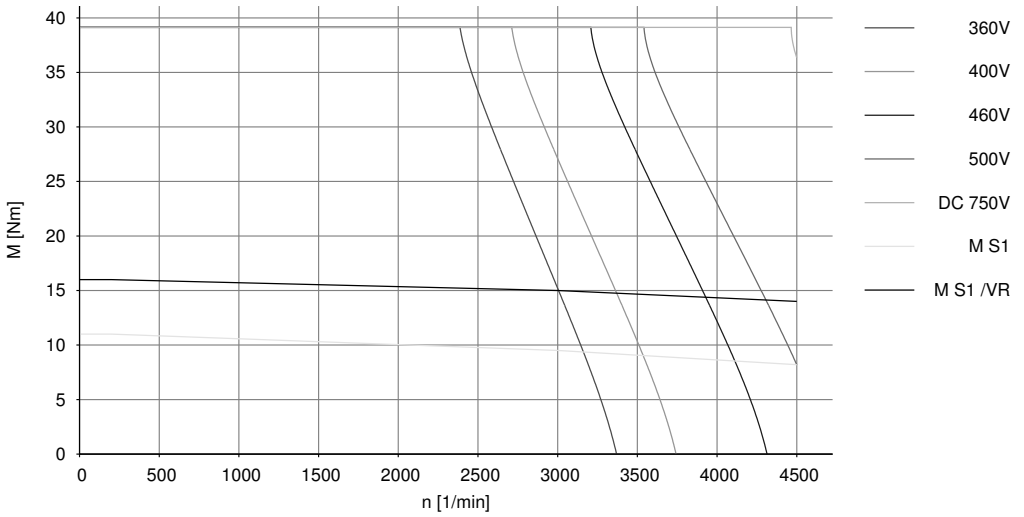
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5.10.13 CFM90S 2000 1/min



14458236299

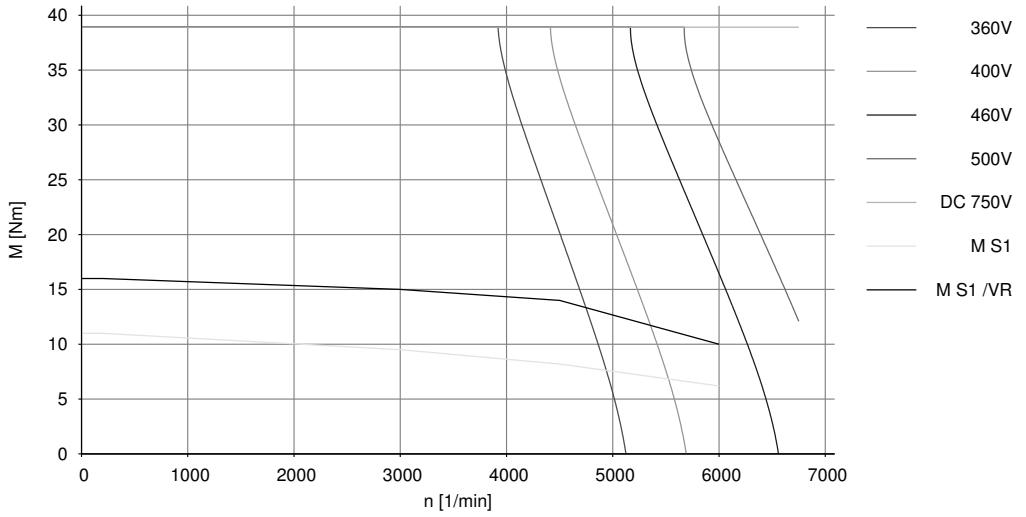
5.10.14 CFM90S 3000 1/min



14458238731

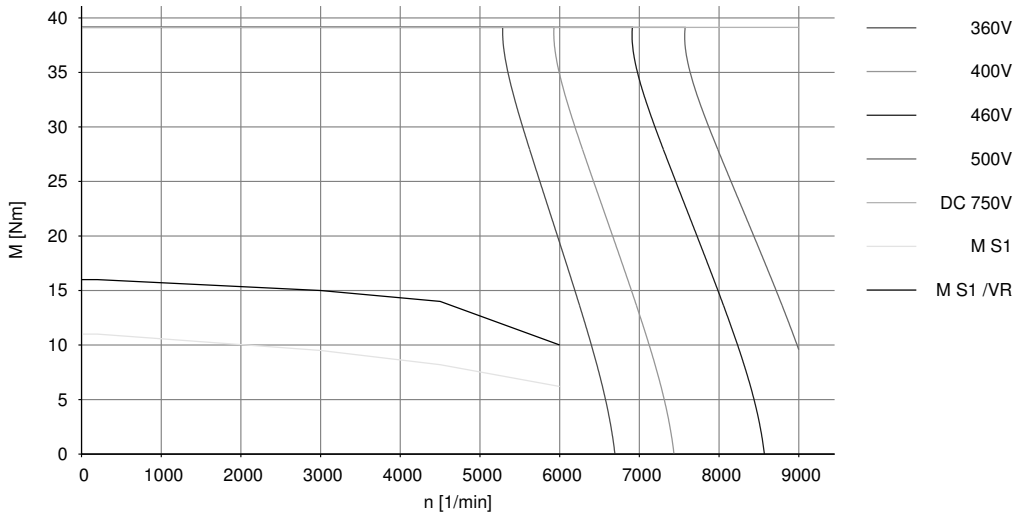
19424019/EN – 03/2017

5.10.15 CFM90S 4500 1/min



14458241163

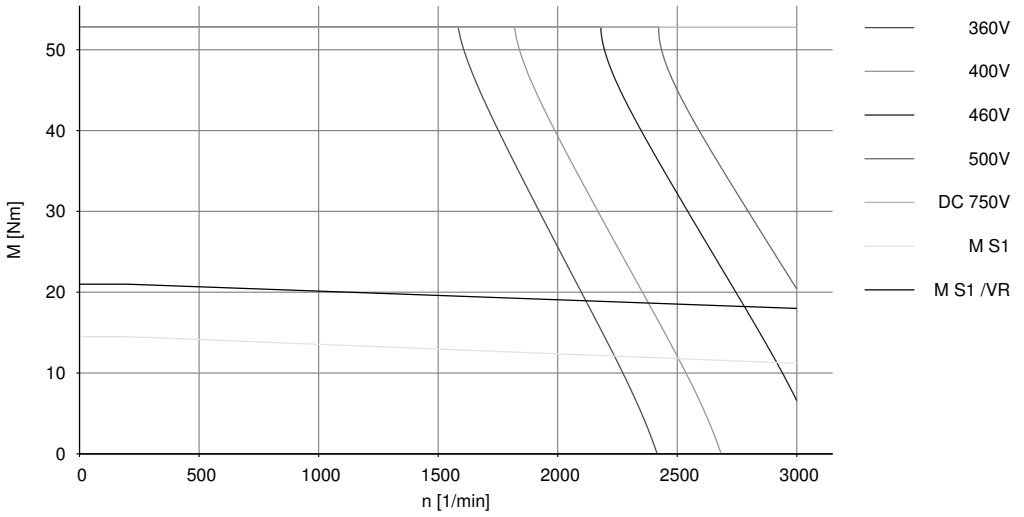
5.10.16 CFM90S 6000 1/min



14458243595

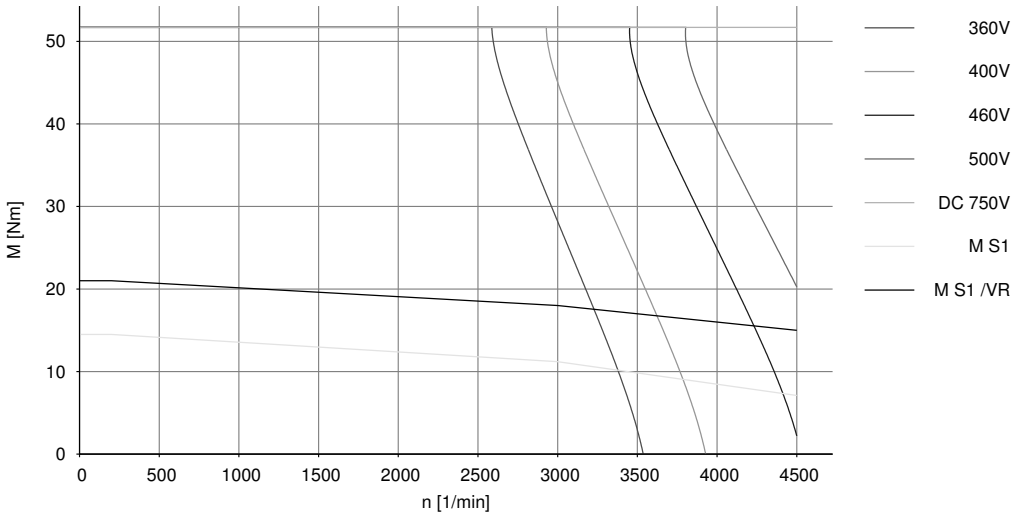
19424019/EN – 03/2017

5.10.17 CFM90M 2000 1/min



14458226571

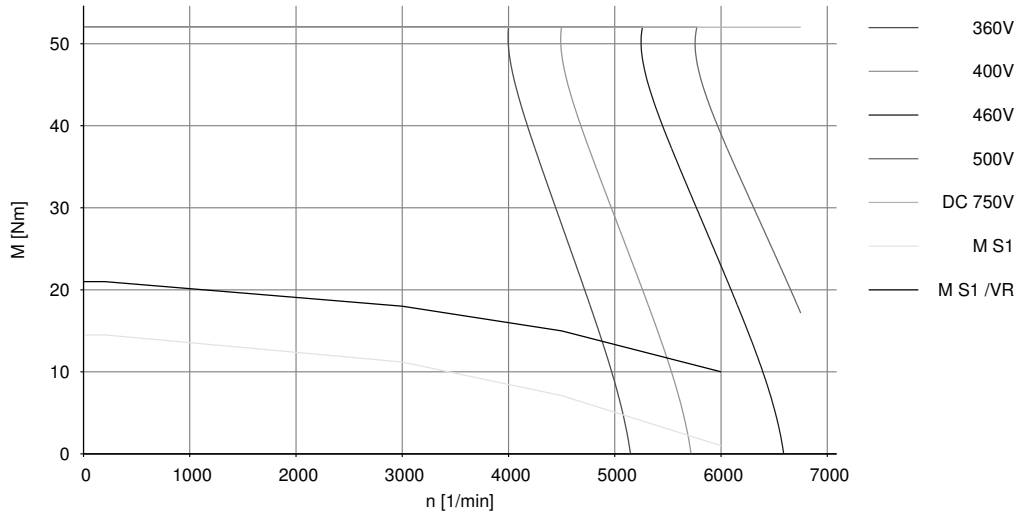
5.10.18 CFM90M 3000 1/min



14458229003

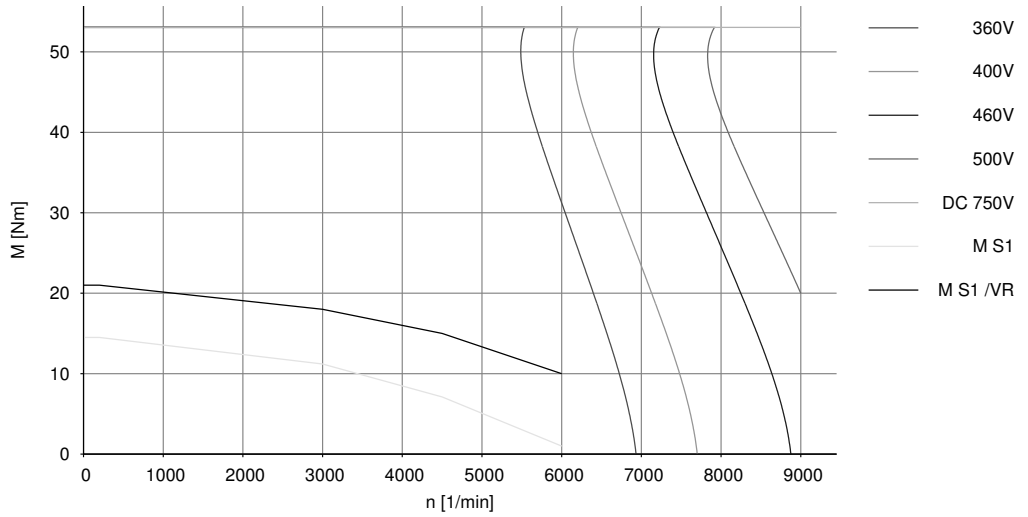
19424019/EN – 03/2017

5.10.19 CFM90M 4500 1/min



14458231435

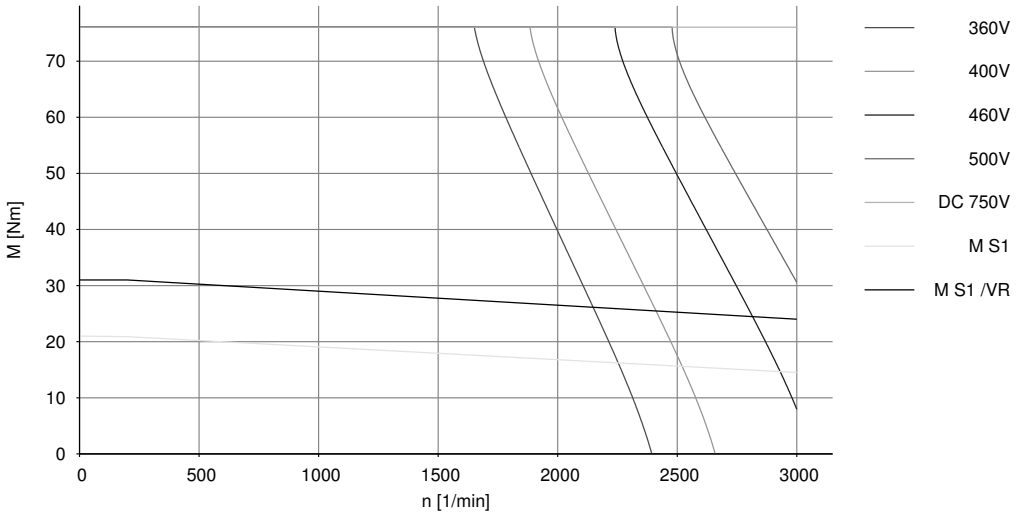
5.10.20 CFM90M 6000 1/min



14458233867

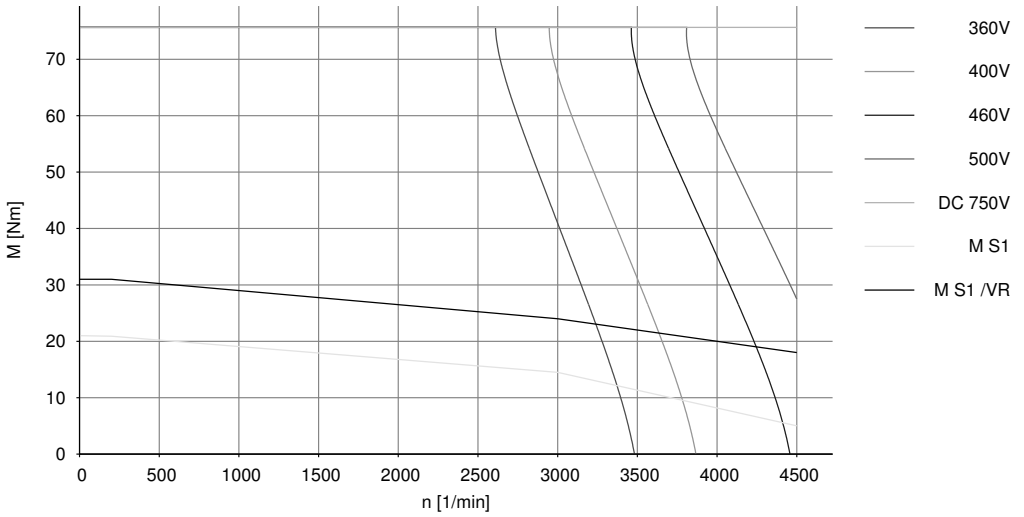
19424019/EN – 03/2017

5.10.21 CFM90L 2000 1/min



14458216843

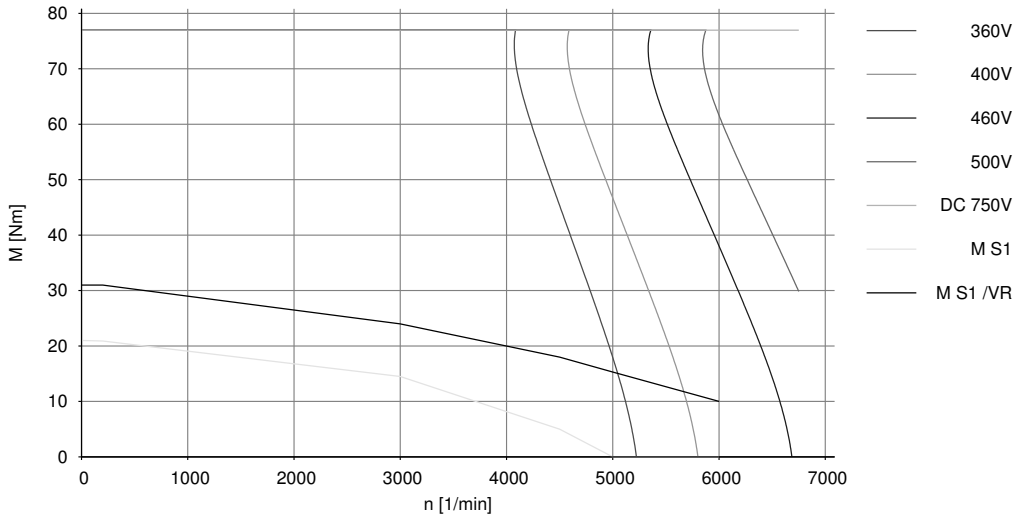
5.10.22 CFM90L 3000 1/min



14458219275

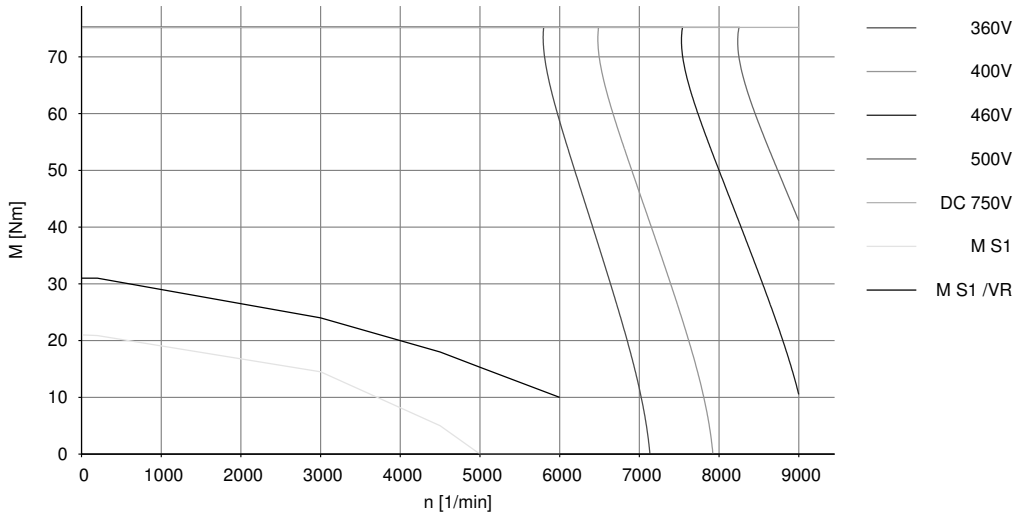
19424019/EN – 03/2017

5.10.23 CFM90L 4500 1/min



14458221707

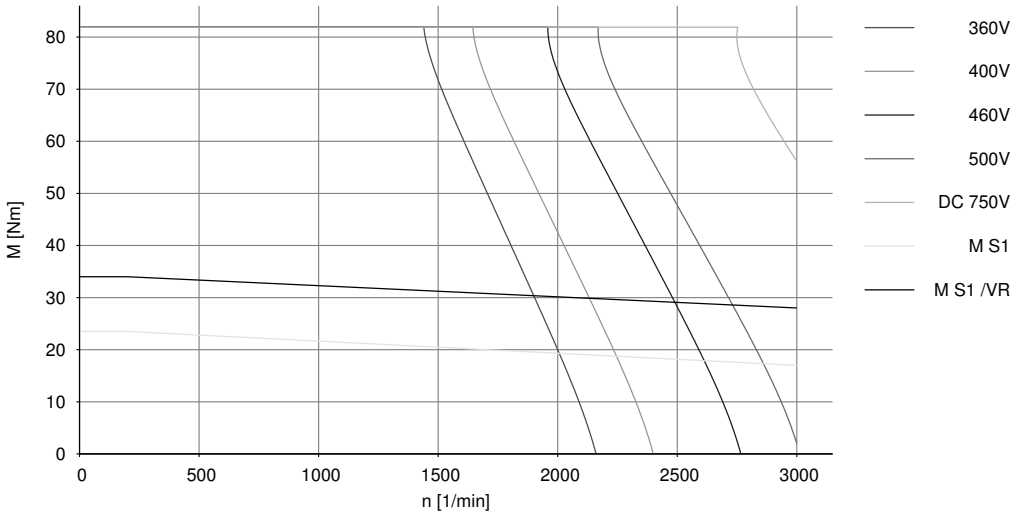
5.10.24 CFM90L 6000 1/min



14458224139

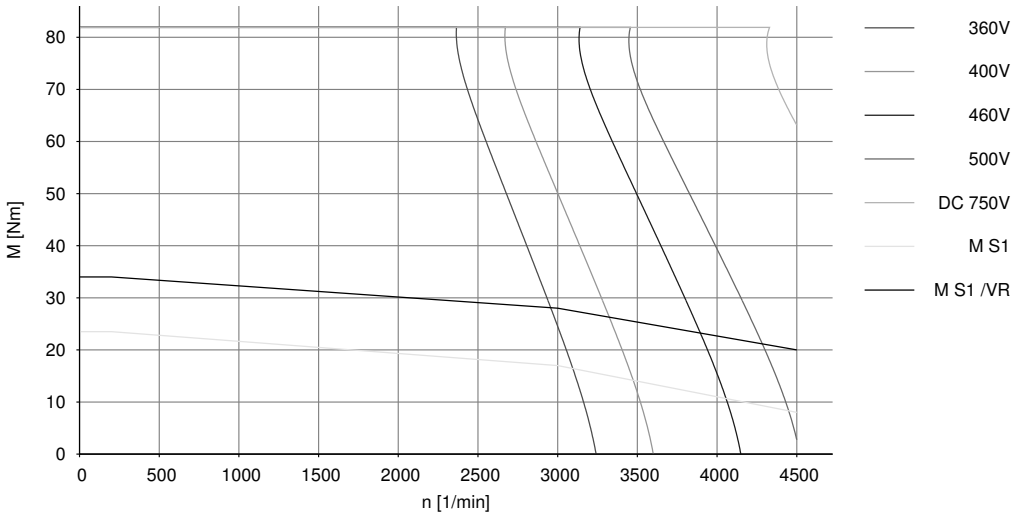
19424019/EN – 03/2017

5.10.25 CFM112S 2000 1/min



14458180363

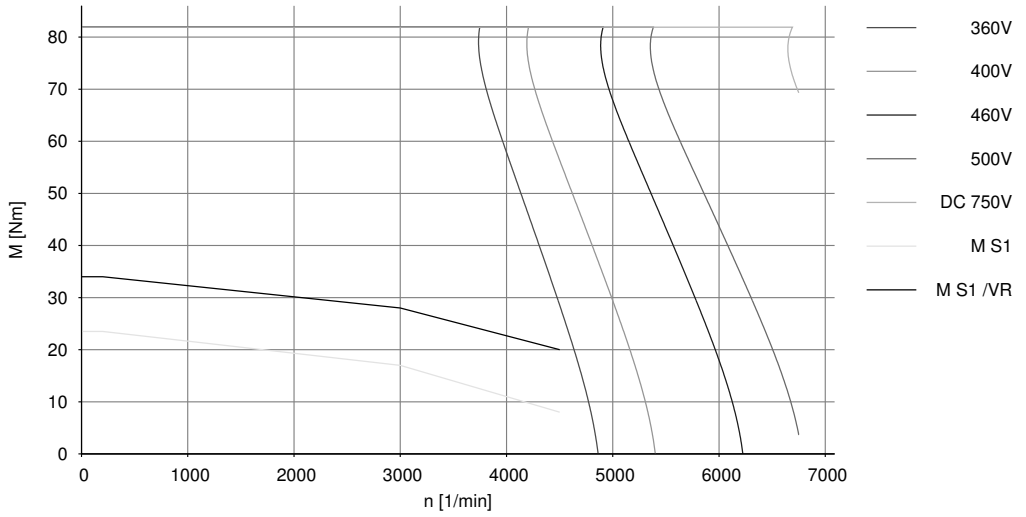
5.10.26 CFM112S 3000 1/min



14458182795

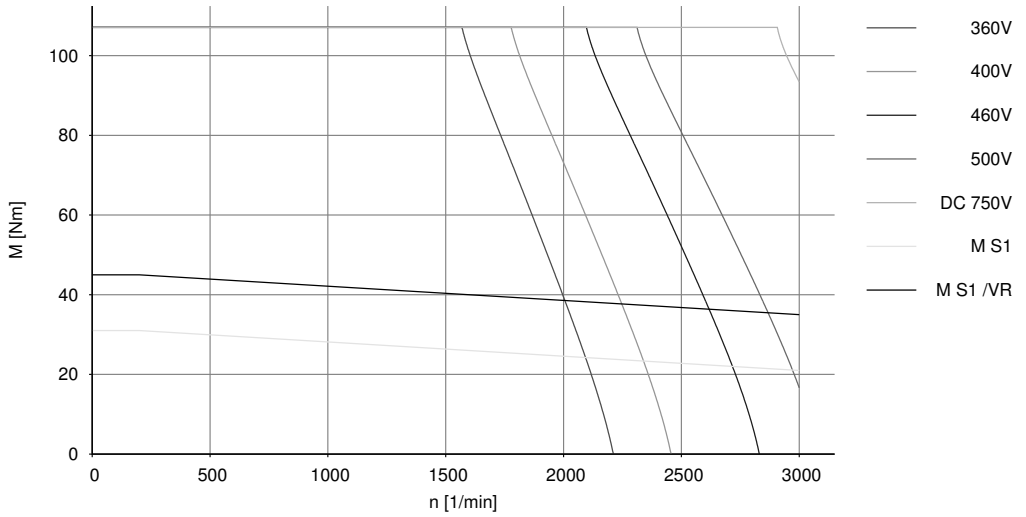
19424019/EN – 03/2017

5.10.27 CFM112S 4500 1/min



14458185227

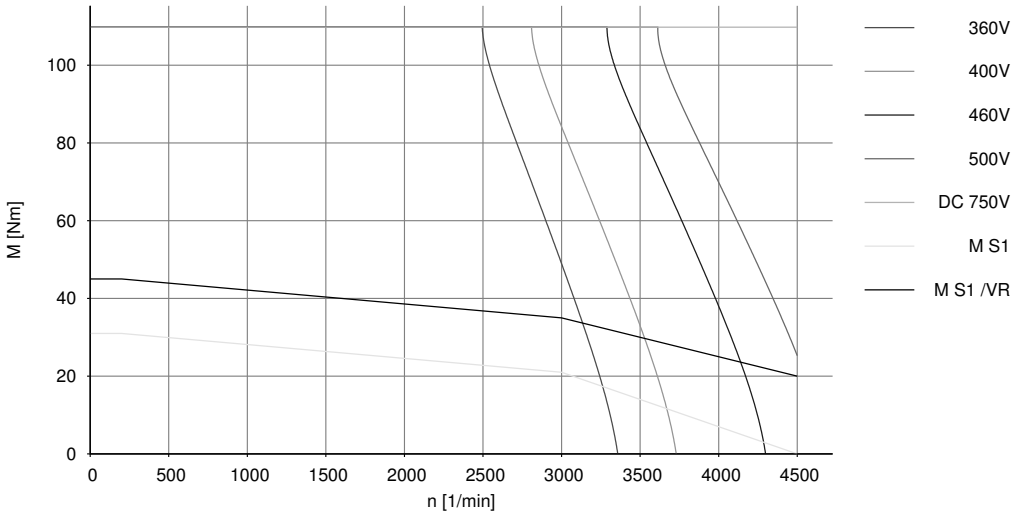
5.10.28 CFM112M 2000 1/min



14458173067

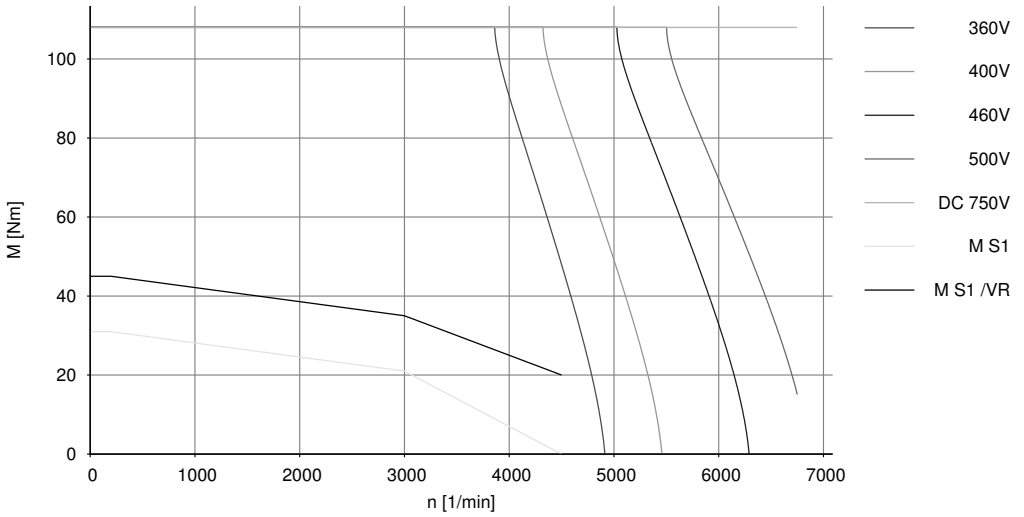
19424019/EN – 03/2017

5.10.29 CFM112M 3000 1/min



14458175499

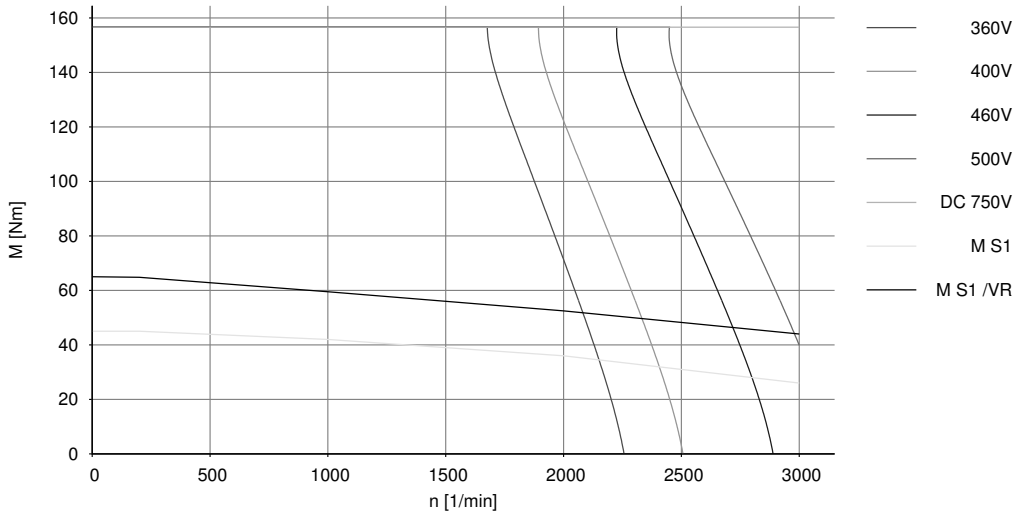
5.10.30 CFM112M 4500 1/min



14458177931

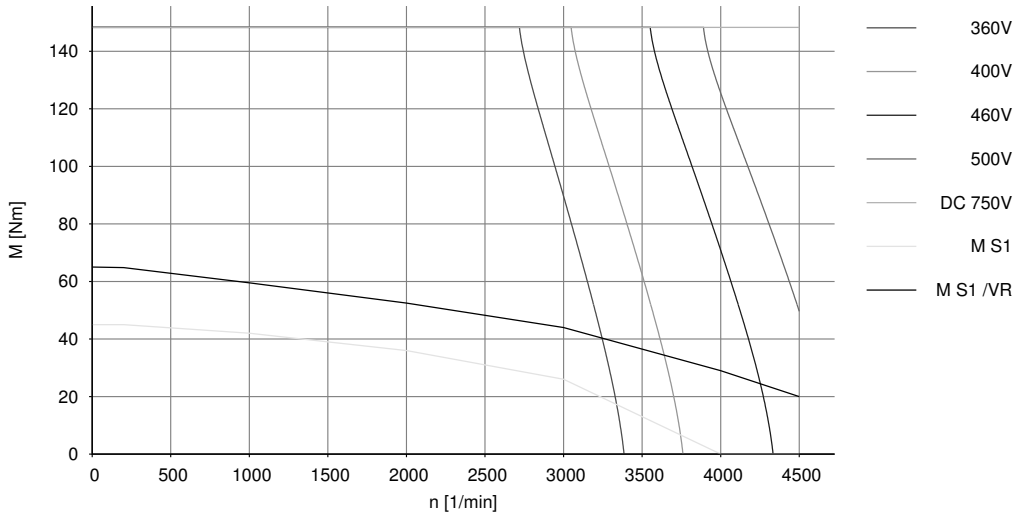
19424019/EN – 03/2017

5.10.31 CFM112L 2000 1/min



14458165771

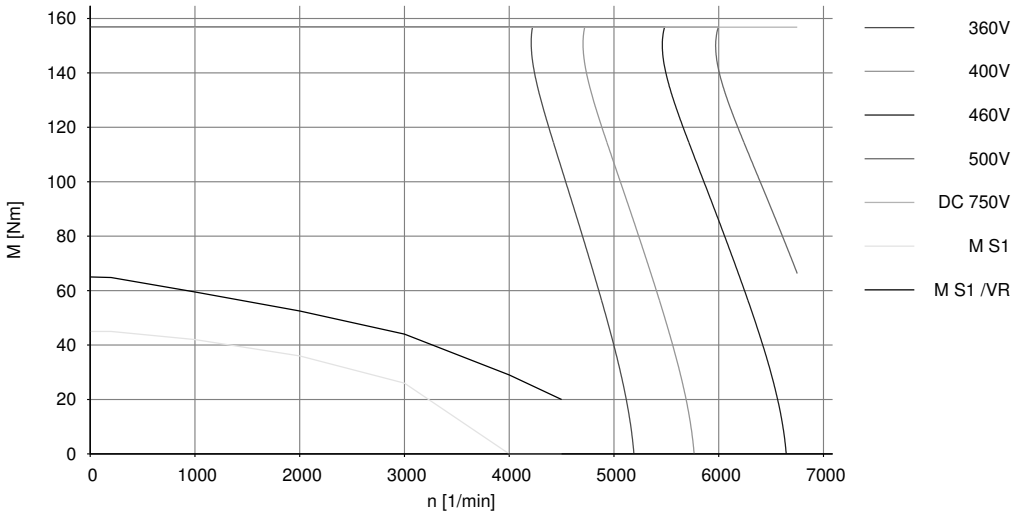
5.10.32 CFM112L 3000 1/min



14458168203

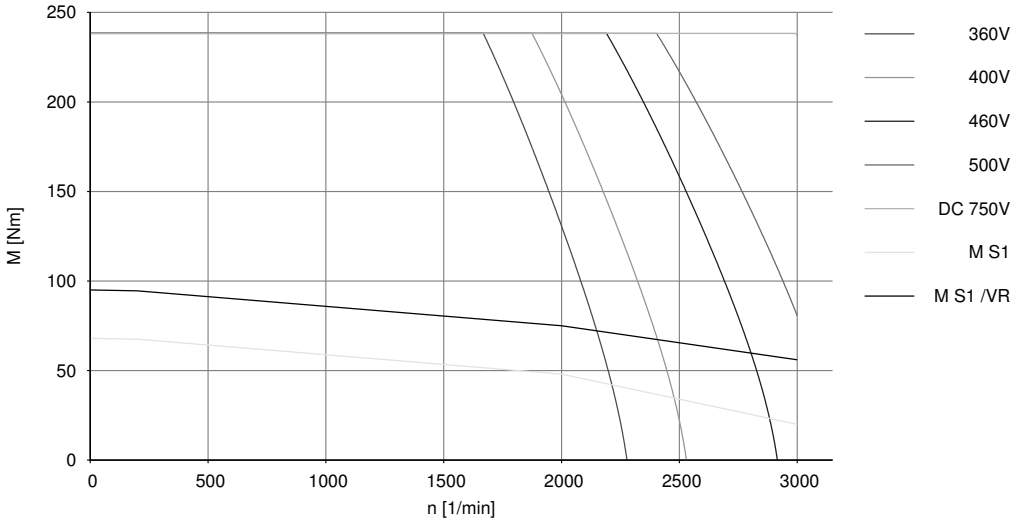
19424019/EN – 03/2017

5.10.33 CFM112L 4500 1/min



14458170635

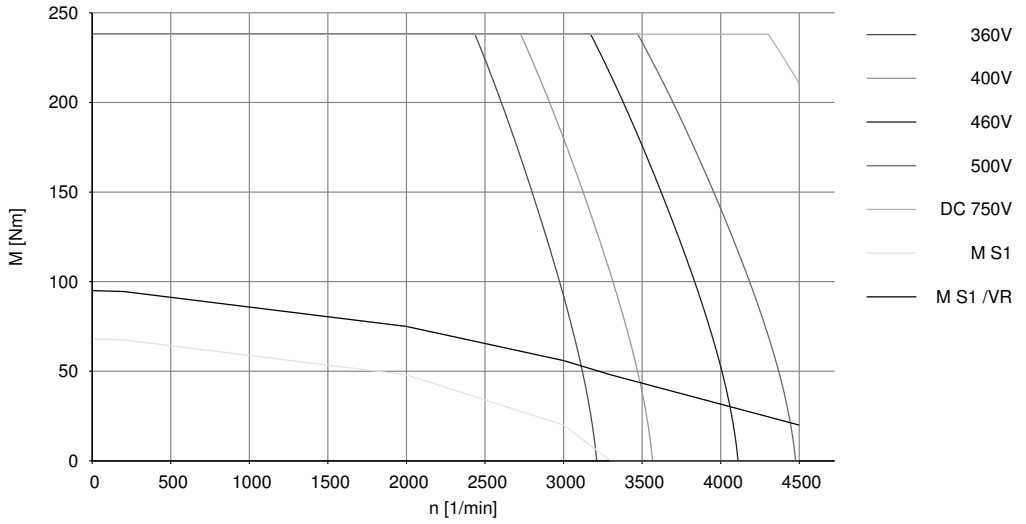
5.10.34 CFM112H 2000 1/min



14458056075

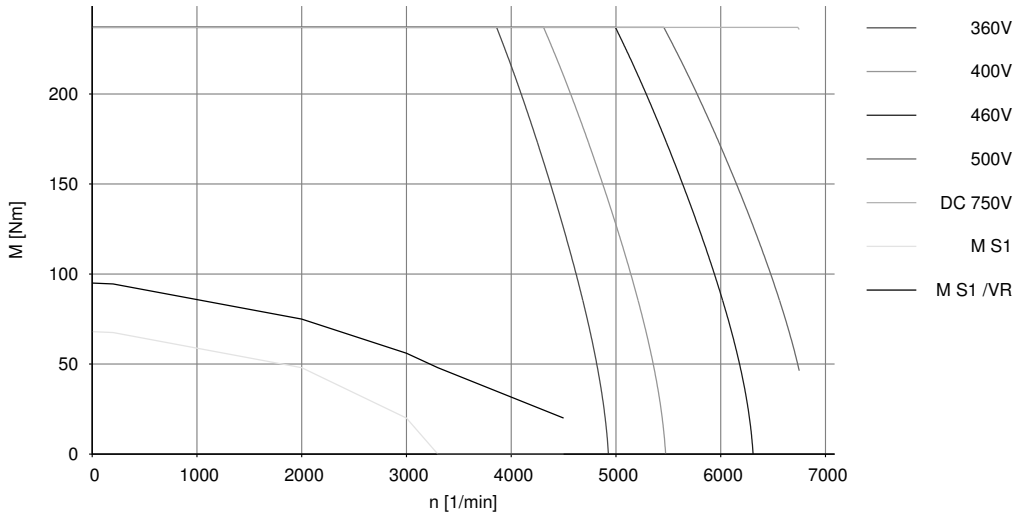
19424019/EN – 03/2017

5.10.35 CFM112H 3000 1/min



14458058507

5.10.36 CFM112H 4500 1/min

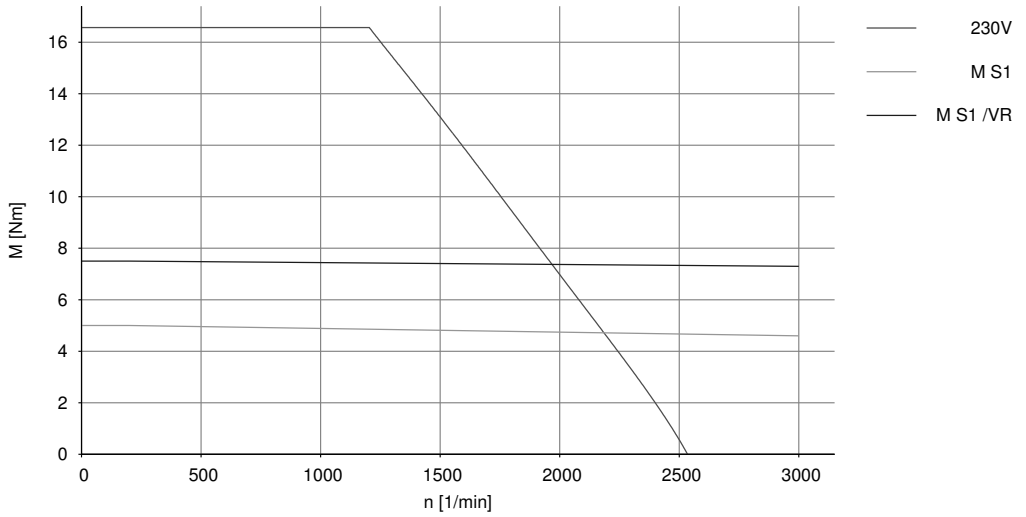


14458060939

19424019/EN – 03/2017

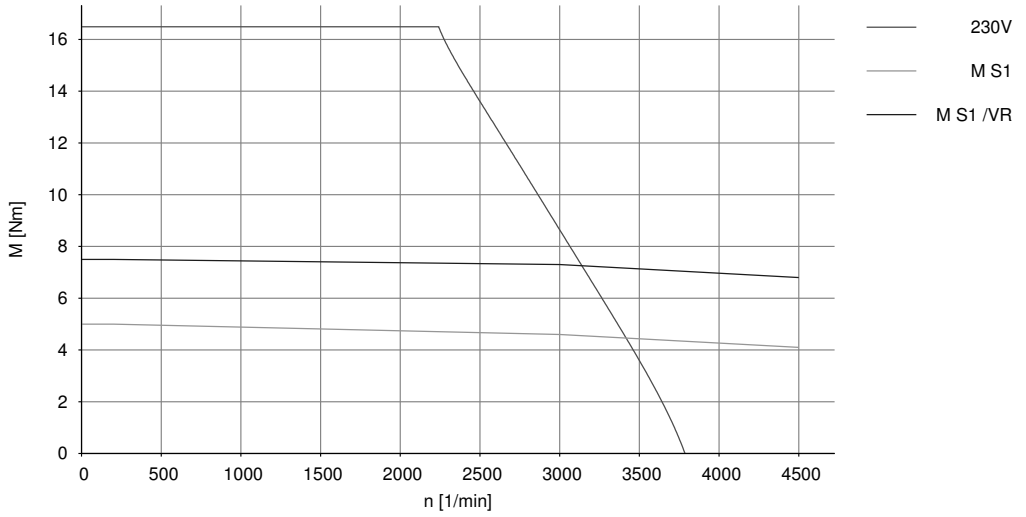
5.11 Dynamic and thermal limit characteristic curves, system voltage 230 V

5.11.1 CFM71S 2000 1/min



14458008715

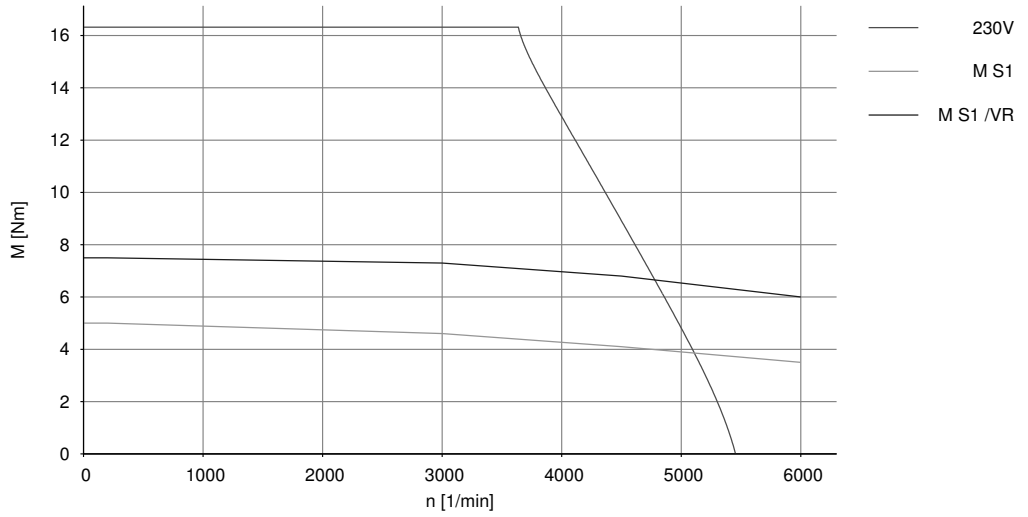
5.11.2 CFM71S 3000 1/min



14458011147

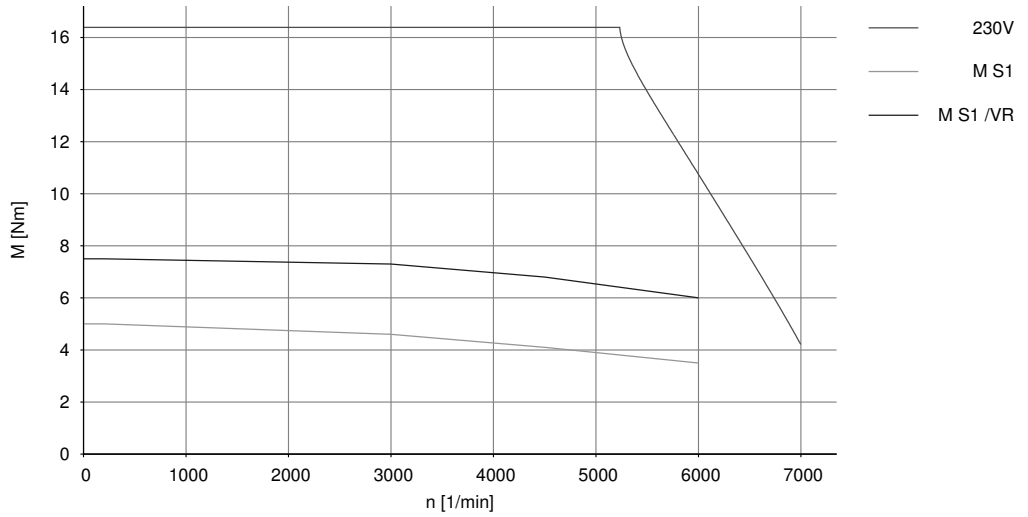
19424019/EN – 03/2017

5.11.3 CFM71S 4500 1/min



14458013579

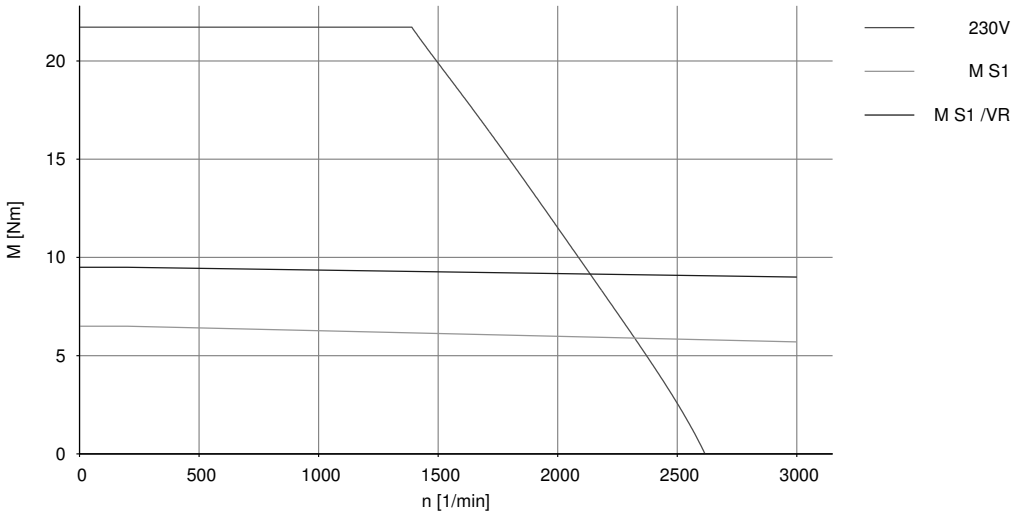
5.11.4 CFM71S 6000 1/min



14458016011

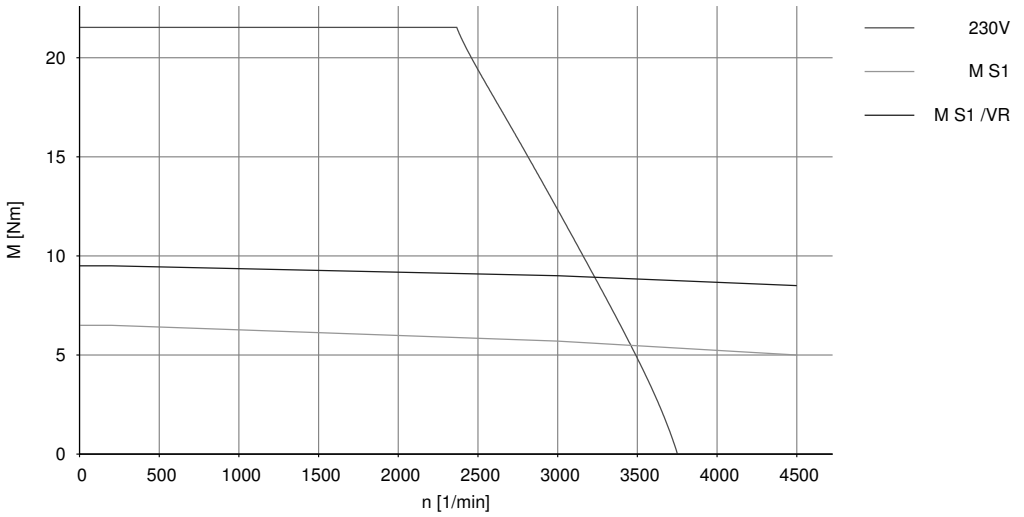
19424019/EN – 03/2017

5.11.5 CFM71M 2000 1/min



14457998987

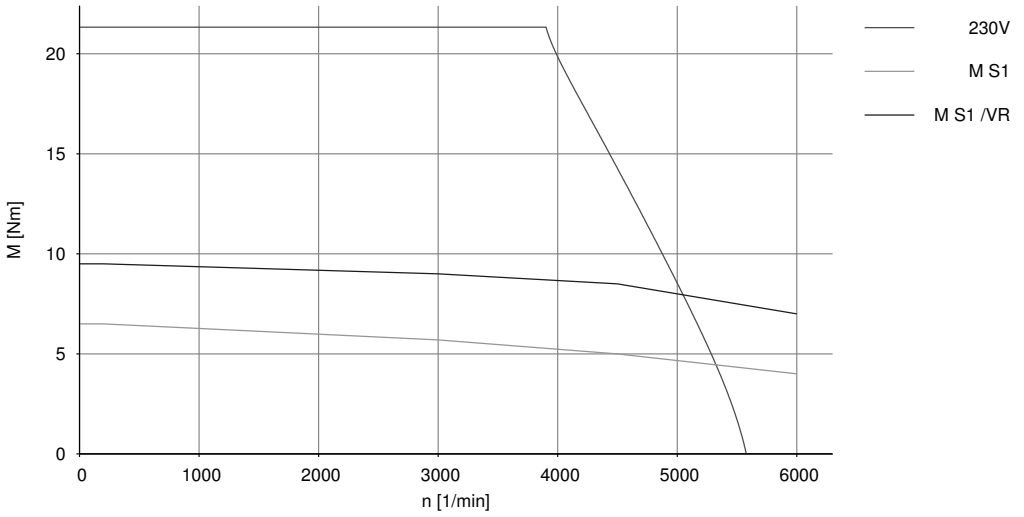
5.11.6 CFM71M 3000 1/min



14458001419

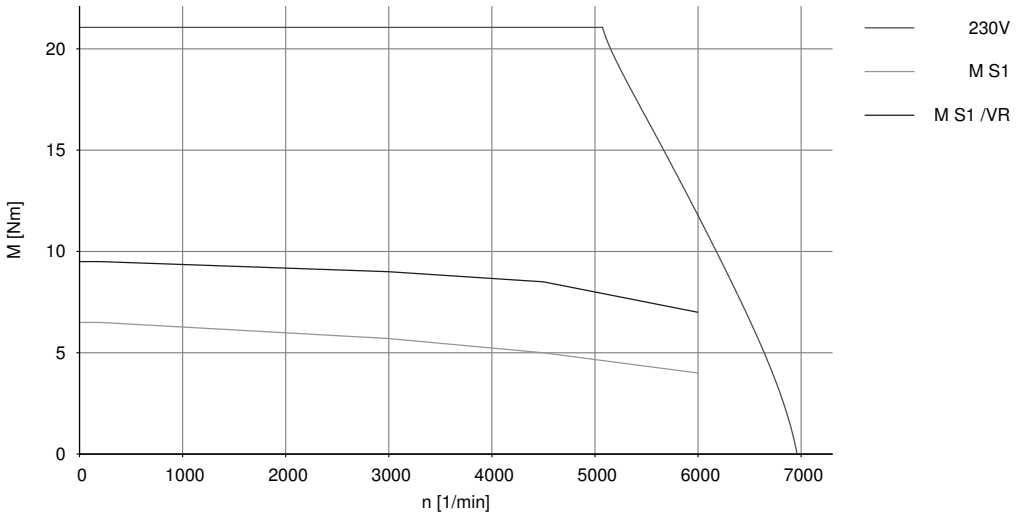
19424019/EN – 03/2017

5.11.7 CFM71M 4500 1/min



14458003851

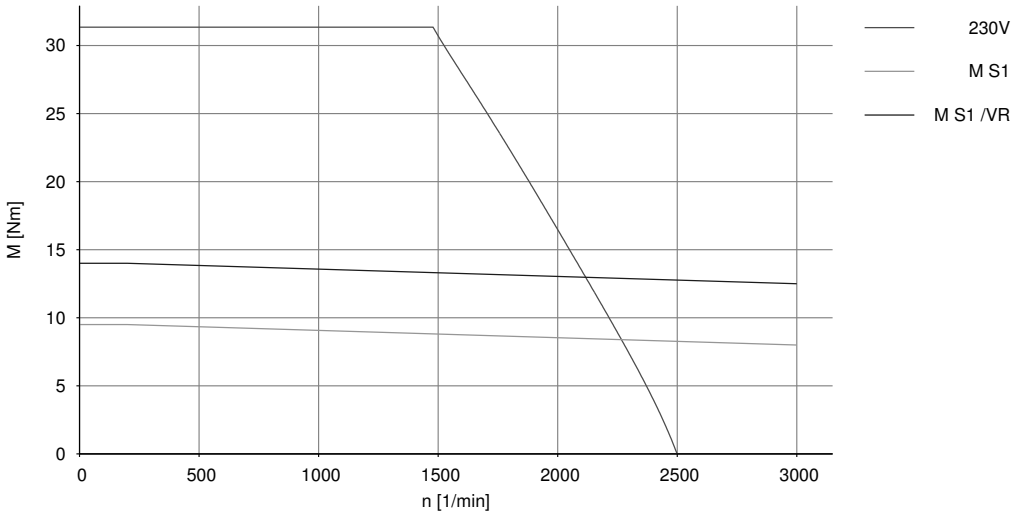
5.11.8 CFM71M 6000 1/min



14458006283

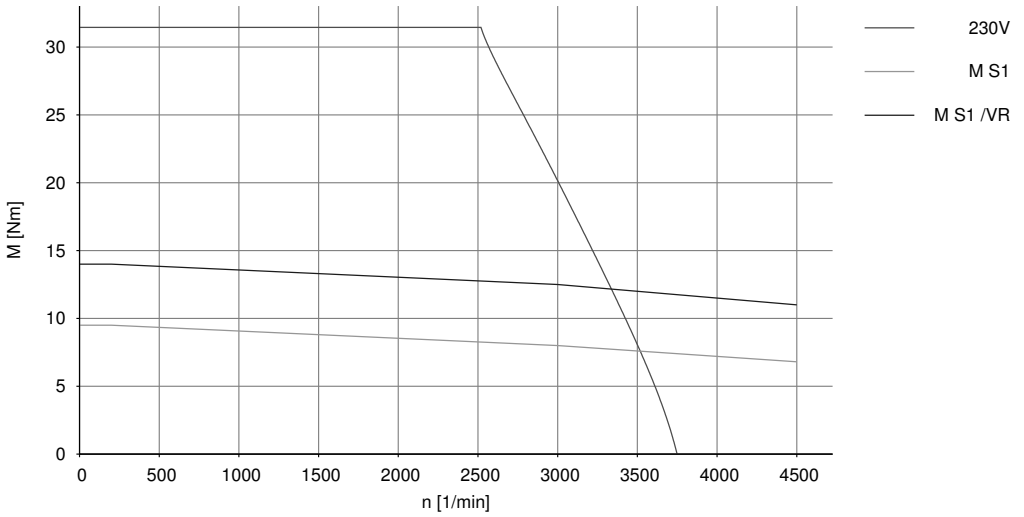
19424019/EN – 03/2017

5.11.9 CFM71L 2000 1/min



14457939083

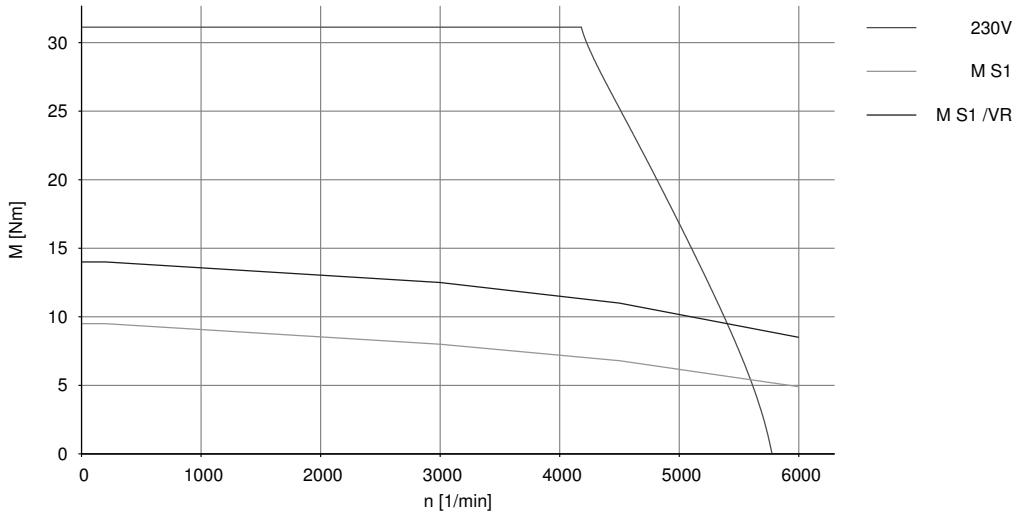
5.11.10 CFM71L 3000 1/min



14457991691

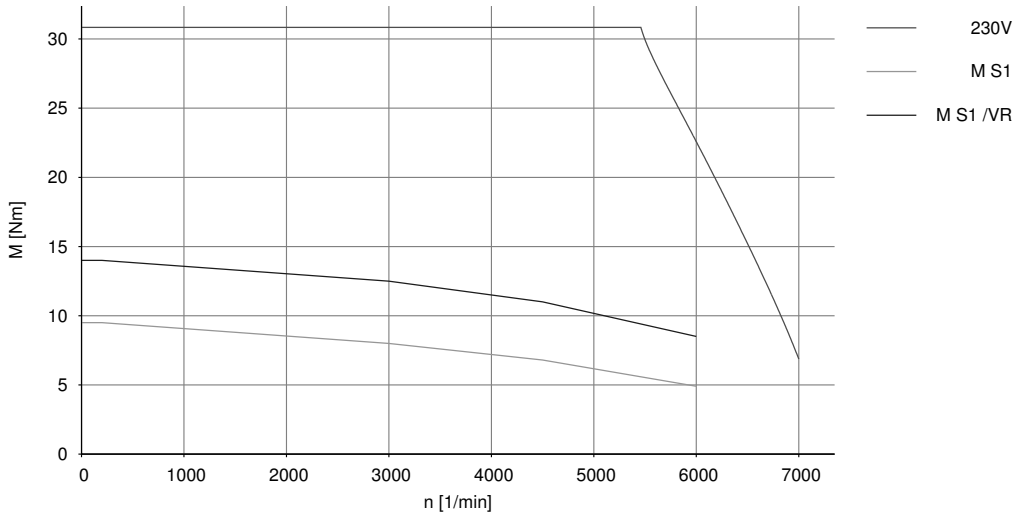
19424019/EN – 03/2017

5.11.11 CFM71L 4500 1/min



14457994123

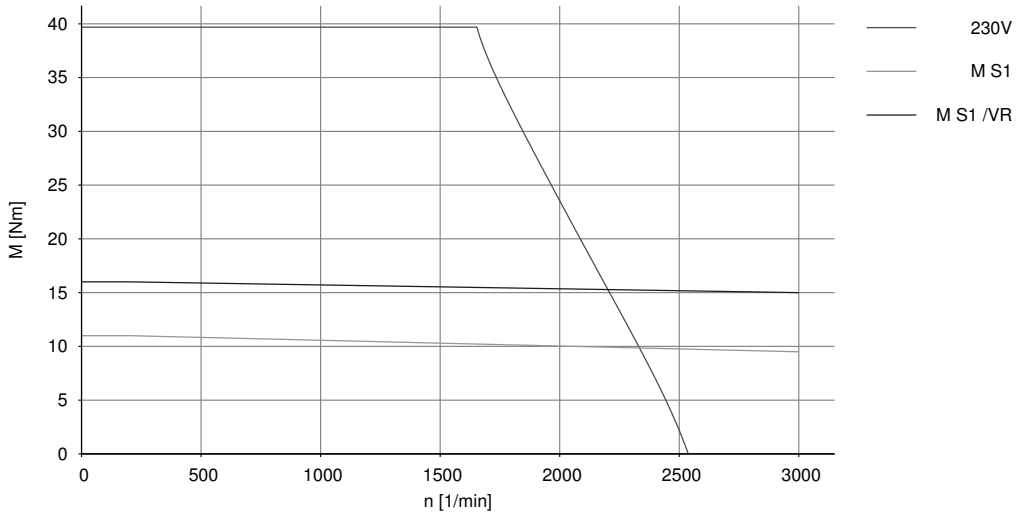
5.11.12 CFM71L 6000 1/min



14457996555

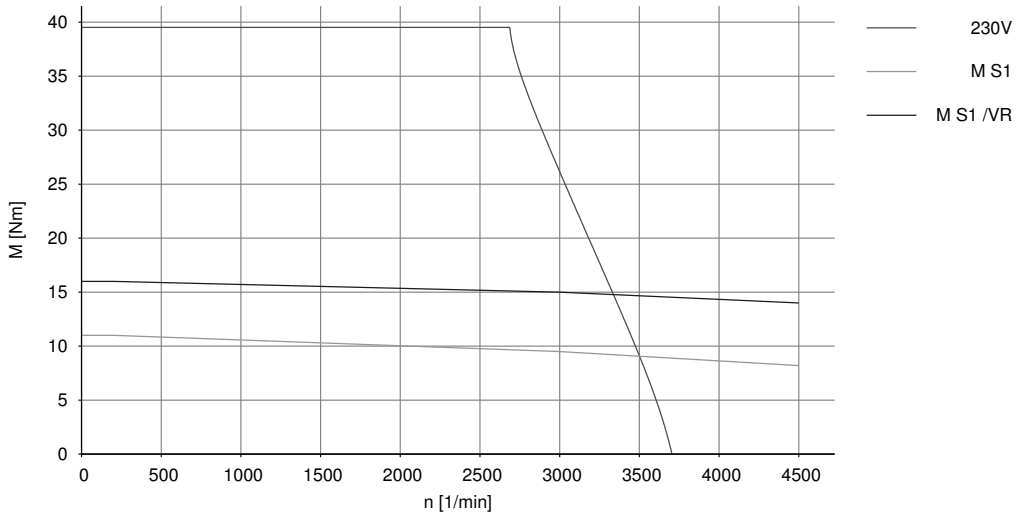
19424019/EN – 03/2017

5.11.13 CFM90S 2000 1/min



14458037899

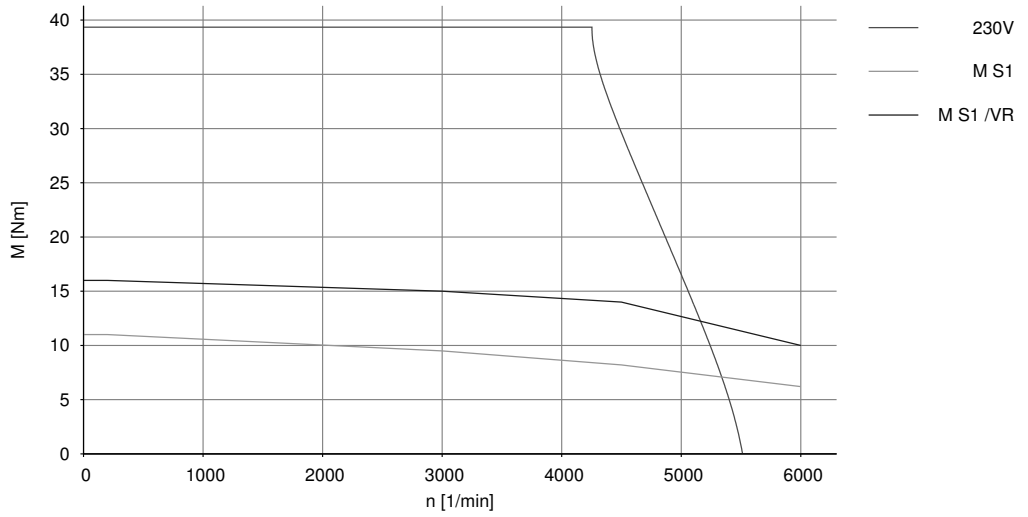
5.11.14 CFM90S 3000 1/min



14458040331

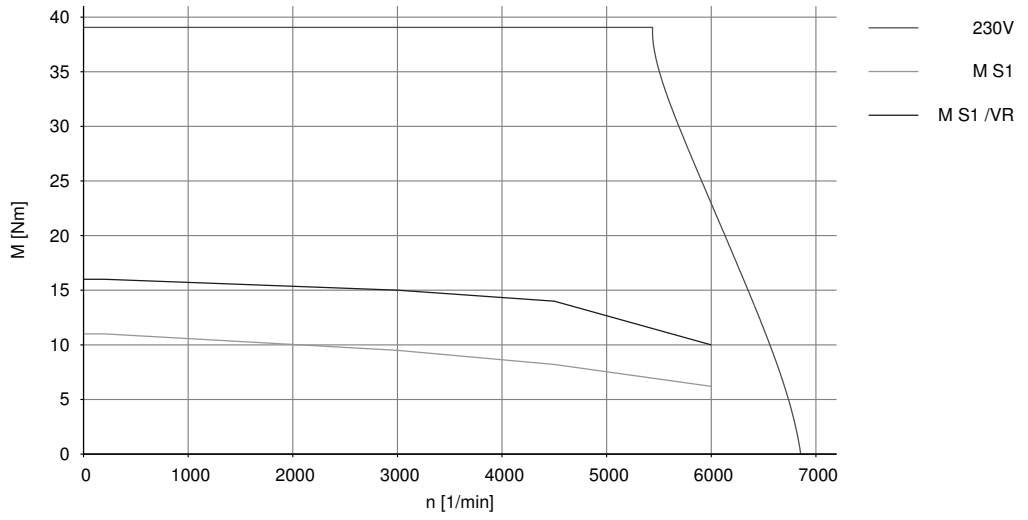
19424019/EN – 03/2017

5.11.15 CFM90S 4500 1/min



14458042763

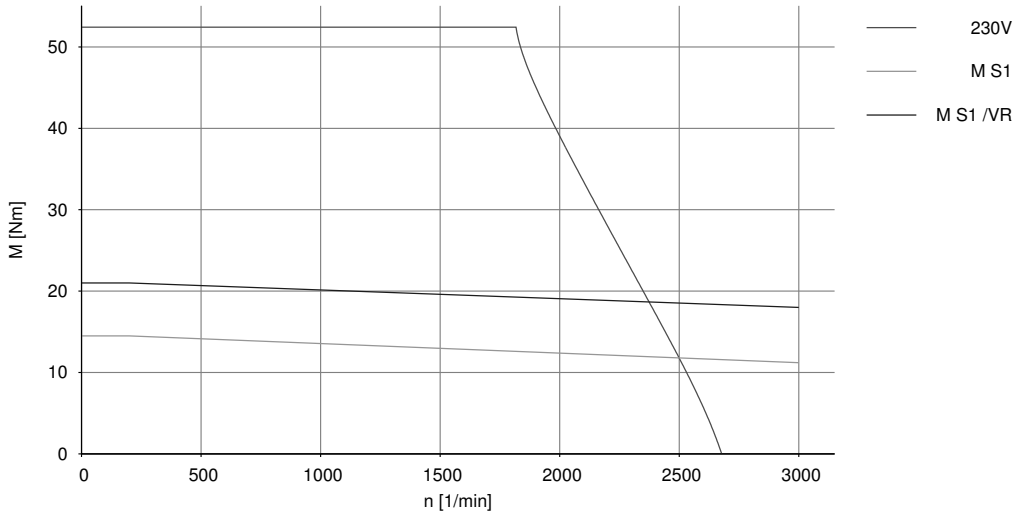
5.11.16 CFM90S 6000 1/min



14458045195

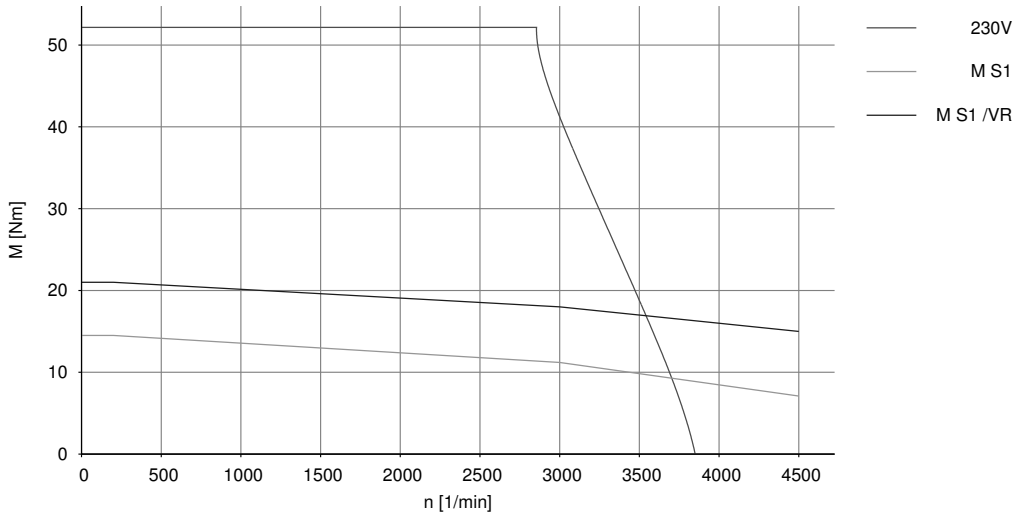
19424019/EN – 03/2017

5.11.17 CFM90M 2000 1/min



14458028171

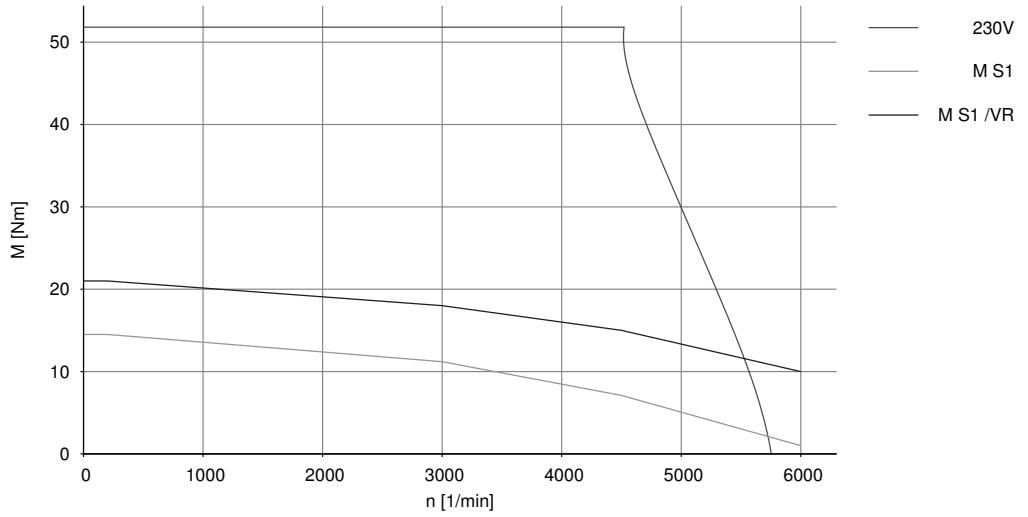
5.11.18 CFM90M 3000 1/min



14458030603

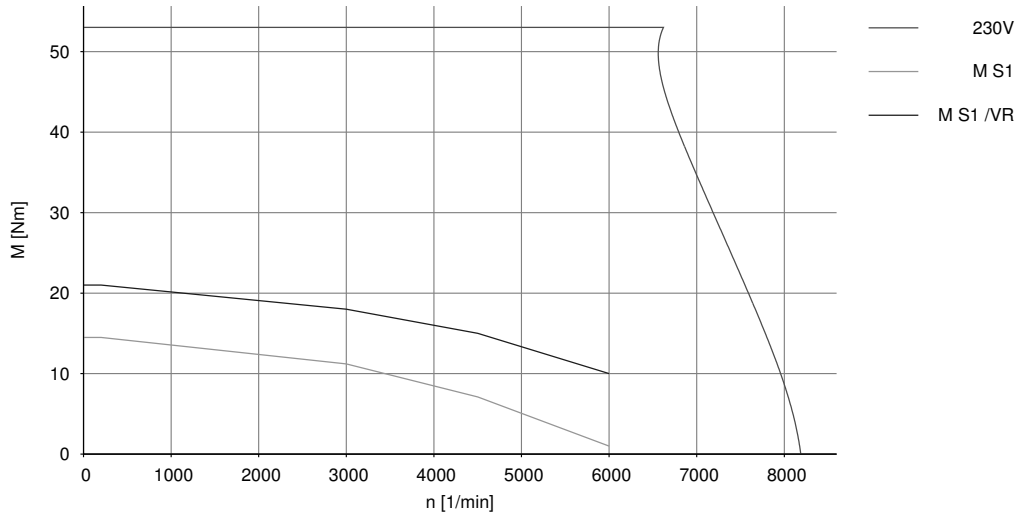
19424019/EN – 03/2017

5.11.19 CFM90M 4500 1/min



14458033035

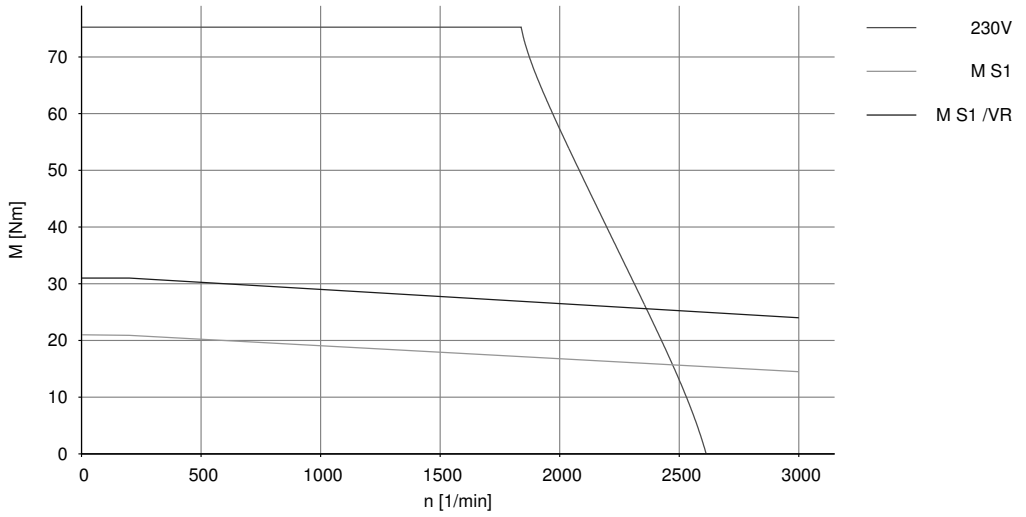
5.11.20 CFM90M 6000 1/min



14458035467

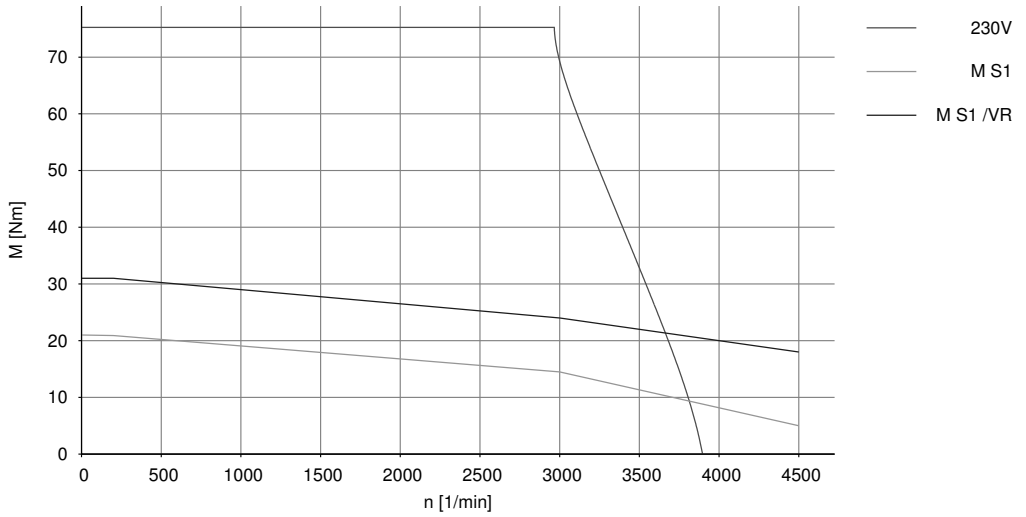
19424019/EN – 03/2017

5.11.21 CFM90L 2000 1/min



14458018443

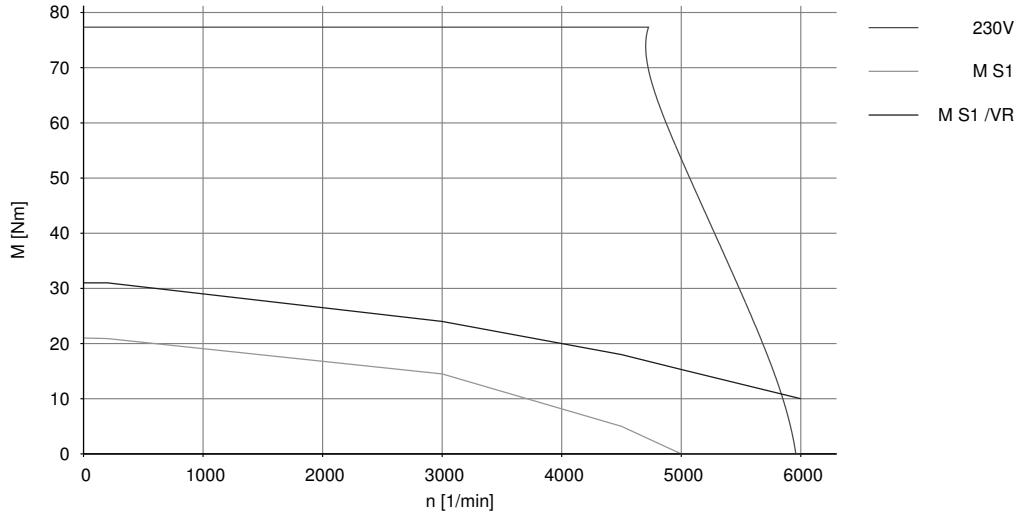
5.11.22 CFM90L 3000 1/min



14458020875

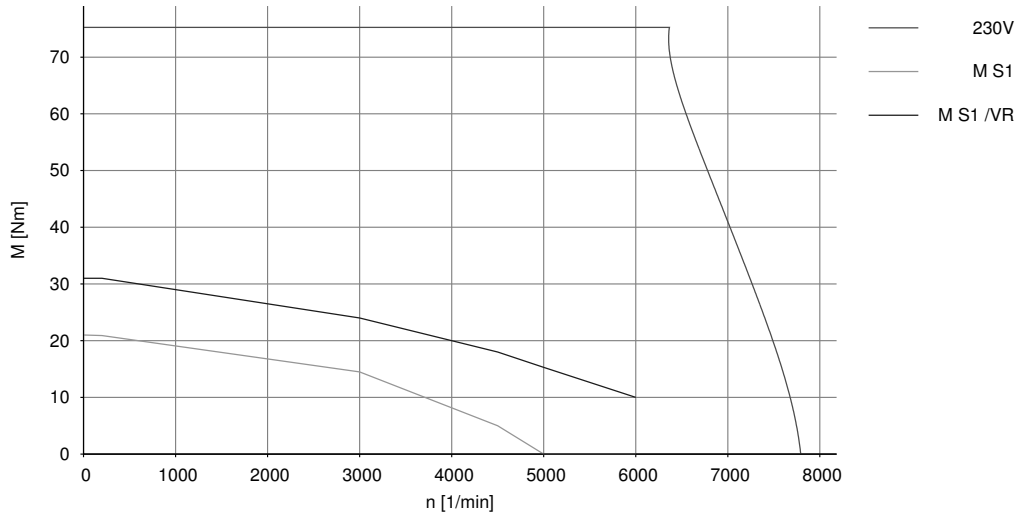
19424019/EN – 03/2017

5.11.23 CFM90L 4500 1/min



14458023307

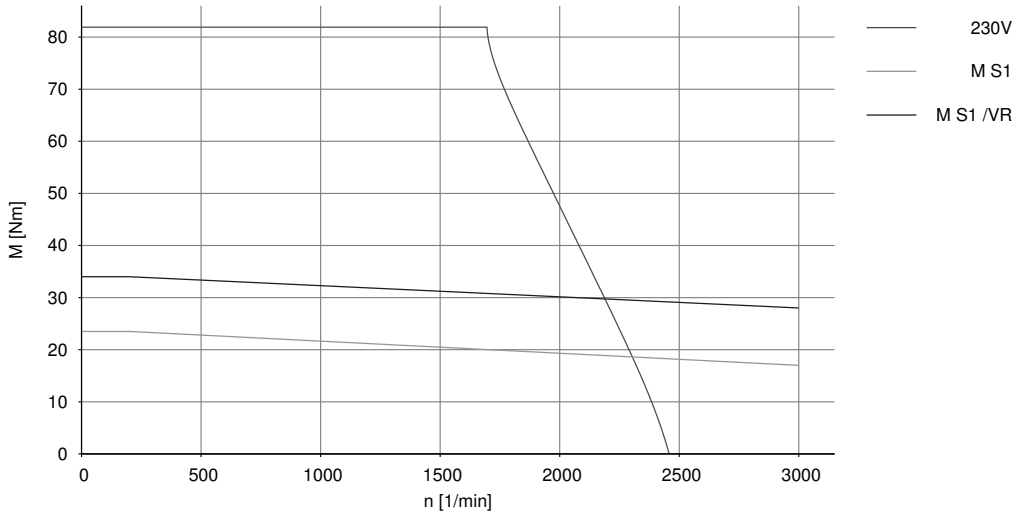
5.11.24 CFM90L 6000 1/min



14458025739

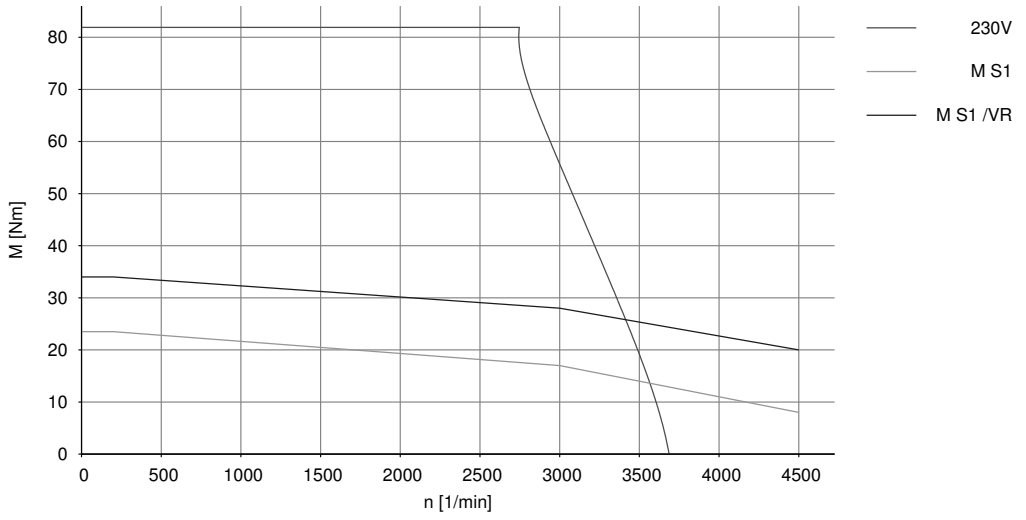
19424019/EN – 03/2017

5.11.25 CFM112S 2000 1/min



14457984395

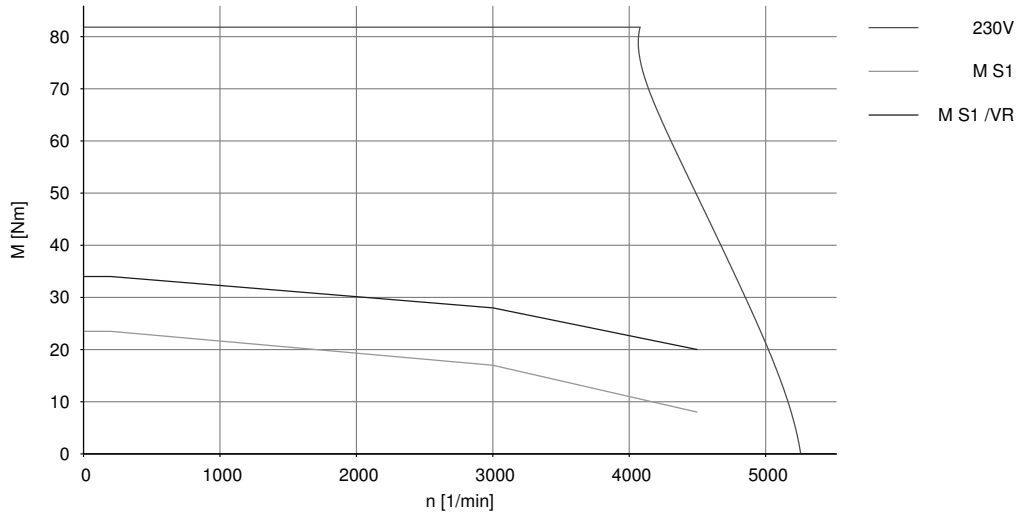
5.11.26 CFM112S 3000 1/min



14457986827

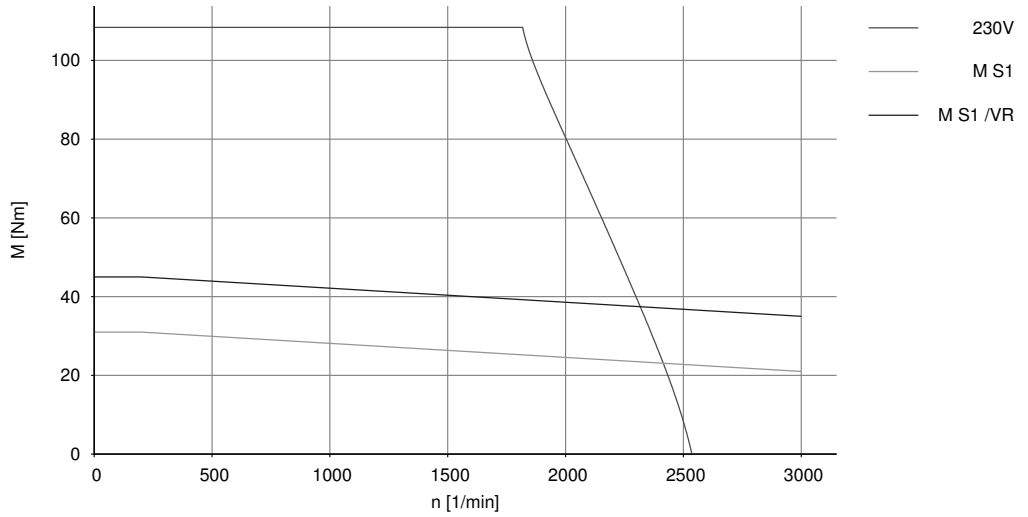
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5.11.27 CFM112S 4500 1/min



14457989259

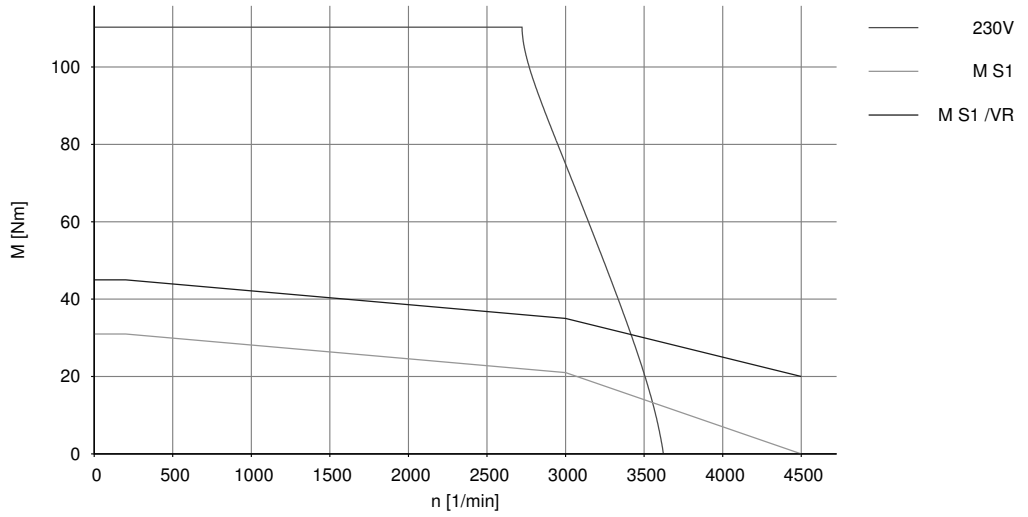
5.11.28 CFM112M 2000 1/min



14457977099

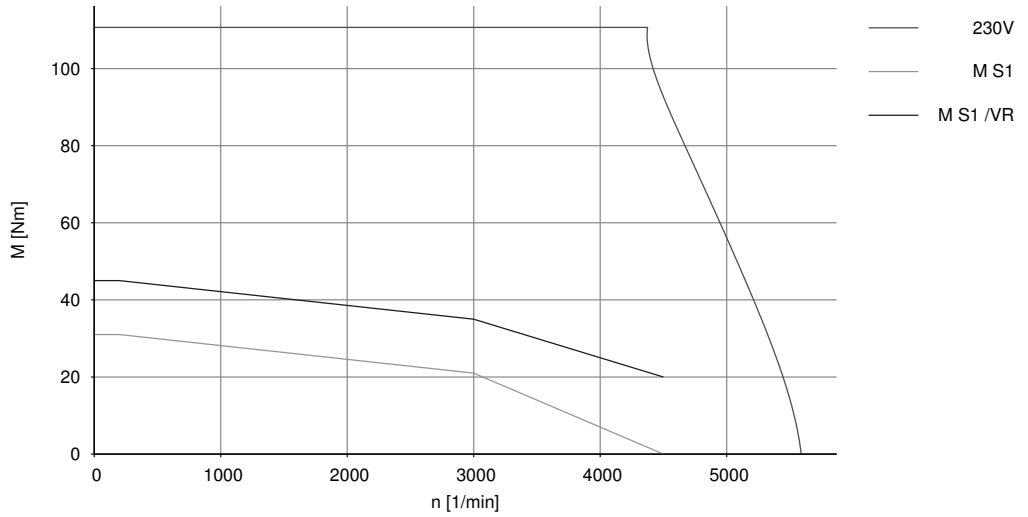
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5.11.29 CFM112M 3000 1/min



14457979531

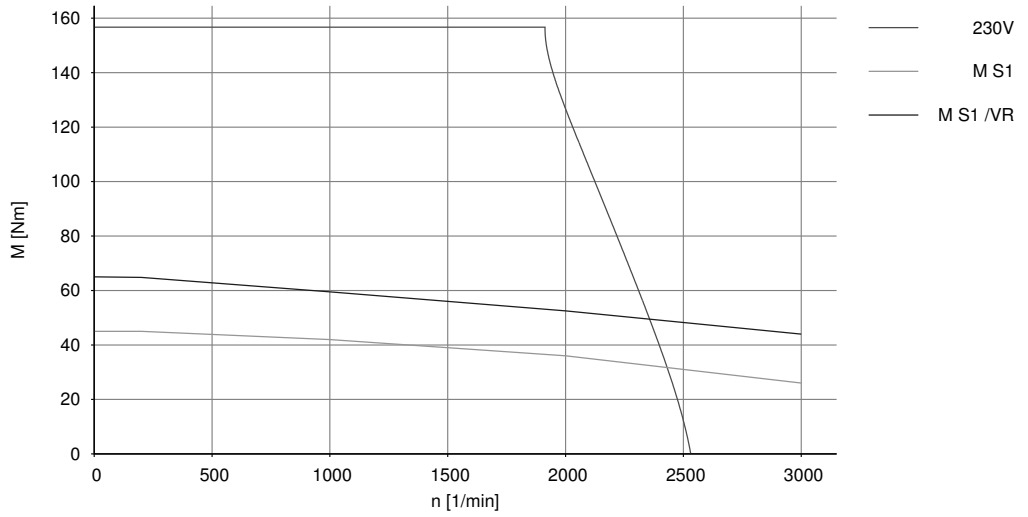
5.11.30 CFM112M 4500 1/min



14457981963

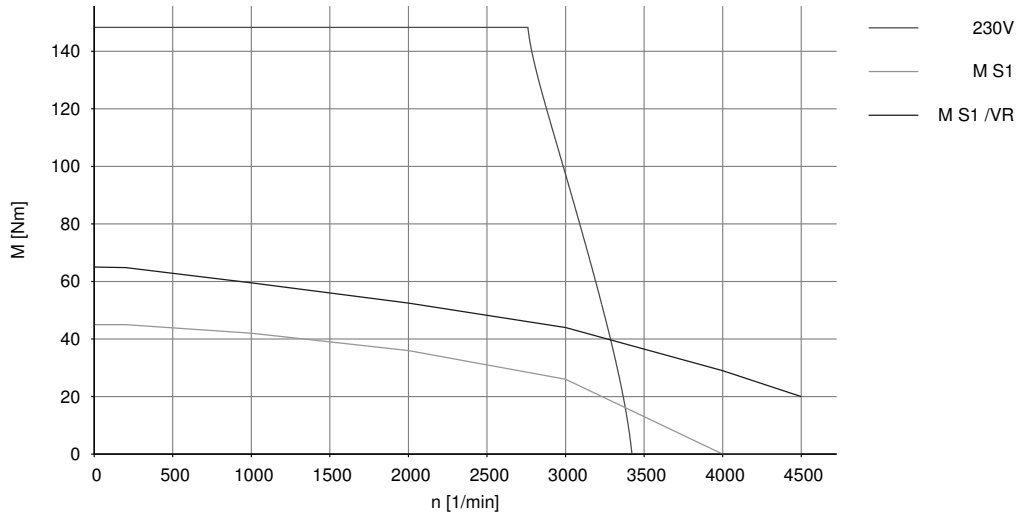
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5.11.31 CFM112L 2000 1/min



14457946635

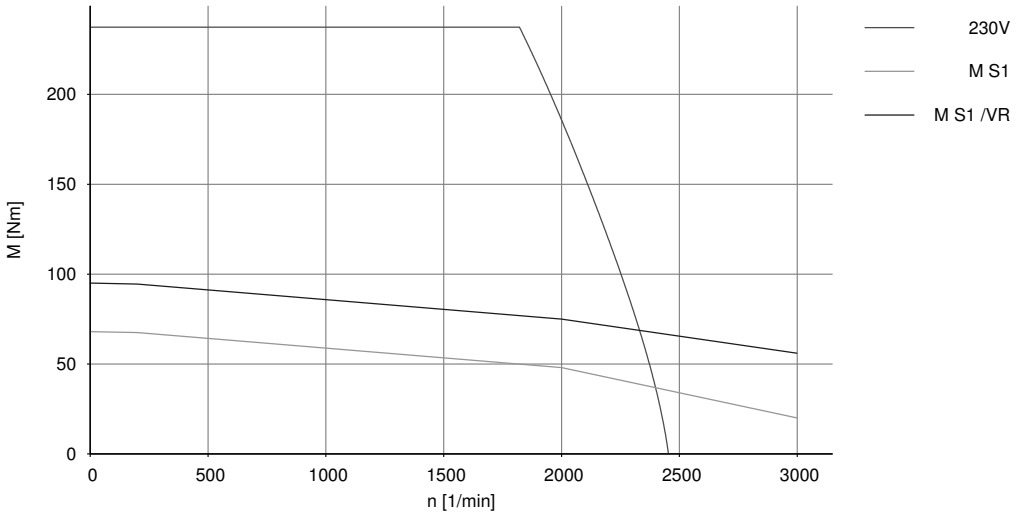
5.11.32 CFM112L 3000 1/min



14457974667

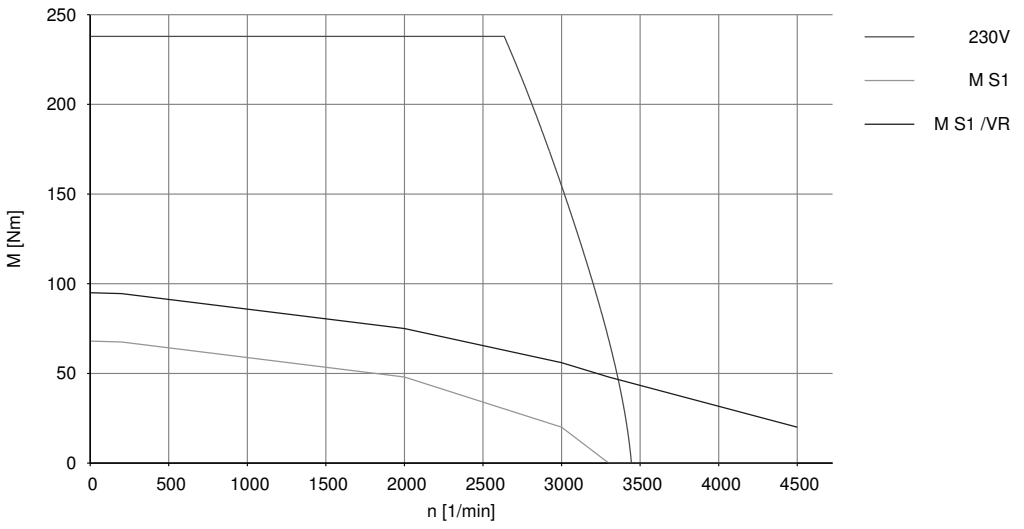
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5.11.33 CFM112H 2000 1/min



14457941771

5.11.34 CFM112H 3000 1/min



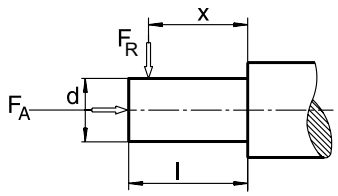
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5.12 Overhung and axial loads

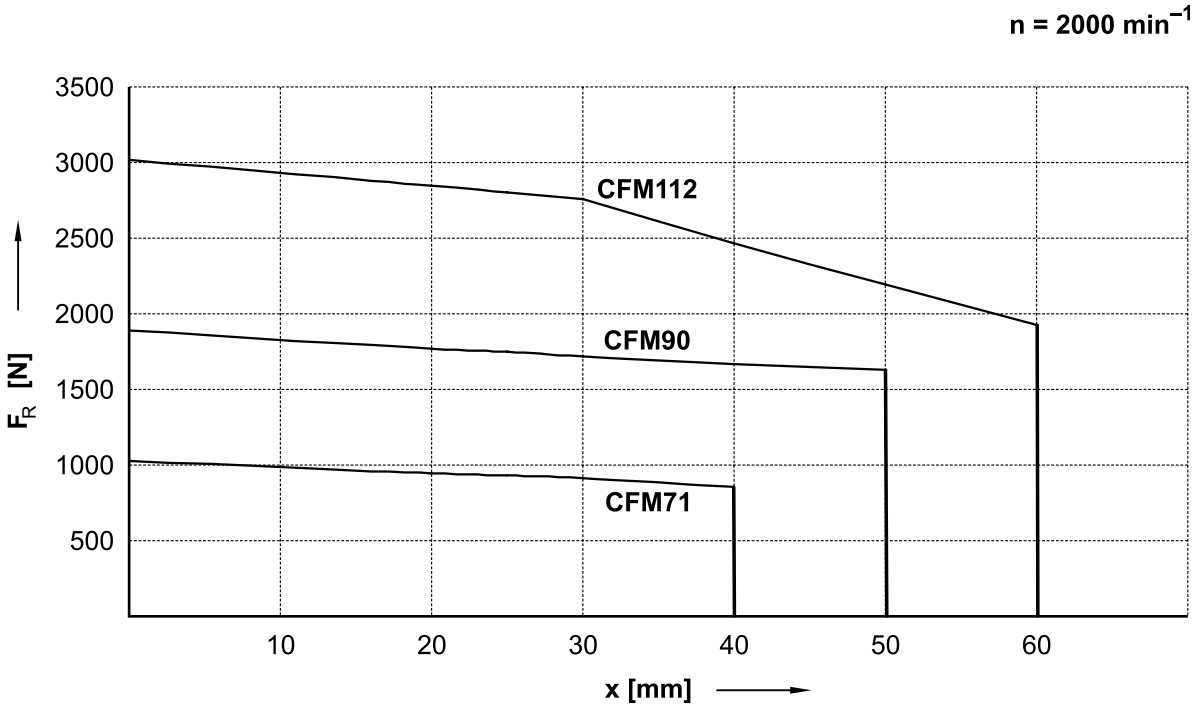
5.12.1 Determining overhung loads

The permitted overhung loads F_R at point x (distance from the shaft shoulder to the application point) are determined using the diagrams below. The diagrams are based on a nominal bearing service life of L_{10h} = 12500 h.



4795970187

Diagram: Permitted overhung load FR at n = 2000 1/min



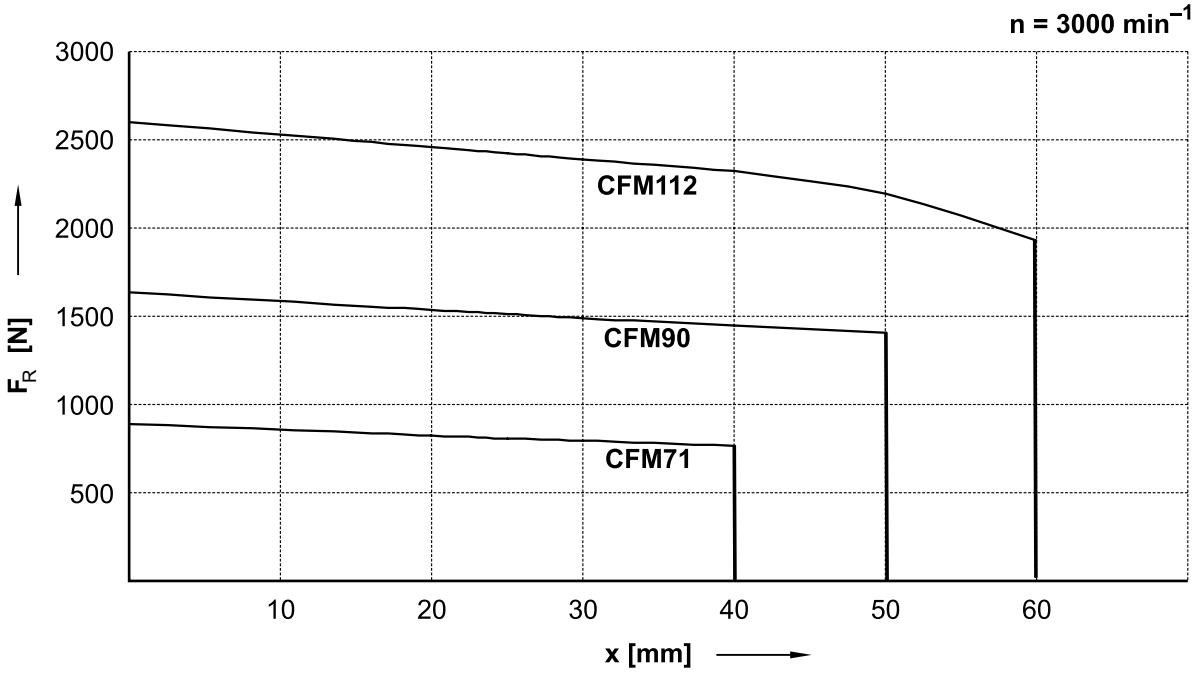
4828159755

Permitted axial load F_A at 2000 1/min:

CFM71: 300 N CFM90: 550 N CFM112: 900 N

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Diagram: Permitted overhung load F_R at n = 3000 1/min

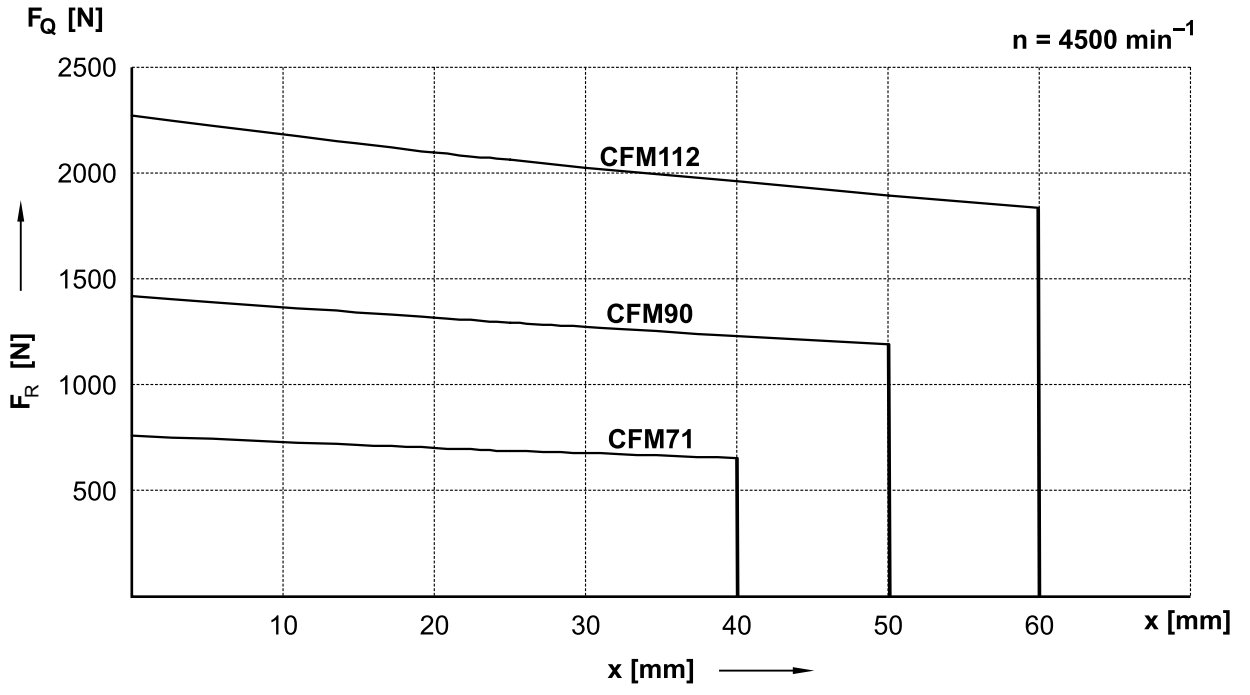


4828161419

Permitted axial load F_A at 3000 1/min:

CFM71: 250 N CFM90: 500 N CFM112: 800 N

Diagram: Permitted overhung load F_R at n = 4500 1/min



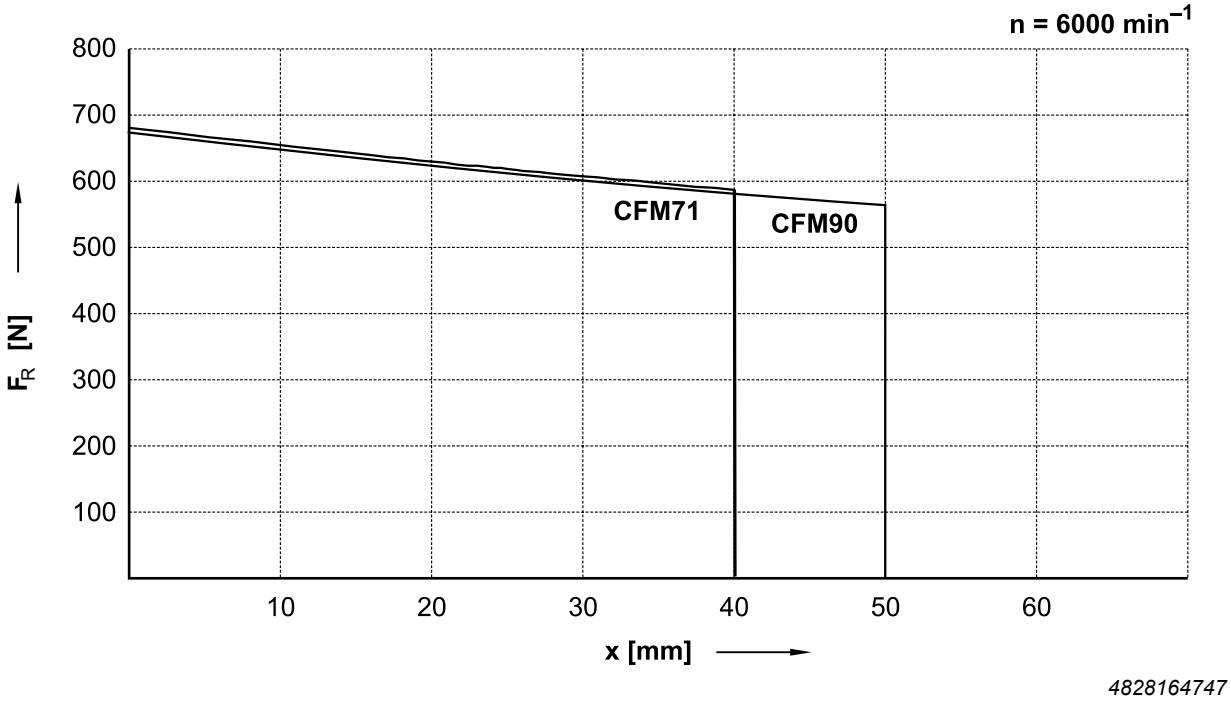
4828163083

Permitted axial load F_A at 4500 1/min:

CFM71: 200 N CFM90: 400 N CFM112: 600 N

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Diagram: Permitted overhung load F_R at n = 6000 1/min



4828164747

Permitted axial load F_A at 6000 1/min:

CFM71: 160 N CFM90: 300 N

5.12.2 Motor bearings used

Motor type	A-side bearing	B-side bearing
CFM71	6205-2Z-J-C3	6303-2Z-J-C3
CFM90	6207-2Z-J-C3	6305-2Z-J-C3
CFM112	6308-2Z-J-C3	6207-2Z-J-C3

5.12.3 Second shaft end

Contact SEW-EURODRIVE regarding permitted load for 2nd shaft end.

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6 Technical data of the motors

6.1 Key to the technical data

The following table lists the short symbols used in the "Technical data" chapter.

n_N	Speed class
M_0	Standstill torque
I_0	Standstill current
M_{pk}	Maximum limit torque of the servomotor
I_{max}	Maximum permitted motor current
M_{0VR}	Standstill 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 brakemotor
W_{max1}	Maximum permitted braking work per braking operation
W_{max2}	Maximum permitted braking work per braking operation with reduced braking torque
L_1	Inductance of the winding
R_1	Ohmic resistance of the winding
V_{p0} cold	Internal voltage at 1000 1/min
m_{mot}	Mass of the motor
m_{bmot}	Mass of the brakemotor

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6.2 400 V system voltage

n_N	Motor	M_0	I_0	M_{pk}	I_{max}	M_{0VR}	I_{0VR}	m	J_{mot}	L_1	R_1	V_{p0}cold	m_{bmot}	J_{bmot}
1/min	Motor	Nm	A	Nm	A	Nm	A	kg	10^{-4} kgm²	mH	mH	V	kg	10^{-4} kgm²
2000	CFM71S	5	2.2	16.5	8.8	7.3	3.2	9.5	4.99	51.8	7.09	152	11.8	6.72
	CFM71M	6.5	3	21.5	12	9.4	4.2	10.8	6.4	35.4	4.44	149	13.1	8.13
	CFM71L	9.5	4.2	31.4	16.8	13.8	6.1	13	9.21	24.1	2.5	151	15.3	10.9
	CFM90S	11	4.9	39.6	19.6	16	7.1	15.7	18.2	18.2	1.91	147	19.6	22
	CFM90M	14.5	6.9	52.2	28	21	10	17.8	23.4	12.4	1.18	141	21.6	27.2
	CFM90L	21	9.9	75.6	40	30.5	14.4	21.9	33.7	8.33	0.692	145	26.5	37.5
	CFM112S	23.5	10	82.3	40	34	14.5	26.2	68.9	10.4	0.731	155	31.8	84.2
	CFM112M	31	13.5	108.5	54	45	19.6	30.5	88.9	6.62	0.415	145	36.1	104
	CFM112L	45	20	157.5	80	65	29	39.3	129	4.5	0.24	152	–	–
	CFM112H	68	30.5	238	122	95	43	54.4	189	2.59	0.121	147	60	204
3000	CFM71S	5	3.3	16.5	13.2	7.3	4.8	9.5	4.99	23	3.16	101	11.8	6.72
	CFM71M	6.5	4.3	21.5	17.2	9.4	6.2	10.8	6.4	16	2	100	13.1	8.13
	CFM71L	9.5	6.2	31.4	25	13.8	9	13	9.21	11	1.12	102	15.3	10.9
	CFM90S	11	7.3	39.6	29	16	10.6	15.7	18.2	8.1	0.838	98	19.6	22
	CFM90M	14.5	10.1	52.2	40	21	14.6	17.8	23.4	5.7	0.533	96	21.6	27.2
	CFM90L	21	14.4	75.6	58	30.5	21	21.9	33.7	3.9	0.324	99	26.5	37.5
	CFM112S	23.5	15	82.3	60	34	22	26.2	68.9	4.6	0.325	103	31.8	84.2
	CFM112M	31	20.5	108.5	82	45	30	30.5	88.9	3.1	0.199	99	36.1	104
	CFM112L	45	30	157.5	120	65	44	39.3	129	1.7	0.0945	93.2	–	–
	CFM112H	68	43	238	172	95	60	54.4	189	1.3	0.0607	104	60	204
4500	CFM71S	5	4.9	16.5	19.6	7.3	7.2	9.5	4.99	10	1.36	66.7	11.8	6.72
	CFM71M	6.5	6.6	21.5	26	9.4	9.6	10.8	6.4	6.73	0.828	64.9	13.1	8.13
	CFM71L	9.5	9.6	31.4	38	13.8	14	13	9.21	4.51	0.449	65.3	15.3	10.9
	CFM90S	11	11.1	39.6	44	16	16.2	15.7	18.2	3.46	0.358	64.1	19.6	22
	CFM90M	14.5	14.7	52.2	59	21	21.5	17.8	23.4	2.67	0.25	65.7	21.6	27.2
	CFM90L	21	21.6	75.6	86	30.5	31.5	21.9	33.7	1.87	0.157	68.5	26.5	37.5
	CFM112S	23.5	22.5	82.3	90	34	32.5	26.2	68.9	2.04	0.145	68.7	31.8	84.2
	CFM112M	31	30	108.5	120	45	44	30.5	88.9	1.38	0.0834	66	36.1	104
	CFM112L	45	46	157.5	184	65	67	39.3	129	0.855	0.0454	66	–	–
	CFM112H	68	66	238	264	95	92	54.4	189	0.544	0.0252	67.3	60	204
6000	CFM71S	5	6.5	16.5	26	7.3	9.5	9.5	4.99	5.75	0.788	50.5	11.8	6.72
	CFM71M	6.5	8.6	21.5	34	9.4	12.5	10.8	6.4	3.79	0456	48.6	13.1	8.13
	CFM71L	9.5	12.5	31.4	50	13.8	18.2	13	9.21	2.53	0.259	49	15.3	10.9
	CFM90S	11	14.5	39.6	58	16	21	15.7	18.2	2.03	0.21	49	19.6	22
	CFM90M	14.5	19.8	52.2	79	21	29	17.8	23.4	1.58	0.146	50.5	21.6	27.2
	CFM90L	21	29.5	75.6	118	30.5	43	21.9	33.7	0.926	0.0769	48.2	26.5	37.5

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6.3 230 V system voltage

n_N	Motor	M_0	I_0	M_{pk}	I_{max}	M_{0VR}	I_{0VR}	m	J_{mot}	L_1	R_1	V_{p0}cold	m_{bmot}	J_{bmot}
1/min	Motor	Nm	A	Nm	A	Nm	A	kg	10^{-4} kgm²	mH	mH	V	kg	10^{-4} kgm²
2000	CFM71S	5	3.95	16.5	15.8	7.3	5.7	9.5	4.99	16.2	2.19	84.8	11.8	6.72
	CFM71M	6.5	5.3	21.5	21	9.4	7.7	10.8	6.4	11.2	1.39	83.8	13.1	8.13
	CFM71L	9.5	7.4	31.4	29.5	13.8	10.7	13	9.21	7.76	0.802	85.7	15.3	10.9
	CFM90S	11	8.7	39.6	35	16	12.6	15.7	18.2	5.8	0.593	82.9	19.6	22
	CFM90M	14.5	12.1	52.2	48.5	21	17.5	17.8	23.4	4.04	0.382	80.8	21.6	27.2
	CFM90L	21	17.1	75.6	68	30.5	25	21.9	33.7	2.79	0.236	83.8	26.5	37.5
	CFM112S	23.5	18	82.3	72	34	26	26.2	68.9	3.19	0.225	85.8	31.8	84.2
	CFM112M	31	24.5	108.5	98	45	35.5	30.5	88.9	2.09	0.135	81.2	36.1	104
	CFM112L	45	35.5	157.5	142	65	51	39.3	129	1.43	0.0768	85.5	–	–
	CFM112H	68	52	238	208	95	73	54.4	189	0.882	0.041	85.6	60	204
3000	CFM71S	5	5.9	16.5	23.5	7.3	8.6	9.5	4.99	7.21	0.973	56.6	11.8	6.72
	CFM71M	6.5	7.6	21.5	30.5	9.4	11	10.8	6.4	5.15	0.642	56.8	13.1	8.13
	CFM71L	9.5	11.1	31.4	44.5	13.8	16.1	13	9.21	3.45	0.347	57.1	15.3	10.9
	CFM90S	11	12.7	39.6	51	16	18.4	15.7	18.2	2.7	0.271	56.5	19.6	22
	CFM90M	14.5	17.4	52.2	70	21	25	17.8	23.4	1.91	0.182	55.6	21.6	27.2
	CFM90L	21	25.5	75.6	102	30.5	37	21.9	33.7	1.24	0.105	55.8	26.5	37.5
	CFM112S	23.5	27	82.3	108	34	39	26.2	68.9	1.42	0.1	57.2	31.8	84.2
	CFM112M	31	35	108.5	140	45	51	30.5	88.9	1.08	0.0669	58.4	36.1	104
	CFM112L	45	48	157.5	192	65	70	39.3	129	0.666	0.0357	58.3	–	–
	CFM112H	68	73	238	292	95	102	54.4	189	0.45	0.0204	61.2	60	204
4500	CFM71S	5	8.5	16.5	34	7.3	12.3	9.5	4.99	3.32	0.449	38.4	11.8	6.72
	CFM71M	6.5	11.3	21.5	45	9.4	16.4	10.8	6.4	2.29	0.278	37.8	13.1	8.13
	CFM71L	9.5	17.1	31.4	68	13.8	25	13	9.21	1.43	0.149	36.7	15.3	10.9
	CFM90S	11	18.9	39.6	76	16	27.5	15.7	18.2	1.2	0.124	37.7	19.6	22
	CFM90M	14.5	26	52.2	104	21	37.5	17.8	23.4	0.849	0.0808	37.1	21.6	27.2
	CFM90L	21	39	75.6	156	30.5	57	21.9	33.7	0.577	0.0485	38.1	26.5	37.5
	CFM112S	23.5	38.5	82.3	154	34	56	26.2	68.9	0.696	0.0501	40.1	31.8	84.2
	CFM112M	31	54	108.5	216	45	78	30.5	88.9	0.459	0.0283	38.1	36.1	104
6000	CFM71S	5	11.6	16.5	46.5	7.3	16.8	9.5	4.99	1.8	0.243	28.3	11.8	6.72
	CFM71M	6.5	14.1	21.5	56	9.4	20.5	10.8	6.4	1.41	0.175	29.7	13.1	8.13
	CFM71L	9.5	21.5	31.4	86	13.8	31	13	9.21	0.862	0.0891	28.6	15.3	10.9
	CFM90S	11	23.5	39.6	94	16	34	15.7	18.2	0.767	0.0779	30.2	19.6	22
	CFM90M	14.5	37	52.2	148	21	54	17.8	23.4	0.449	0.0425	26.9	21.6	27.2
	CFM90L	21	51	75.6	204	30.5	74	21.9	33.7	0.31	0.0263	27.9	26.5	37.5

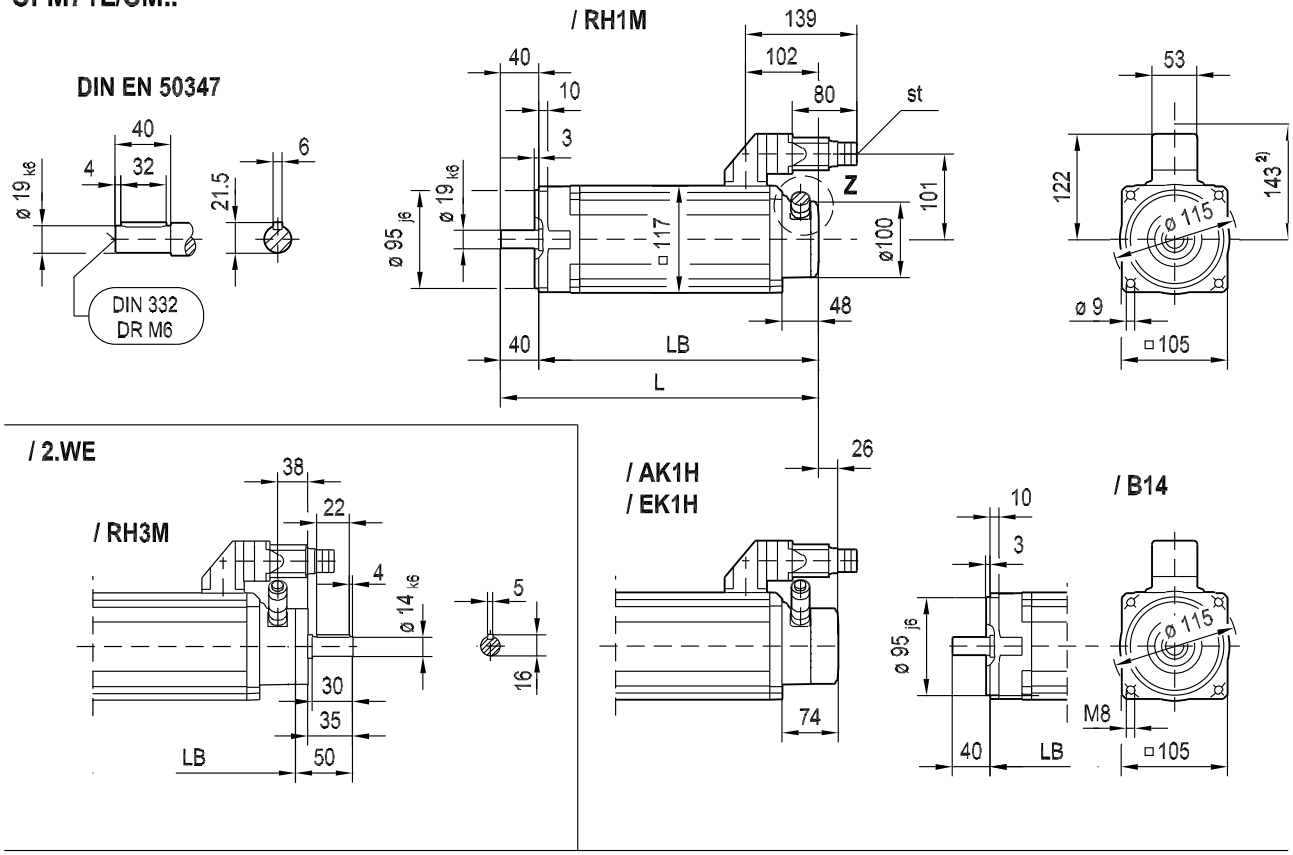
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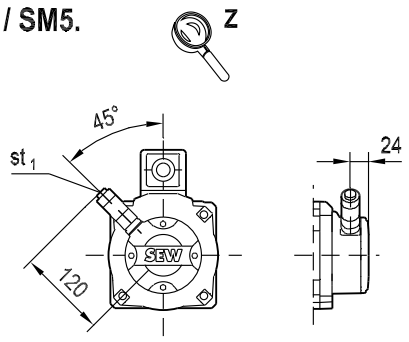
7 Dimension drawings for CFM.. servomotors/CFM.. servo brakemotors

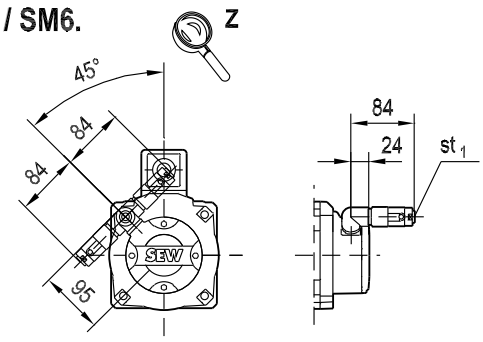
7.1 CFM71.. synchronous servomotors

CFM71S/SM..
CFM71M/SM..
CFM71L/SM..

08 172 05 01
1 (2)







2) Space required for plug connector in locked condition

	CFM71S/SM..	CFM71M/SM..	CFM71L/SM..
L	289	309	349
LB	249	269	309
st[1)]	8 –14	14 –17	14 –17
st_1[1)]	5.5 – 10.5	5.5 – 10.5	5.5 – 10.5

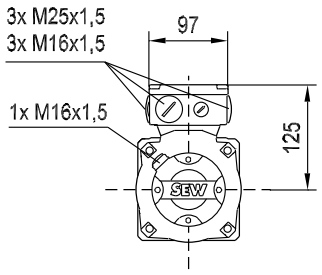
1) Diameter of cable to be connected

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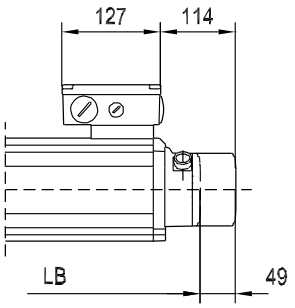
CFM71.

08 172 05 01
2 (2)

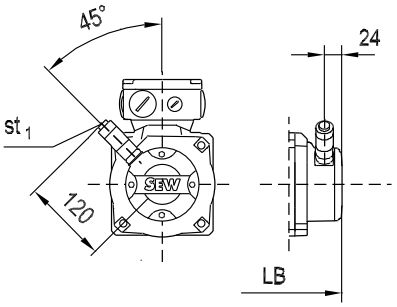
/ KK



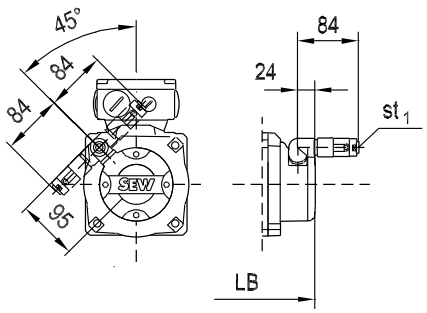
/ RH1M
/ AK1H
/ EK1H



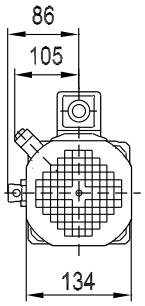
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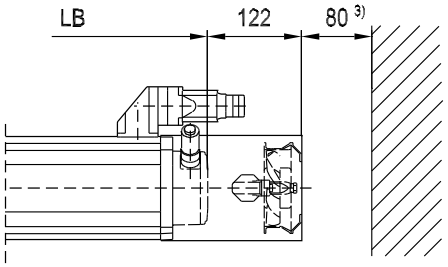
/ KK6.



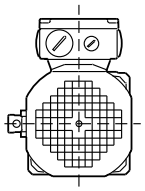
/ VR

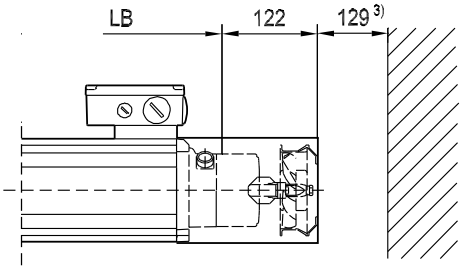


/ SM5.

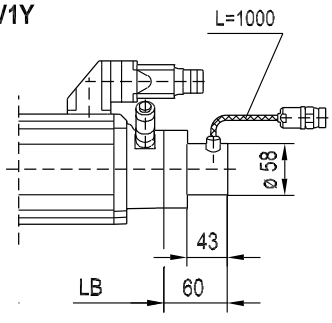


/ KK

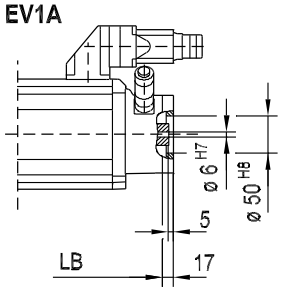




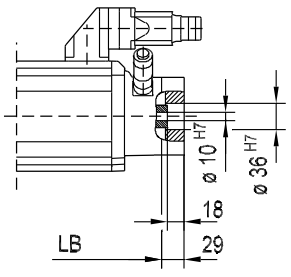
/ AV1Y



/ AV1A
/ EV1A



/ XV2A



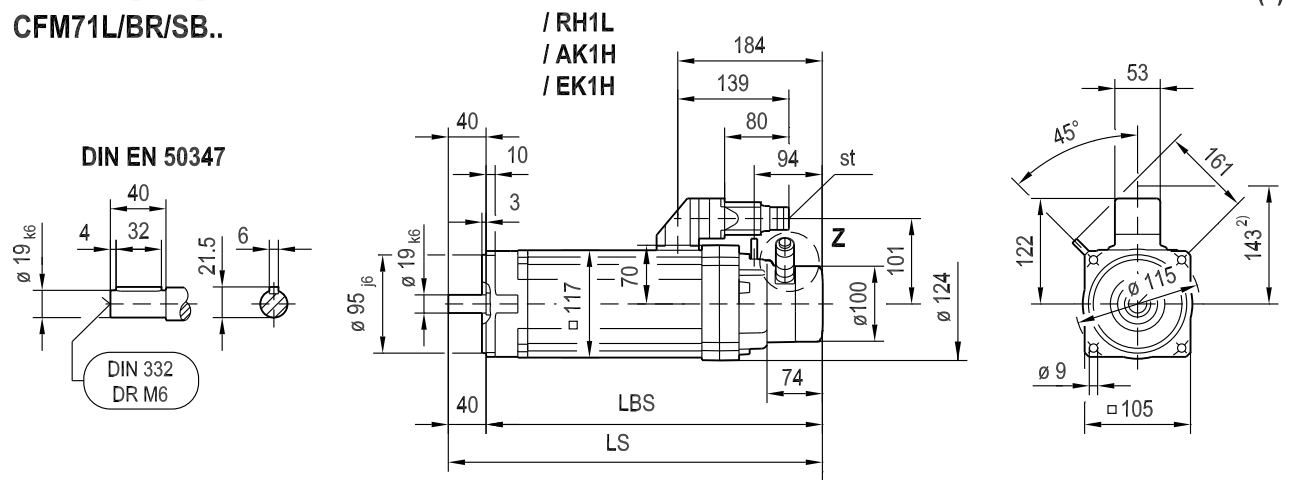
3) Space required to remove the fan guard in axial direction; leave at least sufficient space for a supply of cooling air

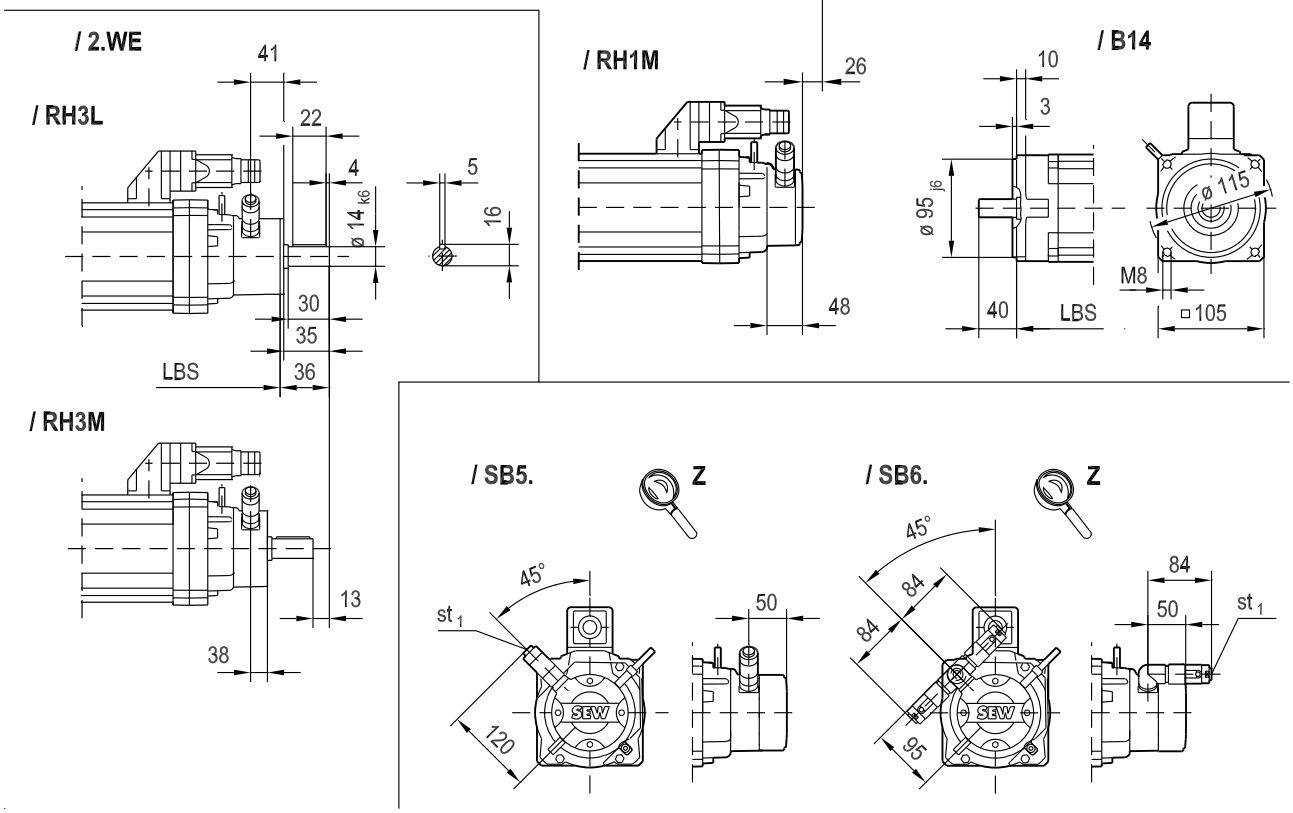
19424019/EN – 03/2017

7.2 CFM71/BR.. synchronous servo brakemotors

CFM71S/BR/SB..
CFM71M/BR/SB..
CFM71L/BR/SB..

09 033 05 01
1 (2)





2) Space required for plug connector in locked condition

	CFM71S/BR/SB..	CFM71M/BR/SB..	CFM71L/BR/SB..
LS	371	391	431
LBS	331	351	391
st[1)]	8 –14	14 –17	14 –17
st_1[1)]	5.5 – 10.5	5.5 – 10.5	5.5 – 10.5

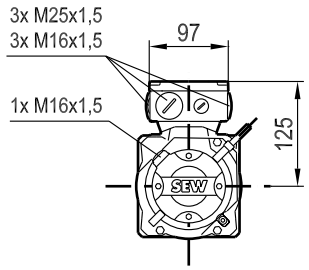
1) Diameter of cable to be connected

19424019/EN – 03/2017

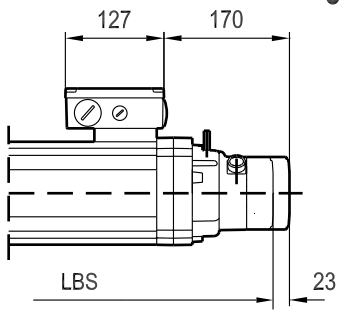
CFM71./BR/...

09 033 05 01
2 (2)

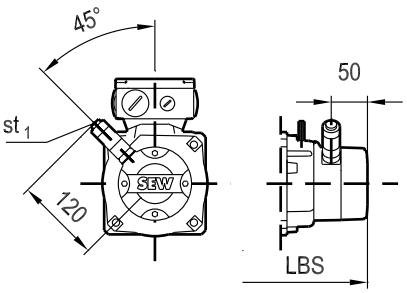
/ KK..



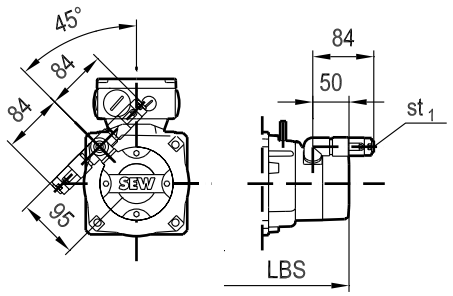
/ RH1L
/ RH1M
/ AK1H
/ EK1H



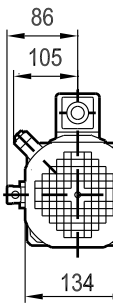
/ KK5.



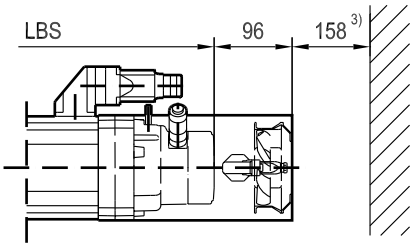
/ KK6.



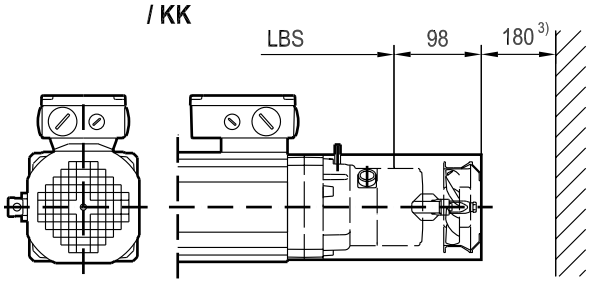
/ VR



/ SB5.

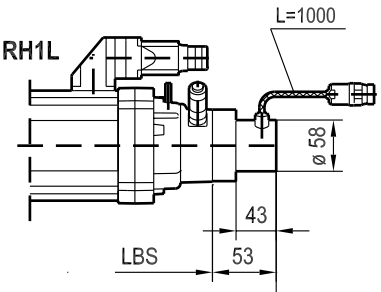


/ KK

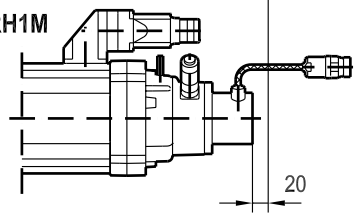


/ AV1Y

/ RH1L

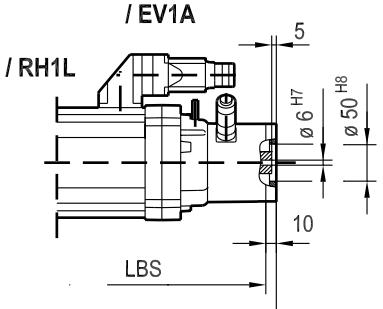


/ RH1M

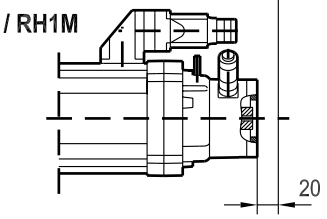


/ AV1A
/ EV1A

/ RH1L

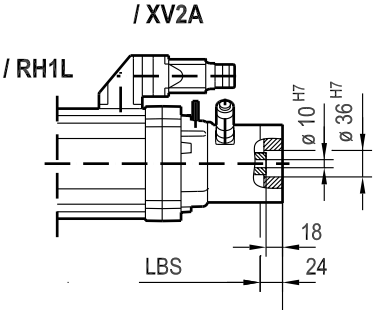


/ RH1M

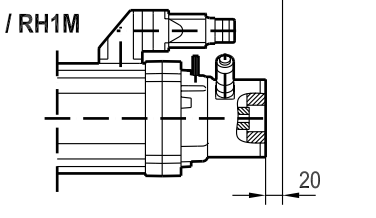


/ XV2A

/ RH1L



/ RH1M



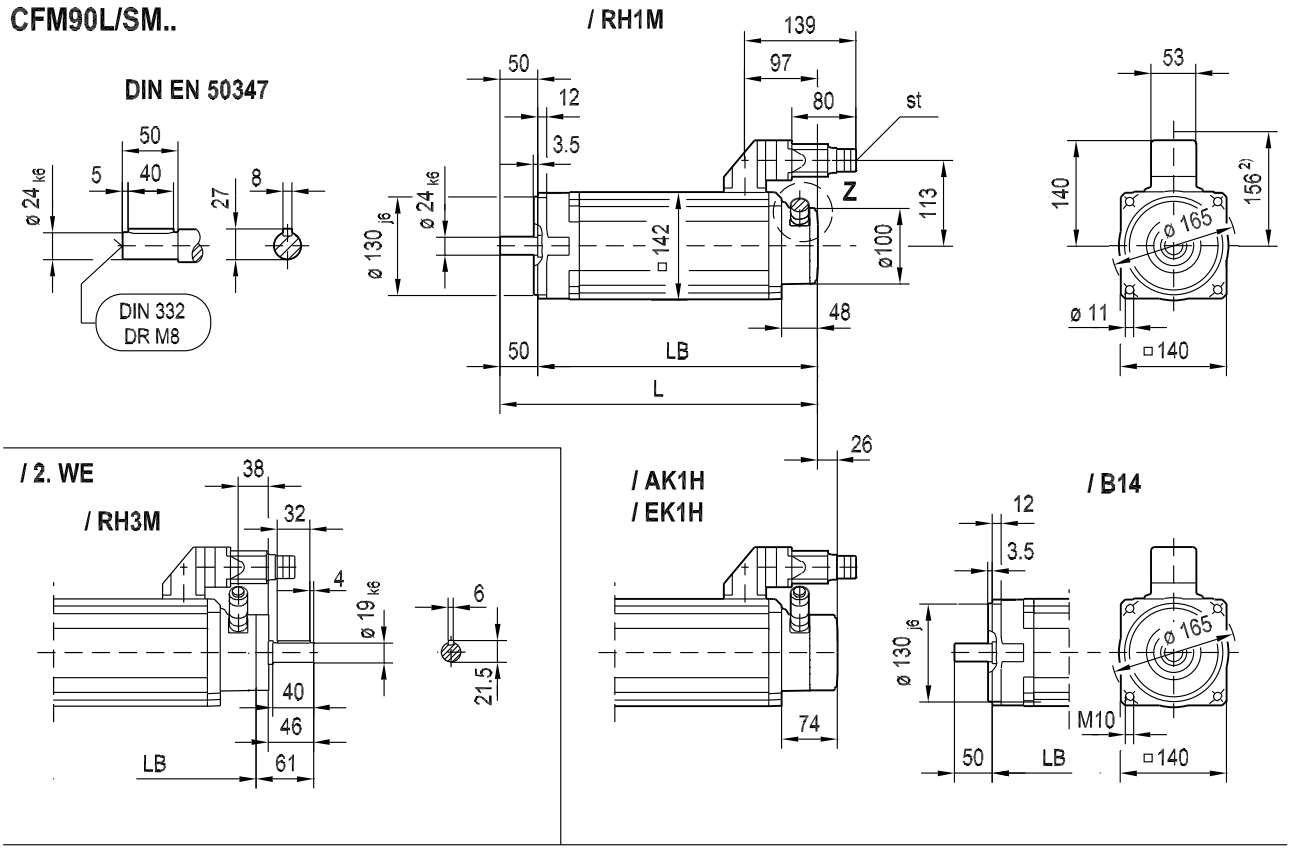
3) Space required to remove the fan guard in axial direction; leave at least sufficient space for a supply of cooling air

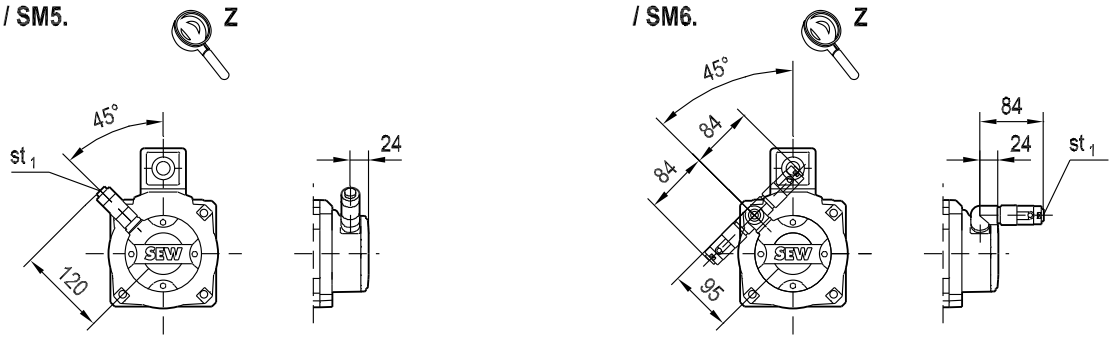
19424019/EN – 03/2017

7.3 CFM90.. synchronous servomotors

08 173 05 01
1 (2)

CFM90S/SM..
CFM90M/SM..
CFM90L/SM..





2) Space required for plug connector in locked condition

	CFM90S/SM..	CFM90M/SM..	CFM90L/SM..
L	341	368	422
LB	291	318	372
st[1)]	8 –14	14 –17	14 – 17
st_1[1)]	5.5 – 10.5	5.5 – 10.5	5.5 – 10.5

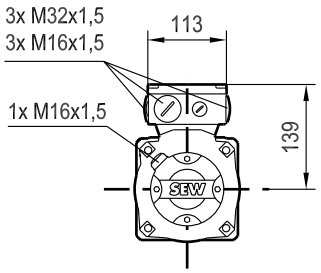
1) Diameter of cable to be connected

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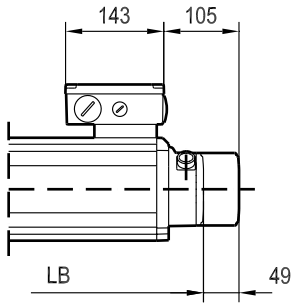
CFM90.

08 173 05 01
2 (2)

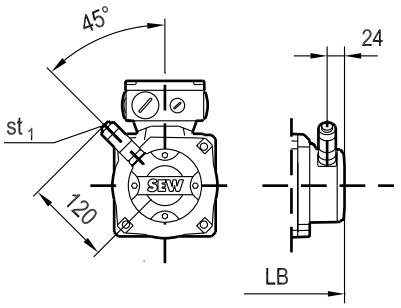
/ KK...



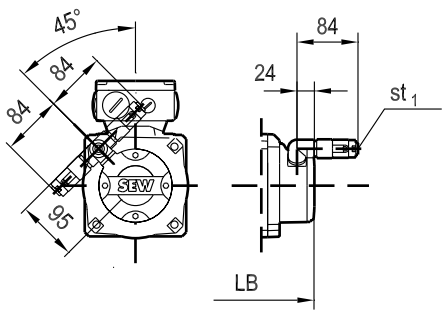
/ RH1M
/ AK1H
/ EK1H



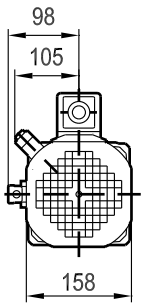
/ KK5.



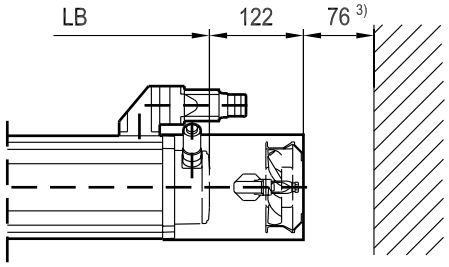
/ KK6.



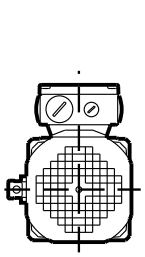
/ VR

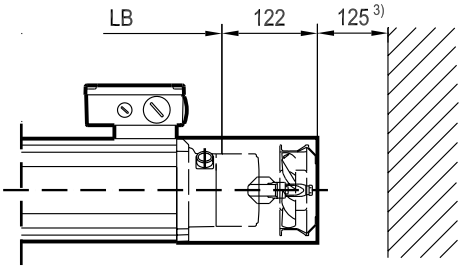


/ SM5.

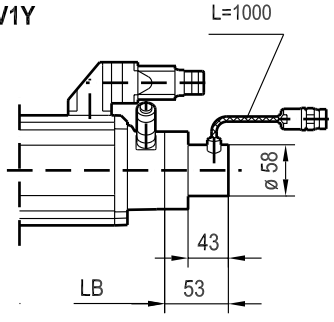


/ KK

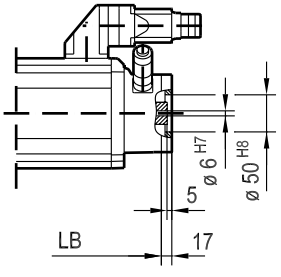




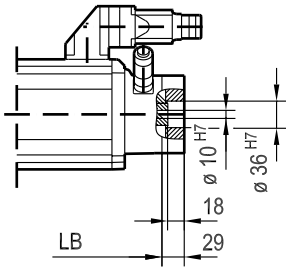
/ AV1Y



/ AV1A
/ EV1A



/ XV2A



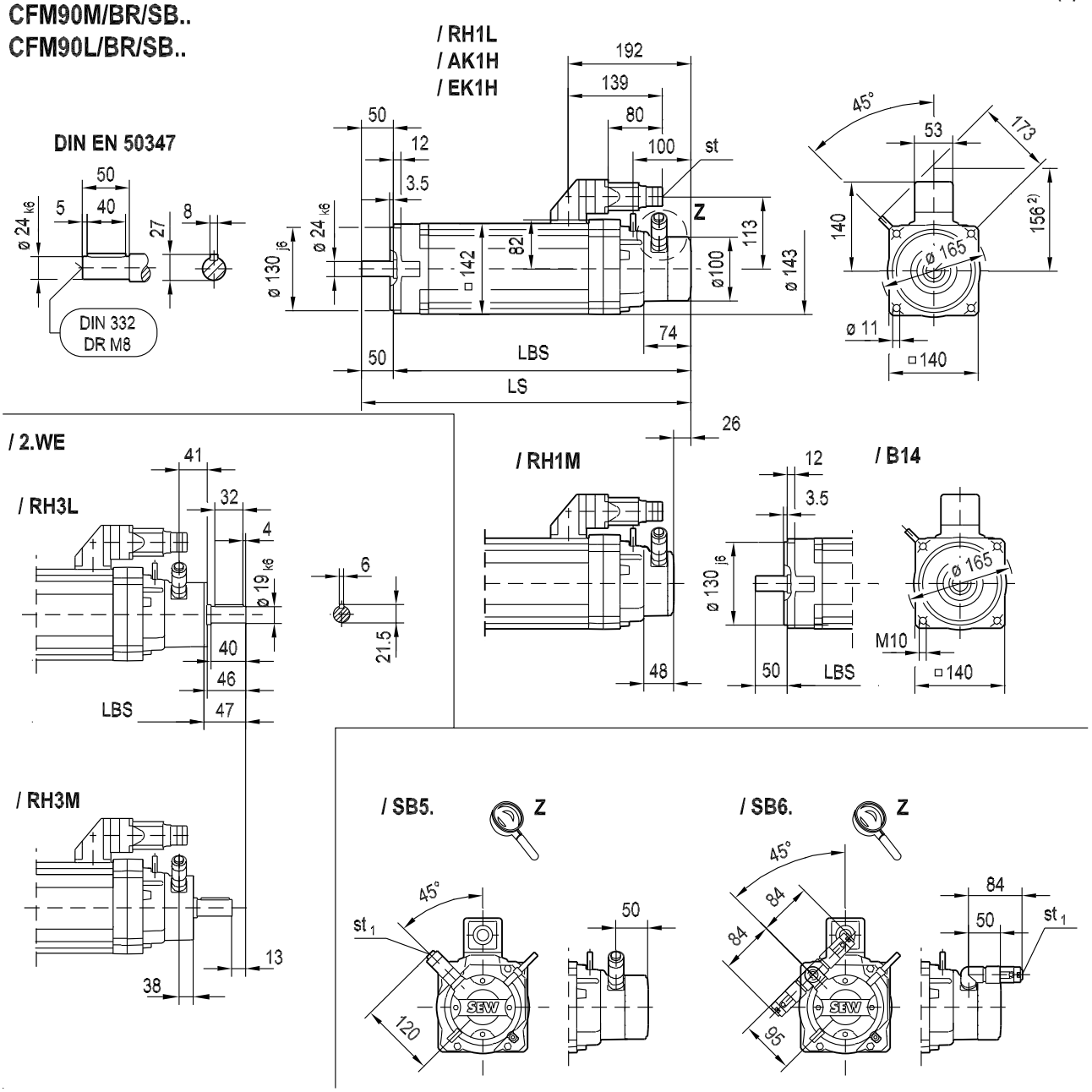
3) Space required to remove the fan guard in axial direction; leave at least sufficient space for a supply of cooling air

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7.4 CFM90/BR.. synchronous servo brakemotors

09 034 05 01
1 (2)

CFM90S/BR/SB..
CFM90M/BR/SB..
CFM90L/BR/SB..



2) Space required for plug connector in locked condition

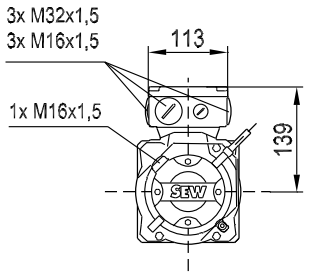
	CFM90S/BR/SB..	CFM90M/BR/SB..	CFM90L/BR/SB..
LS	436	463	517
LBS	386	413	467
st[1)]	8 – 14	14 - 17	14 to 17
st_1[1)]	5.5 to 10.5	5.5 – 10.5	5.5 – 10.5

1) Diameter of cable to be connected

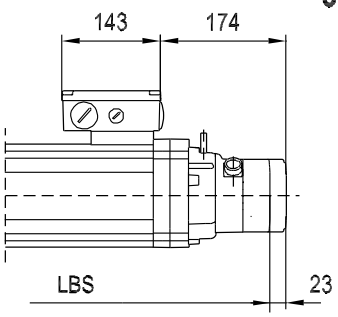
CFM90./BR/...

09 034 05 01
2 (2)

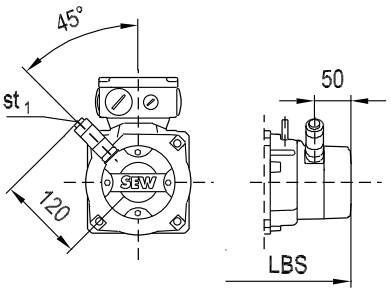
/ KK..



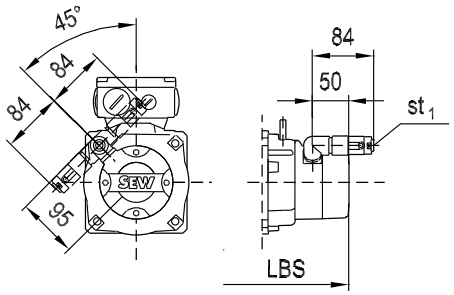
/ RH1L
/ RH1M
/ AK1H
/ EK1H



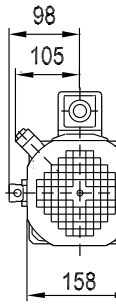
/ KK5.



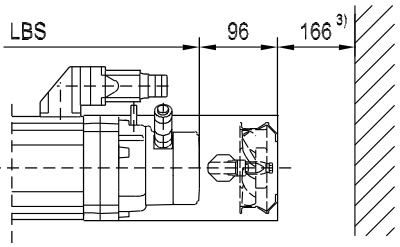
/ KK6.



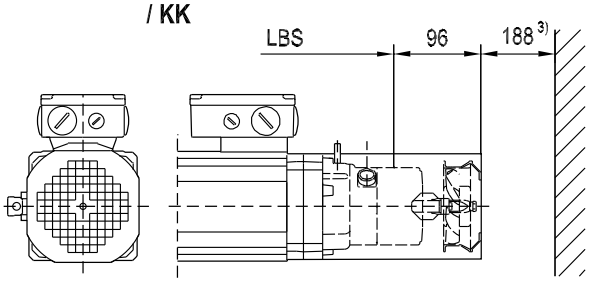
/ VR



/ SB5.

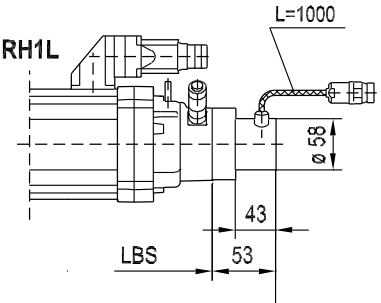


/ KK

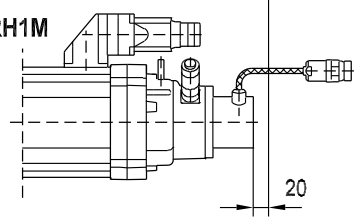


/ AV1Y

/ RH1L

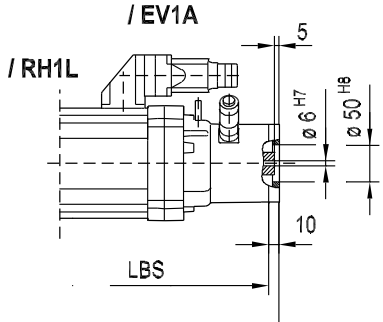


/ RH1M

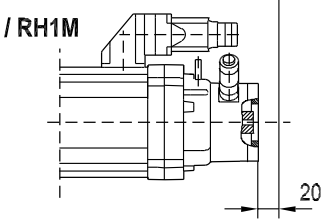


/ AV1A
/ EV1A

/ RH1L

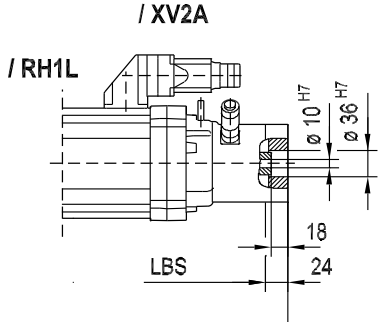


/ RH1M

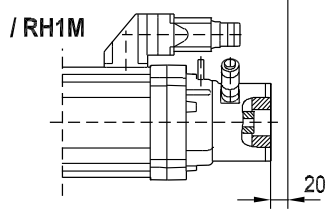


/ XV2A

/ RH1L



/ RH1M



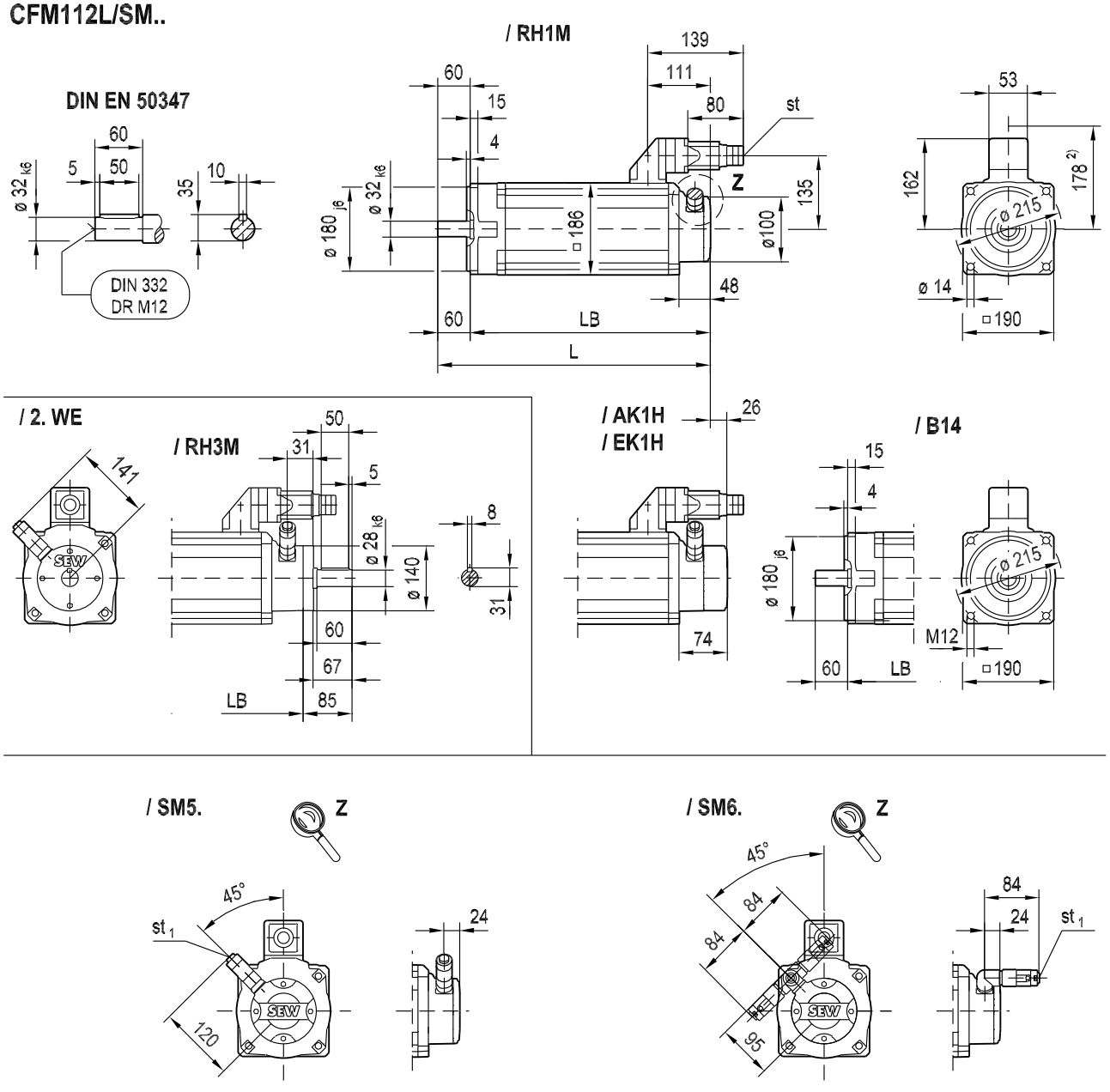
3) Space required to remove the fan guard in axial direction; leave at least sufficient space for a supply of cooling air

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7.5 CFM112.. synchronous servomotors

CFM112S/SM..
CFM112M/SM..
CFM112L/SM..

08 174 05 01
1 (2)



2) Space required for plug connector in locked condition

	CFM112S/SM..	CFM112M/SM..	CFM112L/SM..
L	379	406	460
LB	319	346	400
st[1)]	14 - 17	17 – 23	17 -23
st_1[1)]	5.5 – 10.5	5.5 – 10.5	5.5 – 10.5

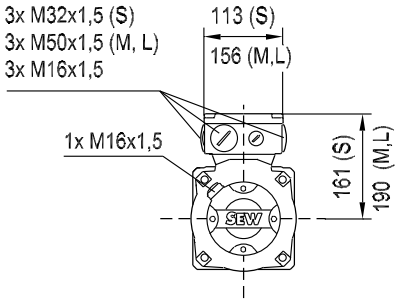
1) Diameter of cable to be connected

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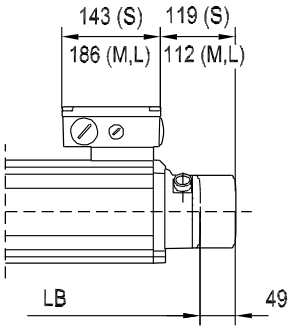
CFM112.

08 174 05 01
2 (2)

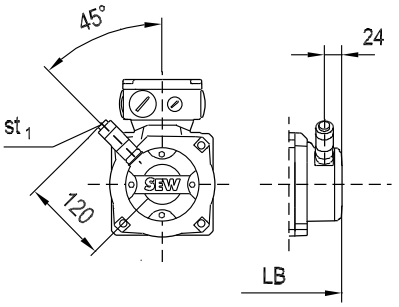
/ KK...



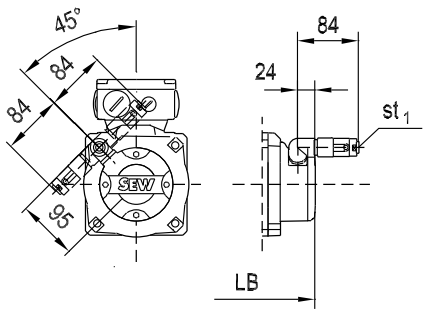
/ RH1M
/ AK1H
/ EK1H



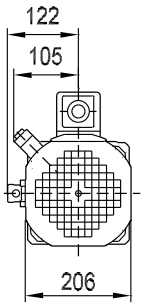
/ KK5.



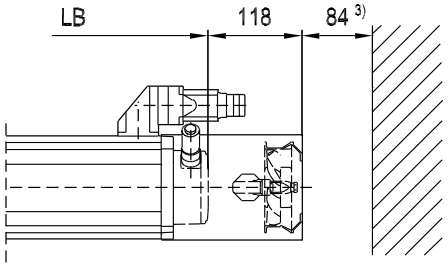
/ KK6.



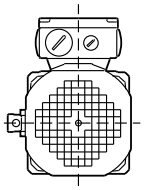
/ VR

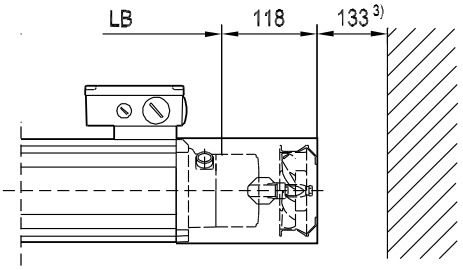


/ SM5.

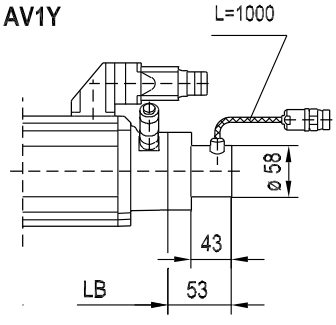


/ KK

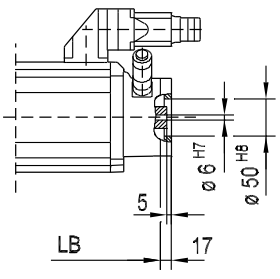




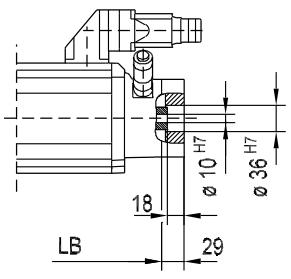
/ AV1Y



/ AV1A
/ EV1A



/ XV2A



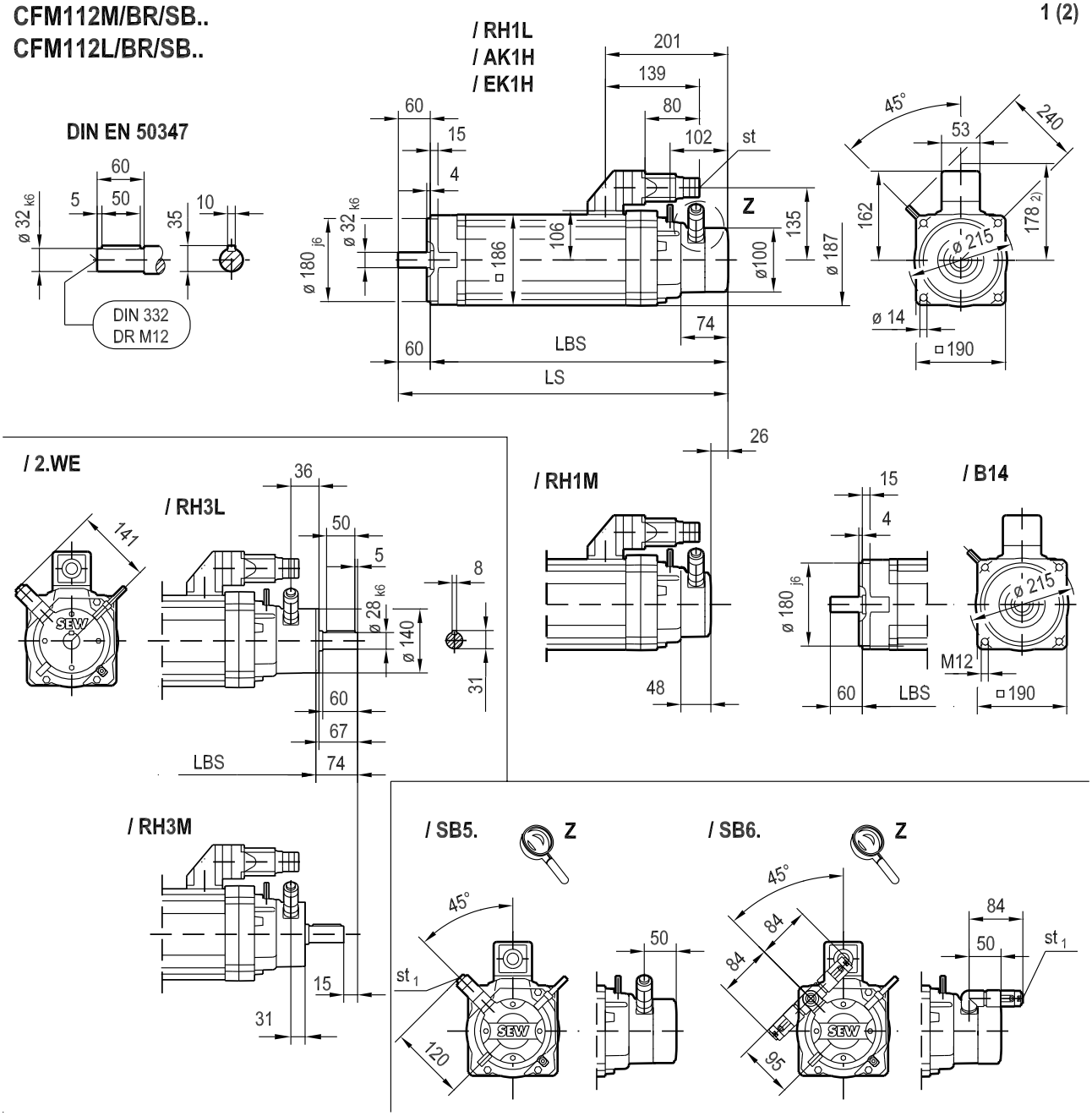
3) Space required to remove the fan guard in axial direction; leave at least sufficient space for a supply of cooling air

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7.6 CFM112/BR.. synchronous servo brakemotors

CFM112S/BR/SB..
CFM112M/BR/SB..
CFM112L/BR/SB..

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1 (2)

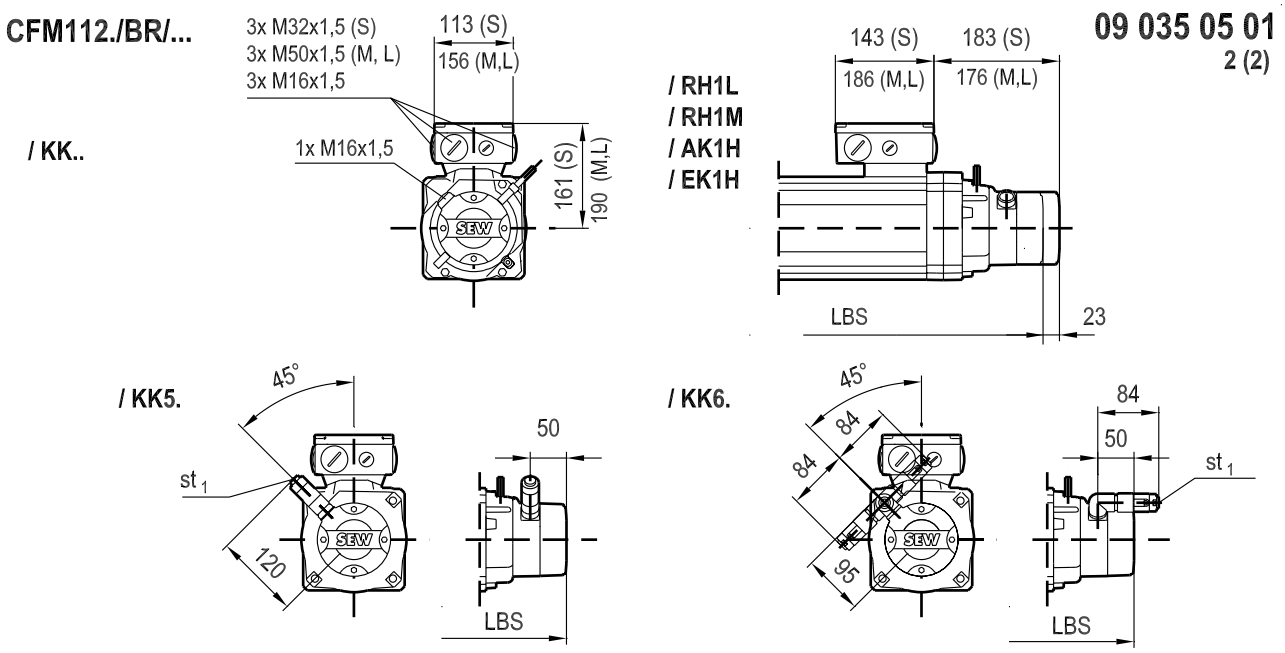


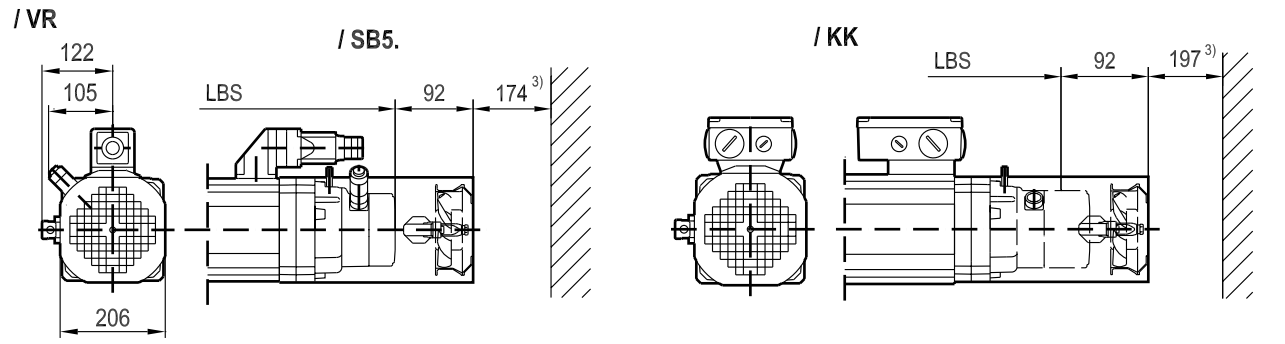
2) Space required for plug connector in locked condition

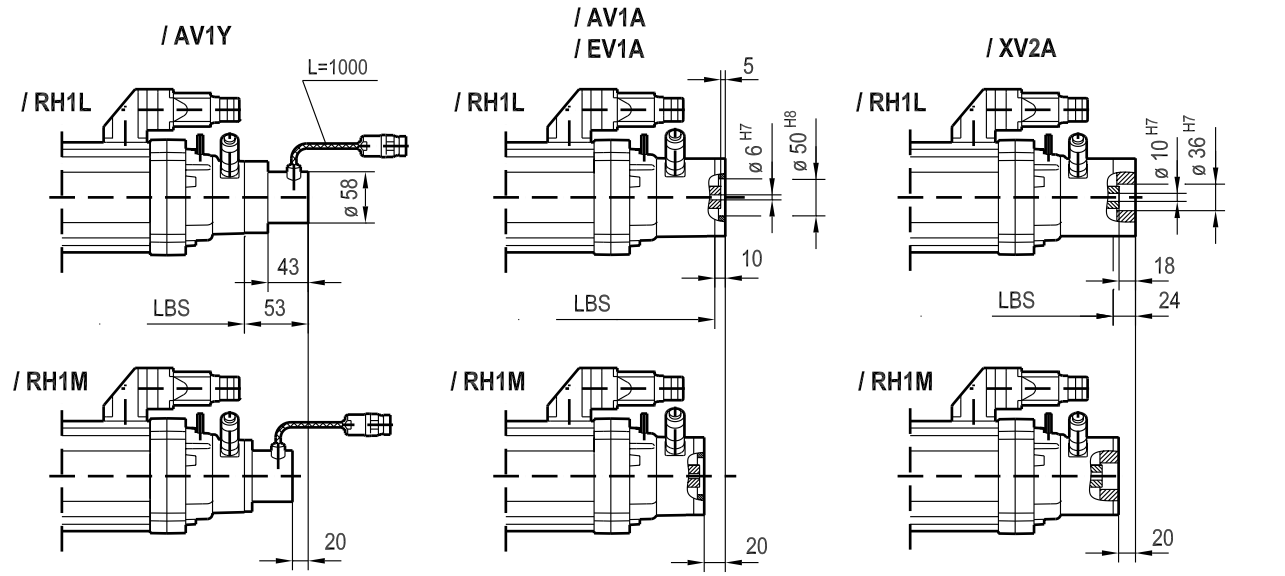
	CFM112S/BR/SB..	CFM112M/BR/SB..	CFM112L/BR/SB..
LS	469	496	550
LBS	409	436	490
st[1)]	14 - 17	17 – 23	17 -23
st_1[1)]	5.5 – 10.5	5.5 – 10.5	5.5 – 10.5

1) Diameter of cable to be connected

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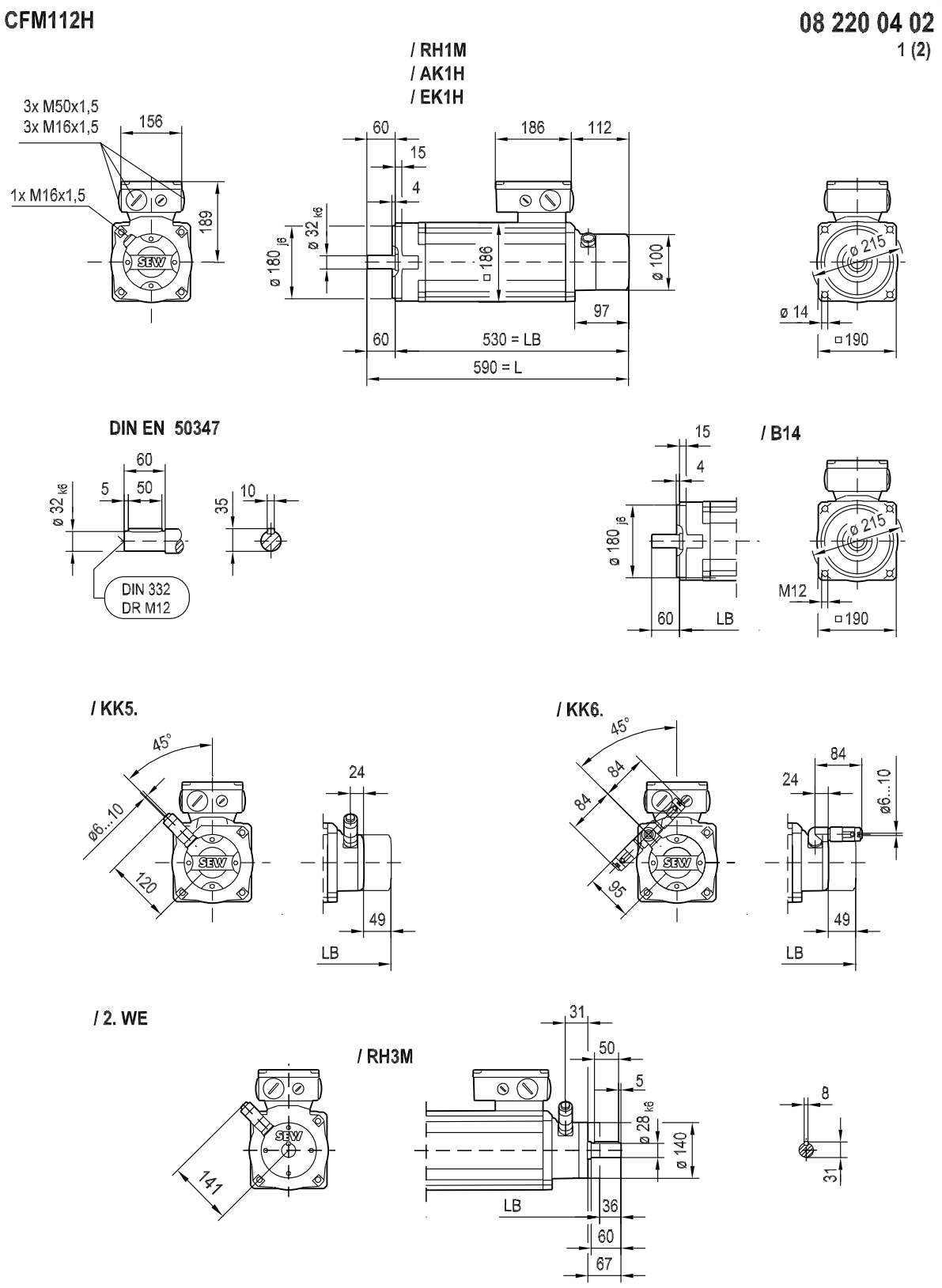




3) Space required to remove the fan guard in axial direction; leave at least sufficient space for a supply of cooling air

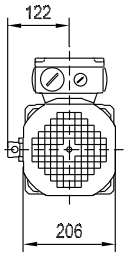
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7.7 CFM112H.. synchronous servomotors

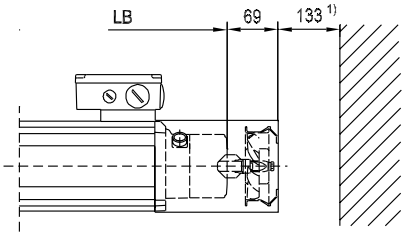


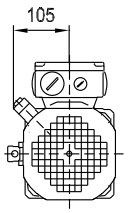
Z (2)

/ VR

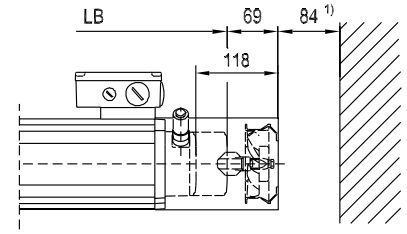


/ KK

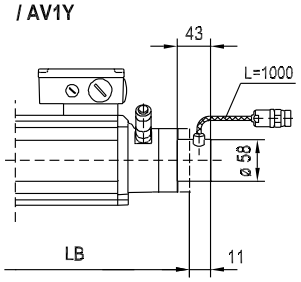




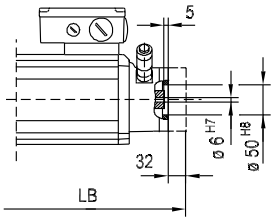
/ KK5



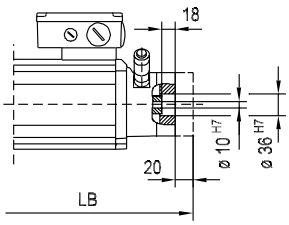
/ AV1Y



/ AV1A
/ EV1A



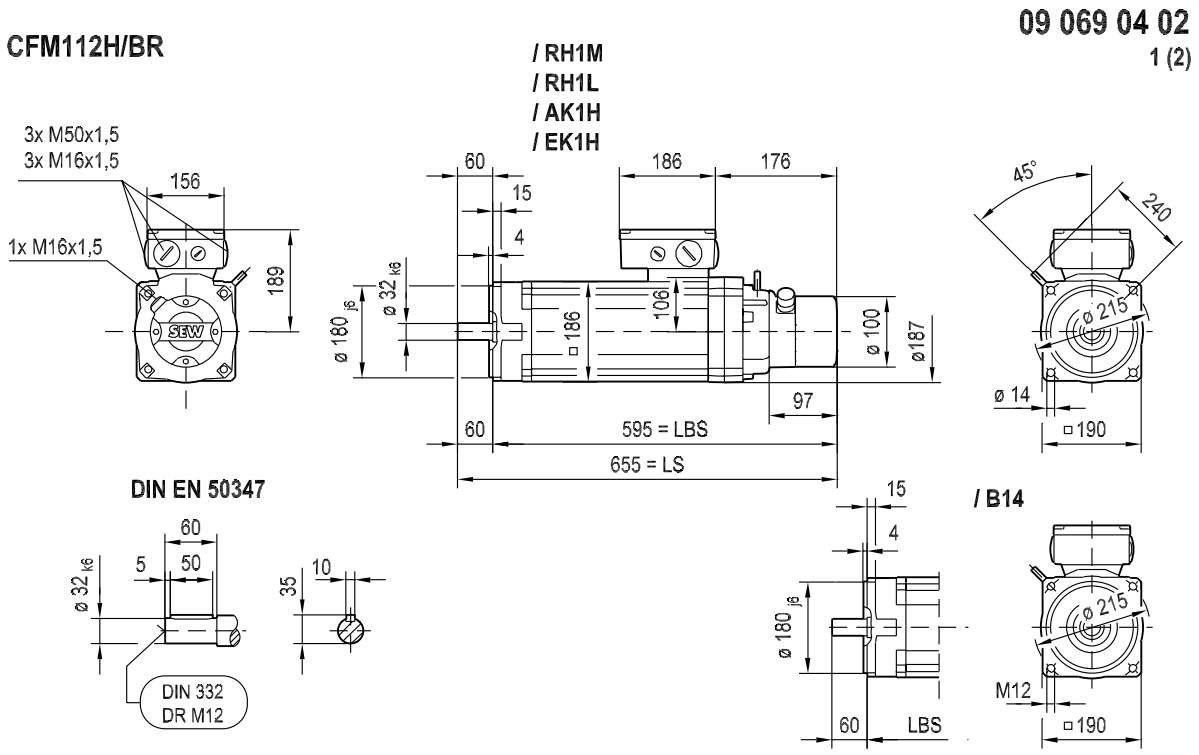
/ XV2A

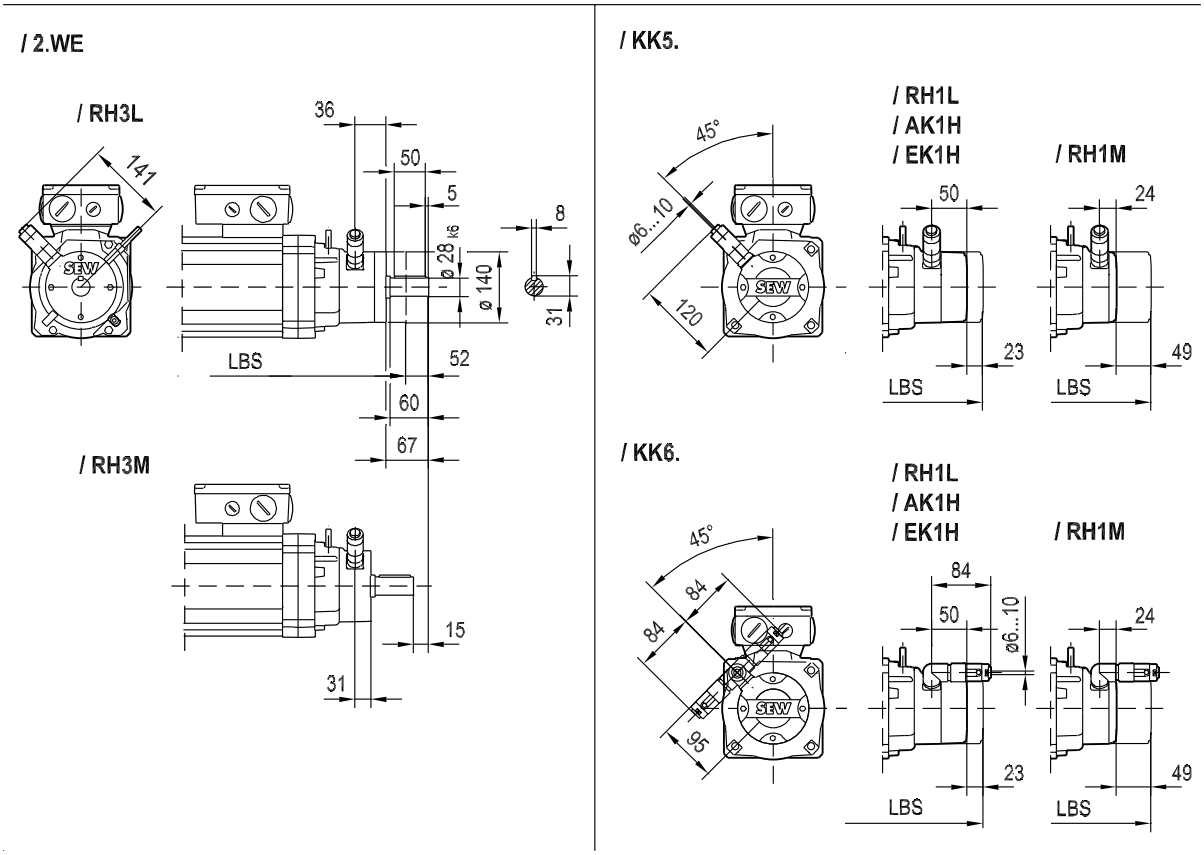


1) Space required to remove the fan guard in axial direction; leave at least sufficient space for a supply of cooling air

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7.8 CFM112H/BR.. synchronous servo brakemotors

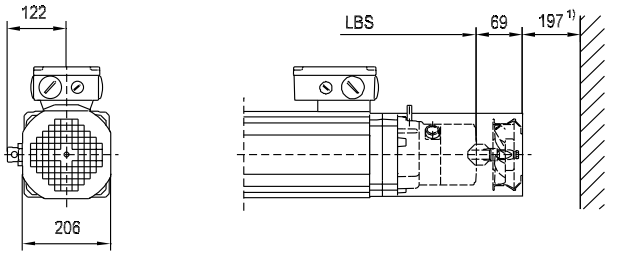




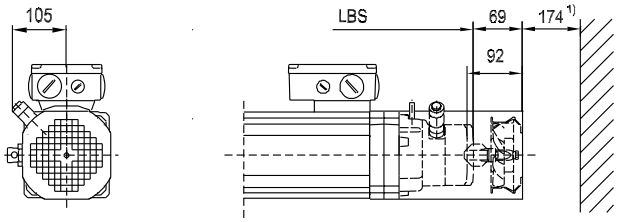
CFM112H/BR **09 069 03 02**
2 (2)

/ VR

/ KK



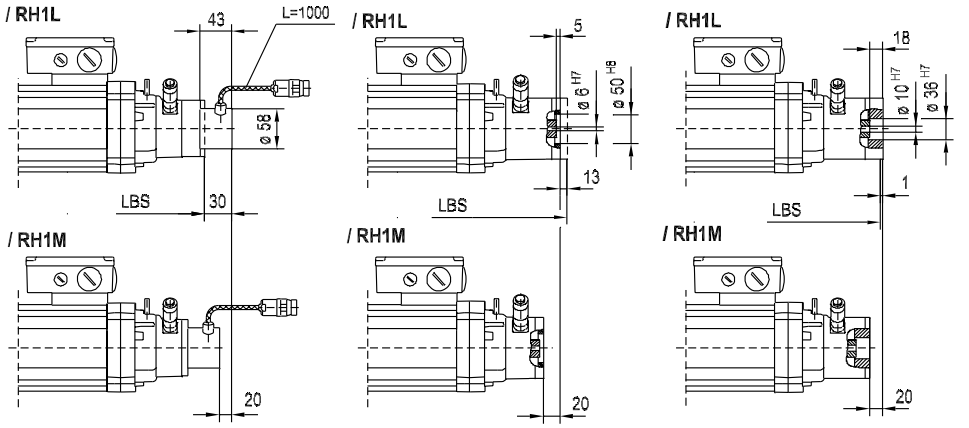
/ KK5



/ AV1Y

/ AV1A
/ EV1A

/ XV2A



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1) Space required to remove the fan guard in axial direction; leave at least sufficient space for a supply of cooling air

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8 Motor equipment

The following motor equipment is available for CFM112H/BR.. motors:

1. SM/SB plug connector
2. Terminal box KK/KK5/KK6
3. BR brake
4. Resolver RH1M/RH1L
5. Absolute HIPERFACE® encoder EK1H/AK1H
6. Absolute encoder AV1Y, AV1H, EV1H
7. VR forced cooling fan
8. Encoder mounting adapter AV1A, EV1A, XV2A

Other motor options are available on request.

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8.1 Optional motor protection

8.1.1 Thermal motor information with KTY

Type designation

/KY

Description

This type detects the motor temperature continuously using a semi-conductor sensor for further processing in the inverter or controller.

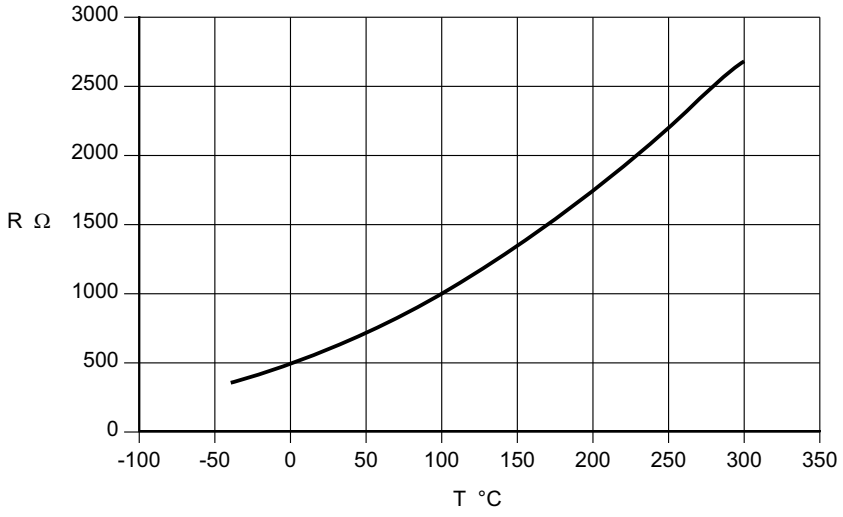
The inverter + /KY option can only take on the function of motor protection when it is used in combination with an inverter containing the thermal motor model.

Technical data

The temperature sensor KTY84 – 130 continuously detects the motor temperature.

	KTY84 - 130
Connection	Red (+) Blue (–)
Total resistance at 20 – 25 °C	540 Ω < R < 640 Ω
Test current	< 3 mA

Typical characteristic curve of KTY:



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8.1.2 PT1000 thermal motor protection

Type designation

/PK

Description

Thermal motor protection in combination with the corresponding evaluation electronics prevents the motor from overheating and consequently from being damaged. A temperature sensor provides only indirect protection as only one sensor value is determined.

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

Technical data

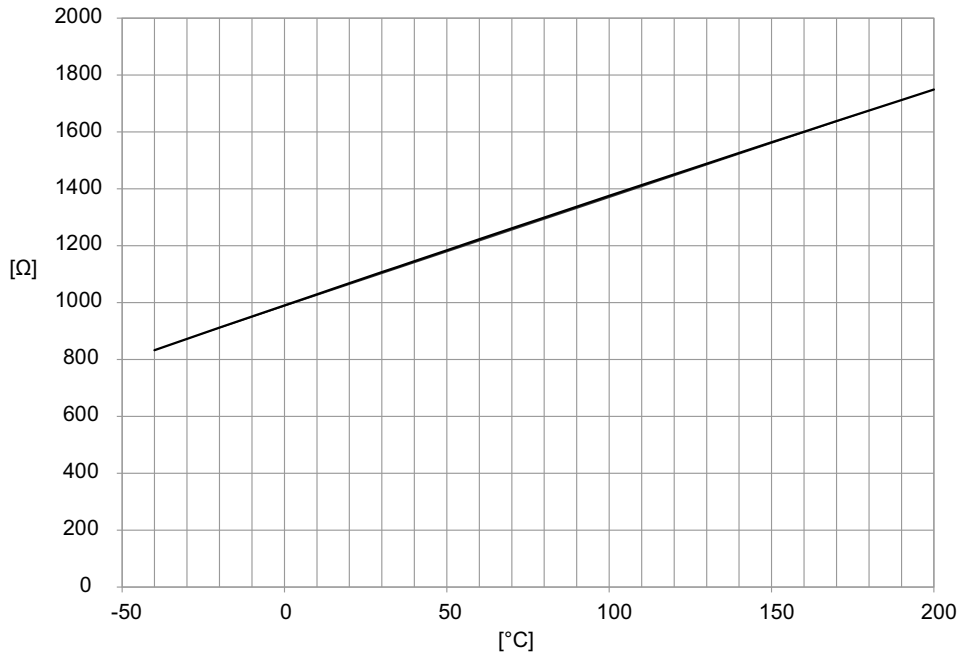
The PT1000 temperature sensor continuously detects the motor temperature.

	PT1000
Connection	Black – red
Total resistance at 20 – 25 °C	1050 Ω < R < 1150 Ω
Test current	< 3 mA

INFORMATION

The temperature sensor is unipolar which means that interchanging the incoming cables does not change the measurement result.

Typical characteristic curve of PT1000



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8.2 SM/SB plug connector

CFM.. motors are connected via a rectangular plug connector. This connector system offers the following advantages:

- One connector size for all connection cross sections from 1.5 mm^2 to 10 mm^2.
- Up to I_0 = 46 A.
- Metallic housing to ensure EMC
- Assembly without requiring special tools
- Control contacts in addition to the motor power contacts in one connector housing
- Separate insulation elements for power and control contacts
- UL certified

The other control contacts are assigned by SEW-EURODRIVE for connecting the BR brake. Socket contacts for core cross sections from 1 mm^2 or 1.5 mm^2 are used for this purpose.

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8.2.1 Type designation

A four-digit type designation is assigned to the power plug connector and the encoder plug connector. The second position indicates whether only the motor power is connected, or the motor power combined with the brake. The fourth digit represents a code for the core cross section to be connected or indicates that the motor was delivered without mating connector.

1st character:	**S**	Connection via plug connector	
2nd character:	**M**	Motor	
	B	Brakemotor	
3rd character:	**5**	Connector housing size and type of encoder cable entry (radial)	
	6	Connector housing size and type of encoder cable entry (axial)	
4th character:	**0**	Delivered without mating plug	
		If 2nd character is **M**, then	1: 4 x 1.5 mm^2
			2: 4 x 2.5 mm^2
			4: 4 x 4 mm^2
			6: 4 x 6 mm^2
			9: 4 x 10 mm^2
		If 2nd character is **B**, then	1: 4 x 1.5 mm^2 + 3 x 1 mm^2
			2: 4 x 2.5 mm^2 + 3 x 1 mm^2
			4: 4 x 4 mm^2 + 3 x 1 mm^2
			6: 4 x 6 mm^2 + 3 x 1.5 mm^2
			9: 4 x 10 mm^2 + 3 x 1.5 mm^2

8.2.2 Example

S B 5 9

- 9: 4 x 10 mm^2 motor core cross section and 3 x 1.5 mm^2 brake core cross section
- 5: Indicates the connector housing size and radial encoder cable entry
- B: Motor and brake
- S: Plug connector

In the basic version, SEW-EURODRIVE delivers CFM.. motors with the flange socket on the motor end and without SM50/SB50 mating connector. The encoder cable entry is radial.

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8.3 Connection with terminal box KK, KK5, KK6

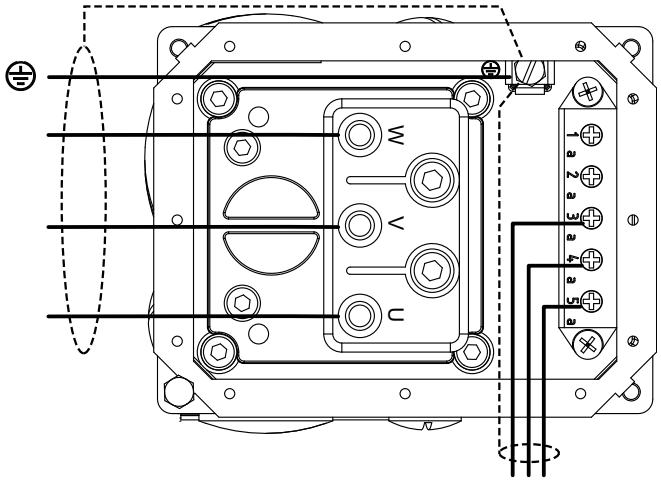
Motor type	Power connection			Encoder/resolver/thermal motor protection	
	Connection	Maximum connection cross section	Cable entry	Connection	Cable entry
CFM71..	3 x M5	4 x 6 mm²	M25 x 1.5	Spring cage terminal in the encoder housing	M16 x 1.5
CFM90../112S	3 x M6	4 x 10 mm²	M32 x 1.5		M16 x 1.5
CFM112M/H	3 x M8	4 x 25 mm²	M50 x 1.5		M16 x 1.5

8.3.1 EMC compliant cabling

Make sure that:

- The line type corresponds to the applicable regulations (rated currents are indicated on the nameplate).
- The signal lines consist of twisted pair wires and are collectively shielded (resolver lead as example: one pair each for reference, sine and cosine signals).
- The brake cables are routed separately from power cables, or that power cables and, if necessary, also brake cables are shielded to protect the brake against electromagnetic interference.

8.3.2 Motor power connection



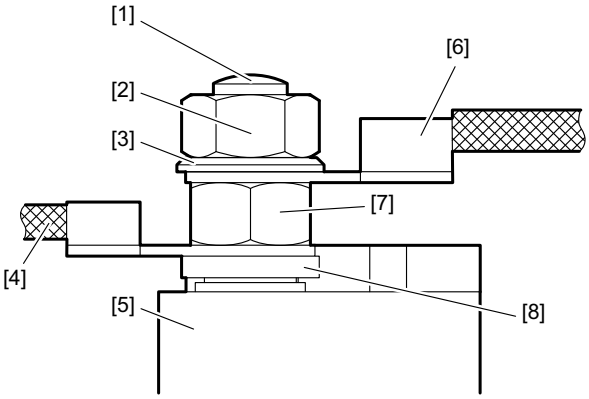
4834004747

Contact	Core identification	Connection
V	Black with white lettering U, V, W	V
V		V
W		W
PE	Green/yellow	Protective earth

Contact on the auxiliary terminal strip	Core identification	Connection of BME, BMH, BMK, BMP brake rectifiers	Connecting the BSG brake control unit
3a	Black with white lettering 1, 2, 3	14	1
4a		13	3
5a		15	5

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Figure: Power connection in the terminal box



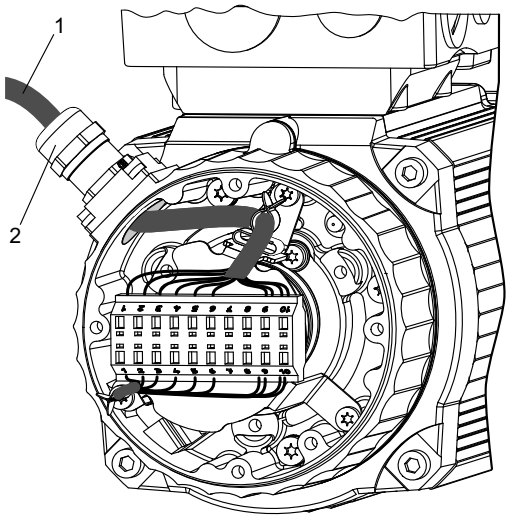
9007202155623307

[1]	Terminal studs	[5]	Terminal board
[2]	Top nut	[6]	Customer's cable
[3]	Washer	[7]	Bottom nut
[4]	Motor cable	[8]	Lock washer

For designing the terminal box, positions 6, 7 and 4 are regarded as current-carrying.

Resolver connection

Figure: Connection of an RH1M resolver



4834009099

1 Feedback cable

2 Cable gland

Encoder in delivery state

The housing is closed with an M16 × 1.5 screw plug. Positions 1 and 2 are not included in the delivery.

Contact	RH1M/RH1L connection	AK1H/EK1H connection
1	R1 (reference +)	cos +
2	R2 (reference -)	ref cos
3	S1 (cosine +)	sin+
4	S3 (cosine -)	ref sin
5	S2 (sine +)	D -
6	S4 (sine -)	D +
7	–	GND
8	–	Us
9[1)]	TF (KTY+/PK)	TF (KTY+/PK)
10[1)]	TF (KTY-/PK)	TF (KTY-/PK)

1) Double assignment to increase cross section

2. Connection with terminal box variant KK5/KK6

The extended terminal box variant KK5/KK6 for CFM.. motors comprises the terminal box for the power and the plug connector for signal evaluation.

K K 5 0

- 0: Delivery without mating signal connector
- 5: Radial encoder cable entry
- 6: Axial encoder cable entry
- KK Terminal box

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8.4 Brakes

8.4.1 BR brake

The optional BR disk brake from SEW-EURODRIVE is integrated in the motor. It operates as a DC-operated fail-safe brake, which means the brake is released electrically. The brake is applied automatically when the voltage is switched off or in the event of a power outage.

Information

Due to the high peak current loading and the DC voltage to be switched at inductive load, contactors in utilization category AC 3 (EN 60947-4-1) must always be used for controlling the brake rectifiers or BSG brake control unit.

Motor sizes CFM71, 90, 112

As standard, the brakes are available for supply voltages of AC 110 V, AC 230 V, AC 400 V, AC 460 V and DC 24 V. If no supply voltage is indicated for the brake, the brake will be delivered with a supply voltage of AC 400 V.

Speed classes

The BR brake for CFM71, CFM90 and CFM112 motors can be operated **up to a maximum of 4500 1/min**.

Standard design

As standard, synchronous servomotors CFM.. /BR with BME brake control are supplied for AC connection or BSG control unit for DC 24 V connection. The motors are ready for connection.

Brake control (only sizes 71, 90, 112)

Only SEW-EURODRIVE brake control systems are used for controlling the brake. The brake control systems are fitted as standard with varistors to protect against overvoltage.

The brakes are available with DC and AC voltage connection.

- AC voltage connection:
  - **BME**, equipped with DIN rail profile
- DC voltage connection:
  - **BSG**.

Two possible methods are available for electrical disconnection:

- Normal application times: cut-off in the AC circuit.
- Particularly short application times: cut-off in the AC and DC circuits.

The brake control systems are mounted in the control cabinet. Retaining screws are included in the delivery.

The following options are available:

- AC supply, cut-off in the AC and DC circuits without additional switch contact, particularly short application times: **BMP**.

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- AC supply, brake heating function when switched off: **BMH**.
- The **BMK/BMV** control system energizes the brake coil if the supply system and a DC 24 V signal (e.g. from the PLC) are present simultaneously. The brake is applied if one condition is not being met. BMK/BMV allows for shortest response and application times.

Control cabinet

The following table lists SEW-EURODRIVE brake control systems for installation in the control cabinet. The different housings have different colors (= color code) to make them easier to distinguish.

Brake control	Function	Voltage	Holding current I_{Hmax} (A)	Type	Part number	Color code
BME	Half-wave rectifier with electronic switching	AC 150 – 500 V	1.5	BME 1.5	825 722 1	Red
		AC 42 – 150 V	3.0	BME 3	825 723 X	Blue
BMH	Half-wave rectifier with electronic switching and heating function	AC 150 – 500 V	1.5	BMH 1.5	825 818 X	Green
		AC 42 – 150 V	3	BMH 3	825 819 8	Yellow
BMP	Half-wave rectifier with electronic switching, integrated voltage relay for cut-off in the DC circuit	AC 150 – 500 V	1.5	BMP 1.5	825 685 3	White
		AC 42 – 150 V	3.0	BMP 3	826 566 6	Light blue
BMK	Half-wave rectifier with electronic switching, DC 24 V control input and cut-off in the DC circuit	AC 150 – 500 V	1.5	BMK 1.5	826 463 5	Water blue
		AC 42 – 150 V	3.0	BMK 3	826 567 4	Light red
BSG	Control unit for DC 24 V connection with electronic switching	DC 24 V	5.0	BSG	825 459 1	White
BMV	Electronic switching, DC 24 V control input and cut-off in the DC circuit	DC 24 V	5.0	BMV	1 300 006 3	White

Quick response times

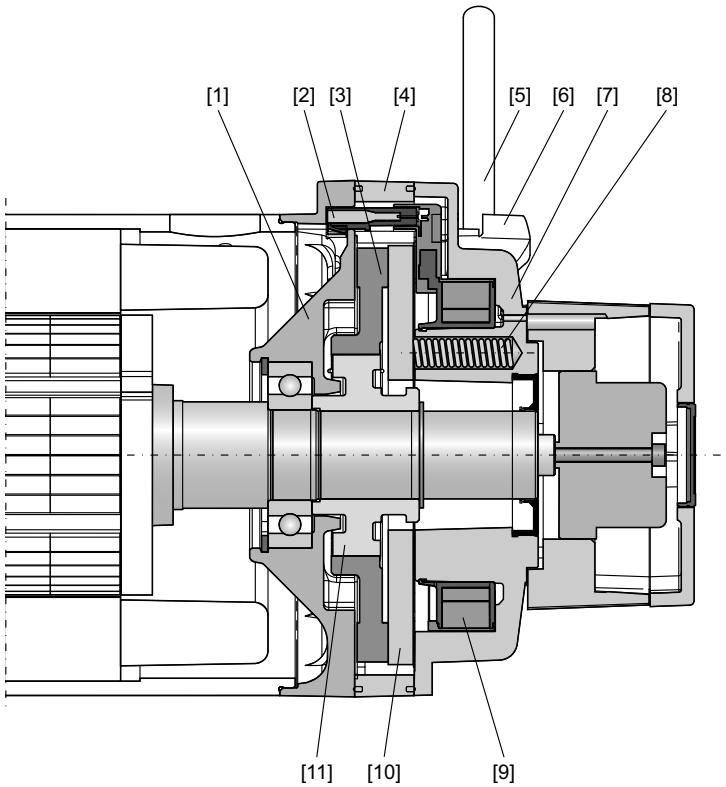
A characteristic feature of the SEW-EURODRIVE brake is the patented two-coil system. This system consists of accelerator coil and coil section. The special SEW-EURODRIVE brake control system ensures that the accelerator coil is switched on with a high current inrush when the brake is released, after which the coil section is switched on. The result is a particularly short reaction time when opening the brake. The brake disk becomes free very rapidly as a result and the motor starts up practically without braking friction.

This principle of the two coil system also reduces self-induction so that the brake is applied more rapidly. The result is a reduced braking distance. The SEW-EURODRIVE brake can be cut off in the DC and AC circuits to achieve particularly short response times when applying the brake, for example for hoists.

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Basic structure of sizes 71, 90, 112

Figure: Basic structure of the brake



1158202251

[1]	Brake endshield	[7]	Magnet body
[2]	Contact box	[8]	Brake spring
[3]	Brake disk	[9]	Brake coil
[4]	Guide ring	[10]	Pressure plate
[5]	Hand lever (not for HF)	[11]	Driver
[6]	Release lever (not installed in ASEPTIC motors)		

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8.4.2 Project planning for BR brakes

Data for brake dimensioning

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

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

Hold function

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

$$M_{4,100°C} > M_L$$

Emergency off function for lifting applications

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

$$M_{1m,100°C} > M_L \times 1.4$$

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Speed difference during brake application

Due to the interaction of response time (signal transmit time), brake application time and the gravitational acceleration, the hoist may be in "free fall" for a short time. This results in an increased motor speed by n_D (hoist downwards) or in a decreased motor speed by n_D (hoist upwards).

Calculation of the emergency stop speed (hoist downwards):

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

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

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

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

Working capacity in case of emergency off

The working capacity of the brake is defined by the permitted braking work done W_1 per braking operation and the total permitted braking work W_{insp} until maintenance of the brake.

Permitted number of braking operations until maintenance of the brake:

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

Braking work per braking operation:

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

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

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

The calculated braking work W_1 is compared with the permitted braking work per braking operation W_1 of the BP brake.

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

Braking time/stopping distance

Braking time hoist downwards

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

Braking time horizontal drive, hoist upwards

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

Stopping distance

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

Permitted gear unit load in case of emergency off

The following condition can be applied for easier checking of the gear unit in case of emergency off:

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

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

The exact check taking the relevant influencing factors such as the mass inertia ratio into account is carried out in the SEW Workbench project planning function.

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8.4.3 Technical data

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

Brake	Motor type	$M_{2, 20\,°C}$ Nm	$M_{4, 100\,°C}$ Nm	$M_{1m, 100\,°C}$ Nm	P W	t_1 ms	t_2 ms	t_3 ms	W_{insp} kJ	J_{Brake} 10^{-4} kgm²
BR1	CFM71S	5	3	3.5	45	20	40	100	60	1.73
		10	6	7						
	CFM71M	7	4.2	4.9		25	30	90		
		14	8.4	9.8						
	CFM71L	10	6	7		30	20	80		
		14	8.4	9.8						
BR2	CFM90S	14	8.4	9.8	55	30	35	120	90	3.8
		28	16.8	19.6						
	CFM90M	20	12	14		35	25	90		
		40	24	28						
	CFM90L	28	16.8	19.6		40	25	90		
		40	24	28						
BR8	CFM112S	28	16.8	19.6	75	35	35	100	180	15.3
		55	33	38.5						
	CFM112M	40	24	28		40	35	80		
		90	54	63						
	CFM112L/H	55	33	38.5		40	25	80		
		90	54	63						

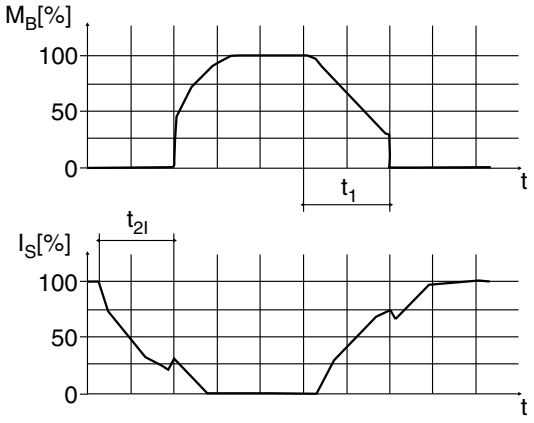
	Standard braking torque
	Optional braking torque

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

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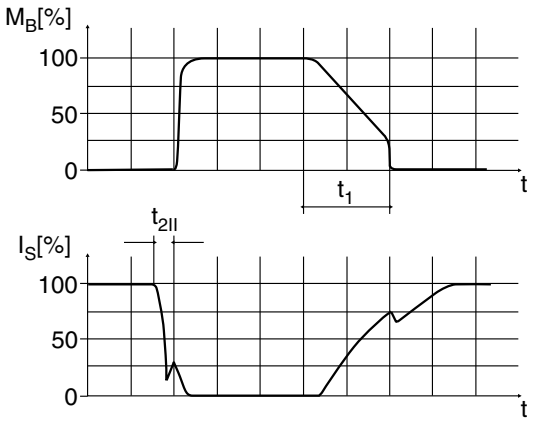
Current and braking torque

Cut-off in the AC circuit



4834026763

Cut-off in the DC and AC circuits



4834028427

M_B = Braking torque

I_S = Coil current

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SEW EURODRIVE

Operating currents

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

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

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

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

Brake		**BR1**	**BR2**	**BR8**
for motor		CFM71	CFM90	CFM112
$M_{2,\ 20°C}$ in Nm		14	40	90
P_B in W		45	55	75
Inrush current ratio I_B/I_H		4.0	4.0	6.3
Nominal voltage U_N (...) Voltage tolerances		I_H A_{AC}	I_H A_{AC}	I_H A_{AC}
V_{AC}	V_{DC}			
	24 (21.6 – 26.4)	1.5	1.7	2.6
110 (99-121)		0.71	0.9	1.2
230 (218-243)		0.31	0.39	0.53
400 (380-431)		0.18	0.22	0.29
460 (432-484)		0.16	0.21	0.26

Cross section of the brake cable

Select the cross section of the brake cables according to the currents in your application. Remember to take the inrush current of the brake into account when selecting the cross section. When taking the voltage drop into account due to the inrush current, the value must not drop below 90% of the line voltage.

Information

Cable cross sections of max. 2.5 mm^2 can be connected to the terminals of the brake control units. Use intermediate terminals if the cross sections of the brake cable are larger than this value. Keep the distance between the intermediate terminal and the brake control system as short as possible.

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 acceleration current is decisive for the calculation.

The permitted tolerance for the rated voltage outside the range limit is ± 5 % (BR1, BR2, BR8).

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Manual brake release

A manual brake release kit according to the brake size can be ordered for retrofitting the manual brake release.

Part number	Content
BR1 manual brake release kit 0196 602 2	• 1 releasing lever • 1 hand lever • 2 hex nuts
BR2 manual brake release kit 0196 603 0	
BR8 manual brake release kit 0196 604 9	

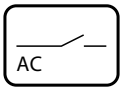
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Block diagrams of the brake control for terminal box

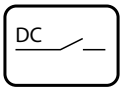
INFORMATION

For operating the brake, apply the voltage specified on the nameplate. Switch contacts must be designed according to utilization category AC3 to EN 60947-4.1.

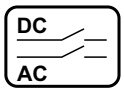
Key



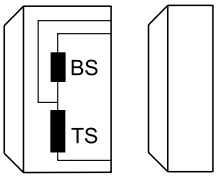
Cut-off in the AC circuit
(standard application of the brake)



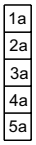
Cut-off in the DC circuit
(rapid brake application)



Disconnection of the DC and AC circuits
(rapid brake application)



Brake
BS = Accelerator coil
TS = Coil section



Auxiliary terminal strip in terminal box



Motor with delta connection



Motor with star connection



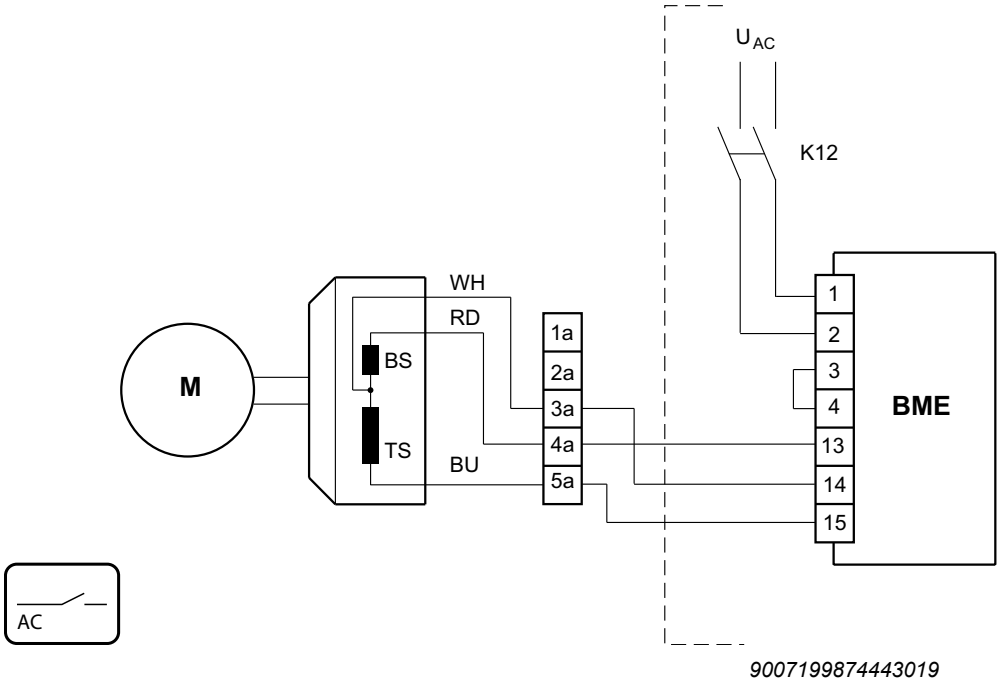
Control cabinet limit

K12	Contactor for the supply voltage of the brake rectifiers
WH	White
RD	Red
BU	Blue
BN	Brown
BK	Black

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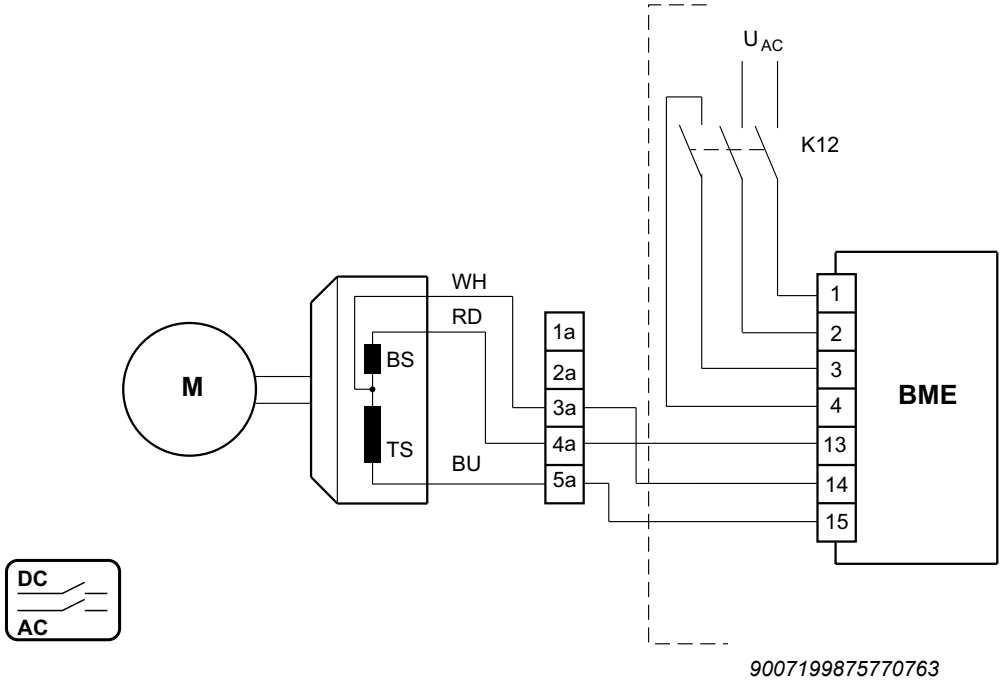
BME brake rectifier

Cut-off in the AC circuit / normal application of the brake.



9007199874443019

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

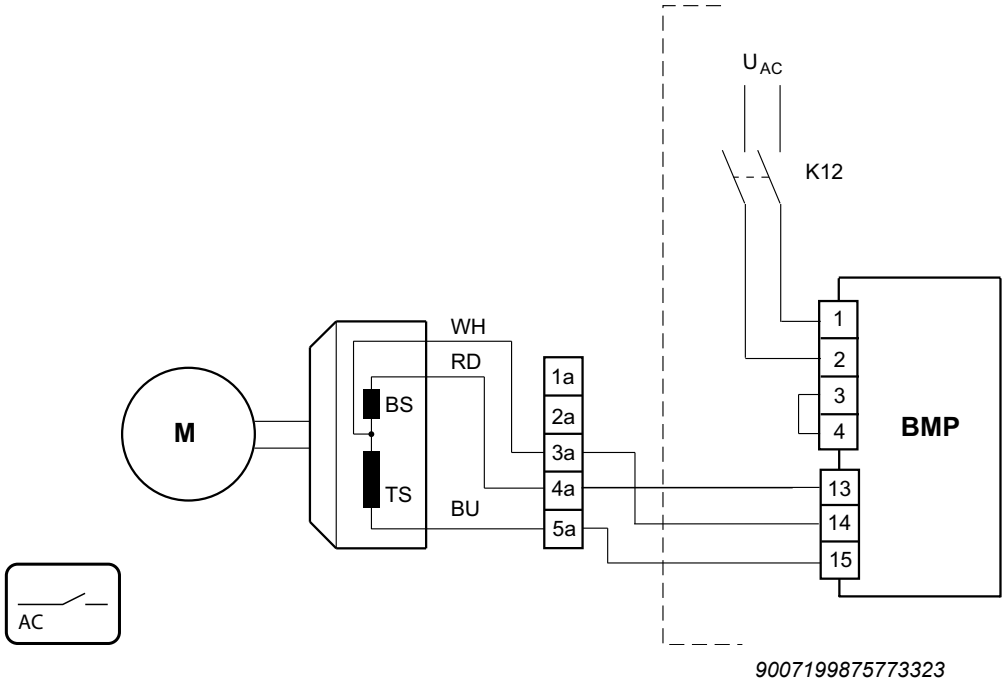


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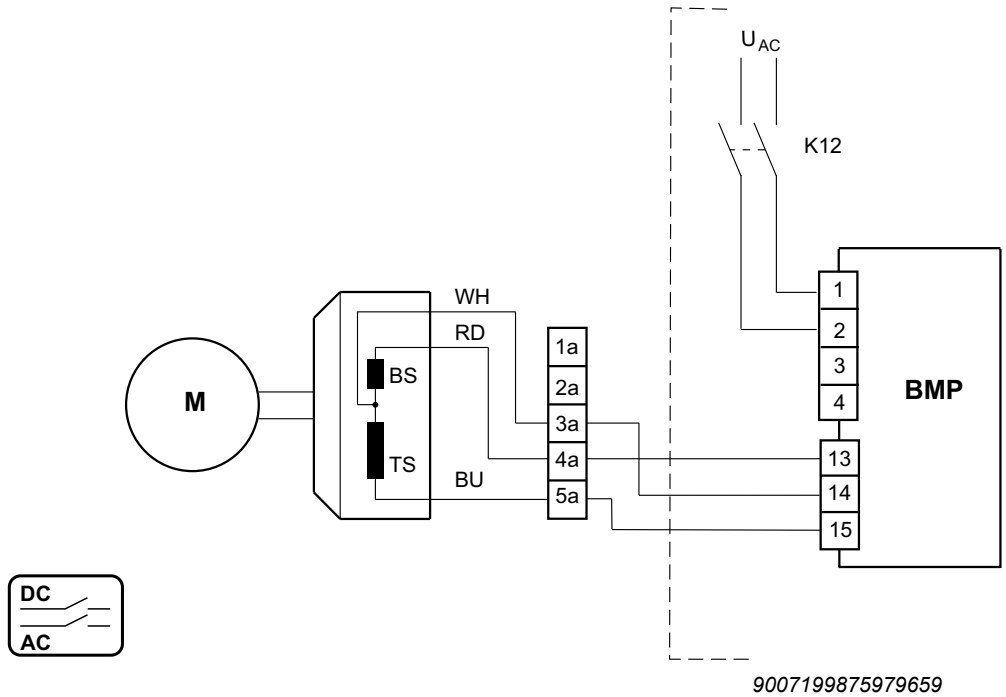
BMP brake rectifier

Cut-off in the DC circuit / normal application of the brake / integrated voltage relay.



9007199875773323

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



9007199875979659

BMH brake rectifier

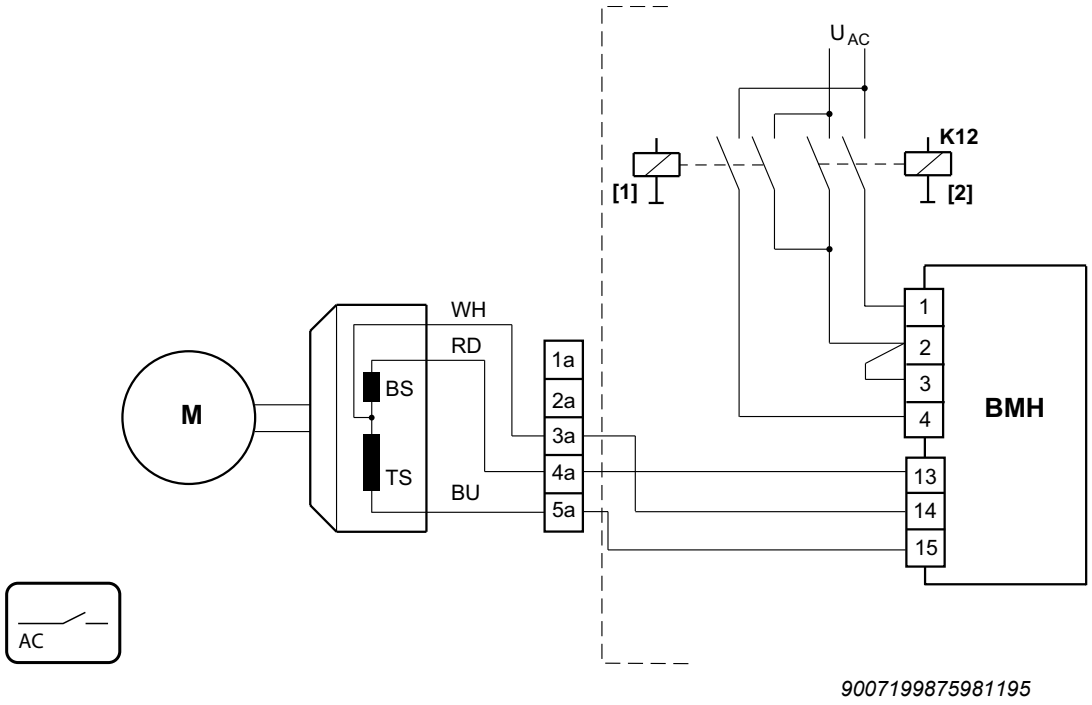
Cut-off in the AC circuit / normal application of the brake.

Apply the voltage as stated on the nameplate to release and heat the brake.

K12 not activated: Heating mode

Contact rating of the BMH terminals:

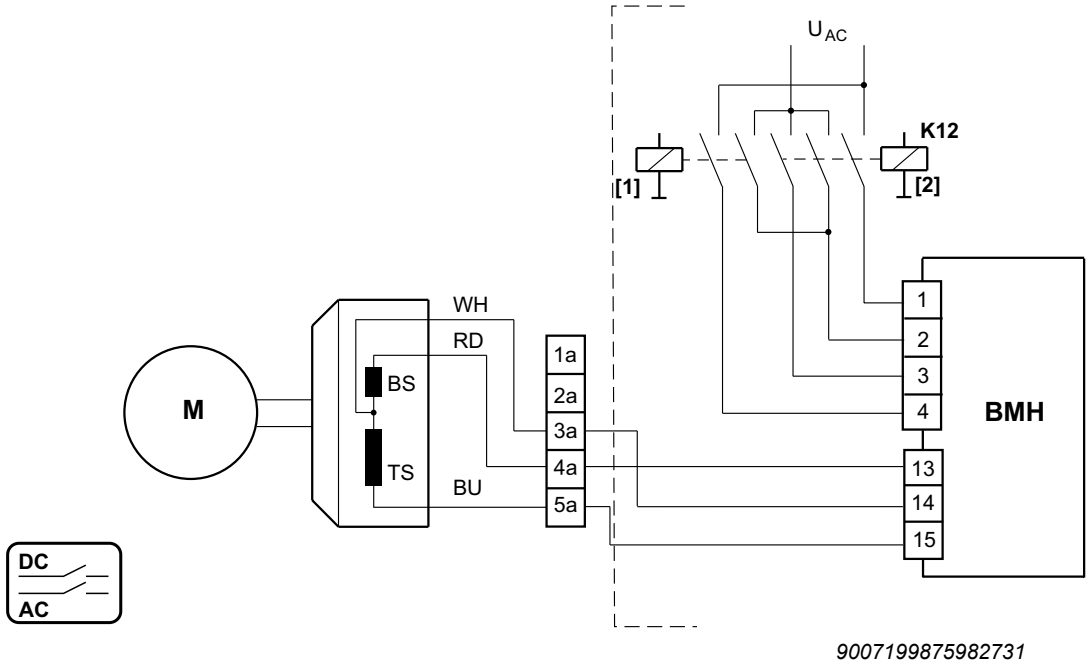
- Terminals 1 and 4: AC11
- Terminal 3: AC3 in accordance with EN 60947-4-1



[1] Heating [2] Releasing

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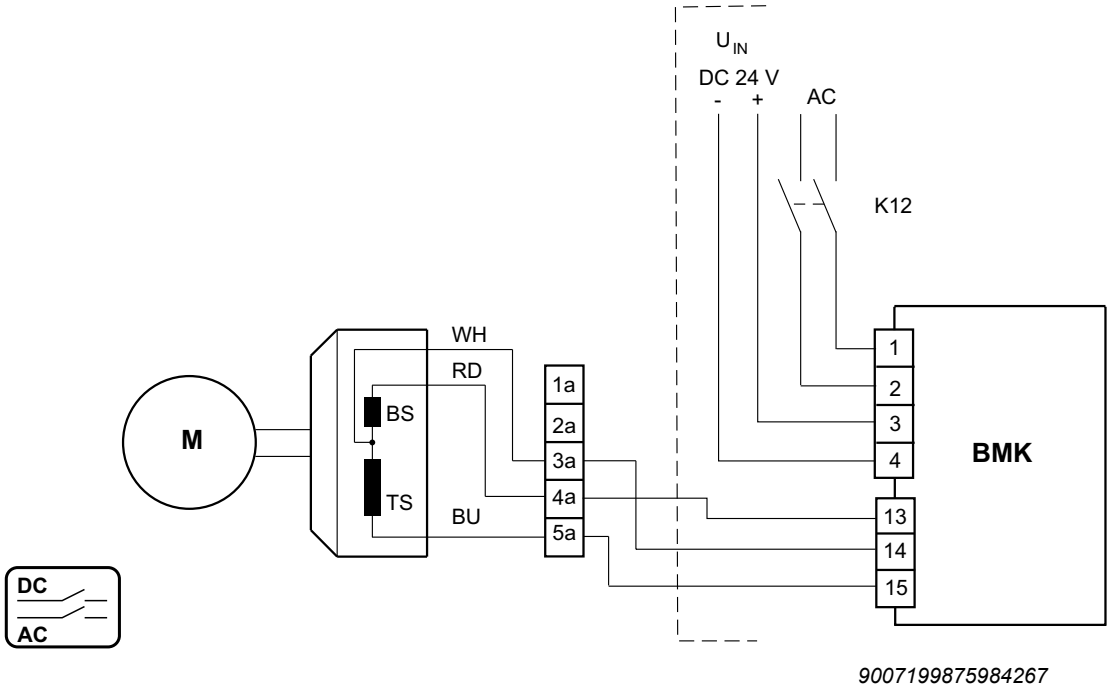
Cut-off in the DC and AC circuits / rapid application of the brake.



[1] Heating [2] Releasing

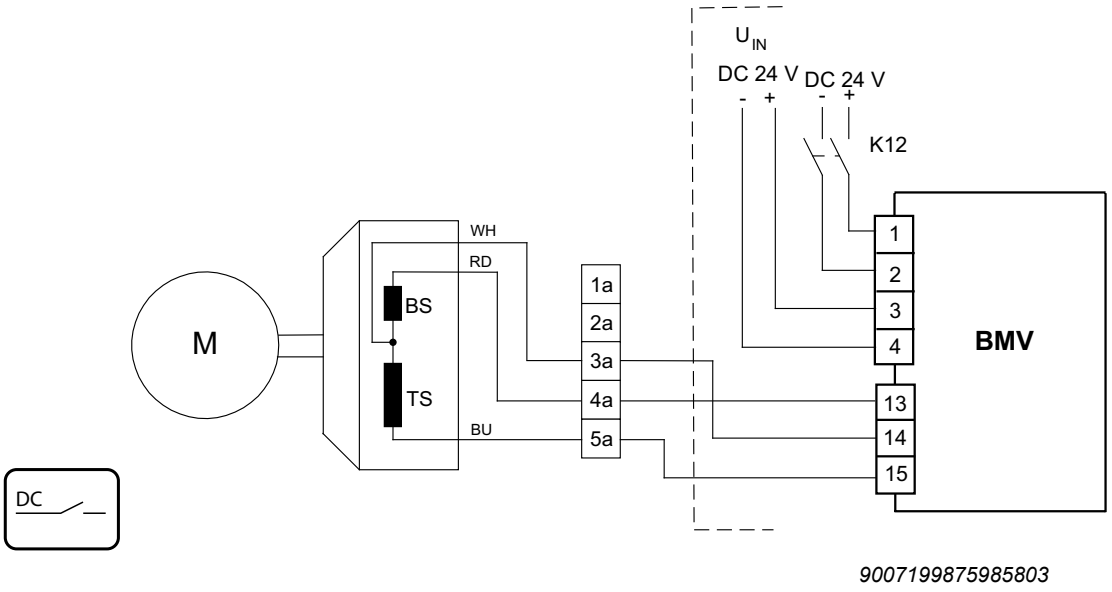
BMK brake rectifier

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



BMV brake control unit

Cut-off in the DC circuit / rapid application of the brake / integrated DC 24 V control input.

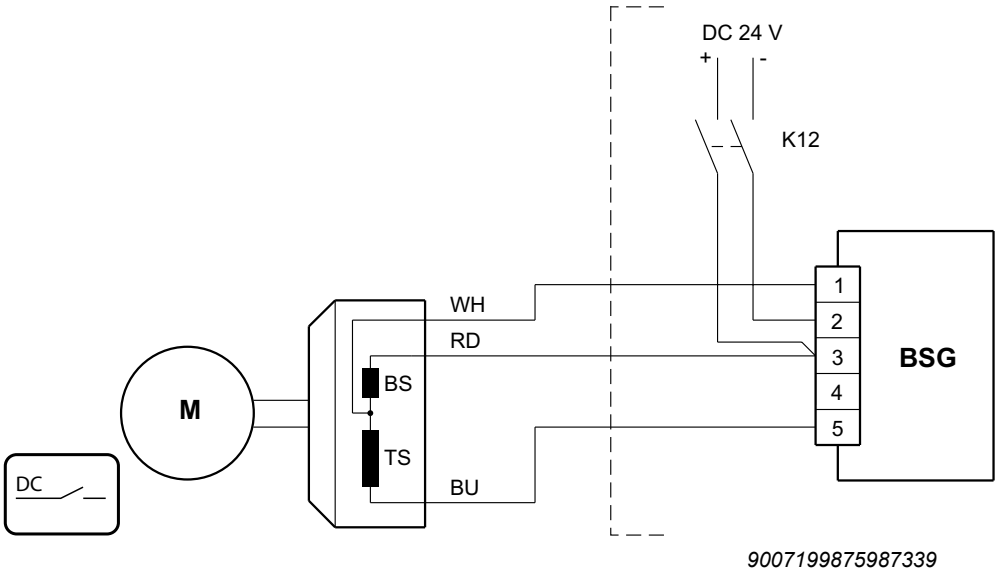


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U_{IN} = Control signal

BSG brake control unit

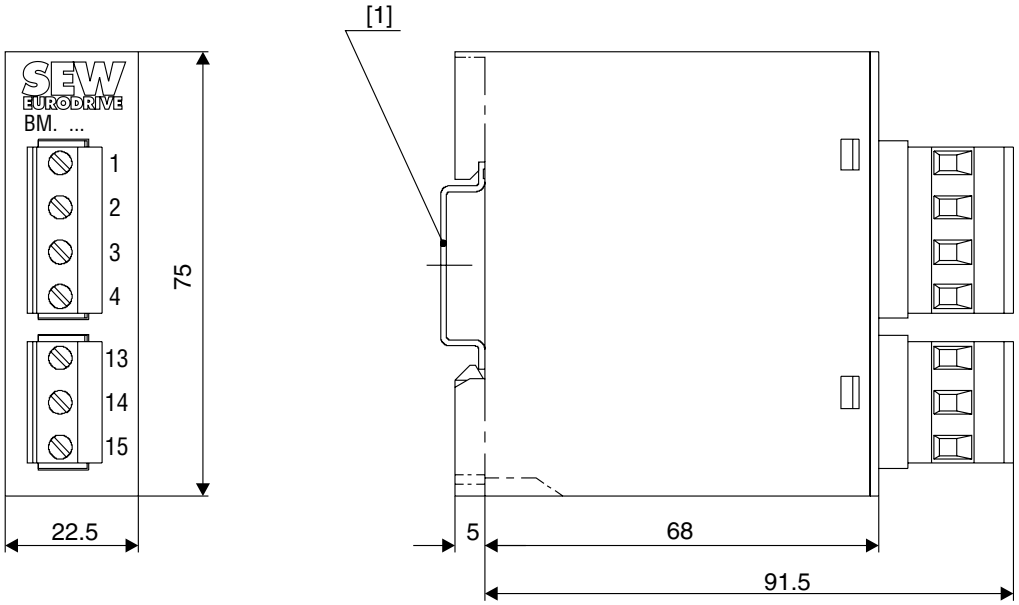
For DC voltage supply with DC 24 V.



9007199875987339

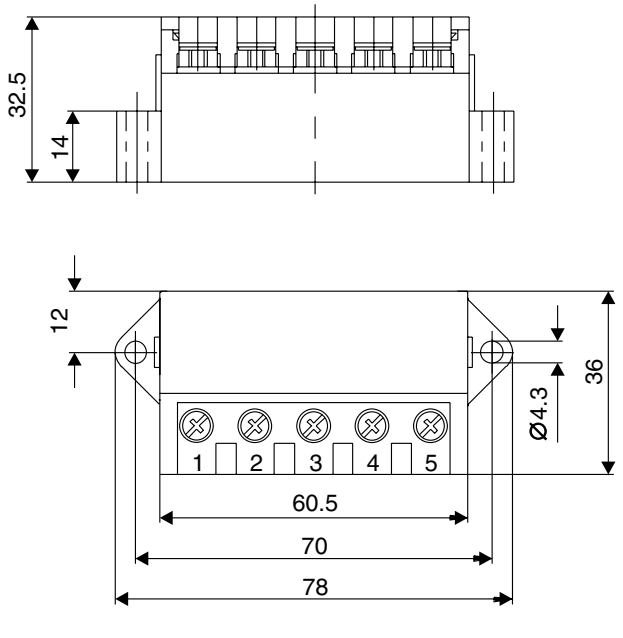
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BME, BMP, BMH, BMK, BMV brake control – dimension drawing



[1] Support rail mounting EN 50022-35 × 7.5

Dimension drawing for BSG brake control units



Block diagrams of the brake control for plug connectors

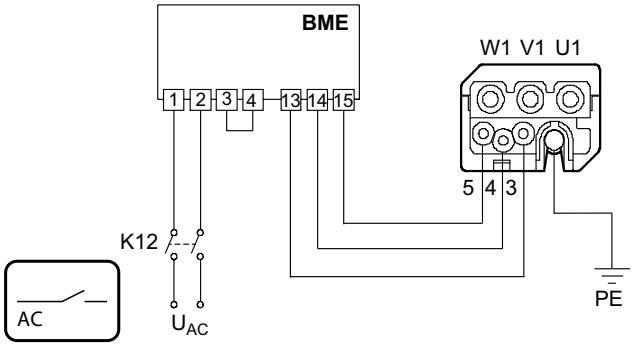
INFORMATION

For operating the brake, apply the voltage specified on the nameplate. Switch contacts must be designed according to utilization category AC3 to EN 60947-4.1.

"Key:" (→ 🗎 133)

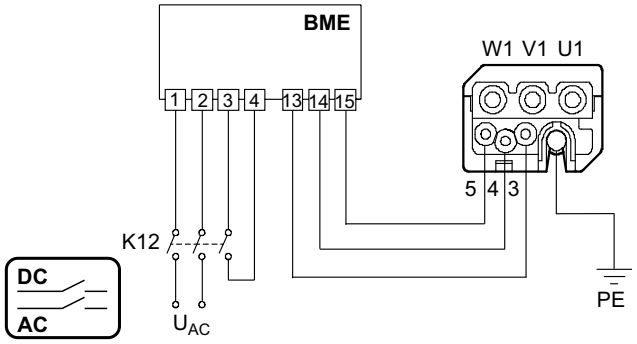
BME brake rectifier

Cut-off in the AC circuit / normal application of the brake



476143499

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

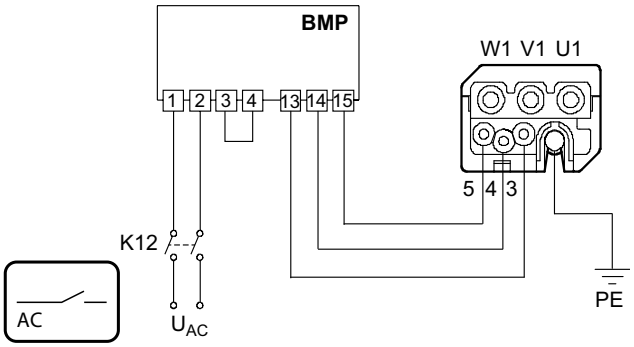


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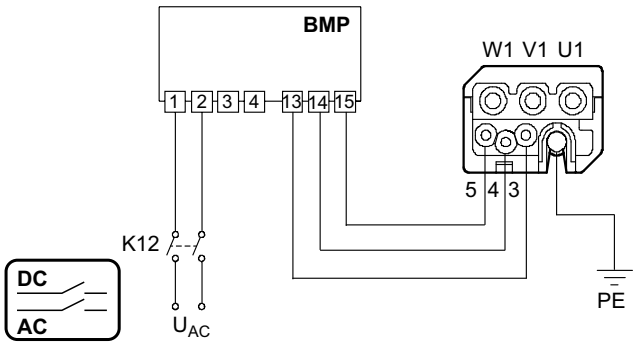
BMP brake rectifier

Cut-off in the AC circuit / rapid application of the brake / integrated voltage relay



476659723

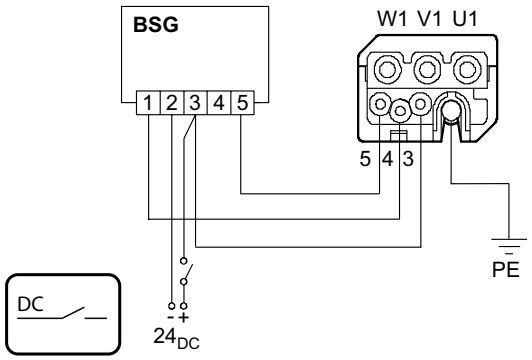
Cut-off in the DC and AC circuits / rapid application of the brake / integrated voltage relay



476661259

BSG brake control unit

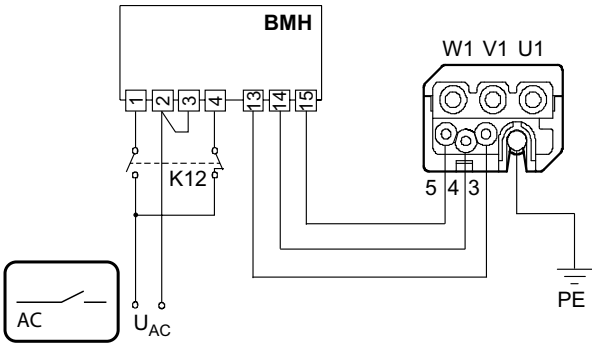
For DC voltage supply with DC 24 V



476668427

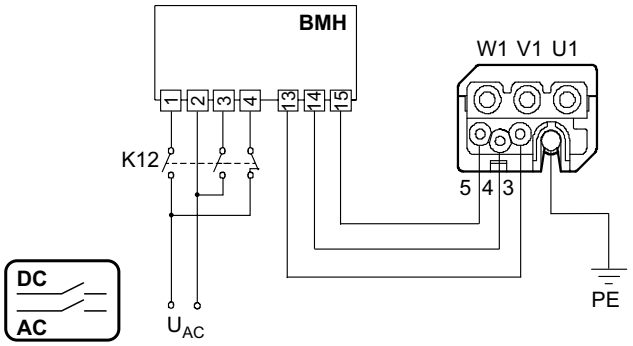
BMH brake rectifier

Cut-off in the AC circuit / normal application of the brake



476663819

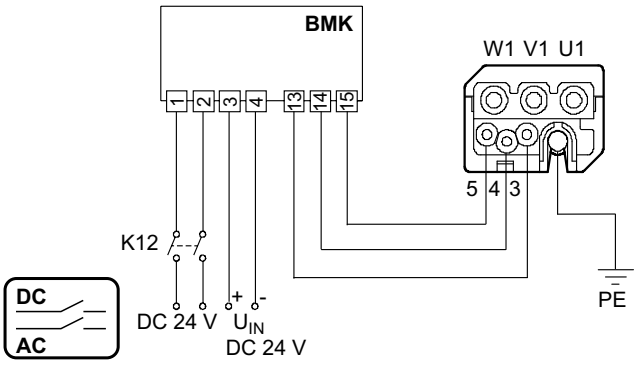
Cut-off in the DC and AC circuits / rapid application of the brake



476665355

BMK brake rectifier

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



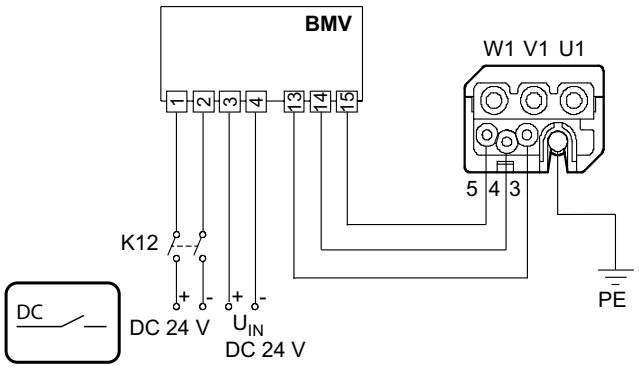
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U_{IN} = Control signal

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BMV brake control unit

Cut-off in the DC circuit / rapid application of the brake / integrated DC 24 V control input



U_{IN} = Control signal

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8.5 Encoders

8.5.1 Resolver

Resolver for motor size CFM71 – 112

Type	RH1M/RH1L
Number of poles	2
Primary	Rotor
Input voltage	7 V
Input frequency	7 kHz
Gear ratio ± 10%	0.5
Phase shift ± 5°	+13 °
Input impedance ± 15%	130 + j 120 Ω
Output impedance ± 15%	200 + j 270 Ω
Input resistance ± 10%	82 Ω
Output resistance ± 10%	68 Ω
Maximum electrical fault	± 6’
Temperature range	-55 °C to +150 °C

SEW-EURODRIVE servo gearmotors are delivered with 2-pole resolvers as standard. Further information on other resolvers is available on request.

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8.5.2 HIPERFACE® encoders AK1H/EK1H

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

INFORMATION

When prefabricating the encoder cables, ensure correct polarity for the supply outputs.

Type	EK1H	AK1H
Can be mounted to encoder	**CFM71 – 112**	
Supply voltage	DC 7 – 8 – 12 V polarity reversal protected	
Max. current consumption	140 mA	
Maximum operating frequency	200 kHz	
Pulses (sine cycles) per revolution	1024	
Output amplitude per track	0.9 – 1.1 V_{pp} sin/cos	
Single-turn resolution	32768 increments/revolution (15 bits)	
Multi-turn resolution	–	4096 revolutions (12 bits)
Transmission protocol	HIPERFACE®	
Serial data output	Driver to EIA RS-485	
Vibration (55 to 2000 Hz)	≤ 200 m/s^2 (DIN IEC 68-2-6)	
Maximum speed	12000 1/min	
Temperature range	-30 °C to +110 °C	

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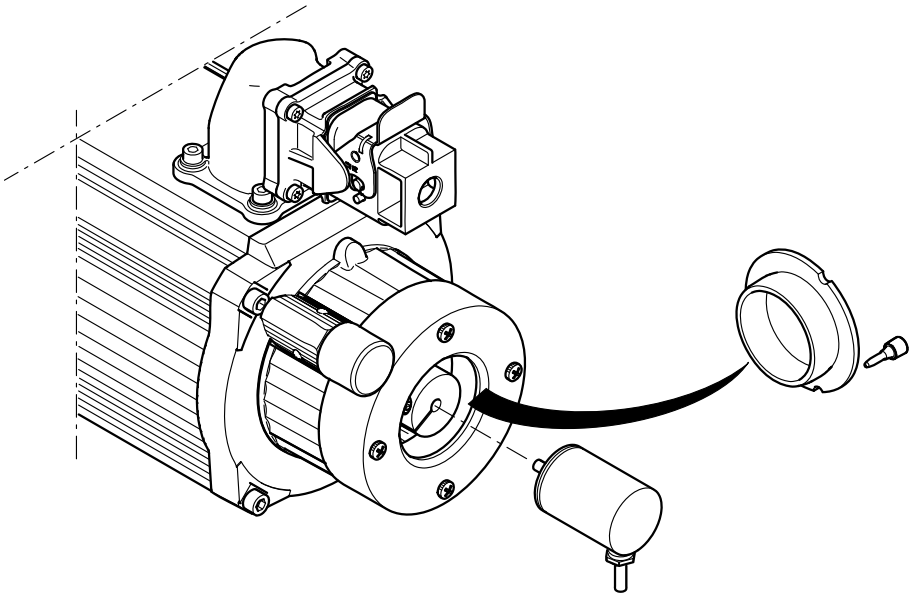
8.5.3 Absolute encoders AV1Y, AV1H, EV1H

Type	Unit	AV1Y	AV1H	EV1H
		13642049	01871897	01872877
Supply voltage	U_B	DC 10 – 15 – 24 – 30 V polarity reversal protected	DC 7 – 12 V polarity reversal protected	
Max. current consumption	I_{in}	250 mA	80 mA	
Maximum operating frequency	f_{limit}	≥ 100 kHz	200 kHz	
Pulses (sine cycles) per revolution	A, B	512	1024	
Output amplitude per track		1 V_{PP} sin/cos		
Scanning code		Gray Code	–	
Single-turn resolution		4096 increments/revolution	32768 increments/revolution	
Multi-turn resolution		4096 revolutions (12 bits)		–
Data transmission absolute values		synchronous, serial (SSI)	HIPERFACE®	
Serial data output		Driver to EIA RS-485		
Serial pulse input		Optocoupler, recommended driver to EIA RS-485	–	
Clock frequency		Permitted range: 90 – 300 – 1100 kHz (max. 100 m cable length with 300 kHz)	–	
Clock-pulse space period		12 – 35 µs	–	
Vibration (55 to 2000 Hz)		≤ 100 m/s^2 (DIN 150 68-2-6)	200 m/s^2 (DIN 150 68-2-6)	
Maximum speed	n_{max}	6000 1/min		
Mass	m	0.30 kg	0.55 kg	
Operating temperature	ϑ_B	-15°C to +60°C (EN 60721-3-3, class 3K3)	-20 °C to +85 °C (EN 60721-3-3, class 3K3)	
Degree of protection		IP65 (EN 60529)		
Connection		1 m (3.3 ft) cable with 17-pin round connector, suitable for female connector SPUC 17B FRAN	1 m (3.3 ft) cable with 12-pin round connector (Intercontec)	

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8.5.4 Encoder mounting adapter AV1A/EV1A/XV2A

The motors can be equipped with various encoder attachment fittings for mounting devices from different manufacturers.



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The encoder is attached using 3 fixing clamps (screws with eccentric disks) for 3 mm flanges.

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8.6 VR forced cooling fan

CFM.. synchronous servomotors can be equipped with a forced cooling fan if required. The VR forced cooling fan is available for DC 24 V and AC 100 – 240 V.

Forced cooling fan type	VR		
for motor size	CFM71	CFM90	CFM112
DC supply voltage in V	24 ± 10%		
Current consumption DC A	0.46		0.75
Power consumption in W	11		18
Air discharge rate m^3/h	170	170	410
Ambient temperature in °C	-20 to +60		
Degree of protection	IP54/IP55		
Electrical connection	Plug connector		
Max. cable cross section in mm^2	3 × 1		
Connection cable, max. Ø	7 mm		

8.6.1 UWU52A switched-mode power supply

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

Input: AC 110 – 240 V; 1.04 – 0.63 A; 50/60 Hz

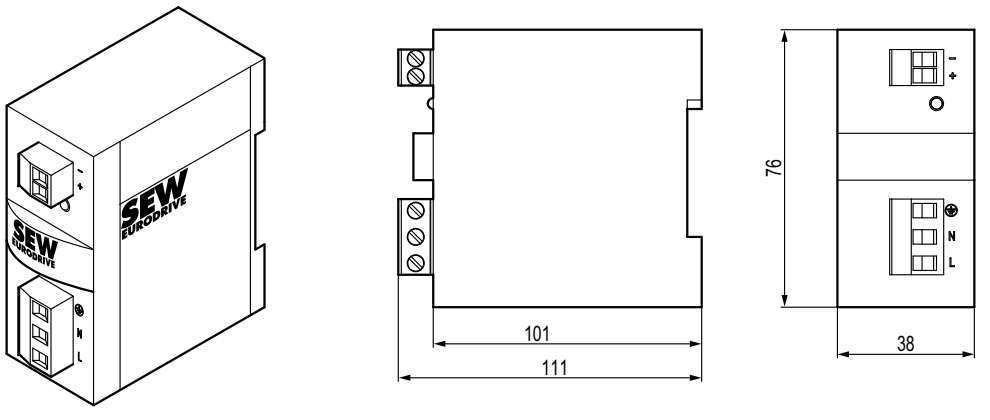
Output: DC 24 V; 2.5 A (40 °C); 2.0 A (55 °C)

Connection: Screw terminals 0.2 – 2.5 mm^2, separable.

Degree of protection: IP20; attachment to EN 60715 TH35 support rail in the control cabinet.

Part number: 0188 1817.

Dimensions of the UWU52A switched-mode power supply:



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8.6.2 Forced cooling fan, cpl.

Forced cooling fan for motor type	Part number
24 V, CFM71	01873806
24 V, CFM71 /BR	01873814
24 V, CFM90	01873822
24 V, CFM90 /BR	01874799
24 V, CFM112	01873849
24 V, CFM112 /BR	01873830
24 V, CFM71 /BR /KK	01876228
24 V, CFM90 /BR /KK	01876244

8.6.3 Retrofitting a forced cooling fan

An accessory bag must be ordered for retrofitting a forced cooling fan.

Accessory bag for motor type	Part number
CFM71	01879456
CFM90	01993224
CFM112	01993232
CFM71 – 112 /BR	01993240

Refer to the operating instructions of the motor for details on retrofitting a forced cooling fan.

INFORMATION

Before retrofitting the forced cooling fan, make sure that the previously used motor plug connector/cables are also permitted for the higher current consumption.

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8.7 Prefabricated cables

8.7.1 Prefabricated cables and their structure

SEW-EURODRIVE offers prefabricated cables with plugs for straightforward and reliable motor connection.

Cable and contact are connected using the crimp technique. The following cables are available by the meter:

- Motor cables
- Brakemotor cables
- Resolver/motor protection cables
- Absolute encoder/motor protection cables
- Forced cooling fan cables

INFORMATION

For cable specifications, such as bending radius, certification and temperature range, refer to chapter "Cable specification".

Folgen

The size of the plug connector depends on the current level and the maximum cable length according to the speed.

Prefabricated cables are divided into:

- Power cables (motor cable, brakemotor cable, extension cable)
- Feedback cables (encoder cable, extension cable)

Plug threads

INFORMATION

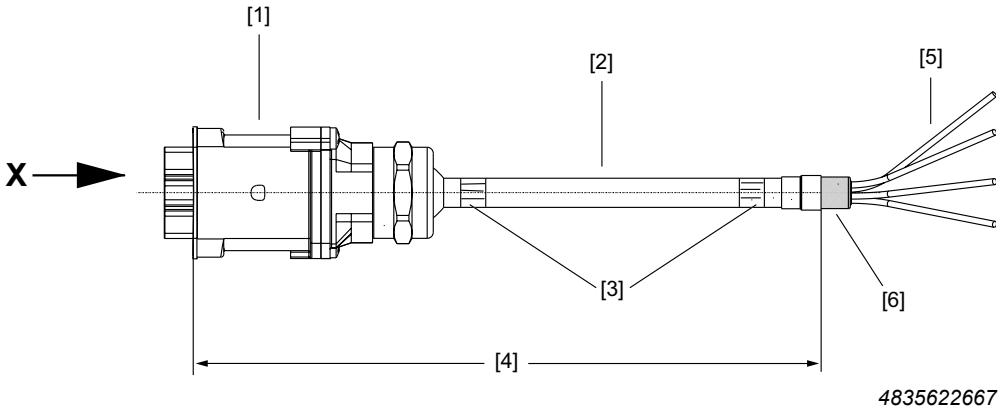
D-sub connectors are equipped with a common UNC thread.

Note on the wiring diagrams

All connectors are shown with view onto the pins!

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Structure of the motor cables for CFM.. motors



[1] Plug

[2] SEW-EURODRIVE logo printed on cable

[3] Nameplate

[4] Line length ≤ 10 m: Tolerance +200 mm.

Line length ≥ 10 m: Tolerance +2%.

Permitted line length according to the technical documents.

[5] Prefabricated cable end for inverters.

Required loose parts are supplied with the cable.

[6] Shielding approx. 20 mm, pulled back approximately + 5 mm.

Prefabrication for the motor

The cables on the motor end have a 6-pin plug connector and socket contacts.

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

Prefabrication for the inverter

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

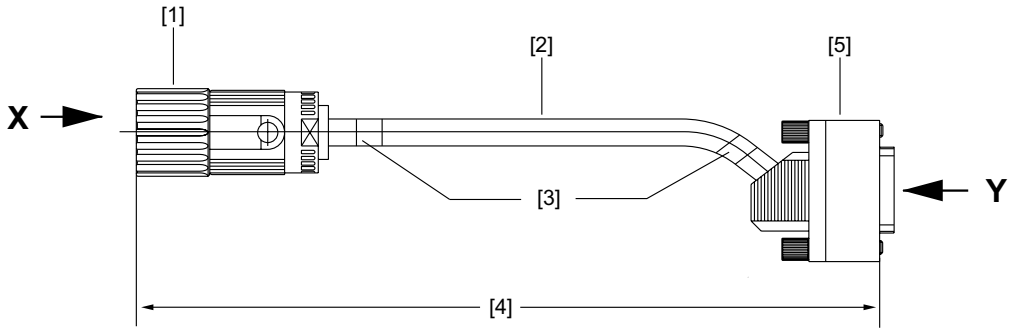
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Loose parts

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

Bag no.	Motor	Content
1	CFM..	4 x conductor end sleeves 1.5 mm², insulated 4 x M6 U-shaped cable lugs 1.5 mm²
2		4 x conductor end sleeves 2.5 mm², insulated 4 x M6 U-shaped cable lugs 2.5 mm²
3		4 x conductor end sleeves 4 mm², insulated 4 x M6 U-shaped cable lugs 4 mm² 4 x M10 U-shaped cable lugs 4 mm²
4		4 x M6 U-shaped cable lugs 6 mm² 4 x M10 U-shaped cable lugs 6 mm²
5		4 x M6 U-shaped cable lugs 10 mm² 4 x M10 ring cable lugs 10 mm²

Structure of the feedback cables



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[1] Plug

[2] Printed on connector: SEW-EURODRIVE

[3] Nameplate

[4] Line length ≤ 10 m: Tolerance +200 mm.

Line length ≥ 10 m: Tolerance +2%.

Permitted line length according to the technical documents.

[5] D-sub plug

Prefabrication for the motor

A 12-pin EMC signal plug connector with socket contacts is used on the motor end for RH.M/RH.L/AK1H/EK1H. 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.

A feedback cable is alternatively available for the corresponding terminal box. The individual cable strands are exposed and prepared for connection to the terminal box.

Prefabrication for the inverter

A commercially available D-sub EMC connector with pin contacts is used on the inverter end. A 9-pin or 15-pin connector matching the inverter is used.

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Prefabricated 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: Tolerance +200 mm.
- Cable length > 10 m: Tolerance +2 %.

INFORMATION

Refer to the system manual of the inverter for determining the maximum cable length.

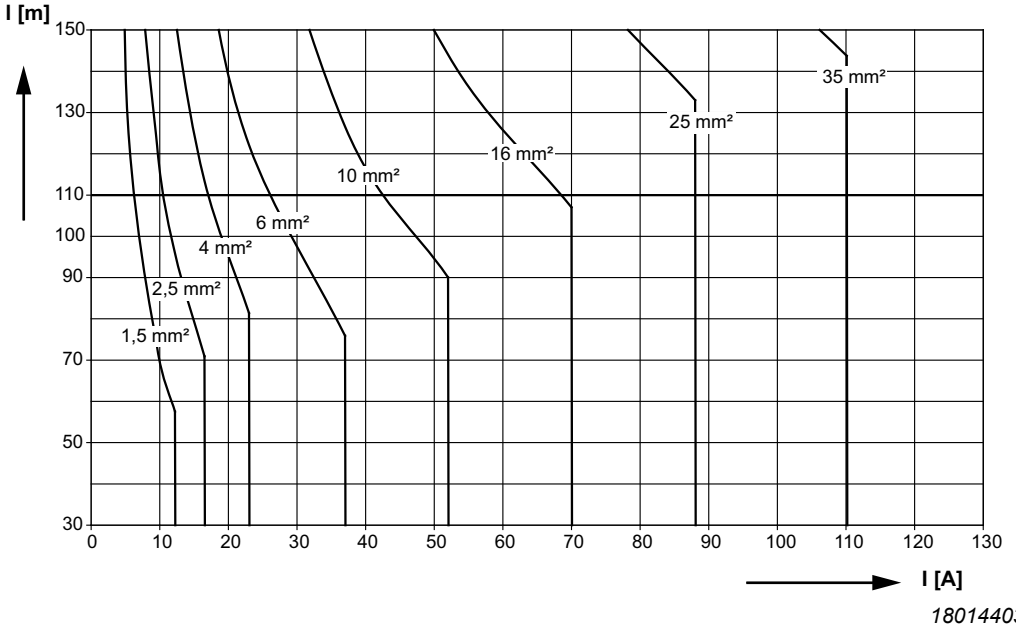
Bear in mind during project planning that an EMC compliant environment is required.

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8.7.2 Project planning for cable cross section

Cable dimensioning according to EN 60402

Diagram: Minimum required cable cross section depending on cable length l in meters and current I in amperes:



18014403327547531

Prefabricated 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	Three-core sheathed cable in pipe or cable (B2)	Three-core sheathed cable on top of each other on wall (C)	Three-core sheathed cable lined up horizontally (E)
mm²	A	A	A
1.5	13.1	15.2	16.1
2.5	17.4	21.	22
4	23	28	30
6	30	36	37
10	40	50	52
16	54	66	70
25	70	84	88
35	86	104	110
50	103	125	133
70	130	160	171

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.

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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 acceleration current is decisive for the calculation.

Assignment of servomotor and cable cross section

n_N	Motor	M_0	I_0	SM
1/min		Nm	A	SB
2000	CFM71S	5	2.2	51
	CFM71M	6.5	3	51
	CFM71L	9.5	4.2	51
	CFM90S	11	4.9	51
	CFM90M	14.5	6.9	51
	CFM90L	21	9.9	51
	CFM112S	23.5	10	51
	CFM112M	31	13.5	52
	CFM112L	45	20	54
3000	CFM71S	5	3.3	51
	CFM71M	6.5	4.3	51
	CFM71L	9.5	6.2	51
	CFM90S	11	7.3	51
	CFM90M	14.5	10.1	51
	CFM90L	21	14.4	52
	CFM112S	23.5	15	52
	CFM112M	31	20.5	54
	CFM112L	45	30	56
4500	CFM71S	5	4.9	51
	CFM71M	6.5	6.6	51
	CFM71L	9.5	9.6	51
	CFM90S	11	11.1	51
	CFM90M	14.5	14.7	52
	CFM90L	21	21.6	54
	CFM112S	23.5	22.5	54
	CFM112M	31	30	56
	CFM112L	45	46	59

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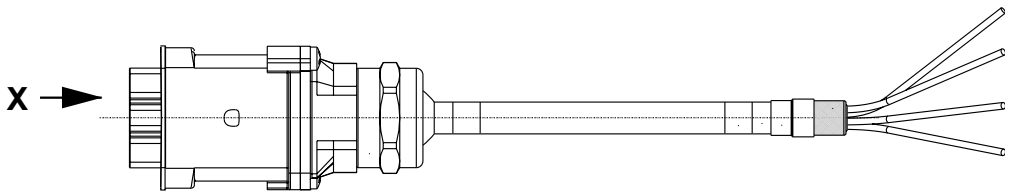
n_N	Motor	M_0	I_0	SM
1/min		Nm	A	SB
6000	CFM71S	5	6.5	51
	CFM71M	6.5	8.6	51
	CFM71L	9.5	12.5	52
	CFM90S	11	14.5	52
	CFM90M	14.5	19.8	54
	CFM90L	21	29.5	56

The assignments of SM/SB plug connectors are not binding. Given the dynamic properties in the system, other cross sections can also be implemented.

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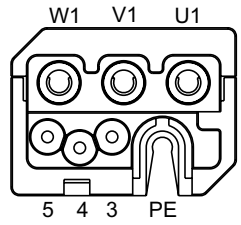
8.7.3 Power cables for CFM..

Motor cables



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Pin assignment of the motor cable

Plug connector View X	Contact	Description	Color coding	Core marking	Contact
	U1	U	Black (BK)	U	Cut-off, length about 250 mm
	V1	V		V	
	W1	W		W	
	PE	Protective earth	Green-yellow (GNYE)		

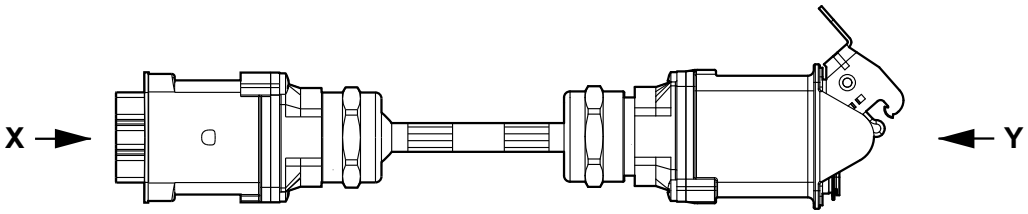
Motor cable types

The cables are equipped with a plug for motor connection and conductor end sleeves for inverter connection.

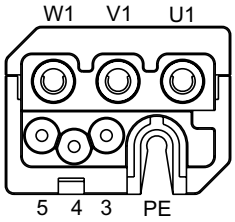
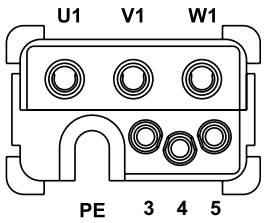
Plug connector	Number of cores and cable cross section	Part number	Installation type
SM51/SM61	4 × 1.5 mm² (AWG 16)	1991795	Fixed installation
SM52/SM62	4 × 2.5 mm² (AWG 12)	1991817	
SM54/SM64	4 × 4 mm² (AWG 10)	1991833	
SM56/SM66	4 × 6 mm² (AWG 10)	199185X	
SM59/SM69	4 × 10 mm² (AWG 8)	1991876	
SM51/SM61	4 × 1.5 mm² (AWG 16)	13331140	Cable carrier installation
SM52/SM62	4 × 2.5 mm² (AWG 12)	13331159	
SM54/SM64	4 × 4 mm² (AWG 10)	1991841	
SM56/SM66	4 × 6 mm² (AWG 10)	1991868	
SM59/SM69	4 × 10 mm² (AWG 8)	1991884	

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Figure: Motor extension cable



Pin assignment of motor extension cable

Plug connector view X	Contact	Core identification	Contact	Plug connector view Y
C148U adapter with socket contacts 	U1	Black with white lettering U, V, W	U1	**C148U plug with pin contacts** 
	V1		V1	
	W1		W1	
	PE	Green/yellow	PE	
	3	Black with white lettering 1, 2, 3	3	
	4		4	
	5		5	
			4838341387	

The motor extension cable is a 1:1 connection of all pins.

Types of motor extension cables

The cables are equipped with a connector and adapter for extending the CFM.. motor cable.

Plug connector	Number of cores and cable cross section	Part number	Installation type
SM51/SM61	4 × 1.5 mm²	01995499	Fixed installation
SM51/SM61	4 × 1.5 mm²	13331183	Cable carrier installation
SM52/SM62	4 × 2.5 mm²	01995510	Fixed installation
SM52/SM62	4 × 2.5 mm²	13331191	Cable carrier installation
SM54/SM64	4 × 4 mm²	01995537	Fixed installation
SM54/SM64	4 × 4 mm²	01995545	Cable carrier installation
SM56/SM66	4 × 6 mm²	01995553	Fixed installation
SM56/SM66	4 × 6 mm²	01995561	Cable carrier installation
SM59/SM69	4 × 10 mm²	0199557X	Fixed installation
SM59/SM69	4 × 10 mm²	01995588	Cable carrier installation

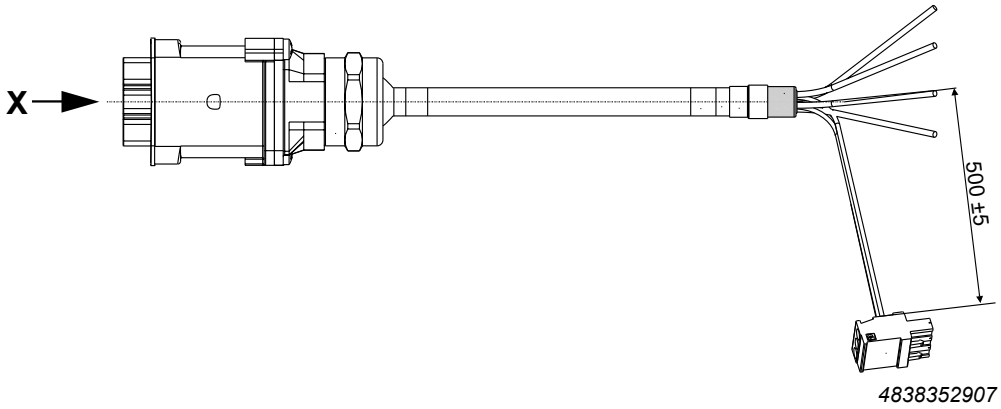
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Alternative plug connectors

Plug connectors for power supply with socket contacts (complete):

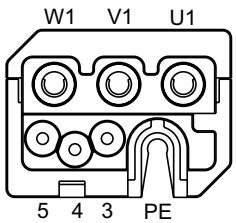
Type	Cross sections	Part no.
SM51/SM61	4 x 1.5 mm²	1991353
SM52/SM62	4 x 2.5 mm²	1991361
SM54/SM64	4 x 4 mm²	199137X
SM56/SM66	4 x 6 mm²	1991388
SM59/SM69	4 x 10 mm²	1991396

Brakemotor cable



Pin assignment of brakemotor cables

The brakemotor cable is fabricated for the BME, BMP, BMH, BMK and BMV brake rectifiers. For the BSG control unit, the customers have to assemble the cable themselves.

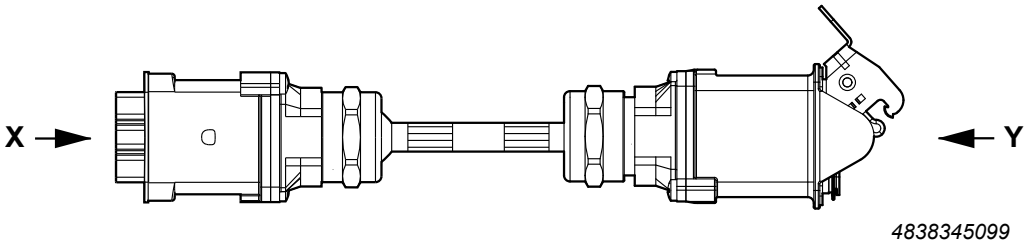
Plug connector View X	Contact	Description	Color coding	Core marking	Contact
	U1	U	Black (BK)	U	Cut-off, length about 250 mm
	V1	V		V	
	W1	W		W	
	PE	Protective earth	Green-yellow (GNYE)		
	3		Black (BK)	1	
	4			2	
	5			3	

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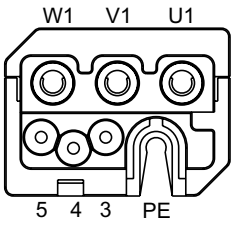
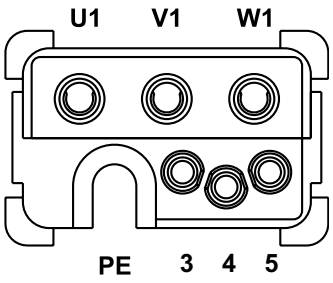
Types of brakemotor cables

Plug connector	Number of cores and cable cross section	Part number	Installation type
SB51/SB61	4 × 1.5 mm² + 3 × 1.0 mm²	01991892	Fixed installation
SB51/SB61	4 × 1.5 mm² + 3 × 1.0 mm²	13331167	Cable carrier installation
SB52/SB62	4 × 2.5 mm² + 3 × 1.0 mm²	01991914	Fixed installation
SB52/SB62	4 × 2.5 mm² + 3 × 1.0 mm²	13331175	Cable carrier installation
SB54/SB64	4 × 4 mm² + 3 × 1.0 mm²	01991930	Fixed installation
SB54/SB64	4 × 4 mm² + 3 × 1.0 mm²	01991949	Cable carrier installation
SB56/SB66	4 × 6 mm² + 3 × 1.5 mm²	01991957	Fixed installation
SB56/SB66	4 × 6 mm² + 3 × 1.5 mm²	01991965	Cable carrier installation
SB59/SB69	4 × 10 mm² + 3 × 1.5 mm²	01991973	Fixed installation
SB59/SB69	4 × 10 mm² + 3 × 1.5 mm²	01991981	Cable carrier installation

Brakemotor extension cables



Pin assignment of brake motor extension cable

Plug connector view X	Contact	Core identification	Contact	Plug connector view Y
C148U adapter with socket contacts 	U1	(BKWH) Black with white lettering U, V, W	U1	**C148U plug with pin contacts** 
	V1		V1	
	W1		W1	
	PE	(GNYE) green/yellow	PE	
	3	(BKWH) Black with white lettering 1, 2, 3	3	
	4		4	
	5		5	

The brakemotor extension cable is a 1:1 connection of all pins.

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Types of brakemotor extension cables

Plug connector	Number of cores and cable cross section	Part number	Installation type
SK51/SK61	4 × 1.5 mm² + 3 × 1.0 mm²	0199199X	Fixed installation
SK51/SK61	4 × 1.5 mm² + 3 × 1.0 mm²	13331205	Cable carrier installation
SK52/SK62	4 × 2.5 mm² + 3 × 1.0 mm²	01992015	Fixed installation
SK52/SK62	4 × 2.5 mm² + 3 × 1.0 mm²	13331213	Cable carrier installation
SK54/SK64	4 × 4 mm² + 3 × 1.0 mm²	01992031	Fixed installation
SK54/SK64	4 × 4 mm² + 3 × 1.0 mm²	0199204X	Cable carrier installation
SK56/SK66	4 × 6 mm² + 3 × 1.5 mm²	01992058	Fixed installation
SK56/SK66	4 × 6 mm² + 3 × 1.5 mm²	01992066	Cable carrier installation
SK59/SK69	4 × 10 mm² + 3 × 1.5 mm²	01992074	Fixed installation
SK59/SK69	4 × 10 mm² + 3 × 1.5 mm²	01992082	Cable carrier installation

Alternative plug connectors

Plug connectors for power supply with socket contacts (complete).

Type	Cross sections	Part no.
SB51/SB61	4 × 1.5 mm² + 3 × 1.0 mm²	1991426
SB52/SB62	4 × 2.5 mm² + 3 × 1.0 mm²	1991434
SB54/SB64	4 × 4 mm² + 3 × 1.0 mm²	1991442
SB56/SB66	4 × 6 mm² + 3 × 1.5 mm²	1991450
SB59/SB69	4 × 10 mm² + 3 × 1.5 mm²	1991469

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8.7.4 Encoder cables

Resolver

MOVIDRIVE® MDX60B/61B

Illustration of RH1M resolver cable



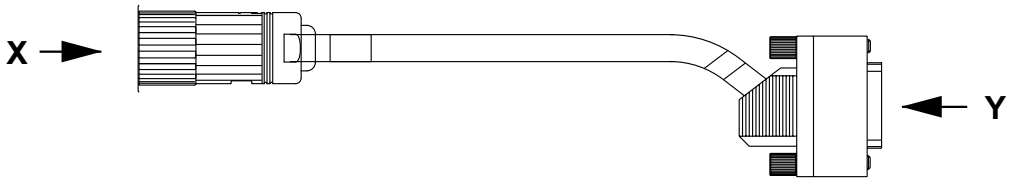
4819177867

RH1M resolver cables

Number of cores and cable cross section	Part number	Installation
4 x 2 x 0.25 mm^2 + 2 x 0.5 mm^2	01994875	Fixed installation
4 x 2 x 0.25 mm^2 + 2 x 0.5 mm^2	01993194	Cable carrier installation

MOVIAXIS® MX

Illustration of RH1M resolver cable



4819185931

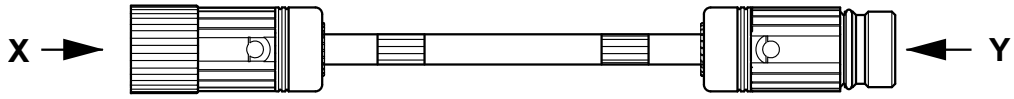
RH1M resolver cables

Number of cores and cable cross section	Part number	Installation
5 × 2 × 0.25 mm^2	13327429	Fixed installation
5 × 2 × 0.25 mm^2	13327437	Cable carrier installation

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Extension cables

Illustration of RH1M extension cable



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RH1M extension cables

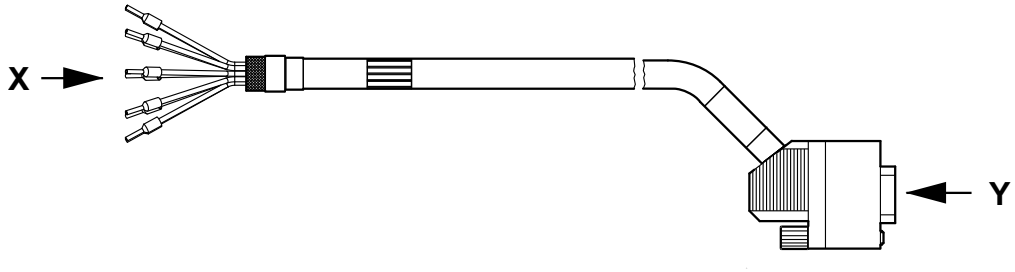
Number of cores and cable cross section	Part number	Installation type
5 × 2 × 0.25 mm²	01995421	Fixed installation
5 × 2 × 0.25 mm²	01995413	Cable carrier installation

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Terminal box

MOVIDRIVE®

Illustration of RH1M resolver cable for terminal box

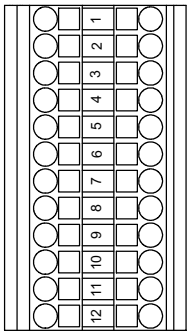
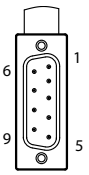


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Resolver cable to terminal box

Number of cores and cross-sections	Part number	Installation
5 × 2 × 0.25 mm²	13356356	Fixed installation
5 × 2 × 0.25 mm²	13356364	Cable carrier installation

Pin assignment of resolver cables – terminal box for RH1M

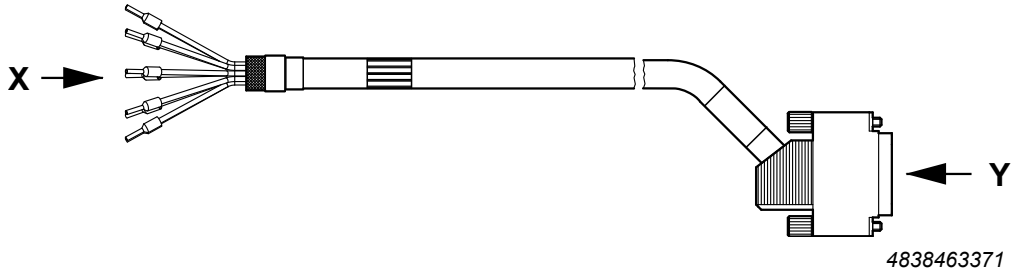
Motor connection side				Inverter connection side	
Terminal strip View X	Contact	Description	Color coding	Contact	Plug connector View Y
	1	R1 (reference +)	Pink (PK)	3	**D-sub 9-pin** 
	2	R2 (reference -)	Gray (GY)	8	
	3	S1 (cosine +)	Red (RD)	2	
	4	S3 (cosine -)	Blue (BU)	7	
	5	S2 (sine +)	Yellow (YE)	1	
	6	S4 (sine -)	Green (GN)	6	
	7	–	–	–	
	8	n.c.	–	–	
	9	TF/KTY+/PK	Brown+violet (BN+VT)[1)]	9	
	10	TF/KTY-/PK	White+black (WH+BK)[1)]	5	
	11	n.c.	n.c.	–	
	12	n.c.	n.c.	–	

1) Double assignment to increase cross-section

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MOVIAXIS®

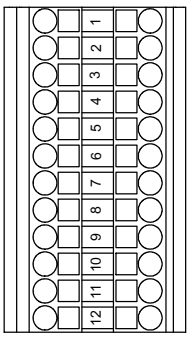
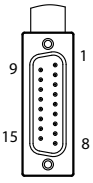
Illustration of RH1M resolver cable for terminal box



RH1M resolver cables for terminal box

Number of cores and cable cross section	Part number	Installation type
5 × 2 × 0.25 mm²	13356356	Fixed installation
5 × 2 × 0.25 mm²	13356364	Cable carrier installation

Pin assignment of RH1M resolver cables for terminal box

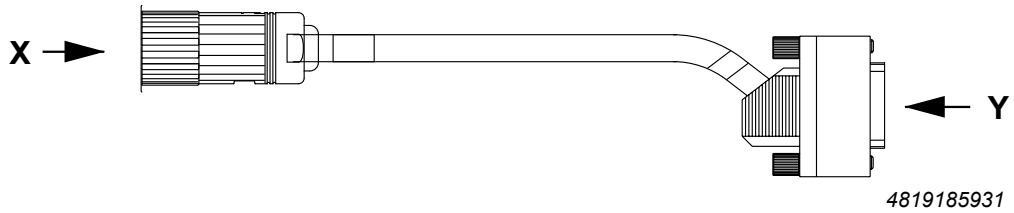
Motor connection side				Inverter connection side	
Terminal strip View X	**Contact**	**Description**	**Color coding**	**Contact**	**Plug connector View Y**
	1	R1 (reference +)	Pink (PK)	5	**Sub-D 15-pin** 
	2	R2 (reference -)	Gray (GY)	13	
	3	S1 (cosine +)	Red (RD)	2	
	4	S3 (cosine -)	Blue (BU)	10	
	5	S2 (sine +)	Yellow (YE)	1	
	6	S4 (sine -)	Green (GN)	9	
	7	n.c.	–	4	
	8	n.c.	–	–	
	9	TF/KTY+/PK	Brown+violet (BN+VT)	14	
	10	TF/KTY-/PK	White+black (WH+BK)	6	
	11	n.c.	n.c.	–	
	12	n.c.	n.c.	–	

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HIPERFACE® encoder

MOVIDRIVE® B and MOVIAXIS® MX

Illustration of HIPERFACE®encoder cable

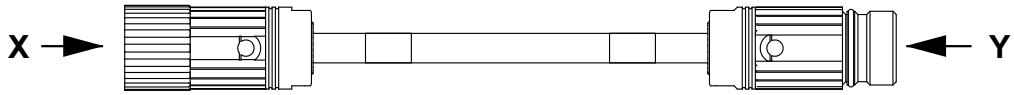


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HIPERFACE® encoder cables

Number of cores and cable cross section	Part number	Installation type
4 × 2 × 0.25 mm² + 2 × 0.5 mm²	13324535	Fixed installation
4 × 2 × 0.25 mm² + 2 × 0.5 mm²	13324551	Cable carrier installation

Illustration of HIPERFACE® encoder extension cable



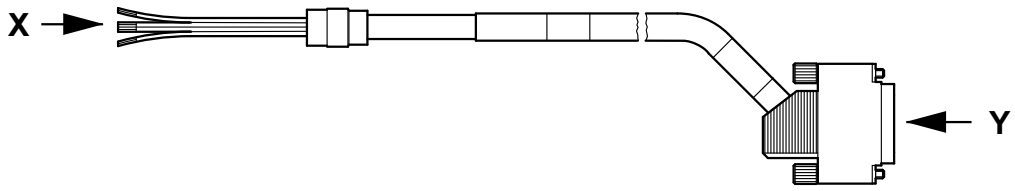
4819207051

HIPERFACE® encoder extension cables

Number of cores and cable cross section	Part number	Installation type
6 × 2 × 0.25 mm²	01995391	Fixed installation
6 × 2 × 0.25 mm²	01995405	Cable carrier installation

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Illustration of HIPERFACE® encoder cable for terminal box

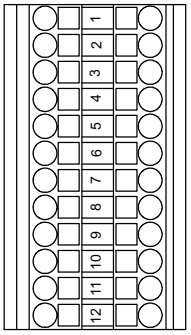
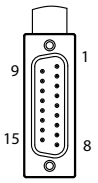


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HIPERFACE® encoder cables for terminal box

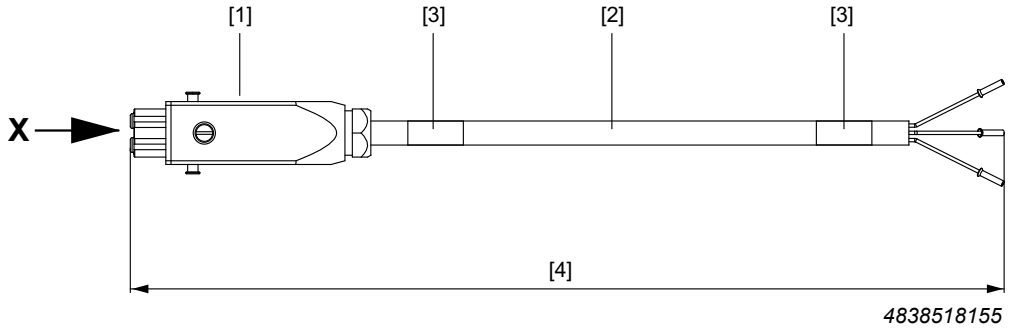
Number of cores and cable cross section	Part number	Installation type
6 × 2 × 0.25 mm²	13356291	Fixed installation
6 × 2 × 0.25 mm²	13356305	Cable carrier installation

Contact assignment of HIPERFACE® encoder cables for terminal box

Motor connection side				Inverter connection side	
Terminal strip View X	Contact	Description	Color coding	Contact	Plug connector View Y
	6	Data +	Black (BK)	4	Sub-D 15-pin 
	5	Data -	Violet (VT)	12	
	1	S1 (COS +)	Red (RD)	1	
	2	S3 (COS -)	Blue (BU)	9	
	3	S2 (SIN +)	Yellow (YE)	2	
	4	S4 (SIN -)	Green (GN)	10	
	7	GND	Gray-pink+pink (GYPK +PK)	8	
	8	Us	Red-blue+gray (RDBU+GY)	15	
	9	TF/KTY+/PK	Brown (BN)	14	
	10	TF/KTY-/PK	White (WH)	6	

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8.7.5 Cable for VR forced cooling fan



[1] Connector: STAK 200

[2] Printed on connector: SEW-EURODRIVE

[3] Nameplate

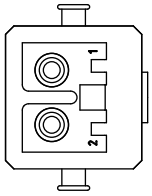
[4] Line length ≤ 5 m: Tolerance +200 mm

Line length ≥ 5 m: Tolerance +2%

Permitted line length according to the technical documents.

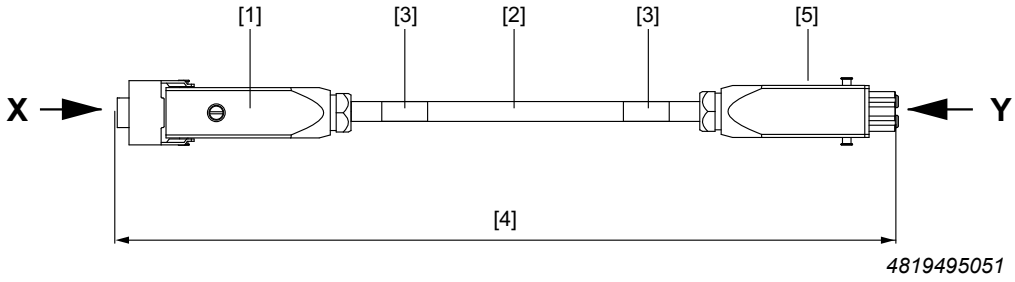
Type	Routing	Cross section	Part number
CFM..	Fixed installation	3 × 1 mm²	1986341
CFM..	Cable carrier installation		199560X

Pin assignment of cable for VR forced cooling fan

Plug connector STAK 200	Contact	Core identification	Assigned	Contact	Connection type
Connector with two socket contacts  View X	1	Digit 1	24 V +	Cut-off, length approx. 250 mm	Conductor end sleeves
	2	Digit 2	0 V		

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Extension cable for VR forced cooling fan



[1] Connector: STAS 200

[2] Printed on connector: SEW-EURODRIVE

[3] Nameplate

[4] Line length ≤ 5 m: Tolerance +200 mm

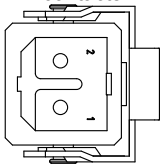
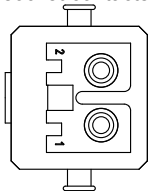
Line length ≥ 5 m: Tolerance +2%

Permitted line length according to the technical documents.

[5] Socket: STAK 200

Type	Routing	Cross section	Part number
CFM..	Fixed installation	3 × 1 mm²	1995618
CFM..	Cable carrier installation		1995626

Pin assignment of extension cable for forced cooling fan

Plug connector STAS 200	Contact	Core identification	Assigned	Contact	Connection type STAK 200
Connector with two pin contacts  View X	1	Digit 1	24 V +	1	Connector with two socket contacts  View Y
	2	Digit 2	0 V	2	

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

Alternative plug connector for CFM71, CFM90, CFM112

Signal plug connector with socket contacts (complete)

Type	Cross sections that can be connected	Part no.
VR	3 x 1 mm²	1984985

8.7.6 Cable specification

Fixed installation of power cables

Routing		**Fixed**				
Cable cross sections		**4 x 1.5 mm²**	**4 x 2.5 mm²**	**4 x 4 mm²**	**4 x 6 mm²**	**4 x 10 mm²**
		(AWG 16)	**(AWG 14)**	**(AWG 12)**	**(AWG 10)**	**(AWG 8)**
Manufacturer		**HELUKABEL**				
Manufacturer's designation		LI9YCY				
Operating voltage V_0/V AC	V	600/1000				
Temperature range	°C	Fixed installation – 40 to +80				
Maximum temperature	°C	+80				
Minimum bending radius	mm	45	55	65	73	85
Diameter D	mm	9.0 ± 0.2	11 ± 0.2	13 ± 0.2	14.3 ± 0.3	17.0 ± 0.6
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	110	110	118	125	125
Capacitance core/core	nF/km	70	70	75	80	80
Halogen-free		No				
Silicon-free		Yes				
CFC-free		Yes				
Inner insulation (conductor)		PP				
Outer insulation (sheath)		PVC				
Flame-retardant/self-extinguishing		No				
Conductor material		Cu				
Shielding		Tinned Cu				
Weight (cable)	kg/km	134	202	262	332	601

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Cable carrier installation of power cables

Routing		Cable carrier				
Cable cross sections		**4 x 1.5 mm²**	**4 x 2.5 mm²**	**4 x 4 mm²**	**4 x 6 mm²**	**4 x 10 mm²**
		(AWG 16)	**(AWG 14)**	**(AWG 12)**	**(AWG 10)**	**(AWG 8)**
Manufacturer		**Nexans**				
Manufacturer's designation		PSL(LC)C11Y-J 4 x – mm²		PSL11YC11Y-J 4 x – mm²		
Operating voltage V_0/V AC	V	600/1000				
Temperature range	°C	–20 to +60				
Maximum temperature	°C	+90 (on conductor)				
Minimum bending radius	mm	134	140	135	155	180
Diameter D	mm	12.8 + 0.6/–0.7	15.7 ± 0.3	13.2 ± 0.4	15.4 ± 0.4	17.8 ± 0.5
Maximum acceleration	m/s²	20				
Maximum 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/cRUus				
Capacitance core/shielding	nF/km	95	95	170	170	170
Capacitance core/core	nF/km	65	65	95	95	95
Halogen-free		Yes				
Silicon-free		Yes				
CFC-free		Yes				
Inner insulation (conductor)		Polyolefin		TPM		
Outer insulation (sheath)		TPU (PUR)				
Flame-retardant/self-extinguishing		Yes				
Conductor material		E-Cu blank				
Shielding		Braided tinned Cu shield (optically covered > 85%)				
Weight (cable)	kg/km	249	373	311	426	644
Minimum bending cycles		≥ 5 million				

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Fixed installation of brake power cables

Routing		Fixed				
Cable cross sections		**4 x 1.5 mm² (AWG 16) + 3 x 1 mm² (AWG 18)**	**4 x 2.5 mm² (AWG 14) + 3 x 1 mm² (AWG 18)**	**4 x 4 mm² (AWG 12) + 3 x 1 mm² (AWG 18)**	**4 x 6 mm² (AWG 10) + 3 x 1.5 mm² (AWG 16)**	**4 x 10 mm² (AWG 8) + 3 x 1.5 mm² (AWG 16)**
Manufacturer		**HELUKABEL**				
Manufacturer's designation		LI9YCY				
Operating voltage V_0/V AC	V	600/1000				
Temperature range	°C	Fixed installation: – 40 to +80				
Maximum temperature	°C	+80				
Minimum bending radius	mm	60	68	75	85	100
Diameter D	mm	11.8 ± 0.4	13.4 ± 0.4	15.0 ± 0.5	17.0 ± 0.6	20.0 ± 1.0
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	105	105	110	115	120
Capacitance core/core	nF/km	60	60	70	75	78
Halogen-free		No				
Silicon-free		Yes				
CFC-free		Yes				
Inner insulation (conductor)		PP				
Outer insulation (sheath)		PVC				
Flame-retardant/self-extinguishing		Yes				
Conductor material		Cu				
Shielding		Tinned Cu				
Weight (cable)	kg/km	229	292	393	542	938

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Cable carrier installation for brake power cables

Routing		Cable carrier				
Cable cross sections		**4 x 1.5 mm² (AWG 16) + 3 x 1 mm² (AWG 18)**	**4 x 2.5 mm² (AWG 14) + 3 x 1 mm² (AWG 18)**	**4 x 4 mm² (AWG 12) + 3 x 1 mm² (AWG 18)**	**4 x 6 mm² (AWG 10) + 3 x 1.5 mm² (AWG 16)**	**4 x 10 mm² (AWG 8) + 3 x 1.5 mm² (AWG 16)**
Manufacturer		**Nexans**				
Manufacturer's designation		PSL(LC)C11Y-J 4x... +3A.../C		PSL11YC11Y-J 4x... +3A.../C		
Operating voltage V_0/V AC	V	600/1000				
Temperature range	°C	–20 to +60				
Maximum temperature	°C	+90 (conductor)				
Minimum bending radius	mm	159	170	155	175	200
Diameter D	mm	15.0 ± 0.9	16.5 ± 0.7	15.3 ± 0.5	17.4 ± 0.5	20.5 ± 0.5
Maximum acceleration	m/s^2	20				
Maximum 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/cRUus				
Capacitance core/shielding	nF/km	105	105	170	170	170
Capacitance core/core	nF/km	65	65	95	95	95
Halogen-free		Yes				
Silicon-free		Yes				
CFC-free		Yes				
Inner insulation (cable)		TPM				
Outer insulation (sheath)		Polyolefin		TPU (PUR)		
Flame-retardant/self-extinguishing		Yes				
Conductor material		E-Cu blank				
Shielding		Braided tinned Cu shield (optically covered > 85%)				
Weight (cable)	kg/km	335	433	396	522	730
Minimum bending cycles		≥ 5 million				

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Fixed installation of feedback cables

Accessory designation		AK1H/EK1H	RH1M
Cable cross sections		**6 x 2 x 0.25 mm²**	**5 x 2 x 0.25 mm²**
Manufacturer		**HELUKABEL**	
Manufacturer's designation		LI9YCY	
Operating voltage U_0/V AC	V	230/350	
Temperature range	°C	Fixed installation -40 to +80	
Max. temperature	°C	+ 80	
Minimum bending radius	mm	43	36.5
Diameter D	mm	8.6 ± 0.2	7.3 ± 0.2
Core identification		DIN 47 100	
Sheath color		Green, similar to RAL 6018	
Approval(s)		DESINA/VDE/cRUus	
Capacitance core/shielding	nF/km	110	
Capacitance core/core	nF/km	70	
Halogen-free		No	
Silicone-free		Yes	
CFC-free		Yes	
Inner insulation (conductor)		PP	
Outer insulation (sheath)		PVC	
Flame-retardant/self-extinguishing		No	
Conductor material		Cu blank	
Shielding		Braided tinned Cu	
Weight (cable)	kg/km	107	78

Cable carrier installation of feedback cables

Accessory designation		AK1H/EK1H	RH1M
Cable cross sections		**6 x 2 x 0.25 mm²**	**5 x 2 x 0.25 mm²**
Manufacturer		**Nexans**	
Manufacturer's designation		SSL18YC11Y 6 x 2 x 0.25/SSL11YC11Y 5 x 2 x 0.25	
Operating voltage U_0/V AC	V	300	
Temperature range	°C	-20 to + 60	
Maximum temperature	°C	+90 (on conductor)	
Minimum bending radius	mm	100	95
Diameter D	mm	9.8 ± 0.2	9.5 ± 0.2
Maximum acceleration	m/s²	20	
Maximum velocity	m/min	200	
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
Sheath color		Green similar to RAL 6018	
Approval(s)		DESINA/VDE/cRUus	
Capacitance core/shielding	nF/km	100	
Capacitance core/core	nF/km	55	
Halogen-free		Yes	
Silicone-free		Yes	
CFC-free		Yes	
Inner insulation (conductor)		PP	
Outer insulation (sheath)		TPE-U	
Flame-retardant/self-extinguishing		Yes	
Conductor material		E-Cu blank	
Shielding		Braided tinned Cu	
Weight	kg/km	130	120
Minimum bending cycles		≥ 5 million	

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Fixed installation of forced cooling fan cables

Accessory designation		VR
Cable cross sections		**3 x 1 mm²**
Manufacturer		**Lapp**
Manufacturer's designation		Ölflex 110 Classic
Operating voltage U_0/V AC	V	300/500
Temperature range	°C	-30 to +70
Maximum temperature	°C	+ 70
Minimum bending radius	mm	24
Diameter D	mm	6.0 ± 0.3
Core identification		VDE 0293
Sheath color		Silver gray, RAL 7001
Approval(s)		VDE
Capacitance core/shielding	nF/km	–
Capacitance core/core	nF/km	–
Halogen-free		No
Silicone-free		Yes
CFC-free		Yes
Inner insulation (conductor)		PVC
Outer insulation (sheath)		PVC
Flame-retardant/self-extinguishing		No
Conductor material		Cu blank
Shielding		–
Weight (cable)	kg/km	65

Cable carrier installation for forced cooling fan cables

Accessory designation		VR
Cable cross sections		**3 x 1 mm²**
Manufacturer		**Nexans**
Manufacturer's designation		PSL 3 x 1.0
Operating voltage U_0/V AC	V	300
Temperature range	°C	- 30 to + 70
Maximum temperature	°C	+90 (on conductor)
Minimum bending radius	mm	45
Diameter D	mm	5.7 ± 0.2
Maximum acceleration	m/s²	10
Maximum velocity	m/min	50
Core identification		2 x WH with digit + 1 x GN/YE
Sheath color		Black RAL 9005
Approval(s)		VDE/UL
Capacitance core/shielding	nF/km	–
Capacitance core/core	nF/km	–
Halogen-free		Yes
Silicone-free		Yes
CFC-free		Yes
Inner insulation (conductor)		TPM
Outer insulation (sheath)		TPE-U
Flame-retardant/self-extinguishing		Yes
Conductor material		E-Cu blank
Shielding		–
Weight	kg/km	50
Minimum bending cycles		≥ 5 million

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9 Address Directory

Germany			
Headquarters Production plant Sales	**Bruchsal**	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Strasse 42 76646 Bruchsal, Germany P.O. box address Postfach 3023 • D-76642 Bruchsal, Germany	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.seweurodrive.com sew@sew-eurodrive.de
Production Plant / Industrial Gear Units	**Bruchsal**	SEW-EURODRIVE GmbH & Co KG Christian-Pähr-Str.10 76646 Bruchsal, Germany	Tel. +49 7251 75-0 Fax +49 7251 75-2970
Production plant	**Graben**	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Strasse 1 76676 Graben-Neudorf, Germany P.O. box address Postfach 1220 • 76671 Graben-Neudorf, Germany	Tel. +49 7251 75-0 Fax +49 7251 75-2970
	Östringen	SEW-EURODRIVE GmbH & Co KG, Oestringen Plant Franz-Gurk-Strasse 2 76684 Oestringen, Germany	Tel. +49 7253 9254-0 Fax +49 7253 9254-90 oestringen@sew-eurodrive.de
Service Competence Centers	**Mechanical/ Mechatronic Components**	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Strasse 1 76676 Graben-Neudorf, Germany	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 sc-mitte@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Strasse 42 76646 Bruchsal, Germany	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 sc-elektronik@sew-eurodrive.de
Drive Technology Center	**North**	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Strasse 40-42 30823 Garbsen (near Hanover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 sc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Daenkritzer Weg 1 08393 Meerane (near Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 sc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstrasse 5 85551 Kirchheim (near Munich)	Tel. +49 89 909552-10 Fax +49 89 909552-50 sc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstrasse 1 40764 Langenfeld (near Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 sc-west@sew-eurodrive.de
	Drive Service Hotline/24-hour availability		+49 800 SEWHELP +49 800 7394357
Technical offices	**Augsburg**	SEW-EURODRIVE GmbH & Co KG August-Wessels-Strasse 27 86156 Augsburg, Germany	Tel. +49 821 22779-10 Fax +49 821 22779-50 tb-augsburg@sew-eurodrive.de
	Berlin	SEW-EURODRIVE GmbH & Co KG Lilienthalstrasse 3a 12529 Schoenefeld, Germany	Tel. +49 306331131-30 Fax +49 306331131-36 tb-berlin@sew-eurodrive.de
	Lake Constance	SEW-EURODRIVE GmbH & Co KG Dornierstraße 4 88677 Markdorf, Germany	Tel. +49 7544 96590-90 Fax +49 7544 96590-99 tb-bodensee@sew-eurodrive.de
	Bremen	SEW-EURODRIVE GmbH & Co KG Bornstr.19 ... 22 28195 Bremen, Germany	Tel. +49 421 33918-10 Fax +49 421 33918-22 tb-bremen@sew-eurodrive.de
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	Dresden	SEW-EURODRIVE GmbH & Co KG Hauptstrasse 32 01445 Radebeul, Germany	Tel. +49 351 26338-0 Fax +49 351 26338-38 tb-dresden@sew-eurodrive.de
	Erfurt	SEW-EURODRIVE GmbH & Co KG Dubliner Strasse 12 99091 Erfurt, Germany	Tel. +49 361 21709-70 Fax +49 361 21709-79 tb-erfurt@sew-eurodrive.de
	Guestrow	SEW-EURODRIVE GmbH & Co KG Glasewitzer Chaussee 33 B 18273 Guestrow, Germany P.O. box address Postfach 1216 • 18262 Güstrow, Germany	Tel. +49 3843 8557-80 Fax +49 3843 8557-88 tb-guestrow@sew-eurodrive.de

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Germany			
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	Hanover/Garbsen	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Str.40-42 30823 Garbsen, Germany P.O. box address Postfach 1104 53 • 30804 Garbsen, Germany	Tel. +49 5137 8798-10 Fax +49 5137 8798-50 tb-hannover@sew-eurodrive.de
	Heilbronn	SEW-EURODRIVE GmbH & Co KG Zeppelinstrasse 7 74357 Boennigheim, Germany	Tel. +49 7143 8738-0 Fax +49 7143 8738-25 tb-heilbronn@sew-eurodrive.de
	Herford	SEW-EURODRIVE GmbH & Co KG Göbenstraße 3 – 7 32052 Herford	Tel. +49 5221 9141-0 Fax +49 5221 9141-20 tb-herford@sew-eurodrive.de
	Karlsruhe	SEW-EURODRIVE GmbH & Co KG Ettlinger Weg 2 76467 Bietigheim, Germany P.O. box address Postfach 43 • 76463 Bietigheim, Germany	Tel. +49 7245 9190-10 Fax +49 7245 9190-20 tb-karlsruhe@sew-eurodrive.de
	Kassel	SEW-EURODRIVE GmbH & Co KG Lange Strasse 14 34253 Lohfelden, Germany	Tel. +49 561 95144-80 Fax +49 561 95144-90 tb-kassel@sew-eurodrive.de
	Koblenz	SEW-EURODRIVE GmbH & Co KG Bahnstrasse 17a 56743 Mendig, Germany	Tel. +49 2652 9713-30 Fax +49 2652 9713-40 tb-koblenz@sew-eurodrive.de
	Lahr	SEWEURODRIVE GmbH & Co KG Europastrasse 3/1 77933 Lahr/Schwarzwald, Germany	Tel. +49 7821 90999-60 Fax +49 7821 90999-79 tb-lahr@sew-eurodrive.de
	Langenfeld	SEW-EURODRIVE GmbH & Co KG Siemensstrasse 1 40764 Langenfeld, Germany	Tel. +49 2173 8507-10 Fax +49 2173 8507-50 tb-langenfeld@sew-eurodrive.de
	Magdeburg	SEW-EURODRIVE GmbH & Co KG Breiteweg 53 39179 Barleben, Germany	Tel. +49 39203 7577-1 Fax +49 39203 7577-9 tb-magdeburg@sew-eurodrive.de
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	Muenster	SEW-EURODRIVE GmbH & Co KG Hafenplatz 4 48155 Muenster, Germany	Tel. +49 251 41475-11 Fax +49 251 41475-50 tb-muenster@sew-eurodrive.de
	Nuremberg	SEW-EURODRIVE GmbH & Co KG Plattenaeckerweg 6 90455 Nuremberg, Germany	Tel. +49 911 98884-50 Fax +49 911 98884-60 tb-nuernberg@sew-eurodrive.de
	Regensburg	SEW-EURODRIVE GmbH & Co KG Im Gewerbepark A15 93059 Regensburg, Germany	Tel. +49 941 46668-68 Fax +49 941 46668-66 tb-regensburg@sew-eurodrive.de
	Rhine-Main	SEW-EURODRIVE GmbH & Co KG Niederstedter Weg 5 61348 Bad Homburg, Germany	Tel. +49 6172 9617-0 Fax +49 6172 9617-50 tb-rheinmain@sew-eurodrive.de
	Stuttgart	SEW-EURODRIVE GmbH & Co KG Friedrich-List-Strasse 46 70771 Leinfelden-Echterdingen, Germany	Tel. +49 711 16072-0 Fax +49 711 16072-72 tb-stuttgart@sew-eurodrive.de
	Ulm	SEWEURODRIVE GmbH & Co KG Dieselstrasse 14 89160 Dornstadt, Germany	Tel. +49 7348 9885-0 Fax +49 7348 9885-90 tb-ulm@sew-eurodrive.de
	Drive Center Wuerzburg	SEW-EURODRIVE GmbH & Co KG Nuernbergerstrasse 118 97076 Wuerzburg-Lengfeld, Germany	Tel. +49 931 27886-60 Fax +49 931 27886-66 tb-wuerzburg@sew-eurodrive.de
	Zwickau / Meer-ane	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg 1 08393 Meerane, Germany	Tel. +49 3764 7606-0 Fax +49 3764 7606-20 tb-zwickau@sew-eurodrive.de

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France			
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Production plant	**Forbach**	SEW-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 57604 Forbach Cedex, France	Tel. +33 3 87 29 38 00
Assembly plant **Sales** **Service**	**Bordeaux**	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan - B. P. 182 33607 Pessac Cedex, France	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09
	Lyon	SEW-USOCOME Parc d'affaires Roosevelt Rue Jacques Tati 69120 Vaulx en Velin, France	Tel. +33 4 72 15 37 00 Fax +33 4 72 15 37 15
	Nantes	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon, France	Tel. +33 2 40 78 42 00 Fax +33 2 40 78 42 20
	Paris	SEW-USOCOME Zone industrielle 2 rue Denis Papin 77390 Verneuil l'Etang, France	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88
Technical offices	**Alsace**	SEW-USOCOME 1 rue Auguste Gasser 68360 Soultz, France	Tel. +33 3 89 74 51 62 Fax +33 3 89 76 58 71
	Aquitaine/Charente	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan - B.P.182 33607 Pessac Cedex, France	Tel. +33 5 57 26 39 08 Fax +33 5 57 26 39 09
	Auvergne/Limousin	SEW-USOCOME Farges 19600 Chasteaux, France	Tel. +33 5 55 20 12 10 Fax +33 5 55 20 12 11
	Lower Normandy	SEW-USOCOME 5 rue de la Limare 14250 Brouay, France	Tel. +33 2 31 37 92 86 Fax +33 2 31 74 68 15
	Burgundy	SEW-USOCOME 10 rue de la poste 71350 Saint Loup Géanges, France	Tel. +33 3 85 49 92 18 Fax +33 3 85 49 92 19
	Brittany	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon, France	Tel. +33 2 40 78 42 04 Fax +33 2 40 78 42 20
	Centre/Poitou	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon, France	Tel. +33 2 40 78 42 11 Fax +33 2 40 78 42 20
	Champagne-Ardenne	SEW-USOCOME 25 bis rue Victor Hugo Appartement 7 10120 Saint André les Vergers, France	Tel. +33 3 25 79 63 24 Fax +33 3 25 79 63 25
	Franche-Comté	SEW-USOCOME 24 avenue Charles Boby 70000 Quincey, France	Tel. +33 3 81 60 20 47 Fax +33 3 81 87 75 93
	Île-de-France East/Aisne	SEW-USOCOME 20 rue Félix Faure 02100 Saint Quentin, France	Tel. +33 3 23 62 81 24 Fax +33 3 23 62 81 44
	Île-de-France North/Picardy	SEW-USOCOME 25bis rue Kléber 92300 Levallois Perret, France	Tel. +33 1 41 05 92 74 Fax +33 1 41 05 92 75
	Île-de-France South	SEW-USOCOME 6 chemin des bergers Lieu-dit Marchais 91410 Roinville sous Dourdan, France	Tel. +33 1 60 81 10 56 Fax +33 1 60 81 10 57

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SEW EURODRIVE

France			
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	Midi-Pyrénées/ Roussillon	SEW-USOCOME 179 route de Grazac 31190 Caujac, France	Tel. +33 5 61 08 15 85 Fax +33 5 61 08 16 44
	Nord-Pas-de-Calais	SEW-USOCOME 209, route d'Hesdigneul 62360 Hesdin l'Abbé, France	Tel. +33 3 21 10 86 86 Fax +33 3 21 10 86 87
	Paris/Île-de-France West	SEW-USOCOME 42 avenue Jean Jaurès 78580 Maule, France	Tel. +33 1 30 90 89 86 Fax +33 1 30 90 93 15
	Pays de la Loire	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon, France	Tel. +33 2 40 78 42 03 Fax +33 2 40 78 42 20
	Provence-Alpes-Côte d'Azur	SEW-USOCOME Le Clos Montolivet 9 impasse Bounin – Bât. A 13012 Marseille, France	Tel. +33 4 91 18 00 11 Fax +33 4 91 18 00 12
	Rhône-Alpes East	SEW-USOCOME Montée de la Garenne 26750 Génissieux, France	Tel. +33 4 75 05 65 95 Fax +33 4 75 05 65 96
	Rhône-Alpes North	SEW-USOCOME Parc d'affaires Roosevelt Rue Jacques Tati 69120 Vaulx en Velin, France	Tel. +33 4 72 15 37 03 Fax +33 4 72 15 37 15
	Rhône-Alpes West	SEW-USOCOME Parc d'affaires Roosevelt Rue Jacques Tati 69120 Vaulx en Velin, France	Tel. +33 4 72 15 37 04 Fax +33 4 72 15 37 15

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

Argentina			
Assembly plant **Sales**	**Buenos Aires**	SEW EURODRIVE ARGENTINA S.A. Ruta Panamericana Km 37.5, Lote 35 (B1619IEA) Centro Industrial Garín Prov. de Buenos Aires	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 sewar@sew-eurodrive.com.ar http://www.sew-eurodrive.com.ar
	Córdoba	SEW EURODRIVE ARGENTINA S.A. Ruta Nacional 19, Manzana 97, Lote 5 (X5125) Malvinas Argentinas Prov. de Córdoba	Tel. +54 351-490-0010 sewcor@sew-eurodrive.com.ar http://www.sew-eurodrive.com.ar
	Santa Fe	SEW EURODRIVE ARGENTINA S.A. Ruta Prov. 21 Km 7, Lote 41 Parque Industrial Alvear (2126) Gral. Alvear Prov. de Santa Fe	Tel. +54 341-317-7277 sewsfe@sew-eurodrive.com.ar http://www.sew-eurodrive.com.ar
Service	**Mendoza**	SEW EURODRIVE ARGENTINA S.A.	Tel. +54 261-430-0060 sewmen@sew-eurodrive.com.ar http://www.sew-eurodrive.com.ar
Technical offices	**Tucumán**	SEW EURODRIVE ARGENTINA S.A. Balcarce 609 (T4000IAM) S.M. de Tucumán Prov. de Tucumán	Tel. +54 381-400-4569 sewtuc@sew-eurodrive.com.ar http://www.sew-eurodrive.com.ar
	Bahía Blanca	SEW EURODRIVE ARGENTINA S.A. O'Higgins 95, 1er Piso A (B8000IVA) Bahía Blanca Prov. de Buenos Aires	Tel. +54 291-451-7345 sewbb@sew-eurodrive.com.ar http://www.sew-eurodrive.com.ar
	Comahue	SEW EURODRIVE ARGENTINA S.A. Puerto Rico 1885 (R8324IOE) Cipolletti Prov. de Río Negro	Tel. +54 299-478-1290 sewcomahue@sew-eurodrive.com.ar http://www.sew-eurodrive.com.ar

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Argentina			
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Australia			
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	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164, Australia	Tel. +61 2 9725-9900 Fax +61 2 9725-9905 enquires@sew-eurodrive.com.au
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	Brisbane	SEW-EURODRIVE PTY.LTD. 1 /34 Collinsvale St Rocklea, Queensland, 4106, Australia	Tel. +61 7 3276 5100 Fax +61 7 3276 5102 enquires@sew-eurodrive.com.au
	Perth	SEW-EURODRIVE PTY. LTD. 10 Colin Jamieson Drive Welshpool, WA 6106, Australia	Tel. +61 8 9251-4900 Fax +61 8 9251-4903 enquires@sew-eurodrive.com.au
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	Graz	SEW-EURODRIVE Ges.m.b.H. Grabenstraße 231 8045 Graz, Austria	Tel. +43 316 685 756-0 Fax +43 316 685 755 tb-graz@sew-eurodrive.at
	Dornbirn	SEW-EURODRIVE Ges.m.b.H. Lustenauerstraße 27/1 6850 Dornbirn, Austria	Tel. +43 5572 3725 99-0 Fax +43 5572 3725 99-20 tb-dornbirn@sew-eurodrive.at

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

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

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

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Brazil			
Assembly plants **Sales** **Service**	**Rio Claro**	SEW-EURODRIVE Brasil Ltda. Rodovia Washington Luiz, Km 172 Condomínio Industrial Conpark Caixa Postal: 327 13501-600 – Rio Claro / SP	Tel. +55 19 3522-3100 Fax +55 19 3524-6653 montadora.rc@sew.com.br
	Joinville	SEW-EURODRIVE Brasil Ltda. Rua Dona Francisca, 12.346 – Pirabeiraba 89239-270 – Joinville / SC	Tel. +55 47 3027-6886 Fax +55 47 3027-6888 filial.sc@sew.com.br
	Indaiatuba	SEW-EURODRIVE Brasil Ltda. Estrada Municipal Jose Rubim, 205 Rodovia Santos Dumont Km 49 13347-510 – Indaiatuba / SP	Tel. +55 19 3835-8000 sew@sew.com.br
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Cameroon			
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Canada			
Assembly plants **Sales** **Service**	**Toronto**	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, ON L6T 3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca l.watson@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. Tilbury Industrial Park 7188 Honeyman Street Delta, BC V4G 1G1	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger Lasalle, PQ H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 a.peluso@sew-eurodrive.ca
	Please contact us for more addresses of service centers in Canada.		
Chile			
Assembly plant **Sales** **Service**	**Santiago de Chile**	SEW-EURODRIVE CHILE LTDA. Las Encinas 1295 Parque Industrial Valle Grande LAMPA RCH-Santiago de Chile P.O. box address Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 75770-00 Fax +56 2 75770-01 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl
China			
Production plant **Assembly plant** **Sales** **Service**	**Tianjin**	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 46, 7th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25323273 info@sew-eurodrive.cn http://www.sew-eurodrive.cn
Assembly plant **Sales** **Service**	**Suzhou**	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 51262581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn
	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530, China	Tel. +86 20 82267890 Fax +86 20 82267922 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141, China	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn

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	Xi'An	SEW-EURODRIVE (Xi'An) Co., Ltd. No. 12 Jinye 2nd Road Xi'An High-Technology Industrial Development Zone Xi'An 710065	Tel. +86 29 68686262 Fax +86 29 68686311 xian@sew-eurodrive.cn

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

Côte d'Ivoire			
Sales	**Abidjan**	SICA Société Industrielle & Commerciale pour l'Afrique 165, Boulevard de Marseille 26 BP 1173 Abidjan 26	Tel. +225 21 25 79 44 Fax +225 21 25 88 28 sicamot@aviso.ci

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

Czech Republic			
Sales **Assembly plant** **Service**	**Hostivice**	SEW-EURODRIVE CZ S.R.O. Floriánova 2459 253 01 Hostivice	Tel. +420 255 709 601 Fax +420 235 350 613 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
	Drive Service Hotline/24-hour availability	HOTLINE: +420 800 739 739 (800 SEW SEW)	**Service:** Tel. +420 255 709 632 Fax +420 235 358 218 servis@sew-eurodrive.cz
Assembly plant **Service**	**Plzeň**	SEW-EURODRIVE CZ S.R.O. Areal KRPA a.s. Zahradni 173/2 326 00 Plzeň	Tel. +420 378 775 320 Fax +420 377 970 710 sew@sew-eurodrive.cz
Technical offices	**Brno**	SEW-EURODRIVE CZ S.R.O. Křenová 52 60200 Brno	Tel. +420 543 254 174 Fax +420 543 256 845 radek.chmela@sew-eurodrive.cz
	Hradec Králové	SEW-EURODRIVE CZ S.R.O. Čechova 498 50202 Hradec Králové	Tel. +420 495 510 141 Fax +420 495 521 313 miroslav.moravec@sew-eurodrive.cz
	Ostrava	SEW-EURODRIVE CZ S.R.O. Studentská 6202/17 708 00 Ostrava-Poruba	Tel. +420 597 329 044 david.kenkus@sew-eurodrive.cz
	Klatovy	SEW-EURODRIVE CZ S.R.O. Vídeňská 841 33901 Klatovy	Tel. +420 376 331 634 Fax +420 376 331 634 viktor.kubernat@sew-eurodrive.cz
Service	**Horní Moštěnice**	SEW-EURODRIVE CZ S.R.O. Nám.Dr.M.Tyrše 14/64 751 17 Horní Moštěnice	Tel. +420 581 224 374 Fax +420 581 224 374 servis@sew-eurodrive.cz

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

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

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

Finland			
Assembly plant **Sales** **Service**	**Hollola**	SEW-EURODRIVE OY Vesimäentie 4 15860 Hollola 2, Finland	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Service	**Hollola**	SEW-EURODRIVE OY Keskikankaantie 21 FIN-15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Technical offices	**Helsinki**	SEW-EURODRIVE OY Luutnantintie 5 00410 Helsinki, Finland	Tel. +358 201 589-300 sew@sew.fi
	Vaasa	SEW-EURODRIVE OY Asemakatu 7 65100 Vaasa, Finland	Tel. +358 201 589-300 sew@sew.fi
	Kuopio	SEW-EURODRIVE OY Viestikatu 3 70600 Kuopio, Finland	Tel. +358 201 589-300 sew@sew.fi
Production plant **Assembly plant**	**Karkkila**	SEW Industrial Gears Oy Valurinkatu 6, PL 8 FI-03600 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 sew@sew.fi http://www.sew-eurodrive.fi

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

Greece			
Sales	**Athens**	Christ. Boznos & Son S.A. 12, K. Mavromichali Street P.O. Box 80136 GR-18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr
Technical office	**Thessaloniki**	Christ. Boznos & Son S.A. Asklipiou 26 562 24 Evosmos, Thessaloniki, Greece	Tel. +30 2 310 7054-00 Fax +30 2 310 7055-15 info@boznos.gr

Great Britain			
Assembly plant **Sales** **Service**	**Normanton**	SEW-EURODRIVE Ltd. DeVilliers Way Trident Park Normanton West Yorkshire WF6 1GX	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
	Drive Service Hotline/24-hour availability		Tel. +44 1924 896911
Service Competence Centers	**Southern England**	SEW-EURODRIVE Ltd. Unit 41 Easter Park Benyon Road Silchester Reading Berkshire RG7 2PQ	Tel. +44 1189 701-699 Fax +44 1189 701-021
Technical offices	**Midlands**	SEW-EURODRIVE Ltd. 5 Sugar Brook Court Aston Road Bromsgrove Worcs. B60 3EX	Tel. +44 1527 877-319 Fax +44 1527 575-245

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Great Britain			
	Scotland	SEW-EURODRIVE Ltd. No 37 Enterprise House Springkerse Business Park Stirling FK7 7UF	Tel. +44 17 8647-8730 Fax +44 17 8645-0223

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

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

India			
Company office **Assembly plant** **Sales** **Service**	**Vadodara**	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243, India Gujarat	Tel. +91 265 3045200, +91 265 2831086 Fax +91 265 3045300, +91 265 2831087 http://www.seweurodriveindia.com salesvadodara@seweurodriveindia.com
Assembly plant **Sales** **Service**	**Chennai**	SEW-EURODRIVE India Private Limited Plot No. K3/1, Sipcot Industrial Park Phase II Mambakkam Village Sriperumbudur - 602105 Kancheepuram Dist, Tamil Nadu	Tel. +91 44 37188888 Fax +91 44 37188811 saleschennai@seweurodriveindia.com
Technical offices	**Ahmedabad**	SEW-EURODRIVE India Private Limited 306, Shaan office complex, Behind Sakar-IV, Ellisebridge, Ashram Road Ahmedabad – Gujarat, India	Tel. +91 79 40072067/68 Fax +91 79 40072069 salesahmedabad@seweurodrivein-dia.com
	Aurangabad	SEW-EURODRIVE INDIA PRIVATE LIMITED	Tel. +91 86000 12333 salesaurangabad@seweurodrivein-dia.com
	Bangalore	SEW-EURODRIVE India Private Limited Sy.no:41-P3, Peenya1, Phase 1A, Peenya Village, Yeswanthapura Hobli, Bangalore North Taluk, Bangalore Dist, Karnataka	Tel. +91 80 22266565 Fax +91 80 22266569 salesbangalore@seweurodriveindia.com
		SEW-EURODRIVE India Private Limited # C-104, 3rd Block, KSSIDC Complex, Electronic City. Bangalore – 560100, Karnataka	Tel. +91 80 28522662 / 28522663 salesbangalore@seweurodriveindia.com
	Bangladesh	SEW-EURODRIVE INDIA PRIVATE LIMITED Genetic Udayanchal, House-96 (6th Floor), Road-23/A, Block-B, Banani, Dhaka-1213, Bangladesh	Mobile +88 01729 097309 salesdhaka@seweurodrive-bangladesh.com
	Bellary	SEW-EURODRIVE India Private Limited Door no-56/279 Ward No-16, Sindhigi compound, Near Raghavendra talkies, Bellary-583101 Karnataka	Tel. +91 77609 88668 salesbellary@seweurodriveindia.com
	Chandigarh	SEW-EURODRIVE India Private Limited # 72, Type- 4, Power Colony, Chandigarh - Rupnagar Highway Rupnagar- 140001, Punjab	Tel. +91 81462 67606 saleschandigarh@seweurodrivein-dia.com
	Chennai	SEW-EURODRIVE India Private Limited 2nd Floor, Josmans Complex, No. 5, McNichols Road, Chetpet Chennai - 600031 - Tamil Nadu, India	Tel. +91 44 42849813 Fax +91 44 42849816 saleschennai@seweurodriveindia.com
	Kochi	SEW-EURODRIVE India Private Limited CF7-(2), Block No 1, Vasanth Nagar, Opposite Jawahar Lal Nehru Stadium, Palarivattom – Cochin 682025	Tel. +91 98951 30375 salescochin@seweurodriveindia.com

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India			
	Coimbatore	SEW-EURODRIVE INDIA PRIVATE LIMITED 687/2, SRI SAKTHIVEL TOWERS (NEAR DEEPAM HOSPITAL) TRICHY ROAD, RAMANATHAPURAM COIMBATORE - 641 045.Tamilnadu, India	Tel. +91 422 2322420 Fax +91 422 2323988 salescoimbatore@seweurodrivein-dia.com
	Cuttack	SEW-EURODRIVE India Private Limited Plot No. 1764, Nuasahi, Nayapalli Bhubaneswar-12 Orissa	Tel. +91 9937446333 salescuttack@seweurodriveindia.com
	Gandhidham	SEW-EURODRIVE India Private Limited TCX-S-28, FF, Ward 12/A, Gandhidham - Kutch - 370201	Tel. +91 81282 36850 salesgandhidham@seweurodrivein-dia.com
	Hyderabad	SEW-EURODRIVE India Private Limited 408, 4th Floor, Meridian Place Green Park Road Amerpeet Hyderabad - 500016 - Andhra Pradesh, India	Tel. +91 40 23414698 Fax +91 40 23413884 saleshyderabad@seweurodriveindia.com
	Jamshedpur	SEW-EURODRIVE India Private Limited Flat no.: S1 " Kashi Kunj",h. No. 60, New Rani Kudar Road No - 3 P.o. + P.s. - Kadma Jamshedpur - Pin - 831005 Jharkhand	Tel. +91 9934123671 salesjamshedpur@seweurodrivein-dia.com
	Kolhapur	SEW EURODRIVE India Private Limited	Tel. +91 86000 20846 saleskolhapur@seweurodriveindia.com
	Kolkata	SEW EURODRIVE India Private Limited 2nd floor, Room No. 35 Chowringhee Court 55, Chowringhee Road Kolkata - 700 071 - West Bengal, India	Tel. +91 33 22827457 Fax +91 33 22894204 saleskolkata@seweurodriveindia.com
	Lucknow	SEW-EURODRIVE India Private Limited 69, Shiv Vihar Colony Vikas Nagar-5 Lucknow 226022 - Uttar Pradesh	Tel. +91 9793627333 saleslucknow@seweurodriveindia.com
	Mumbai	SEW-EURODRIVE India Private Limited 312 A, 3rd Floor, Acme Plaza, J.B. Nagar, Andheri Kurla Road, Andheri (E) Mumbai - 400059 - Maharashtra, India	Tel. +91 22 28348440 Fax +91 22 28217858 salesmumbai@seweurodriveindia.com
	Nagpur	SEW-EURODRIVE India Private Limited Plot No 49, New Kailash Nager, Samta colony, Nagpur-440027	Tel. +91 95610 89525 salesnagpur@seweurodriveindia.com
	Nashik	SEW-EURODRIVE India Private Limited 107, "YOG" Bunglow, Mahatama Nagar, Trimbak Road, Nashik, Maharashtra – 422 007	Tel. +91 9665752978 salesnashik@seweurodriveindia.com
	New Delhi	SEW-EURODRIVE India Private Limited 1008, 10th Floor, 12th Level "Westend Mall" Tower Plot, District Centre Adjacent Hotel Hilton Janak Puri, New Delhi – 110058	Tel. +91 11 25544111 Fax +91 11 25544113 salesdelhi@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Jai Tulajabhavani Complex. Office No: 15 First Floor, Opp. Century Enka Company, MIDC Bhosari, Pune 411 026	Tel. +91 20-65118890 / 91 Fax +91 20 25380721 salespune@seweurodriveindia.com
		SEW-EURODRIVE India Private Limited LUNAWAT PRISM 4th Floor, S.No. 148 Opposite Wanaz Company, Besides Mega Mart At Neena Co-Operative Housing Society, Paud Road, Pune 411038 - Maharashtra, India	Tel. +91 20 25380730/735 Fax +91 20 25380721 salespune@seweurodriveindia.com praveen.hosur@seweurodriveindia.com
	Raipur	SEW-EURODRIVE India Private Limited A-42, Ashoka Millenium Complex, Ring Road-1, Raipur 492 001 - Chhattisgarh, India	Tel. +91 771 4090765 Fax +91 771 4090765 salesraipur@seweurodriveindia.com

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India			
	Ranchi	SEW-EURODRIVE India Private Limited Flat No.: A - 101, Krishna Shree Apartment, Anantpur, P.O. Doranda – Ranchi 834002	Tel. +91 8294630772 salesranchi@seweurodriveindia.com
	Tiruchirappalli	SEW-EURODRIVE India Private Limited A-106,Trichy Towers, Chandrasekarapuram, Salai Road, Trichy – 620018.	Mobile +91 95009 88081 salestrichy@seweurodriveindia.com
	Vadodara	SEW-EURODRIVE India Private Limited Unit No. 301, Savorite Bldg, Plot No. 143, Vinayak Society, off old Padra Road, Vadodara - 390 007. Gujarat	Tel. +91 265 2325258 Fax +91 265 2325259 salesvadodara@seweurodriveindia.com
	Vijayawada	SEW-EURODRIVE India Private Limited Door No:40-5/3-10A, Syam Nagar, NGO's Colony, Tikkle Road, Vijayawada-520010	Tel. +91 99895 01748 Fax +91 8662475157 Mobile +91 9989501748 salesvijayawada@seweurodrivein-dia.com

Indonesia			
Sales	**Jakarta**	PT. Cahaya Sukses Abadi Komplek Rukan Puri Mutiara Blok A no 99, Sunter Jakarta 14350, Indonesia	Tel. +62 21 65310599 Fax +62 21 65310600 csajkt@cbn.net.id
		PT. Agrindo Putra Lestari Jl.Prof.DR.Latumenten no27/A Jakarta 11330	Tel. +62 21 63855588 Fax +62 21 63853789 aplindo@indosat.net.id
	Medan	PT. Serumpun Indah Lestari Pulau Solor no. 8, Kawasan Industri Medan II Medan 20252	Tel. +62 61 687 1221 Fax +62 61 6871429 / +62 61 6871458 / +62 61 30008041 sil@serumpunindah.com serumpunindah@yahoo.com
	Surabaya	PT. TRIAGRI JAYA ABADI Jl. Sukosemolo No. 63, Galaxi Bumi Permai G6 No. 11 Surabaya 60122	Tel. +62 31 5990128 Fax +62 31 5962666 triagri@indosat.net.id
		CV. Multi Mas Jl. Raden Saleh 43A Kav. 18 Surabaya 60174	Tel. +62 31 5458589 / +62 31 5317224 Fax +62 31 5317220 / +62 31 5994629 sianhwa@sby.centrin.net.id

Ireland			
Sales **Service**	**Dublin**	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11, Ireland	Tel. +353 1 830-6277 Fax +353 1 830-6458 info@alperton.ie http://www.alperton.ie

Iceland			
Sales	**Reykjavik**	VARMA & VELAVERK EHF Dalshrauni 5 IS-220 Hafnarjördur	Tel. +354 585 1070 Fax +354 585 1071 varmaverk@varmaverk.is http://www.varmaverk.is

Israel			
Sales	**Tel Aviv**	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon, Israel	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il

Italy			
Assembly plant **Sales** **Service**	**Solaro**	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 I-20020 Solaro (Milano), Italy	Tel. +39 02 96 9801 Fax +39 02 96 980 999 http://www.sew-eurodrive.it sewit@sew-eurodrive.it
Technical offices	**Bologna**	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via della Grafica, 47 40064 Ozzano dell'Emilia (Bo), Italy	Tel. +39 051 65-23-801 Fax +39 02 96 980 499

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Italy			
	Caserta	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Viale Carlo III Km. 23,300 81020 S. Nicola la Strada (Caserta), Italy	Tel. +39 0823 219011 Fax +39 02 96 980 599
	Milan	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 I-20020 Solaro (Milano), Italy	Tel. +39 02 96 980229 Fax +39 02 96 980 999
	Pescara	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Viale Europa,132 I-65010 Villa Raspa di Spoltore (PE)	Tel. +39 085 41-59-427 Fax +39 02 96 980 699
	Turin	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Filiale Torino c.so Unione Sovietica 612/15 - int. C 10135 Torino, Italy	Tel. +39 011 3473780 Fax +39 02 96 980 799
	Verona	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Antonio Meucci 5, I-37042 - Caldiero (VR)	Tel. +39 045 89-239-11 Fax +39 02 96 980 814

Japan			
Assembly plant **Sales** **Service**	**Iwata**	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373855 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp
Technical offices	**Fukuoka**	SEW-EURODRIVE JAPAN CO., LTD. C-go, 5th-floor, Yakuin-Hiruzu-Bldg. 1-5-11, Yakuin, Chuo-ku Fukuoka, 810-0022, Japan	Tel. +81 92 713-6955 Fax +81 92 713-6860 sewkyushu@jasmine.ocn.ne.jp
	Osaka	SEW-EURODRIVE JAPAN CO., LTD. Higobashi Shimizu Bldg. 10th floor 1-3-7 Tosabori, Nishi-ku Osaka, 550-0001, Japan	Tel. +81 6 6444--8330 Fax +81 6 6444--8338 sewosaka@crocus.ocn.ne.jp
	Tokyo	SEW-EURODRIVE JAPAN CO., LTD. Omarimon Yusen Bldg. 13th floor 3-23-5 Nishinbashi, Minato-ku Tokyo 105-0003, Japan	Tel. +81 3 3239-0469 Fax +81 3 3239-0943 sewtokyo@basil.ocn.ne.jp

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

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

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

Lebanon			
Sales Lebanon	**Beirut**	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut, Lebanon	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb
		After Sales Service	service@medrives.com
Sales Jordan / Kuwait / Saudi Arabia / Syria	**Beirut**	Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 info@medrives.com http://www.medrives.com
		After Sales Service	service@medrives.com

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

Luxembourg			
Assembly plant **Sales** **Service**	**Brussels**	**SEW-EURODRIVE n.v./s.a.** Researchpark Haasrode 1060 Evenementenlaan 7 BE-3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.lu info@sew-eurodrive.be

Madagascar			
Sales	**Antananarivo**	Ocean Trade BP21bis. Andraharo Antananarivo. 101 Madagascar	Tel. +261 20 2330303 Fax +261 20 2330330 oceantrabp@moov.mg

Malaysia			
Assembly plant **Sales** **Service**	**Johor**	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Technical offices	**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 51229633 Fax +60 3 51229622 sewsa@sew-eurodrive.com.my
	Kuching	SEW-EURODRIVE Sdn. Bhd. Lot 268, Section 9 KTLD Lorong 9, Jalan Satok 93400 Kuching, Sarawak East Malaysia	Tel. +60 82 232380 Fax +60 82 242380
	Penang	SEW-EURODRIVE Sdn. Bhd. No. 38, Jalan Bawal Kimsar Garden 13700 Prai, Penang	Tel. +60 4 3999349 Fax +60 4 3999348 sewpg@sew-eurodrive.com.my

Morocco			
Sales **Service**	**Mohammedia**	SEW-EURODRIVE SARL 2 bis, Rue Al Jahid 28810 Mohammedia	Tel. +212 523 32 27 80/81 Fax +212 523 32 27 89 sew@sew-eurodrive.ma http://www.sew-eurodrive.ma

Mauritania			
Sales	**Zouérat**	AFRICOM - SARL En Face Marché Dumez P.B. 88 Zouérate	Tel. +222 45 44 50 19 Fax +222 45 44 03 14 contact@africom-sarl.com

Macedonia			
Sales	**Skopje**	Boznos DOOEL Dime Anicin 2A/7A 1000 Skopje	Tel. +389 23256553 Fax +389 23256554 http://www.boznos.mk

Mexico			
Assembly plant **Sales** **Service**	**Quéretaro**	SEW-EURODRIVE MEXICO SA DE CV SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Quéretaro C.P. 76220 Quéretaro, Mexico	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx

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

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Namibia			
Sales	**Swakopmund**	DB Mining & Industrial Services Einstein Street Strauss Industrial Park Unit1 Swakopmund	Tel. +264 64 462 738 Fax +264 64 462 734 sales@dbmining.in.na

New Zealand			
Assembly plants **Sales** **Service**	**Auckland**	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount Drive East Tamaki Auckland, New Zealand	Tel. +64 9 2745627 Fax +64 9 2740165 http://www.sew-eurodrive.co.nz sales@sew-eurodrive.co.nz
	Christchurch, New Zealand	SEW-EURODRIVE NEW ZEALAND LTD. 10 Settlers Crescent, Ferrymead Christchurch, New Zealand	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Technical offices	**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

Netherlands			
Assembly plant **Sales** **Service**	**Rotterdam**	SEW-EURODRIVE B.V. Industrieweg 175 3044 AS Rotterdam, Netherlands Postbus 10085 3004 AB Rotterdam, Netherlands	Tel. +31 10 4463-700 Fax +31 10 4155-552 Service: 0800-SEWHELP http://www.sew-eurodrive.nl info@sew-eurodrive.nl

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

Norway			
Assembly plant **Sales** **Service**	**Moss**	SEW-EURODRIVE A/S Solgaard skog 71 1599 Moss, Norway	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no

Pakistan			
Sales	**Karatschi**	Industrial Power Drives Al-Fatah Chamber A/3, 1st Floor Central Commercial Area, Sultan Ahmed Shah Road, Block 7/8, Karachi	Tel. +92 21 452 9369 Fax +92-21-454 7365 seweurodrive@cyber.net.pk

Paraguay			
Sales	**Fernando de la Mora**	SEW-EURODRIVE PARAGUAY S.R.L De la Victoria 112, Esquina nueva Asunción Departamento Central Fernando de la Mora, Barrio Bernardino	Tel. +595 991 519695 Fax +595 21 3285539 sew-py@sew-eurodrive.com.py

Peru			
Assembly plant **Sales** **Service**	**Lima**	SEW DEL PERU MOTORES REDUCTORES S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima, Peru	Tel. +51 1 3495280 Fax +51 1 3493002 http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe

Philippines			
Sales	**Luzon**	Totaltech Corporation 5081-B C&L Mansion Filmore Ave. Cor. Fahrenheit St. 1235 Makati City	Tel. +63 2 551-9265 / +63 2 551-9271 / +63 2 551-9378 Fax +63 2 551-9273 totaltech89@gmail.com
	All Areas	P.T. Cerna Corporation 4137 Ponte St., Brgy. Santa Cruz, Makati City 1205	Tel. +63 2 519 6214 Fax +63 2 890 2802 mech_drive_sys@ptcerna.com

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Poland			
Assembly plant **Sales** **Service**	**Łódź**	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 92-518 Łódź, Poland	Tel. +48 42 676 53 00 Fax +48 42 676 53 49 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
	Service	Tel. +48 42 6765332 / 42 6765343 Fax +48 42 6765346	Linia serwisowa 24 hour hotline Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl
Technical office	**Tychy**	SEW-EURODRIVE Polska Sp.z.o.o. ul. Strzelecka 66 PL-43-109 Tychy	Tel. +48 32 32 32 610 Fax +48 32 32 32 648
	Bydgoszcz	SEW-EURODRIVE Polska Sp.z.o.o. ul. Fordońska 246 PL-85-959 Bydgoszcz	Tel. +48 52 3606590 Fax +48 52 3606591
	Gdansk	SEW-EURODRIVE Polska Sp.z.o.o. ul. Galaktyczna 30A PL-80-299 Gdańsk	Tel. +48 58 762 70 00 Fax +48 58 762 70 09
	Poznan	SEW-EURODRIVE Polska Sp.z.o.o. ul. Romana Maya 1 61-371 Poznań, Poland	Tel. +48 61 6465500 Fax +48 61 6465519
	Radom	SEW-EURODRIVE Polska Sp.z.o.o. ul. Słowackiego 84 26-600 Radom, Poland	Tel. +48 48 365 40 50 Fax +48 48 365 40 52

Portugal			
Assembly plant **Sales** **Service**	**Coimbra**	SEW-EURODRIVE, LDA. Apartado 15 3050-901 Mealhada, Portugal	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt
Service Competence Centers	**Lisbon**	SEW-EURODRIVE, LDA. Núcleo Empresarial I de São Julião do Tojal Rua de Entremuros, 54 Fracção I 2660-533 São Julião do Tojal, Portugal	Tel. +351 21 958-0198 Fax +351 21 958-0245 esc.lisboa@sew-eurodrive.pt
Technical office	**Porto**	SEW-EURODRIVE, LDA. Av. 25 de Abril, 68 4440-502 Valongo, Portugal	Tel. +351 229 350 383 Fax +351 229 350 384 Tel. +351 9 32559110 esc.porto@sew-eurodrive.pt

Romania			
Sales **Service**	**Bucharest**	Sialco Trading SRL str. Brazilia nr. 36 011783 Bucuresti, Romania	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro

Russia			
Assembly plant **Sales** **Service**	**St. Petersburg**	ZAO SEW-EURODRIVE P.O. Box 36 RUS-195220 St. Petersburg	Tel. +7 812 3332522 +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru
Technical office	**Ekaterinburg**	ZAO SEW-EURODRIVE Kominterna Str. 16 Office 614 620078 Ekaterinburg, Russia	Tel. +7 343 310 3977 Fax +7 343 310 3978 eso@sew-eurodrive.ru
	Irkutsk	ZAO SEW-EURODRIVE 5-Armii Str., 31 664011 Irkutsk, Russia	Tel. +7 3952 25 5880 Fax +7 3952 25 5881 iso@sew-eurodrive.ru
	Moscow	ZAO SEW-EURODRIVE Malaja Semjonowskaja Str. д. 9, корпус 2 107023 Moscow	Tel. +7 495 9337090 Fax +7 495 9337094 mso@sew-eurodrive.ru
	Novosibirsk	ZAO SEW-EURODRIVE pr. K Marksa 30 630087 Novosibirsk, Russia	Tel. +7 383 3350200 Fax +7 383 3462544 nso@sew-eurodrive.ru
	Perm	ZAO SEW-EURODRIVE Stakhanovskaya str., 45 Office 512 RUS-614066 Perm	Tel. +7 342 2219494 Fax +7 342 2219444 pso@sew-eurodrive.ru

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Russia			
	Togliatti	ZAO SEW-EURODRIVE Sportivnaya Str. 4B, office 2 Samarskaya obl. 445057 Togliatti, Russia	Tel. +7 8482 710529 Fax +7 8482 810590
Senegal			
Sales	**Dakar**	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 338 494 770 Fax +221 338 494 771 senemeca@sentoo.sn http://www.senemeca.com
Serbia			
Sales	**Belgrade**	DIPAR d.o.o. Ustanicka 128a PC Košum, IV sprat SRB-11000 Beograd, Serbia	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.rs
Singapore			
Assembly plant **Sales** **Service**	**Singapore**	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com
Slovakia			
Sales	**Bratislava**	SEW-EURODRIVE SK s.r.o. Rybničná 40 831 06 Bratislava, Slovakia	Tel. +421 2 33595 202 Fax +421 2 33595 200 sew@sew-eurodrive.sk http://www.sew-eurodrive.sk
	Žilina	SEW-EURODRIVE SK s.r.o. Industry Park - PChZ ulica M.R.Štefánika 71 010 01 Žilina, Slovakia	Tel. +421 41 700 2513 Fax +421 41 700 2514 sew@sew-eurodrive.sk
	Banska Bystrica	SEW-EURODRIVE SK s.r.o. Rudlovská cesta 85 974 11 Banská Bystrica, Slovakia	Tel. +421 48 414 6564 Fax +421 48 414 6566 sew@sew-eurodrive.sk
	Košice	SEW-EURODRIVE SK s.r.o. Slovenská ulica 26 040 01 Košice, Slovakia	Tel. +421 55 671 2245 Fax +421 55 671 2254 sew@sew-eurodrive.sk
Slovenia			
Sales **Service**	**Celje**	Pakman - Pogonska Tehnika d.o.o. Ul. XIV. divizije 14 3000 Celje, Slovenia	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net
Spain			
Assembly plant **Sales** **Service**	**Bilbao**	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 48170 Zamudio (Vizcaya), Spain	Tel. +34 94 43184-70 Fax +34 94 43184-71 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es
Technical offices	**Barcelona**	Delegación Barcelona Avda. Francesc Macià, 60 – Planta 16, porta 1 Eix Macià – "Torre Milenium" 08208 Sabadell (Barcelona), Spain	Tel. +34 93 7162200 Fax +34 93 7233007
	Madrid	Delegación Madrid Gran Via. 48-2° A-D 28220 Majadahonda (Madrid), Spain	Tel. +34 91 6342250 Fax +34 91 6340899
	Sevilla	MEB Pólogono Calonge, C/A Nave 2 - C E-41.077 Sevilla, Spain	Tel. +34 954 356 361 Fax +34 954 356 274 mebsa.sevilla@mebsa.com
	Valencia	MEB Músico Andreu i Piqueres, 4 E-46.900 Torrente (Valencia)	Tel. +34 961 565 493 Fax +34 961 566 688 mebsa.valencia@mebsa.com
Sri Lanka			
Sales	**Colombo**	SM International (Pte) Ltd 254, Galle Raod Colombo 4, Sri Lanka	Tel. +94 1 2584887 Fax +94 1 2582981

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South Africa			
Assembly plants **Sales** **Service**	**Johannesburg**	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013, South Africa P.O.Box 90004 Bertsham 2013, South Africa	Tel. +27 11 248-7000 Fax +27 11 494-3104 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town, South Africa P.O. Box 36556 Chempet 7442 Cape Town, South Africa	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 bgriffiths@sew.co.za
	Durban, South Africa	SEW-EURODRIVE (PROPRIETARY) LIMITED 48 Prospecton Road Isipingo Durban, South Africa P.O. Box 10433, Ashwood 3605, South Africa	Tel. +27 31 902 3815 Fax +27 31 902 3826 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PTY) LTD. 7 Christie Crescent Vintonia P.O. Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za
Technical offices	**Port Elizabeth**	SEW-EURODRIVE PTY LTD. 8 Ruan Access Park Old Cape Road Greenbushes 6000 Port Elizabeth	Tel. +27 41 3722246 Fax +27 41 3722247 dtait@sew.co.za

South Korea			
Assembly plant **Sales** **Service**	**Ansan**	SEW-EURODRIVE KOREA CO., LTD. B 601-4, Banweol Industrial Estate #1048-4, Shingil-Dong, Danwon-Gu, Ansan-City, Kyunggi-Do Zip 425-839	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-korea.co.kr master.korea@sew-eurodrive.com
	Busan	SEW-EURODRIVE KOREA Co., Ltd. No. 1720 - 11, Songjeong - dong Gangseo-ku Busan 618-270, Korea	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. 1502, Hongin officetel 536-9, Bongmyung-dong, Yusung-ku Daejeon 305-301	Tel. +82 42 828-6461 Fax +82 42 828-6463
	Gwangju	SEW-EURODRIVE KOREA Co., Ltd. 4fl., Dae-Myeong B/D 96-16 Unam-dong, Buk-ku Kwangju 500-170	Tel. +82 62 511-9172 Fax +82 62 511-9174
	Seoul	SEW-EURODRIVE KOREA Co., Ltd. No.504 Sunkyung officetel 106-4 Kuro 6-dong, Kuro-ku Seoul 152-054, Korea	Tel. +82 2 862-8051 Fax +82 2 862-8199

Swaziland			
Sales	**Manzini**	C G Trading Co. (Pty) Ltd PO Box 2960 Manzini M200	Tel. +268 2 518 6343 Fax +268 2 518 5033 engineering@cgtrading.co.sz

Sweden			
Assembly plant **Sales** **Service**	**Jönköping**	SEW-EURODRIVE AB Gnejsvägen 6-8 55303 Jönköping, Sweden Box 3100 S-55003 Jönköping	Tel. +46 36 3442 00 Fax +46 36 3442 80 http://www.sew-eurodrive.se jonkoping@sew.se

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Sweden			
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	Stockholm	SEW-EURODRIVE AB Björkholmsvägen 10 14146 Huddinge, Sweden	Tel. +46 8 44986 80 Fax +46 8 44986 93 stockholm@sew.se
	Malmö	SEW-EURODRIVE AB Borrgatan 5 21124 Malmö, Sweden	Tel. +46 40 68064 80 Fax +46 40 68064 93 malmo@sew.se
	Skellefteå	SEW-EURODRIVE AB Trädgårdsgatan 8 93131 Skellefteå, Sweden	Tel. +46 910 7153 80 Fax +46 910 7153 93 skelleftea@sew.se

Switzerland			
Assembly plant **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	**Romandy**	André Gerber Es Perreyres 1436 Chamblon, Switzerland	Tel. +41 24 445 3850 Fax +41 24 445 4887
	Bern / Solothurn	Rudolf Bühler Muntersweg 5 2540 Grenchen, Switzerland	Tel. +41 32 652 2339 Fax +41 32 652 2331
	Central Switzer-land, Aargau	Armin Pfister Stierenweid 4950 Huttwill, BE, Switzerland	Tel. +41 62 962 54 55 Fax +41 62 962 54 56
	Zurich, Tessin	Gian-Michele Muletta Fischerstrasse 61 8132 Egg bei Zürich, Switzerland	Tel. +41 44 994 81 15 Fax +41 44 994 81 16
	Lake Constance and Eastern Switzerland	Markus Künzle Eichweg 4 9403 Goldach, Switzerland	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, Taiwan	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net

Tanzania			
Sales	**Dar es Salaam**	SEW-EURODRIVE PTY LIMITED TANZANIA Plot 52, Regent Estate PO Box 106274 Dar Es Salaam	Tel. +255 0 22 277 5780 Fax +255 0 22 277 5788 uroos@sew.co.tz

Thailand			
Assembly plant **Sales** **Service**	**Chonburi**	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000, Thailand	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com
Technical offices	**Bangkok**	SEW-EURODRIVE (Thailand) Ltd. 6th floor, TPS Building 1023, Phattanakarn Road Suanluang Bangkok,10250	Tel. +66 2 7178149 Fax +66 2 7178152 sewthailand@sew-eurodrive.com
	Hat Yai	SEW-EURODRIVE (Thailand) Ltd. Hadyai Country Home Condominium 59/101 Soi.17/1 Rachas-Utid Road. Hadyai, Songkhla 90110, Thailand	Tel. +66 74 359441 Fax +66 74 359442 sewthailand@sew-eurodrive.com

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Thailand			
	Khon Kaen	SEW-EURODRIVE (Thailand) Ltd. 4th Floor, Kaow-U-HA MOTOR Bldg, 359/2, Mitraphab Road. Muang District Khonkaen 40000, Thailand	Tel. +66 43 225745 Fax +66 43 324871 sew-thailand@sew-eurodrive.com

Tunisia			
Sales	**Tunis**	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 79 40 88 77 Fax +216 79 40 88 66 http://www.tms.com.tn tms@tms.com.tn

Turkey			
Assembly plant **Sales** **Service**	**Kocaeli-Gebze**	SEW-EURODRİVE Sistemleri San. Ve TIC. Ltd. Sti Gebze Organize Sanayi Böl. 400 Sok No. 401 41480 Gebze Kocaeli	Tel. +90-262-9991000-04 Fax +90-262-9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr
Technical offices	**Adana**	SEW-EURODRİVE Cevat Yurdakul Cad.No:52 Akdoğan İş Merkezi K:5 D.18 Seyhan / Adana	Tel. +90 322 359 94 15 Fax +90 322 359 94 16
	Ankara	SEW-EURODRİVE 1368.Cadde Eminel İşmerkezi No: 18/68 İvogsan / Ankara	Tel. +90 312 385 33 90 Fax +90 312 385 32 58
	Bursa	SEW-EURODRİVE Üçevler Mah. Bayraktepe Sok. Akay İş Merkezi Kat:3 No: 7/6 Nilüfer / Bursa	Tel. +90 224 443 45 60 Fax +90 224 443 45 58
	Istanbul	SEW-EURODRİVE Tekstilkent Ticaret Merkezi B-13 Blok No:70 Esenler / İstanbul	Tel. +90-262-9991000-04 Fax +90-262-9991009
	Izmir	SEW-EURODRİVE 1203/11 Sok. No. 4/614 Kara Hasan Atlı İş Merkezi Kat :6 Yenişehir / İzmir	Tel. +90 232 469 62 64 Fax +90 232 433 61 05

Ukraine			
Assembly plant **Sales** **Service**	**Dnipropetrowsk**	ООО «СЕВ-Евродрайв» ул.Рабочая, 23-В, офис 409 49008 Днепропетровск	Тел. +380 56 370 3211 Факс. +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua
Sales	**Kiev**	ООО «СЕВ-Евродрайв» ул.С.Олейника, 21 02068 Киев	Тел. +380 44 503 95 77 Факс. +380 44 503 95 78 kso@sew-eurodrive.ua
	Donetsk	ООО «СЕВ-Евродрайв» ул.25-летия РККА, 1-В, оф. 805 83000 Донецк	Тел. +380 62 38 80 545 Факс. +380 62 38 80 533 dso@sew-eurodrive.ua
	Ivano-Frankivsk	ООО «СЕВ-Евродрайв» ул.Независимости, 4, оф.303 83000 Ивано-Франковск	Тел. +380 342 725 190 Факс. +380 342 725 191 ifso@sew-eurodrive.ua

Uruguay			
Assembly plant **Sales**	**Montevideo**	SEW-EURODRIVE Uruguay, S. A. Jose Serrato 3569 Esqina Corumbe CP 12000 Montevideo	Tel. +598 2 21181-89 Fax +598 2 21181-89 sewuy@sew-eurodrive.com.uy

USA			
Production plant **Assembly plant** **Sales** **Service**	**Southeast Region**	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Manufacturing +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com

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USA			
Assembly plants **Sales** **Service**	**Northeast Region**	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014, USA	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373, USA	Tel. +1 937 335-0036 Fax +1 937 332-0038 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237, USA	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544, USA	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Please contact us for other service center addresses in the USA.		

Venezuela			
Assembly plant **Sales** **Service**	**Valencia**	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia, Estado Carabobo, Venezuela	Tel. +58 241 832-9804 Fax +58 241 838-6275 http://www.sew-eurodrive.com.ve ventas@sew-eurodrive.com.ve sewfinanzas@cantv.net

United Arab Emirates			
Sales **Service**	**Sharjah**	Copam Middle East (FZC) Sharjah Airport International Free Zone P.O. Box 120709 Sharjah	Tel. +971 6 5578-488 Fax +971 6 5578-499 copam_me@eim.ae

Vietnam			
Sales	**Ho-Chi-Minh-Stadt**	**All sectors except for ports and offshore:** Nam Trung Co., Ltd 250 Binh Duong Avenue, Thu Dau Mot Town, Binh Duong Province HCM office: 91 Tran Minh Quyen Street District 10, Ho Chi Minh City	Tel. +84 8 8301026 Fax +84 8 8392223 namtrungco@hcm.vnn.vn truongtantam@namtrung.com.vn khanh-nguyen@namtrung.com.vn
		Ports and offshore: DUC VIET INT LTD Industrial Trading and Engineering Services A75/6B/12 Bach Dang Street, Ward 02, Tan Binh District, 70000 Ho Chi Minh City	Tel. +84 8 62969 609 Fax +84 8 62938 842 totien@ducvietint.com
	Hanoi	Nam Trung Co., Ltd R.205B Tung Duc Building 22 Lang ha Street Dong Da District, Hanoi City	Tel. +84 4 37730342 Fax +84 4 37762445 namtrunghn@hn.vnn.vn

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

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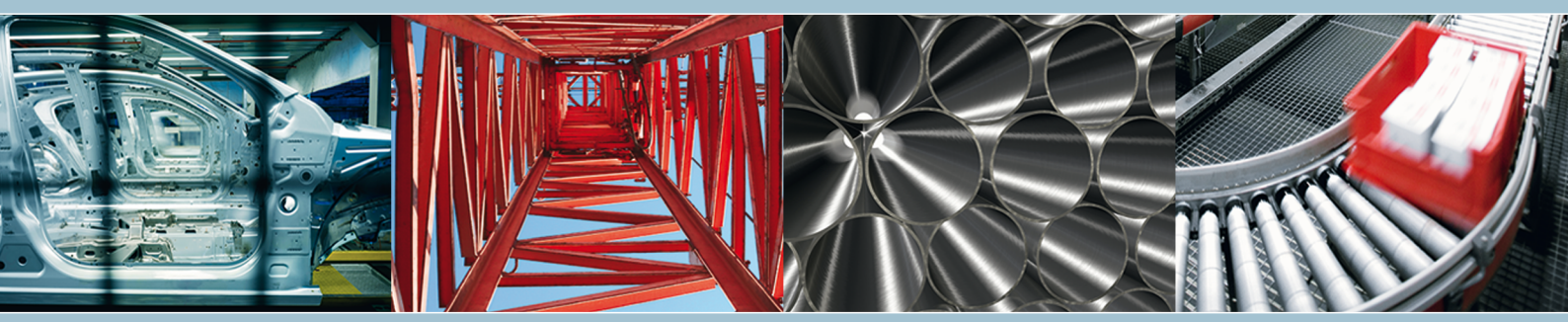
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