Rotary gripper module EHMD

FESTO

New

Rotary gripper module EHMD

Key features

At a glance

- The rotary gripper module is a compact module for handling small parts
- The rotary motion is implemented by means of a stepper motor
- The gripping motion is implemented either electrically with a stepper motor or pneumatically using a cylinder
- Used together with the motor controller CMMO-ST, the gripper can grip under power. This allows for flexible gripping

Areas of application:

- Pick and place of small parts from trays
- For fitting and removing cover caps on vials

Everything from a single source

Rotary gripper module
EHMD
➔ Page 5

Motor controller
CMMO-ST
➔ Page 20

Gripper jaw blanks
BUB-HGPT
➔ Page 20

- The motor controller CMMO-ST is a closed-loop and open-loop position controller
- Easy activation via:
  - I/O interface
  - IO-Link or I-Port
  - Modbus TCP
- Monitoring of freely defined positions and torque ranges

The technology in detail

Rotation

Closed loop

- Makes it possible to control the motor torque via the motor current, so the torque can be limited when twisting off a cover cap
- No step loss is possible in the event of overload
- It is possible to use the entire output torque of the motor

Open loop

- The motor is activated in microstep operation with a constant, defined phase current
- Reduction of holding current is required to prevent overheating
- A torque reserve is required to prevent step losses

Homing

- The encoder zero pulse can be used to home the axis of rotation
- One zero pulse per rotation
- Defined angular orientation based on this zero pulse

Gripping

Closed loop

- Makes it possible to the control motor torque via the motor current
- The gripping force of the gripper can be set by a limited driving torque of the lead screw

Open loop

- The motor is activated in microstep operation with a constant, defined phase current
- Reduction of holding current is required to prevent overheating
- The gripper drive is spring-mounted for force setting, so that defined gripping forces can be set in positioning mode

Homing

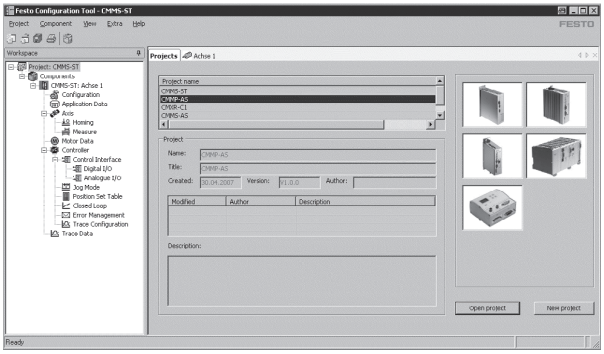
- Gripper motor has an incremental encoder. No limit switch is present
- In the opening direction, homing must be to a stop

Rotary gripper module EHMD

Key features

FCT software – Festo Configuration Tool

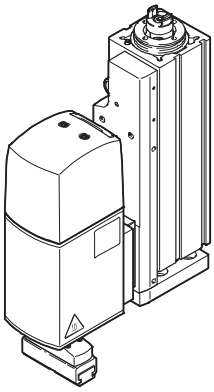
Software platform for electric drives from Festo (➔ www.festo.com/sp/fct)



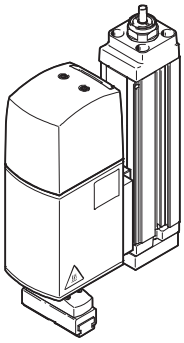
- All drives in a system can be managed and saved in a common project
- Project and data management for all supported types of equipment
- Easy to use thanks to graphically supported parameter entry
- Universal mode of operation for all drives
- Work offline at your desk or online at the machine

Combinations comprising mini slides EGSC-BS, EGSL and electric slide EGSK

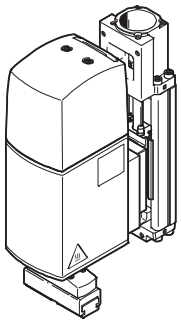
With mini slide EGSC-BS-25/32



With mini slide EGSL-BS-35/45



With electric slide EGSK-20/26

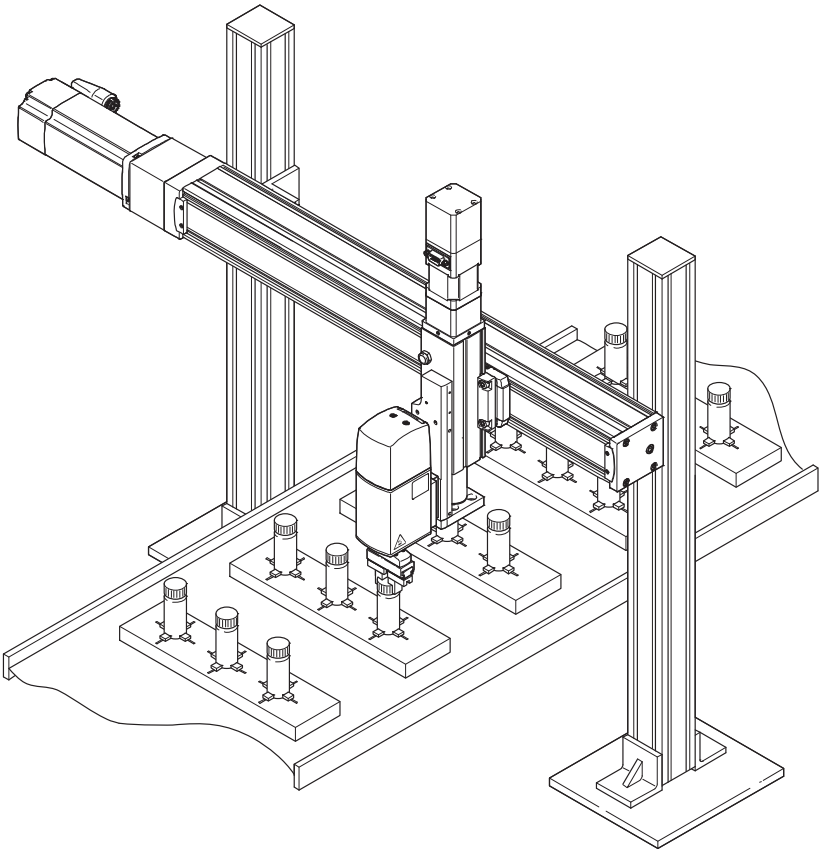


Rotary gripper module EHMD

Key features

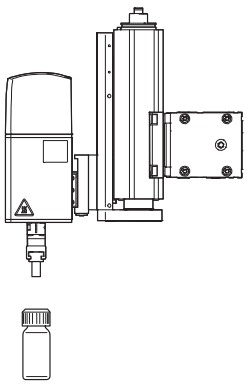
Application example

For fitting and removing covers caps on vials

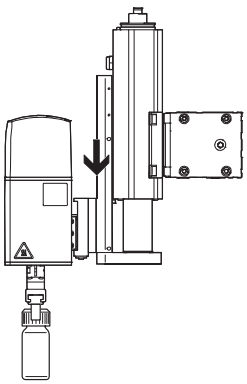


Screwing covers caps on and removing them from vials

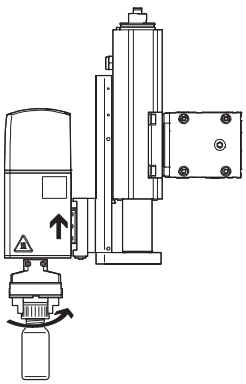
- Mini slide EGSC-BS retracted
- Mounting EHAM-E20



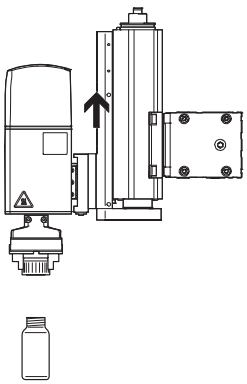
- Mini slide EGSC-BS extends
- Rotary gripper module EHMD grips the cover cap



- Rotary gripper module EHMD unscrews the cover from the vial
- The adapter EHAM-E20 compensates for the thread pitch of caps without the need to move the mini slide (Z-axis)

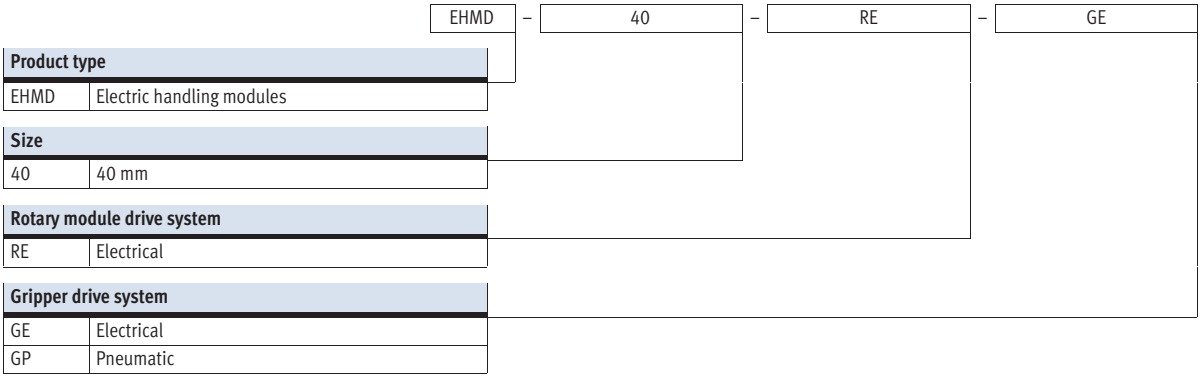


- When the cover is unscrewed, the mini slide EGSC-BS retracts
- The Z compensation module returns to the lower end position due to the weight



Rotary gripper module EHMD

Type codes



Product type	
EHMD	Electric handling modules

Size	
40	40 mm

Rotary module drive system	
RE	Electrical

Gripper drive system	
GE	Electrical
GP	Pneumatic

Rotary gripper module EHMD

Peripherals overview

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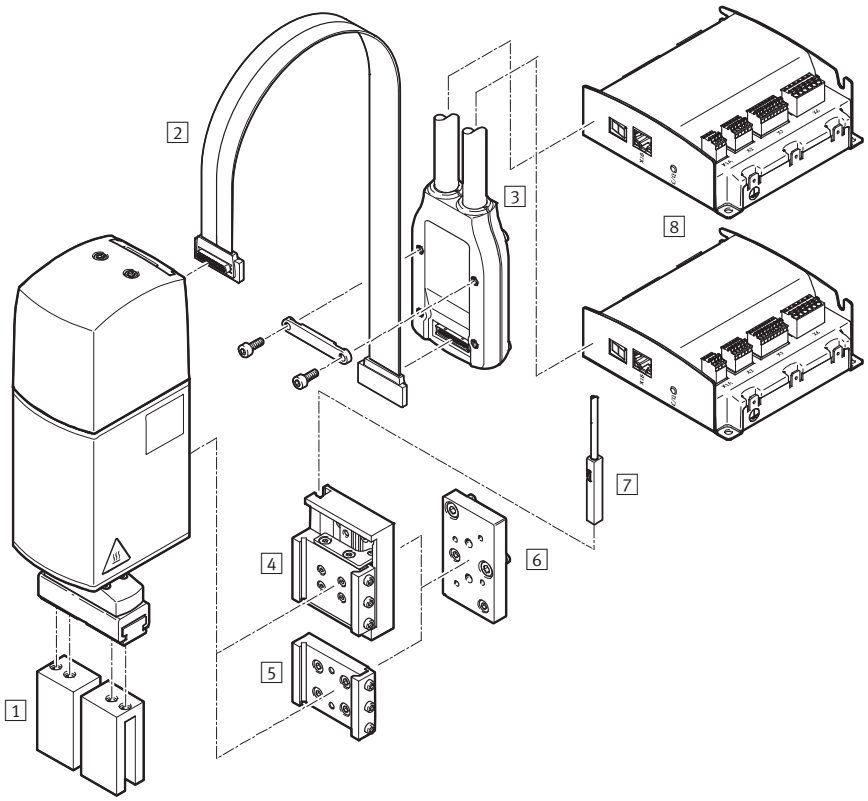
EHMD-40-RE-GE – Electrical gripping



Note

The gripper is provided for external gripping only (closing movement).

Accessories

	Type/order code	Description	➔ Page/Internet
1	Gripper jaw blank BUB-HGPT-16-B	Unmachined parts specially matched to the gripper jaws for production of gripper fingers	20
2	Motor cable NEBM-F1W31	• Connecting cable between EHMD and motor cable NEBM-SF1 • The cable is mandatory for compliance with the EMC Directive	20
3	Motor cable NEBM-SF1	Cable with adapter between motor cable NEBM-F1 and motor controller CMMO-ST	20
4	Mounting (with Z compensation) EHAM-E20-40-Z	Mounting option via dovetail mounting. The mounting makes it possible to fit or remove e.g. covers from vials without additional Z-axis (Z compensation = 12 mm).	17
5	Mounting (rigid) EHAM-E20-40	Mounting option via dovetail mounting	18
6	Adapter kit EHAM-E20-40-E...	For attaching the mountings to the Z-axes: • Mini slide EGSC-BS-25/32 • Mini slide EGSL-BS-35/45 • Electric slide EGSK-20/26	19
7	Proximity sensor, T-slot SIES-M8	Inductive proximity sensor for sensing the Z compensation position	21
8	Motor controller CMMO-ST	For positioning the rotary or gripping motion	20

Rotary gripper module EHMD

Peripherals overview

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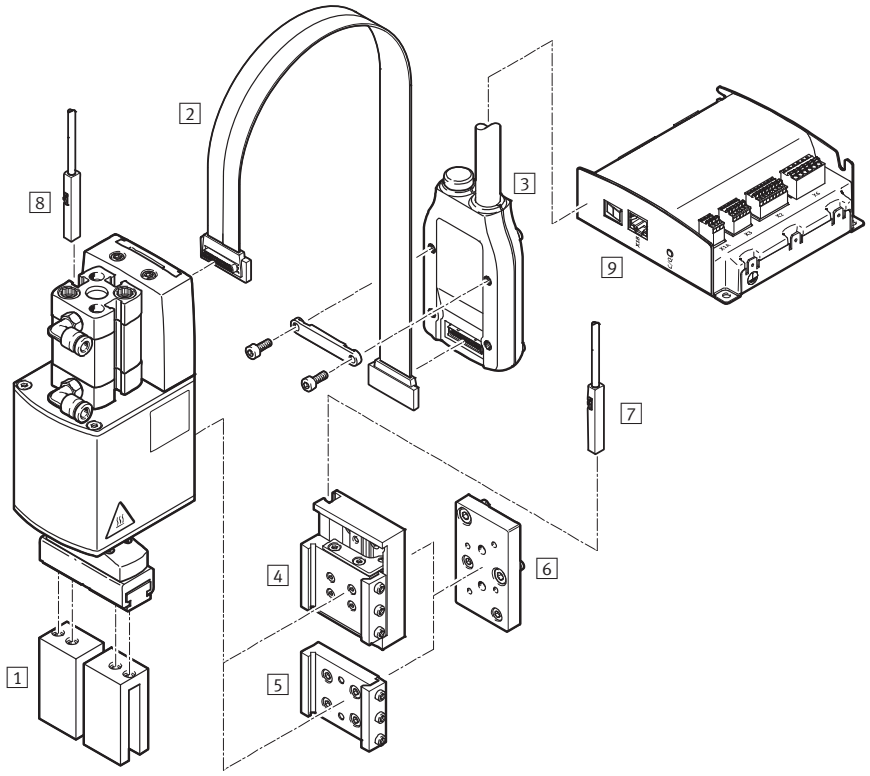
EHMD-40-RE-GP – Pneumatic gripping



Note

The gripper is provided for external gripping only (closing movement).

Accessories

	Type/order code	Description	➔ Page/Internet
1	Gripper jaw blank BUB-HGPT-16-B	Unmachined parts specially matched to the gripper jaws for production of gripper fingers	20
2	Motor cable NEBM-F1W31	Connecting cable between EHMD and motor cable NEBM-SF1	20
3	Motor cable NEBM-SF1	Cable with adapter between motor cable NEBM-F1 and motor controller CMMO-ST	20
4	Mounting (with Z compensation) EHAM-E20-40-Z	Mounting option via dovetail mounting. The mounting makes it possible to fit or remove e.g. covers from vials without additional Z-axis (Z compensation = 12 mm).	17
5	Mounting (rigid) EHAM-E20-40	Mounting option via dovetail mounting	18
6	Adapter kit EHAM-E20-40-E...	For attaching the mountings to the Z-axes: • Mini slide EGSC-BS-25/32 • Mini slide EGSL-BS-35/45 • Electric slide EGSK-20/26	19
7	Proximity sensor, T-slot SIES-M8	Inductive proximity sensor for sensing the Z compensation position	21
8	Proximity sensor, T-slot SME/SMT-M8	Proximity sensor for sensing the position of the gripper fingers (open/closed)	21
9	Motor controller CMMO-ST	For positioning the rotary or gripping motion	20

New

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Technical data

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Output torque
0.3 Nm

Rotation angle
Infinite

Total stroke
10 mm

Activation by:
- Motor controllers CMMO-ST
- Controllers for stepper motors with encoder input

EHMD-...-GE EHMD-...-GP

General technical data			
Type code		EHMD-...	
		-GE	-GP
Design		Electric rotary drive	Electric rotary drive
		Electric gripper	Pneumatic gripper
Motor type		Stepper motor	
Position sensing			
Rotation		Motor encoder	
Gripping		Motor encoder	Slot for proximity sensor
Homing			
Rotation		Encoder index	
Gripping		Fixed-stop block	–
Gripper function		Parallel	
Rotation angle		Infinite	
Number of gripper jaws		2	
Stroke per gripper jaw	[mm]	0 ... 5	5
Nominal load[1)]	[g]	250	
Type of mounting		Via dovetail slot	
Mounting position		Any	
Product weight	[g]	681	577

1) Rated load = gripper fingers + payload

Technical data – Rotation			
Type code		EHMD-...	
		-GE	-GP
Design		Electric rotary drive	Electric rotary drive
Max. output torque	[Nm]	0.3	
Max. output speed	[rpm]	240	
Functional principle		Stepper motor, direct drive	
Nominal voltage	[V DC]	24	
Nominal current	[A]	0.9	
Holding torque at nominal current	[Nm]	0.3	
Resistance per phase	[Ω]	5.8 ±15%	
Inductance per phase	[mH]	11 ±20%	
Step angle	[°]	1.8 ±5%	
Moment of inertia	[kgm^2]	1.25 x 10^{-5}	
Electrical connection		Plug	
		Connection pattern F1	
Encoder			
Operating voltage	[V DC]	5 ±10%	
Current consumption (without load)	[mA]	60	
Pulses/rotation	[1/rev]	500	
Rotor position encoder		RS422 TTL AB-channel + zero index	
		Incremental	
Rotor position sensor measuring principle		Optical	

Rotary gripper module EHMD

Technical data

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Technical data – Gripping			
Type code		EHMD-...	
		-GE	-GP
Design		Electric gripper	Pneumatic gripper
Gripping force per gripper jaw	[N]	7 ... 35	5 ... 35
Max. gripping force			
Closed-loop operation	[N]	35	–
Open-loop operation	[N]	20 ... 25	–
Residual gripping force[1)]	[N]	> 10	–
Gripping force per gripper jaw at 6 bar, closing	[N]	–	25
Minimum gripping force	[N]	7	5
Pneumatic connection		–	QS-4
Functional principle		Stepper motor with lead screw	–
Nominal voltage	[V DC]	24	–
Nominal current	[A]	0.5	–
Holding torque at nominal current	[Nm]	0.043	–
Resistance per phase	[Ω]	5.6 ±15%	–
Inductance per phase	[mH]	4.0 ±20%	–
Step angle	[°]	1.8 ±5%	–
Moment of inertia	[kgm^2]	9 x 10^{-7}	–
Max. motor speed	[rpm]	1000	–
Feed constant	[mm/rev]	1.478	–
Max. speed per gripper jaw	[mm/s]	25	–
Permissible speed for homing to stop	[mm/s]	2	–
Reversing backlash	[mm]	0.3	–
Electrical connection		Plug	–
		Connection pattern F1	–
Encoder			
Operating voltage	[V DC]	5 ±10%	–
Current consumption (without load)	[mA]	30	–
Pulses/rotation	[1/rev]	500	–
Rotor position encoder		RS422 TTL AB-channel + zero index	–
		Incremental	–
Rotor position sensor measuring principle		Optical	–

Note

1) In the event of a power failure, a residual gripping force (gripping force backup) is ensured by the mechanical design. However, the maximum gripping force cannot be maintained.

Rotary gripper module EHMD

Technical data

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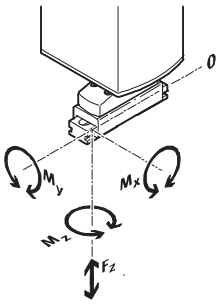
Operating and environmental conditions			
Type code		EHMD-...	
		-GE	-GP
Operating pressure	[bar]	–	1.5 ... 8
Operating medium		–	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		–	Unlubricated compressed air supply
Ambient temperature	[°C]	0 ... +40	
Storage temperature	[°C]	–20 ... +70	
Relative humidity	[%]	0 ... 85 (non-condensing)	
Degree of protection		IP20	
Insulation class		B	
Duty cycle	[%]	100	
Corrosion resistance class CRC[1)]		1	
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)] (with shielded cables and a cable length of max. 30 m)	
KC marking		KC-EMV	
Certification		RCM trademark	
Suitable for use in the food industry[3)]		See additional information on materials	

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp ➔ User documentation.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.
3) Additional information www.festo.com/sp ➔ Certificates.

Materials		
Type code	EHMD-	
	-GE	-GP
Cover	PA-reinforced	PA
Housing	Anodised wrought aluminium alloy	
Tie rod	Stainless steel	
Gripper kinematics	Tempered steel	
Note on materials	Contains paint-wetting impairment substances	
	RoHS-compliant	

Static characteristic load values at the gripper jaws



The indicated permissible forces and torques apply to a single gripper jaw. They include the lever arm, additional weight forces due to the workpiece or external gripper fingers and acceleration forces occurring during movement. The zero coordinate line (gripper jaw guide) must be taken into consideration for the calculation of torques.

Type code		EHMD-...	
		-GE	-GP
Max. permissible force F_x	[N]	30	
Max. permissible force F_z	[N]	30	
Max. permissible torque M_x	[Nm]	0.7	
Max. permissible torque M_y	[Nm]	1.5	
Max. permissible torque M_z	[Nm]	0.7	

Rotary gripper module EHMD

Technical data

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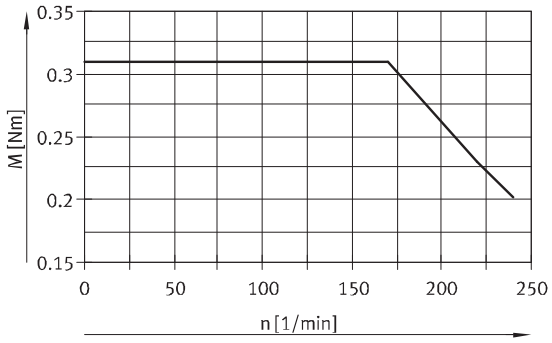
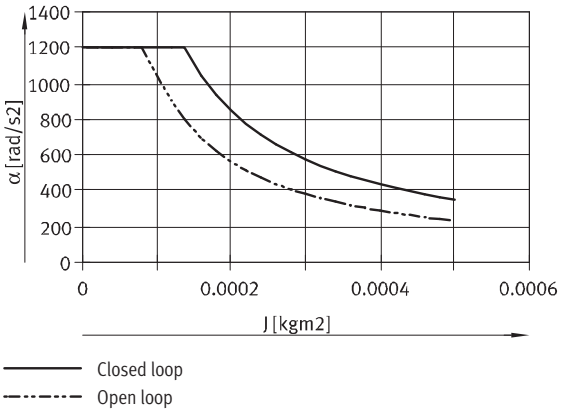
Graphs for rotation

Torque M as a function of rotational speed n

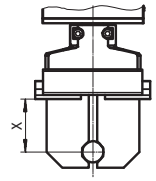


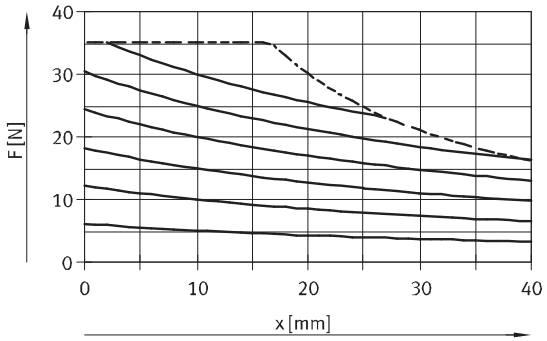
Angular acceleration α as a function of moment of inertia J



Graphs for gripping, electric and pneumatic

Gripping force F in relation to lever arm x





Graphs for gripping, pneumatic

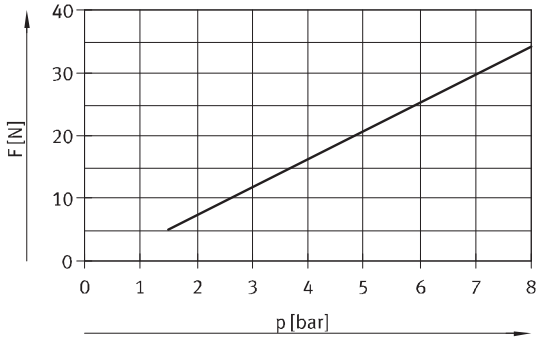
Gripping force F as a function of operating pressure d

Prerequisite:

- Lever arm =10 mm

Description:

The gripper has no gripping force backup if the operating pressure fails.



Rotary gripper module EHMD

Technical data

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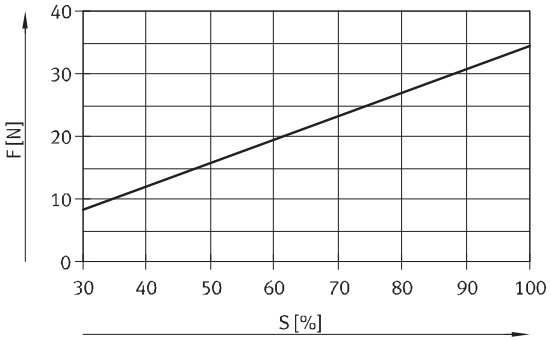
Graphs for gripping, electric

Gripping force F as a function of force setpoint value S

Prerequisite:

- Motor controllers CMMO-ST under power
- Lever arm x = 10 mm
- Speed = 2 mm/s



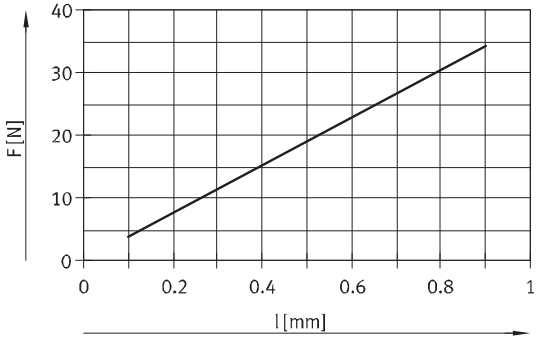
Gripping force F in relation to additional stroke l

Prerequisite:

- Motor controllers CMMO-ST in positioning mode
- Lever arm x = 10 mm

Description:

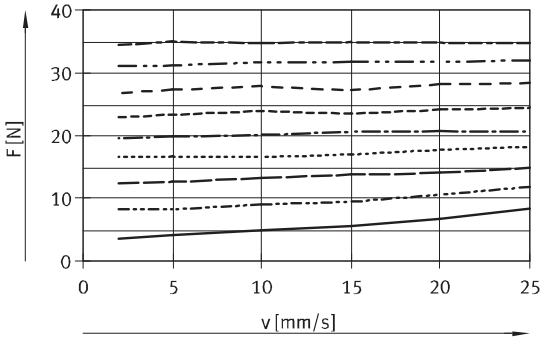
The gripper closes against a spring. The gripping force can be adjusted by means of this additional stroke.



Gripping force F as a function of speed v

Prerequisite:

- Motor controllers CMMO-ST under power
- Ambient temperature = 25 °C



Force specification of:		Force specification of:	
———	20%	- - - - - -	70%
-·-·-·-	30%	- - - -	80%
— — —	40%	- - -·-	90%
·····	50%	— — — —	100%
-·-·-	60%		

Rotary gripper module EHMD

Technical data

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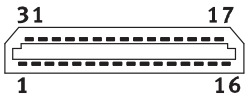
Pin allocation



PIN	Function EHMD-...-GE	EHMD-...-GP
1	Encoder rotation I	Encoder rotation I
2	Encoder rotation B	Encoder rotation B
3	Encoder rotation A	Encoder rotation A
4	Encoder gripper I	–
5	Encoder gripper B	–
6	Encoder gripper A	–
7	Screened	Screened
8	+5 V DC encoder gripper	–
9	+5 V DC encoder rotation	+5 V DC encoder rotation
10	Screened	Screened
11	Motor rotation phase B	Motor rotation phase B
12	Motor rotation phase B	Motor rotation phase B
13	Motor rotation phase A	Motor rotation phase A
14	Motor rotation phase A	Motor rotation phase A
15	Motor gripper phase B	–
16	Motor gripper phase A	–
17	Motor gripper phase A/	–
18	Motor gripper phase B/	–
19	Motor rotation phase A/	Motor rotation phase A/
20	Motor rotation phase A/	Motor rotation phase A/
21	Motor rotation phase B/	Motor rotation phase B/
22	Motor rotation phase B/	Motor rotation phase B/
23	Screened	Screened
24	GND encoder	GND encoder
25	Screened	Screened
26	Encoder gripper A/	–
27	Encoder gripper B/	–
28	Encoder gripper I/	–
29	Encoder rotation A/	Encoder rotation A/
30	Encoder rotation B/	Encoder rotation B/
31	Encoder rotation I/	Encoder rotation I/

Rotary gripper module EHMD

Technical data

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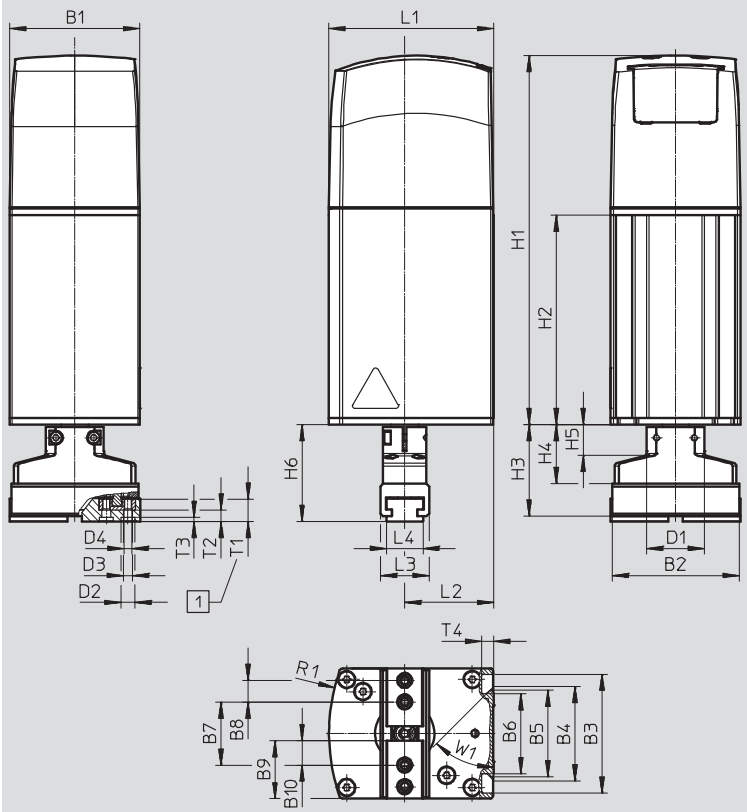
Dimensions Download CAD data ➔ **www.festo.com**

EHMD-...-GE



1 Max. screw-in depth

Included in the scope of delivery:

- 4x screws M3x12
- 4x centring sleeves ZBH-5

(for gripper fingers)

Type code	B1	B2	B3	B4 ±0.15	B5	B6	B7 min.	B7 max.	B8 ±0.08	B9
EHMD-...-GE	48	47	44	35	32	29.6	18	28	8	21.5

Type code	B10	D1 ∅	D2 ∅ H9	D3 ∅	D4	H1	H2	H3	H4	H5	H6
EHMD-...-GE	9	21.5	5	3.4	M3	136.6	77.5	33.8	21.8	11.3	35.8

Type code	L1	L2	L3	L4	R1	T1	T2	T3	T4	W1
EHMD-...-GE	61	33	18	13.5	70	8.3	4.3	1.5	4.5	45°

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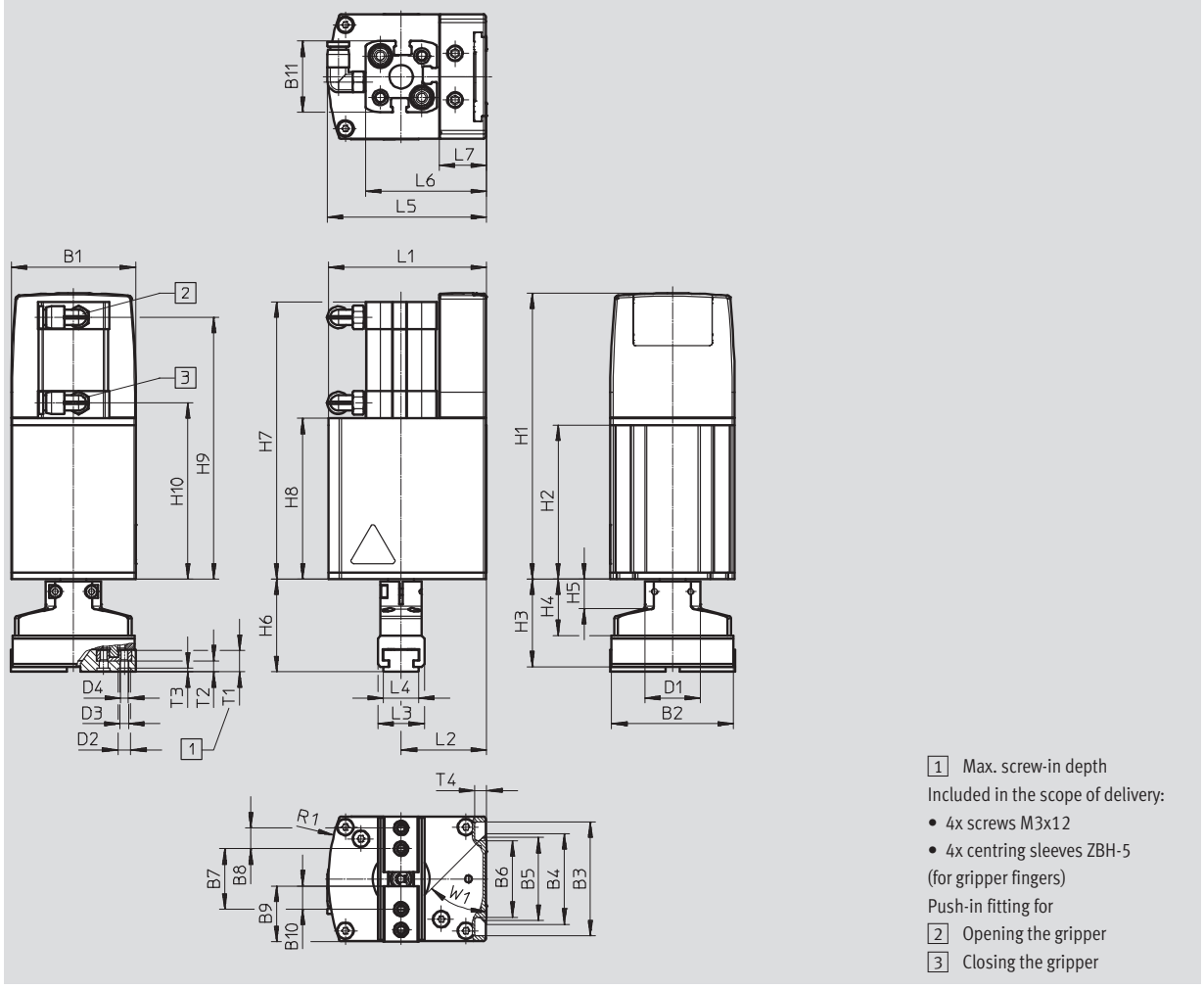
Dimensions Download CAD data ➔ **www.festo.com**

EHMD-...-GP



1 Max. screw-in depth

Included in the scope of delivery:

- 4x screws M3x12
- 4x centring sleeves ZBH-5

(for gripper fingers)

Push-in fitting for

2 Opening the gripper

3 Closing the gripper

Type code	B1	B2	B3	B4	B5	B6	B7		B8	B9	B10	B11	D1
				±0.15			min.	max.	±0.08				∅
EHMD-...-GP	48	47	44	35	32	29.6	18	28	8	21.5	9	27.5	21.5

Type code	D2 ∅ H9	D3 ∅	D4	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
EHMD-...-GP	5	3.4	M3	110.3	59.5	33.8	21.8	11.3	35.8	107	62	101	68

Type code	L1	L2	L3	L4	L5	L6	L7	R1	T1	T2	T3	T4	W1
EHMD-...-GP	61	33	18	13.5	61.5	46.8	18.3	70	8.3	4.3	1.5	4.5	45°

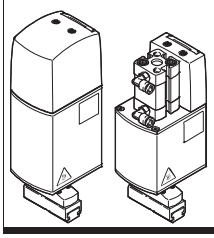
New

Rotary gripper module EHMD

Technical data

FESTO

Ordering data

	Drive system		Part No.	Type code
	Rotation	Gripping		
	Electrical	Electrical	**4788875**	**EHMD-40-RE-GE**
	Electrical	Pneumatic	**4790698**	**EHMD-40-RE-GP**

Rotary gripper module EHMD

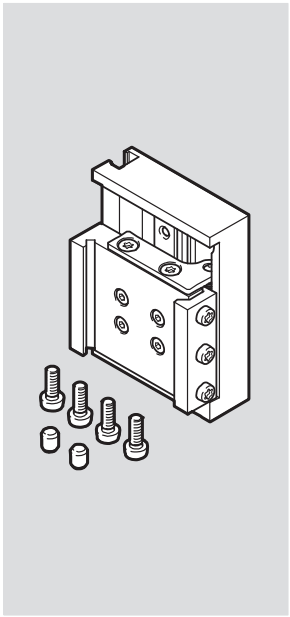
Accessories

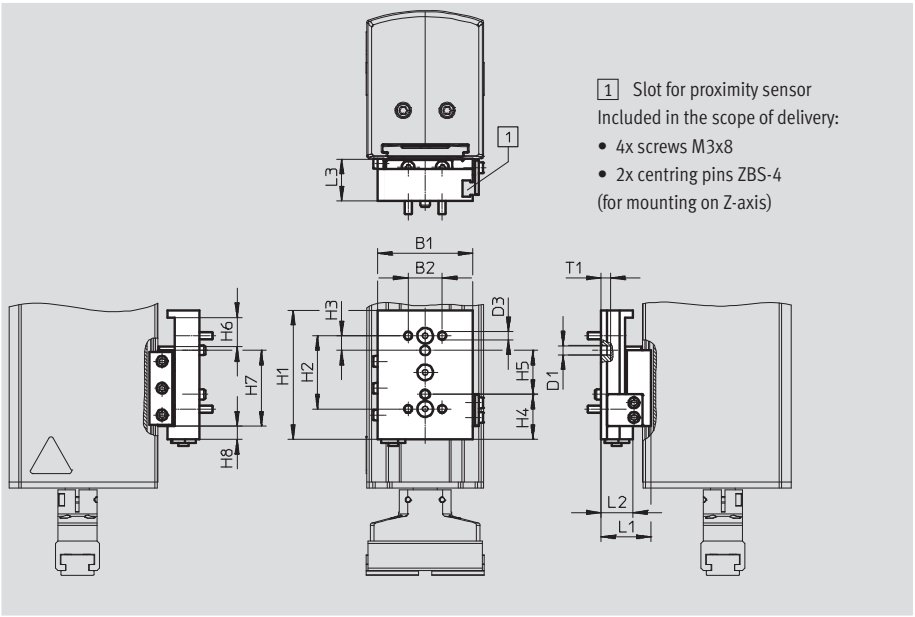
FESTO

Mounting EHAM-E20-40-Z
Mounting position: Vertical
Materials:
Wrought aluminium alloy

RoHS-compliant
Contains paint-wetting impairment substances

Mounting option via dovetail mounting.
The mounting compensates for the thread pitch when turning (fitting/removing) covers on vials without needing additional movement of the Z-axis.
(Z compensation = 12 mm)





1 Slot for proximity sensor
Included in the scope of delivery:
- 4x screws M3x8
- 2x centring pins ZBS-4

(for mounting on Z-axis)

Dimensions and ordering data

For size	B1	B2	D1 ∅ H8	D3 ∅	H1	H2	H3	H4	H5 ±0.05	H6
40	39	14	4	3.4	53	30	6	18.5	18	12

For size	H7	H8	L1	L2	L3	T1	Weight [g]	Part No.	Type code
40	31	5.5	20.5	13	17	2.5	82	**5293408**	**EHAM-E20-40-Z**

New

Rotary gripper module EHMD

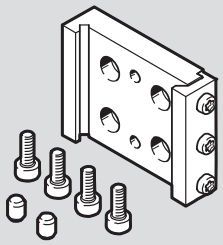
Accessories

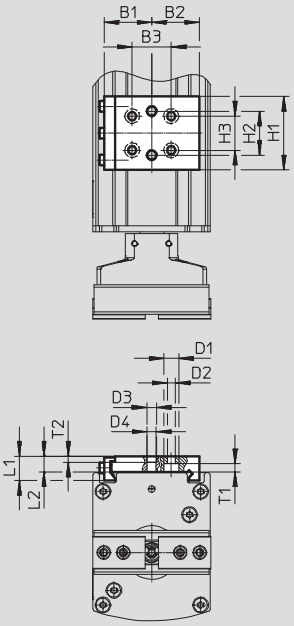
FESTO

Mounting EHAM-E20-40
Mounting position: Any
Materials:
Wrought aluminium alloy

RoHS-compliant
Contains paint-wetting impairment substances

Rigid mounting option via dovetail mounting.





Included in the scope of delivery:
- 4x screws M3x8
- 2x centring pins ZBS-4

(for mounting on Z-axis)

Dimensions and ordering data

For size	B1	B2	B3	D1 ∅	D2 ∅	D3 ∅ H8	D4 ∅	H1
40	19.5	19.5	16	6	3.4	4	3.8	30

For size	H2 ±0.05	H3	L1	L2	T1	T2	Weight [g]	Part No.	Type code
40	18	14	10	6.5	3.4	2.5	26	**4991965**	**EHAM-E20-40**

Rotary gripper module EHMD

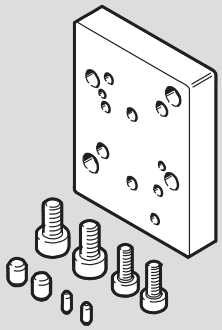
Accessories

FESTO

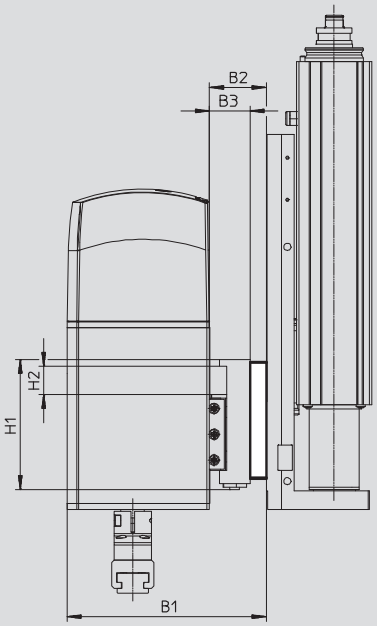
Mounting EHAM-E20-40-E...
Mounting position: Any
Materials:
Wrought aluminium alloy

RoHS-compliant
Contains paint-wetting impairment substances

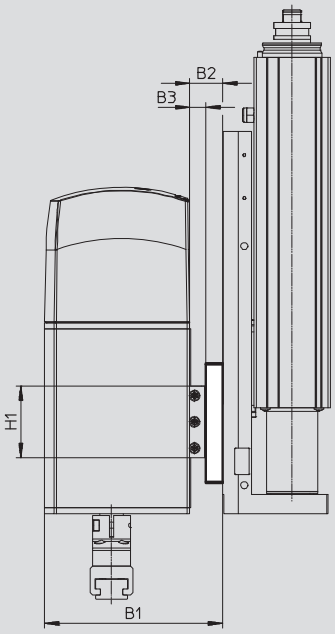
For attaching the mountings to the Z-axes:
- Mini slide EGSC-BS-25/32
- Mini slide EGSL-BS-35/45
- Electric slide EGSK-20/26



With Z compensation
EAHM-E20-40-Z



With rigid mounting
EAHM-E20-40



Suitable screws and centring pins/ sleeves included in scope of delivery.

Dimensions and ordering data

For Z-axis	B1	B2	B3	H1	H2[1]	Weight [g]	Part No.	Type code
And flexible mounting EHAM-E20-40-Z								
EGSC-BS-25/32	85	24.3	17.3	55.6	12	30	**8080760**	**EHAM-E20-40-E19-25**
EGSL-BS-35/45						24	**8081015**	**EHAM-E20-40-E8-35**
EGSK-20/26						36	**8081016**	**EHAM-E20-40-E9-20**
And rigid mounting EHAM-E20-40								
EGSC-BS-25/32	74.5	13.8	6.8	30	–	30	**8080760**	**EHAM-E20-40-E19-25**
EGSL-BS-35/45						24	**8081015**	**EHAM-E20-40-E8-35**
EGSK-20/26						36	**8081016**	**EHAM-E20-40-E9-20**

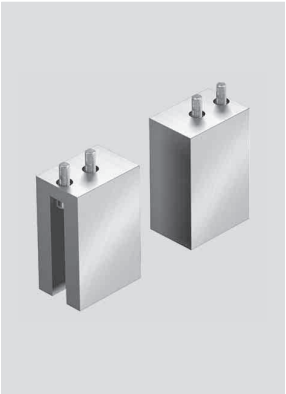
1) Automatic Z-stroke compensation.

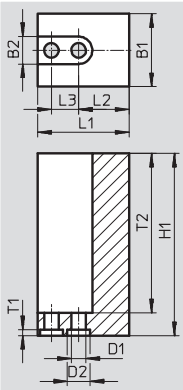
Rotary gripper module EHMD

Accessories

Gripper jaw blank BUB-HGPT
(2 included in delivery)

Materials:
Aluminium





Note

Use the matching screws and centring sleeves included with the rotary gripper EHMD to mount it.

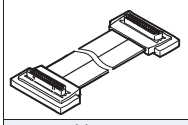
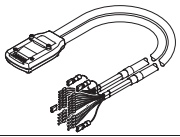
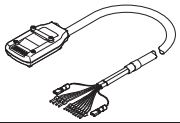
Dimensions and ordering data

For size	B1 ±0.05	B2 H13	D1 ∅ H13	D2 ∅ H8	D3 ∅ H13	H1 ±0.05	L1 ±0.05
40	16	6	3.2	5	–	40	21

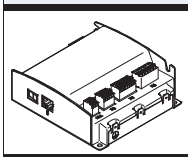
For size	L2[1)]	L3[1)]	T1 +0.1	T2	Weight per blank [g]	Part No.	Type code
40	10	8	1.3	35	29	**560244**	**BUB-HGPT-16-B**

1) Tolerance for centring hole ±0.02 mm
Tolerance for through-hole ±0.1 mm

Ordering data – Cables

	Description	Cable length [m]	Part No.	Type code
Motor cable				
	• Connecting cable between EHMD and motor cable NEBM-SF1 • For EHMD-...-GE and EHMD-...-GP	0.5	**8079819**	**NEBMF1W31XC0.5F1NDF1W31**
Motor cable				
	• Cable with adapter between motor cable NEBM-F1 and motor controller CMMO-ST • For EHMD-...-GE	2.6	**5213342**	**NEBMSF1W31EH2.6Q15NLE28**
	• Cable with adapter between motor cable NEBM-F1 and motor controller CMMO-ST • For EHMD-...-GP	2.6	**5213343**	**NEBMSF1W31EH2.6Q15NLE14**

Ordering data – Motor controller Technical data ➔ Internet: cmmo

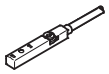
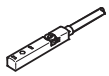
	Description	Part No.	Type code
	With I/O interface		
	Switching input/output PNP	**1512316**	**CMMO-ST-C5-1-DIOP**
	Switching input/output NPN	**1512317**	**CMMO-ST-C5-1-DION**
	With IO-Link®		
	Switching input/output PNP	**1512320**	**CMMO-ST-C5-1-LKP**

Rotary gripper module EHMD

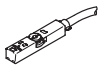
Accessories

FESTO

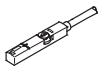
Ordering data – Proximity sensor for T-slot, inductive — Technical data ➔ Internet: sies

	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part No.	Type code
N/O contact						
	Inserted in the slot from above, flush with the cylinder profile	PNP	Cable, 3-wire	7.5	**551386**	**SIES-8M-PS-24V-K-7,5-OE**
			Plug M8x1, 3-pin	0.3	**551387**	**SIES-8M-PS-24V-K-0,3-M8D**
		NPN	Cable, 3-wire	7.5	**551396**	**SIES-8M-NS-24V-K-7,5-OE**
			Plug M8x1, 3-pin	0.3	**551397**	**SIES-8M-NS-24V-K-0,3-M8D**
N/C contact						
	Inserted in the slot from above, flush with the cylinder profile	PNP	Cable, 3-wire	7.5	**551391**	**SIES-8M-PO-24V-K-7,5-OE**
			Plug M8x1, 3-pin	0.3	**551392**	**SIES-8M-PO-24V-K-0,3-M8D**
		NPN	Cable, 3-wire	7.5	**551401**	**SIES-8M-NO-24V-K-7,5-OE**
			Plug M8x1, 3-pin	0.3	**551402**	**SIES-8M-NO-24V-K-0,3-M8D**

Ordering data – Proximity sensor for T-slot, magneto-resistive — Technical data ➔ Internet: smt

	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part No.	Type code
N/O contact						
	Inserted in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-wire	2.5	**574335**	**SMT-8M-A-PS-24V-E-2,5-OE**
			Plug M8x1, 3-pin	0.3	**574334**	**SMT-8M-A-PS-24V-E-0,3-M8D**
			Plug M12x1, 3-pin	0.3	**574337**	**SMT-8M-A-PS-24V-E-0,3-M12**
		NPN	Cable, 3-wire	2.5	**574338**	**SMT-8M-A-NS-24V-E-2,5-OE**
			Plug M8x1, 3-pin	0.3	**574339**	**SMT-8M-A-NS-24V-E-0,3-M8D**

Ordering data – Proximity sensors for T-slot, magnetic reed — Technical data ➔ Internet: sme

	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part No.	Type code
N/O contact						
	Inserted in the slot from above, flush with the cylinder profile	Contacting	Cable, 3-wire	2.5	**543862**	**SME-8M-DS-24V-K-2,5-OE**
				5.0	**543863**	**SME-8M-DS-24V-K-5,0-OE**
			Cable, 2-wire	2.5	**543872**	**SME-8M-ZS-24V-K-2,5-OE**
			Plug M8x1, 3-pin	0.3	**543861**	**SME-8M-DS-24V-K-0,3-M8D**

Ordering data – Connecting cables — Technical data ➔ Internet: nebu

	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type code
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	**541333**	**NEBU-M8G3-K-2.5-LE3**
			5	**541334**	**NEBU-M8G3-K-5-LE3**
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	**541338**	**NEBU-M8W3-K-2.5-LE3**
			5	**541341**	**NEBU-M8W3-K-5-LE3**

Ordering data – Centring sleeve

	Description	Part No.	Type code	PU[1]
	For mountings EHAM and gripper jaw blank BUB	**562959**	**ZBS-4**	10
		189652	**ZBH-5**	

1) Packaging unit