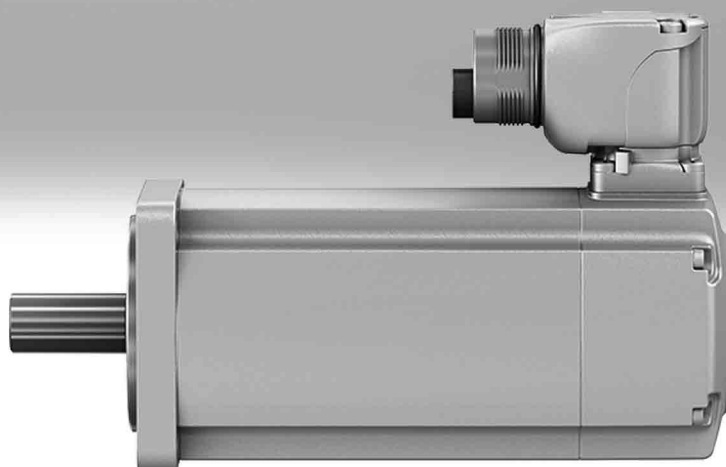


Servo motors EMMT-AS

FESTO



Servo motors EMMT-AS

Key features

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Everything from a single source

Motors EMMT-AS

→ Page 3



- Dynamic, brushless, permanently excited synchronous servo motors
- Extremely low holding torque – supports excellent synchronism even at low rotational speeds
- Digital absolute displacement encoder; choose from:
 - Single-turn
 - Multi-turn, no batteries
- Simple connection technology (OCP: one cable plug) – one connecting cable for supply and encoder
- Connector plug can be aligned with the motor
- Torque-optimised
- Speed-optimised
- Degree of protection:
 - IP40 (motor shaft)
 - IP67 (motor housing with connection technology)
 - IP67 (motor shaft with radial shaft seal made from PTFE)
- Motor temperature transmission, digital via EnDat 2.2; motor protection via CMMT-AS
- Optional:
 - Holding brake
 - Shaft with featherkey
 - Motor shaft with radial shaft seal

Gear unit EMGA-EAS/-SAS

→ Page 11



- Low-backlash planetary gear
- Gear ratio $i = 3$ and 5 , available from stock
- Life-time lubrication
- Degree of protection: IP54
- Other gear unit types, ratios, designs and versions on request

Servo drive CMMT-AS

→ Internet: cmm



- Universal servo drive for synchronous servo motors
- Integrated EMC filters
- Integrated brake chopper
- Integrated braking resistor
- Integrated safety functions
- Position controller
- Speed controller
- Force controller
- Range of control functions
- Interfaces:
 - EtherCAT

Motor cables NEBM

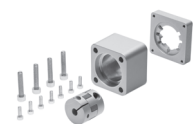
→ Page 12



- Suitable for energy chains
- Connection technology on motor side with degree of protection to IP67
- Can be used in a wide temperature range

Axial and parallel kits EAMM

→ Internet: eamm



- Specific kits for all electro-mechanical axes from Festo
- Each kit includes the relevant necessary coupling housing, couplings and motor flange as well as all screws
- Optionally with degree of protection IP65

EtherCAT® is a registered trademark of its respective trademark holder in certain countries.

Servo motors EMMT-AS

Type codes

		EMMT	–	AS	–	60	–	M	K	R	–	LS	–	R	S	B
Type																
EMMT	Motor															
Motor type																
AS	Servo motor															
Motor flange size																
60	60 mm															
Length																
S	Short															
M	Medium															
L	Long															
Output shaft																
–	Smooth shaft															
K	Shaft to DIN 6885 (with featherkey)															
Rotary shaft seal																
–	None															
R	With standard shaft seal															
Winding																
LS	Low voltage, standard															
HS	High voltage, standard															
Electrical connection																
R	Angled plug, rotatable															
Measuring unit																
S	Absolute encoder, single turn															
M	Absolute encoder, multi-turn															
Brake																
–	None															
B	With brake															

Servo motors EMMT-AS

Technical data

FESTO



Note

Motors and motor controllers from Festo have been specially designed to be used together. Fault-free operation cannot be guaranteed in combination with third-party controllers.



Technical data							
Flange size		60					
Length		S		M		L	
Winding		LS	HS	LS	HS	LS	HS
Nominal voltage	[V DC]	325	565	325	565	325	565
Nominal current							
Without brake	[A]	1.6	1.6	2.4	2.4	3.2	3.2
With brake	[A]	1.4	1.4	2.2	2.2	3.0	3.0
Peak current	[A]	5.4	5.4	11.0	11.0	18.3	18.3
Nominal power							
Without brake	[W]	200	200	350	350	440	440
With brake	[W]	190	190	310	310	410	410
Nominal torque							
Without brake	[Nm]	0.64	0.64	1.1	1.1	1.4	1.4
With brake	[Nm]	0.6	0.6	1.0	1.0	1.30	1.30
Peak torque	[Nm]	1.6	1.6	3.4	3.4	5.6	5.6
Stall torque							
Without brake	[Nm]	0.7	0.7	1.24	1.24	1.66	1.66
With brake	[Nm]	0.66	0.66	1.15	1.15	1.56	1.56
Nominal rotary speed	[rpm]	3000					
Max. rotational speed	[rpm]	7100	12500	6800	11800	6800	11900
Motor constant	[Nm/A]	0.41	0.41	0.45	0.45	0.44	0.44
Winding resistance	[Ω]	11.7	11.7	4.85	4.85	2.68	2.68
Winding inductance	[mH]	21	21	11	11	7	7
Total output inertia moment							
Without brake	[kgcm ²]	0.169	0.169	0.286	0.286	0.403	0.403
With brake	[kgcm ²]	0.257	0.257	0.373	0.373	0.490	0.490
Shaft load							
Radial	[N]	320					
Axial	[N]	65					
Brake							
Operating voltage	[V DC]	24 (+6 ... -10%)					
Performance	[W]	11					
Holding torque (static)	[Nm]	2.5					
Mass moment of inertia	[kgcm ²]	0.074					

Weight [kg]			
Flange size	60		
Length	S	M	L
Without brake	1.18	1.53	1.91
With brake	1.50	1.85	2.23

Servo motors EMMT-AS

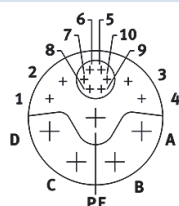
Technical data

Operating and environmental conditions		
Standard		IEC60034
Degree of protection		
Motor shaft		IP40
Motor housing incl. connection technology		IP67
With radial shaft seal		IP67
Ambient temperature	[°C]	–15 ... +40 (up to 80°C with derating of –1.5% per degree Celsius)
Storage temperature	[°C]	–20 ... +70
Temperature monitoring		Digital motor temperature transmission via EnDat 2.2
Rating class to EN 60034-1		S1
Thermal class to EN 60034-1		F
Relative humidity	[%]	0 ... 90
Corrosion resistance class CRC ¹⁾		0
CE marking (see declaration of conformity)		To EU Low Voltage Directive
		To EU EMC Directive ²⁾
		To EU RoHS Directive
Certification		c UL us - Recognized (OL)
		RCM mark
Note on materials		RoHS-compliant
		Contains paint-wetting impairment substances

- 1) Corrosion resistance class CRC 0 to Festo standard FN 940070
No corrosion stress. Applies to small, optically irrelevant standard parts such as threaded pins, circlips and clamping sleeves which are usually only available in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.
- 2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → User documentation.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Technical data – Encoders		
Measuring unit	Absolute, single turn	Absolute, multi-turn
Operating voltage	[V DC]	5
Operating voltage range	[V DC]	3.6 ... 14
Protocol	EnDat 2.2, digital channel only, max. cycle rate (CLOCK) ≤ 16 MHz	
Position values per revolution	262144	524288
Rotor position encoder resolution	18 bit	19 bit
Revolutions	–	4096 revolutions, 12 bits

Pin allocation



PIN	Function
1	BR– Brake
2	–
3	–
4	BR+ Brake
5	Up Encoder power supply
6	0 V Encoder power supply
7	Data + Encoder communication
8	Data – Encoder communication
9	CLK + Encoder communication
10	CLK – Encoder communication
A	U Motor power supply
B	V Motor power supply
C	W Motor power supply
D	–
PE	PE Protective earth conductor

Servo motors EMMT-AS

Technical data

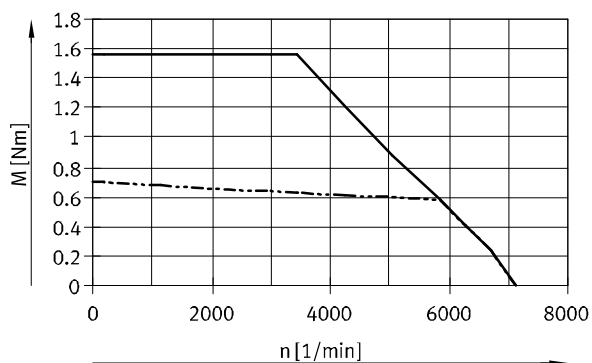
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Torque M as a function of rotational speed n

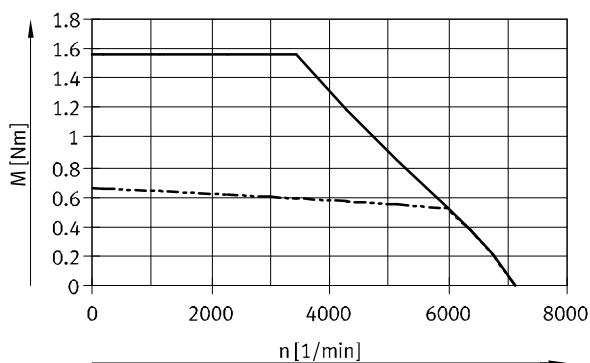
Flange size 60

Length S

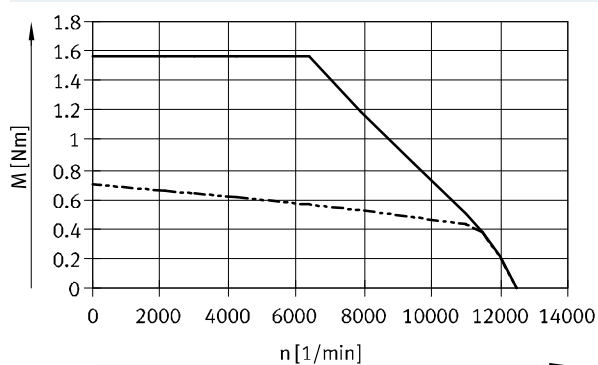
Winding LS (without brake)



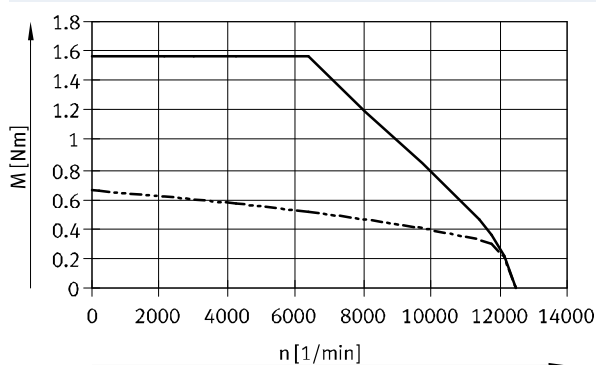
Winding LS-B (with brake)



Winding HS (without brake)

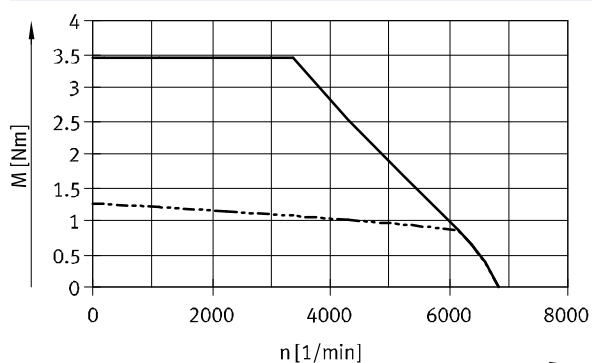


Winding HS-B (with brake)

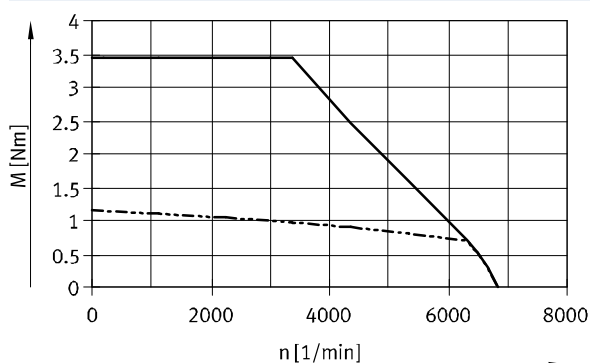


Length M

Winding LS (without brake)



Winding LS-B (with brake)



— Peak torque
- - - Nominal torque

 Note

Typical motor characteristic curve with nominal voltage and ideal motor controller.

Note max. permissible rotational speeds of attachments and built-in components (such as brake, encoder etc.).

Servo motors EMMT-AS

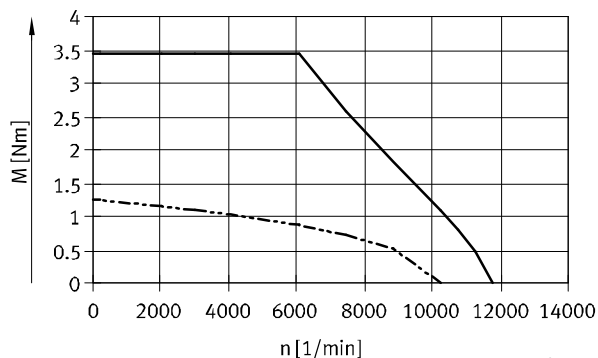
Technical data

Torque M as a function of rotational speed n

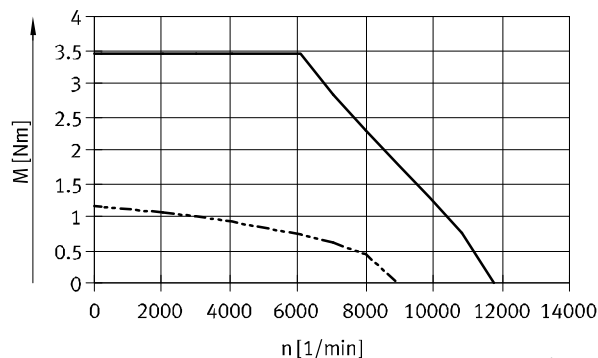
Flange size 60

Length M

Winding HS (without brake)

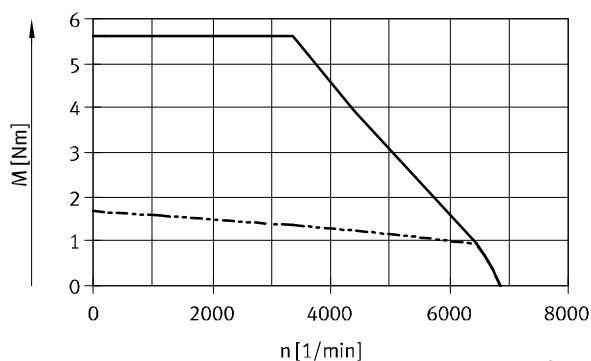


Winding HS-B (with brake)

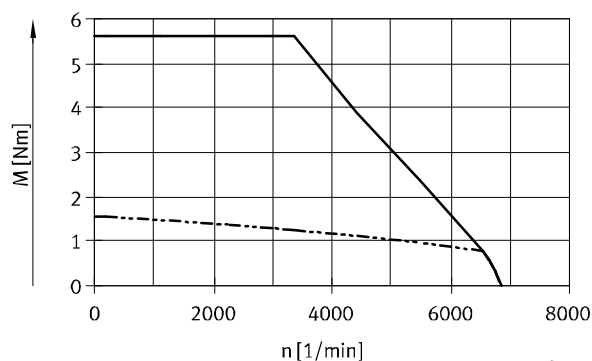


Length L

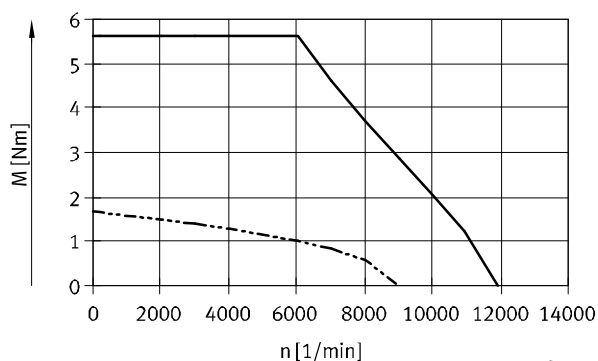
Winding LS (without brake)



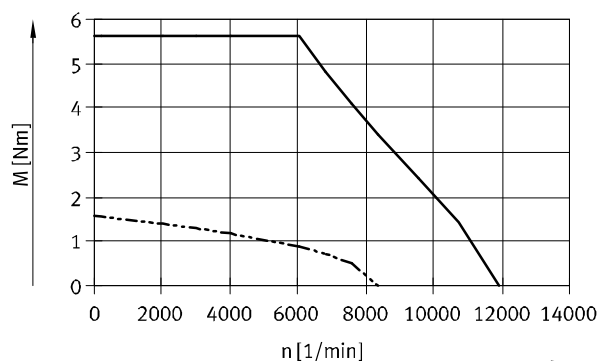
Winding LS-B (with brake)



Winding HS (without brake)



Winding HS-B (with brake)



— Peak torque
- - - Nominal torque

 Note

Typical motor characteristic curve with nominal voltage and ideal motor controller.

Note max. permissible rotational speeds of attachments and built-in components (such as brake, encoder etc.).

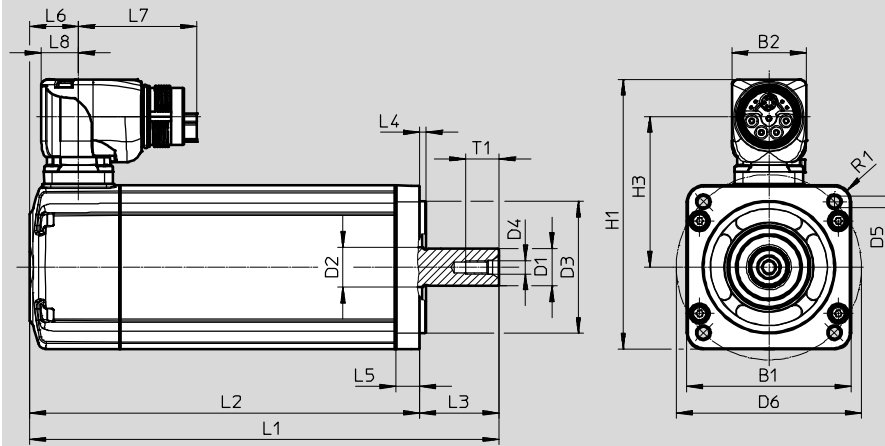
Servo motors EMMT-AS

Technical data

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Dimensions

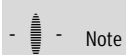
Download CAD data → www.festo.com



Size	Length	B1	B2	D1 Ø h6	D2 Ø	D3 Ø h7	D4	D5 Ø
60	S	62	28	14	15	50	M5	4.3
	M							
	L							

Size	Length	D6 Ø ±0.3	H1	H3	L1		L2	
						With brake	±2	With brake ±2
60	S	70	102	57	144.5	177.3	114.5	147.3
	M				164.5	197.3	134.5	167.3
	L				184.5	217.3	154.5	187.3

Size	Length	L3 +0.5/-0.2	L4 ±0.2	L5 ±0.3	L6	L7	L8	R1	T1
60	S	30	2.5	9	18.4	44.7	14	6	12.5
	M								
	L								



Note

Only motors without featherkey should be used in combination with parallel and axial kits (EAMM-U/EAMM-A).

Servo motors EMMT-AS

Technical data

Ordering data									
Length			Winding		Measuring unit			Part no.	Type code
Short	Medium	Long	Low voltage, standard	High voltage, standard	Encoder, single turn	Encoder, multi-turn			
Flange size 60									
■			■		■			5242196	EMMT-AS-60-S-LS-RS
■			■			■		5242197	EMMT-AS-60-S-LS-RM
■			■		■		■	5242198	EMMT-AS-60-S-LS-RSB
■			■			■	■	5242199	EMMT-AS-60-S-LS-RMB
■				■	■			5242200	EMMT-AS-60-S-HS-RS
■				■		■		5242201	EMMT-AS-60-S-HS-RM
■				■	■		■	5242202	EMMT-AS-60-S-HS-RSB
■				■		■	■	5242203	EMMT-AS-60-S-HS-RMB
	■		■		■			5242204	EMMT-AS-60-M-LS-RS
	■		■			■		5242205	EMMT-AS-60-M-LS-RM
	■		■		■		■	5242206	EMMT-AS-60-M-LS-RSB
	■		■			■	■	5242207	EMMT-AS-60-M-LS-RMB
	■			■	■			5242208	EMMT-AS-60-M-HS-RS
	■			■		■		5242209	EMMT-AS-60-M-HS-RM
	■			■	■		■	5242210	EMMT-AS-60-M-HS-RSB
	■			■		■	■	5242211	EMMT-AS-60-M-HS-RMB
		■	■		■			5242212	EMMT-AS-60-L-LS-RS
		■	■			■		5242213	EMMT-AS-60-L-LS-RM
		■	■		■		■	5242214	EMMT-AS-60-L-LS-RSB
		■	■			■	■	5242215	EMMT-AS-60-L-LS-RMB
		■		■	■			5242216	EMMT-AS-60-L-HS-RS
		■		■		■		5242217	EMMT-AS-60-L-HS-RM
		■		■	■		■	5242218	EMMT-AS-60-L-HS-RSB
		■		■		■	■	5242219	EMMT-AS-60-L-HS-RMB

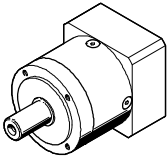
Ordering data – Modular product system

- M** Mandatory data
- O** Options

	EMMT	-	AS	-	60	-				-		-	R		
--	------	---	----	---	----	---	--	--	--	---	--	---	---	--	--

Servo motors EMMT-AS

Accessories

Ordering data – Gear unit				
	Motor interface	Gear ratio	Part no.	Type code
	60P	3	2297686	EMGA-60-P-G3-EAS-60
		5	2297687	EMGA-60-P-G5-EAS-60

Ordering data – Radial shaft seal				
	Description	Weight [g]	Part no.	Type code
	- Achieves degree of protection to IP67 together with the sealing ring - The shaft seal must be replaced after a maximum of 5000 operating hours, subject to the working conditions - Information on installation/replacement → www.festo.com/sp	13	8079786	EASS-RS-T-A-4P-15-30-B7

Servo motors EMMT-AS

Accessories

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Recommended cable cross section at an ambient temperature of 40 °C as a function of cable length and max. motor current

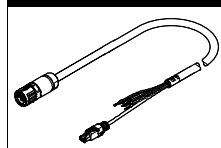
	Up to 5 m	Up to 10 m	Up to 20 m	Up to 30 m	Up to 40 m	Up to 50 m	Up to 75 m	Up to 100 m
EMMT-AS-60-...								

	0.75 mm ²
	1.5 mm ²

 **Note**

Depending on the drive controller used, the max. cable lengths may also be shorter.

Technical data – Motor cables		
For motor	EMMT-AS-60	
Type code	NEBM-M23G15-...	
Cable composition	4x 0.75 mm ² + 1x (2x 0.75 mm ²) + 1x (2x 0.24 mm ² + 2x2x0.15 mm ²)	
	Shielded	
Contamination level	1	
Min. bending radius		
With fixed cable installation	[mm]	≥ 48
With flexible cable installation	[mm]	≥ 90
Ambient temperature		
With fixed cable installation	[°C]	–40 ... +90
With flexible cable installation	[°C]	–25 ... +80
Cable property	Suitable for use with energy chains	
Degree of protection	IP67 (in assembled state)	
Material	TPE-U (PUR)	
Note on materials	RoHS-compliant	
CE marking (see declaration of conformity)	To EU Low Voltage Directive	

Ordering data – Motor cable			
	Cable length [m]	Part no.	Type code
	2.5	5251374	NEBM-M23G15-EH-2.5-Q7N-R3LEG14
	5	5251375	NEBM-M23G15-EH-5-Q7N-R3LEG14
	7.5	5251376	NEBM-M23G15-EH-7.5-Q7N-R3LEG14
	10	5251377	NEBM-M23G15-EH-10-Q7N-R3LEG14
	15	5251378	NEBM-M23G15-EH-15-Q7N-R3LEG14
	20	5251379	NEBM-M23G15-EH-20-Q7N-R3LEG14
	X length ¹⁾	5251373	NEBM-M23G15-EH-...-Q7N-R3LEG14

1) Cable length can be selected between 0.5 ... 99.9 m in increments of 0.1 m.

 **Note**

Cable lengths > 25 m possible following technical clarification.
For motors with holding brake, the max. cable length is 50 m.

Festo - Your Partner in Automation



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Subject to change