

Key features

FESTO

→ 14

At a glance

The rotary module ERMB facilitates unlimited and flexible rotation angles. The output interface is the same as on the semi-rotary drive DRQD.

The motor's power is transmitted to the output pinion by means of a circulating toothed belt with a specific transmission ratio. The drive and

output pinions run on separate bearings. The toothed belt is pretensioned at the factory by means of an eccentric tensioning roller.

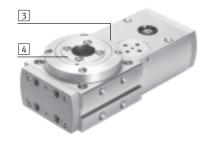
Advantages:

- Stable arrangement of the output shaft bearings
- Pretensioned toothed belt means zero backlash
- Compact design

The technology in detail

- 1 Interface with the motor, via axial kit
- 2 Mounting interface
- 3 Mounting for proximity sensor SIEN in the retaining ring
- 4 Output interface: Same as on the semi-rotary drive DRQD (with larger through-hole)

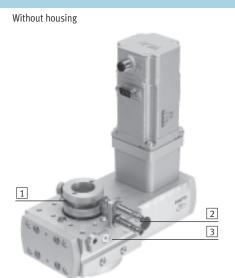




Sensing kit EAPS as an accessory

The sensing kit facilitates monitoring of the angle of rotation using adjustable cams. It can also be used for reference checking.

- 1 Trip cam support
- 2 Proximity sensor SIEN
- 3 Sensor bracket
- 4 Housing



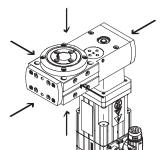


Mounting and installation options

Mounting option

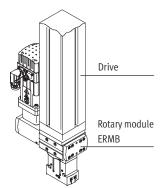
2

The rotary module can be attached on six sides.

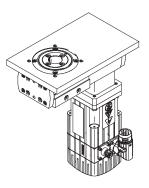


Installation option

As a front end

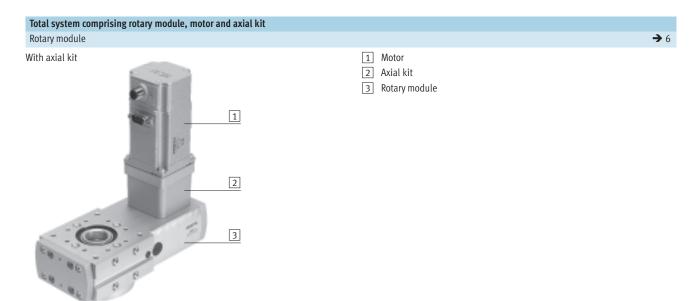


As a rotary table in a plate



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Key features









- 1 Servo motor EMMS-AS
- 2 Stepper motor EMMS-ST
- 3 Motor unit MTR-DCI

Note

A range of specially adapted complete solutions is available for the rotary module ERMB.

Motor controllers





Technical data → Internet: motor controller

- 1 Servo motor controller CMMP-AS, SEC-AC
- 2 Stepper motor controller CMMS-ST

Axial kit



→16

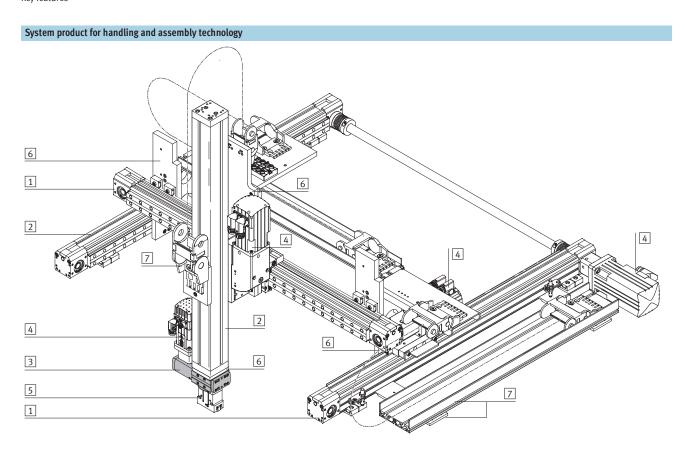


- Motor flange
- Coupling housing
- Coupling
- Screws



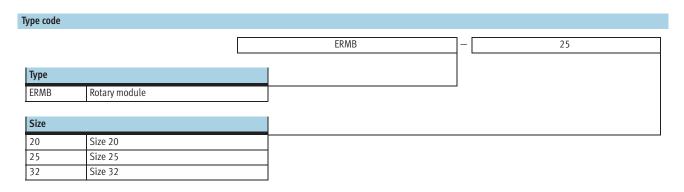


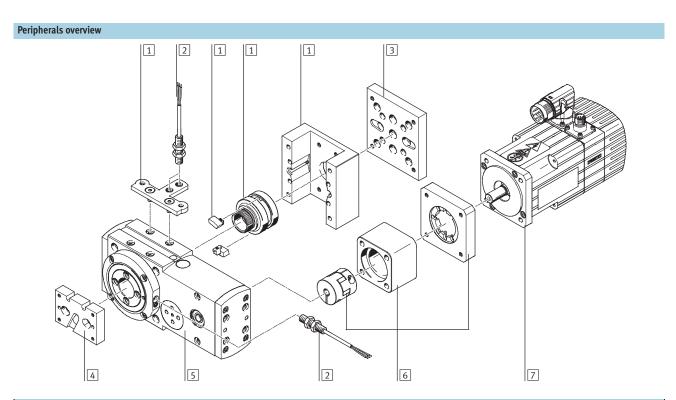
Rotary modules ERMB, electric Key features



Syste	m components and accessories			
		Brief description	→ Page/Internet	
1	Axes	Wide range of combinations possible within handling and assembly technology	axes	
2	Guide axes	For extending force and torque capacity in multi-axis applications	guide axes	
3	Rotary module	Wide range of combinations possible within handling and assembly technology	rotary module	
4	Motors	Servo or stepper motors, with or without gear unit	motor	
5	Gripper	Wide range of variations possible within handling and assembly technology	gripper	
6	Adapters	For drive/drive and drive/gripper connections	adapter kit	
7	Installation components	For a clean, safe layout of electrical cables and tubing	installation component	

Rotary modules ERMB, electric Type code and peripherals overview





Acces	sories		
	Туре	→ Page/Internet	
1	Sensing kit	For indicating impermissible swivel angles, i.e. obstacles or areas that cannot be	19
	EAPS	approached can be sensed using proximity sensors	
		(comprising: housing, trip cam support, 2 cams and sensor bracket)	
2	Proximity sensor	For use as a signal or safety check	19
	SIEN		
3	Adapter kit	Interface between the rotary module and drive	adapter kit
		(the rotary module can be attached to a drive with or without a sensing kit)	
4	Adapter kit	Interface between the rotary module and gripper	adapter kit
5	Rotary module	Facilitates unlimited and flexible rotation angles	6
	ERMB		
6	Axial kit	For axial motor mounting	16
	EAMM-A	(comprising: coupling, coupling housing and motor flange)	
7	Motor	Motors specially matched to the axis, with or without brake	16
	EMMS, MTR-DCI	The motor can be turned by 90° for mounting, depending on requirements.	
		This means the connection side can be freely selected	



Rotary modules ERMB, electric Technical data





General technical data						
Size		20	25	32		
Constructional design		Electromechanical rotary module v	vith toothed belt			
Drive shaft \varnothing	[mm]	6	8	12		
Rotation angle		Infinite				
Repetition accuracy ¹⁾						
with servo motor EMMS-AS	[°]	±0.03				
with stepper motor EMMS-ST ²⁾	[°]	±0.08				
with motor unit MTR-DCI	[°]	±0.05				
Positioning times		→ 8				
Transmission ratio		4.5:1	4:1	3:1		
Position sensing		Via proximity sensor				
Mounting position		Any				
Product weight	[g]	850	1,460	3,250		

- As per FN 942 027
 Depends on the encoder resolution

Mechanical data				
Size		20	25	32
Max. driving torque	[Nm]	0.7	2.2	8.5
Max. output torque ¹⁾	[Nm]	3.15	8.8	25.5
No-load driving torque ²⁾	[Nm]	< 0.07	< 0.18	≤ 0.5
Max. input speed	[rpm]	1,350	1,200	900
Max. output speed	[rpm]	300	300	300
Max. mass moment of inertia ³⁾				
with servo motor EMMS-AS	[kgcm ²]	50	200	1,000
with stepper motor EMMS-ST	[kgcm ²]	30	100	500
with motor unit MTR-DCIG7	[kgcm ²]	50	300	1,000
with motor unit MTR-DCIG14	[kgcm ²]	200	1,200	3,700
Toothed belt pitch		2	3	5
Hollow shaft \varnothing	[mm]	20	24	28

- 1) Output torque less friction depends on speed
- 2) At maximum speed
 3) Depends on the size of the motor. Suitable motors →16

Operating and environmental conditions							
Size		20	25	32			
Ambient temperature	[°C]	-10 +60					
Protection class		IP20					
Corrosion resistance class CRC ¹⁾		2					
Noise level $\overline{L}_{pEq}^{2)}$	[dB (A)]	32	49	53			

- 1) Corrosion resistance class 2 as per Festo standard 940 070 Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.
 - CRC 2 does not apply to ball bearings, retaining rings, screws < M5
- 2) In combination with servo motor EMMS-AS



Technical data

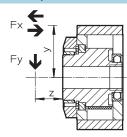


Materials Sectional view

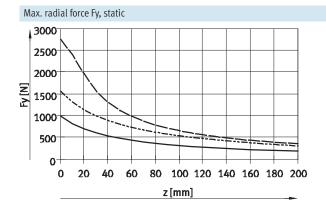
Rota	Rotary module							
1	End cap	Anodised aluminium						
2	Output shaft	Wrought aluminium alloy, anodised						
3	Housing	Wrought aluminium alloy, anodised						
4	Drive shaft	High-alloy stainless steel						
5	Toothed belt	Polychloroprene with glass fibres						
-	Note on materials	Contains paint wetting impairment substances						

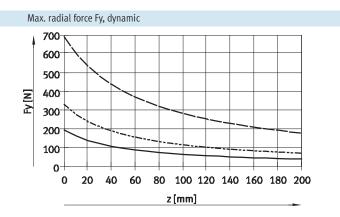
Maximum radial and axial force Fx/Fy on the output shaft as a function of the distance y/z

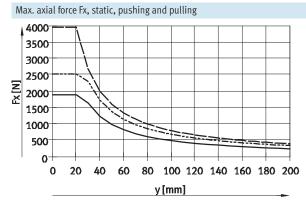
If the rotary module is subjected to several forces at once, the following equation must be satisfied in addition to the maximum loads indicated below.

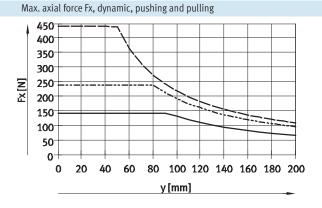


$$\frac{F_{y (2)}}{F_{y, \text{max. (z)}}} + \frac{F_{x, \text{ pushing (v)}}}{F_{x, \text{ pushing,max. (v)}}} + \frac{F_{x, \text{ pulling (v)}}}{F_{x, \text{ pulling,max. (v)}}} \leq 1$$









ERMB-20
ERMB-25
ERMB-32

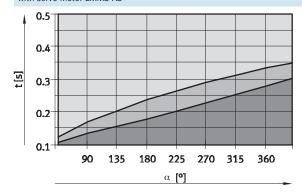
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Technical data



Size 20

with servo motor EMMS-AS

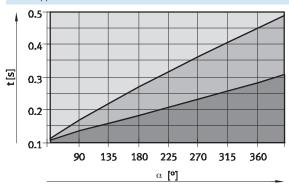


Extended operating range

Typical operating range, depending on motor size and load inertia

Unrealisable range

with stepper motor EMMS-ST

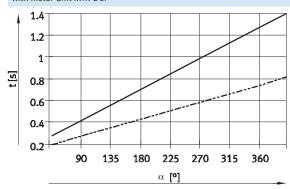


Extended operating range

Typical operating range, depending on motor size and load inertia

Unrealisable range

with motor unit MTR-DCI



Limit line for MTR-DCI-32-G14

at 0 ... 200 kgcm²
Limit line for MTR-DCI-32-G7
at 0 ... 50 kgcm²

Note

The positioning time t ends with the controller signal MC (motion complete), i.e. on the drive side. Increased positioning times are to be expected at the output shaft depending on the motor type and eccentricity of the moving load.

For servo motor: 50 ... 100 ms For stepper motor: 100 ... 200 ms

Not

The "PositioningDrives" design tool compiles the optimum combination of rotary module and motor for the respective application with respect to mass moment of inertia, positioning time and positioning accuracy.

→www.festo.com



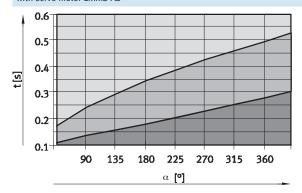
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Technical data

Positioning time t as a function of the rotation angle α in combination with motor EMMS-.../motor unit MTR-DCI-...

Size 25

with servo motor EMMS-AS

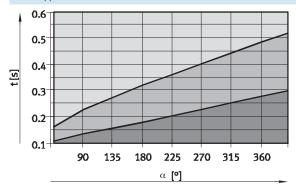


Extended operating range

Typical operating range, depending on motor size and load inertia

Unrealisable range

with stepper motor EMMS-ST

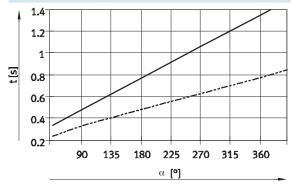


Extended operating range

Typical operating range, depending on motor size and load inertia

Unrealisable range

with motor unit MTR-DCI



Limit line for MTR-DCI-42-G14 at 0 ... 1,200 kgcm²

------ Limit line for MTR-DCI-42-G7 at 0 ... 300 kgcm²

Note

The positioning time t ends with the controller signal MC (motion complete), i.e. on the drive side. Increased positioning times are to be expected at the output shaft depending on the motor type and eccentricity of the moving load.

For servo motor: 50 ... 100 ms For stepper motor: 100 ... 200 ms

Note

The "PositioningDrives" design tool compiles the optimum combination of rotary module and motor for the respective application with respect to mass moment of inertia and positioning time, positioning accuracy.

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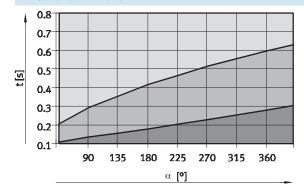
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Technical data



Size 32

with servo motor EMMS-AS

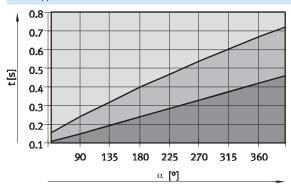


Extended operating range

Typical operating range, depending on motor size and load inertia

Unrealisable range

with stepper motor EMMS-ST

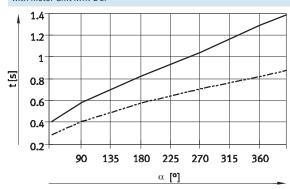


Extended operating range

Typical operating range, depending on motor size and load inertia

Unrealisable range

with motor unit MTR-DCI



Limit line for MTR-DCI-52-G14 at 0 ... 3,700 kgcm²

Limit line for MTR-DCI-52-G7 at 0 ... 1,000 kgcm²

Note

The positioning time t ends with the controller signal MC (motion complete), i.e. on the drive side. Increased positioning times are to be expected at the output shaft depending on the motor type and eccentricity of the moving load.

For servo motor: 50 ... 100 ms For stepper motor: 100 ... 200 ms

Not

The "PositioningDrives" design tool compiles the optimum combination of rotary module and motor for the respective application with respect to mass moment of inertia and positioning time, positioning accuracy.

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Technical data



Information on service life characteristic values

Within the framework of product qualification, the specified statistic load changes/switching cycles were achieved with 3 samples.

Definition of load change/switching cycle:

A switching cycle corresponds to two load changes: position A to position B and back.

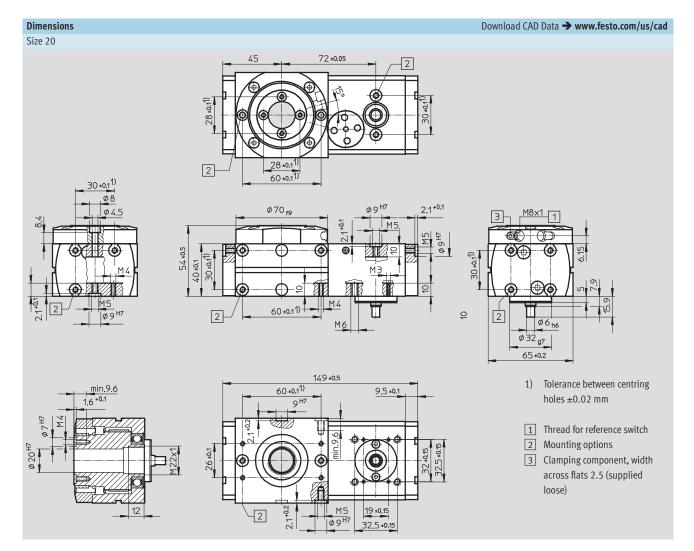
Size		20	25	32
Guide value load changes	[Mio.]	30	40	40
Guide value switching cycles	[Mio.]	15	20	20
Mass moment of inertia at output	[kgcm ²]	24	80	400
Medium angle acceleration at output	[°/sec ²]	28,000	20,000	12,000
Maximum angle speed at output	[°/sec]	1,800	1,800	1,800

The above specified statististic load change/switching cycles were achieved under the following defined operating conditions: horizontally hanging fitting, 180° swivel angle,

frequency 2 Hz, mass moment of inertia, acceleration (jerk-free) and max. angle speed as specified in the table, room temperature (23 ±5) °C.

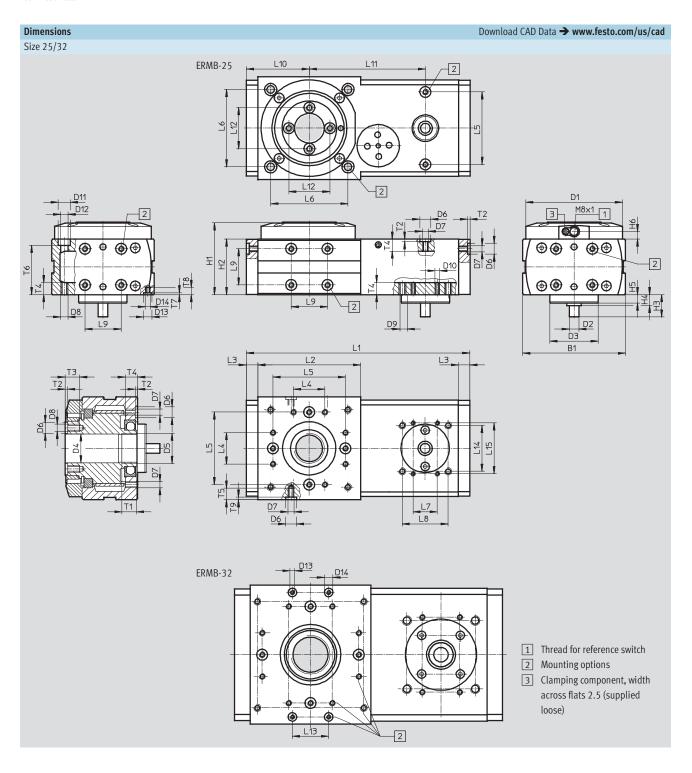
Under different operating conditions, a shorter or longer service life is possible.

The conditions of use and safety regulations specified in the product documentation must also be taken into account.





Rotary modules ERMB, electric Technical data



Rotary modules ERMB, electric Technical data

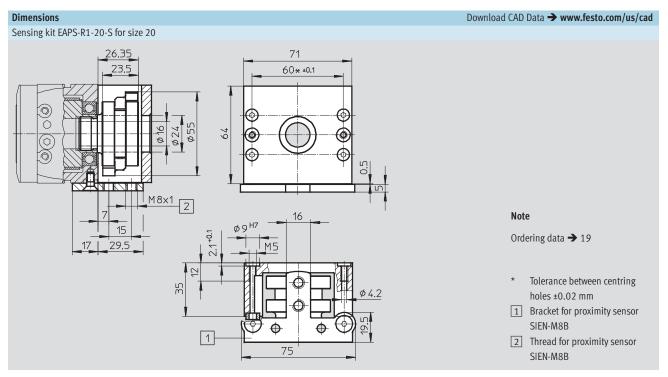
Size	B1	D1	D2	D3		D4		D	5		06	D7	D8	D9	D10
		Ø	Ø	Ø		Ø				(Ø				
	±0.2	f9	h6	g7		H7				H	17				
25	85	80	8	40		24		M25	5x1		9	M5	M6	M6	M4
32	115	112	12	60		28		M32	x1.5		9	M5	M6	M8	M5
Size	D11	D12	D13	D14		H1		H:	2	H	13	H4	H5	Н6	L1
	Ø	Ø	Ø												
			H7			±0.5	5	±0	.1						±0.5
25	10	6.2	-	-		60		40	6	18	3.45	-	7	6.3	185
32	10	6.2	7	M4		76.0	5	60	0	2	3.5	6.5	6	9.4	222
Size	L2	L3	L4	L5 ¹⁾	L	L6	L	.7	L8		L9 ¹⁾	L10	L11	L12 ¹⁾	L13 ¹⁾
	±0.2	±0.1	±0.1	±0.1			±0	.15	±0.1	.5	±0.1		±0.05	±0.1	±0.1
25	85	9.5	26	60	64:	±0.15	2	.0	38		30	52	96	34	-
32	100	13	36	80	88	±0.1	3	1	56.	5	40	63	108	45	30
Size	L14	L15	L16	T1	1	Т2	T	3	T4		T5	T6	T7	T8	T9
	±0.15	±0.15	+0.2		+(0.1	m	in.			min.		+0.1	min.	+0.2
25	38	42	-	12	2	2.1	1	2	10		9.6	40.8±0.2	-	-	2.1
32	56.5	62	103	12	2	2.1	1	2	10		10	54.3	1.6	7.6	2.1

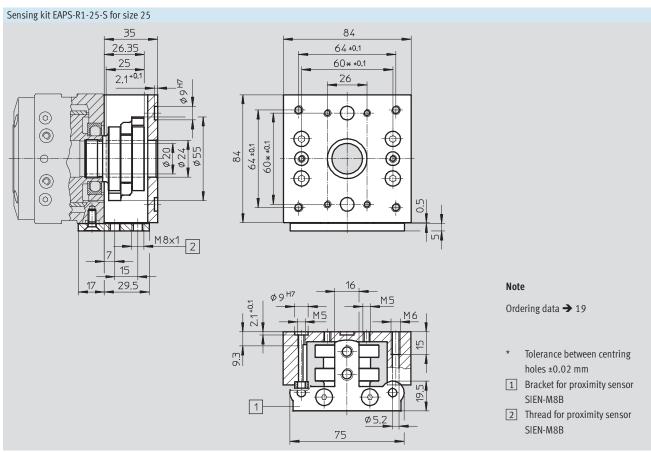
¹⁾ Tolerance between centring holes ± 0.02 mm



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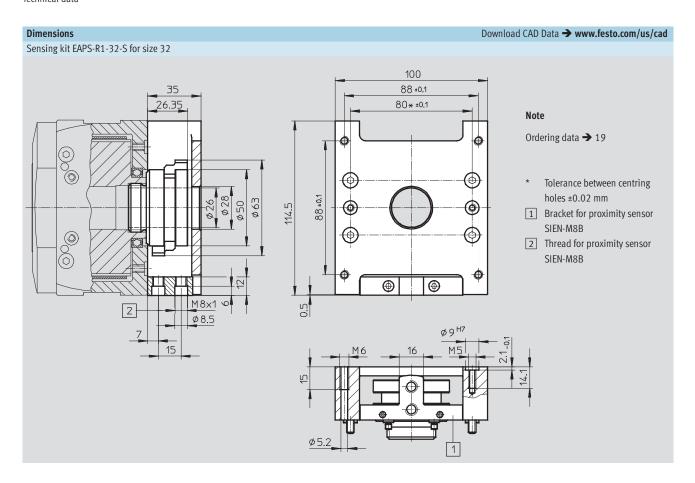
Technical data







Rotary modules ERMB, electric Technical data





Rotary modules ERMB, electric Technical data and accessories

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Ordering data	Ordering data							
	Size	Part No.	Туре					
	20	552 706	ERMB-20					
	25	552 707	ERMB-25					
	32	552 708	ERMB-32					

Accessories

Motor/motor unit	oinations with axial kit – Without ge Axial kit								
Motor/motor unit	Axial Kit	Axial kit comprising:	· · · ·						
		Motor flange	Coupling	Coupling housing					
			O						
Туре	Part No.	Part No.	Part No.	Part No.					
	Туре	Туре	Туре	Туре					
ERMB-20									
with servo motor									
EMMS-AS-40	560 281	-	558 312	560 280					
	EAMM-A-D32-35A-40A		EAMC-30-32-6-6	EAMK-A-D32-35-40A					
with stepper motor									
EMMS-ST-42	543 148	552 164	543 419	552 155					
	EAMM-A-D32-42A	EAMF-A-28B-42A	EAMC-16-20-5-6	EAMK-A-D32-28B					
EMMS-ST-57-S	550 980	530 081	551 002	551 006					
	EAMM-A-D32-57A	EAMF-A-44A/B-57A	EAMC-30-32-6-6.35	EAMK-A-D32-44A					
with motor unit									
MTR-DCI-32S	543 149	-	543 420	552 156					
	EAMM-A-D32-32B		EAMC-16-20-6-6	EAMK-A-D32-32B					
FD14D 4-7									
ERMB-25									
with servo motor	15/2452	LE20.0/2	F/2 /22	552457					
EMMS-AS-55	543 153	529 942	543 423	552 157					
EMMS-AS-70-S	EAMM-A-D40-55A 550 981	EAMF-A-44A/B-55A 529 943	EAMC-30-32-8-9 551 004	EAMK-A-D40-44A 552 157					
EIVIIVI.3-A3-/U-3	EAMM-A-D40-70A	EAMF-A-44A/B-70A	EAMC-30-32-8-11	EAMK-A-D40-44A					
with stepper motor	LAWWY-A-D-104	LAMIT-A-44A/D-70A	EAWIC-30-32-0-11	LAMINTATUTOTATA					
EMMS-ST-57	543 154	530 081	543 421	552 157					
LITING-31-37	EAMM-A-D40-57A		EAMC-30-32-6.35-8	EAMK-A-D40-44A					
with motor unit	LAMMIN-A-D-7/A	EAMF-A-44A/B-57A	E-101C-30-32-0.33-0	בייייייייייייייייייייייייייייייייייייי					
MTR-DCI-42SG7	E/2 1EE		E42 422	EE21E0					
WIIK-DCI-425U/	543 155 EAMM-A-D40-42B	-	543 422 EAMC-30-32-8-8	552 158 EAMK-A-D40-42B					
MTR-DCI-42SG14			543 422						
WIIK-DCI-425614	543 156	-	1	552 159					
	EAMM-A-D40-42C		EAMC-30-32-8-8	EAMK-A-D40-42C					



Rotary modules ERMB, electric Accessories

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Permissible axis/motor comb	oinations with axial kit – Without	gear unit		
Motor/motor unit	Axial kit	Axial kit comprising:		
		Motor flange	Coupling	Coupling housing
			D. 18	
Туре	Part No.	Part No.	Part No.	Part No.
	Туре	Туре	Туре	Туре
ERMB-32				
with servo motor				
EMMS-AS-70-M	543 161	529 945	543 424	552 160
	EAMM-A-D60-70A	EAMF-A-64A/B-70A	EAMC-42-50-11-12	EAMK-A-D60-64B
EMMS-AS-100-S	550 983	529 947	551 005	551 007
	EAMM-A-D60-100A	EAMF-A-64A/C-100A	EAMC-42-50-12-19	EAMK-A-D60-64C
with stepper motor			<u> </u>	
EMMS-ST-87-M	543 162	533 140	543 424	552 160
EMMS-ST-87-L	EAMM-A-D60-87A	MTR-FL64-ST87	EAMC-42-50-11-12	EAMK-A-D60-64B
with motor unit	•	•	, 	·
MTR-DCI-52SG7	543 163	-	533 709	552 161
	EAMM-A-D60-52B		EAMC-42-50-12-12	EAMK-A-D60-52B
MTR-DCI-52SG14	543 164	-	533 709	552 162
	EAMM-A-D60-52C		EAMC-42-50-12-12	EAMK-A-D60-52C

Permissible axis/motor co	mbinations with axial kit –	With gear unit			
Gear unit	Motor	Axial kit	Axial kit comprising:		
			Motor flange	Coupling	Coupling housing
			O H	D. M. E.	
Туре	Туре	Part No.	Part No.	Part No.	Part No.
		Туре	Туре	Туре	Туре
ERMB-25					
with servo motor					
EMGA-40-P-G3-SAS-40	EMMS-AS-40	560 282	550 986	558 029	552 157
		EAMM-A-D40-40G	EAMF-A-44A/B-40G	EAMC-30-32-8-10	EAMK-A-D40-44A
	•				
ERMB-32					
with servo motor					
EMGA-60-P-GSAS-55	EMMS-AS-55	560 283	550 987	543 424	552 160
		EAMM-A-D60-60G	EAMF-A-64A/B-60G	EAMC-42-50-11-12	EAMK-A-D60-64B
EMGA-60-P-G3-SAS-70	EMMS-AS-70	560 283	550 987	543 424	552 160
		EAMM-A-D60-60G	EAMF-A-64A/B-60G	EAMC-42-50-11-12	EAMK-A-D60-64B

Note

Note the maximum permissible drive torque of the ERMB. The motor current may need to be limited.

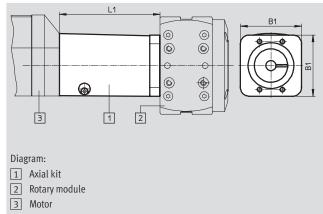
Rotary modules ERMB, electric Accessories

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Axial kit EAMM-A-...

Material: Coupling housing, coupling hubs, motor flange: Aluminium Screws: Galvanised steel Clamping component: Steel, corrosion resistant





General technical data									
EAMM-A		D32-				D40-			
		32B	35-40A	42A	57A	42B	42C	55A	57A
Transferable torque	[Nm]	1.1	4.0	0.8	4.0	8.0			6.0
Mass moment of inertia	[kgmm ²]	0.3	5.87	0.3	5.87	5.87			
Mounting position	Any			Any					

EAMM-A		D40-		D60-						
		70A	40G	52B	52C	70A	87A	100A	60G	
Transferable torque	[Nm]	8.0		14.0		12.0		14.0	12.0	
Mass moment of inertia [kgmm ²] 5.87		35.5								
Mounting position		Any								

Operating and environmental conditions					
Ambient temperature	[°C]	0 50			
Storage temperature	[°C]	-25 +60			
Protection class ¹⁾		IP40			
Relative air humidity	[%]	0 95			

¹⁾ Only with combined attachment of motor and axis

Dimensions and ordering data				
Туре	B1	L1	Weight [g]	Part No. Type
EAMM-A-D32-32B	45	43	150	543 149 EAMM-A-D32-32B
EAMM-A-D32-35A-40A	40	46	220	560 281 EAMM-A-D32-35A-40A
EAMM-A-D32-42A	45	48	140	543 148 EAMM-A-D32-42A
EAMM-A-D32-57A	45	50.5	270	550 980 EAMM-A-D32-57A
EAMM-A-D40-42B	53.5	88	340	543 155 EAMM-A-D40-42B
EAMM-A-D40-42C	53.5	101	370	543 156 EAMM-A-D40-42C
EAMM-A-D40-40G	53.5	55.5	350	560 282 EAMM-A-D40-40G
EAMM-A-D40-55A	53.5	49.2	350	543 153 EAMM-A-D40-55A
EAMM-A-D40-57A	53.5	50.5	350	543 154 EAMM-A-D40-57A
EAMM-A-D40-70A	53.5	52	410	550 981 EAMM-A-D40-70A
EAMM-A-D60-52B	74	112	930	543 163 EAMM-A-D60-52B
EAMM-A-D60-52C	74	126	1,020	543 164 EAMM-A-D60-52C
EAMM-A-D60-60G	74	71.4	830	560 283 EAMM-A-D60-60G
EAMM-A-D60-70A	74	63.2	750	543 161 EAMM-A-D60-70A
EAMM-A-D60-87A	74	64.7	890	543 162 EAMM-A-D60-87A
EAMM-A-D60-100A	74	78.2	1,170	550 983 EAMM-A-D60-100A



Rotary modules ERMB, electric Accessories

FESTO

Ordering data – Centring sleeves									
	For size	Brief description	Number	Part No.	Туре	PU ¹⁾			
	20	For centring loads and attachments	2	186 717	ZBH-7	10			
		(centring sleeves are included in the scope	2	150 927	ZBH-9				
	25, 32	of delivery of the rotary module)	4	1					

1) Packaging unit quantity

Ordering data						
	For size	Brief description	Weight [g]	Part No.	Туре	PU ¹⁾
Sensing kit EAPS	-S					
(6.)	20	Kit with housing (trip cam support,	258	558 392	EAPS-R1-20-S	1
	25	2 cams, sensor bracket)	406	558 393	EAPS-R1-25-S	
	32		560	558 394	EAPS-R1-32-S	
Sensing kit without	housing EAPSS-	WH				
	20	Kit without housing (trip cam support,	86	558 395	EAPS-R1-20-S-WH	1
	25	2 cams, sensor bracket)	90	558 396	EAPS-R1-25-S-WH	
	32		136	558 397	EAPS-R1-32-S-WH	
Cam EAPSCK	•					•
	20, 25, 32	For sensing positions (the scope of delivery includes two cams)	5 each	558 398	EAPS-R1-CK	2
Sensor bracket EAP:	SSH			1		
<u></u>	20, 25	For attaching proximity sensors to the	24	558 399	EAPS-R1-20-SH	1
	32	rotary module	30	558 400	EAPS-R1-32-SH	
Housing EAPSH	<u> </u>					
<u></u>	20	For protecting the sensing kit and as	172	560 673	EAPS-R1-20-H	1
	25	mounting interface with a drive	316	560 674	EAPS-R1-25-H	
	32		424	560 675	EAPS-R1-32-H	

Ordering data – Proxi	mity sensors, inductive			Technical data → Internet: sien
	Contact	Connection	Part No.	Туре
	N/O contact	Cable, 2.5 m	150 386	SIEN-M8B-PS-K-L
		Plug	150 387	SIEN-M8B-PS-S-L
	N/C contact	Cable, 2.5 m	150 390	SIEN-M8B-PO-K-L
		Plug	150 391	SIEN-M8B-PO-S-L

	Ordering data - Conne	Technical data → Internet: nebu				
		Electrical connection, left	Electrical connection, right	Cable length	Part No.	Туре
				[m]		
ľ		Straight socket, M8x1,	Cable, open end,	2.5	541 333	NEBU-M8G3-K-2.5-LE3
		3-pin	3-wire	5	541 334	NEBU-M8G3-K-5-LE3

Product Range and Company Overview

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Custom Automation Components Complete custom engineered solutions



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Complete Systems Shipment, stocking and storage services

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Pneumatics Pneumatic linear and rotary actuators, valves, and air supply



PLCs and I/O Devices PLC's, operator interfaces, sensors and I/O devices

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