
















Synchronous Servo Motors MS2E

Bosch Rexroth. The Drive & Control Company

Product portfolio motors

Servo Motors						Accessories	
Synchronous					Asynchronous		Gearboxes
MS2N New Generation  M_{max} 3,5...360 Nm	MS2E New Generation ATEX  M_{max} 4...120 Nm	MSK Standard, ATEX  M_{max} 2...631 Nm	MKE EX d ATEX + UL  M_{max} 4...187 Nm	MSM Compact IndraDrive Cs  M_{max} 0,5...7,1 Nm	MAD/MAF Force-ventilated, water-cooled  P_N 1.8...120 kW	GTE, GTM  Cable 	
Kit motors rotating				Kit motors linear			
Synchronous			Asynchronous		Synchronous		
MBT Torque  M_{max} bis 13.800 Nm	MBS High-Speed  n_{max} bis 22.500 1/min	MSD Customized 	1MB High-Speed  n_{max} bis 20.000 1/min	MLF Iron core, water-cooled  F_{max} bis 21.500 N	ML3 Iron-core, self-cooled  F_{max} bis 4.500 N	MCL Iron-core, self-cooled  F_{max} bis 3.320 N	

MS2E

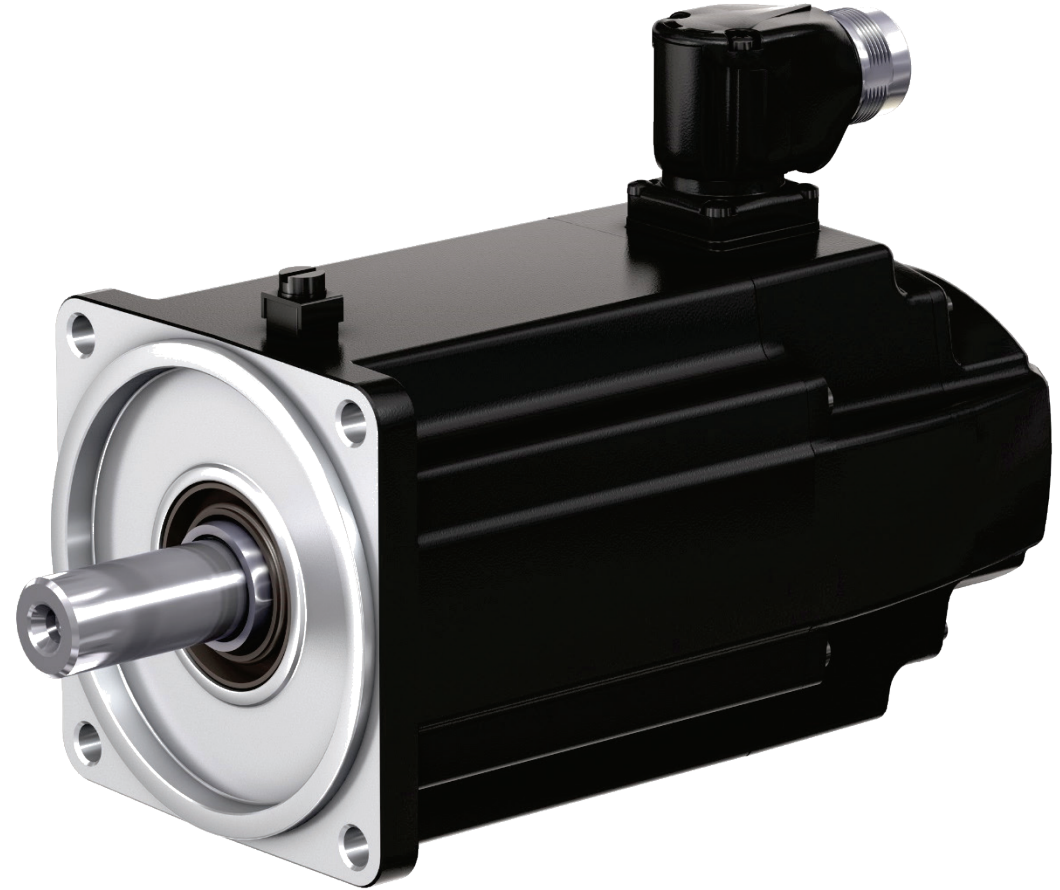


Servo Motors | MS2E

Überblick

The only servo motor for hazardous areas with single-cable connection

- Powerful for more performance and productivity
- Flexible configurability tailored adaption to every application
- Safety in hazardous ATEX areas Certified for gases and dusts, zone 2 and 22



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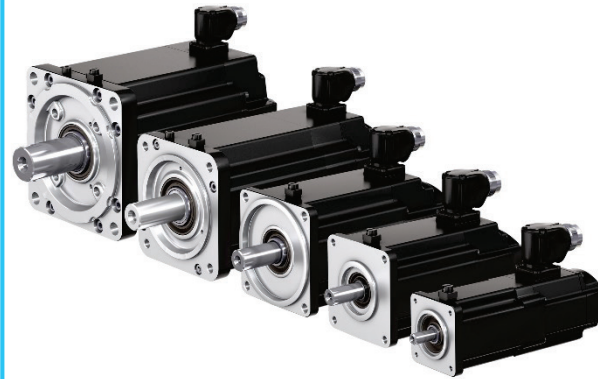
Highlights

5 sizes with up to
3 lengths
and 10 basic variants

Only ATEX-certified servo motor with
single-cable connection

ATEX-certified for gases and dusts,
zone 2 and 22, device group II,
category 3

Certifiziert.
Flexible.
Powerful.



High-resolution encoder
system with motor data
memory, digital type plate
and SafeMotion SIL2

Compact dimensions with more power per
volume and highest energy efficiency

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Übersicht Baureihe

Basic model kit

- 5 sizes, each with up to 3 lengths
- Overlapping torque ranges for optimal motor selection
- Self-cooling
- Digital encoder, single-/multiturn, SIL2 PLd
- Single-cable connection
- Additional ground terminal
- Shaft sealing ring, IP65

For hazardous ATEX areas

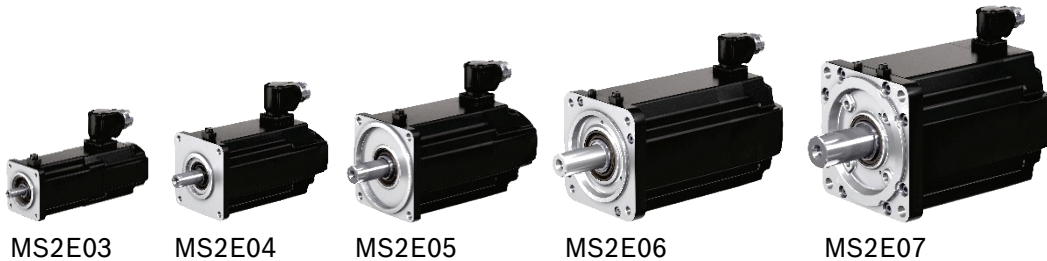
- Zones 2 (gas) and 22 (dust), device group II, category 3

Functional options

- Digital encoder single- or multiturn
- Holding brake
- Keyway

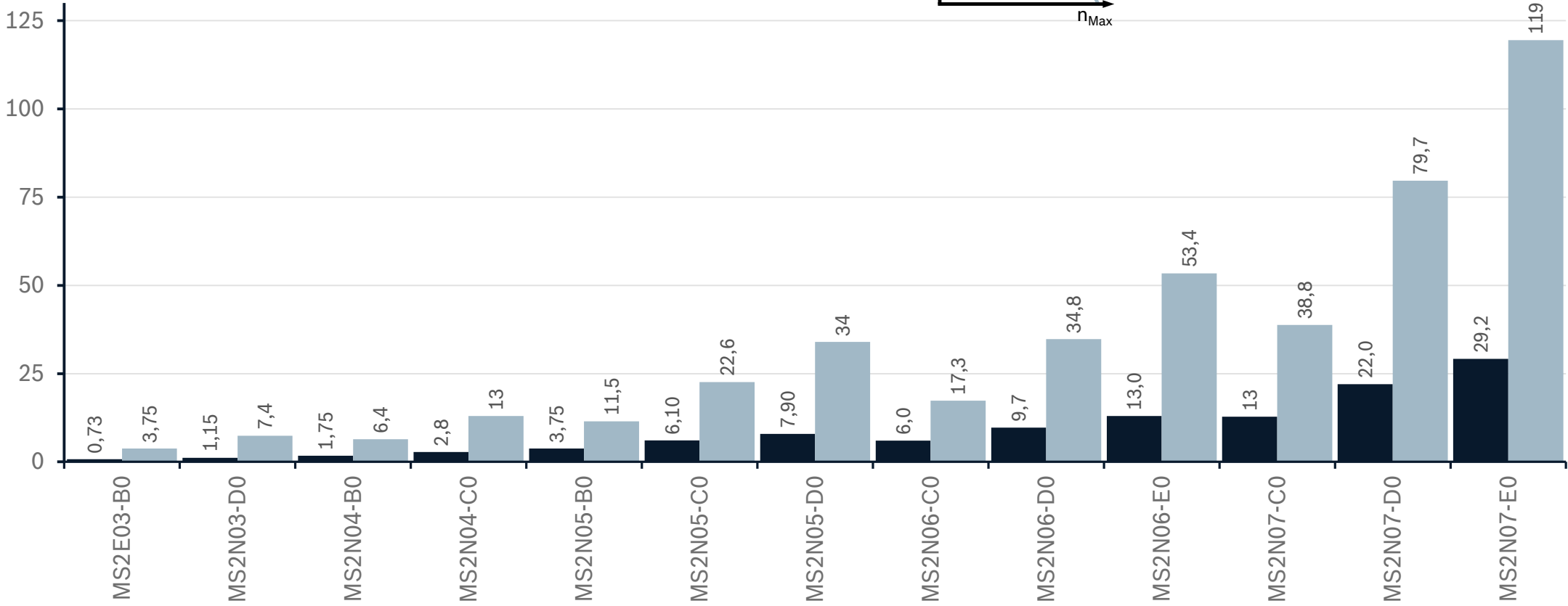
Accessories

- Impact protection acc. to ATEX standard



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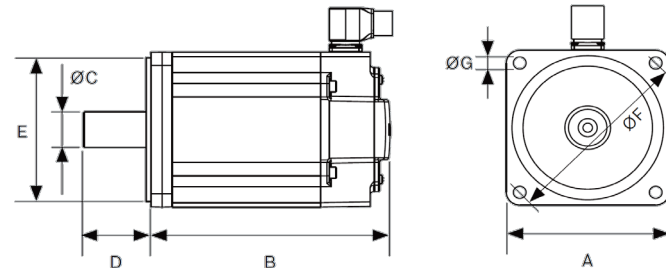
Torque range self-cooling



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Dimensions

MS2E	Length	Flange	Basic length	Brake	Shaft	Shaft length	Centering	Bolt circle	Mounting hole	Mass [kg]
		A	B	+B	C	D	E	F	G	m
03	B	58	163	+29	9	20	40	63	4,5	1,4
	D		203		11	23				2
04	B	82	162	+32,5	14	30	50	95	6,6	2,7
	C		194							3,7
05	B	98	188	+30	19	40	95	115	9	4
	C		224							5,9
	D		260							7,3
06	C	116	184	+37	24	50	95	130	9	6,4
	D		224							9
	E		264							11,5
07	C	140	205	+54	32	58	130	165	11	12
	D		263							17,5
	E		321							23



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Innovative single-cable connection

- Simple installation, reduced effort and space requirements
- Power, encoder information and temperature signals through a single motor cable
- For encoder ADVANCED with digital ACURO®link interface
- Approved immunity for up to 75 m cable length without additional components *
- Turnable plug M23 with SPEEDCON quick locking

ACURO®link



MS2E03



MS2E04



MS2E05



MS2E06



MS2E07

Only for I_{0_100k} up to 16 A

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Quick locking - SPEEDCON

- Simple, practical, time-saving
- For single- and dual-cable connection with M17, M23 and M40
- Put plug on → 90° clockwise rotation → locked
- Reduces installation time



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Encoder system

Performance	Singleturn Multiturn	Accuracy [arcsec]	Safe Motion	Single- cable	Interface	Motor size
ADVANCED	CS CM	±50"	SIL2 PLd	Ja	ACURO® link	MS2E03...07

Digital encoder system

- digital transmission of encoder data
- Position, motor temperature, motor data memory, etc.
- Digital type plate
- 4-wire system
- High resolution 20 bit, single- or multiturn
- SafeMotion SIL2 PLd

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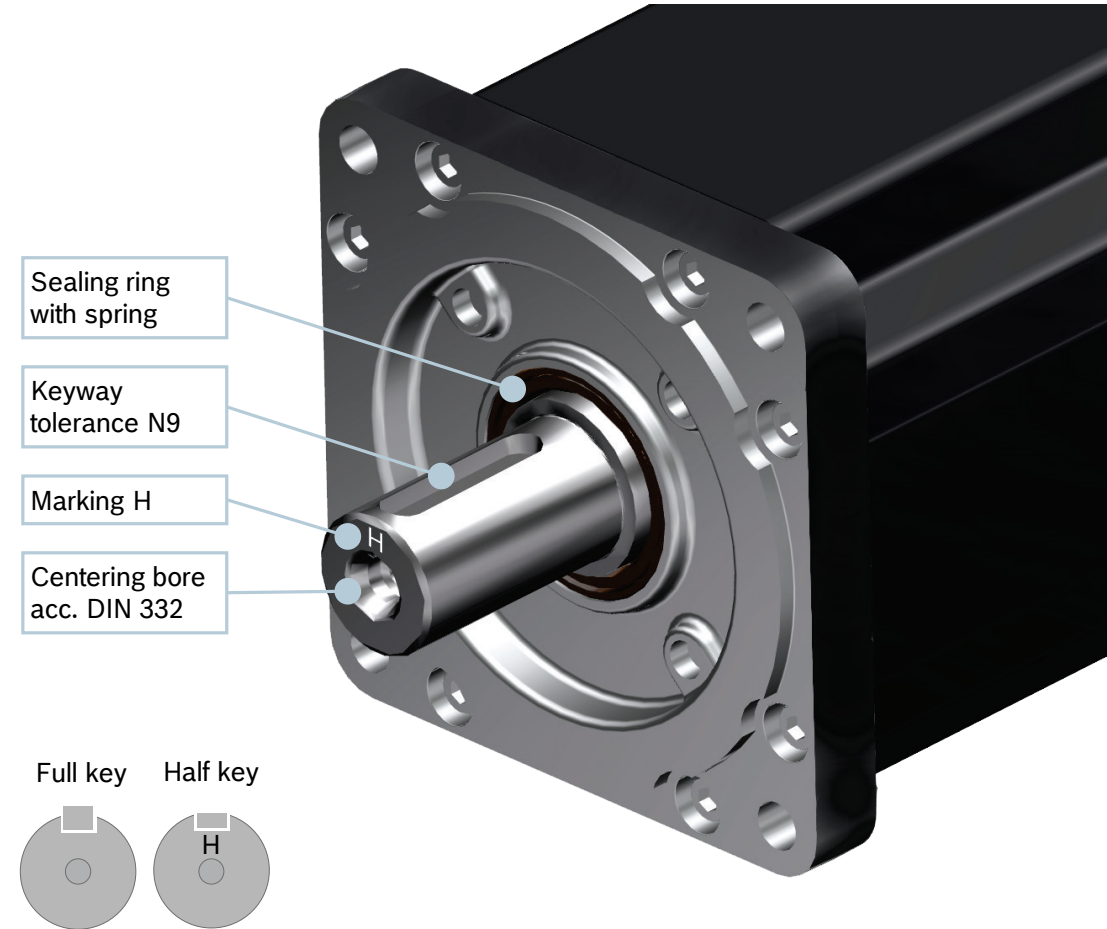
Drive shaft

Shaft options

- Plain, with shaft sealing ring = G
- Keyway, with shaft sealing ring = K
 - Degree of protect. IP65, with shaft sealing ring ex works
 - Centering bore standard ex works
 - Key not scope of delivery

Balancing with option "keyway"

- MS2E Half-key balancing (EN 60034)
Marking "H" on front of shaft
- MSK Full-key balancing



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Overview MS2E options

MS2E	Cooling		Encoder		Connec- tion	Shaft		Brake		Other		Acces- sories
	Self-cooling		ADVANCED Single Multi		Single-cable, plug M23 turnable	Plain with shaft seal. ring	Keyway with shaft seal. ring	no brake	with brake	Flange accuracy	Additional ground terminal	Impact protection
↓	N	CS	CM	S	G	K	0	1	N	-	SUP	
03	●	●	○	●	●	○	●	○	●	●	○	
04	●	●	○	●	●	○	●	○	●	●	○	
05	●	●	○	●	●	○	●	○	●	●	○	
06	●	●	○	●	●	○	●	○	●	●	○	
07	●	●	○	●	●	○	●	○	●	●	○	

● Standard ○ Option - not available

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Type code

M S 2 E 0 7 - D 0 B H N - C M S G 0 - N N N N N - N N

Product		Performance		Function		Mechanics		Other	
Product line	MS2N	Length	D	Encoder performance	C	Flange accuracy	N		
Size	07	Rotor inertia	0	Singe-/Multiturn	M	Bearings	N		
		Winding	BH	Electrical connection	U	Design incl. temperature sensor	N		
		Cooling	N	Shaft	G	Coating	N		
				Brake	0	Sonstige	N		

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ATEX - Conformity

EU Declaration of Conformity

- Acc. to ATEX directive 2014/34/EU
- Part of operator manual, shipped with every motor

Marking

- For areas with inflammable gas

Ex II 3G Ex ec IIB T155°C (T3) Gc X

- For areas with inflammable dust

Ex II 3D Ex tc IIIC T155°C Dc IP6X X

Special conditions of use "X"

- Ambient temperature
- Tensile load on motor cables
- Impact hazards to motor plugs
- Repair

→ Details see operator manual



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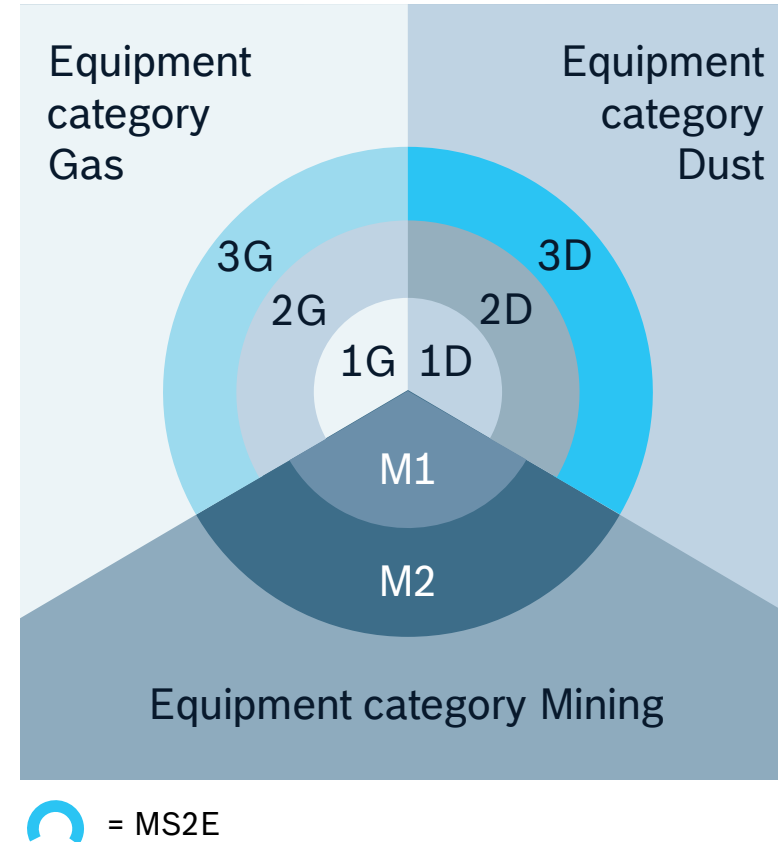
ATEX - Equipment category

Equipment category for Gases (G) and Dust (D)

- Device group II, category 3

"Gases" includes

- Gas
- Fog
- Vapor

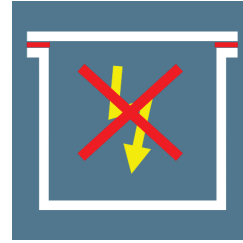


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ATEX - Types of protection

"Increased safety" Ex ec

- for gases/vapors (G) in zone 2
 - Device group II, category 3, protection level Gc
- Protection principle makes sure, there is no ignition source inside the motor



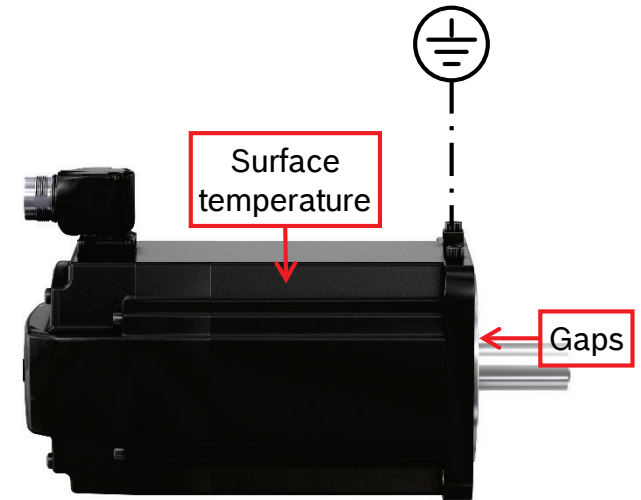
Symbol Ex ec

"Protection by enclosure" Ex tc

- for dusts (D) in zone 22
 - Device group II, category 3, protection level Dc
- Protection principle makes sure, that...
- no inflammable dust can intrude
 - the surface temperature is limited



Symbol Ex tc



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ATEX - Classification

Hazardous areas – classification and marking

Flammable substances	Presence of flammable substances	Potentially explosive areas	Marking of equipment			Equipment protection level (EPL)			
			Equipment group	Equipment category					
Gas Fog Vapor	continuous, long periods, frequent	Zone 0	II	1G	2G	3G	Ga	Gb	Gc
	occasional	Zone 1							
	normally not, rarely, short-time	Zone 2							
Dust	continuous, long periods, frequent	Zone 20	II	1D	2D	3D	Da	Db	Dc
	occasional	Zone 21							
	normally not, rarely, short-time	Zone 22							

Gas Fog Vapor	Increased safety	Ex ec
Dust	Protection by enclosure	Ex tc
	Protection principle	Type of protection

II 3G Ex ec IIB T155°C (T3) Gc X
II 3D Ex tc IIIC T155°C Dc IP6X X

MS2E - Marking

Explosion groups and temperature classes

Explosion group	Examples <small>(only excerpt of potentially explosive substances)</small>								
	IIA	IIB	IIIC	Acetone, Ammonia, Methane, Propane	1,2 Dichloroethan, Cyclohexanon, n-Butane	Gasoline, Diesel, heating oil, kerosine, n-Hexane	Acetaldehyde		
			Lighting gas, Acrylonitrile	Ethylene alcohol, Ethylene, Ethylene oxide	Ethylene glycol, Hydrogen sulphide	Ethyl methyl ether			
			Hydrogen	Acetylene		Carbon disulfide			
			T1 ≤ 450 °C						
			T2 ≤ 300 °C						
			T3 ≤ 200 °C						
			T4 ≤ 135 °C						
			T5 ≤ 100 °C						
			T6 ≤ 85 °C						
<small>Temperature class indicates max. permissible surface temperature of equipment. For protection against combustible dust the max. permissible surface temperature is indicated directly.</small>									
IIIA	IIIB	IIIC	Electrically conductive dusts			IP6X	Dust-proof	X	Special conditions must be observed, see manuals
			Non-conductive dusts						
			Ignitable fibers						
Dust group		Examples		Protection		Additional note			

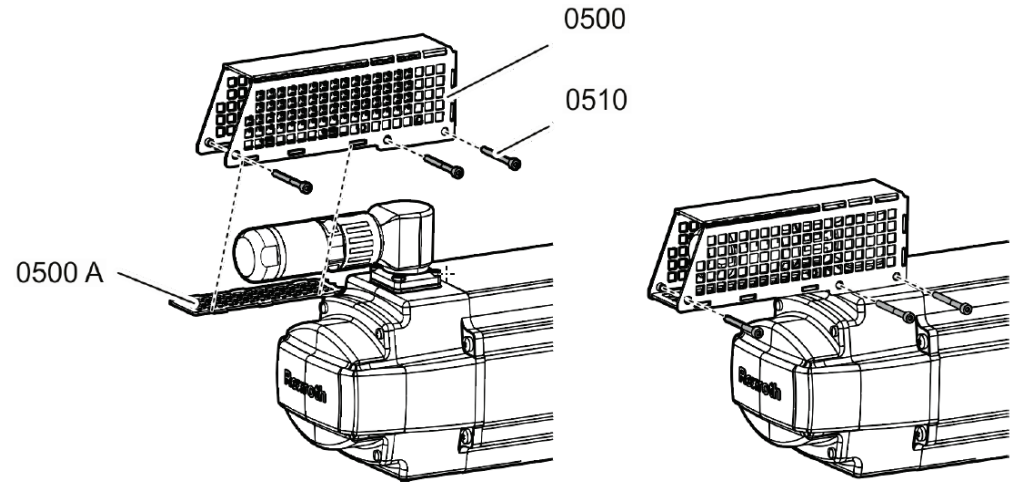
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Accessories

Impact protection SUP-M01-MS2E

- Optional protection against mechanical impact on the motor plug
- Protection against unwanted unlocking of the motor plug during operation
- After an impact a damaged protection SUP-M01 must be replaced
- Securing operational safety acc. to ATEX-standard EN 60079

→ The machine operator has to determine the necessity by risk analysis (see notes in operator manual of MS2E)



R911392284
SUP-M01-MS2E
Mounting instructions incl.

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Information sources

Deutsch

- MS2E Product catalog
- MS2E Project planning manual
- MS2E Operator manual

English

- MS2E Product catalog
- MS2E Project planning manual
- MS2E Operator manual

- Public media directory
- IndraSize
- Product catalog online

i.V.

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