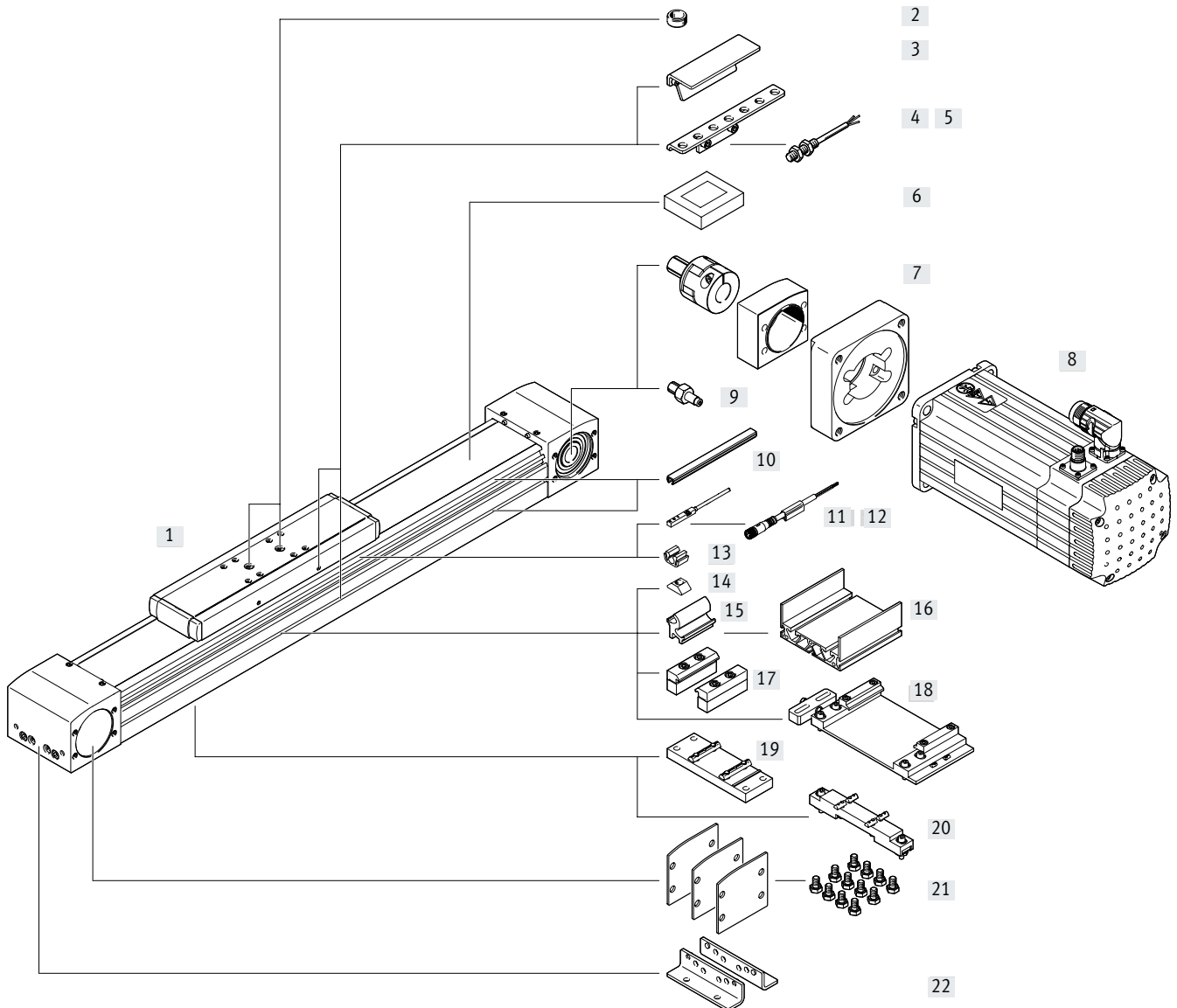
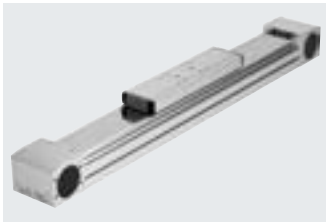


Peripherals overview



Peripherals overview

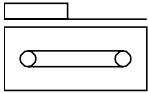
Accessories			
	Type/order code	Description	→ Page/Internet
[1]	Toothed belt axis ELGA-TB-G	Electric drive	82
[2]	Centring pin/sleeve ZBS, ZBH	<ul style="list-style-type: none"> • For centring loads and attachments on the slide • Included in the scope of delivery: <ul style="list-style-type: none"> – With size 70: 2x ZBS-5 – With size 80, 120: 2x ZBH-9 	108
[3]	Switch lug SA, SB, SC, SD, SE, SF	For sensing the slide position	105
[4]	Sensor bracket SC, SD, SE, SF	For mounting the inductive proximity switches (round design) on the axis	106
[5]	Proximity switch, M8 SC, SD, SE, SF	<ul style="list-style-type: none"> • Inductive proximity switch, round design • The order code SC, SD, SE, SF includes 1 switch lug and max. 2 sensor brackets in the scope of delivery 	110
[6]	Clamping element EADT	Tool for retensioning the cover strip	108
[7]	Axial kit EAMM	For axial motor mounting (comprising: coupling, coupling housing and motor flange)	94
[8]	Motor EMME, EMMS	Motors specially matched to the axis, with or without gear unit, with or without brake	94
[9]	Drive shaft EA	<ul style="list-style-type: none"> • Can, if required, be used as an alternative interface • No drive shaft is required for the axis/motor combinations → page 94 	99
[10]	Slot cover NS, NC	<ul style="list-style-type: none"> • For protection against contamination 	108
[11]	Proximity switch, T-slot SA, SB	<ul style="list-style-type: none"> • Inductive proximity switch, for T-slot • The order code SA, SB includes 1 switch lug in the scope of delivery 	109
[12]	Connecting cable CA	For proximity switch (order code SE and SF)	110
[13]	Clip CM	For mounting the proximity switch cable in the slot	108
[14]	Slot nut NM	For mounting attachments	108
[15]	Adapter kit DHAM	For mounting the support profile on the axis	109
[16]	Support profile HMIA	For mounting and guiding an energy chain	109
[17]	Profile mounting MA	For mounting the axis on the side of the profile	101
[18]	Adjusting kit EADC-E16	For mounting the axis on a vertical surface. Once mounted, the axis can be aligned horizontally	104
[19]	Central support EAHF-L5	For mounting the axis on the profile from underneath	102
[20]	Adjusting kit EADC-E15	Height-adjustable. Can be used to easily compensate for any unevenness in the bearing surface	103
[21]	Cover kit EASC-L5	For covering the sides of the drive cover	108
[22]	Foot mounting MF	<ul style="list-style-type: none"> • For mounting the axis on the end cap • With higher forces and torques, the axis should be mounted using the profile 	100




Type codes

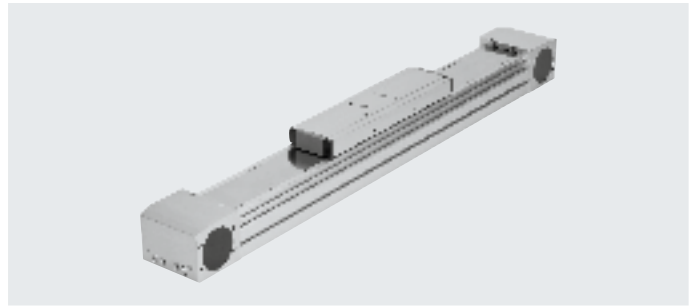
001	Series	
ELGA	Gantry axis	
002	Drive system	
TB	Toothed belt	
003	Guide	
G	Basic variant	
004	Size	
70	70	
80	80	
120	120	
005	Stroke range [mm]	
...	50 ... 8500	
006	Stroke reserve	
OH	None	
...H	0 ... 999 mm	
007	Protection against particles	
	Standard	
PO	Without strip cover	
008	Material of toothed belt	
CR	Chloroprene rubber	
PU1	Uncoated PU, FDA-compliant	
PU2	Coated PU	
009	Foot mounting	
	None	
MF	1 record	
010	Profile mounting	
	None	
...MA	1 ... 2 units	
011	Proximity sensor, inductive, slot 8, N/O contact, cable 7.5 m	
	Without	
...SA	1 ... 6 units	

012	Proximity sensor, inductive, slot 8, N/C contact, cable 7.5 m	
	Without	
...SB	1 ... 6 units	
013	Proximity switch, inductive, M8, N/O contact, cable 2.5 m	
	None	
...SC	1 ... 99 pieces	
014	Proximity switch, inductive, M8, N/C contact, cable 2.5 m	
	Without	
...SD	1 ... 99 pieces	
015	Proximity switch, inductive, M8, N/O contact, M8 plug	
	Without	
...SE	1 ... 99 pieces	
016	Proximity switch, inductive, M8, N/C contact, M8 plug	
	None	
...SF	1 ... 99 pieces	
017	Connecting cable 2.5 m, M8, 3-wire	
	None	
...CA	1 ... 99 pieces	
018	Cover, sensor slot	
	None	
...NS	1 ... 50 pieces	
019	Mounting slot covering	
	None	
...NC	1 ... 50 units	
020	Slot nut for mounting slot	
	Without	
...NM	1 ... 99 units	
021	Cable clip	
	None	
...CM	... units	
022	Drive shaft	
	None	
...EA	1 ... 4 pieces	

Data sheet



-  Size
70 ... 120
-  Stroke length
50 ... 8500 mm
-  www.festo.com

**General technical data**

Size	70	80	120
Design	Electromechanical axis with toothed belt		
Guide	Plain-bearing guide		
Mounting position	Any		
Working stroke	[mm] 50 ... 8500	50 ... 8500	50 ... 8500
Max. feed force F_x	[N] 350	800	1300
Max. no-load torque ¹⁾	[Nm] 0.5	1	3
Max. no-load resistance to shifting ¹⁾	[N] 35	50	114
Max. driving torque	[Nm] 5	15.9	34.1
Max. speed ²⁾	[m/s] 5		
Max. acceleration	[m/s ²] 50		
Repetition accuracy	[mm] ±0.08		

1) At 0.2 m/s

2) At higher speeds, the wear on the guide will increase (→ page 85)

Operating and environmental conditions

Ambient temperature ¹⁾	[°C]	-10 ... +60
Degree of protection		
ELGA-...		IP40
ELGA-...-P0		IP00
Duty cycle	[%]	100

1) Note operating range of proximity switches

Weight [kg]

Size	70	80	120
Basic weight with 0 mm stroke (including slide)	2.16	4	11.8
Additional weight per 1000 mm stroke	2.64	3.56	7.45
Moving mass	0.57	1.1	3.06

Toothed belt

Size	70	80	120
Pitch	[mm] 3	5	5
Elongation ¹⁾			
ELGA-...	[%] 0.213	0.168	0.21
ELGA-...-PU2	[%] 0.105	0.1	0.122
Effective diameter	[mm] 28.65	39.79	52.52
Feed constant	[mm/rev] 90	125	165

1) At max. feed force

Mass moments of inertia

Size	70	80	120
J_0	[kg mm ²] 175	666	3201
J_H per metre stroke	[kg mm ² /m] 19	93	215
J_L per kg payload	[kg mm ² /kg] 205	396	690

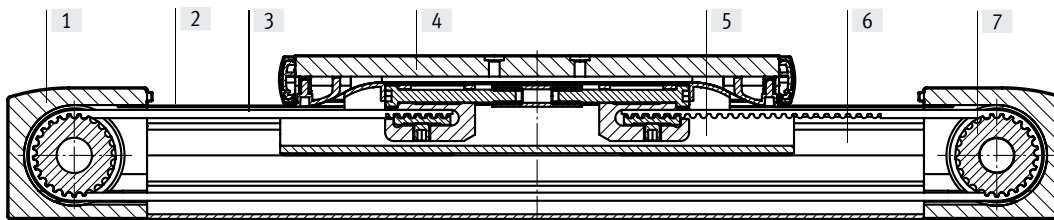
The mass moment of inertia J_A of the entire axis is calculated as follows:

$$J_A = J_0 + J_H \times \text{working stroke [m]} + J_L \times m_{\text{payload}} [\text{kg}]$$

Data sheet

Materials

Sectional view



Axis

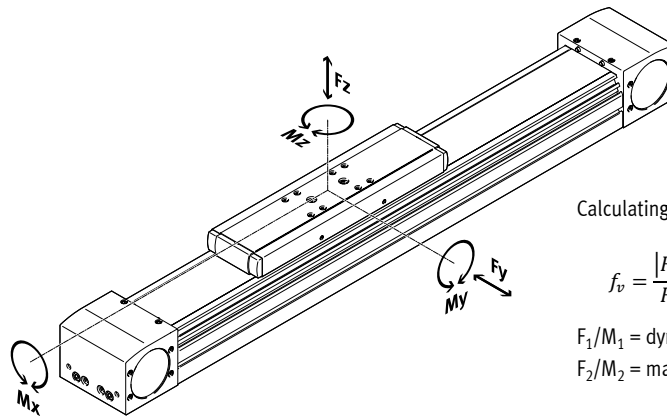
[1] Drive cover	Anodised wrought aluminium alloy
[2] Cover strip	Stainless steel strip, non-corroding
[3] Toothed belt	
ELGA-...	Polychloroprene with glass cord and nylon coating
ELGA-...-PU2	Polyurethane with steel cord and nylon cover
[4] Slide	Anodised wrought aluminium alloy
[5] Slide elements	Polyacetal
[6] Profile with integrated guide	Anodised wrought aluminium alloy
[7] Toothed belt pulley	High-alloy stainless steel
Note on materials	RoHS-compliant
	Contains paint-wetting impairment substances

Characteristic load values

The indicated forces and torques refer to the slide surface. The point of application of force is the point where the centre of the guide and the longitudinal centre of the slide intersect.

These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration phase.

In the event of high torques M_y and M_z , the guide may lock automatically during dynamic operation. Therefore, make sure that the feed force is applied as close as possible to the slide.



If the axis is subjected to two or more of the indicated forces and torques simultaneously, the following equation must be satisfied in addition to the indicated maximum loads:

Calculating the load comparison factor:

$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{x1}|}{M_{x2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

F_1/M_1 = dynamic value

F_2/M_2 = maximum value

Permissible forces and torques

Size		70	80	120
$F_{y_{max}}$	[N]	80	200	380
$F_{z_{max}}$	[N]	400	800	1600
$M_{x_{max}}$	[Nm]	5	10	20
$M_{y_{max}}$	[Nm]	30	60	120
$M_{z_{max}}$	[Nm]	10	20	40

The plain-bearing guide is subject to wear. This depends on the load, on the travel speed and on the length of the pause between the cycles. A higher speed has a more critical effect on wear than a higher load. The values given above refer to a maximum travel speed of 0.5 m/s and a pause longer than 5 s.

The plain-bearing guide is not backlash-free. The toothed belt axis ELGA-TB-RF or ELGA-TB-KF is recommended for applications that need to be backlash-free, or applications involving high torque loads.

Engineering software

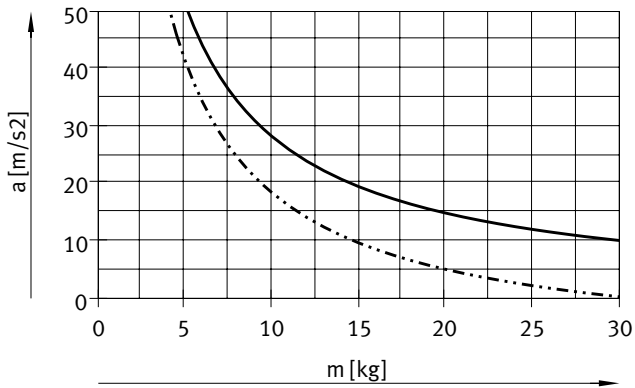
Electric Motion Sizing

www.festo.com/x/electric-motion-sizing

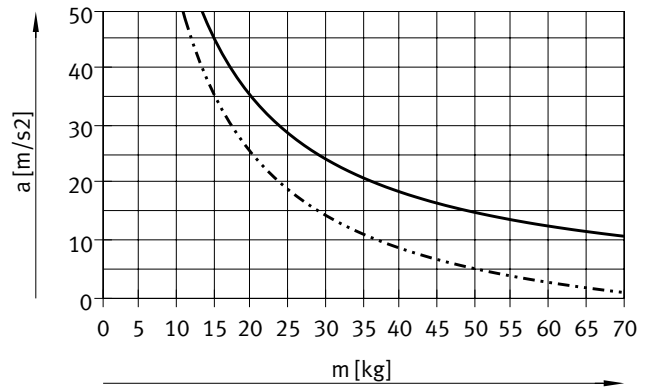
Data sheet

Max. acceleration a as a function of payload m

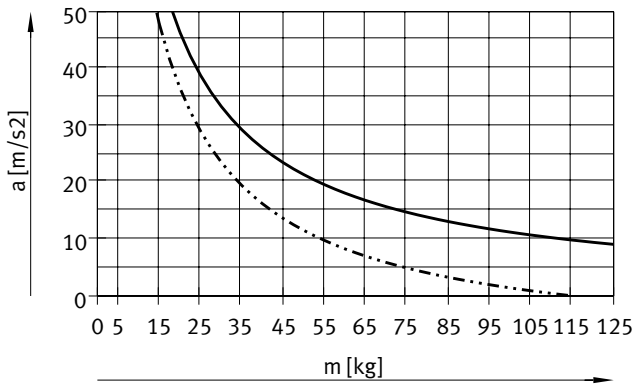
Size 70



Size 80

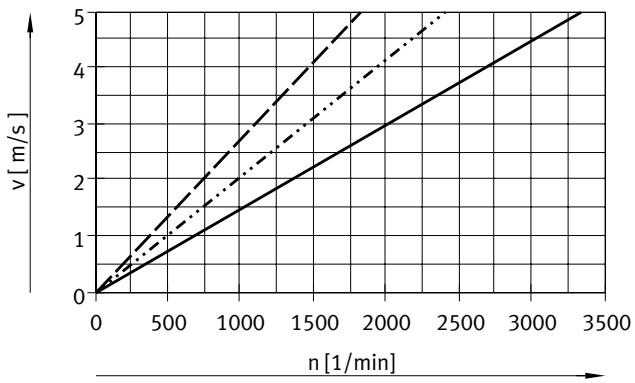


Size 120



— Horizontal mounting position
 - - - Vertical mounting position

Velocity v as a function of rotational speed n

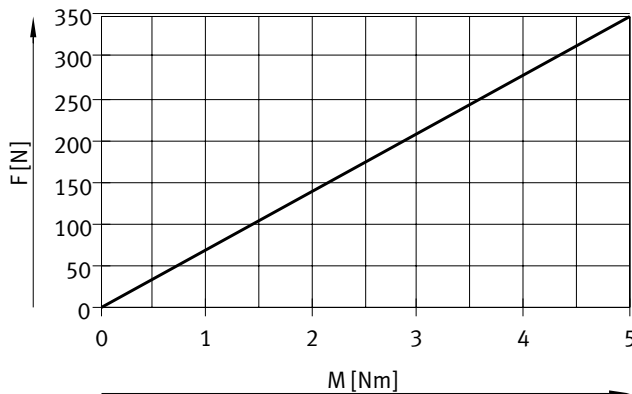


— ELGA-TB-G-70
 ELGA-TB-G-80
 - - - ELGA-TB-G-120

Data sheet

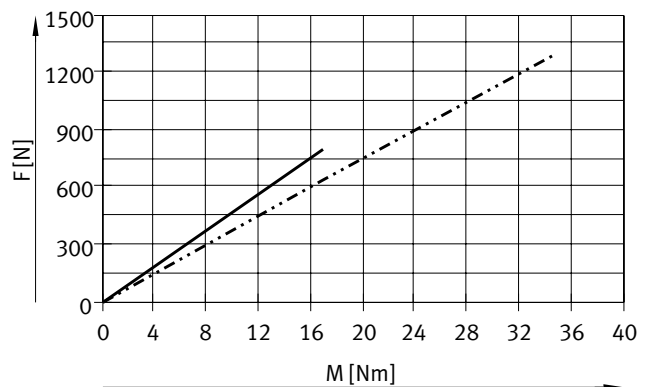
Theoretical feed force F as a function of input torque M

Size 70



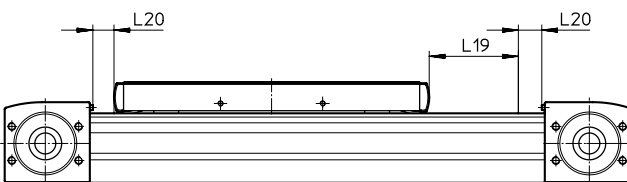
— ELGA-TB-G-70

Size 80/120



— ELGA-TB-G-80
 - - - - - ELGA-TB-G-120

Stroke reserve



L19 = Nominal stroke
 L20 = Stroke reserve

- The stroke reserve is a safety distance from the mechanical end position and is not used in normal operation
- The sum of the nominal stroke and 2x stroke reserve must not exceed the maximum permissible working stroke
- The stroke reserve length can be freely selected
- The stroke reserve is defined via the "stroke reserve" characteristic in the modular product system.

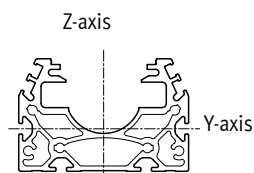
Example:

Type ELGA-TB-G-70-500-20H-...
 Nominal stroke = 500 mm
 2x stroke reserve = 40 mm
 Working stroke = 540 mm
 (540 mm = 500 mm + 2x 20 mm)

The toothed belt axis ELGA-TB-G features a safety distance to the end positions as standard.

Size		70	80	120
Safety distance per end position	[mm]	4.5	5	5

2nd moments of area



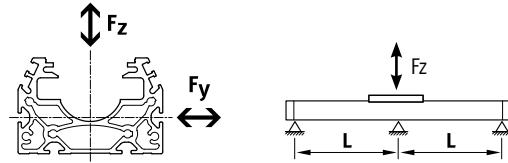
Size		70	80	120
I_y	[mm ⁴]	1.47×10^5	2.77×10^5	1.23×10^6
I_z	[mm ⁴]	4.25×10^5	9.07×10^5	4.03×10^6

Data sheet

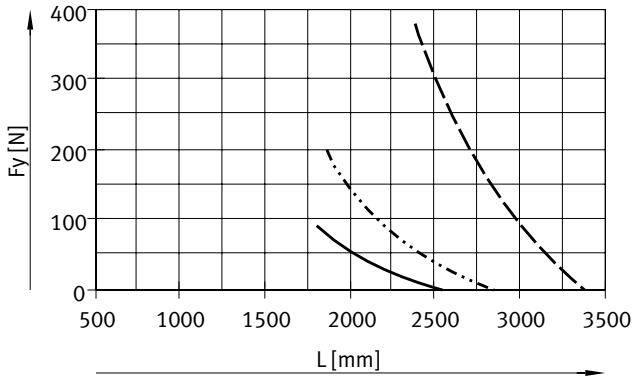
Maximum permissible support spacing L (without profile mounting MUE/central support EAHF) as a function of force F

In order to limit deflection in the case of large strokes, the axis may need to be supported.

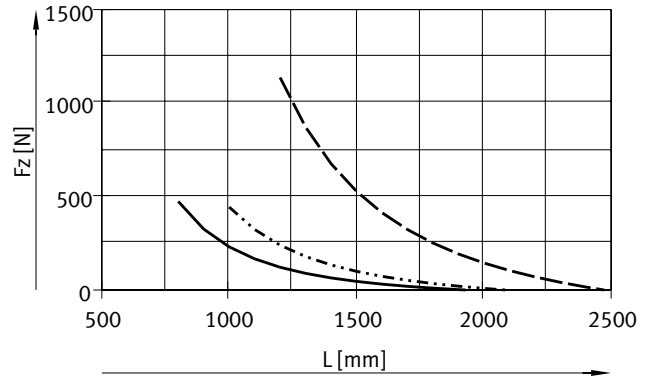
The following graphs can be used to determine the maximum permissible support span l as a function of force F acting on the axis. The deflection is $f = 0.5 \text{ mm}$.



Force Fy



Force Fz



- ELGA-TB-G-70
- ELGA-TB-G-80
- - - ELGA-TB-G-120

Recommended deflection limits

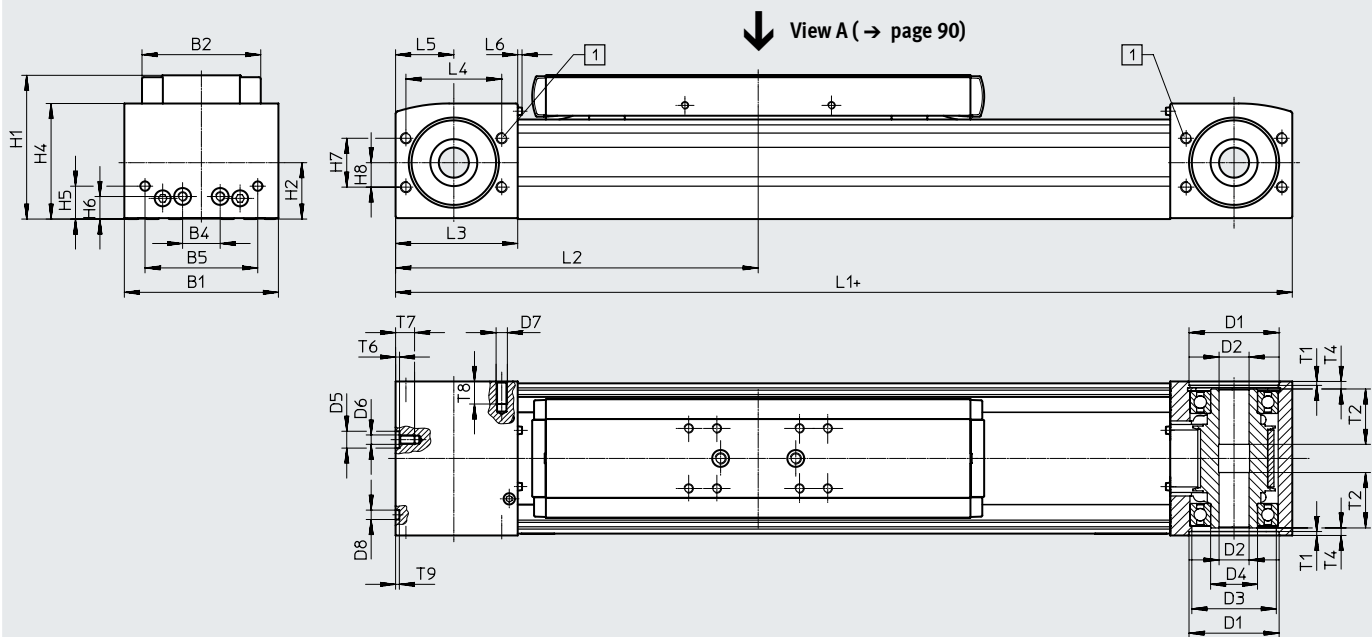
Adherence to the following deflection limits is recommended so as not to impair the functionality of the axes. Greater deformation can result in increased friction, greater wear and reduced service life.

Size	Dynamic deflection (moving load)	Static deflection (stationary load)
70 ... 120	0.05% of the axis length, max. 0.5 mm	0.1% of the axis length

Data sheet

Dimensions

Download CAD data → www.festo.com



+ = plus stroke length + 2x stroke reserve
 [1] Sealing air connection

Size	B1	B2	B4	B5	D1 ∅ H7	D2 ∅ H7	D3 ∅	D4 ∅	D5 ∅ H7	D6	D7
70	69	48.2	30	45	38	16	34	25	-	M5	M6
80	82	63.2	20	60	48	16	45	25	9	M5	M6
120	120	95	80	40	80	23	72	45	-	M8	M8

Size	D8 ∅ H7	H1	H2	H4	H5	H6	H7	H8	L1	L2 min.	L3
70	5	64	26.5	50.8	13	13	24	12	346	173	57.5
80	5	76.5	30	61.5	17.5	12	26	13	386	193	65
120	9	111.5	45	91	22	22	59	32	546	273	100

Size	L4	L5	L6	T1	T2	T4	T6	T7	T8	T9
70	42	27.5	2.3	2.1	18	7.15	-	10	12	3.1
80	51	31	2.3	2.1	29.5	4	2.1	10	12	2
120	76	50	2.5	3.1	29.5	4	-	16	16	2.1

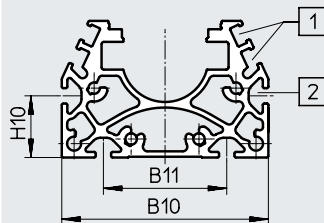
Data sheet

Dimensions

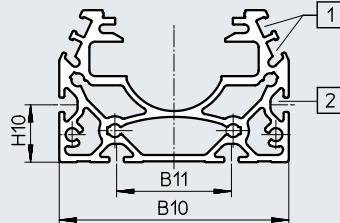
Download CAD data → www.festo.com

Profile

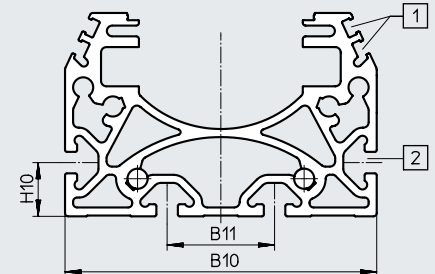
Size 70



Size 80




Size 120



- [1] Sensor slot for proximity switch
 [2] Mounting slot for slot nut
 With size 70, 80: slot nut NST-5-M5
 With size 120: slot nut NST-8-M6

Size	B10	B11	H10
70	67	40	20
80	80	40	20
120	116	40	20

 **Note**

Requirements for the evenness of the bearing surface and of attachments as well as for use in parallel structures

→ www.festo.com/sp
 User documentation

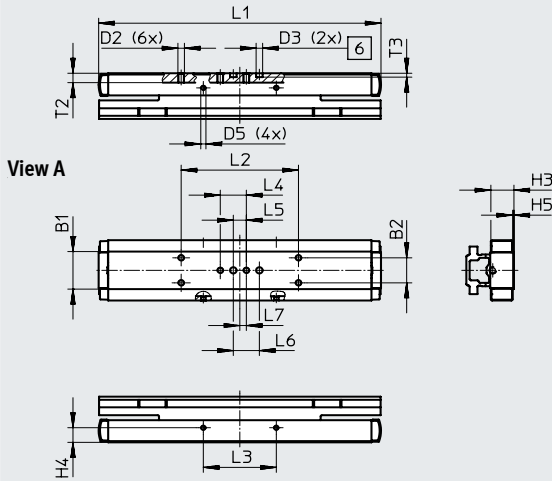
Data sheet

Dimensions

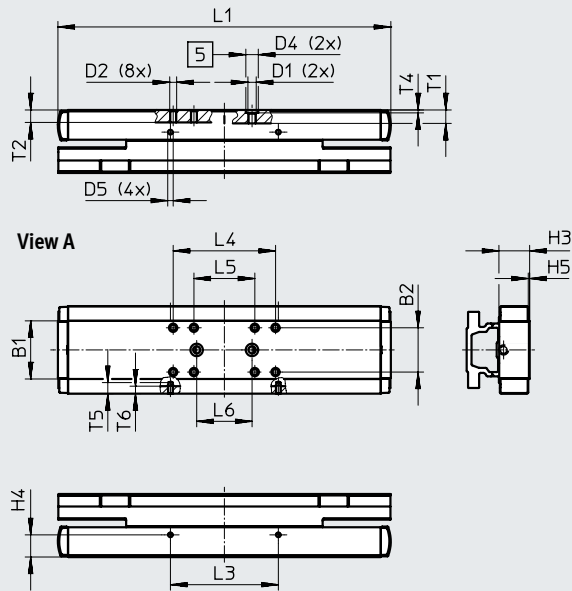
Download CAD data → www.festo.com

Slide

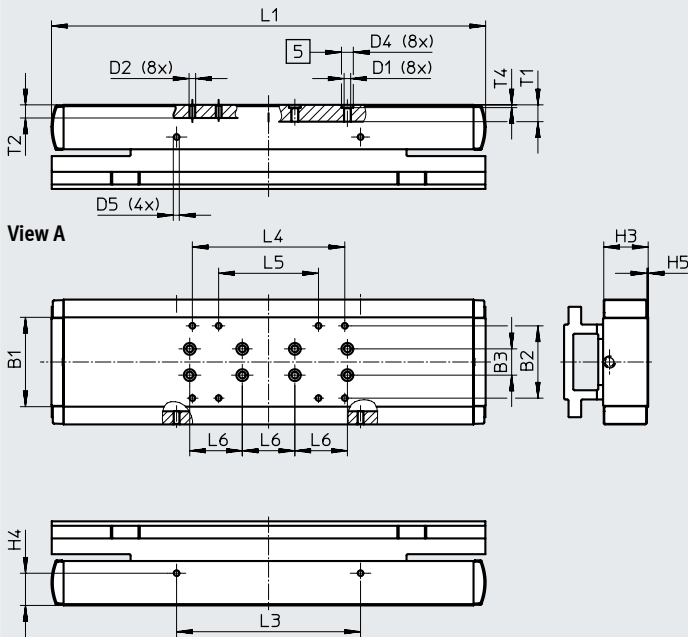
Size 70



Size 80



Size 120



- [5] Drilled hole for centring sleeve
- [6] Drilled hole for centring pin

Data sheet

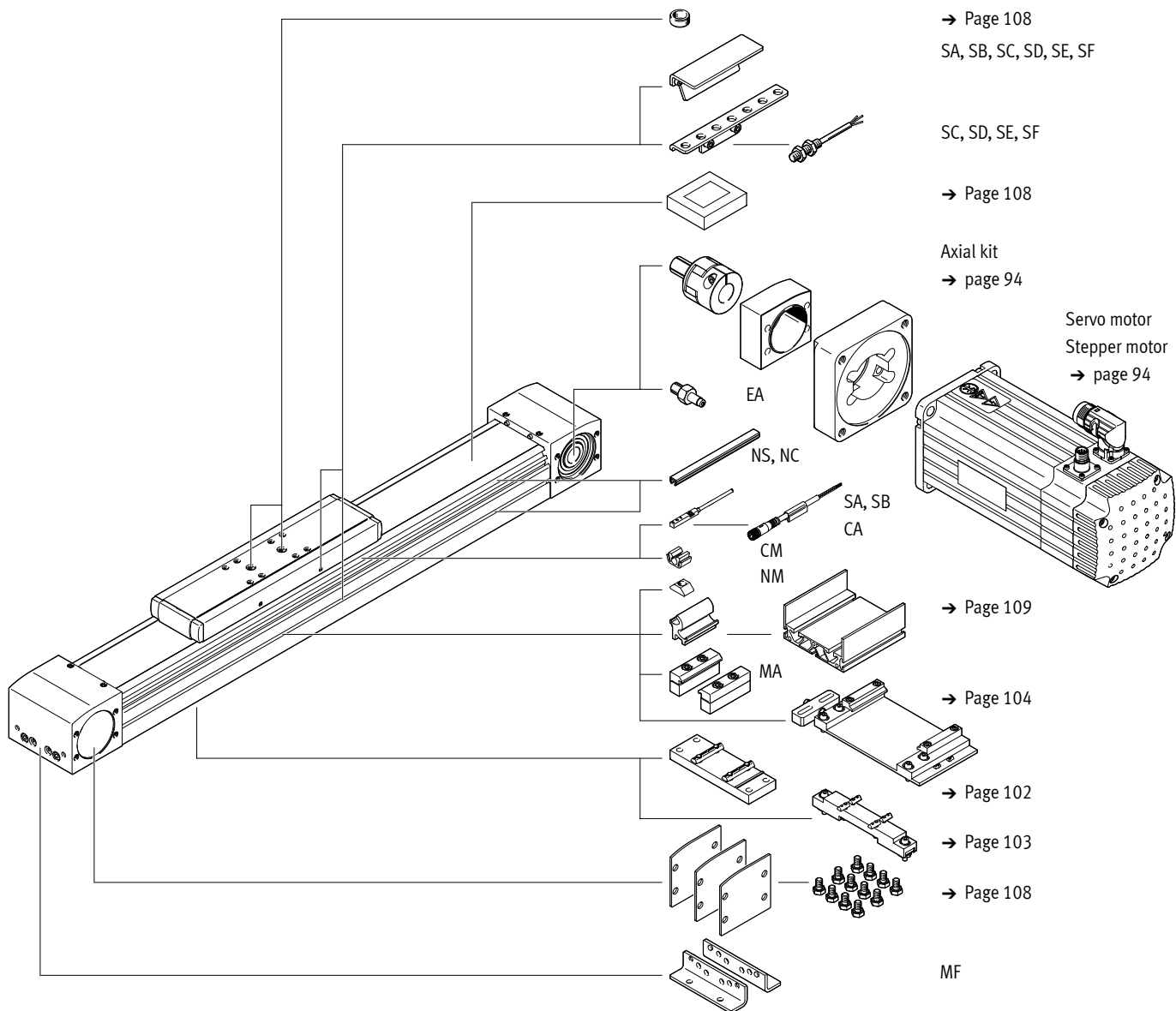
Size	B1	B2	B3	D1	D2	D3 ∅	D4 ∅	D5
70	30	20±0.1	–	–	M5	5 ^{H7}	–	M4
80	42	32±0.2	–	M6	M5	–	9 ^{H7}	M4
120	68	55±0.2	20±0.03	M6	M5	–	9 ^{H7}	M5

Size	H3	H4 ±0.1	H5	L1	L2 ±0.1	L3 ±0.1	L4	L5
70	17.7	11.7	1	216.6	90	56	20±0.1	10±0.1
80	22.2	16	1	240.6	–	78	74±0.2	44±0.2
120	33.8	24.5	1	330.4	–	140	116±0.2	76±0.2

Size	L6 ±0.03	L7	T1	T2	T3 +0.1	T4 +0.1	T5	T6
70	20	5	–	7.5	3.1	–	–	–
80	40	–	9.7	9	–	2.1	8	6
120	40	–	12.8	10	–	2.1	–	–

Ordering data – Modular product system

Accessories



Ordering data – Modular product system

Ordering table					Conditions	Code	Enter code
Size		70	80	120			
Module no.		570502	570503	570504			
Design		Linear axis				ELGA	ELGA
Function		Toothed belt				-TB	-TB
Guide		Plain-bearing guide				-G	-G
Size	[mm]	70	80	120		-...	
Stroke length	[mm]	1 ... 8500				-...	
Stroke reserve	[mm]	0 ... 999 (0 = no stroke reserve)			[1]	-...H	
Protection against particles		Standard					
		Without cover strip				-PO	
Material of toothed belt		Chloroprene rubber					
		Coated PU				-PU2	
Accessories		Accessories enclosed separately				+	+
Foot mounting		1				MF	
Profile mounting		1 ... 50				...MA	
Proximity switch (SIES), inductive, slot type 8, PNP, incl. switch lug	N/O contact, 7.5 m cable	1 ... 6				...SA	
	N/C contact, 7.5 m cable	1 ... 6				...SB	
Proximity switch (SIEN), inductive, M8, PNP, incl. switch lug with sensor bracket	N/O contact, 2.5 m cable	1 ... 99				...SC	
	N/C contact, 2.5 m cable	1 ... 99				...SD	
	N/O contact, M8 plug	1 ... 99				...SE	
	N/C contact, M8 plug	1 ... 99				...SF	
Connecting cable 2.5 m M8, 3-wire		1 ... 99				...CA	
Sensor slot cover		1 ... 50 (1 = 2 units, 500 mm)				...NS	
Mounting slot cover		1 ... 50 (1 = 2 units, 500 mm)				...NC	
Slot nut for mounting slot		1 ... 99				...NM	
Clip for sensor slot		10, 20, 30, 40, 50, 60, 70, 80, 90				...CM	
Drive shaft		1 ... 4				...EA	

[1] ... H The sum of the nominal stroke and 2x stroke reserve must be at least 50 mm and must not exceed the maximum stroke length

The code SA, SB includes a switch lug in the scope of delivery.
The code SC, SD, SE, SF includes one switch lug and max. two sensor brackets in the scope of delivery.