

Rotary drive ERMO

FESTO



Characteristics

At a glance

[Link](#) [ermo](#)

- Electric rotary drive with stepper motor and integrated gear unit
- ServoLite – closed-loop operation with encoder
- Heavy-duty bearing for high forces and torques
- Backlash-free pre-stressed rotating plate with very good axial eccentricity and concentricity
- Optional holding brake

Range of applications:

- Rotating and positioning parts
- Simple rotary indexing table applications
- As a rotary axis in multi-axis applications

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.

Diagrams

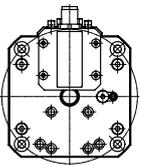
[Link](#) [ermo](#)



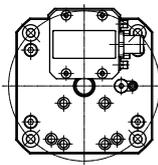
The diagrams shown in this document are also available online. These can be used to display precise values.

Cable outlet direction

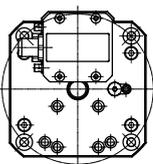
[] Standard



[L] Left



[R] Right

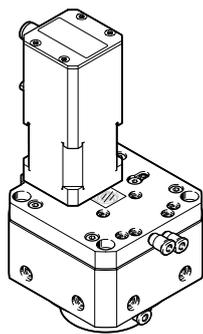


Characteristics

Energy through-feed

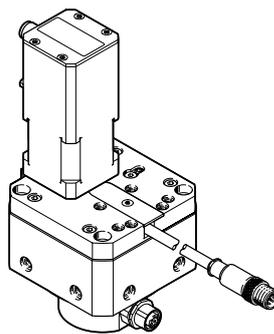
- The energy through-feed can be used to transfer electrical signals or compressed air through the hollow shaft
- This enables the quick and easy supply of the parts mounted on the rotating plate, even for infinitely rotating applications
- Tubing and electrical cables will not be damaged by the rotary movement
- Suitable for IO-Link® signal transmission
- Approved for vacuum operation
- The energy through-feed cannot be used in combination with the stop kit EADP-ES-R3

[P2] Pneumatic, 2 ducts



- Number of pneumatic ducts: 2
- Tubing outside diameter: 4 mm
- Operating pressure per duct: -0.85 ... 8 bar
- Flow rate per duct: 86 l/min

[E8] Electric, 8 signals



- No. of signal cables: 8
- Rated voltage: 30 V DC
- Max. current: 1.5 A
- Cable cross section: 0.1 mm²

Type code

001	Series
ERMO	Rotary drive, electric

002	Size
12	12
16	16
25	25
32	32

003	Motor type
ST	Stepper motor ST

004	Measuring unit
E	Encoder

005	Brake
	None
B	With brake

006	Cable outlet direction
	Standard
L	Left
R	Right

007	Energy through-feed
	None
E8	Electric, 8 signals
P2	Pneumatic, 2 ducts

Datasheet

General technical data				
Size	12	16	25	32
Design	Electromechanical rotary drive, With integrated gear unit			
Rotation angle	Infinite			
Repetition accuracy ¹⁾	±0.05°			±0.1°
Torsional backlash ²⁾	0.2 deg			
Gear unit ratio	9:1			7:1
Type of mounting	Via female thread			
Mounting position	optional			
Product weight	475 g	900 g	1,350 g	2,200 g

1) Without payload in new condition

2) Without payload in new condition

Mechanical data				
Size	12	16	25	32
Nominal torque ¹⁾	0.15 Nm	0.8 Nm	2.5 Nm	5 Nm
Nominal rotary speed	100 rpm		66 rpm	50 rpm
Max. speed at 90°	200 rpm		150 rpm	100 rpm
Permissible mass moment of inertia	3 kgcm ²	13 kgcm ²	65 kgcm ²	164 kgcm ²
Mass moment of inertia JO	0.0079 kgcm ²	0.0383 kgcm ²	0.114 kgcm ²	0.39 kgcm ²

1) Theoretical torque at nominal rotational speed (see graph)

Electrical data				
Size	12	16	25	32
Nominal operating voltage DC	24 V			
Nominal motor current	0.8	1.4	3	4.2
Stepper angle for complete step	1.8 deg			
Duty cycle	100%			
Operating voltage DC for brake	–	24 V		
Power consumption, brake	–	8 W		
Brake holding torque	–	1 Nm	2.5 Nm	
Mass moment of inertia of brake	–	0.0069 kgcm ²	0.013 kgcm ²	
Rotor position sensor	Incremental encoder			
Rotor position sensor, encoder measuring principle	Optical			
Rotor position encoder interface	RS422 TTL AB channels + zero index			
Insulation protection class	B			

Operating and environmental conditions	
Ambient temperature	0 ... 50°C
Storage temperature	-20 ... 60°C
Degree of protection	IP40
Relative air humidity	0 - 85%, Non-condensing
Corrosion resistance class CRC ¹⁾	1 - Low corrosion stress
CE mark (see declaration of conformity) ²⁾	To EU EMC Directive In accordance with EU RoHS Directive
UKCA marking (see declaration of conformity) ³⁾	To UK instructions for EMC To UK RoHS instructions
Approval	RCM trademark

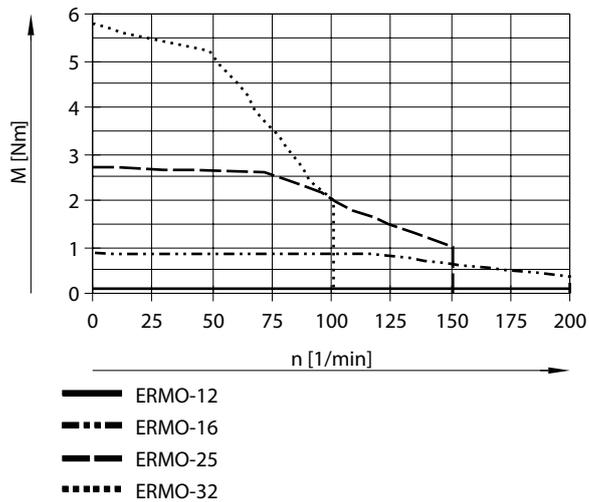
1) More information: www.festo.com/x/topic/crc2) Further information www.festo.com/catalogue/ermo → Support/Downloads3) Further information www.festo.com/catalogue/ermo → Support/Downloads

Datasheet

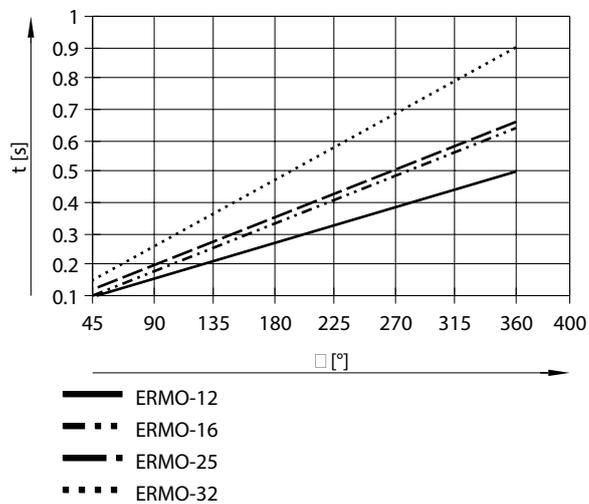
Materials

Material housing	Wrought aluminium alloy, Anodised
Material flange	Wrought aluminium alloy, Anodised
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364 zone III

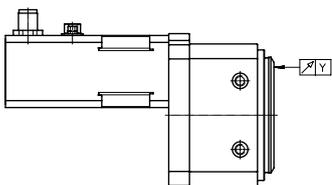
Torque M as a function of speed n



Positioning time t as a function of rotation angle a



Axial run-out



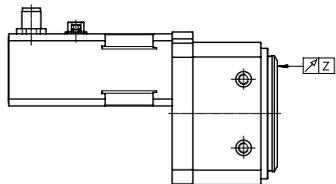
Measured on the surface of the rotating plate, at the edge of the plate, when new.

For sizes 12; 16; 25: less than 0.02 mm

For size 32: less than 0.04 mm

Datasheet

Concentricity

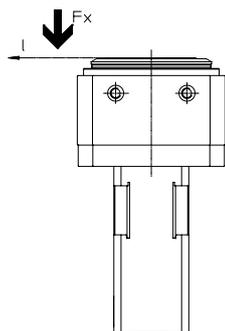


Measured at the centring hole of the rotating plate, when new.

For sizes 12; 16; 25: less than 0.02 mm

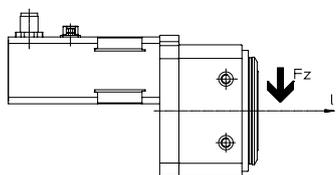
For size 32: less than 0.04 mm

Max. dynamic axial force F_x



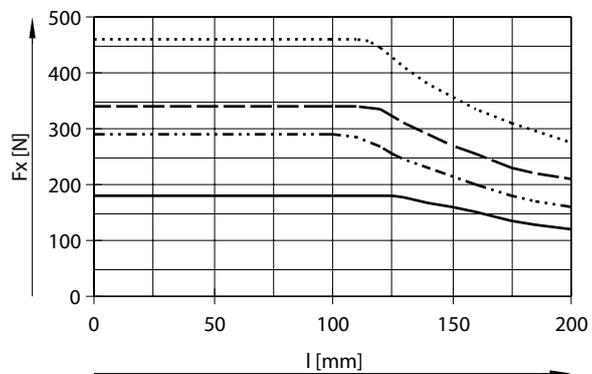
Size	12	16	25	32
Max. axial force	180	290	350	450

Max. dynamic radial force F_z



Size	12	16	25	32
Max. radial force	200	300	450	550

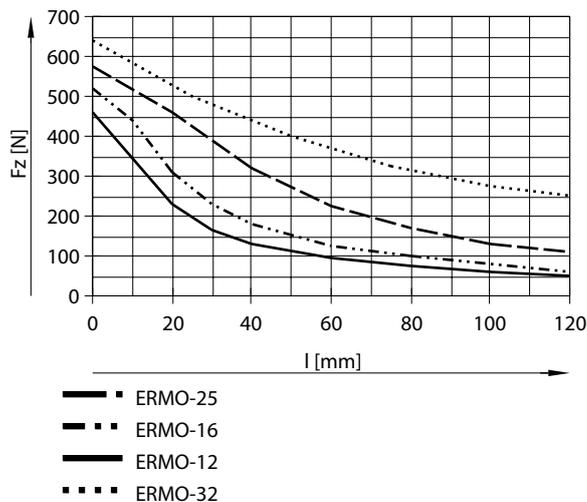
Dynamic axial force F_x as a function of lever arm l



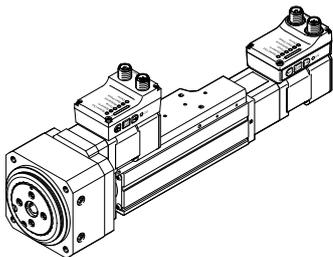
- ERMO-32
- ERMO-25
- ERMO-16
- ERMO-12

Datasheet

Dynamic radial force F_z as a function of lever arm l



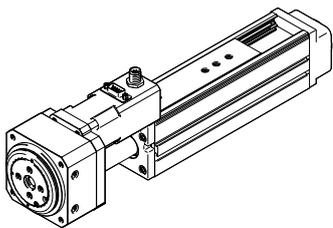
Combination of ERMO with mini slide EGSC



Required accessories:

- ERMO-12 / EGSC-32: 2x centring sleeve ZBH-7; 2x screw M4x12
- ERMO-16 / EGSC-45: 2x centring sleeve ZBH-7; 2x screw M5x12
- ERMO-25 / EGSC-45, 60: 2x centring sleeve ZBH-7; 2x screw M5x12
- ERMO-32 / EGSC-60: 2x centring sleeve ZBH-7; 2x screw M5x15

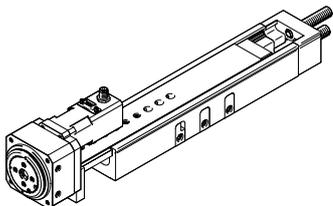
Combination of ERMO with mini slide EGSL



Required accessories:

- ERMO-12 / EGSL-35: 2x centring sleeve ZBH-7; 2x screw M4x12
- ERMO-16 / EGSL-45: 2x centring sleeve ZBH-7; 2x screw M5x12
- ERMO-25 / EGSL-55: 2x centring sleeve ZBH-7; 2x screw M5x14
- ERMO-32 / EGSL-55: 2x centring sleeve ZBH-7; 2x screw M5x14

Combination of ERMO with mini slide DGSL



Required accessories:

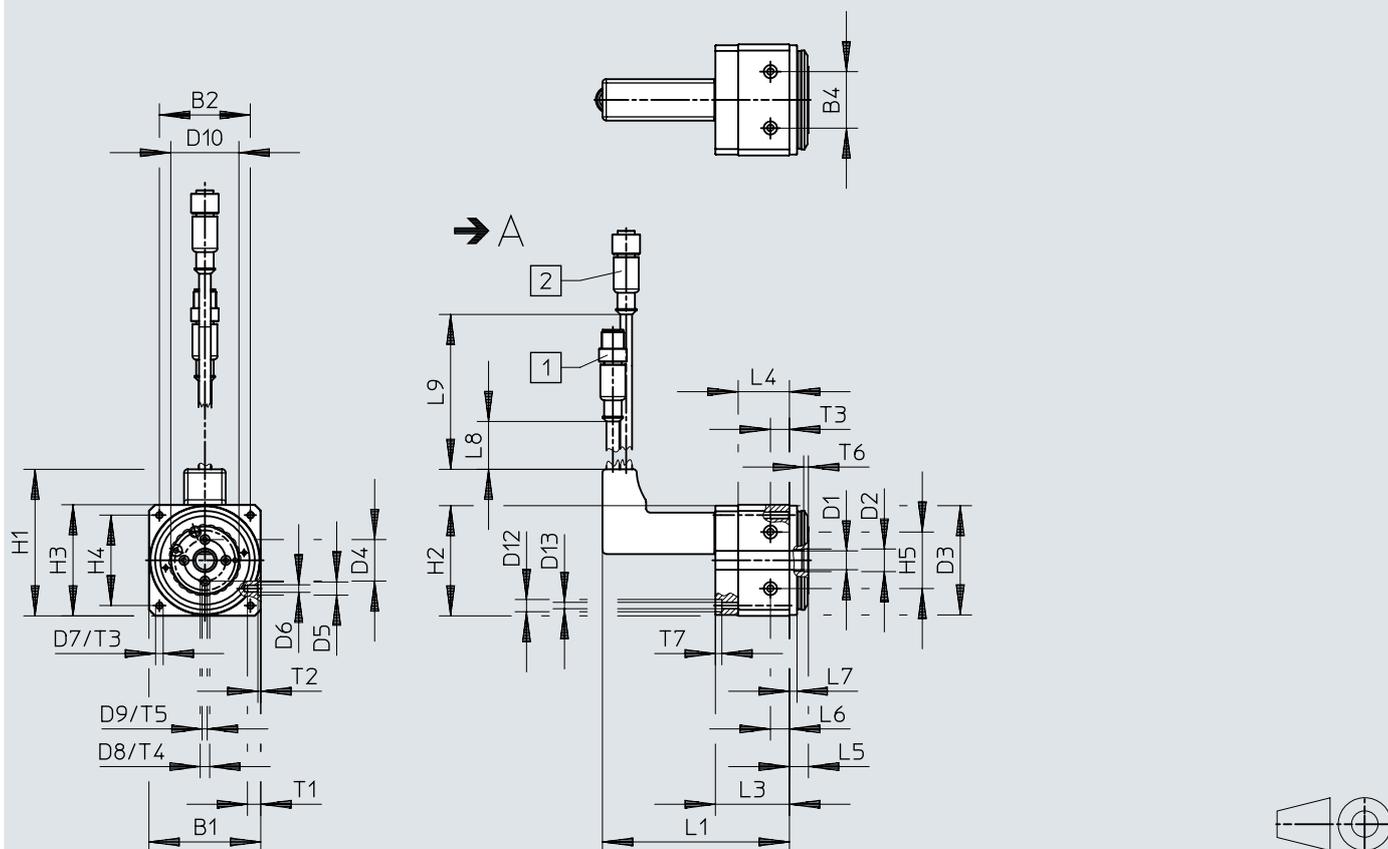
- ERMO-12 / DGSL-12: 2x centring sleeve ZBH-7; 2x screw M4x18
- ERMO-25 / DGSL-20: 2x connector sleeve ZBV-9-7; 2x screw M5x22
- ERMO-25 / DGSL-25: 2x connector sleeve ZBV-9-7; 2x screw M5x22

When combining ERMO-12 with DGSL-12, the proximity switch SIEN cannot be used as a reference switch for ERMO.

In this combination, the stroke is reduced by the head height of the screws for the DGSL. This shortened stroke must be compensated by external cushioning.

Dimensions

Dimensions – ERMO, size 12

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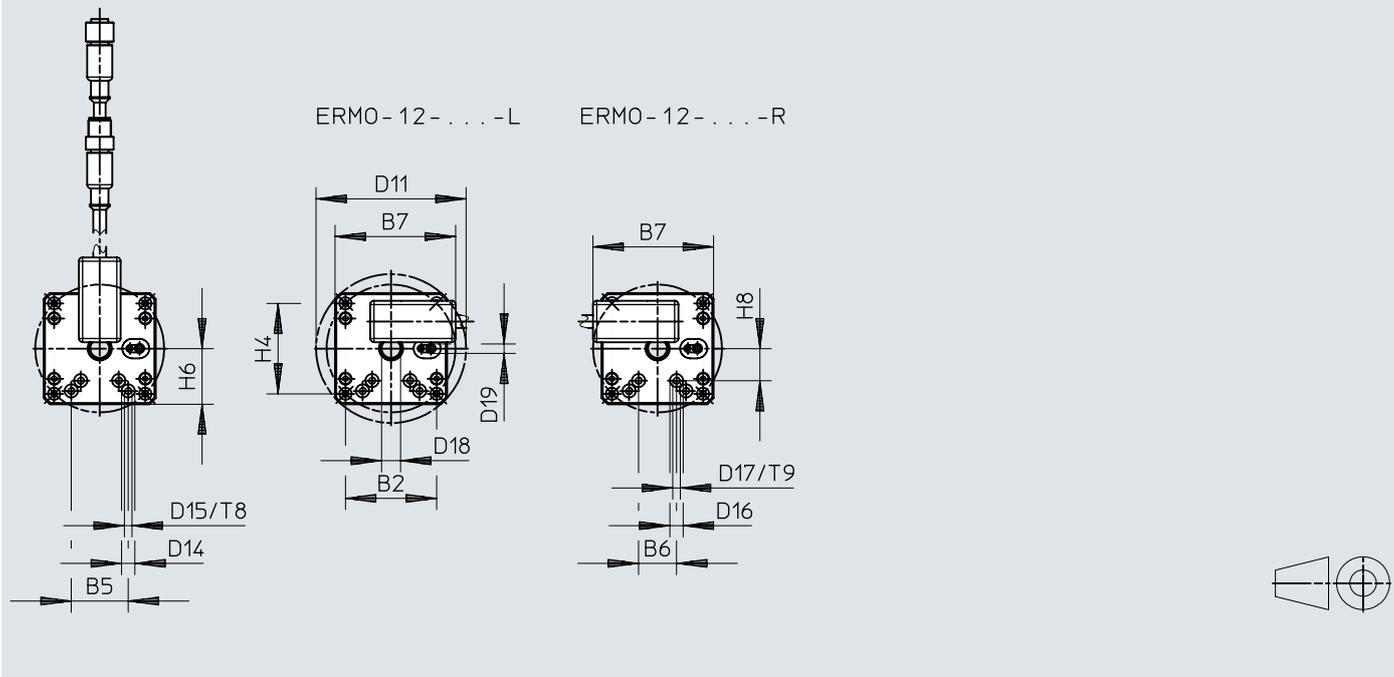
- [1] Encoder cable
 [2] Motor cable
 [3] Min. bending radius of the cables is 60 mm

	B1	B2	B4	D1	D2	D3	D4	D5	D6
	±0,3		±0,03	∅	∅ H8	∅ f8	∅ ±0,02	∅ H7	
ERMO-12	59	48	30	10/7 ¹⁾	12	58	22	7	M4
	D7	D8	D9	D10	D12	D13	H1	H2	H4
	M4	∅ H7 5	M3	∅ 36	∅ 6,5	∅ 3,4	80	58,5	48
	H3	H5	L1	L3	L4	L5	L6	L7	L8
	±0,3	±0,03	±1,5	±0,6		±0,2	±0,1	±0,1	
ERMO-12	59	30	100	39	27	10	10	4	300
	L9	T1	T2	T3	T4	T5	T6	T7	
			+0,1		+0,1		+0,1		
ERMO-12	300	7	1,5	10	1,2	7	2,5	3,4	

Dimensions

Dimensions – ERMO, size 12 (view A)

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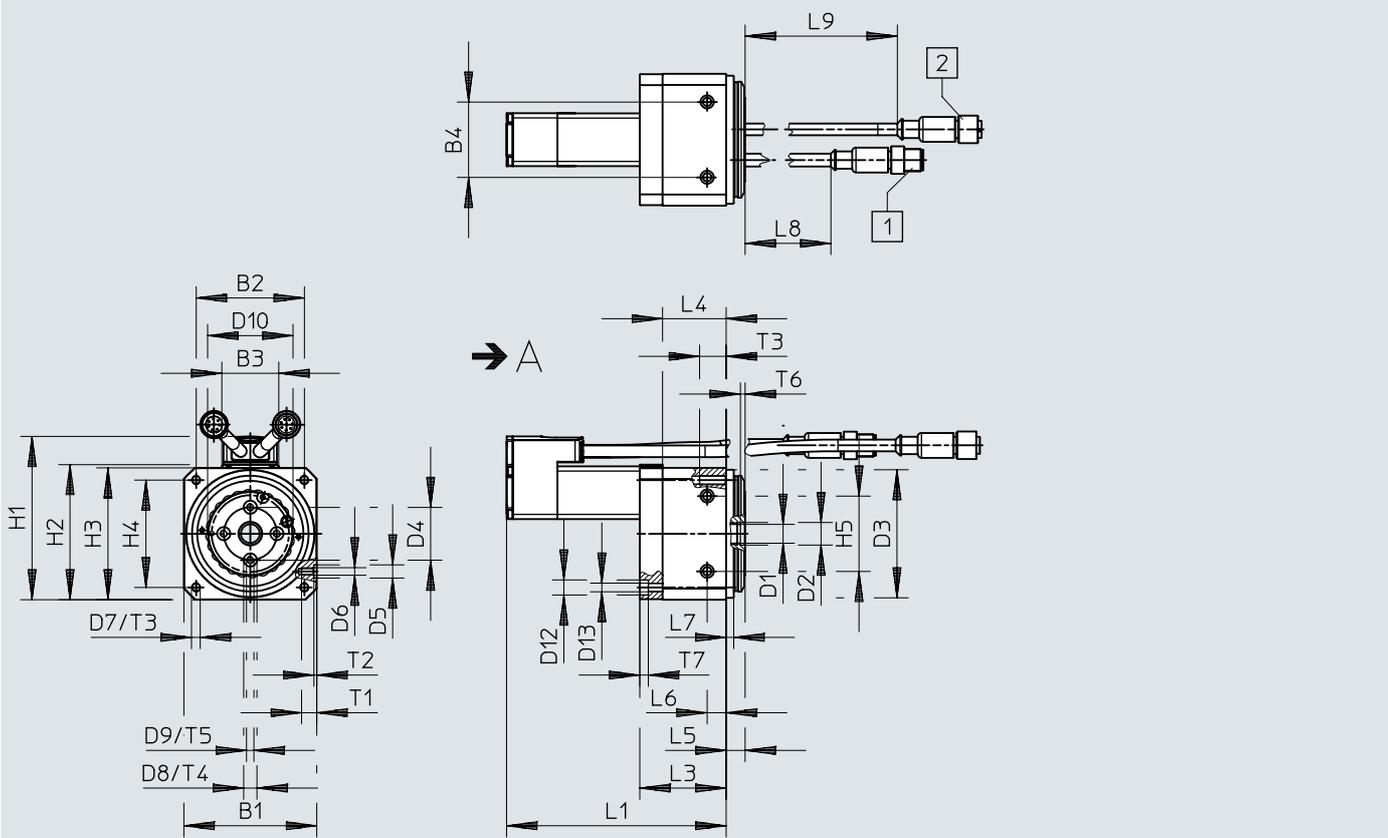


	B2	B5	B6	B7	D11 ∅	D14 ∅	D15	D16 ∅
		±0,02	±0,02		±0,5	H7		H7
ERMO-12	48	30	20	46	79	7	M4	7
	D17	D18	D19	H4	H6	H8	T8	T9
		max.						
ERMO-12	M4	7	M5x0,5	48	22,5	17	1,5	1,5

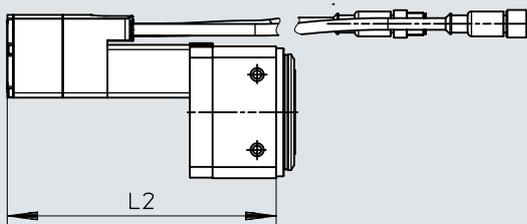
Dimensions

Dimensions – ERMO, size 16

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ERMO-16-ST-E-B



- [1] Encoder cable
- [2] Motor cable
- [3] Min. bending radius of the cables is 60 mm



Dimensions

	B1 ±0,3	B2	B3	B4 ±0,03	D1 ∅	D2 ∅ H8	D3 ∅ f8	D4 ∅ ±0,02	D5 ∅ H7	
ERMO-16	70	57	30	40	10	12	68	28	7	
	D6	D7	D8 ∅ H7	D9	D10 ∅	D12 ∅	D13 ∅	H1	H2	H3 ±0,3
ERMO-16	M5	M5	7	M4	45	8	4,6	87	71,8	70
	H4	H5 ±0,03	H4	H5 ±0,03	L1 ±1,5	L2 ±1,5	L3 ±0,6	L4	L5 ±0,2	L6 ±0,1
ERMO-16	57	40	57	40	116	142	45,5	33,5	10	10
	L7 ±0,1	L8	L9	T1	T2 +0,1	T3	T4 +0,1	T5	T6 +0,1	T7
ERMO-16	4	250	350	8	1,5	14	1,5	8	2,5	4,5

Dimensions

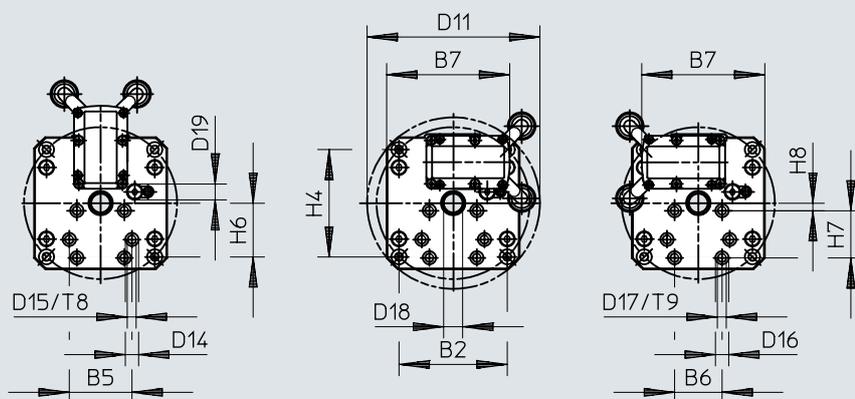
Dimensions – ERMO, size 16 (view A)

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ERMO-16-...-L

ERMO-16-...-R

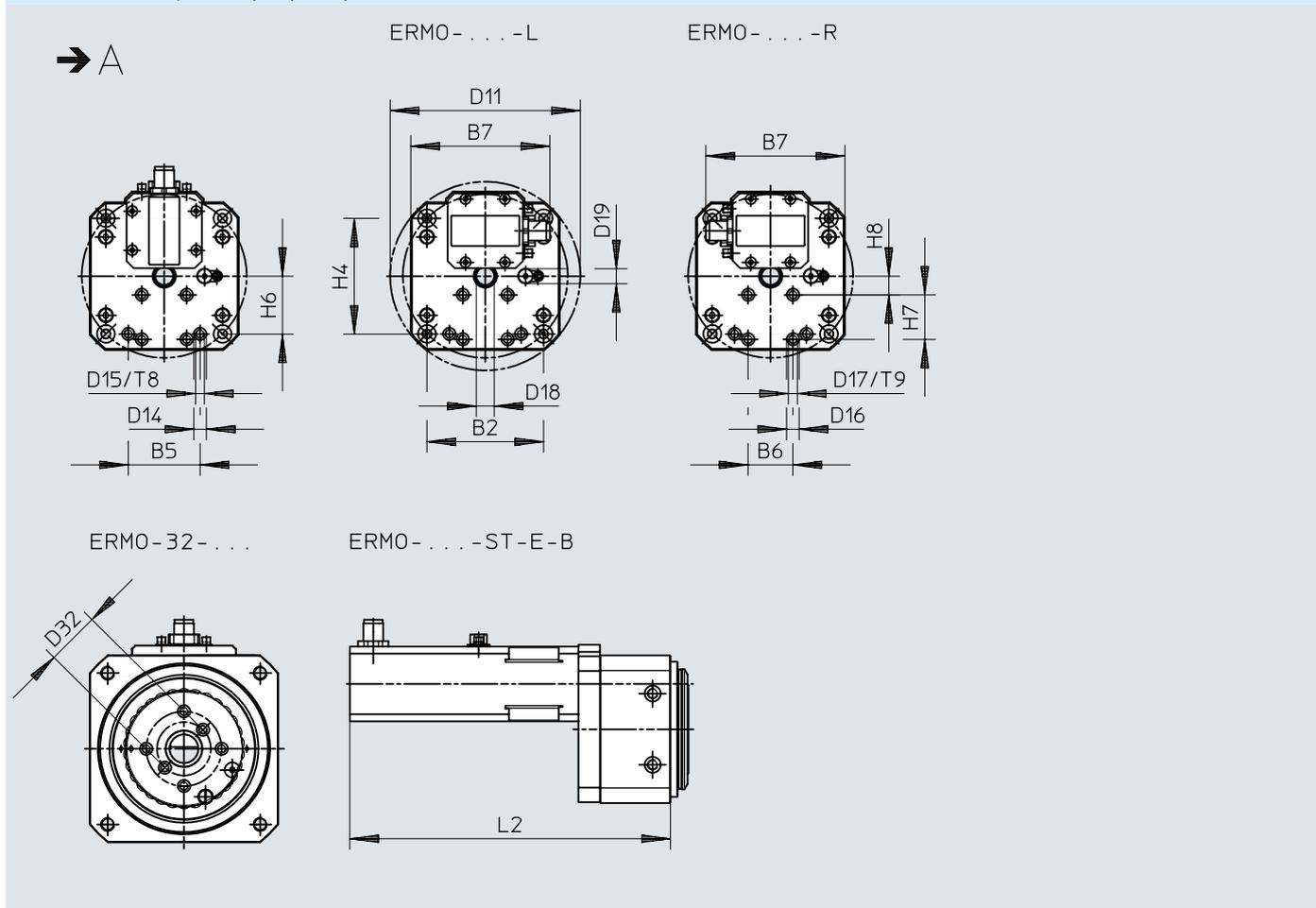


	B5	B6	B7	D11 ∅	D14 ∅	D15	D16 ∅	D17
	±0,02	±0,02		±0,5	H7		H7	
ERMO-16	33	25	65	91	7	M5	7	M5
	D18	D19	H4	H6	H7	H8	T8	T9
	max.				±0,02			
ERMO-16	–	M8x1	57	19,3	25	4	1,5	1,5

Dimensions

Dimensions – ERMO, sizes 25/32 (view A)

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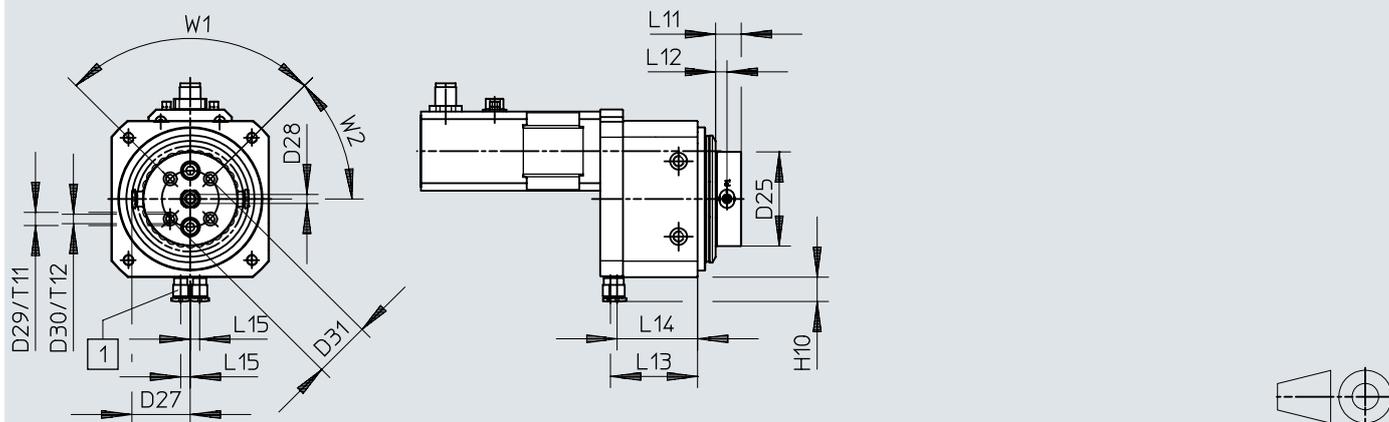
	B2	B5	B7	D11	D14	D15	D16	D17
		±0,02		∅ ±0,5	∅ H7		∅ H7	
ERMO-25	65	40	78	106	7	M5	7	M5
ERMO-32	85	–	96	135	–	–	7	M5

	D18	D19	H4	H6	H7	H8	T8	T9
	max.				±0,02			
ERMO-25	10	M8x1	65	32,5	25	10,5	1,5	1,5
ERMO-32	9	M8x1	85	–	25	15	–	1,5

Dimensions

Dimensions – P2 – Energy through-feed, pneumatic

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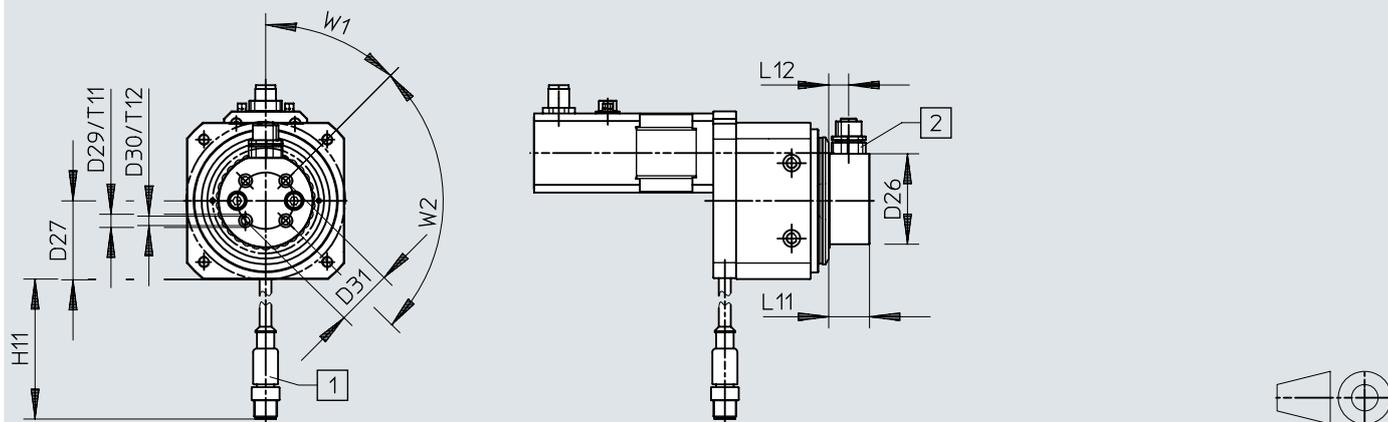


[1] 4x push-in fitting QSM-M5-4-I

	D26 ∅	D27 ∅	D28 ∅	D29 ∅ H7	D30	D31 ∅ ±0,02	H10 ±1	L11	L12	L13	L14	L15	T11 +0,1	T12	W1	W2
ERMO-12	44	R29,5	3	5	M3	22	13	13,5	6	33,8	30,3	4	1,2	8	90°	45°
ERMO-16	44	R31	4,8	7	M4	28	13	13	6	40,6	37	5	1,5	8	90°	45°
ERMO-25	50	R31	4,8	7	M5	30	13	13,5	6	45,9	42,4	5	1,5	8,5	90°	45°
ERMO-32	64	R36	4,8	7	M5	42	13	16	8,6	41,5	38	5	1,5	10	90°	22,5°

Dimensions

Dimensions – E8 – Energy through-feed, electrical

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


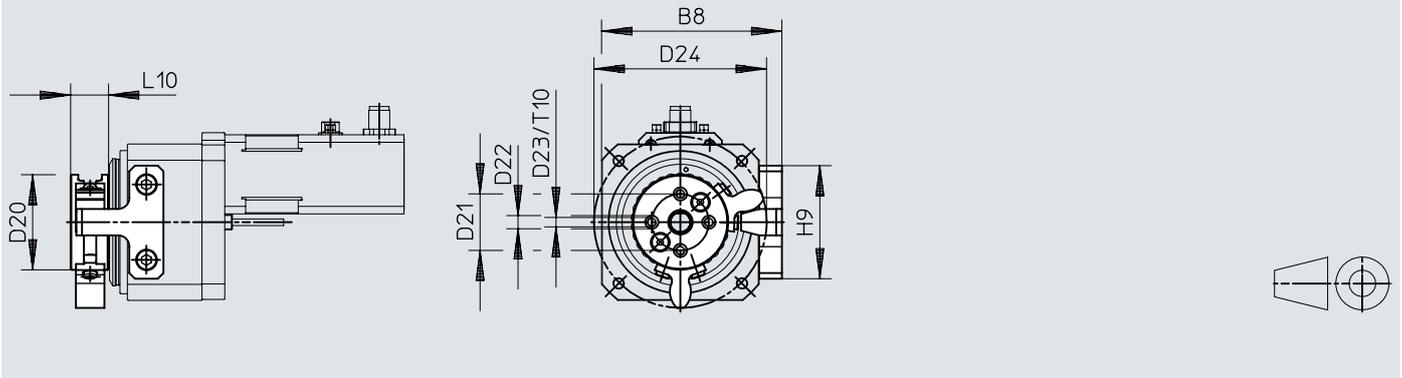
- [1] M12 plug, 8-pin
 [2] M12 socket, 8-pin

	D26 ∅	D27 ∅	D29 ∅ H7	D30	D31 ∅ ±0,02	H11 ±10	L11	L12	T11 +0,1	T12	W1	W2
ERMO-12	44	R38,5	5	M3	22	205	21,5	10	1,2	8	54°	72°
ERMO-16	44	R37,5	7	M4	28	195	21	10,5	1,5	8	55°	70°
ERMO-25	48	R42	7	M5	30	185	21,5	10,5	1,5	8,5	45°	90°
ERMO-32	64	R47	7	M5	42	175	21	11	1,5	10	45°	90°

Dimensions

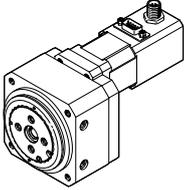
Dimensions – Stop kit EADP

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	B8	D20 ∅ ±0,1	D21 ∅ ±0,1	D22 ∅ H7	D23	D24 ∅	H9	L10 ±0,1	T10
EADP-ES-R3-12	69	44	28	7	M4	74,8	40	16	16
EADP-ES-R3-16	80	44	28	7	M4	74,2	52	16	16
EADP-ES-R3-25	95	50,5	30	7	M5	91	60	20	20
EADP-ES-R3-32	120	64	42	7	M5	90	80	27	27

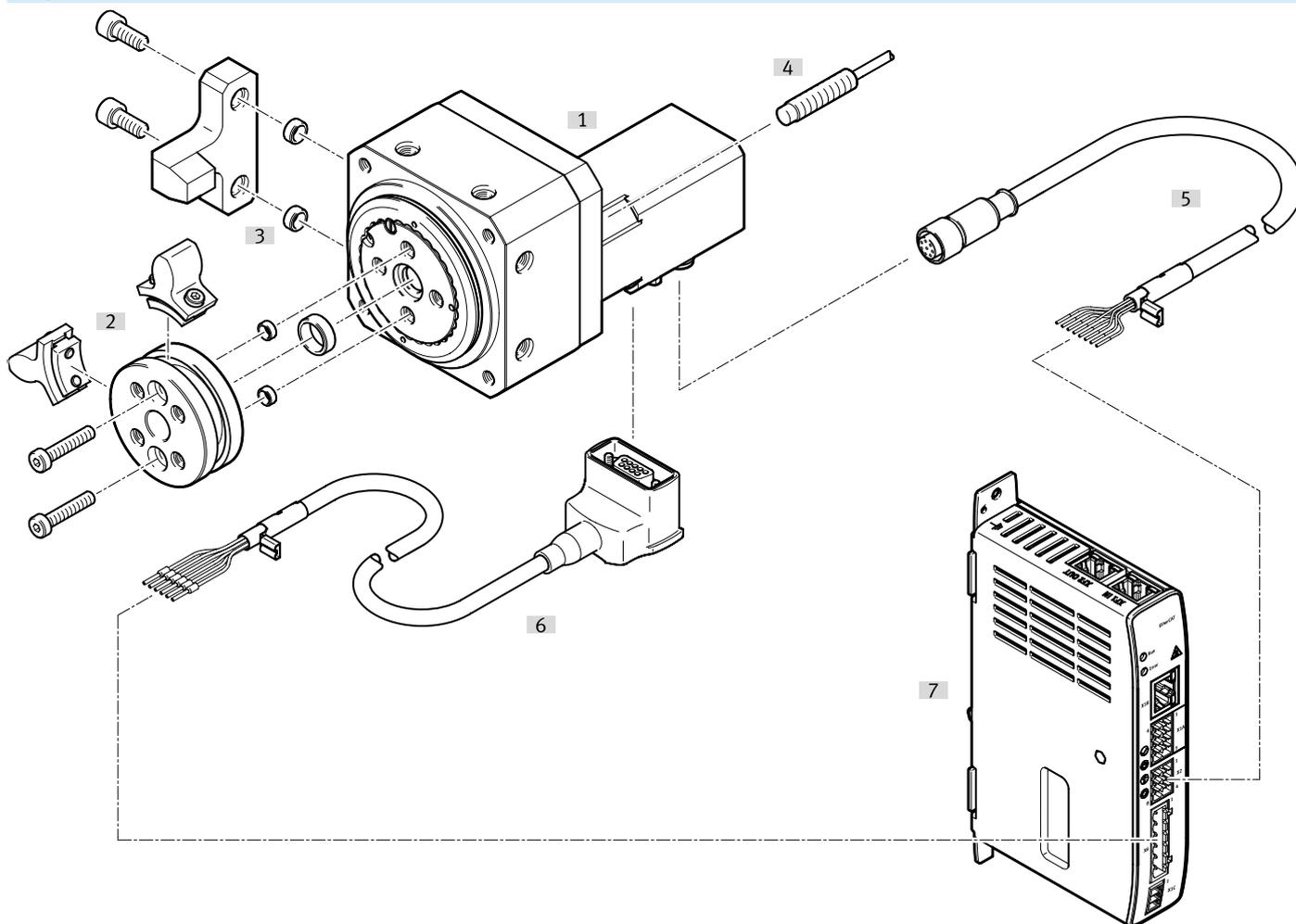
Ordering data

Ordering data			
	Size	Part no.	Type
	12	3008525	ERMO-12-ST-E
	16	3008526	ERMO-16-ST-E
	25	3008527	ERMO-25-ST-E
	32	3008528	ERMO-32-ST-E

Ordering data – Modular product system			Link ermo
	Size	Part no.	Type
	12	2954695	ERMO-12
	16	2954696	ERMO-16
	25	2954697	ERMO-25
	32	2954698	ERMO-32

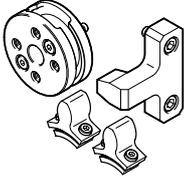
Peripherals

Peripherals overview



Accessories		→ Link
Type/order code	Description	
[1] Rotary drives ERMO	Electric rotary drive	ermo
[2] Stop kit EADP-ES-R3	<ul style="list-style-type: none"> • For homing to the end position • As end stop for rotary drives without brake • For safety functions 	21
[3] Centring sleeve ZBH	<ul style="list-style-type: none"> • For centring attachments • For centring the rotary drive 	21
[4] Proximity switch SIEN	For homing or position sensing	21
[5] Encoder cable NEBM	For connecting the encoder and controller	23
[6] Motor cable NEBM	For connecting the motor and controller	22
[7] Servo drive CMMT-ST	For positioning the rotary drive	23
[8] Adapter kit DHAA	For drive/gripper connections	adapter-bausatz

Accessories

Stop kit EADP					
	Size	Product weight	Part no.	Type	
	12	96 g	3044562	EADP-ES-R3-12	
	16	100 g	2715501	EADP-ES-R3-16	
	25	210 g	2721599	EADP-ES-R3-25	
	32	290 g	2735411	EADP-ES-R3-32	

Centring sleeve ZBH						
	Description	Material sleeve	Size of pack	Product weight	Part no.	Type
	For sizes 12 ... 32	Steel	10	1 g	8146544	ZBH-7-B

Centring sleeve ZBH						
	Description	Material sleeve	Size of pack	Product weight	Part no.	Type
	For size 25	Steel	10	2 g	8137184	ZBH-9-B

Centring sleeve ZBH						
	Description	Material sleeve	Size of pack	Product weight	Part no.	Type
	For sizes 12, 16, 32	Steel	10	1 g	8137185	ZBH-12-B

Centring sleeve ZBH						
	Description	Material sleeve	Size of pack	Product weight	Part no.	Type
	For size 25	High-alloy stainless steel	10	3 g	191409	ZBH-15

Proximity switch SIEN (round design), inductive – for sizes 12							Link sien-m5
	Switching element function	Electrical connection	Switching output	Cable length	Part no.	Type	
	N/C contact		PNP		150375	SIEN-M5B-PO-S-L	
				2.5 m	150374	SIEN-M5B-PO-K-L	
	N/O contact				150371	SIEN-M5B-PS-S-L	
				2.5 m	150370	SIEN-M5B-PS-K-L	

Proximity switch SIEN (round design), inductive – for sizes 16 ... 32							Link sien-m8
	Switching element function ¹⁾	Electrical connection	Switching output	Cable length	Part no.	Type	
	N/C contact		PNP		150391	SIEN-M8B-PO-S-L	
				2.5 m	150390	SIEN-M8B-PO-K-L	
	N/O contact				150387	SIEN-M8B-PS-S-L	
				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).

Accessories

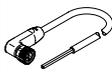
Connecting cable NEBA, straight

[Link](#) 

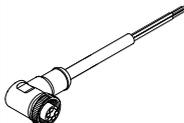
	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/ cores	Cable length	Part no.	Type
	M8x1, A-coded, to EN 61076-2-104	Open end	3	2.5 m	8078223	NEBA-M8G3-U-2.5-N-LE3
				5 m	8078224	NEBA-M8G3-U-5-N-LE3

Connecting cable NEBA, angled

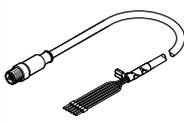
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	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/ cores	Cable length	Part no.	Type
	M8x1, A-coded, to EN 61076-2-104	Open end	3	2.5 m	8078230	NEBA-M8W3-U-2.5-N-LE3
				5 m	8078231	NEBA-M8W3-U-5-N-LE3

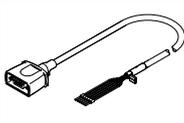
Connecting cables for energy through-feed

	Electrical connection 1, connector system	Electrical connection 2, cable outlet	Electrical connection 2, connector system	Cable length	Part no.	Type
	M12x1, A-coded to EN 61076-2-101	Straight	M12x1, A-coded to EN 61076-2-101	2 m	525617	KM12-8GD8GS-2-PU
				Open end	525616	SIM-M12-8GD-2-PU
			5 m	525618	SIM-M12-8GD-5-PU	
			10 m	570008	SIM-M12-8GD-10-PU	

Motor cable NEBM for size 12, 16

	Electrical connection 1, connection type	Electrical connection 1, cable outlet	Electrical connection 2, connector system	Cable characteristic	Cable length	Part no.	Type
	Plugs	Straight	Open end	Suitable for energy chains	1.5 m	1449600	NEBM-SM12G8-E-1.5-Q5-LE6
					2.5 m	1449601	NEBM-SM12G8-E-2.5-Q5-LE6
					5 m	1449602	NEBM-SM12G8-E-5-Q5-LE6
					7 m	1449603	NEBM-SM12G8-E-7-Q5-LE6
					10 m	1449604	NEBM-SM12G8-E-10-Q5-LE6

Motor cable NEBM for size 25, 32

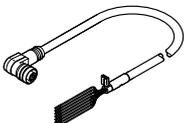
	Electrical connection 1, connection type	Electrical connection 1, cable outlet	Electrical connection 2, connector system	Cable characteristic	Cable length	Part no.	Type			
	Socket	Straight	Open end	Suitable for energy chains	1.5 m	1450368	NEBM-S1G9-E-1.5-Q5-LE6			
					2.5 m	1450369	NEBM-S1G9-E-2.5-Q5-LE6			
					5 m	1450370	NEBM-S1G9-E-5-Q5-LE6			
					7 m	1450371	NEBM-S1G9-E-7-Q5-LE6			
					10 m	1450372	NEBM-S1G9-E-10-Q5-LE6			
					1.5 m	1450736	NEBM-S1W9-E-1.5-Q5-LE6			
		2.5 m			1450737	NEBM-S1W9-E-2.5-Q5-LE6				
		5 m			1450738	NEBM-S1W9-E-5-Q5-LE6				
		7 m			1450739	NEBM-S1W9-E-7-Q5-LE6				
		10 m			1450740	NEBM-S1W9-E-10-Q5-LE6				
					Angled					

Accessories

Encoder cable NEBM for sizes 12 ... 32

	Electrical connection 1, connection type	Electrical connection 1, cable outlet	Electrical connection 2, connector system	Cable characteristic	Cable length	Part no.	Type
	Socket	Straight	Open end	Suitable for energy chains	1.5 m	1451586	NEBM-M12G8-E-1.5-LE8
					2.5 m	1451587	NEBM-M12G8-E-2.5-LE8
					5 m	1451588	NEBM-M12G8-E-5-LE8
					7 m	1451589	NEBM-M12G8-E-7-LE8
					10 m	1451590	NEBM-M12G8-E-10-LE8

Encoder cable NEBM for size 25, 32

	Electrical connection 1, connection type	Electrical connection 1, cable outlet	Electrical connection 2, connector system	Cable characteristic	Cable length	Part no.	Type
	Socket	Angled	Open end	Suitable for energy chains	1.5 m	1451674	NEBM-M12W8-E-1.5-LE8
					2.5 m	1451675	NEBM-M12W8-E-2.5-LE8
					5 m	1451676	NEBM-M12W8-E-5-LE8
					7 m	1451677	NEBM-M12W8-E-7-LE8
					10 m	1451678	NEBM-M12W8-E-10-LE8

Motor controller

 Link [cmmt-st](#)

	Type of mounting	Fieldbus link	Part no.	Type
	Mounting plate, attached with screws, With H-rail	EtherCAT, EtherNet/IP, Modbus/TCP, PROFINET	8163946	CMMT-ST-C8-1C-MP-S0