Planar surface gantries EXCM

FESTO

Characteristics

At a glance

General

- A gantry that is characterised by excellent functionality in compact installation spaces
- The drive concept has a low moving mass
- Perfectly matched drive and controller package

- The kinematics are actuated via 2 stepper motors with integrated optical encoder (closed loop) and a suitable two-axis controller

- Can be actuated using two operating modes:
  - Direct mode via Ethernet and CAN
  - Record selection via digital I/O, Ethernet and CAN
- Flexible motor mounting possible

Application examples

- Feeding, pressing, joining components
- Dispensing liquid media
- Mounting electronic components

EXCM-30

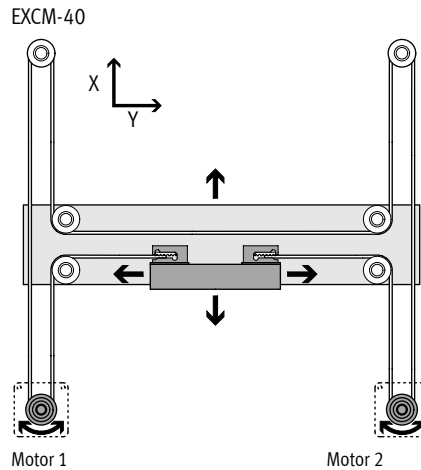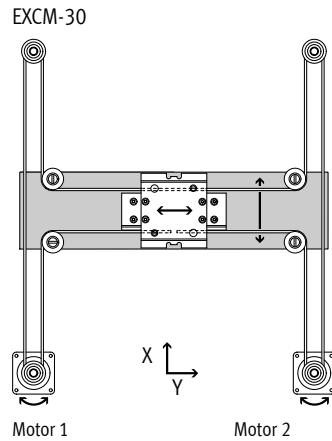### EXCM-40

Operating principle

A slide is moved in a 2-dimensional space (X-axis/Y-axis) via a toothed belt. The system is powered via 2 fixed motors in position-controlled operation (closed loop). The motors are coupled to the toothed belt. The belt is guided via pulleys so that the slide can move to any position in a working space when the motors are actuated.

EXCM-30

Motor 1   Motor 2

EXCM-40

Motor 1   Motor 2

Characteristics

Planar surface gantry

Type		EXCM-30	EXCM-40
Guide		Recirculating ball bearing guide	Recirculating ball bearing guide
Stroke of the			
X-axis	[mm]	100, 150, 200, 300, 400, 500	–
		90 … 700	200 … 2000
Y-axis	[mm]	110, 160, 210, 260, 310, 360, 410, 460, 510	–
		110 … 510	200 … 1000
Rated load at max. dynamic response[1]	[kg]	2/3[2]	4
Repetition accuracy	[mm]	±0.05	±0.1
Mounting position		Any	Horizontal
Controller		Separate	Separate
Further technical data		➔ Page 8	➔ Page 22

1)   Rated load = tool load (attachment components) + payload
2)   Vertical/horizontal mounting position

Controller

For planar surface gantry		EXCM-30	EXCM-40
Can be ordered via modular product system EXCM-…-E			
Load supply	[V DC]	24	–
Nominal current	[A]	6	–
Switching logic		NPN	–
Configuration support		FCT (Festo Configuration Tool) with plug-in EXCM	–
Technical data		➔ Page 39	–
Can be ordered via modular product system EXCM-…-PF			
Load supply	[V DC]	48 or 24	48
Nominal current	[A]	10	
Switching logic		PNP	
Safety function to EN 61800-5-2		Safe torque off (STO)	
Configuration support		FCT (Festo Configuration Tool) with plug-in CMXH	
Technical data		➔ Internet: cmxh	

FCT software – Festo Configuration Tool

Software platform for electric drives from Festo

- 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

Record table

- 31 records ensure flexible positioning
- The following parameters can be set flexibly for each application:
  - Position
  - Speed
  - Acceleration
  - Jerk (only with controller CMXH)
- Absolute or relative positioning values can be used
- Complete function test
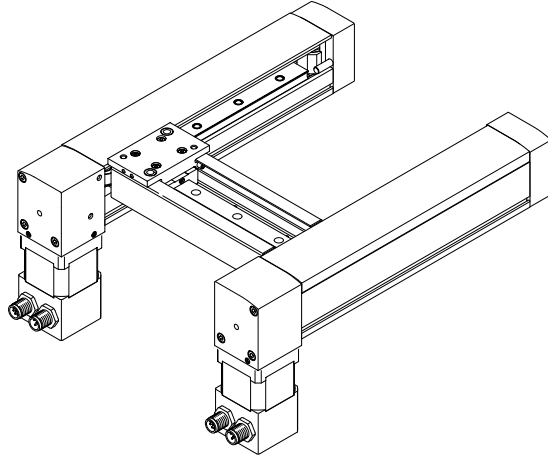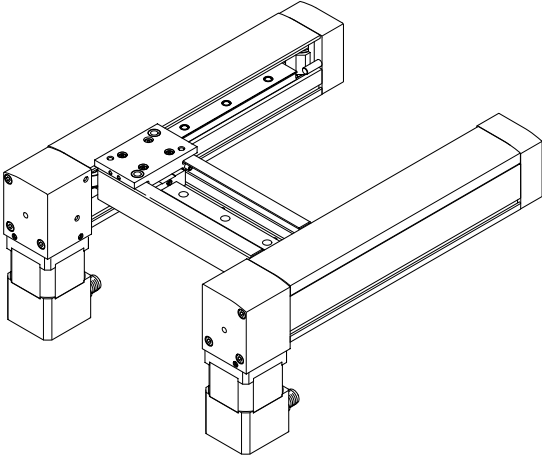
Characteristics

EXCM-30 – Motor mounting variants Additional technical data ➔ page 8
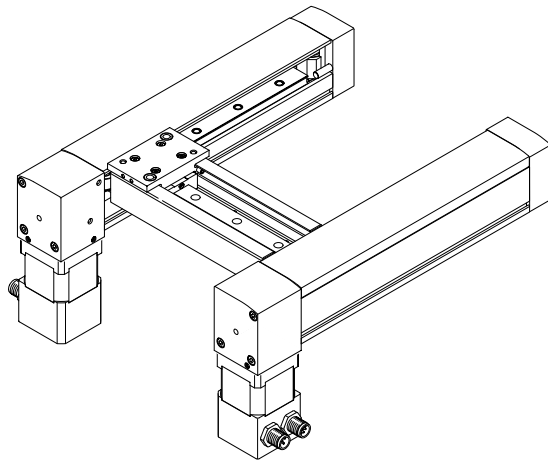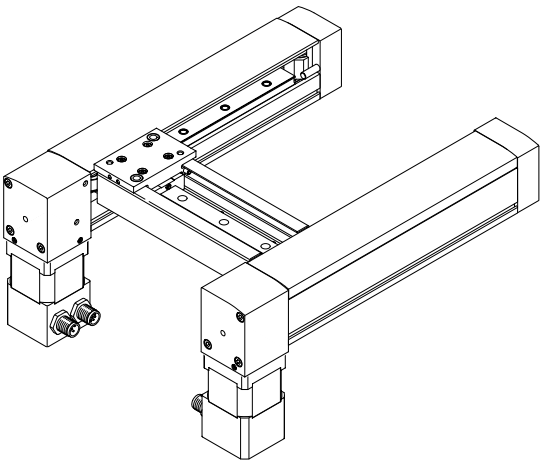
Underneath

EXCM-30-...-B1 – Cable outlet to the front

EXCM-30-...-B2 – Cable outlet to the rear

EXCM-30-...-B3 – Cable outlet inwards
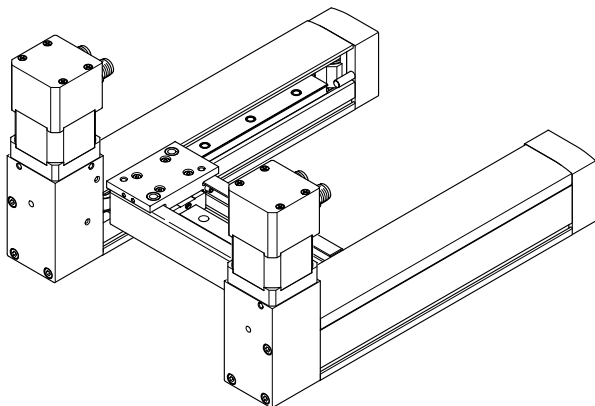
EXCM-30-...-B4 – Cable outlet outwards
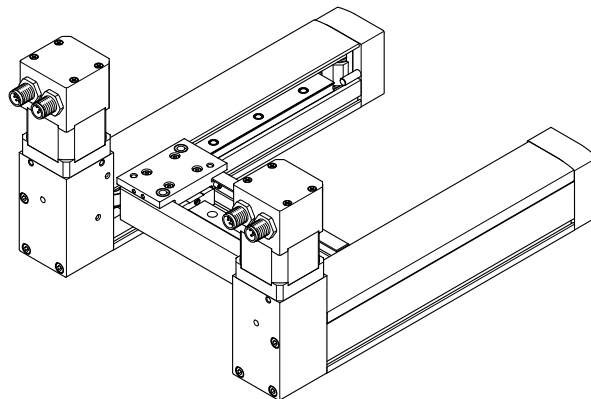
Characteristics

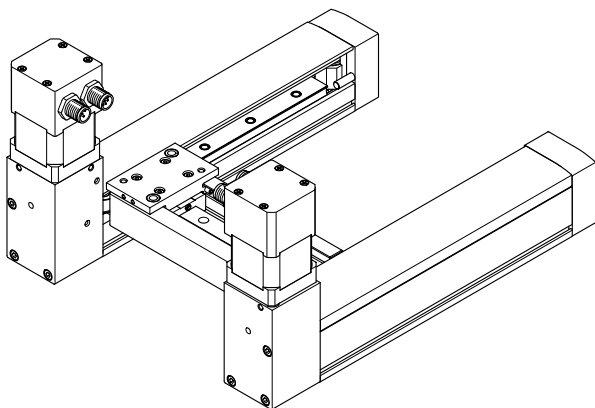**EXCM-30 – Motor mounting variants**
On top

EXCM-30-...-T1 – Cable outlet to the front

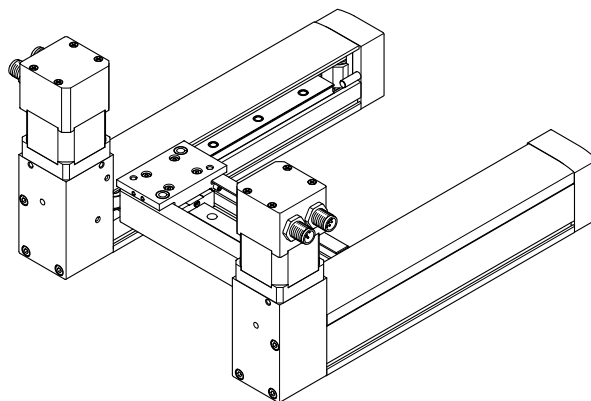EXCM-30-...-T2 – Cable outlet to the rear

EXCM-30-...-T3 – Cable outlet inwards

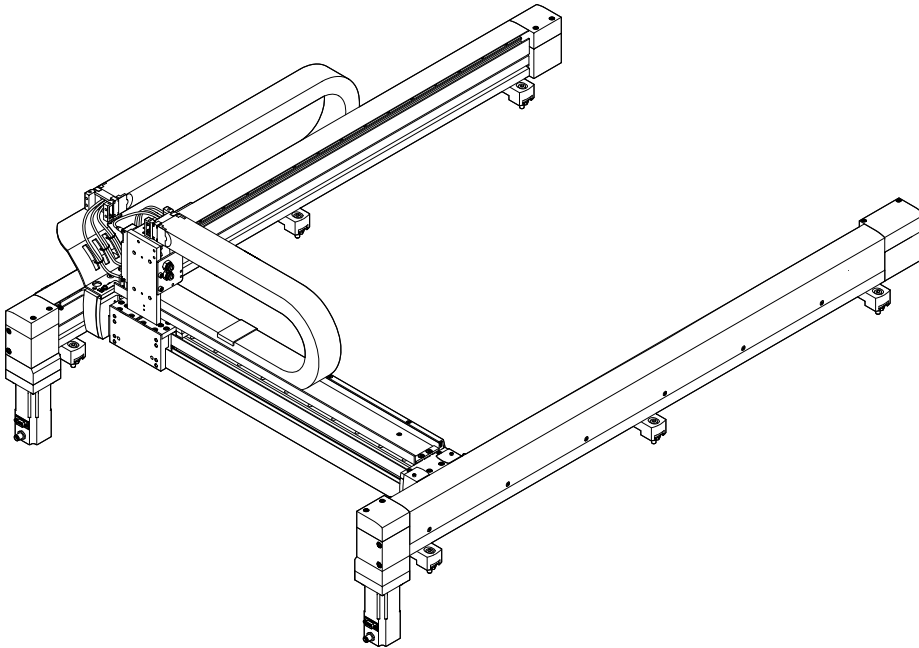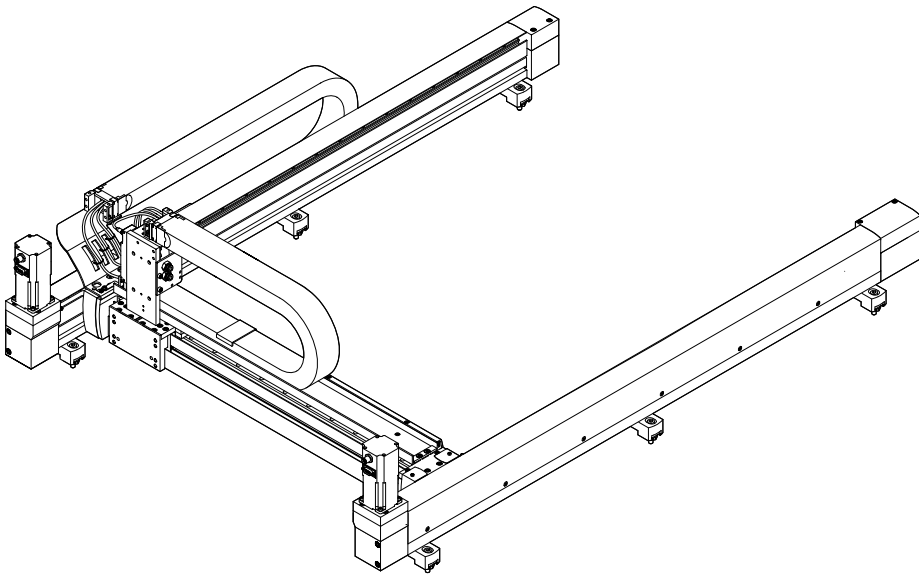EXCM-30-...-T4 – Cable outlet outwards

Characteristics

EXCM-40 – Motor mounting variants

EXCM-40-...-B – Motor underneath

EXCM-40-...-T – Motor on top

Type codes

001	Series	
EXCM	Planar surface gantry	

002	Size	
30	30	
40	40	

003	Stroke of the X-axis [mm]	
...	90 ... 2000	

004	Stroke of the Y-axis [mm]	
...	110 ... 1000	

005	Guide	
KF	Recirculating ball bearing guide	

006	Motor type	
W	Without motor	
ST	Stepper motor ST	
SB	Stepper motor ST with brake	

007	Protection against particles	
	Standard	
P8	Protected version	

008	Motor attachment position	
B	Underneath	
B1	Underneath, cable outlet at front	
B2	Underneath, cable outlet at rear	
B3	Underneath, cable outlet internal	
B4	Underneath, cable outlet external	
T	Top	
T1	Top, cable outlet at front	
T2	Top, cable outlet at rear	
T3	Top, cable outlet internal	
T4	Top, cable outlet outside	

009	Controller	
	None	
E	Offset, NPN (24 V)	
PF	Offset, PNP (24/48 V)	

010	Cable length	
	None	
2	0.5 m	
3	1 m	
4	1.5 m	
5	2 m	
6	5 m	
7	10 m	

011	Attachment components	
	None	
P1	Pneumatic lifting unit, stroke 50 mm	
P2	Pneumatic lifting unit, stroke 100 mm	
P3	Pneumatic lifting unit, stroke 150 mm	
HE1	Electric lifting unit, stroke 100 mm	

012	Mounting kit	
	With mounting component	
J	With adjusting kit	

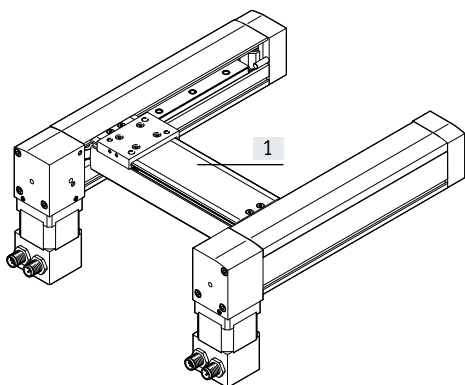| 013	Document language	
DE	German	
EN	English	
ES	Spanish	
FR	French	
IT	Italian	
RU	Russian	
ZH	Chinese	
	No documentation	

Peripherals overview
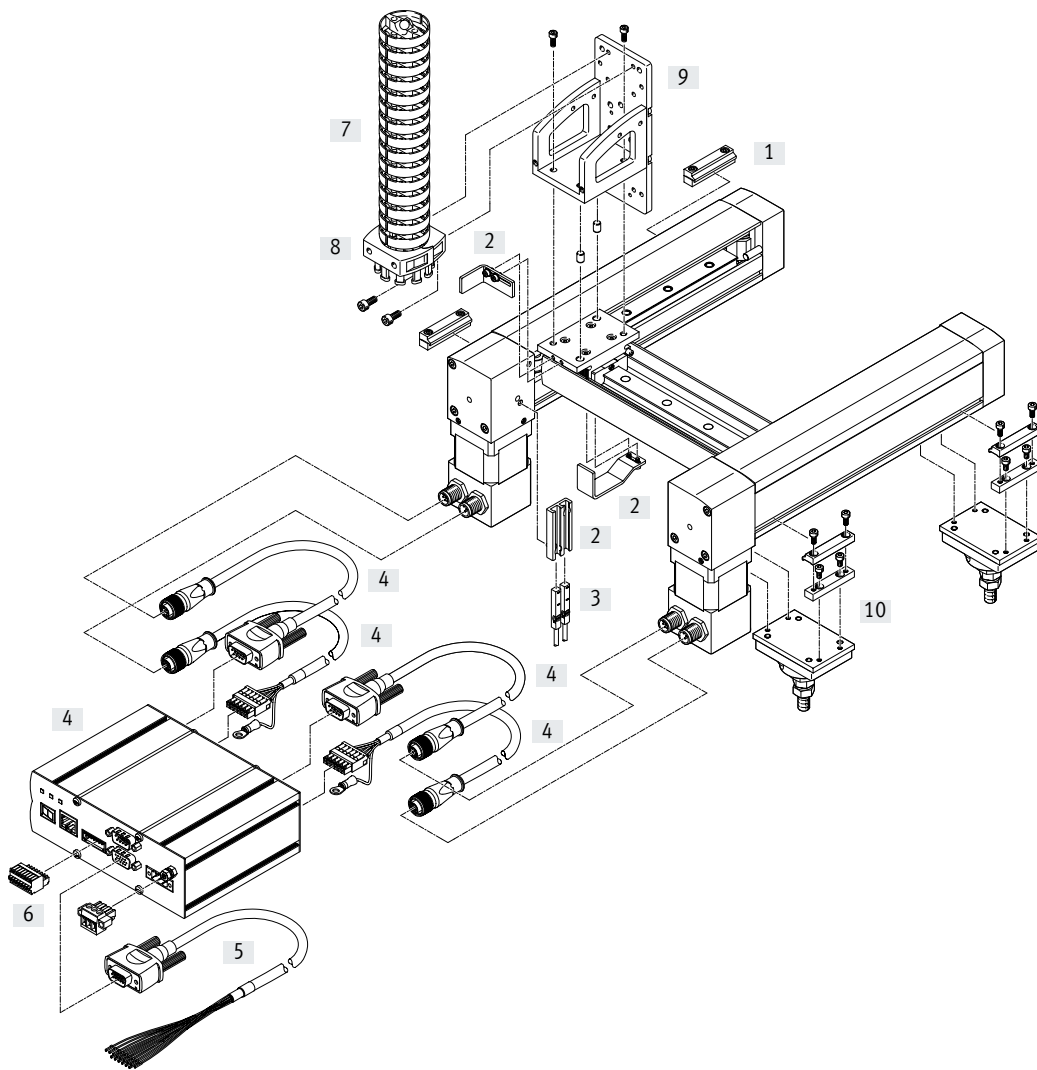
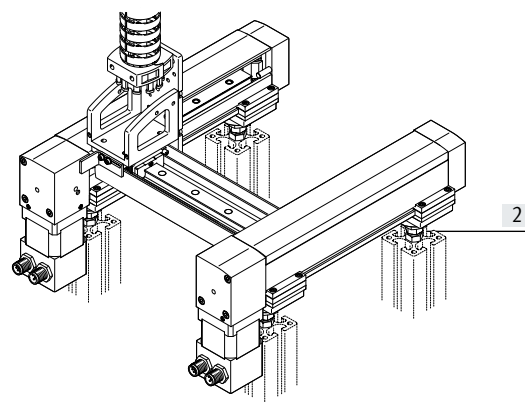**Variants and accessories**

[1]	With protection against particles EXCM-…-P8

The cover protects the guide of the Y-axis against contamination.

[2]	With adjusting kit EADC-E11

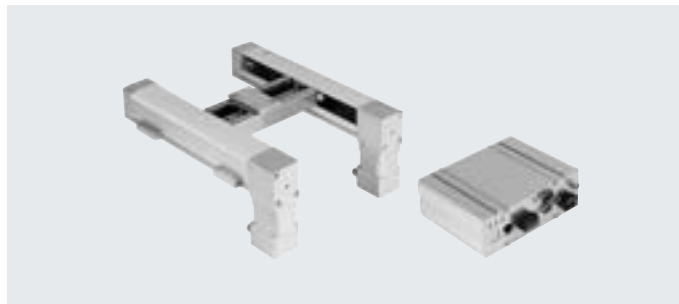With the adjusting kit, the gantry can be aligned after installation.

Peripherals overview

Accessories

Type		Description	→ Page/Internet
[1]	Profile mounting MUE	Included in the scope of delivery of the planar surface gantry: • X-stroke < 500 mm: 2 pairs • X-stroke ≥ 500 mm: 3 pairs	42
[2]	Sensor mounting EAPR	For homing in combination with third-party motors	44
[3]	Proximity sensor SIES-8M		48
[4]	Drive package comprising: controller, motor, motor cable	Available with or without drive package	20
[5]	Control cable NEBC-S1H15	For the I/O interface to any controller	49
[6]	Plug	Included in the scope of delivery of the drive package	–
[7]	Energy chain EADH-U-3D	For routing the cables for the Z-axis	45
[8]	Connection set	Holder for mounting the energy chain Included in the scope of delivery: • 2 connectors • 4 socket head screws M4x10	45
[9]	Mounting kit EAHT-E9	Mounting kit for the energy chain and a Z-axis, like EGSL, DGSL, EGSK Stroke reduction in combination with mounting kit EAHT → page 15	43
[10]	Adjusting kit EADC-E11	Height-adjustable mounting kit	42
[11]	H-rail mounting CAFM-D3	For mounting the controller on an H-rail to EN 50022	41

- ⚷ - **Note**

Homing is always carried out using the mechanical stop in combination with the drive package from Festo; the sensor mounting and proximity sensor are not required in this case.

Data sheet

General technical data

Design		Planar surface gantry
Guide		Recirculating ball bearing guide
Stroke of the		
X-axis	[mm]	100, 150, 200, 300, 400, 500
		90 ... 700
Y-axis	[mm]	110, 160, 210, 260, 310, 360, 410, 460, 510
		110 ... 510
Rated load at max. dynamic response[1]	[kg]	2/3[2]
Max. process force[3]	[N]	100
Max. torque		➔ Page 12
Max. no-load torque		➔ Page 12
Nominal torque of motor	[Nm]	0.5
Motor holding torque	[Nm]	0.5
Max. acceleration		
EXCM-...-E	[m/s²]	10
EXCM-...-PF	[m/s²]	2 0/10[4]
Max. speed		
EXCM-...-E	[m/s]	0.5
EXCM-...-SB-...-PF	[m/s]	0.5
EXCM-...-ST-...-PF	[m/s]	1.0/0.5[4]
Repetition accuracy	[mm]	±0.05
Mounting position		Any[5]
Type of mounting		
Planar surface gantry		With profile mounting
Controller		Via H-rail, on sub-base

1) Rated load = tool load (attachment components) + payload
2) Vertical/horizontal mounting position. Applies to EXCM-...-E with stroke of the Y-axis of 360 mm ➔ page 11
3) Perpendicular to working plane, at standstill
4) In case of a load supply of 48 V/24 V
5) Motors with brake must be used in the case of vertical mounting

Operating and environmental conditions

Degree of protection		IP20
Ambient temperature	[°C]	+10 ... +45
Storage temperature	[°C]	−10 ... +60
Relative humidity	[%]	0 ... 90 (non-condensing)
Noise level	[dB(A)]	52
Duty cycle	[%]	100
CE marking (see declaration of conformity)		To EU Machinery Directive

Data sheet

Materials
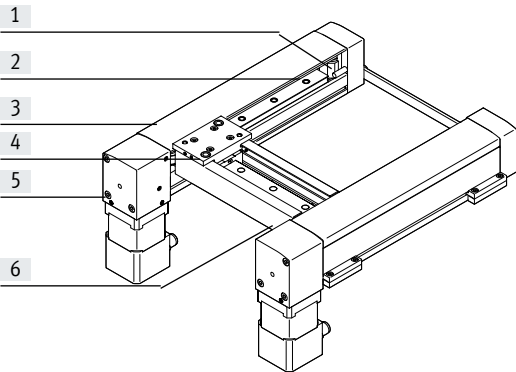
Size		30
[1]	Guide pulley	Aluminium
[2]	Toothed belt	Polychloroprene with glass cord
[3]	Cover	
	X-axis	Polymer
	Y-axis	Stainless steel
[4]	Slide	Aluminium
[5]	End cap	Aluminium
[6]	Y-axis	Aluminium
–	Guide	Steel
	Ball bearings	Steel
	Note on materials	RoHS-compliant
		Contains paint-wetting impairment substances

Weight [kg]

Product weight with 0 mm stroke (without rated load, motors and controllers)	
EXCM-...	1.73
EXCM-...-P8	1.80
Y-axis (without slide)	0.3 4/0.4[1]
Additional weight per 50 mm stroke	
X-axis	0.237
Y-axis	0.12 0/0.132[1]
Weight	
2 motors	0.9
2 motors with brake	1.5
Controller	0.65

1) Standard/with protection against particles P8

Acceleration a as a function of the rated load m and stroke of the Y-axis

The following data applies to a horizontal mounting position and refers to the service life of the mechanical system of 3500 km. For vertical mounting positions, please get in touch with your local contact at Festo.

The centre of gravity of the slide is at the height of the slide in the Z-direction and in the centre of the slide in the X-/Y-directions.
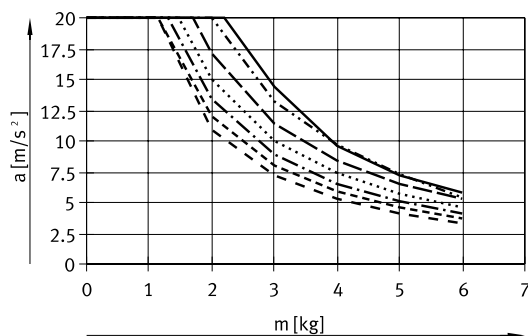
	Stroke, Y-axis = 110/160/210 mm
— · — · —	Stroke, Y-axis = 260 mm
— — —	Stroke, Y-axis = 310 mm
··········	Stroke, Y-axis = 360 mm
— · — · —	Stroke, Y-axis = 410 mm
- - - - -	Stroke, Y-axis = 460 mm
— — —	Stroke, Y-axis = 510 mm

Data sheet

Torque M as a function of rotational speed n

Typical motor characteristic curve with nominal voltage and optimal controller.
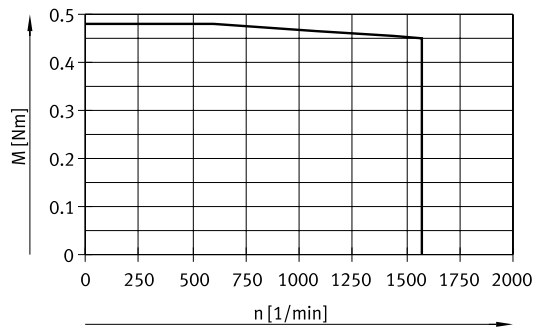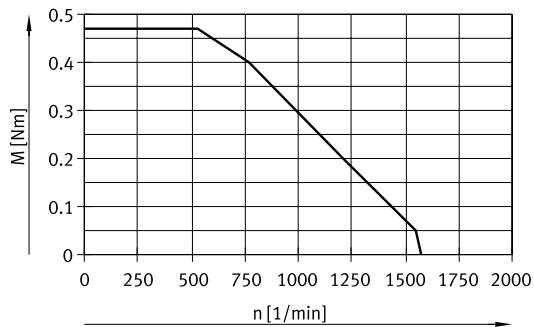
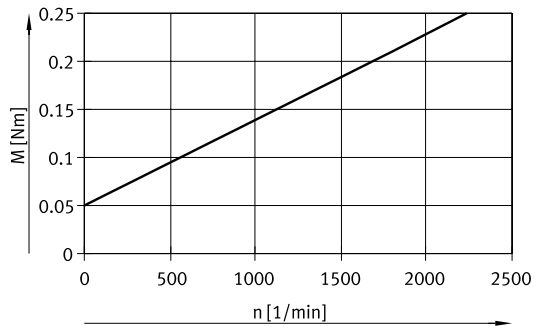In combination with:
EXCM-…-ST-…-E or EXCM-…-ST-…-PF (for 24 V)
EXCM-…-SB-…-PF (for 48 V)

In combination with:
EXCM-…-ST-…-PF (for 48 V)

No-load torque M as a function of rotational speed n

Characteristic load values

The centre of gravity of the slide is at the height of the slide in the Z-direction and in the centre of the slide in the X-/Y-directions.

The system is subject to the greatest load in the case of 45° travel. The following data apply in this case:

Formula for calculating the required torque M and the required rotational speed n

$$M_{45°} = a \times (4.28 \times m_L + 2.14 \times m_{Ay} + 23.38 \times J_m + 0.56) \times 10^{-3} + M_R$$

$$n_{45°} = 2232 \times v$$

a = acceleration $[m/s^2]$
v = speed $[m/s]$
m_{Ay} = product weight of the Y-axis [kg] ➔ page 11
m_L = attachment component (Z-axis) [kg] with payload
J_m = moment of inertia of the motor $[kgcm^2]$ ➔ table below
M_R = no-load torque [Nm] ➔ page 12
$n_{45°}$ = rotational speed at 45° travel [rpm]

Combination of planar surface gantry with stepper motor for X-/Y-axis

Planar surface gantry	Motor	Moment of inertia of motor [kgcm²]
EXCM-30-…-ST	EMMS-ST-42-…	0.082
EXCM-30-…-SB	EMMS-ST-42-…	0.095

Data sheet

Sample calculation

Given:
Planar surface gantry
EXCM-30-700-410-KF-ST-…-E

a_{max} = 10 m/s^2
v_{max} = 2 m/s
Payload = 0.5 kg
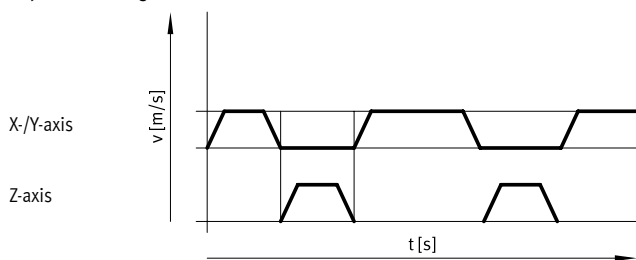
Calculation:
1. What is the max. acceleration permitted by the mechanical system?

Moving mass m_L on the Y-axis:
m_L = 2 kg
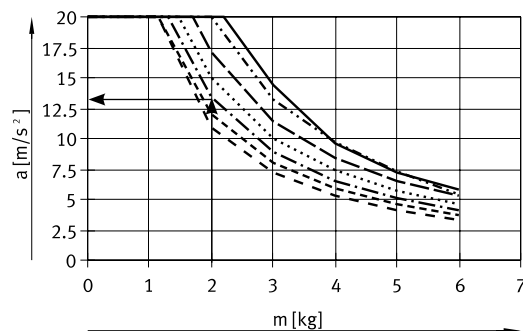
Stroke of the Y-axis:
410 mm

Result:
In case of a moving mass m_L of 2 kg the maximum permissible acceleration is 13 m/s^2.
The required acceleration of 10 m/s^2 is therefore permissible.

	Stroke, Y-axis = 110/160/210 mm
	Stroke, Y-axis = 260 mm
	Stroke, Y-axis = 310 mm
	Stroke, Y-axis = 360 mm
	Stroke, Y-axis = 410 mm
	Stroke, Y-axis = 460 mm
	Stroke, Y-axis = 510 mm

Note

The following data applies to a horizontal mounting position. For a vertical mounting position, please get in touch with your local contact at Festo.
The centre of gravity of the slide is at the height of the slide in the Z-direction and in the centre of the slide in the X-/Y-directions.

Data sheet

Sample calculation

2. Is the attached motor sufficient for this load?

Given:

a_{max}	= 10 m/s^2	
v_{max}	= 0.35 m/s	
m_{Ay}	= 1.32 kg	
m_L	= 2 kg	
J_m	= 0.082 kgcm^2	

$M_{45°} = a \times (4.28 \times m_L + 2.14 \times m_{Ay} + 23.38 \times J_m + 0.56) \times 10^{-3} + M_R$

$n_{45°} = 2232 \times v$

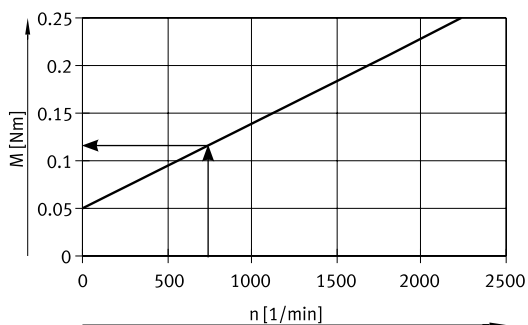|	
a =	acceleration [m/s^2]
v =	speed [m/s]
m_{Ay} =	product weight of the Y-axis [kg] ➔ page 11
m_L =	attachment component (Z-axis) [kg] with payload
J_m =	moment of inertia of the motor [kgcm^2] ➔ table below
M_R =	no-load torque [Nm] ➔ page 12
$n_{45°}$ =	nominal rotational speed at 45° travel [rpm]

Determining M45°

$n_{45°}$ = 2232 x 0.35 ms = 781.2 rpm

No-load torque:

▬▬▬▬ EXCM-30

M_R = 0.12 Nm

$M_{45°} = a \times (4.28 \times m_L + 2.14 \times m_{Ay} + 23.38 \times J_m + 0.56) \times 10^{-3} + M_R$

$M_{45°} = 10 \text{ m/s}^2 \times (4.28 \times 2 \text{ kg} + 2.14 \times 1.32 \text{ kg} + 23.38 \times 0.082 \text{ kgcm}^2 + 0.56) \times 10^{-3} + 0.12 \text{ Nm} = 0.26 \text{ Nm}$

Result:

The value for the torque lies below the motor characteristic curve.
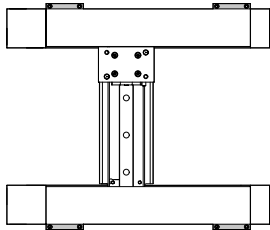The design is thus acceptable.
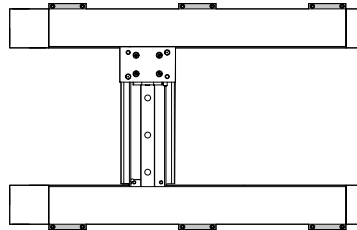
Data sheet

Minimum number of profile mountings

Different numbers of profile mountings must be used as a function of the
mounting position and stroke of the X-axis.

Horizontal mounting position Stroke < 500 mm	Stroke ≥ 500 mm
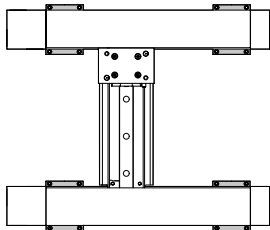
Vertical mounting position Stroke < 500 mm	Stroke ≥ 500 mm
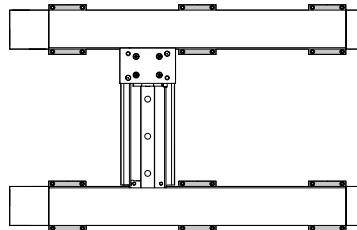
Stroke of the X-axis [mm]	Number of profile mountings Horizontal mounting position	Vertical mounting position
100 … 499	2 per profile, inside or outside	4 per profile, inside and outside
500 … 700	3 per profile, inside or outside	6 per profile, inside and outside

Stroke reduction in combination with mounting kit EAHT-E9

The reduction is influenced by the following factors:
- [1] The mounting kit EAHT-E9 is wider than the slide of the Y-axis
- [2] By mounting adjusting kits EADC-E11 or profile mountings MUE on the inside of the X-axis

- [3] By using an additional mounting surface for the cover in combination with EXCM-…-P8 (with protection against particles)
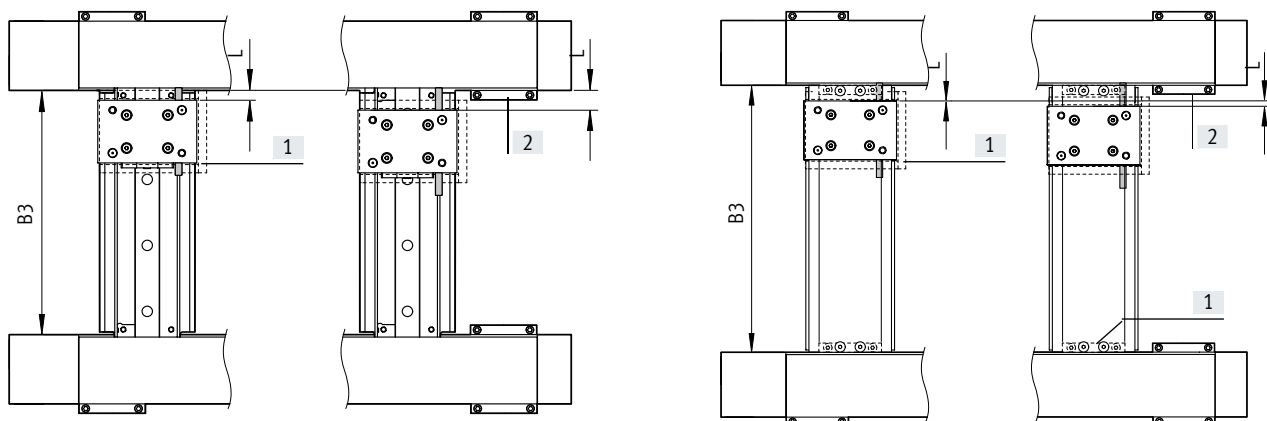
	B3 (→ from page 16)		L	
	For EXCM-…	For EXCM-…-P8	For EXCM-…	For EXCM-…-P8
With mounting kit EAHT-E9	38 + stroke	63 + stroke	2x 8 mm	No stroke reduction
With mounting kit EAHT-E9 and adjusting kits EADC-E11/ profile mountings MUE			2x 16 mm	2x 4 mm

Data sheet

Dimensions

EXCM-30-... and EXCM-30-...-P8
Motor attachment position – Underneath
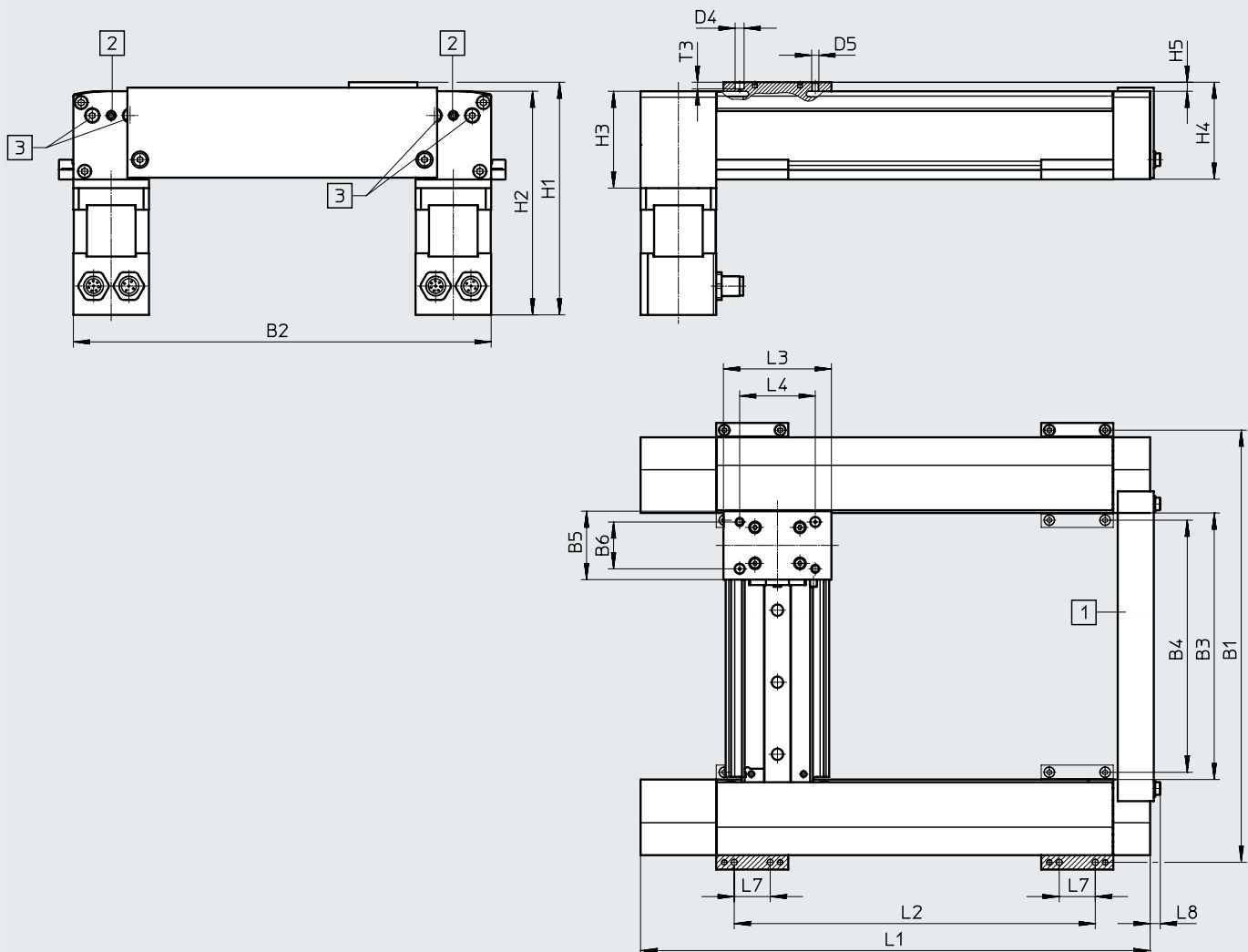
[1]   Transport lock serves as transport aid and can be removed after assembly
[2]   Threaded pin for securing the adjusting screws
[3]   Screw for setting the toothed belt tension

Motor interface
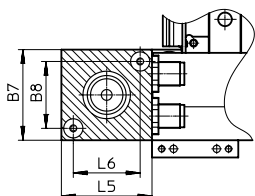
Coupling interface
with radial threaded pins
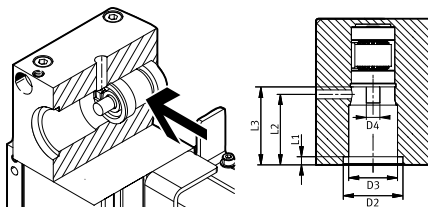
Coupling interface
with tangential clamping screws
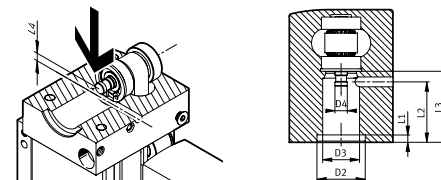
Data sheet

Type	B5	B6 ±0.03	B7	B8 ±0.1	D1 ∅ H7	D2 ∅	D3 ∅ f8	D4 ∅ H8	D5
EXCM-30-...	38	26	42	31	22	16	5	5	M4
EXCM-30-...-P8	38	26	42	31	22	16	5	5	M4

Type	H1		H2		H3	H4	H5	L3	L4
	EXCM-...-ST	EXCM-...-SB	EXCM-...-ST ±0.7	EXCM-...-SB					±0.03
EXCM-30-...	129.2	186.2	124.2	181.2	53.8	54	5	60	42
EXCM-30-...-P8	131.2	188.2	124.2	181.2	53.8	56	7	60	42

Type	L5	L6 ±0.1	L7	L8	T1	T2	T3	T4	T5
EXCM-30-...	42	31	20	5.6	3	26	3.7	28.7	24.5
EXCM-30-...-P8	42	31	20	5.6	3	26	3.7	28.7	24.5

Stroke-dependent dimensions

Stroke of the X-axis	L1	L2 ±0.2
100	233	150.5
150	283	200.5
200	333	250.5
300	433	350.5
400	533	450.5
500	633	550.5
90 ... 700	133 + stroke	50.5 + stroke

Stroke of the Y-axis	B1 EXCM-30-...-		B2 EXCM-30-...-		B3 EXCM-30-...-		B4 EXCM-30-...-	
		P8		P8		P8		P8
110	240	265	232	257	148	173	140	165
160	290	315	282	307	198	223	190	215
210	340	365	332	357	248	273	240	265
260	390	415	382	407	298	323	290	315
310	440	465	432	457	348	373	340	365
360	490	515	482	507	398	423	390	415
410	540	565	532	557	448	473	440	465
460	590	615	582	607	498	523	490	515
510	640	665	632	657	548	573	540	565
110 ... 510	130 + stroke	155 + stroke	122 + stroke	147 + stroke	38 + stroke	63 + stroke	30 + stroke	55 + stroke

Data sheet

Dimensions

EXCM-30-... and EXCM-30-...-P8
Motor attachment position – On top

[1] Transport lock serves as transport aid and can be removed after assembly
[2] Threaded pin for securing the adjusting screws
[3] Screw for setting the toothed belt tension

Motor interface

Coupling interface
with radial threaded pins

Coupling interface
with tangential clamping screws

Data sheet

Type	B5	B6	B7	B8	D1	D2	D3	D4
					∅	∅	∅	∅
		±0.03		±0.1	H7		f8	H8
EXCM-30-...	38	26	42	31	22	16	5	5
EXCM-30-...-P8	38	26	42	31	22	16	5	5

Type	D5	H2		H3	H4	H5	L3	L4
		EXCM-...-ST	EXCM-...-SB					
		±1						±0.03
EXCM-30-...	M4	146.2	203.2	75.6	54	5	60	42
EXCM-30-...-P8	M4	146.2	203.2	75.6	56	7	60	42

Type	L5	L6	L7	L8	T1	T2	T3	T4	T5
		±0.1							
EXCM-30-...	42	31	20	5.6	3	26	3.7	28.7	24.5
EXCM-30-...-P8	42	31	20	5.6	3	26	3.7	28.7	24.5

Stroke-dependent dimensions

Stroke of the X-axis	L1	L2
		±0.2
100	233	150.5
150	283	200.5
200	333	250.5
300	433	350.5
400	533	450.5
500	633	550.5
90 ... 700	133 + stroke	50.5 + stroke

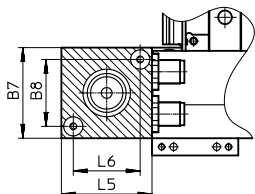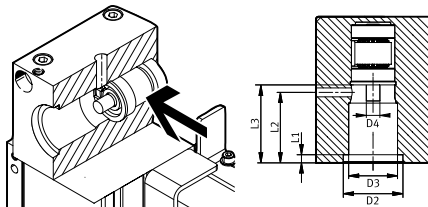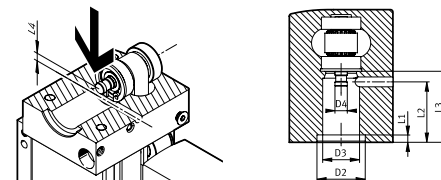| Stroke of the Y-axis	B1		B2		B3		B4	
	EXCM-30-...-		EXCM-30-...-		EXCM-30-...-		EXCM-30-...-	
		P8		P8		P8		P8
110	240	265	232	257	148	173	140	165
160	290	315	282	307	198	223	190	215
210	340	365	332	357	248	273	240	265
260	390	415	382	407	298	323	290	315
310	440	465	432	457	348	373	340	365
360	490	515	482	507	398	423	390	415
410	540	565	532	557	448	473	440	465
460	590	615	582	607	498	523	490	515
510	640	665	632	657	548	573	540	565
110 ... 510	130 + stroke	155 + stroke	122 + stroke	147 + stroke	38 + stroke	63 + stroke	30 + stroke	55 + stroke

Ordering data – Modular product system

Ordering table

Size		30	Conditions	Code		Enter code
Module no.		**2226101**				
Product type		EXCM series M		**EXCM**		EXCM
Size		30		**-30**		30
Stroke of the	[mm]	100		**-100**		
X-axis	[mm]	150		**-150**		
	[mm]	200		**-200**		
	[mm]	300		**-300**		
	[mm]	400		**-400**		
	[mm]	500		**-500**		
	[mm]	90 … 700		**-...**		
Stroke of the	[mm]	110		**-110**		
Y-axis	[mm]	160		**-160**		
	[mm]	210		**-210**		
	[mm]	260		**-260**		
	[mm]	310		**-310**		
	[mm]	360		**-360**		
	[mm]	410		**-410**		
	[mm]	460		**-460**		
	[mm]	510		**-510**		
	[mm]	110 … 510		**-...**		
Guide		Recirculating ball bearing guide		**-KF**		KF
Motor type		Stepper motors		**-ST**		
		Stepper motors with brake		**-SB**		
		Without stepper motors	[1]	**-W**		
Protection against particles		Standard				
		Protected version		**-P8**		
Motor attachment position		Underneath	[2]	**-B**		
		Underneath, cable outlets to the front		**-B1**		
		Underneath, cable outlets to the rear		**-B2**		
		Underneath, cable outlets inwards		**-B3**		
		Underneath, cable outlets outwards		**-B4**		
		On top	[2]	**-T**		
		On top, cable outlets to the front		**-T1**		
		On top, cable outlets to the rear		**-T2**		
		On top, cable outlets inwards		**-T3**		
		On top, cable outlets outwards		**-T4**		

[1] W   In combination with "Without stepper motors" W, controllers E and PF are not required
[2] B, T   Not in combination with stepper motors ST and SB. Option if third-party motors are mounted

Ordering data – Modular product system

Ordering table

Size	30	Conditions	Code		Enter code
Controller	None				
	Remote, NPN (24 V)		-E		
	Remote, PNP (24/48 V)		-PF		
Cable length	None				
	Motor and encoder cable 0.5 m		2		
	Motor and encoder cable 1 m		3		
	Motor and encoder cable 1.5 m		4		
	Motor and encoder cable 2 m		5		
Document language	German		-DE		
	English		-EN		
	Spanish		-ES		
	French		-FR		
	Italian		-IT		
	Russian		-RU		
	Chinese		-ZH		

Characteristics

Selection of attachment components

The following variants for the Z-axis can optionally be ordered using the modular product system
➔ page 38:

- Without attachment component
- With pneumatic attachment component (mini slide DGSL)
- With electric attachment component (mini slide EGSL)

The drives are fully connected on delivery. Cables and tubes are routed as far as the output of the energy chain (X-axis).

EXCH-...-T0... (without attachment component)

The following are pre-installed:
- 2 compressed air supply ports for e.g. Z-axis
- Multi-pin plug distributor for bundling signals:
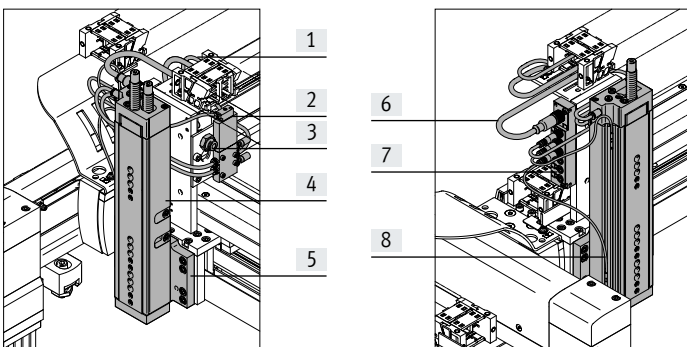 - e.g. proximity sensor
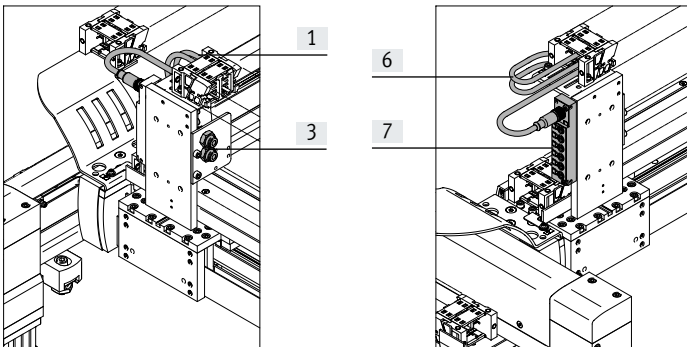
Components		Number of components
[1]	Compressed air tubing	2
[3]	Bulkhead fitting	2
[6]	Plug socket with cable	1
[7]	Multi-pin plug distributor (6-way)	1
–	Earthing cable	2

EXCH- ... -P... (pneumatic attachment component)

The following are pre-installed:
- Solenoid valve for controlling the drive
- 1 compressed air supply port for e.g. gripper
- Proximity sensors for sensing the end positions
- Multi-pin plug distributor for bundling signals:
  - For mini slide DGSL:
  - 2 proximity sensors
  - 1 solenoid valve
  - 3 connections available

Components		Number of components
[1]	Compressed air tubing	2
[2]	Solenoid valve	1
[3]	Bulkhead fitting	1
[4]	Mini slide DGSL-...-Y3A[1]	1
[5]	Adapter plate	1
[6]	Plug socket with cable	1
[7]	Multi-pin plug distributor (6-way)	1
[8]	Proximity sensor	2
–	Earthing cable	2

1) For EXCM-40, the mini slide DGSL-16 is used with progressive shock absorbers.
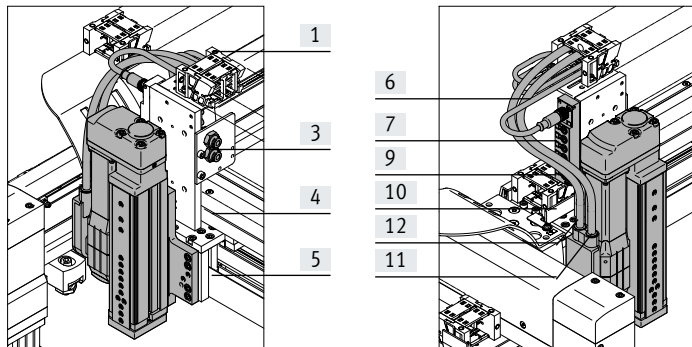   Further information ➔ Internet: dgsl

Characteristics

Selection of attachment components
EXCH-...-E... (electric attachment component)

The following are pre-installed:
- 2 compressed air supply ports for e.g. gripper
- Multi-pin plug distributor for bundling signals:
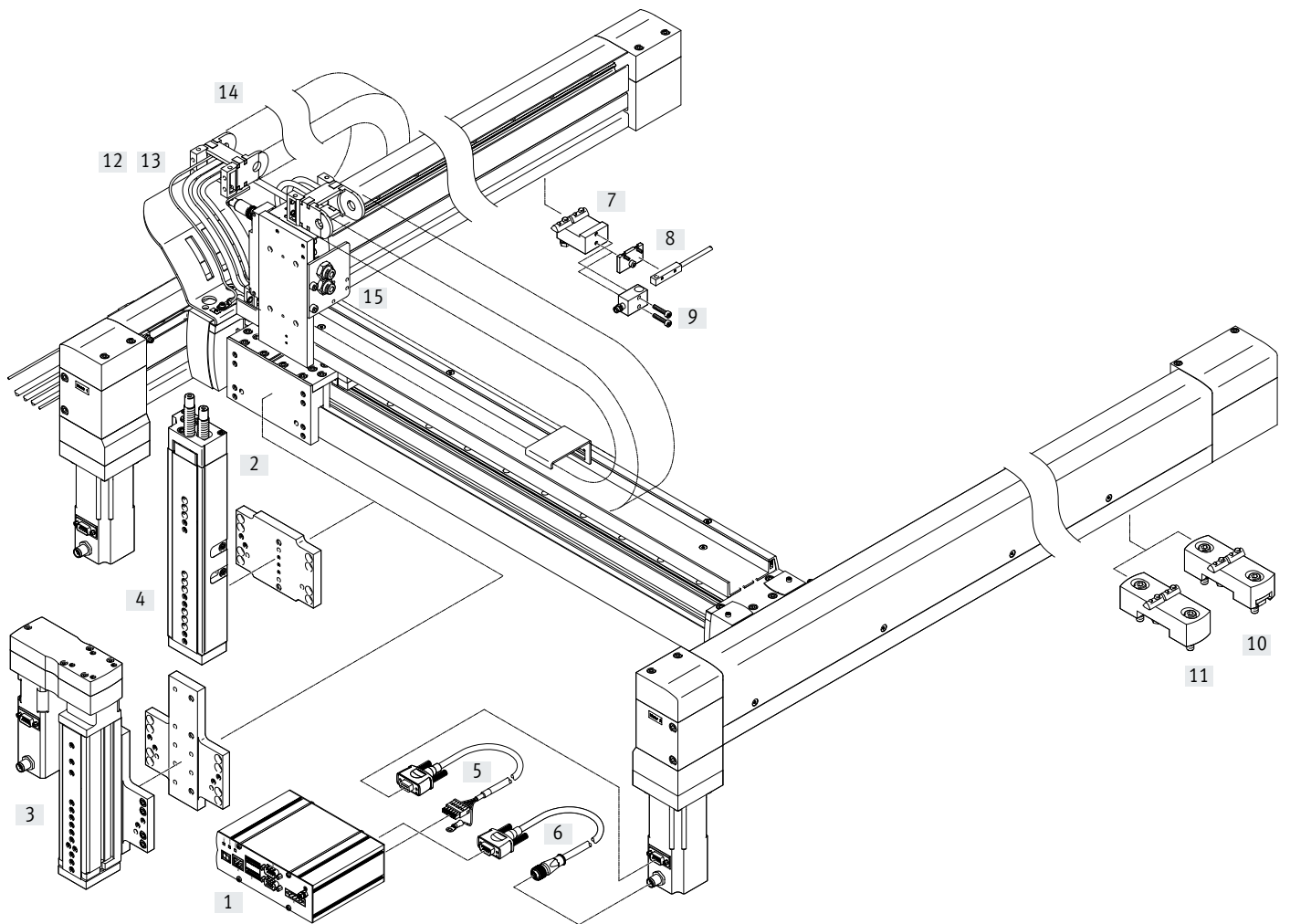 - e.g. proximity sensor

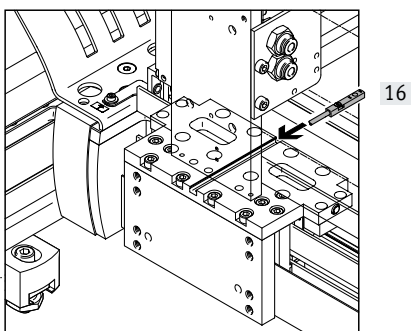| Components		Number of components
[1]	Compressed air tubing	2
[3]	Bulkhead fitting	2
[4]	Mini slide EGSL[1]	1
[5]	Adapter plate	1
[6]	Plug socket with cable	1
[7]	Multi-pin plug distributor (6-way)	1
[9]	Parallel kit	1
[10]	Motor	1
[11]	Motor cable	1
[12]	Encoder cable	1
–	Earthing cable	2

1)   For EXCM-40, the mini slide EGSL-45 is used with a pitch of 10 mm.
     Further information ➔ Internet: egsl

Peripherals overview

Proximity sensor for sensing the position of the slide on the Y-axis

Peripherals overview

Attachments and accessories

Type		Description	→ Page/Internet
[1]	Controller CMXH	• For controlling the planar surface gantry	cmxh
[2]	Mini slide P1, P2, P3	• Pneumatic attachment component (mini slide DGSL) for the Z-axis	38
[3]	Mini slide HE1	• Electric attachment component (mini slide EGSL) with motor cable NEBM and encoder cable NEBM for the Z-axis	38
[4]	Proximity sensor SME-10M/SIES-8M	• For position sensing on the Z-axis • Included in the scope of delivery of the planar surface gantry EXCM-...-P-...	48
[5]	Motor cable NEBM	• Connecting cable between motor and controller CMXH-ST2 • Included in the scope of delivery of the planar surface gantry EXCM-...-ST/-SB	49
[6]	Encoder cable NEBM	• Connecting cable between encoder and controller CMXH-ST2 • Included in the scope of delivery of the planar surface gantry EXCM-...-ST/-SB	49
[7]	Sensor mounting EAPR	• For mounting the proximity sensors SIES-Q8B, SIES-V3B on the X-axis • Not included in the scope of delivery of the planar surface gantry	47
[8]	Proximity sensor SIES-Q8B	• For position sensing on the X-axis • Not included in the scope of delivery of the planar surface gantry	48
[9]	Proximity sensor SIES-V3B	• For position sensing on the X-axis • Not included in the scope of delivery of the planar surface gantry	48
[10]	Adjusting kit EADC-12	• Height-adjustable mounting kit for the planar surface gantry • Included in the scope of delivery of the planar surface gantry. If no adjusting kit is selected in the modular product system, the mounting kit will automatically be delivered	46
[11]	Mounting kit EAHM-E12	• Non-height-adjustable mounting kit for the planar surface gantry	46
[12]	Multi-pin plug distributor NEDU	• For connecting up to 6 inputs/outputs • Included in the scope of delivery of the planar surface gantry	nedu
[13]	Plug socket with cable SIM	• Connecting cable between multi-pin plug distributor NEDU and the controller • Included in the scope of delivery of the planar surface gantry	sim
[14]	Energy chain	• For EXCM-40: type IGUS 2500.03.075.0	–
[15]	Plastic tubing PUN-H-6x1	• Two compressed air tubes are connected to the bulkhead fittings and routed in the energy chains on delivery (for pneumatic Z-axis, one tube on the valve and one on the bulkhead fitting)	pun
[16]	Proximity sensor SIES-8M	• For position sensing on the Y-axis • Not included in the scope of delivery of the planar surface gantry	48
–	Motor cable NEBM-S1G9	• Connecting cable between the motor on the Z-axis and the motor controller CMMS-ST • The motor controller and connecting cable are included in the scope of delivery of the planar surface gantry EXCM-...-HE1	49
	Encoder cable NEBM-M12G8	• Connecting cable between the encoder on the Z-axis and the motor controller CMMS-ST • The motor controller and connecting cable are included in the scope of delivery of the planar surface gantry EXCM-...-HE1	49
	One-way flow control valve GRLA	• For speed regulation • Included in the scope of delivery of the planar surface gantry EXCH-...-P...	38
	H-rail mounting CAFM-D3	For mounting the controller on an H-rail to EN 50022	41

Note

In contrast to the X and Y axis, the z axis (using the included motor controller CMMS-ST) cannot be controlled via ModBus TCP.

Data sheet
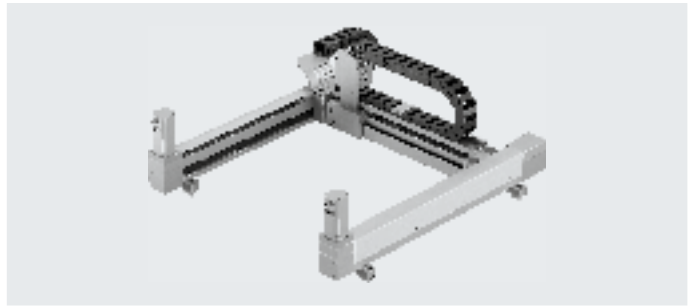
General technical data

Design		Planar surface gantry
Guide		Recirculating ball bearing guide
Stroke of the		
X-axis	[mm]	200 … 2000
Y-axis	[mm]	200 … 1000
Z-axis	[mm]	50, 100, 150
EXCM-…-HE1	[mm]	100
EXCM-…-P1	[mm]	50
EXCM-…-P2	[mm]	100
EXCM-…-P3	[mm]	150
Rated load at max. dynamic response[1]	[kg]	4
Process force in Z direction	[N]	450
Max. torque[2]		➔ Page 29
Max. no-load torque[2)3)]		➔ Page 29
Max. acceleration[4]		
With motor and controller	[m/s^2]	➔ Page 29
Purely mechanical system	[m/s^2]	20
Max. speed[4]		
With motor and controller	[m/s]	1
Purely mechanical system	[m/s]	2
Repetition accuracy	[mm]	±0.1
Mounting position		Horizontal
Type of mounting		Mounting kit, adjusting kit

1) Rated load = tool load (attachment component (Z-axis) + e.g. gripper) + payload
2) These values must also be complied with when installing third-party motors
3) At v=0.2 m/s and 45° travel.
4) These data apply only under ideal conditions.
    For a precise configuration, please consult a sales engineer from Festo.
   Further information ➔ page 29

Operating and environmental conditions

Degree of protection		IP40
Ambient temperature[1]	[°C]	+10 … +50
Storage temperature	[°C]	−10 … +60
Relative humidity	[%]	0 … 90 (non-condensing)
Noise level	[dB(A)]	65
Duty cycle	[%]	100
CE marking (see declaration of conformity)		To EU Machinery Directive

1) Note operating range of proximity sensors and motors

Data sheet

Materials
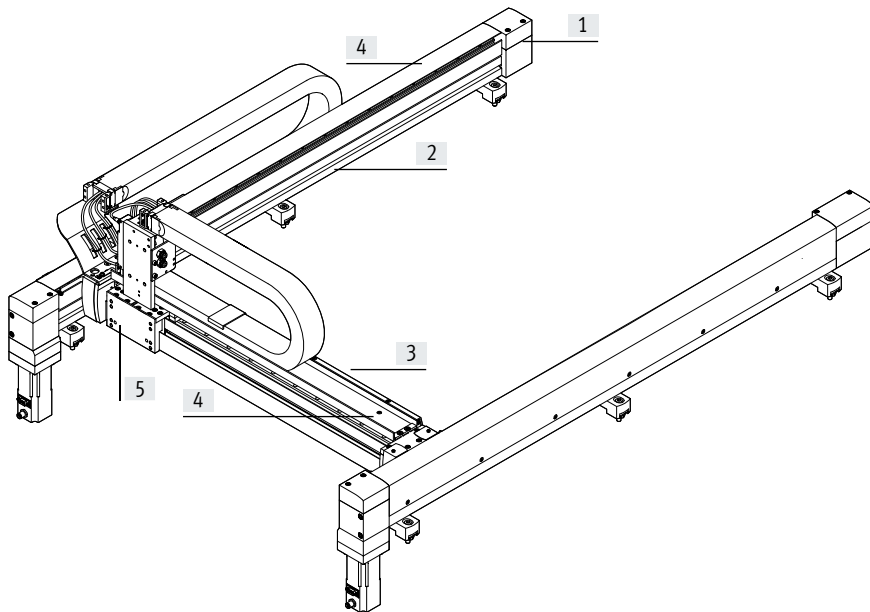
Size	40
[1] Drive and end caps	Aluminium
[2] Profiles of the X-axis	Aluminium
[3] Profile of the Y-axis	Aluminium
[4] Cover	
X-axis	Aluminium
Y-axis	Aluminium
[5] Slide	Aluminium
– Coupling	Aluminium with elastomer ring gear
Guide	Steel
Drive pinion	Steel
Ball bearings	Steel
Toothed belt	PU with steel cord
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

Data sheet

| Weight [kg]	
Product weight with 0 mm stroke (without rated load, motors, axial kits, mounting kits)	
EXCM-...-W-T	16.7
EXCM-...-W-B	17.5
X-axis (2x)	8.5
Y-axis (without slide)	6.2
Additional weight per 100 mm stroke	
X-axis	1.75
Y-axis	0.89
Axial kit[1]	
For EMMS-ST-57-M	0.54
Motor[1]	
EXCM-...-ST (without brake)	1.2
EXCM-...-SB (with brake)	1.38
Attachment component (Z-axis)	
Electrical	
EXCM-...-HE1	3.3
Pneumatic	
EXCM-...-P1	1.8
EXCM-...-P2	2.4
EXCM-...-P3	2.7
Mounting kit for X-axis	
Adjusting kit[1]	0.78
Mounting kit[1]	0.33

1) Weight per component
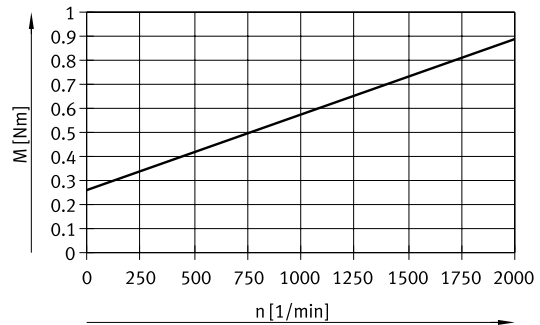
Data sheet

Torque M as a function of rotational speed n

Typical motor characteristic curve with nominal voltage and optimal controller.
In combination with:
EXCM-…-ST-…-PF (for 48 V) or EXCM-…-SB-…-PF (for 48 V)
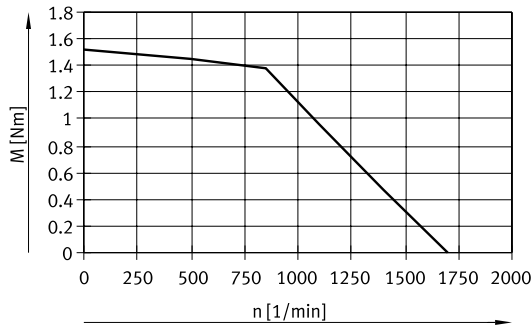
No-load torque M as a function of rotational speed n

Characteristic load values

The centre of gravity of the slide is at the height of the slide in the Z-direction and in the centre of the slide in the X-/Y-directions.
The system is subject to the greatest load in the case of 45° travel.
The following data apply in this case:

Formula for calculating the required torque M and the required rotational speed n

$$M_{45°} = a \times (9.79 \times m_L + 4.89 \times m_{Ay} + 10.21 \times J_m + 19.58) \times 10^{-3} + M_R$$

$$n_{45°} = 975 \times v$$

a =	acceleration [m/s^2]
v =	speed [m/s]
m_{Ay} =	product weight of the Y-axis [kg] ➔ page 28
m_L =	attachment component (Z-axis) [kg] with payload
J_m =	moment of inertia of the motor [kgcm^2] ➔ table below
M_R =	no-load torque [Nm] ➔ page 29
$n_{45°}$ =	nominal rotational speed at 45° travel [rpm]

Allocation of planar surface gantry to servo motor for X-/Y-axis

Planar surface gantry	Motor	Moment of inertia of motor [kgcm^2]
EXCM-40-…-ST	EMMS-ST-57-M-SE-G2	0.48
EXCM-40-…-SB	EMMS-ST-57-M-SEB-G2	0.5

Data sheet

Sample calculation

Given:
Planar surface gantry
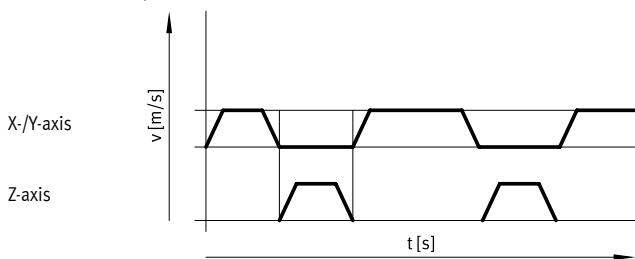EXCM-40-1000-500-KF-SB-B-PF7-HE1-…
with attached motor
EMMS-ST-57-M-SEB-G2

a_{max} = 2 m/s²
v_{max} = 0.5 m/s
Payload = 0.5 kg
Attachment component on Z-axis: EGSL-BS-45-100-10P

Sample calculation

2. Is the attached motor sufficient for this load?

Given:

a_{max}	= 2 m/s²
v_{max}	= 0.5 m/s
m_{Ay}	= 10.65 kg
m_L	= 3.8 kg
J_m	= 0.5 kgcm²

$M_{45°} = a \times (9.79 \times m_L + 4.89 \times m_{Ay} + 10.21 \times J_m + 19.58) \times 10^{-3} + M_R$

$n_{45°} = 975 \times v$

a = acceleration [m/s²]
v = speed [m/s]
m_{Ay} = product weight of the Y-axis [kg] ➜ page 28
m_L = attachment component (Z-axis) [kg] with payload
J_m = moment of inertia of the motor [kgcm²] ➜ table below
M_R = no-load torque [Nm] ➜ page 29
$n_{45°}$ = nominal rotational speed at 45° travel [rpm]

- ⬍ - **Note**

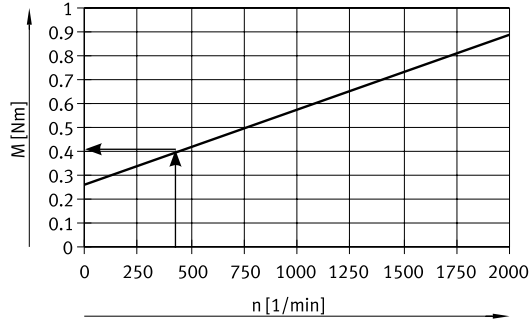These requirements for the dynamic response apply to 45° travel.
The dynamic values may be higher for travel only in the X- or Y-direction.

Data sheet
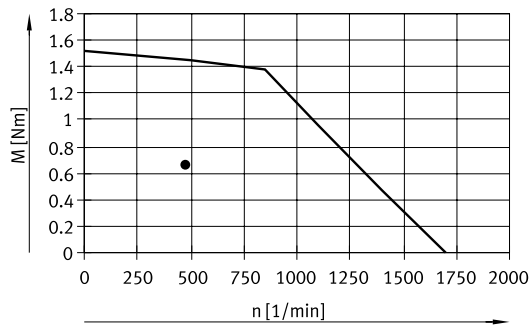
Determining M45°

$n_{45°} = 975 \times 0.5\ ms = 487.5\ rpm$

No-load torque:

———— EXCM-40

$M_R = 0.4\ Nm$

$M_{45°} = a \times (9.79 \times m_L + 4.89 \times m_{Av} + 10.21 \times J_m + 19.58) \times 10^{-3} + M_R$

$M_{45°} = 2\ m/s^2 \times (9.79 \times 3.8\ kg + 4.89 \times 10.65\ kg + 10.21 \times 0.5\ kg\ cm^2 + 19.58) \times 10^{-3} + 0.4\ Nm = 0.63\ Nm$

Result:

The value for the torque lies below the motor characteristic curve.
The design is thus acceptable.

Data sheet

Minimum number of profile mountings

Irrespective of the mounting position, a different number of profile mountings
needs to be used depending on the stroke of the X-axis.
The required number is mounted on delivery.

Stroke of the X-axis [mm]	Number of profile mountings per axis
200 … 499	2
500 … 899	2
900 … 1799	3
1800 … 2000	4

Distances between the profile mountings

The profile mountings must be evenly spaced by distance l.
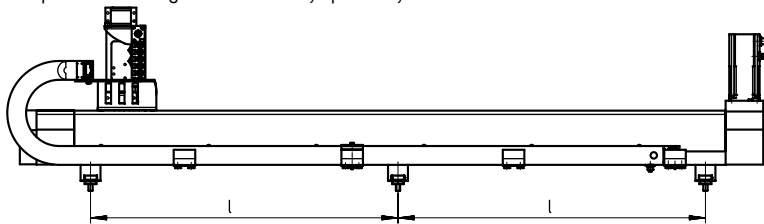
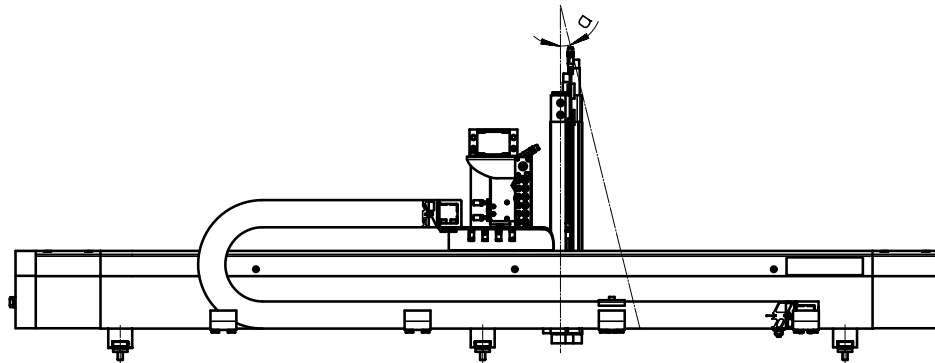$$l_1 = \frac{l + 141}{n - 1}$$

l$_1$ = distance

l   = stroke

n   = number of profile mountings per axis

Mounting position of the Z-axis

Due to manufacturing tolerances and
the backlash in the guides, the angle
between the X- and Z-axes may not be
exactly 90° in certain circumstances.
Max. deviation:
á = ±1.1°

Data sheet

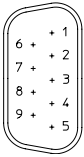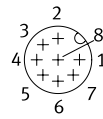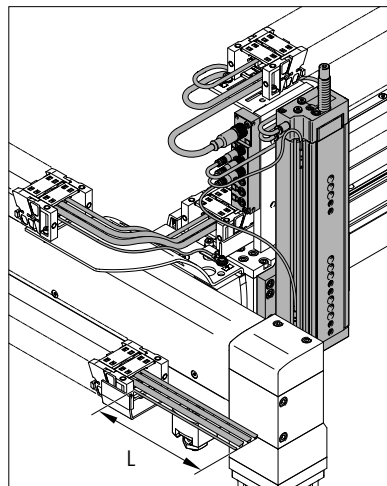## Pin allocations

Motors on the X-/Y- and Z-axes

Motor

Encoder

PIN	Function
1	String A
2	String A/
3	String B
4	String B/
5	n. c.
6	n. c.
7	Brake (24 V)
8	Brake (0 V)
9	–

PIN	Function
1	Signal trace A
2	Signal trace A/
3	Signal trace B
4	Signal trace B/
5	0 V
6	Signal trace N
7	Signal trace N/
8	5 V

Selection of cable lengths

2 cable lengths (5 m or 10 m) can be selected using the modular product system ➜ page 38. This specification relates to the output of the energy chain at the X-axis (dimension L) and describes the minimum length by which the cables and tubing protrude. The selected length applies to the following components:

• Compressed air tubing
• Plug sockets with cable
• Motor cables
• Encoder cables
• Earthing cables

Data sheet
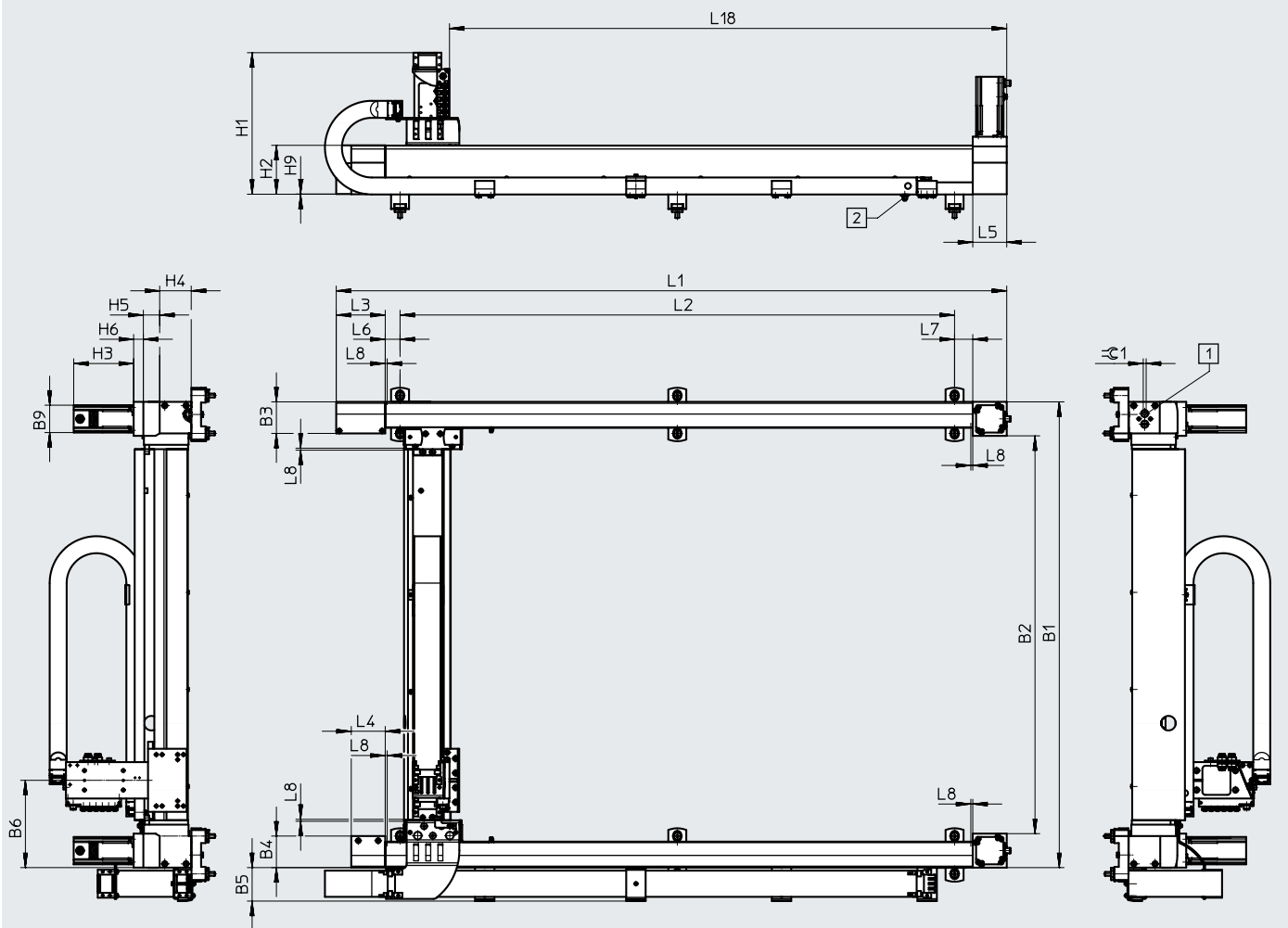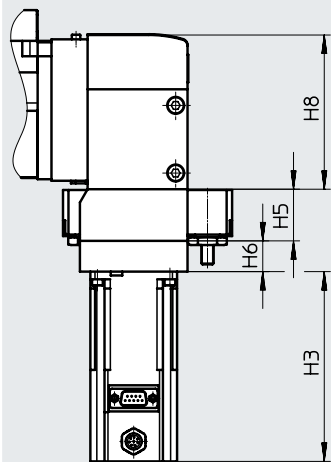
Dimensions
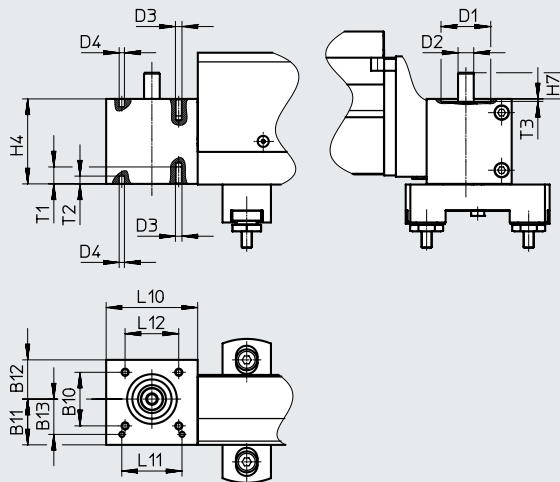
EXCM-40-...-T – Motor attachment position on top

[1]   Screw for toothed belt tension
[2]   Earthing point
L8   Safety distance per side

EXCM-40-...-B – Motor attachment position underneath

EXCM-40-... – Motor interface
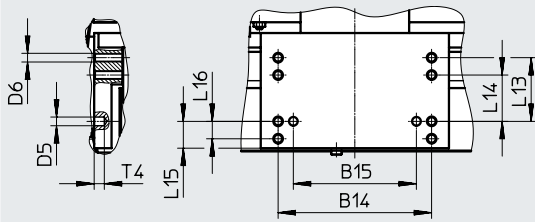
Data sheet

Dimensions　　　　　　　　　　　　　　　　　　　　　　Download CAD data → www.festo.com

EXCM-40-... – Slide

Type	B3	B4	B5	B6	B9	B10	B11	B12	B13 ±0.05	B14 ±0.1
EXCM-40	65	65	69	179.9	56.4	41	35	30	27	106

Type	B15 ±0.03	D1 ∅ H7	D2 ∅ h6	D3	D4 ∅ H7	D5 ∅ H7	D6	H1	H2	H3
EXCM-40	85	38	12	M5	4	6	M6	Approx. 293	100.8	12 4/159.5[1]

Type	H4	H5	H6	H7	H8	H9	L3	L4	L5	L6	L7	L8
EXCM-40	65	33.6	20	20	100.3	0.5	101	70	70	30.5	37.5	6

Type	L10	L11 ±0.03	L12	L13 ±0.1	L14 ±0.1	L15	L16 ±0.1	T1	T2	T3	T4	⇌C1
EXCM-40	70	46	41	44	32	18.5	12	12	6	1.9	7	6

Stroke-dependent dimensions

Stroke of the X-axis	L1	L2	L18	Stroke of the Y-axis	B1	B2
200 ... 2000	382+stroke	→ Page 32	167.2+stroke	200 ... 1000	360+stroke	230+stroke

1) With brake

- ☷ - Note

Depending on the stroke of the X-axis, a different number of profile mountings is required. The distance between the profile mountings must always be the same (→ page 32).

The tension of the toothed belt must be set before commissioning. The tools required to do this (e.g. frequency meter) are not included in the scope of delivery.
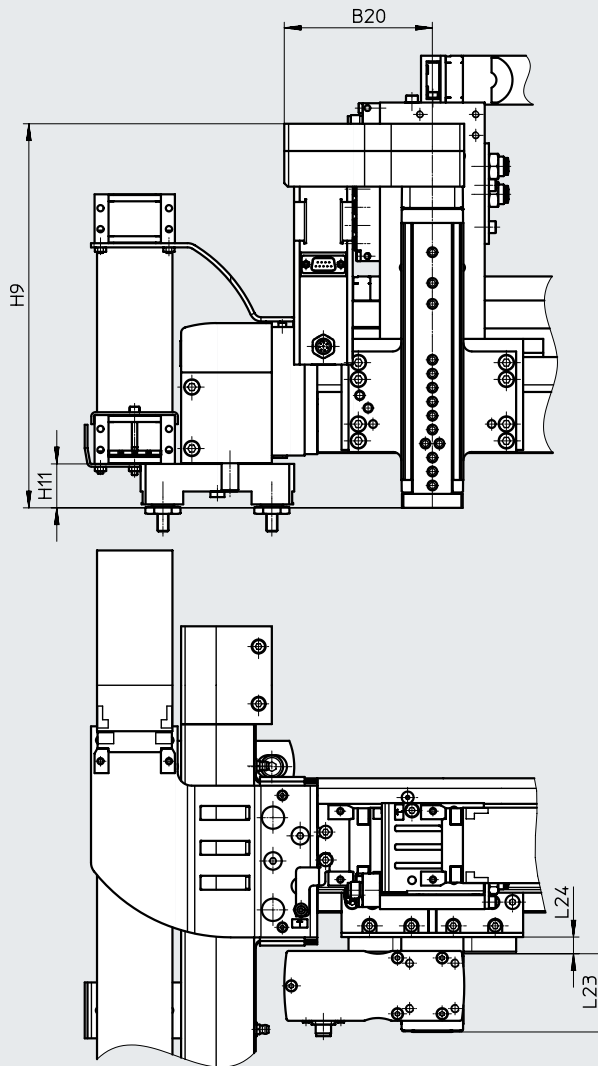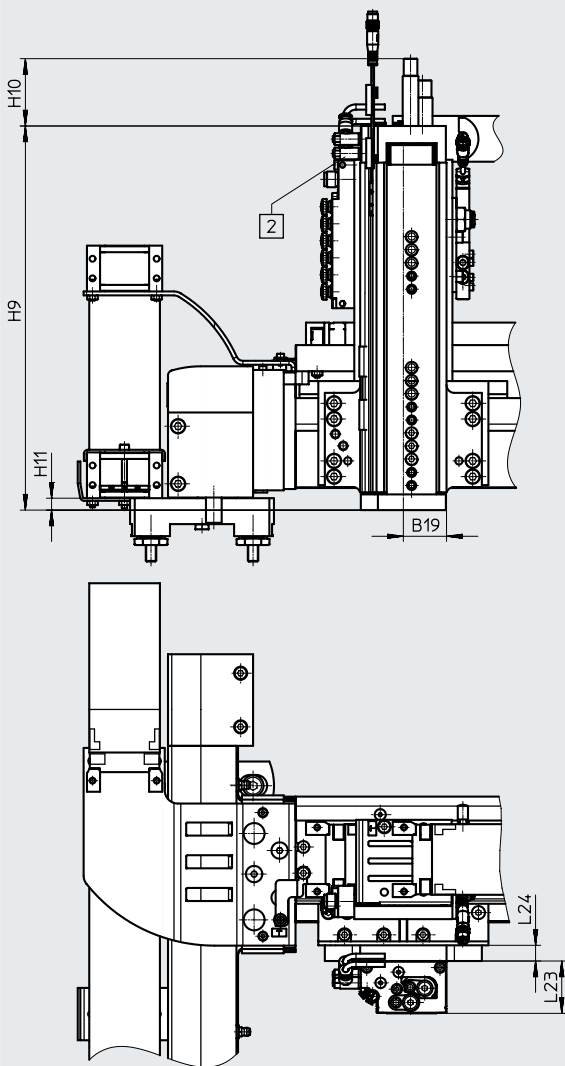
Data sheet

Dimensions

EXCM-40-...-P...
With pneumatic attachment component (mini slide DGSL)

EXCM-40-...-HE1...
With electric attachment component (mini slide EGSL)

Type	B19	B20	H9	H10 max.	H11	L23	L24
With pneumatic attachment component (mini slide DGSL)							
EXCM-40-...-P1	33	–	164.6	51.9	9.1	40±0.08	12
EXCM-40-...-P2			243.6				
EXCM-40-...-P3			293.6				
With electric attachment component (mini slide EGSL)							
EXCM-40-...-HE1	–	106	275	–	31.5	56	12

Data sheet

Allocation of planar surface gantry to servo motor for X-/Y-axis

Planar surface gantry	Motor
EXCM-40-...-ST	EMMS-ST-57-M-SE-G2
EXCM-40-...-SB	EMMS-ST-57-M-SEB-G2

Allocation of planar surface gantry to servo motor for Z-axis

Planar surface gantry	Motor
EXCM-40-...-HE1	EMMS-ST-42-S-SEB-G2

- ⦵ - **Note**

Third-party motors with a driving torque that is too high can damage the planar surface gantry. When selecting the motors, please observe the limits specified in the technical data.

Ordering data – Modular product system

Ordering table

Size	40		Conditions	Code	Enter code
Module no.	**3741955**				
Product type	EXCM series M			**EXCM**	EXCM
Size	40			**-40**	-40
Stroke of the X-axis [mm]	200 ... 2000				
Stroke of the Y-axis [mm]	200 ... 1000				
Guide	Recirculating ball bearing guide			**-KF**	-KF
Motor type	Stepper motor with brake			**-SB**	
	Stepper motor			**-ST**	
	Without motor			**-W**	
Motor attachment position	Underneath			**-B**	
	On top			**-T**	
Controller	None				
	Remote, PNP (48 V)			**-PF**	
Cable length	None				
	5 m			**6**	
	10 m			**7**	
Attachment components	None				
	Electric lifting unit, 100 mm stroke			**-HE1**	
	Pneumatic lifting unit, 50 mm stroke			**-P1**	
	Pneumatic lifting unit, 100 mm stroke			**-P2**	
	Pneumatic lifting unit, 150 mm stroke			**-P3**	
Mounting kit	Via mounting kit				
	With adjusting kit			**-J**	
Document language	German			**-DE**	
	English			**-EN**	
	Spanish			**-ES**	
	French			**-FR**	
	Italian			**-IT**	
	Russian			**-RU**	
	Swedish			**-SV**	
	Chinese			**-ZH**	

- ⫯ - **Note**

In combination with key feature W (without motor), the EXCM planar surface gantry is provided without a coupling housing and without a coupling.

- ⫯ - **Note**

The planar surface gantry can only be operated with the controller CMXH and a load voltage of 48 V.

Controller – Data sheet

Controller EXCM-...-E...
For size 30
Configuration support
via FCT plug-in EXCM
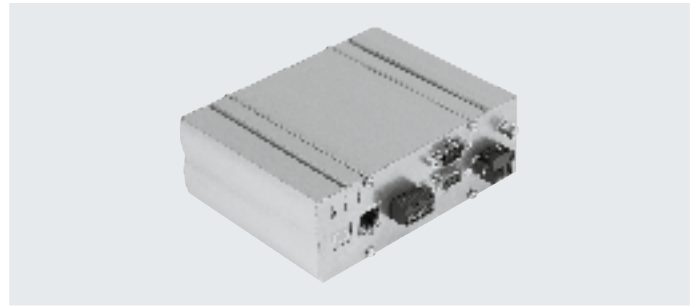Technical data ➔ table below

Controller EXCM-...-PF...
For sizes 30 and 40
Configuration support
via FCT plug-in CMXH
Technical data ➔ Internet: cmxh

Technical data – Controller

Operating principle		Cascade controller with P position controller, PI speed controller, PI current regulator;
		current regulation inside the cascade controller
		PWM MOSFET power output stage
Operating mode		Direct operation
		Set selection
Rotor position sensor		Optical encoder, 2000 steps/rev.
Status indication		7-segment display
		LED
Encoder interface input		RS422
Adjustable current reduction		Via software
Nominal current setting		Via software
Step adjustment		Via software
Braking resistor	[Ω]	15
Mains filter		Integrated

Electrical data – Controller

| For EXCM size		30
Load supply		
Nominal voltage	[V DC]	24 ±15%
Nominal current	[A]	6
Maximum current	[A]	8
Logic supply		
Nominal voltage	[V DC]	24 ±15%
Maximum current	[A]	0.3
Maximum peak current per digital output	[A]	0.1
Characteristics of digital logic outputs		Not galvanically isolated
Characteristics of logic inputs		Galvanically connected to logic potential
Logic input specification		Based on IEC 61131-2
Switching logic		NPN (negative switching)
Protective function		I^2t monitoring, following error monitoring, software end-position detection,
		voltage failure detection, current monitoring, temperature monitoring

Technical data – Fieldbus interface

Interfaces		I/O	CANopen	Ethernet
Number of digital logic outputs		5		
Number of digital logic inputs		9		
Operating range of logic inputs	[V DC]	8 ... 30		
Process interfacing		31 records		
Communication profile		–	FHPP	FHPP (via TCP/IP – CVE)
Max. fieldbus transmission rate	[Mbps]	–	1	100
Bus connection		Socket, 15-pin, Sub-D	Plug, 9-pin, Sub-D	RJ45

Controller – Data sheet

Pin allocation of controller EXCM-...-E...

Front panel | Back
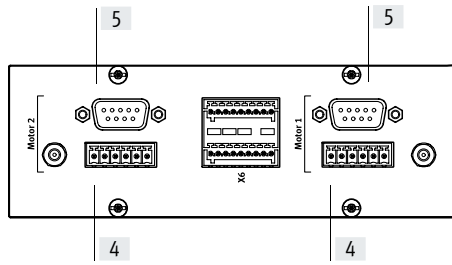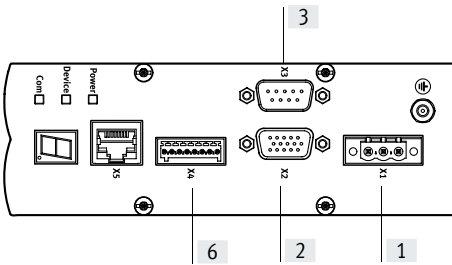
[1]   X1 power supply

PIN	Function
1	+24 V logic Logic supply
2	+24 V load Load supply
3	0 V Reference potential

[2]   X2 I/O interface

PIN	Function
1	+24 V Ready Ready for communication
2	In 1 Positioning record bit 1
3	In 2 Positioning record bit 2
4	In 3 Positioning record bit 3
5	In 4 Positioning record bit 4
6	In 5 Positioning record bit 5
7	In 6 Not used
8	Start Start input
9	Enable Enable input
10	Reset Reset input
11	Ready Ready output
12	Fault Fault output
13	Acknowledge Acknowledge output
14	MC Motion complete
15	0 V Reference potential

[3]   X3 CAN interface

PIN	Function
1	n. c.
2	CAN_L CAN low
3	GND Reference potential
4	n. c.
5	Screening
6	n. c.
7	CAN_H CAN high
8	n. c.
9	n. c.

[4]   Motor connection – supply

PIN	Function
1	A String A
2	A/ String A/
3	B String B
4	B/ String B/
5	BR+ 24 V brake connection
6	BR− 0 V brake connection

[5]   Motor connection – encoder

PIN	Function
1	A
2	B
3	N
4	0 V Reference potential for encoder
5	5 V Auxiliary supply for encoder
6	A/
7	B/
8	N/
9	n. c.

[6]   X4 Emergency stop interface

PIN	Function
1	+24 V logic Logic supply
2	TO Interrupt motor voltage (at 0 V)
3	ES Trigger braking ramp (at 0 V)
4	RB Release brake (at 24 V)
5	FAULT Fault
6	DIAG1
7	DIAG2
8	0 V Reference potential

Controller – Data sheet

Dimensions of controller EXCM-...-E...
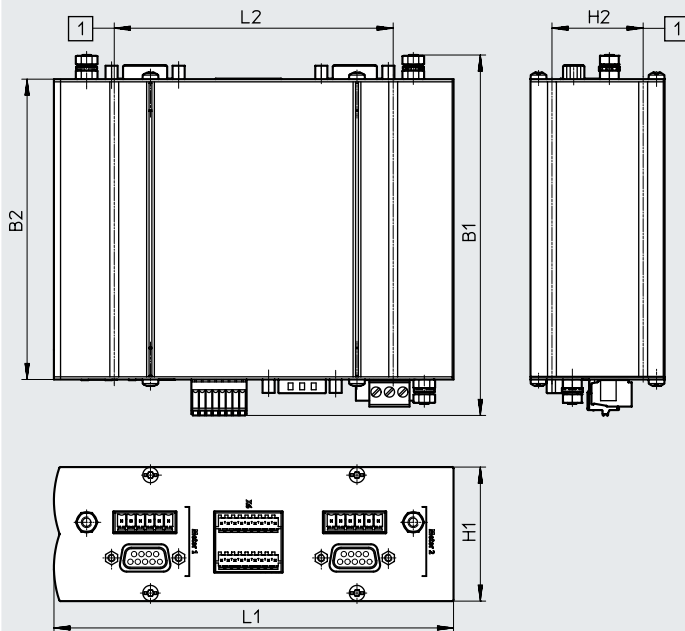
[1] Dimensions for H-rail mounting

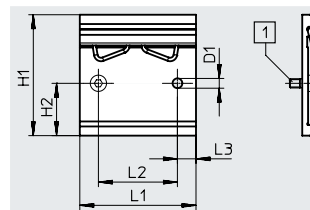| B1	B2	H1	H2	L1	L2
134.4	112	50	34	149	104

H-rail mounting CAFM

For H-rail to EN 50022

Material:
Anodised aluminium
RoHS-compliant

[1] Socket head screw M4x8

Dimensions and ordering data

D1 ∅	H1	H2	L1	L2	L3	Weight [g]	Part no.	Type
4.2	52	22.5	50	34	8	29	**4135048**	**CAFM-D3-H**

Accessories

Profile mounting MUE
For size 30

Material:
Anodised aluminium
RoHS-compliant

For mounting the planar surface gantry
(scope of delivery: 1 pair)

Included in the scope of delivery of the
planar surface gantry:
X-stroke < 500 mm: 2 pairs
X-stroke ≥ 500 mm: 3 pairs
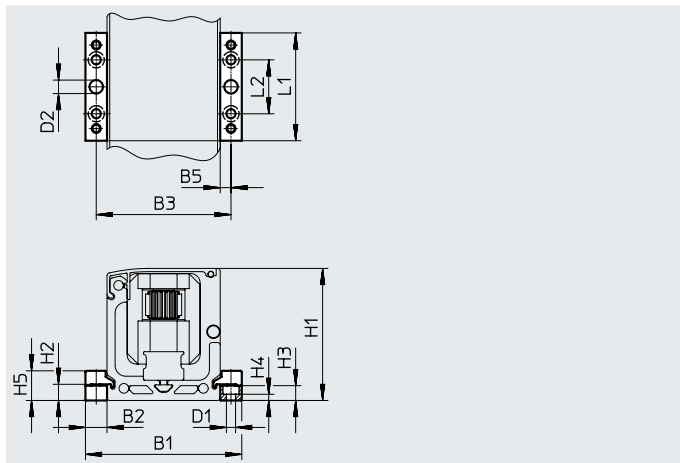
Dimensions and ordering data

For size	B1	B2	B3	B5	D1 Ø	D2 Ø H7	H1	H2	H3
30	58	8	50	4	3.4	5	49	6	5.5

For size	H4	H5	L1	L2	Weight [g]	Part no.	Type
30	2.3	11	40	20	20	558042	MUE-50

Adjusting kit EADC-E11
For size 30

Material:
Anodised aluminium
RoHS-compliant

For mounting and aligning the planar
surface gantry. The kit is height
adjustable.
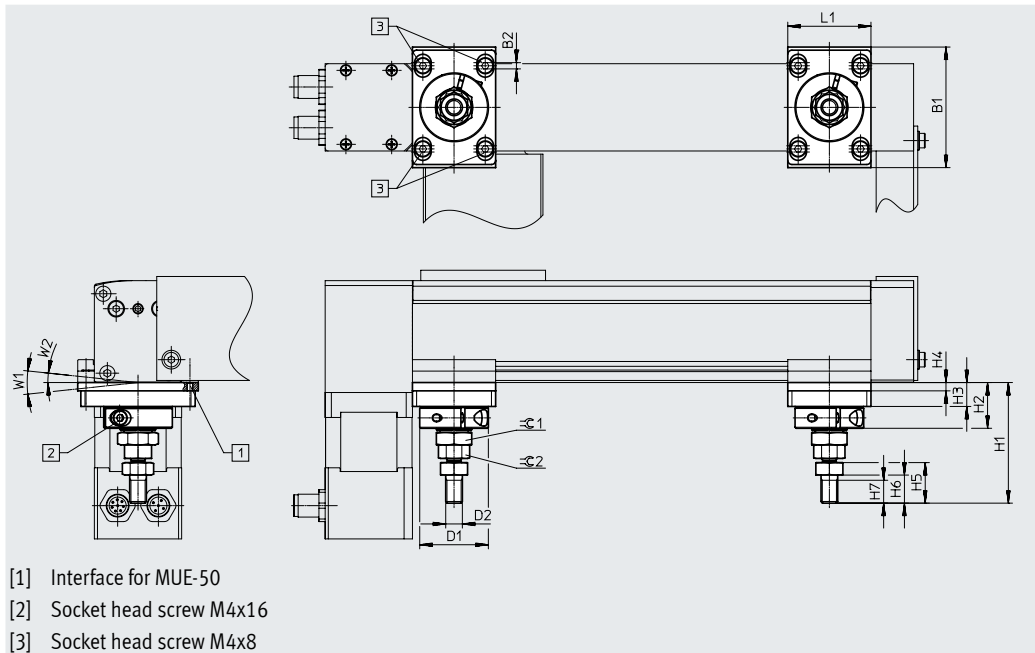
[1]   Interface for MUE-50
[2]   Socket head screw M4x16
[3]   Socket head screw M4x8

Dimensions and ordering data

For size	B1	B2	D1 Ø	D2	H1 +12/−2	H2	H3	H4	H5	H6	H7
30	58	3	33	M8	58	22	11.5	4	19.5	13.5	11

For size	L1	W1	W2	⊂1	⊂2	Weight [g]	Part no.	Type
30	40	12°	6°	17	13	160	4706964	EADC-E11-30

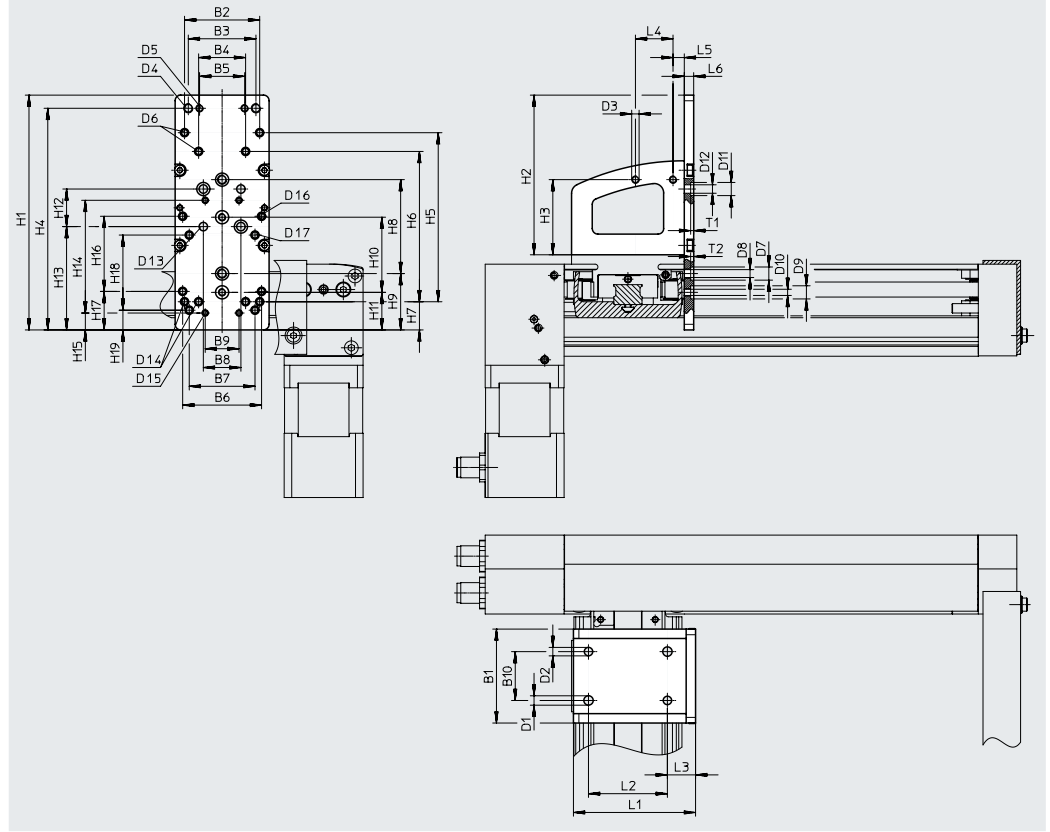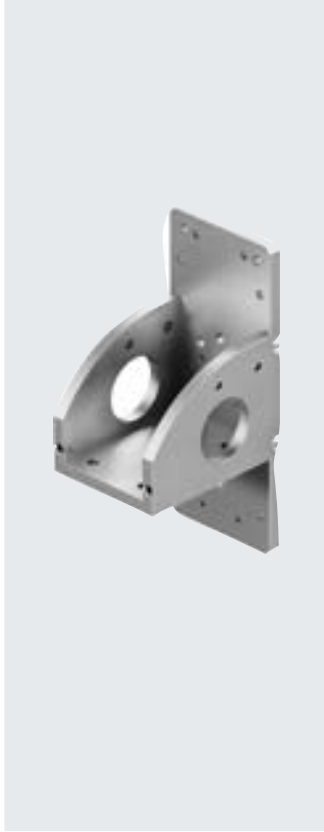**→ Internet: www.festo.com/catalogue/...**

Accessories

Mounting kit EAHT-E9
For size 30

Material:
Anodised aluminium
RoHS-compliant

Prepared hole patterns for:
• Mini slide EGSL-35
• Mini slide DGSL-8/-10/-12
• Electric slide EGSK-20/-26

• Electric cylinder EPCO-16
• Mini slide EGSC-BS-25/-32

Dimensions and ordering data											
For size	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	D1 ∅ H7	D2 ∅
30	50	40	36	25	24	42	35	20	18	26	5	4.5

For size	D3	D4	D5	D6	D7 ∅ H7	D8	D9 ∅ H7	D10	D11 ∅ H7	D12 ∅	D13 ∅	D14
30	M4	M5	M4	M4	7	M5	7	M4	7	4.5	4.5	M4

For size	D15	D16	D17	H1	H2	H3	H4 ±0.2	H5	H6	H7	H8	H9
30	M3	M4	M4	125	85	40	118	90	80	15	50	30

For size	H10	H11	H12	H13	H14	H15	H16	H17	H18	H19	L1	L2
30	40	20	20	55	60	9	40	20.5	40	10.5	65	42

For size	L3	L4	L5	L6	T1 ±0.1	T2 ±0.1	Weight [g]	Part no.	Type
30	15	20	6	5	1.6	1.6	165	**4070088**	**EAHT-E9-FB-3D-30**

Accessories

Sensor mounting EAPR
For size 30
(incl. switch lug)

Material:
Retaining bracket: Wrought aluminium
alloy
Switch lug: Steel
RoHS-compliant

For homing in combination with third-party motors.
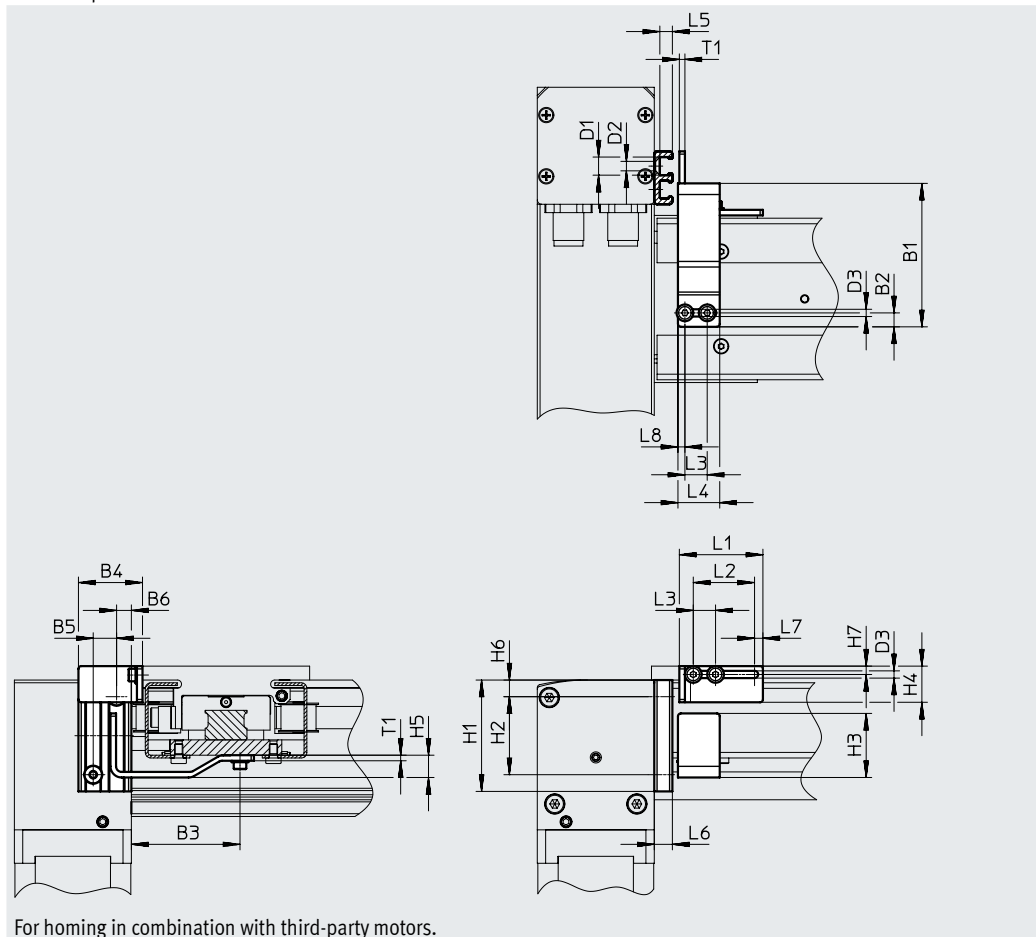
Dimensions and ordering data

For size	B1	B2	B3	B4	B5	B6	D1 ∅	D2 ∅	D3 ∅	H1
30	51.5	5	39	23	8.4	5.3	6.5	3.4	2.6	40

For size	H2	H3	H4	H5	H6	H7	L1	L2	L3	L4
30	28	23	13	8	6	3	30	22	8	15

For size	L5	L6	L7	L8	T1	Weight [g]	Part no.	Type
30	4.5	6.5	3	2.5	2	330	2319236	EAPR-E11-30

Accessories

Energy chain and connection set for size 30
Ordering data – Energy chain
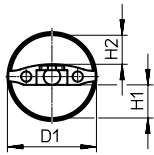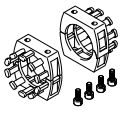
EADH-U-30-30   EADH-U-30-40
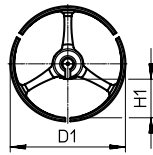
Type		D1 ∅	H1	H2
	EADH-U-3D-30	34.5	12.5	11
	EADH-U-3D-40	45	15	–

For size	Max. bending radius [mm]	Length [mm]	Weight [g]	Part no.	Type
30	50	Approx. 500	75	8059999	EADH-U-3D-30
	58	Approx. 500	100	8060324	EADH-U-3D-40

Ordering data – Connection set

	For energy chain	Description	Part no.	Type
	EADH-U-3D-30	For mounting the energy chain.	8060325	EAHT-AE-3D-30
	EADH-U-3D-40	Included in the scope of delivery: • 2 connectors • 4 socket head screws M4x10	8060326	EAHT-AE-3D-40

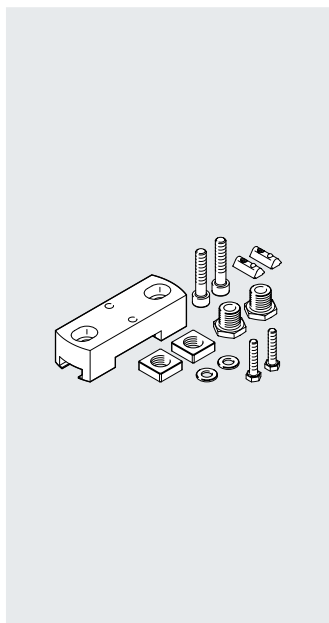# Accessories

Adjusting kit EADC-E12
For size 40

Material:
Anodised aluminium
RoHS-compliant

For mounting and aligning the planar
surface gantry. The kit is height
adjustable.
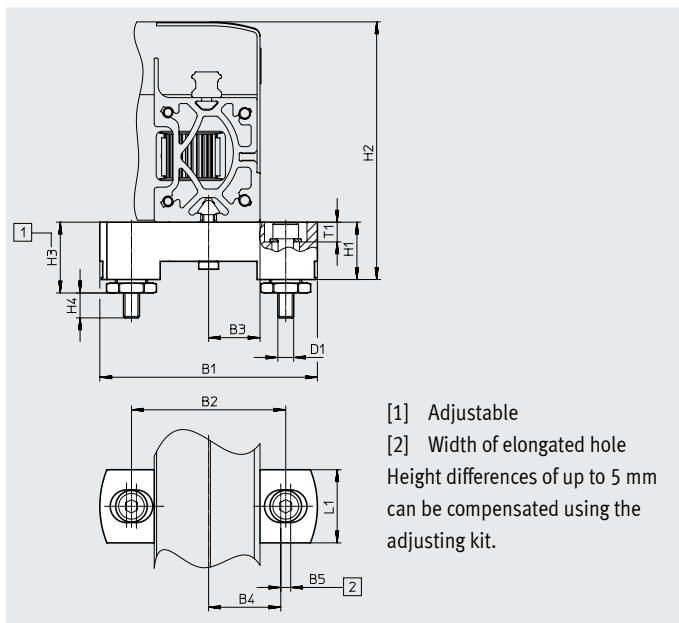
[1] Adjustable
[2] Width of elongated hole
Height differences of up to 5 mm
can be compensated using the
adjusting kit.

Dimensions and ordering data

For size	B1	B2	B3	B4 ±0.2	B5	D1	H1	H2
40	110	78	26	36.5	5	M8	29	129.8

For size	H3 min.	H3 max.	H4 max.	L1	T1 ±0.1	Weight [g]	Part no.	Type
40	34.8	39.8	14	37	10	800	**8029165**	**EADC-E12-40**

Mounting kit EAHM-E12
For size 40

Material:
Anodised aluminium
RoHS-compliant

For mounting the planar surface
gantry. The kit is not height adjustable.
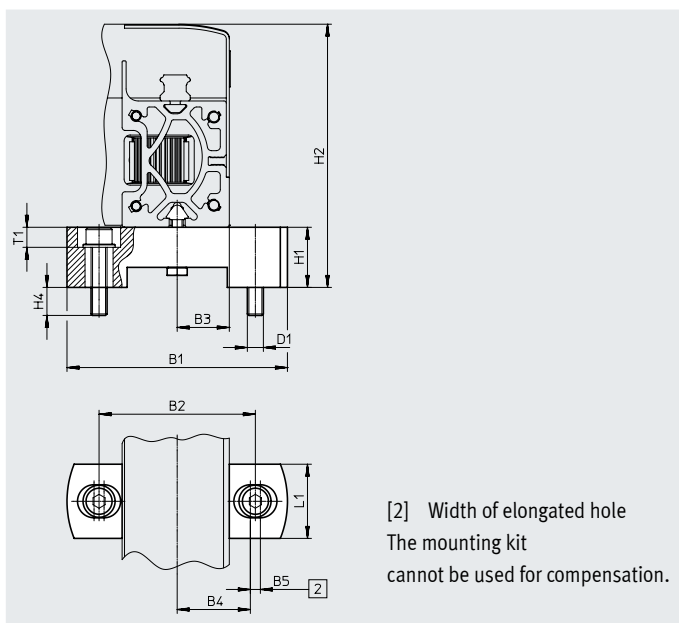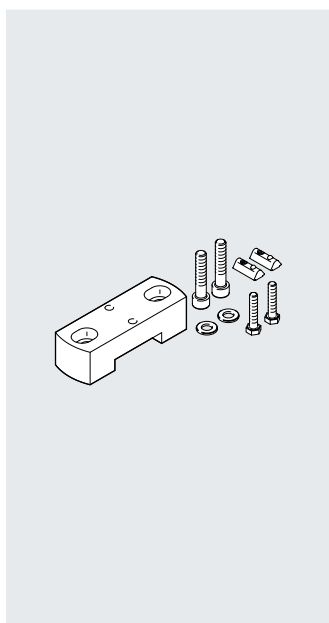
[2] Width of elongated hole
The mounting kit
cannot be used for compensation.

Dimensions and ordering data

For size	B1	B2	B3	B4 ±0.2	B5	D1	H1 ±0.2
40	110	78	26	36.5	5	M8	30

For size	H2	H4 max.	L1	T1 ±0.1	Weight [g]	Part no.	Type
40	131.3	14	37	10	330	**3489340**	**EAHM-E12-K-40**

Accessories

Sensor mounting EAPR
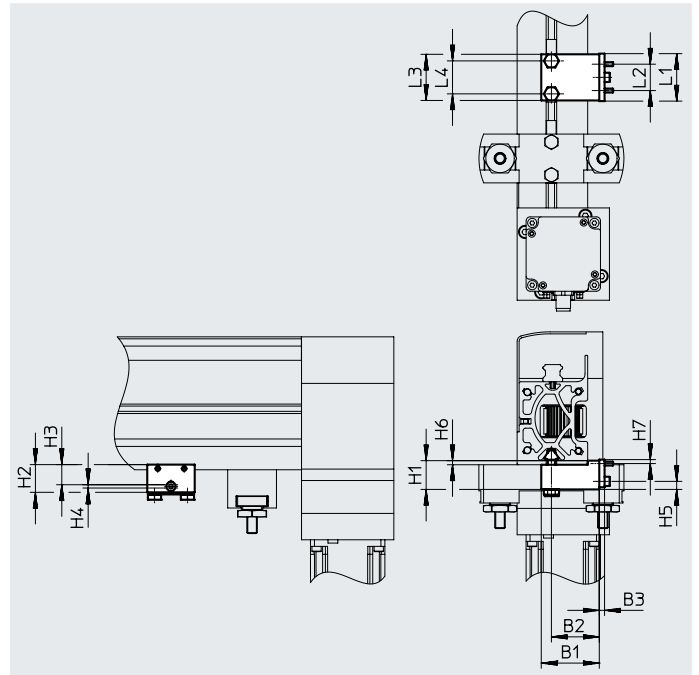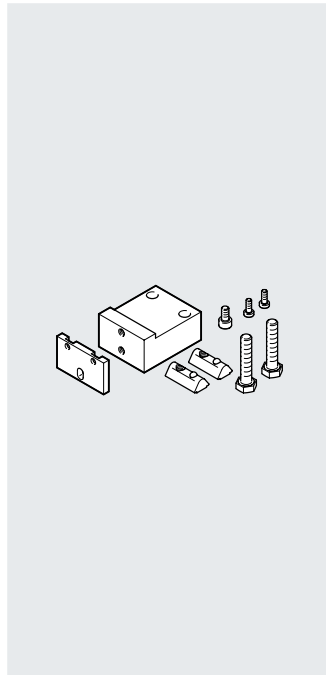For size 40

Material:
Switch lug: Steel
Sensor bracket: Wrought aluminium
alloy
RoHS-compliant

For proximity sensors
SIES-V3B and SIES-Q8B
(for sensing the position of the slide on
the X-axis)

Dimensions and ordering data

For size	B1	B2	B3	H1	H2	H3 ±0.1	H4	H5	H6 −0.1	H7 −0.2
40	44	36.3	4	21.8	21	15	2.5	6.1	3.1	3
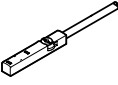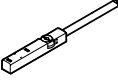
For size	L1	L2	L3	L4	Weight [g]	Part no.	Type
40	36	20	35	25	120	**2536353**	**EAPR-E12-40**

Accessories

Proximity sensores for size 30
Ordering data – Proximity sensores for T-slot, inductive

Data sheets → Internet: sies

	Type of mounting	Electrical connection	Switching output	Cable length [m]	Part no.	Type
N/O contact						
	Insertable in the slot from above, flush with the cylinder profile	Cable, 3-wire	PNP	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**
		Cable, 3-wire	NPN	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						
	Insertable in the slot from above, flush with the cylinder profile	Cable, 3-wire	PNP	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**
		Cable, 3-wire	NPN	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**

Note

For homing in combination with third-party motors.

Proximity sensores for size 40
Permissible proximity sensor for sensing the position of the slide on the Y-axis

**Ordering data – Proximity sensors for T-slot, inductive**

Data sheets → Internet: sies

	Type of mounting	Electrical connection	Switching output	Cable length [m]	Part no.	Type
	Insertable in the slot from above, flush with the cylinder profile	Plug M8x1, 3-pin	PNP, N/O contact	0.3	**551387**	**SIES-8M-PS-24V-K-0,3-M8D**

Permissible proximity sensors for sensing the positions on the Z-axis

Ordering data – Proximity sensors for T-slot

Data sheets → Internet: smt

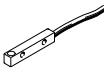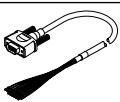|	Type of mounting	Electrical connection	Switching output	Cable length [m]	Part no.	Type
With mini slide DGSL (magneto-resistive)						
	Insertable in the slot from above, flush with the cylinder profile	Plug M8x1, 3-pin	PNP, N/O contact	0.3	**551367**	**SME-10M-DS-24V-E-0,3-L-M8D**
With mini slide EGSL (inductive)						
	Insertable in the slot from above, flush with the cylinder profile	Plug M8x1, 3-pin	PNP, N/O contact	0.3	**551387**	**SIES-8M-PS-24V-K-0,3-M8D**

Accessories

Permissible proximity sensors in combination with sensor mounting EAPR-E12
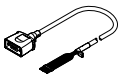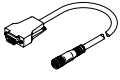
Ordering data – Proximity sensores

	Type of mounting	Electrical connection	Switching output	Part no.	Type
N/O contact					
	Screwed on	Plug M8x1, 3-pin	PNP	**150491**	**SIES-V3B-PS-S-L**
N/C contact					
	Screwed on	Cable, 3-wire	NPN	**174550**	**SIES-Q8B-NO-K-L**

Ordering data

	Description	Cable length [m]	Part no.	Type
Control cable NEBC				
	For the I/O interface to any controller	1	**2307459**	**NEBC-S1H15-E-1.0-N-LE15**
		2.5	**2052917**	**NEBC-S1H15-E-2.5-N-LE15**
		5	**2052918**	**NEBC-S1H15-E-5.0-N-LE15**
		10	**2052919**	**NEBC-S1H15-E-10.0-N-LE15**

Cables for Z-axis for size 40
Ordering data

	Description	Cable length [m]	Part no.	Type
Motor cable NEBM				
	• Min. bending radius: 62 mm • Suitable for energy chains • Ambient temp.: −40 ... +80°C	10	**1450372**	**NEBM-S1G9-E-10-Q5-LE6**
Encoder cable NEBM				
	• Min. bending radius: 51 mm • Suitable for energy chains • Ambient temp.: −40 ... +70°C	10	**550749**	**NEBM-M12G8-E-10-S1G9**
		15	**550750**	**NEBM-M12G8-E-15-S1G9**