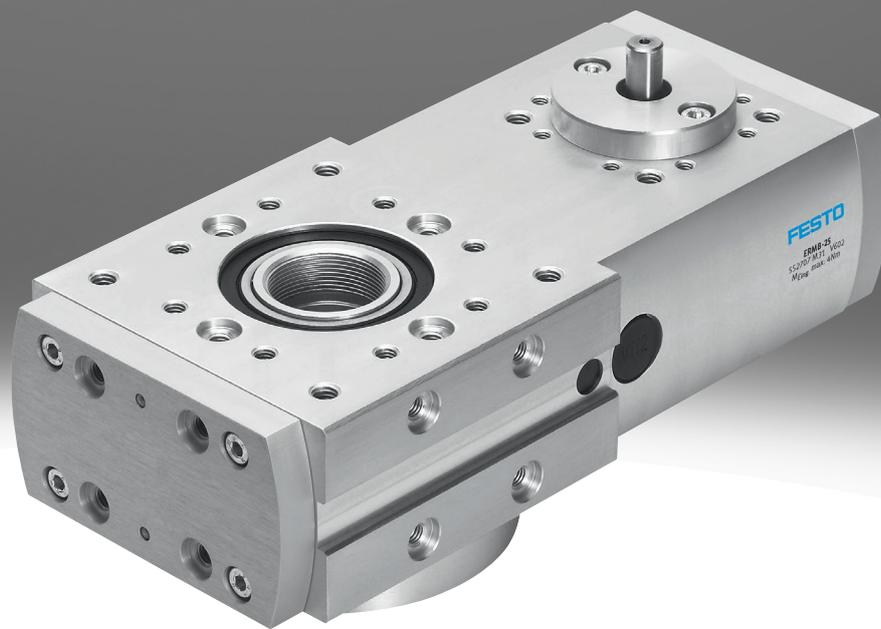


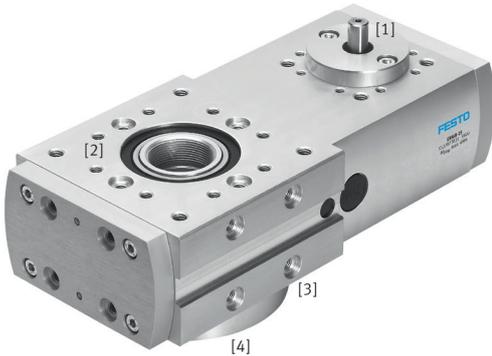
# Rotary module ERMB

**FESTO**



## Characteristics

### At a glance



- The rotary module ERMB enables unlimited and flexible rotation angles.
- The motor's power is transmitted to the output pinion via a recirculating toothed belt with a specific transmission ratio.
- Input and output pinions are mounted separately. The toothed belt is pretensioned at the factory using an eccentric tensioning roller.

#### Benefits:

- Stable output shaft bearings
- Pretensioned toothed belt means low backlash
- Compact design

#### The technology in detail

[1] Interface to the motor, via axial kit

[2] Interface for mounting

[3] Mounting component for proximity switch SIEN in the retaining ring

[4] Output interface

### Engineering tools

[Link](#)  [engineering tools](#)

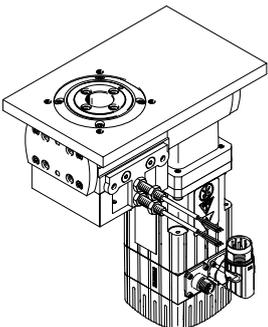


Save time with engineering tools: Smart engineering for the optimal solution. Our goal is to increase your productivity. Our engineering tools play an integral part in achieving this goal. They help you size your system correctly, tap into unimagined productivity reserves and generate additional productivity along the entire value chain. In every phase of your project, from the initial contact to the modernisation of your machine, you will come across a number of different tools that will be of use to you.

#### Electric Motion Sizing

- Create the optimum drive package quickly and reliably. Electric Motion Sizing calculates suitable combinations of electric axis, electric motor and servo drive using just a few application details. It provides all the relevant data including the bill of materials and documentation for your selected combination. This avoids design errors and results in significantly improved energy efficiency for the system. A smooth connection to the Festo Automation Suite also makes commissioning easier for you.

### Overview



#### Range of applications:

- As front unit
- As a rotary table in a plate

## Type code

001	Series
ERMB	Rotary module

002	Size
20	20
25	25
32	32

## Datasheet

### General technical data

Size	20	25	32
Design	Electromechanical rotary module, With toothed belt		
Drive pinion diameter	6 mm	8 mm	12 mm
Rotation angle	Infinite		
Repetition accuracy <sup>1)</sup>	±0.03°		
Gear unit ratio	4.5:1	4:1	3:1
Position detection	Via inductive sensors		
Mounting position	optional		
Product weight	850 g	1,460 g	3,250 g

1) According to FN 942 027. The specifications only apply when the motor is directly mounted. If a gearbox is also installed, the repeat accuracy changes

### Mechanical data

Size	20	25	32
Max. output torque <sup>1)</sup>	3.15 Nm	8.8 Nm	25.5 Nm
Max. drive torque	0.7 Nm	2.2 Nm	8.5 Nm
Frictional torque independent of load <sup>2)</sup>	0.07 Nm	0.18 Nm	0.5 Nm
Max. drive input speed	1,350 rpm	1,200 rpm	900 rpm
Max. drive output speed	300 rpm		
Toothed-belt pitch	2 mm	3 mm	5 mm
Permissible mass moment of inertia	0.1 kgm <sup>2</sup>	0.5 kgm <sup>2</sup>	1 kgm <sup>2</sup>

1) Output torque minus friction is dependent on speed

2) At maximum speed

### Operating and environmental conditions

Size	20	25	32
Ambient temperature	-10 ... 60°C		
Degree of protection	IP20		
Corrosion resistance class CRC <sup>1)</sup>	2 - Moderate corrosion stress		
Sound pressure level <sup>2)</sup>	32 dB(A)	49 dB(A)	53 dB(A)

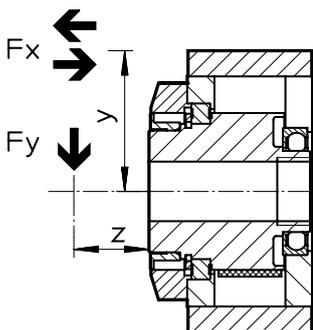
1) Corrosion resistance class CRC 2 according to Festo standard FN 940070. Moderate corrosion stress. Indoor application where condensation may occur. External visible parts with primarily decorative surface requirements that are in direct contact with a normal industrial environment.

2) In combination with servo motor EMME-AS, EMMT-AS

### Materials

Material cover	Wrought aluminium alloy, Anodised
Material drive shaft	Wrought aluminium alloy, Anodised
Material housing	Wrought aluminium alloy, Anodised
Material drive shaft	High-alloy stainless steel
Material toothed belt	Polychloroprene with glass fibre
LABS (PWIS) conformity	VDMA24364 zone III
Note on materials	RoHS-compliant

### Max. radial and axial force F<sub>x</sub>/F<sub>y</sub> at the output shaft as a function of distance y/z



## Datasheet

### Max. radial and axial force Fx/Fy at the output shaft as a function of distance y/z

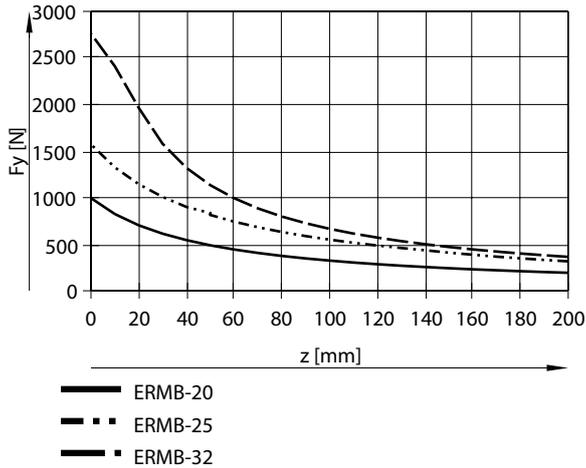
$$\frac{F_y(z)}{F_{y\max.}(z)} + \frac{F_x(y)}{F_{x\max.}(y)} \leq 1$$

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

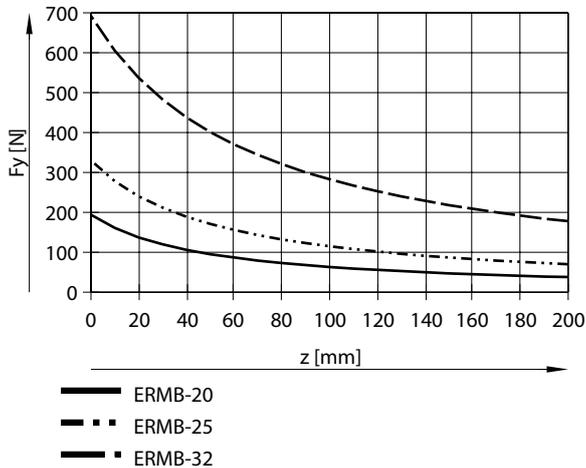
Fx / Fy = dynamic value

Fx max. / Fy max. = maximum value

### Max. radial force Fy, static

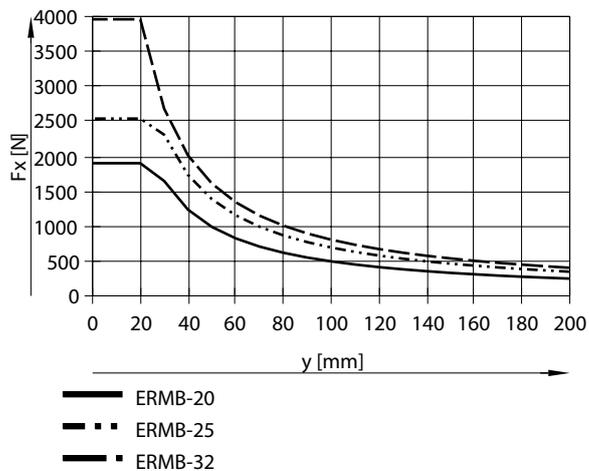


### Max. radial force Fy, dynamic

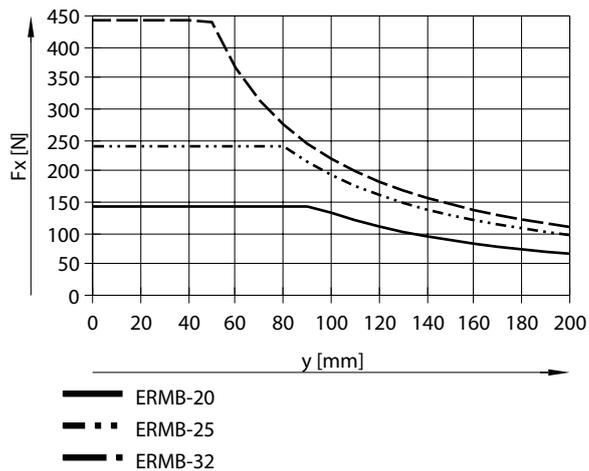


## Datasheet

### Max. axial force $F_x$ , static



### Max. axial force $F_x$ , dynamic



### Positioning time $t$ as a function of rotation angle $\alpha$

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.

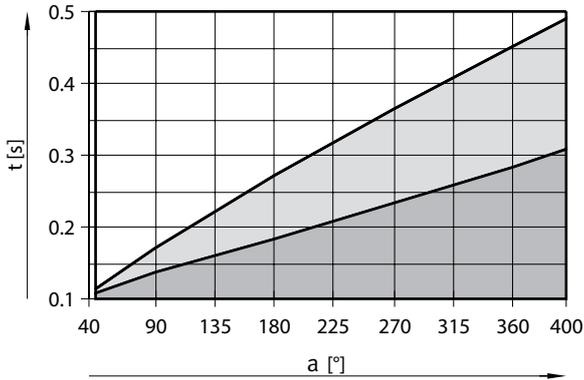
With servo motor: 50 ... 100 ms

For stepper motor: 100 ... 200 ms

The sizing software „Electric Motion Sizing“ puts together the optimum combination of rotary module and motor.

## Datasheet

Positioning time  $t$  as a function of rotation angle  $a$  for ERMB-20 with stepper motor



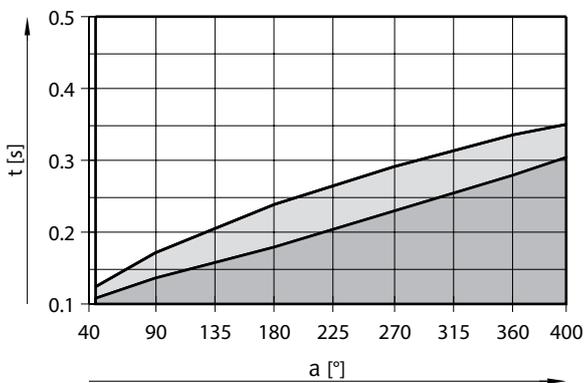
Zones

White: permissible range

Light grey: typical working range, depending on motor size and mass inertia of the load

Dark grey: range cannot be realised

Positioning time  $t$  as a function of rotation angle  $a$  for ERMB-20 with servo motor



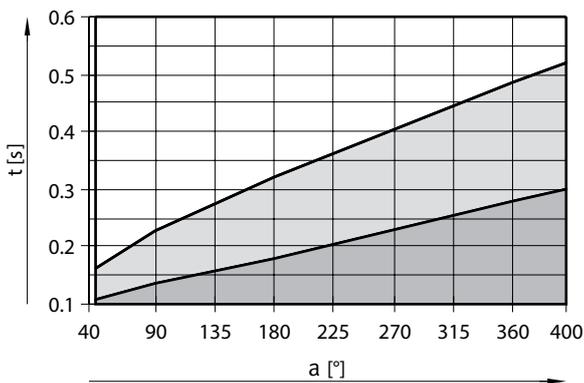
Zones

White: permissible range

Light grey: typical working range, depending on motor size and mass inertia of the load

Dark grey: range cannot be realised

Positioning time  $t$  as a function of rotation angle  $a$  for ERMB-25 with stepper motor



Zones

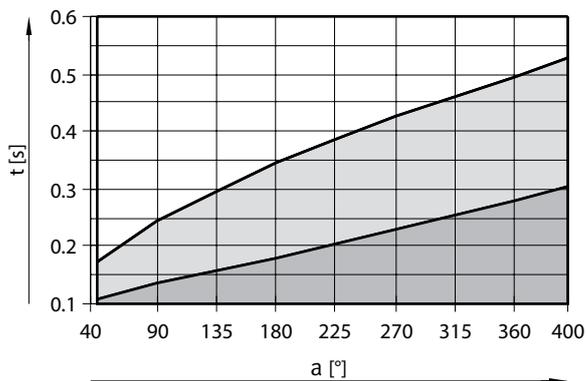
White: permissible range

Light grey: typical working range, depending on motor size and mass inertia of the load

Dark grey: range cannot be realised

## Datasheet

Positioning time  $t$  as a function of rotation angle  $a$  for ERMB-25 with servo motor



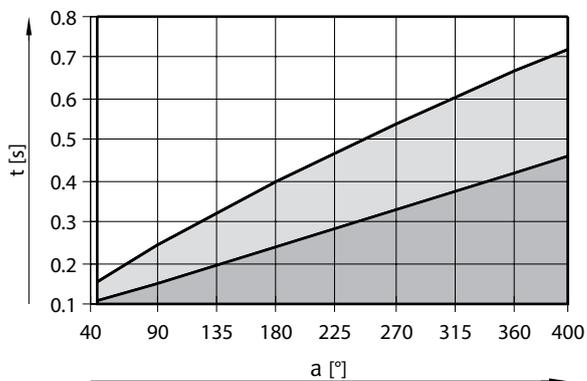
Zones

White: permissible range

Light grey: typical working range, depending on motor size and mass inertia of the load

Dark grey: range cannot be realised

Positioning time  $t$  as a function of rotation angle  $a$  for ERMB-32 with stepper motor



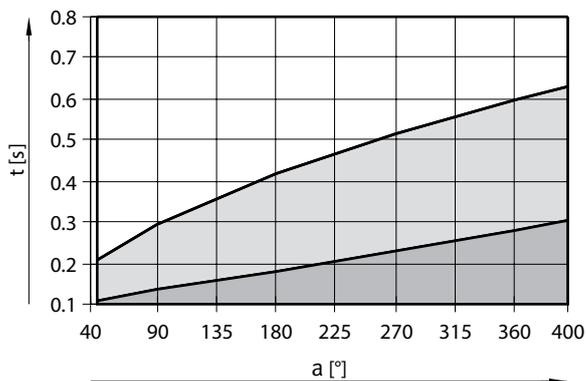
Zones

White: permissible range

Light grey: typical working range, depending on motor size and mass inertia of the load

Dark grey: range cannot be realised

Positioning time  $t$  as a function of rotation angle  $a$  for ERMB-32 with servo motor



Zones

White: permissible range

Light grey: typical working range, depending on motor size and mass inertia of the load

Dark grey: range cannot be realised

Dimensions

Dimensions – Size 20

Download CAD data [www.festo.com](http://www.festo.com)



- [1] Thread for reference switch
- [2] Mounting options
- [3] Clamping component, width across flats 2.5 (supplied loose)

	B1	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13
	±0,2	∅ f9	∅ h6	∅ g7	∅ H7		∅ H7					∅	∅	
ERMB-20	65	70	6	32	20	M22x1	9	M5	M4	M6	M3	8	4,5	M8x1
	D14	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4 <sup>1)</sup>	L5 <sup>1)</sup>	L7	L8
	∅ H7	±0,5	±0,1					±0,5	±0,2	±0,1			±0,15	±0,15
ERMB-20	7	54	40	15,9	7,9	5	6,15	149	71	9,5	28	60	19	32,5
	L9 <sup>1)</sup>	L10	L11	L12 <sup>1)</sup>	L14	L15	T1	T2	T4	T5	T6	T9	W1	
			±0,05		±0,15	±0,15		+0,1		min		+0,2		
ERMB-20	26	45	72	30	32	32,5	12	1,6	10	9,6	8,4	2,1	15°	

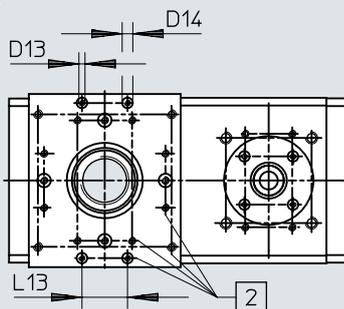
1) Tolerance for centring hole ±0.02 mm Tolerance for thread ±0.1 mm

## Dimensions

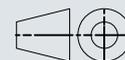
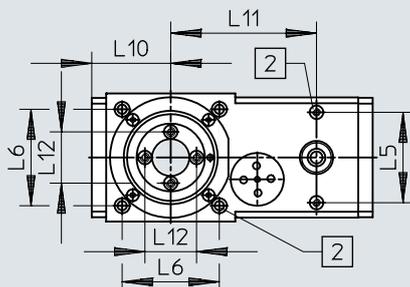
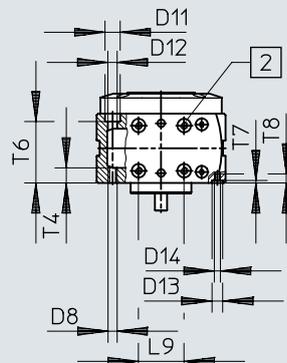
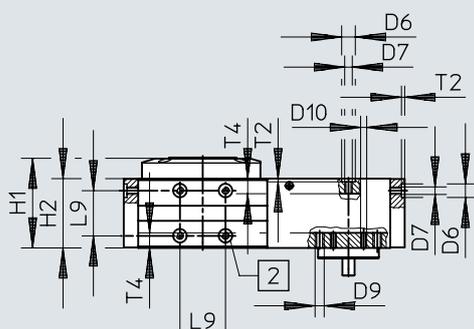
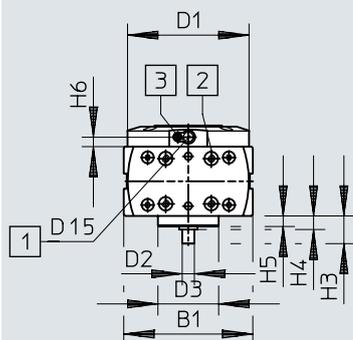
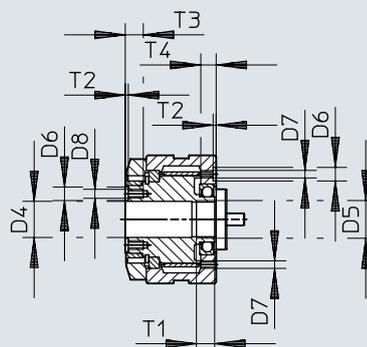
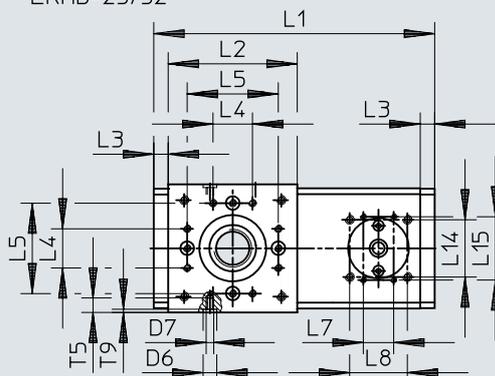
Dimensions – Size 25/32

Download CAD data [www.festo.com](http://www.festo.com)

ERMB-32



ERMB-25/32



- [1] Thread for reference switch
- [2] Mounting options
- [3] Clamping component, width across flats 2.5 (supplied loose)

## Dimensions

	B1 ±0,2	D1 ∅ f9	D2 ∅ h6	D3 ∅ g7	D4 ∅ H7	D5	D6 ∅ H7	D7	D8	D9	D10
ERMB-25	85	80	8	40	24	M25x1	9	M5	M6	M6	M4
ERMB-32	115	112	12	60	28	M32x1,5	9	M5	M6	M8	M5

	D11 ∅	D12 ∅	D13 ∅ H7	D14	H1 ±0,5	H2 ±0,1	H3	H4	H5	H6	L1 ±0,5
ERMB-25	10	6,2	–	–	60	46	18,45	–	7	6,45	185
ERMB-32	10	6,2	7	M4	76,05	60	23,5	6,5	6	9,4	222

	L2 ±0,2	L3 ±0,1	L4 ±0,1	L5 <sup>1)</sup> ±0,1	L6	L7 ±0,15	L8 ±0,15	L9 <sup>1)</sup> ±0,1	L10	L11 ±0,05	L12 <sup>1)</sup> ±0,1	L13 <sup>1)</sup> ±0,1
ERMB-25	85	9,5	26	60	64 ±0,15	20	38	30	52	96	34	–
ERMB-32	100	13	36	80	88 ±0,1	31	56,5	40	63	108	45	30

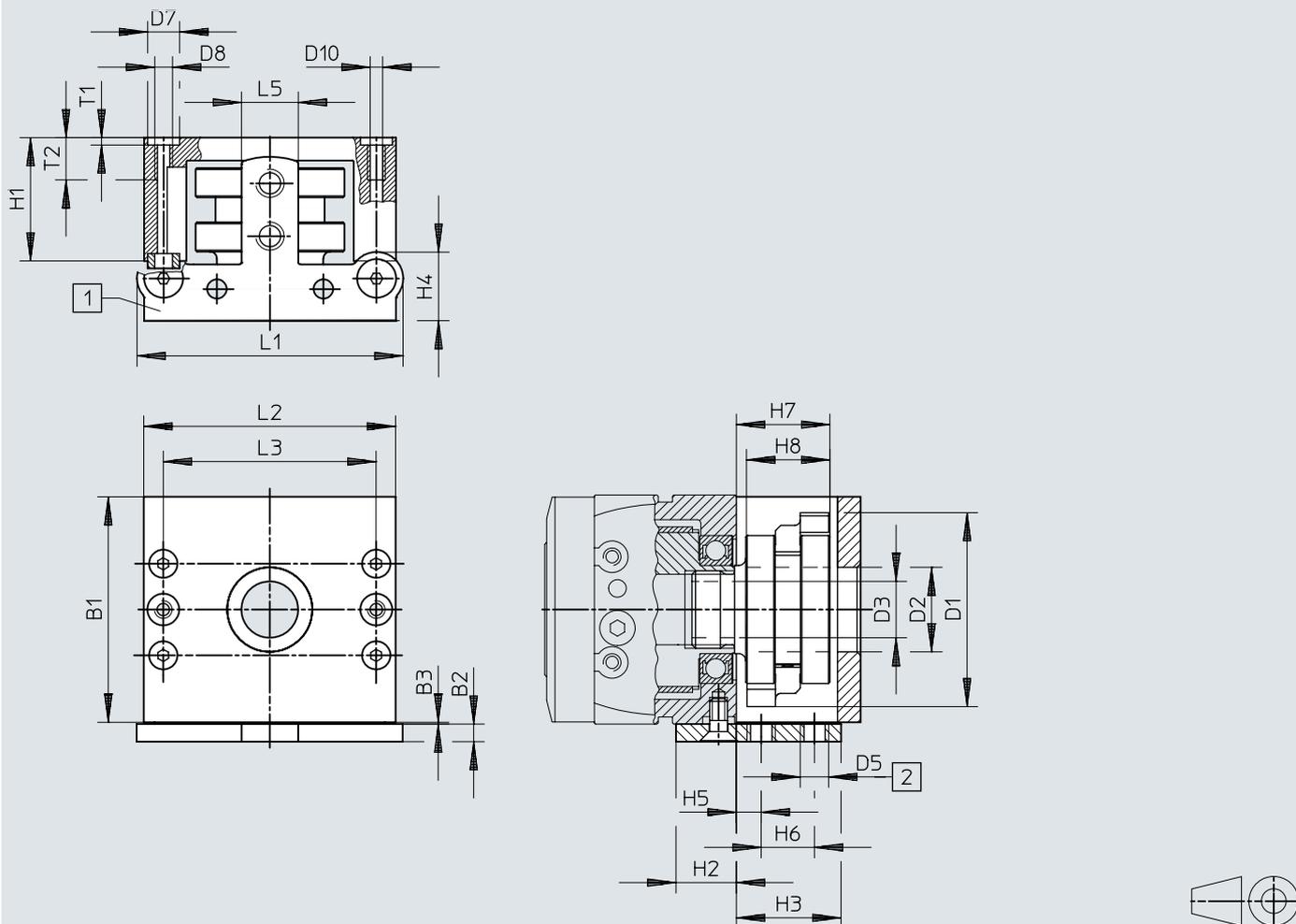
	L14 ±0,15	L15 ±0,15	L16 +0,2	T1	T2 +0,1	T3 min	T4	T5 min	T6	T7 +0,1	T8 min	T9 +0,2
ERMB-25	38	42	–	12	2,1	12	10	9,6	40,8±0,2	–	–	2,1
ERMB-32	56,5	62	103	12	2,1	12	10	10	54,3	1,6	7,6	2,1

1) Tolerance for centring hole ±0.02 mm Tolerance for thread ±0.1 mm

## Dimensions

Dimensions – Sensing kit EAPS-R1-20-S for size 20

Download CAD data [www.festo.com](http://www.festo.com)



- [1] Sensor bracket for proximity switches SIEN-M8B
- [2] Thread for proximity switch SIEN-M8B
- [3] \* Tolerance for centring hole  $\pm 0.02$

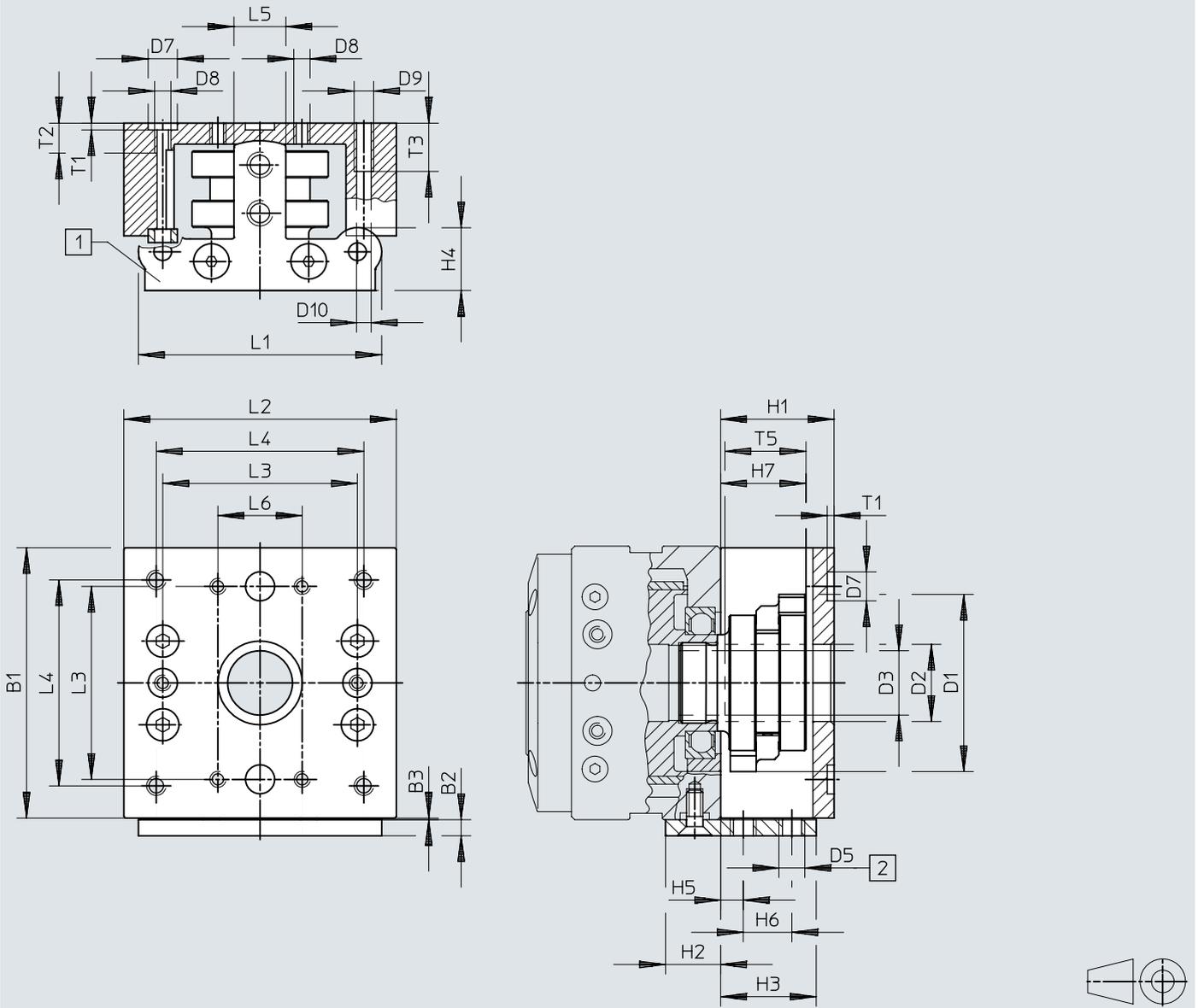
	B1	B2	B3	D1 ∅	D2 ∅	D3 ∅	D5	D7 ∅ H7	D8	D10 ∅	H1	H2
ERMB-20	64	5	0,5	55	24	16	M8x1	9	M5	4,2	35	17
	H3	H4	H5	H6	H7	H8	L1	L2	L3 <sup>1)</sup>	L5	T1	T2
ERMB-20	29,5	19,5	7	15	26,35	23,5	75	71	60	$\pm 0,1$	$\pm 0,1$	12

1) Tolerance for centring hole  $\pm 0.02$  mm Tolerance for thread  $\pm 0.1$  mm

# Dimensions

Dimensions – Sensing kit EAPS-R1-25-S for size 25

Download CAD data [www.festo.com](http://www.festo.com)



- [1] Sensor bracket for proximity switches SIEN-M8B
- [2] Thread for proximity switch SIEN-M8B
- [3] \* Tolerance for centring hole  $\pm 0.02$

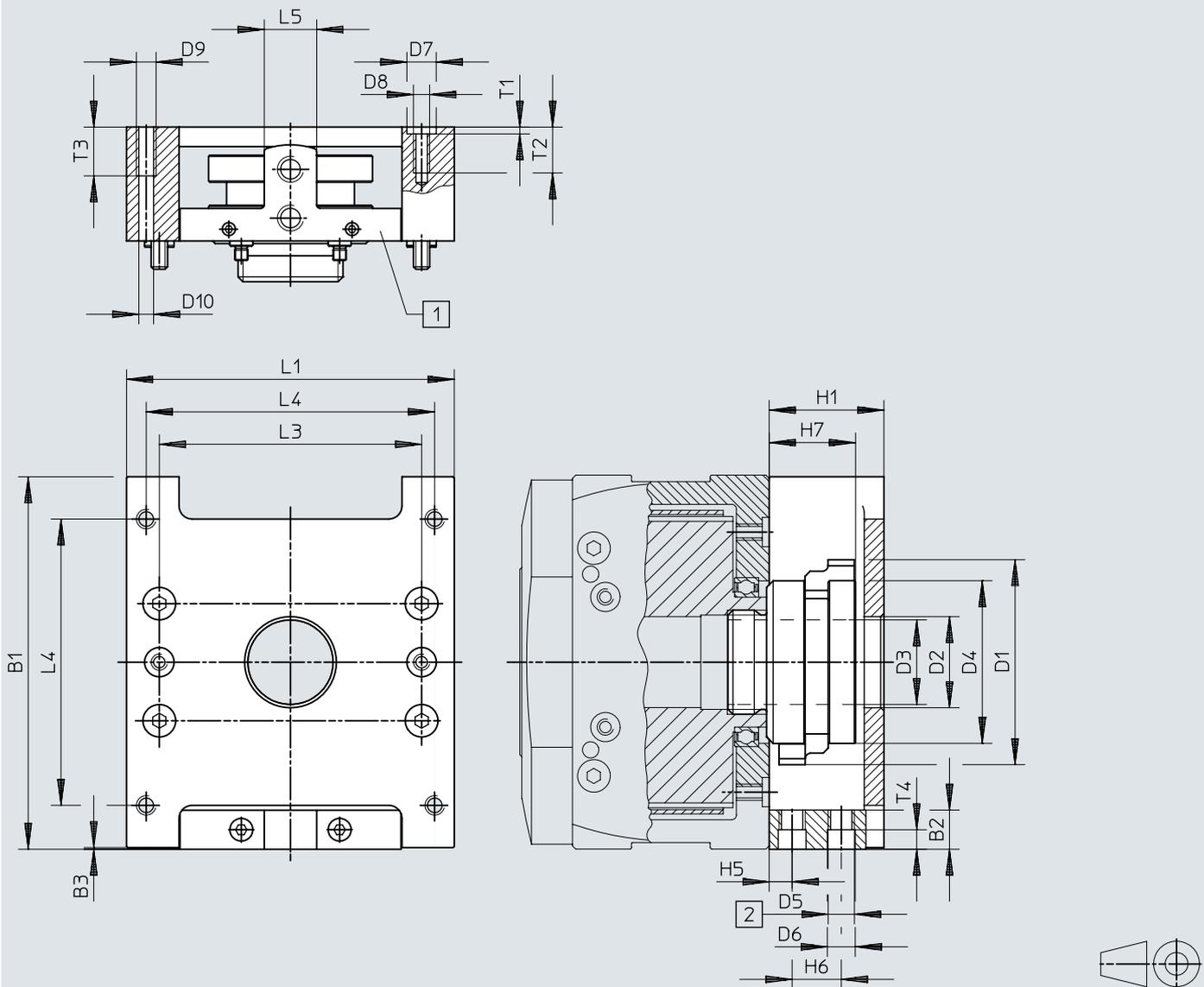
	B1	B2	B3	D1 ∅	D2 ∅	D3 ∅	D5	D7 ∅ H7	D8	D9	D10 ∅	H1	H2
ERMB-25	84	5	0,5	55	24	20	M8x1	9	M5	M6	5,2	35	17
	H3	H4	H5	H6	H7	L1	L2	L3 <sup>1)</sup>	L5 $\pm 0,1$	T1 $\pm 0,1$	T2	T3	T5
ERMB-25	29,5	19,5	7	15	26,35	75	84	60	16	2,1	9,3	15	25

1) Tolerance for centring hole  $\pm 0.02$  mm Tolerance for thread  $\pm 0.1$  mm

## Dimensions

Dimensions – Sensing kit EAPS-R1-32-S for size 32

Download CAD data [www.festo.com](http://www.festo.com)



[1] Sensor bracket for proximity switches SIEN-M8B

[2] Thread for proximity switch SIEN-M8B

[3] \* Tolerance for centring hole  $\pm 0.02$

	B1	B2	B3	D1 ∅	D2 ∅	D3 ∅	D4 ∅	D5	D6 ∅	D7 ∅ H7	D8	D9	D10 ∅
ERMB-32	114,5	12	0,5	63	28	26	50	M8x1	8,5	9	M5	M6	5,2
	H1	H5	H6	H7	L1	L3 <sup>1)</sup>	L4	L5	T1	T2	T3	T4	
ERMB-32	35	7	15	26,35	100	80	±0,1	±0,1	±0,1	14,1	15	6	

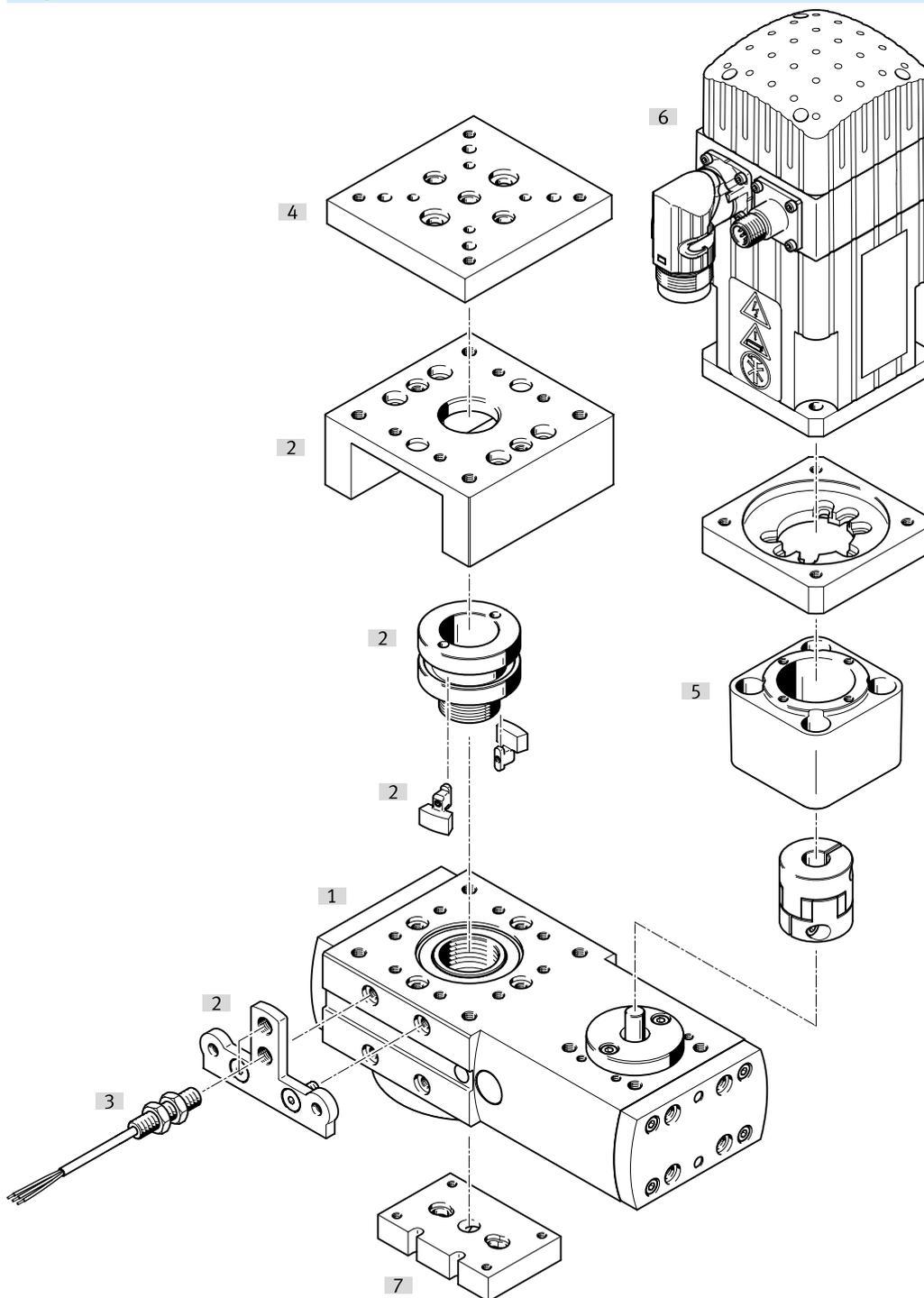
1) Tolerance for centring hole  $\pm 0.02$  mm Tolerance for thread  $\pm 0.1$  mm

## Ordering data

Ordering data			
	Size	Part no.	Type
	20	552706	ERMB-20
	25	552707	ERMB-25
	32	552708	ERMB-32

## Peripherals

### Peripherals overview



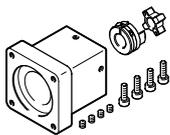
Accessories		→ Link
Type/order code	Description	
[1] Rotary modules ERMB, electric	Facilitates unlimited and flexible rotation angles	<a href="#">ermb</a>
[2] Sensing kit EAPS	<ul style="list-style-type: none"> <li>With the sensing kit, the angle of rotation can be monitored using adjustable cams.</li> <li>The kit can also be used for reference checking.</li> <li>Consisting of: housing, trip cam support, 2 cams and sensor bracket</li> </ul>	<a href="#">18</a>
[3] Proximity switch SIEN	For use as a proximity signal and safety check	<a href="#">19</a>
[4] Adapter kit	Interface between rotary module and drive (The rotary module can be attached to a drive with or without a sensing kit)	<a href="#">ermb</a>
[5] Axial kit EAMM-A	For axial motor mounting (consisting of: coupling, coupling housing and motor flange)	<a href="#">eamm-a</a>

## Peripherals

Accessories		→ Link
Type/order code	Description	
[6] Motor EMMT, EMME	<ul style="list-style-type: none"> <li>• Motors specially matched to the axis, with or without brake</li> <li>• The motor can be mounted and turned by 90° depending on the requirement. This means that the connection side can be freely selected</li> </ul>	<a href="#">emmt</a>
[7] Adapter kit	Interface between rotary module and gripper	<a href="#">ermb</a>

## Accessories

### Permitted axis/motor combinations for axial kits



Follow these links to find all the information you need on:

- Axis/motor combinations
- Permitted third-party motors
- Technical data
- Dimensions

For axial kits → Internet: [www.festo.com/catalogue/eamm-a](http://www.festo.com/catalogue/eamm-a)

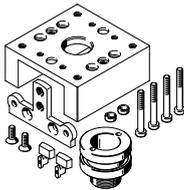
#### Centring sleeve ZBH-7

	Description	Material sleeve	Size of pack	Product weight	Part no.	Type
	For size 20, for centring loads and attachments (centring sleeves are included in the scope of delivery of the rotary module)	Steel	10	1 g	<b>8146544</b>	<b>ZBH-7-B</b>

#### Centring sleeve ZBH-9

	Description	Material sleeve	Size of pack	Product weight	Part no.	Type
	For size 25, 32, for centring loads and attachments (centring sleeves are included in the scope of delivery of the rotary module)	Steel	10	2 g	<b>8137184</b>	<b>ZBH-9-B</b>

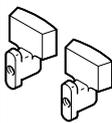
#### Sensing kit EAPS-...-S

	Size	Description	Product weight	Part no.	Type
	20	Kit with housing (trip cam support, 2 cams, sensor bracket)	258 g	<b>558392</b>	<b>EAPS-R1-20-S</b>
	25		406 g	<b>558393</b>	<b>EAPS-R1-25-S</b>
	32		560 g	<b>558394</b>	<b>EAPS-R1-32-S</b>

#### Sensing kit without housing EAPS-...-S-WH

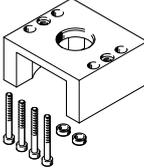
	Size	Description	Product weight	Part no.	Type
	20	Kit without housing (trip cam support, 2 cams, sensor bracket)	86 g	<b>558395</b>	<b>EAPS-R1-20-S-WH</b>
	25		90 g	<b>558396</b>	<b>EAPS-R1-25-S-WH</b>
	32		136 g	<b>558397</b>	<b>EAPS-R1-32-S-WH</b>

#### Cam EAPS-...-CK

	Description	Description	Product weight	Part no.	Type
	For sizes 20, 25, 32	for sensing positions (2 cams included in scope of delivery)	10 g	<b>558398</b>	<b>EAPS-R1-CK</b>

## Accessories

Sensor bracket EAPS-...-SH					
	Description	Description	Product weight	Part no.	Type
	For sizes 20, 25	For mounting the proximity switches on the rotary module	24 g	558399	EAPS-R1-20-SH
	For size 32		30 g	558400	EAPS-R1-32-SH

Housing EAPS-...-H					
	Size	Description	Product weight	Part no.	Type
	20	For protecting the sensing kit and as mounting interface for the drive	172 g	560673	EAPS-R1-20-H
	25		316 g	560674	EAPS-R1-25-H
	32		424 g	560675	EAPS-R1-32-H

Proximity switch SIEN (round design), inductive <span style="float: right;">Link <a href="#">sien-m8</a></span>						
	Switching element function <sup>1)</sup>	Electrical connection	Switching output	Cable length	Part no.	Type
	N/C contact	3-pin, M8x1, Plugs	PNP		150391	SIEN-M8B-PO-S-L
		Cable		2.5 m	150390	SIEN-M8B-PO-K-L
	N/O contact	3-pin, M8x1, Plugs		150387	SIEN-M8B-PS-S-L	
		Cable	2.5 m	150386	SIEN-M8B-PS-K-L	

1) Cannot be fitted on size 16 in combination with motor attachment variant „left“ (ERMO-16-...-L).

Connecting cable NEBA, straight <span style="float: right;">Link <a href="#">neba</a></span>						
	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/cores	Cable length	Part no.	Type
	M8x1, A-coded, to EN 61076-2-104	Open end	3	2.5 m	★ 8078223	NEBA-M8G3-U-2.5-N-LE3
				5 m	★ 8078224	NEBA-M8G3-U-5-N-LE3