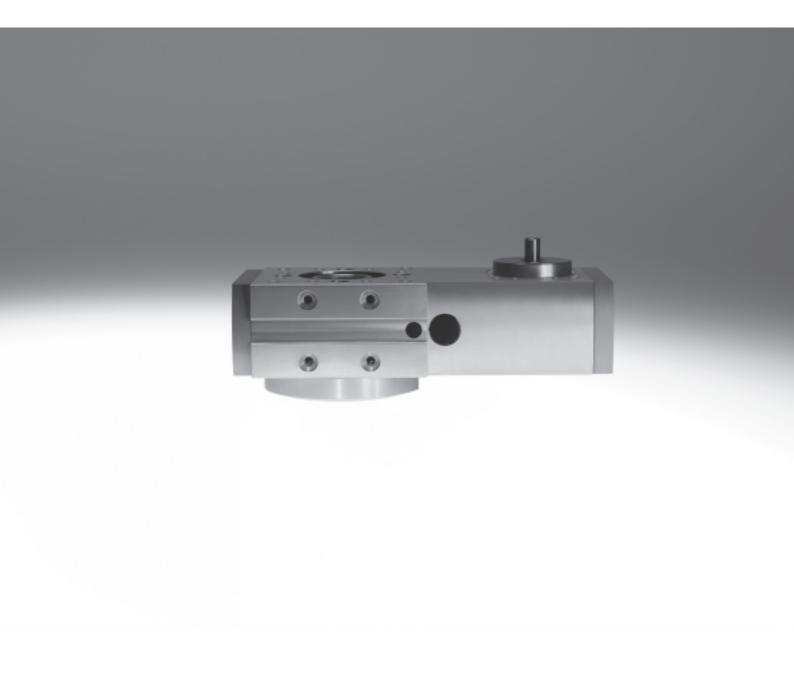
FESTO



FESTO

→ 14

Key features

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)

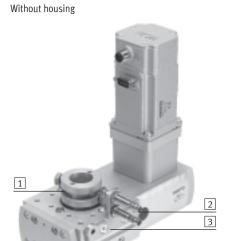


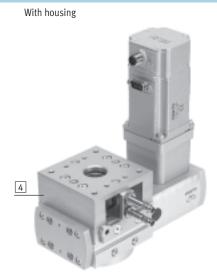


Sensing kit EAPS as an accessory

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

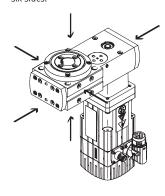
Mounting option

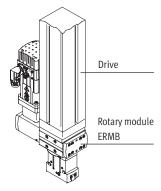
The rotary module can be attached on six sides.

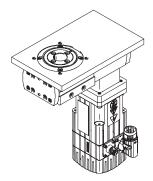


As a front end

As a rotary table in a plate



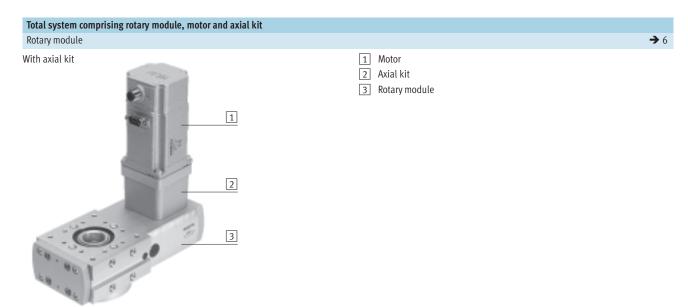






FESTO

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.

→16

→16

3

Motor controllers





- Servo motor controller
 - CMMP-AS, SEC-AC
- 2 Stepper motor controller

Technical data → Internet: motor controller



Axial kit



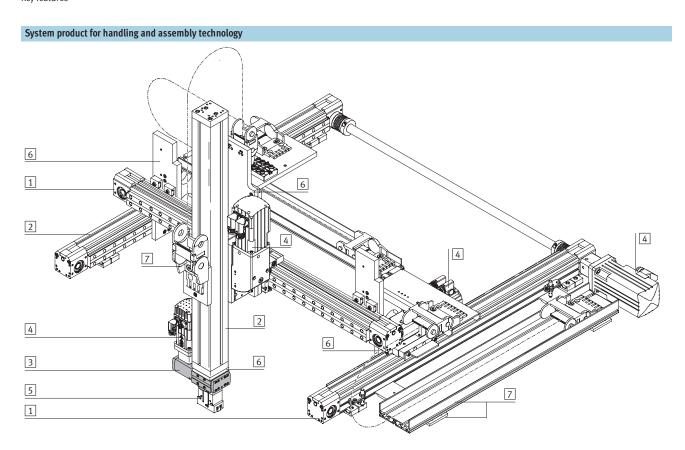
Kit comprising:

- Motor flange
- Coupling housing
- Coupling
- Screws



Rotary modules ERMB, electric Key features





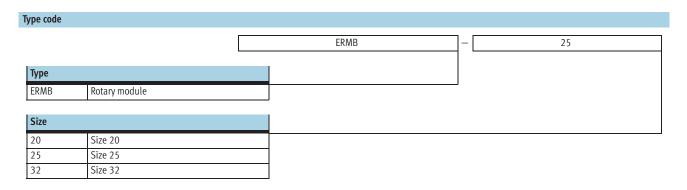
Syste	System components and accessories									
		Brief description	→ Page/Internet							
1	Axes	Wide range of combinations possible within handling and assembly technology	axes							
2	Guide axes	For extending force and torque capacity in multi-axis applications	guide axes							
3	Rotary module	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							

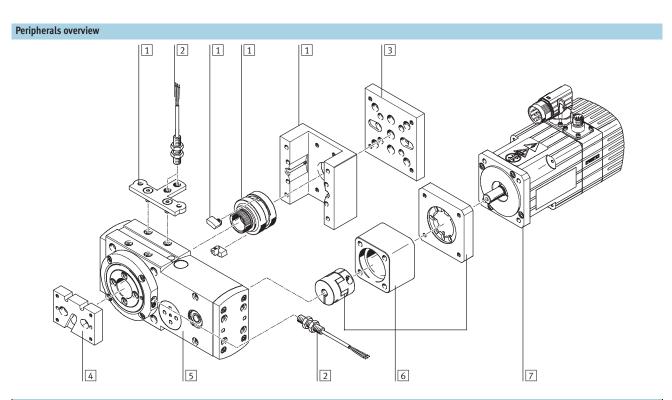


Rotary modules ERMB, electric Type code and peripherals overview

FESTO

5





Acces	Accessories								
	Туре	Brief description	→ 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

FESTO





General technical data						
Size		20	25	32		
Constructional design		Electromechanical rotary	module with toothed belt			
Drive shaft ∅	[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	<u>.</u>	·		
Mounting position		Any				
Product weight	[g]	850	1,460	3,250		

- 1) As per FN 942 027
- 2) 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 ∅	[mm]	20	24	28

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

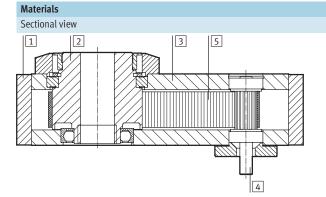
Operating and environmental conditions									
Size		20 25 32							
Ambient temperature	[°C]	-10 +60							
Protection class		IP20							
Corrosion resistance class CRC ¹⁾		2							
Noise level $\overline{L_{pEq}}^{2)}$	[dB (A)]	32 49 53							

- 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

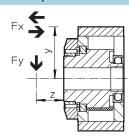




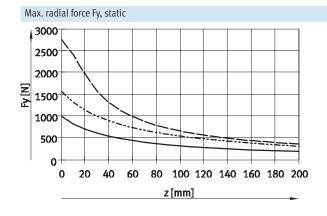
Rotary module							
1	End cap	Anodised aluminium					
2	Output shaft	Wrought aluminium alloy, anodised					
3	Housing	Wrought aluminium alloy, anodised					
4	Drive shaft	High-alloy stainless steel					
5	Toothed belt	Polychloroprene with glass fibres					
-	Note on materials	Contains paint wetting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

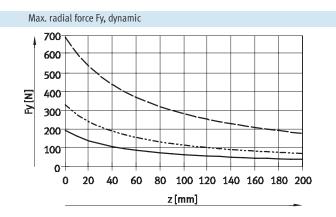
Maximum radial and axial force Fx/Fy on the output shaft as a function of the distance y/z

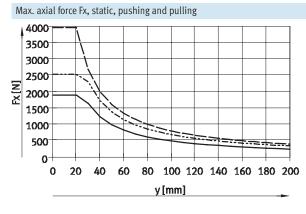
If the rotary module is subjected to several forces at once, the following equation must be satisfied in addition to the maximum loads indicated below.

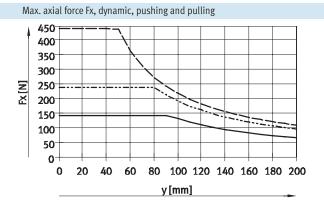


$$\frac{F_{y \text{ (z)}}}{F_{y, \text{ max. (z)}}} + \frac{F_{x, \text{ pushing (v)}}}{F_{x, \text{ pushing,max. (v)}}} + \frac{F_{x, \text{ pulling (v)}}}{F_{x, \text{ pulling,max. (v)}}} \leq 1$$









ERMB-20
----- ERMB-25
----- ERMB-32

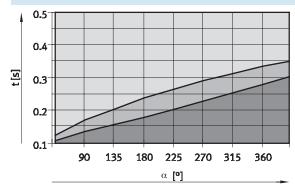
FESTO

Technical data



Size 20

with servo motor EMMS-AS

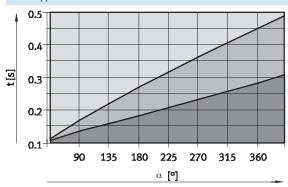


Extended operating range

Typical operating range, depending on motor size and load inertia

Unrealisable range

with stepper motor EMMS-ST

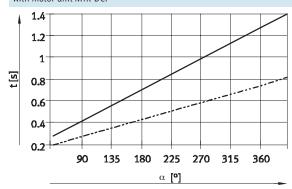


Extended operating range

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

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, positioning time and positioning accuracy.

→www.festo.com



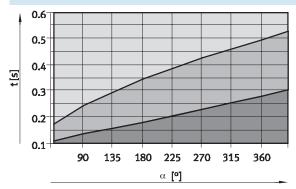
FESTO

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

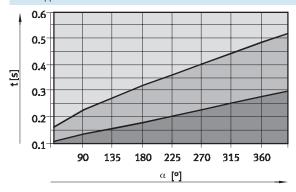


Extended operating range

Typical operating range, depending on motor size and load inertia

Unrealisable range

with stepper motor EMMS-ST

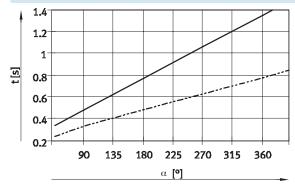


Extended operating range

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.

→www.festo.com

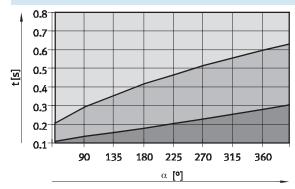
FESTO

Technical data



Size 32

with servo motor EMMS-AS

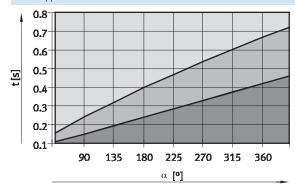


Extended operating range

Typical operating range, depending on motor size and load inertia

Unrealisable range

with stepper motor EMMS-ST

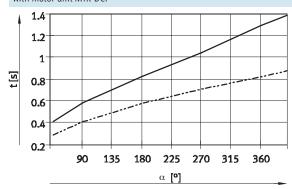


Extended operating range

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

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.

→www.festo.com



FESTO

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.

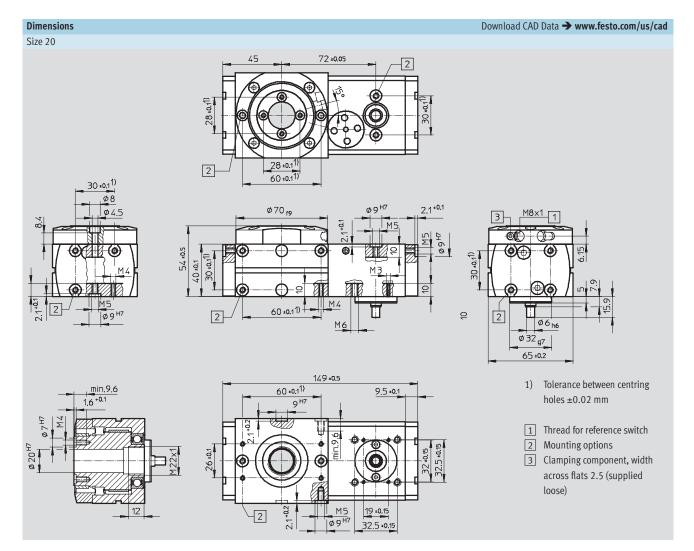
Size		20	25	32
Guide value load changes	[Mio.]	30	40	40
Guide value switching cycles	[Mio.]	15	20	20
Mass moment of inertia at output	[kgcm ²]	24	80	400
Medium angle acceleration at output	[°/sec ²]	28,000	20,000	12,000
Maximum angle speed at output	[°/sec]	1,800	1,800	1,800

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.

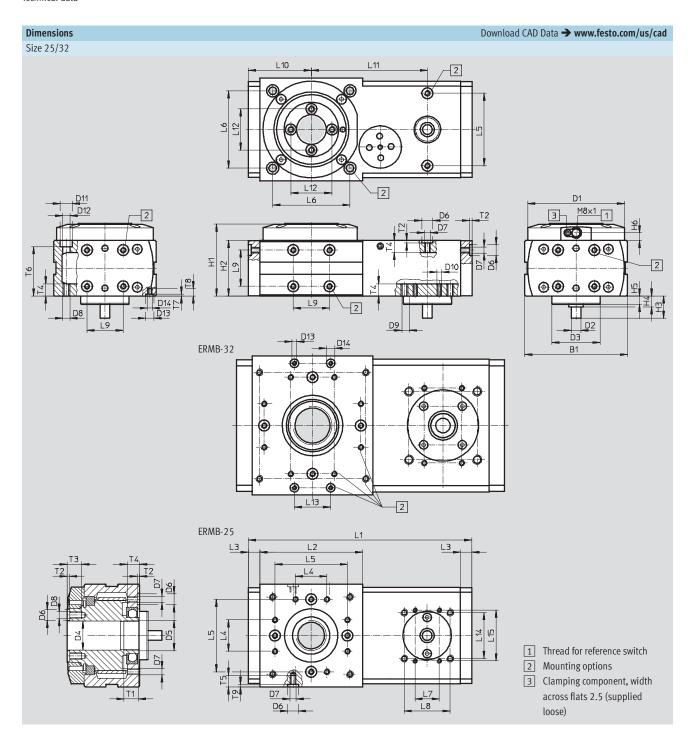
The conditions of use and safety regulations specified in the product documentation must also be taken into account.





Rotary modules ERMB, electric Technical data







Rotary modules ERMB, electric Technical data

FESTO

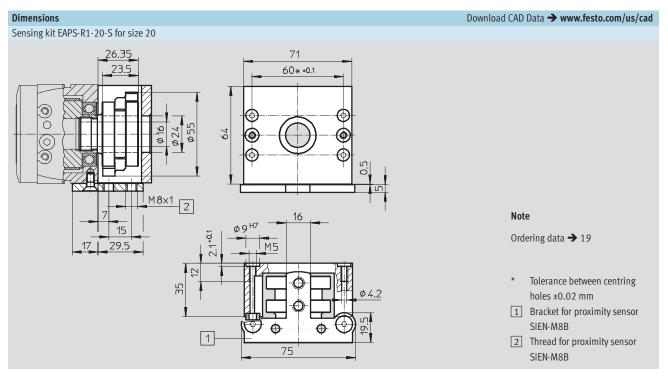
Size	B1	D1 Ø	D2 Ø	D3		D4 Ø		D	5		06 Ø	D	7	D8		D9	D10
	±0.2	f9	h6	g7		H7					17						
25	85	80	8	40		24		M25	x1		9	M	15	M6	T	M6	M4
32	115	112	12	60		28		M32	k1.5		9	М	15	M6		M8	M5
Size	D11	D12	D13	D14		H1		H	2	ŀ	13	Н	4	H5		Н6	L1
	Ø	Ø	Ø H7			±0.	5	±0	.1								±0.5
25	10	6.2	-	_		60		4	ó	18	3.45		-	7		6.3	185
32	10	6.2	7	M4		76.0		6)		3.5	6.	.5	6		9.4	222
Size	L2	L3	L4	L5 ¹⁾	I	L6	L	.7	L8		L9 ¹⁾		L10	L11		L12 ¹⁾	L13 ¹⁾
	±0.2	±0.1	±0.1	±0.1			±0	.15	±0.1	15	±0.1			±0.05		±0.1	±0.1
25	85	9.5	26	60	64	±0.15	2	0	38	3	30		52	96		34	-
32	100	13	36	80	88	8±0.1	3	1	56.	5	40		63	108		45	30
		_									_						
Size	L14	L15	L16	T1		T2	T	3	T4		T5		T6	T7		T8	Т9
	±0.15	±0.15	+0.2		+	+0.1		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

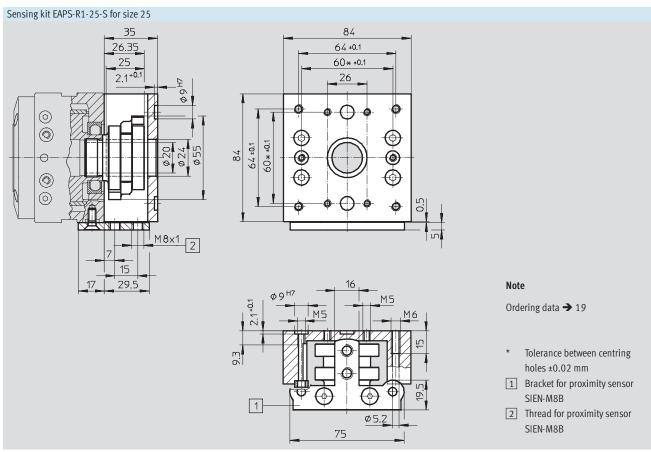
¹⁾ Tolerance between centring holes ±0.02 mm



FESTO

Technical data

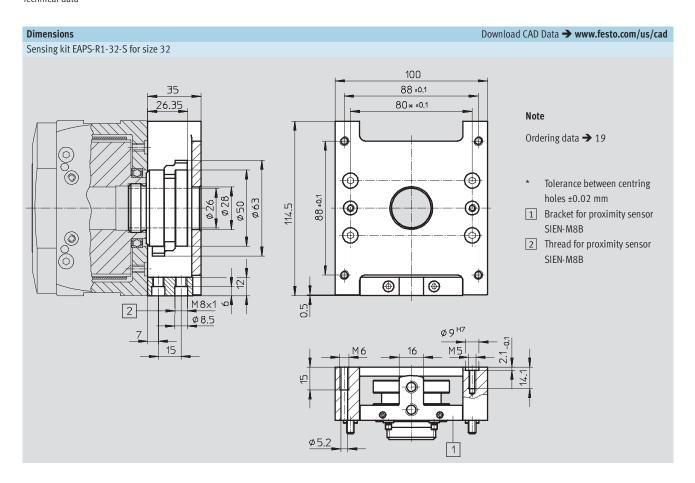






Rotary modules ERMB, electric Technical data

FESTO





Rotary modules ERMB, electric Technical data and accessories

FESTO

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	Axial kit	Axial kit comprising:		
		Motor flange	Coupling	Coupling housing
		(iii	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	·			<u>, </u>
MTR-DCI-32S	543 149	-	543 420	552 156
	EAMM-A-D32-32B		EAMC-16-20-6-6	EAMK-A-D32-32B
ERMB-25				
with servo motor				
EMMS-AS-55	543 153	529 942	543 423	552 157
LITHING-MG-77	EAMM-A-D40-55A	EAMF-A-44A/B-55A	EAMC-30-32-8-9	EAMK-A-D40-44A
EMMS-AS-70-S	550 981	529 943	551 004	552 157
LIMMJ-NJ- / V-J	EAMM-A-D40-70A	EAMF-A-44A/B-70A	EAMC-30-32-8-11	EAMK-A-D40-44A
with stepper motor	EARINI A DAV-7 VA	PUM V 44V/0-16V	Dame 30-32-0-11	LAMIN A DTV-TTA
EMMS-ST-57	543 154	530 081	543 421	552 157
Limino 31-31	EAMM-A-D40-57A	EAMF-A-44A/B-57A	EAMC-30-32-6.35-8	EAMK-A-D40-44A
with motor unit	באווווויית-טדט-אוו	EMIVIT-M-44A/D-3/A	E-11/1C-70-72-0.77-0	E-WIN-A-D-TV-T-A
	F/2455		F/2 /22	552450
MTR-DCI-42SG7	543 155	_	543 422	552 158
	EAMM-A-D40-42B		EAMC-30-32-8-8	EAMK-A-D40-42B
MTR-DCI-42SG14	543 156	-	543 422	552 159
	EAMM-A-D40-42C		EAMC-30-32-8-8	EAMK-A-D40-42C



Rotary modules ERMB, electric Accessories

FESTO

Permissible axis/motor con	nbinations with axial kit – Withou	ut gear unit									
Motor/motor unit	Axial kit	Axial kit comprising:	Axial kit comprising:								
		Motor flange	Coupling	Coupling housing							
			D								
Туре	Part No.	Part No.	Part No.	Part No.							
	Туре	Туре	Туре	Туре							
ERMB-32		<u> </u>									
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							
Туре	Туре	Part No.	Part No.	Part No.	Part No.						
		Туре	Туре	Туре	Туре						
ERMB-25	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

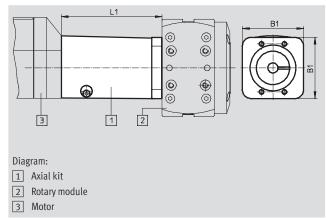
FESTO

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-	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			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 - Cent	Ordering data – Centring sleeves								
	For size	Brief description	Number	Part No.	Туре	PU ¹⁾			
<u></u>	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) Packaging unit quantity

Ordering data						
	For size	Brief description	Weight	Part No.	Туре	PU ¹⁾
			[g]			
Sensing kit EAPS-	S		_			
(*)	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 witho	ut housing EAPSS-\	VH	<u>'</u>			<u>'</u>
	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	·			·		·
Po	20, 25, 32	For sensing positions (the scope of delivery includes two cams)	5 each	558 398	EAPS-R1-CK	2
Sensor bracket EA	APSSH					
. 🔊	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 EAPSI	H					
(a**)	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 − Connecting cables Technical data → Internet: neb								
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Туре			
	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

A Complete Suite of Automation Services

Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.



Custom Automation Components Complete custom engineered solutions



Custom Control Cabinets Comprehensive engineering support and on-site services



Complete Systems Shipment, stocking and storage services

The Broadest Range of Automation Components

With a comprehensive line of more than 30,000 automation components, Festo is capable of solving the most complex automation requirements.



Electromechanical Electromechanical actuators, motors, controllers & drives



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



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

Supporting Advanced Automation... As No One Else Can!

Festo is a leading global manufacturer of pneumatic and electromechanical systems, components and controls for industrial automation, with more than 12,000 employees in 56 national headquarters serving more than 180 countries. For more than 80 years, Festo has continuously elevated the state of manufacturing with innovations and optimized motion control solutions that deliver higher performing, more profitable automated manufacturing and processing equipment. Our dedication to the advancement of automation extends beyond technology to the education and development of current and future automation and robotics designers with simulation tools, teaching programs, and on-site services.

Quality Assurance, ISO 9001 and ISO 14001 Certifications

Festo Corporation is committed to supply all Festo products and services that will meet or exceed our customers' requirements in product quality, delivery, customer service and satisfaction.

To meet this commitment, we strive to ensure a consistent, integrated, and systematic approach to management that will meet or exceed the requirements of the ISO 9001 standard for Quality Management and the ISO 14001 standard for Environmental Management.



© Copyright 2008, Festo Corporation. While every effort is made to ensure that all dimensions and specifications are correct, Festo cannot guarantee that publications are completely free of any error, in particular typing or printing errors. Accordingly, Festo cannot be held responsible for the same. For Liability and Warranty conditions, refer to our "Terms and Conditions of Sale", available from your local Festo office. All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, electronic, mechanical, photocopying or otherwise, without the prior written permission of Festo. All technical data subject to change according to technical update.



Festo North America

Festo Regional Contact Center

5300 Explorer Drive Mississauga, Ontario L4W 5G4 Canada

USA Customers:

For ordering assistance,

Call: 1.800.99.FESTO (1.800.993.3786) 1.800.96.FESTO (1.800.963.3786) Email: customer.service@us.festo.com For technical support,

Call: 1.866.GO.FESTO (1.866.463.3786) Fax: 1.800.96.FESTO (1.800.963.3786) Email: product.support@us.festo.com

Canadian Customers:

Call: 1.877.GO.FESTO (1.877.463.3786) Fax: 1.877.FX.FESTO (1.877.393.3786) Email: festo.canada@ca.festo.com

USA Headquarters

Festo Corporation 395 Moreland Road P.O. Box 18023 Hauppauge, NY 11788, USA www.festo.com/us

USA Sales Offices

Appleton

North 922 Tower View Drive, Suite N Greenville, WI 54942, USA

Boston

120 Presidential Way, Suite 330 Woburn, MA 01801, USA

Chicago

1441 East Business Center Drive Mt. Prospect, IL 60056, USA

Dallas

1825 Lakeway Drive, Suite 600 Lewisville, TX 75057, USA

Detroit – Automotive Engineering Center 2601 Cambridge Court, Suite 320 Auburn Hills, MI 48326, USA

New York

395 Moreland Road Hauppauge, NY 11788, USA

Silicon Valley

4935 Southfront Road, Suite F Livermore, CA 94550, USA

United States



USA Headquarters, East: Festo Corp., 395 Moreland Road, Hauppauge, NY 11788 Phone: 1.631.435.0800; Fax: 1.631.435.8026;

Email: info@festo-usa.com www.festo.com/us

Canada



Headquarters: Festo Inc., 5300 Explorer Drive, Mississauga, Ontario L4W 5G4 Phone: 1.905.624.9000; Fax: 1.905.624.9001; Email: festo.canada@ca.festo.com

Mexico



Headquarters: Festo Pneumatic, S.A., Av. Ceylán 3, Col. Tequesquinahuac, 54020 Tlalnepantla, Edo, de México Phone: 011 52 [55] 53 21 66 00; Fax: 011 52 [55] 53 21 66 65; Email: festo.mexico@mx.festo.com www.festo.com/mx

Central USA

Festo Corporation 1441 East Business Center Drive Mt. Prospect, IL 60056, USA Phone: 1.847.759.2600 Fax: 1 847 768 9480



Western USA

Festo Corporation 4935 Southfront Road, Livermore, CA 94550. USA

Phone: 1.925.371.1099 Fax: 1.925.245.1286



Festo Worldwide

Argentina Australia Austria Belarus Belgium Brazil Bulgaria Canada Chile China Colombia Croatia Czech Republic Denmark Estonia Finland France Germany Great Britain Greece Hong Kong Hungary India Indonesia Iran Ireland Israel Italy Japan Latvia Lithuania Malaysia Mexico Netherlands New Zealand Norway Peru Philippines Poland Romania Russia Serbia Singapore Slovakia Slovenia South Africa South Korea Spain Sweden Switzerland Taiwan Thailand Turkey Ukraine United States Venezuela