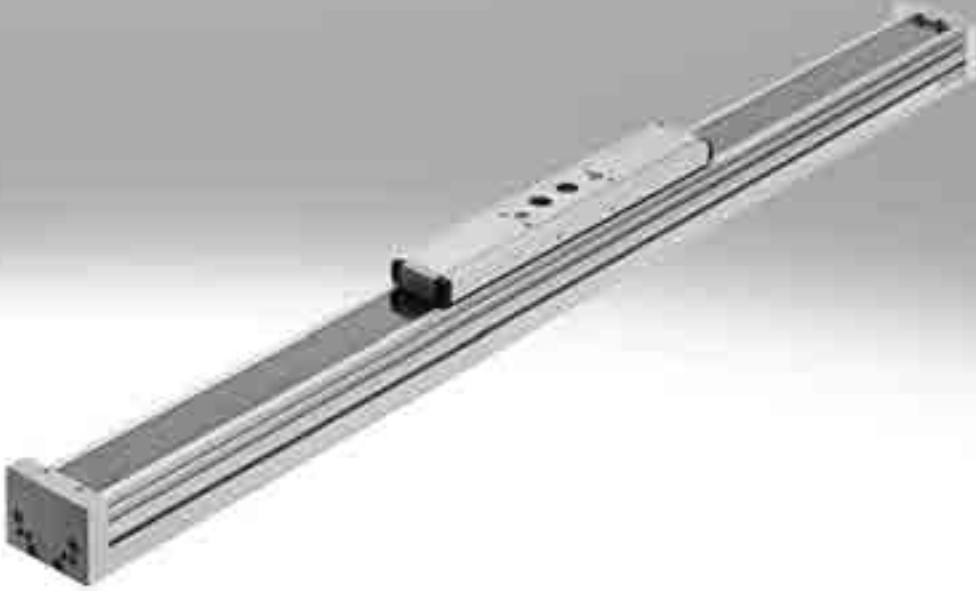


Passive guide axes ELFA-RF, without drive, with roller bearing guide



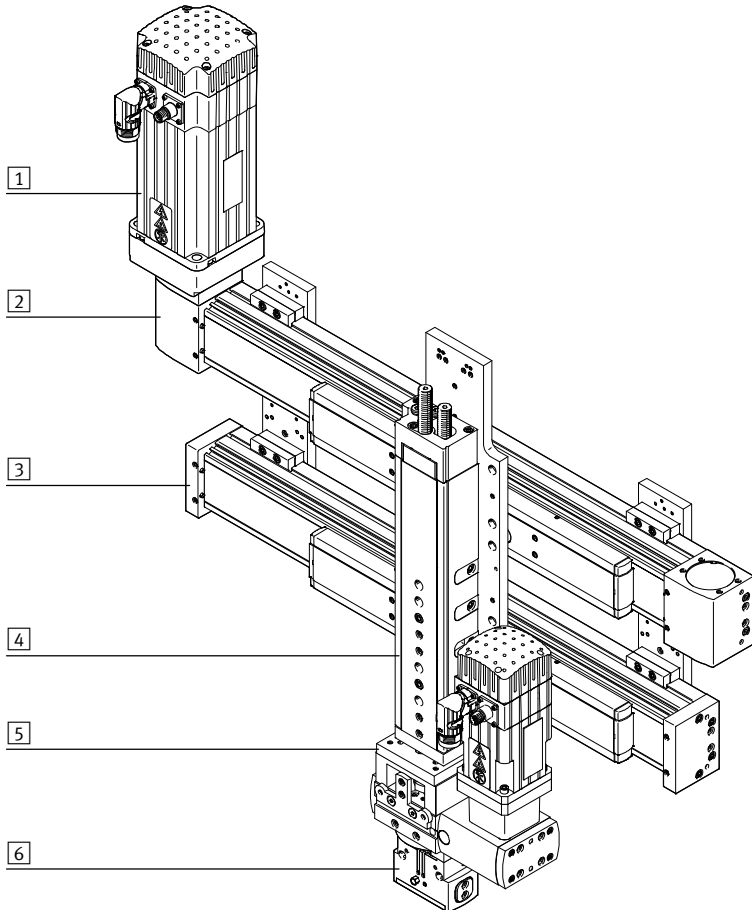
Passive guide axes ELFA-RF, without drive, with roller bearing guide

Key features

At a glance

- Driveless linear guide units with guide and freely movable slide
- The passive guide axis is designed to support force and torque capacity in multi-axis applications
- Higher torsional resistance
- Reduced vibrations with dynamic loads
- Drive axis and passive guide axis can be placed adjacent to or above one another

System product for handling and assembly technology



System components and accessories

	Description	→ Internet
1	Motors	Servo and stepper motors, with or without gear unit motor
2	Axes	Wide range of combinations possible within handling and assembly technology axis
3	Passive guide axes	For supporting force and torque capacity in multi-axis applications passive guide axis
4	Drives	Wide range of combinations possible within handling and assembly technology drive
5	Adapters	For drive/drive and drive/gripper connections gripper
6	Grippers	Wide range of variations possible within handling and assembly technology gripper

Passive guide axes ELFA-RF, without drive, with roller bearing guide

Key features and type codes

Passive guide axes and the corresponding axes/drives

Passive guide axis ELFA-RF



- Can be combined with:
 - Toothed belt axis ELGA-TB-RF
- For size 70, 80
- Load capacity up to max. 800 N or 180 Nm

Passive guide axis EGC-FA



- Can be combined with:
 - Toothed belt axis EGC-TB
 - Spindle axis EGC-BS
- For size 70 ... 185
- Load capacity up to max. 15200 N or 1157 Nm

Passive guide axis DGC-FA



- Can be combined with:
 - Linear drive DGC-KF
- For size 8 ... 83
- Load capacity up to max. 15200 N or 1157 Nm

Passive guide axis FDG-ZR-RF



- Can be combined with:
 - Toothed belt axis DGE-ZR-RF
- For size 25 ... 63
- Load capacity up to max. 600 N or 600 Nm

Passive guide axis FDG-ZR/-SP



- Can be combined with:
 - Toothed belt axis DGE-ZR-KF
 - Spindle axis DGE-SP-KF
- For size 18 ... 63
- Load capacity up to max. 14050 N or 1820 Nm

Type codes

ELFA - RF - 70 - 800 - 20H - [] - [] - []

Type

ELFA Passive guide axis

Guide

RF Roller bearing guide

Size

Stroke [mm]

Stroke reserve

Slide design

- Standard slide

S Short slide

L Long slide

Protection against particles

- Standard

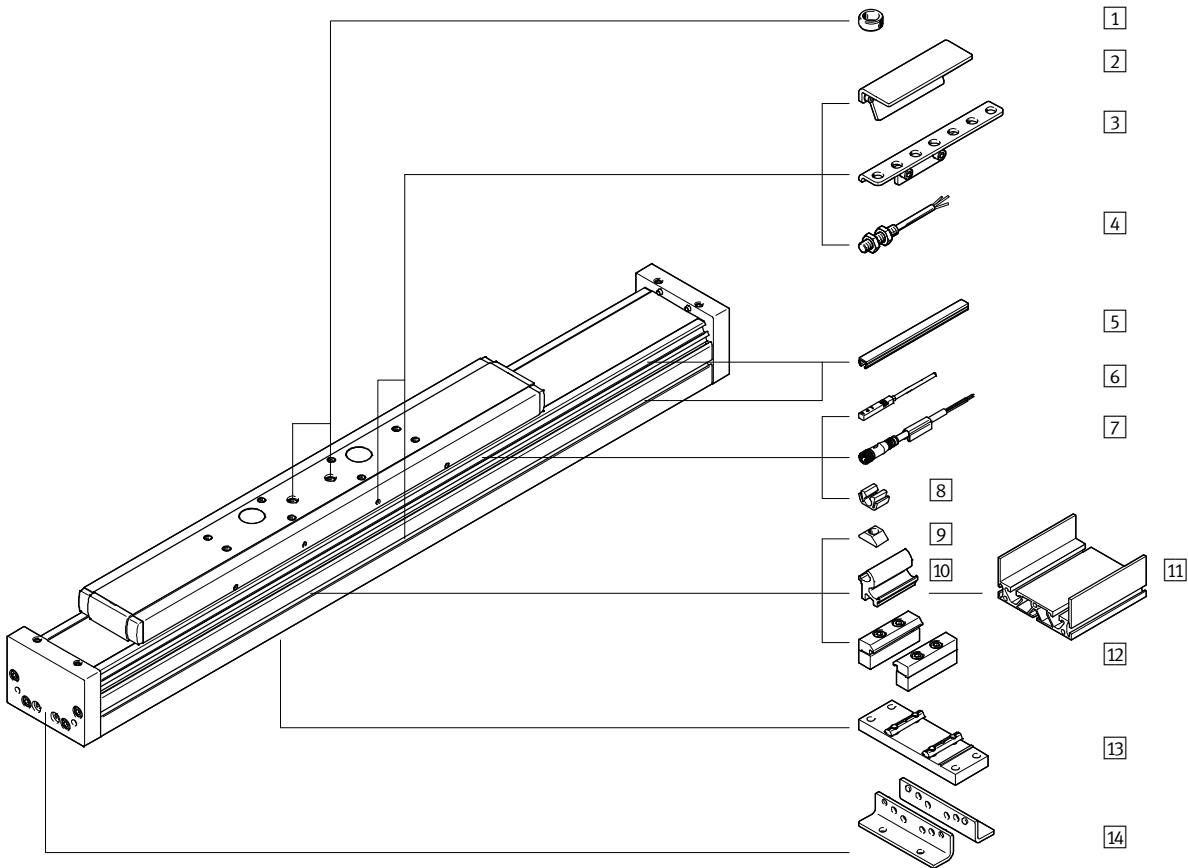
P0 Without strip cover

Operating instructions

DN None

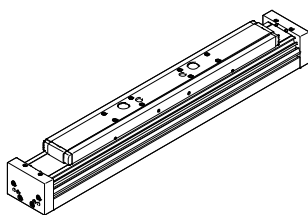
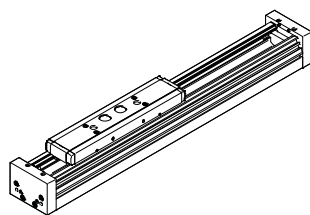
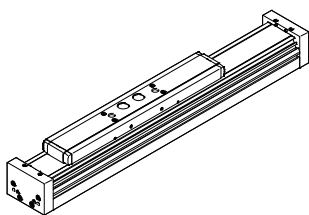
Passive guide axes ELFA-RF, without drive, with roller bearing guide

Peripherals overview



Slide variants

ELFA-...	ELFA-...-S	ELFA-...-L
Standard slide	Short slide	Long slide



This variant is only available without strip cover.

Passive guide axes ELFA-RF, without drive, with roller bearing guide

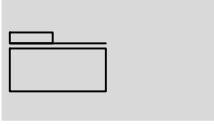
Peripherals overview




Variants and accessories		
Type	Description	→ Page/Internet
1 Centring sleeve ZBH	<ul style="list-style-type: none"> For centring loads and attachments on the slide 2 centring sleeves included in the scope of delivery of the axis 	22
2 Switch lug SF-EGC	For sensing the slide position	21
3 Sensor bracket HWS-EGC	Adapter for mounting the inductive proximity sensors (round design) on the axis	21
4 Proximity sensor, M8 SIEN-M8	Inductive proximity sensor, round design	23
5 Slot cover ABP	For protecting against contamination	22
6 Proximity sensor, T-slot SIES-8M	Inductive proximity sensor, for T-slot	23
7 Connecting cable NEBU	For proximity sensor	23
8 Clip SMBK	For mounting the proximity sensor cable in the slot	22
9 Slot nut NST	For mounting attachments	22
10 Adapter kit DHAM	For mounting the support profile on the axis	22
11 Support profile HMIA	For guiding an energy chain	22
12 Profile mounting MUE	For mounting the axis on the side of the profile	19
13 Central support EAHF-L5	For mounting the axis from underneath on the profile	20
14 Foot mounting HPE	<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 	18

Passive guide axes ELFA-RF, without drive, with roller bearing guide

Technical data

Function



-  Size
70, 80
-  Stroke length
50 ... 7000 mm
-  www.festo.com



General technical data			
Size		70	80
Design		Guide	
Guide		Roller bearing guide	
Mounting position		Any	
Working stroke			
ELFA-...	[mm]	50 ... 7000	50 ... 7000
ELFA-...-S	[mm]	50 ... 7000	50 ... 7000
ELFA-...-L	[mm]	50 ... 6900	50 ... 6900
Max. no-load resistance to shifting	[N]	25	40
Max. speed	[m/s]	10	10
Max. acceleration	[m/s ²]	50	50

Operating and environmental conditions		
Ambient temperature ¹⁾	[°C]	-10 ... +60
Degree of protection		
ELFA-...		IP40
ELFA-...-P0		IP00

1) Note operating range of proximity sensors

Weight [kg]		
Size	70	80
Product weight with 0 mm stroke ¹⁾		
ELFA-...	1.92	4.28
ELFA-...-S	1.56	3.67
ELFA-...-L	2.45	5.45
Additional weight per 1000 mm stroke		
ELFA-...	3.05	4.71
ELFA-...-P0	2.96	4.61
Moving load		
ELFA-...	0.66	1.65
ELFA-...-S	0.56	1.48
ELFA-...-L	0.89	2.16

1) Incl. slide.

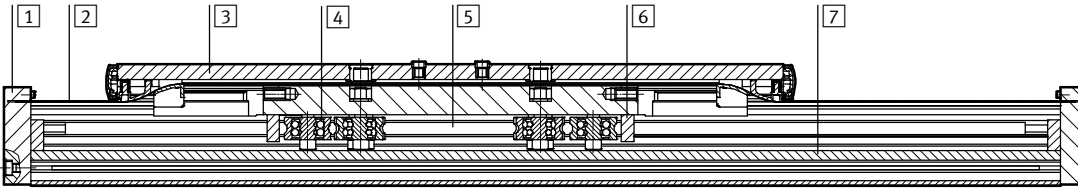
Passive guide axes ELFA-RF, without drive, with roller bearing guide

FESTO

Technical data

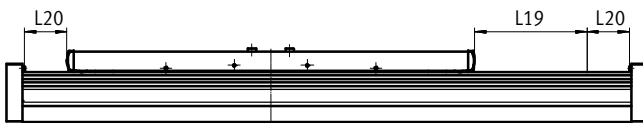
Materials

Sectional view



Axis		
1	End cap	Anodised wrought aluminium alloy
2	Cover strip	Stainless steel strip
3	Slide	Anodised wrought aluminium alloy
4	Track roller	Hardened rolled steel
5	Guide rod	Hardened tempered steel
6	Wiper ring	Oil-impregnated felt
7	Profile	Anodised wrought aluminium alloy
Note on materials		RoHS-compliant
		Contains paint-wetting impairment substances

Stroke reserve



L19 = Nominal stroke
L20 = Stroke reserve

- The stroke reserve is a safety distance that can be available on both sides of the axis in addition to the nominal stroke
- The sum of the nominal stroke and 2x the stroke reserve must not exceed the maximum 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

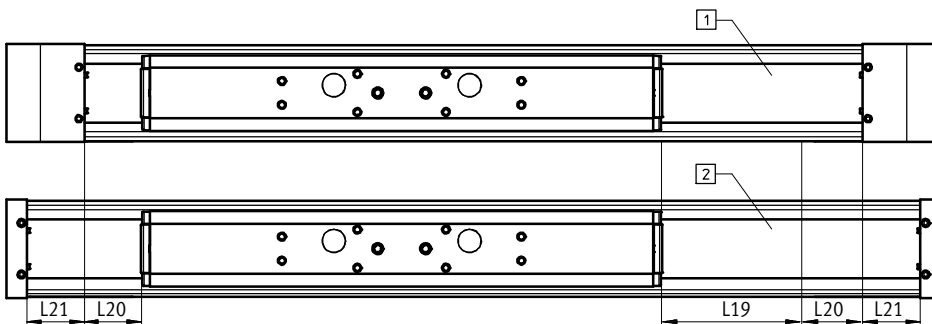
Example:

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

Identical installation length between toothed belt axis ELGA-TB-RF and passive guide axis ELFA-RF

The different end cap lengths result in different overall lengths despite the nominal stroke and stroke reserve being the same.

To achieve the same overall length between two axes, twice the compensation dimension L21 must be added to the stroke reserve with the passive guide axis ELFA-RF.



1 ELGA-TB-RF
 2 ELFA-RF
 L19 = Nominal stroke
 L20 = Stroke reserve
 L21 = Compensation dimension

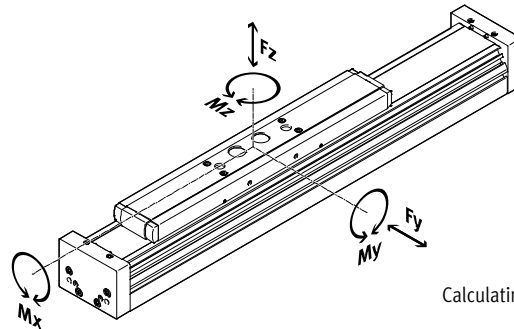
Size	70	80
Compensation dimension [mm]	41.5	48

Passive guide axes ELFA-RF, without drive, with roller bearing guide

Technical data

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 cushioning phase.



If the axis is subjected to more than two 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:

$$f_v = \frac{|F_{y,dyn}|}{F_{y,max}} + \frac{|F_{z,dyn}|}{F_{z,max}} + \frac{|M_{x,dyn}|}{M_{x,max}} + \frac{|M_{y,dyn}|}{M_{y,max}} + \frac{|M_{z,dyn}|}{M_{z,max}} \leq 1$$

Permissible forces and torques for a service life of 10,000 km

Size	70	80
$F_{y,max}$	500	800
$F_{z,max}$	500	800
$M_{x,max}$	11	30
$M_{y,max}$		
ELFA-...	20	90
ELFA-...-S	20	90
ELFA-...-L	40	180
$M_{z,max}$		
ELFA-...	20	90
ELFA-...-S	20	90
ELFA-...-L	40	180

Calculating service life

The service life of the guide depends on the load. To provide a rough indication of the service life of the guide,

the graph below plots the load comparison factor f_v against the service life.

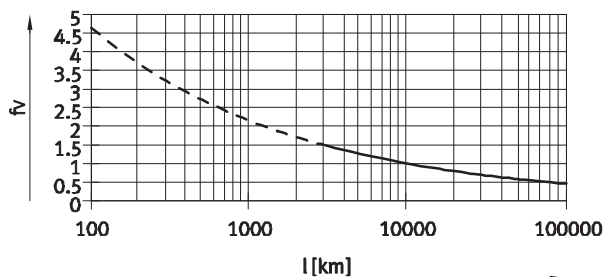
These values are only theoretical. You must consult your local contact person at Festo for load comparison factors f_v greater than 1.5.

Load comparison factor f_v as a function of service life

Example:

A user wants to move an X kg load. Using the formula $\rightarrow 7$ gives a value of 1.5 for the load comparison factor f_v . According to the graph, the guide would have a service life of

approx. 3000 km. Reducing the acceleration reduces the M_z and M_y values. A load comparison factor f_v of 1 now gives a service life of 10,000 km.



Note

PositioningDrives sizing software www.festo.com

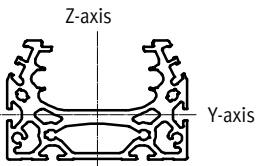
The guide workload for a service life of 10,000 km can be calculated with the help of the sizing software.

$f_v > 1.5$ are only theoretical comparison values for the roller bearing guide.

Passive guide axes ELFA-RF, without drive, with roller bearing guide

Technical data

Second moment of area

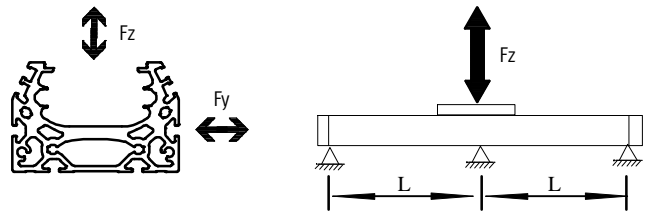


Size		70	80
I_y	[mm ⁴]	1.39×10^5	2.70×10^5
I_z	[mm ⁴]	4.33×10^5	1.02×10^6

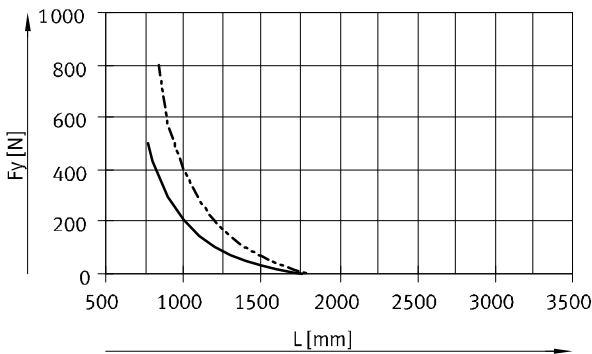
Maximum permissible support span L (without profile mounting MUE/central support EAHF) as a function of force F

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

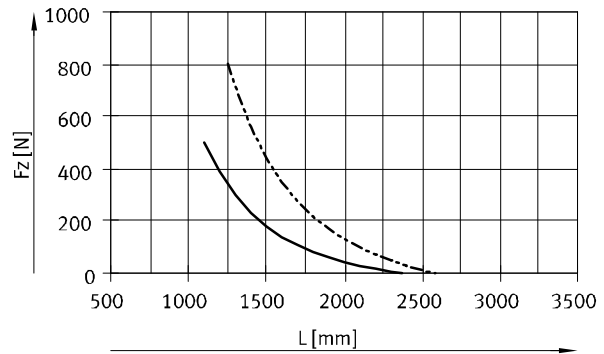
The following graphs can be used to determine the maximum permissible support span l as a function of force F acting on the axis. The deflection is $f = 0.5$ mm.



Force F_y



Force F_z



- ELFA-RF-70
- - - ELFA-RF-80

Recommended deflection limits

Adherence to the following deflection limits is recommended so as not to impair the functional performance of

the axes. Greater deformation can result in increased friction, greater wear and reduced service life.

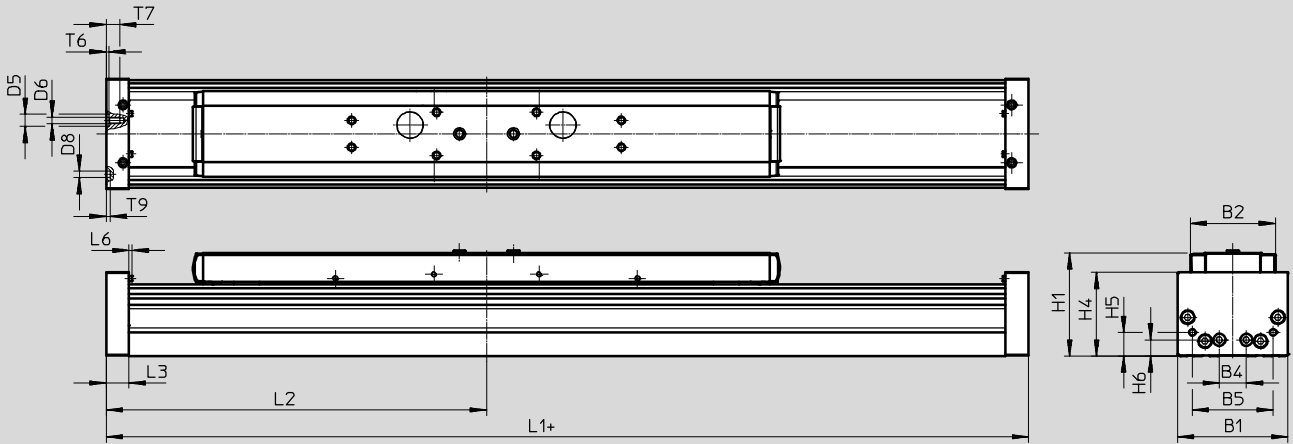
Size	Dyn. deflection (moving load)	Stat. deflection (stationary load)
70, 80	0.05% of the axis length, max. 0.5 mm	0.1% of the axis length

Passive guide axes ELFA-RF, without drive, with roller bearing guide

Technical data

Dimensions

Download CAD data → www.festo.com



+ = plus stroke length + 2x stroke reserve

Size	B1	B2	B4	B5	D5 Ø H7	D6	D8 Ø H7	H1
70	69	48.2	30	45	-	M5	5	64
80	82	63.2	20	60	9	M5	5	76.5

Size	H4	H5	H6	L3	L6	T6	T7	T9
70	50.5	13	13	16	2.3	-	10	3.1
80	62	17.5	12	17	2.3	2.1	10.1	3.1

Size	L1			L2		
	ELFA-...	-S	-L	ELFA-...	-S	-L
				min.	min.	min.
70	337	259	437	168.5	129.5	218.5
80	484	400	624	242	200	312

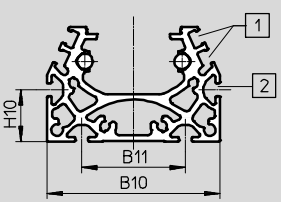
Passive guide axes ELFA-RF, without drive, with roller bearing guide

Technical data

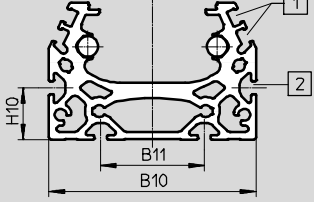
Dimensions Download CAD data → www.festo.com

Profile

Size 70




Size 80



1 Sensor slot for proximity sensor

2 Mounting slot for slot nut

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

 Note

Requirements for the flatness of the bearing surface and of attachments as well as for use in parallel structures → www.festo.com/sp
User Documentation

Passive guide axes ELFA-RF, without drive, with roller bearing guide

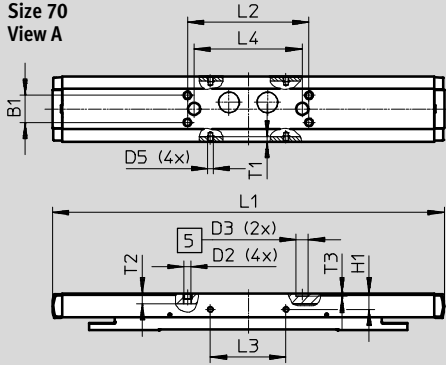
Technical data

Dimensions

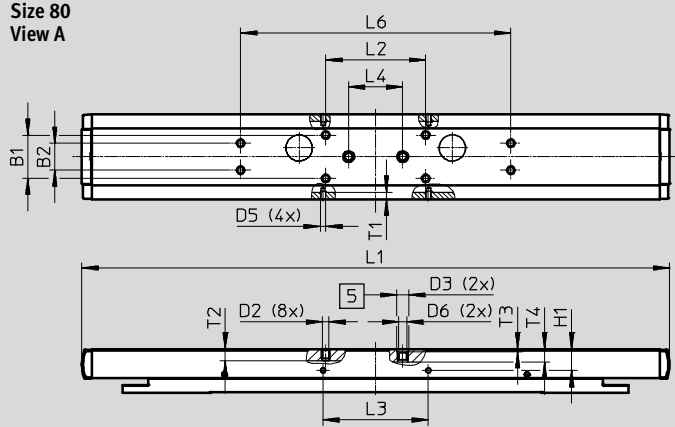
Download CAD data → www.festo.com

ELFA-... – Standard slide

**Size 70
View A**



**Size 80
View A**



5 Hole for centring sleeve

Size	B1	B2	D2	D3	D5	D6	H1	L1
	±0.1	±0.1		∅ H7			±0.1	
70	20	–	M5	9	M4	–	11.7	290
80	32	20	M5	9	M4	M6	16	435

Size	L2	L3	L4	L6	T1	T2	T3	T4
	±0.2	±0.1	±0.03	±0.2				
70	90	56	80	–	3.5	7.5	2.1	–
80	74	78	40	200	5.1	9	2.1	9.7

Passive guide axes ELFA-RF, without drive, with roller bearing guide

Technical data

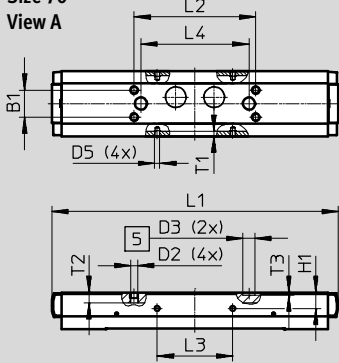
Dimensions

Download CAD data → www.festo.com

ELFA-...-S – Short slide

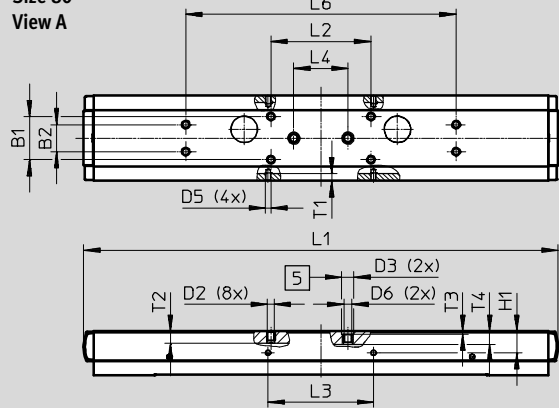
Size 70

View A



Size 80

View A



5 Hole for centring sleeve

Size	B1	B2	D2	D3	D5	D6	H1	L1
	±0.1	±0.1		∅ H7			±0.1	
70	20	–	M5	9	M4	–	11.7	212
80	32	20	M5	9	M4	M6	16	351

Size	L2	L3	L4	L6	T1	T2	T3	T4
	±0.2	±0.1	±0.03	±0.2				
70	90	56	80	–	3.5	7.5	2.1	–
80	74	78	40	200	5.1	9	2.1	9.7

Passive guide axes ELFA-RF, without drive, with roller bearing guide

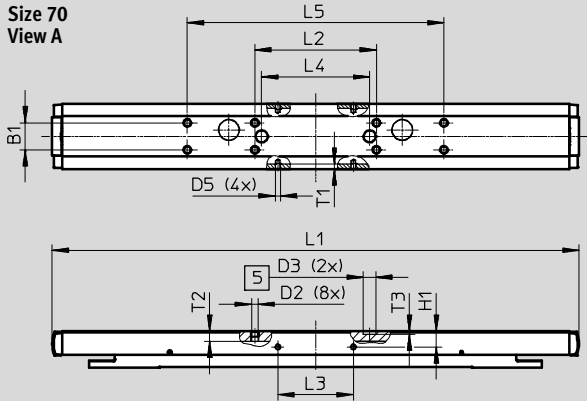
Technical data

Dimensions

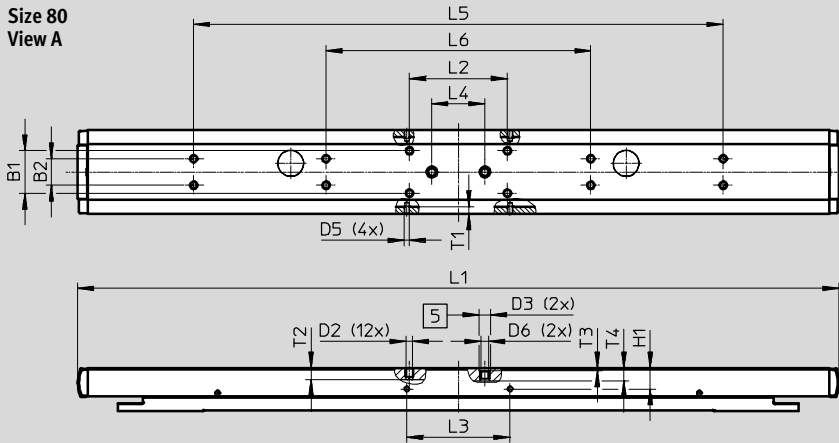
Download CAD data → www.festo.com


ELFA-...-L – Long slide

**Size 70
View A**



**Size 80
View A**



 Hole for centring sleeve

Passive guide axes ELFA-RF, without drive, with roller bearing guide



Technical data

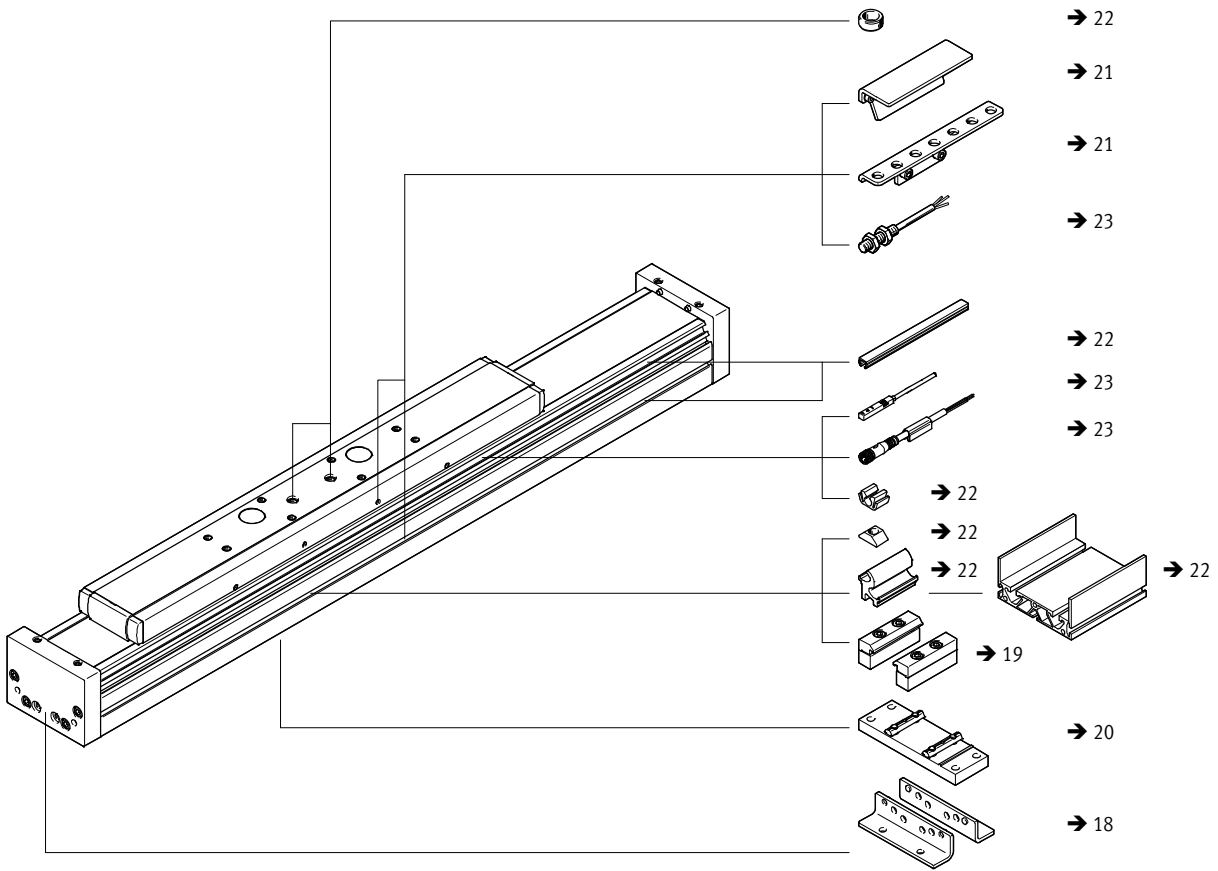
Size	B1 ±0.1	B2 ±0.1	D2	D3 ∅ H7	D5
70	20	–	M5	9	M4
80	32	20	M5	9	M4

Size	D6	H1 ±0.1	L1	L2 ±0.2	L3 ±0.1	L4 ±0.03
70	–	11.7	390	90	56	80
80	M6	16	575	74	78	40

Size	L5 ±0.2	L6 ±0.2	T1	T2	T3	T4
70	190	–	3.5	7.5	2.1	–
80	400	200	5.1	9	2.1	9.7

Passive guide axes ELFA-RF, without drive, with roller bearing guide

Ordering data



Passive guide axes ELFA-RF, without drive, with roller bearing guide

Ordering data – Modular products

Ordering table					
Size	70	80	Condi- tions	Code	Enter code
M Module No.	8037967	8037968			
Design	Passive guide axis			ELFA	ELFA
Guide	Roller bearing guide			-RF	-RF
Size [mm]	70	80		-...	-...
Stroke length [mm]	50 ... 7000			-...	-...
Stroke reserve [mm]	0 ... 999 (0 = no stroke reserve)		1	-...H	
O Slide design	Standard slide 50 ... 7000				
	Short slide 50 ... 7000		2	-S	
	Long slide 50 ... 6900			-L	
Protection against particles	Standard				
	Without strip cover			-PO	
Operating instructions	Express waiver - no operating instructions to be included as already available (operating instructions in PDF format are available free of charge on our website at http://www.festo.com)			-DN	

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

2 **S** Only with PO.

M Mandatory data

O Options

Transfer order code

Passive guide axes ELFA-RF, without drive, with roller bearing guide

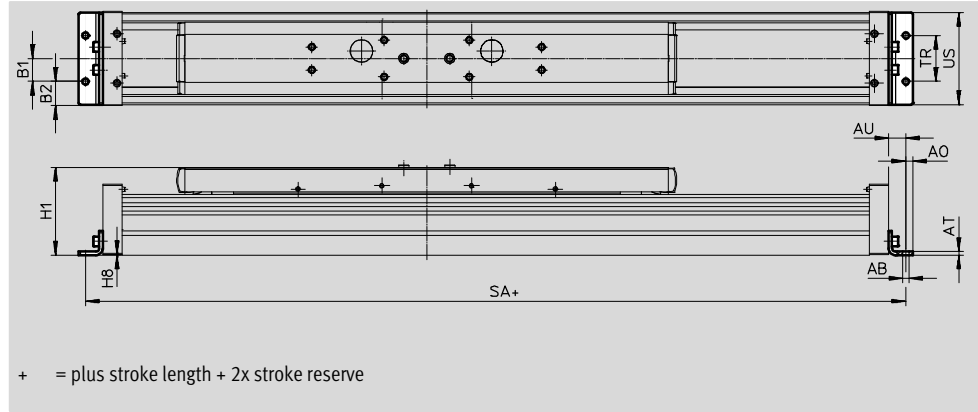
Accessories

Foot mounting HPE

Material:

Galvanised steel

RoHS-compliant



Dimensions and ordering data							
For size	AB ∅	A0	AT	AU	B1	B2	H1
70	5.5	6	3	13	20	14.5	64
80	5.5	6	3	15	20	21	76.5

For size	H8	SA			TR	US
		ELFA-...	-S	-L		
70	0.5	363	285	463	40	67
80	0.5	514	430	654	40	80

For size	Weight [g]	Part No.	Type
70	115	558321	HPE-70
80	150	558322	HPE-80

Passive guide axes ELFA-RF, without drive, with roller bearing guide

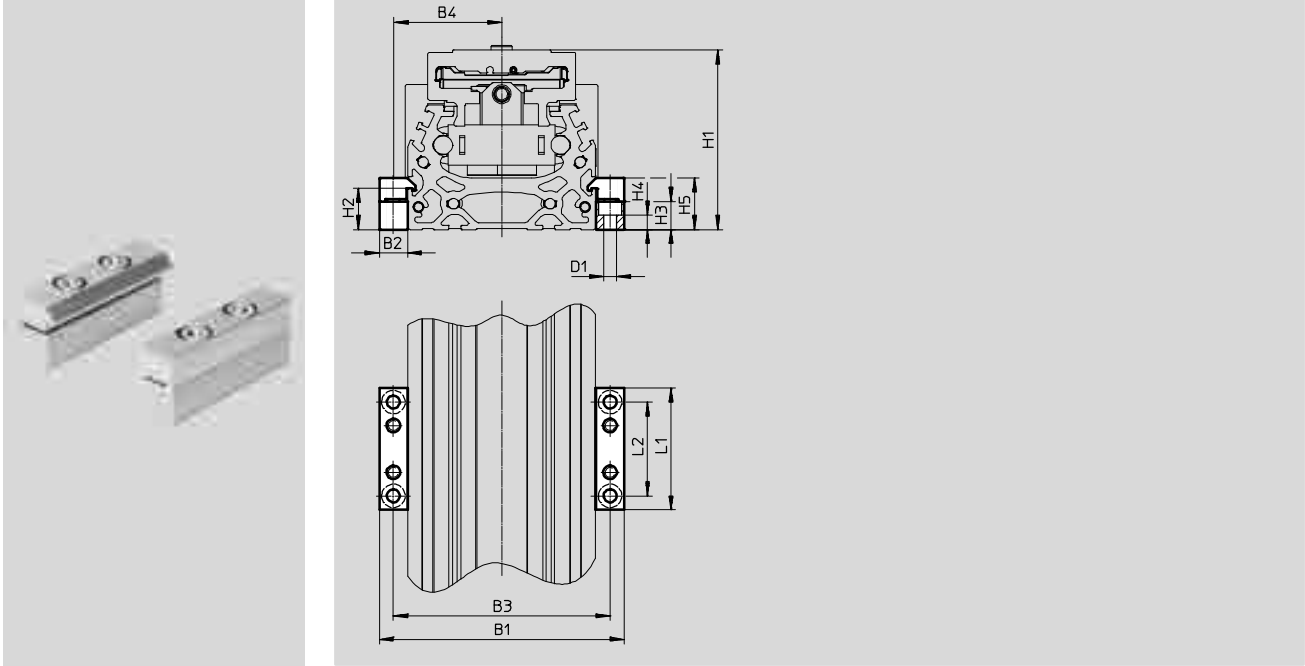
Accessories

Profile mounting MUE

Material:

Anodised aluminum

RoHS-compliant



Dimensions and ordering data								
For size	B1	B2	B3	B4	D1 ∅	H1	H2	H3
70	91	12	79	39.5	5.5	64	17.5	12
80	104	12	92	46	5.5	76.5	17.5	12

For size	H4	H5	L1	L2	Weight [g]	Part No.	Type
70	6.2	22	52	40	80	558043	MUE-70/80
80	6.2	22	52	40	80	558043	MUE-70/80

Passive guide axes ELFA-RF, without drive, with roller bearing guide

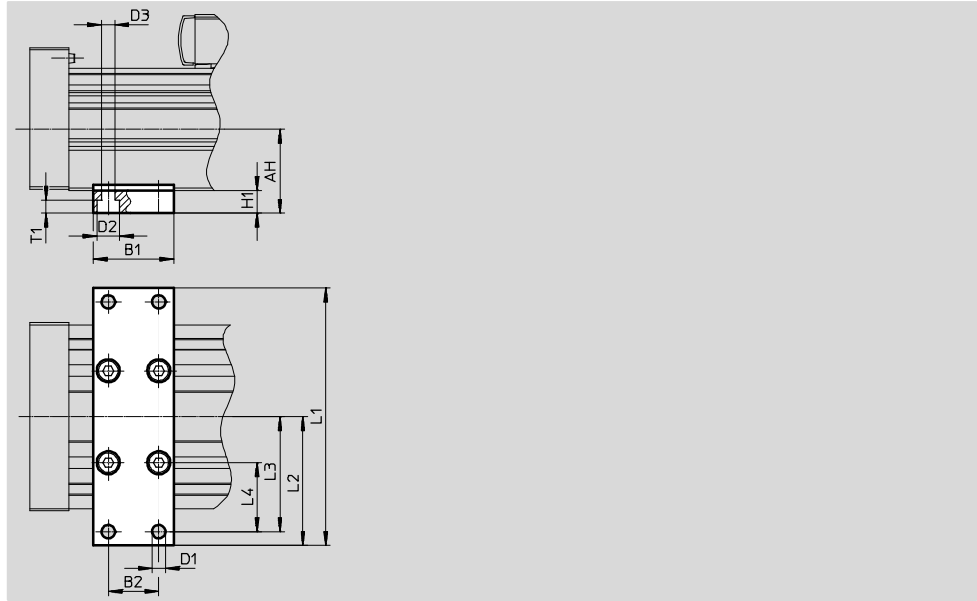
Accessories

Central support EAHF

Material:

Anodised aluminum

RoHS-compliant



Dimensions and ordering data								
For size	AH	B1	B2	D1 Ø	D2 Ø	D3 Ø	H1	L1
70	32.2	35	22	5.8	10	5.8	10	102
80	36.5							112

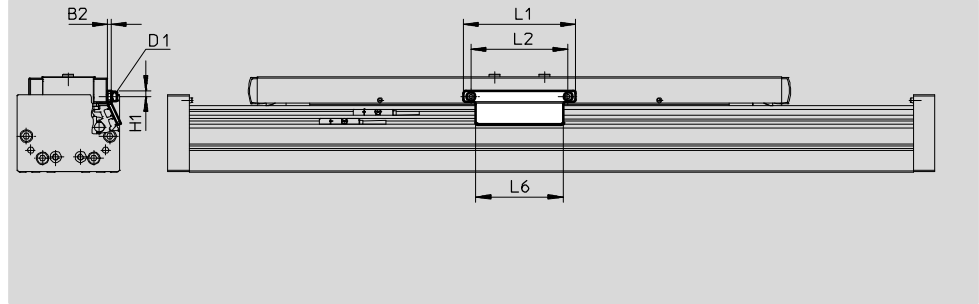
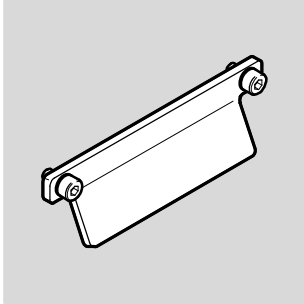
For size	L2	L3	L4	T1	Weight [g]	Part No.	Type
70	51	45	25	5.7	113	2349256	EAHF-L5-70-P
80	56	50	30		123	3535188	EAHF-L5-80-P

Passive guide axes ELFA-RF, without drive, with roller bearing guide

Accessories

Switch lug SF-EGC-1
For sensing via proximity sensor
SIES-8M

Material:
Galvanised steel
RoHS-compliant



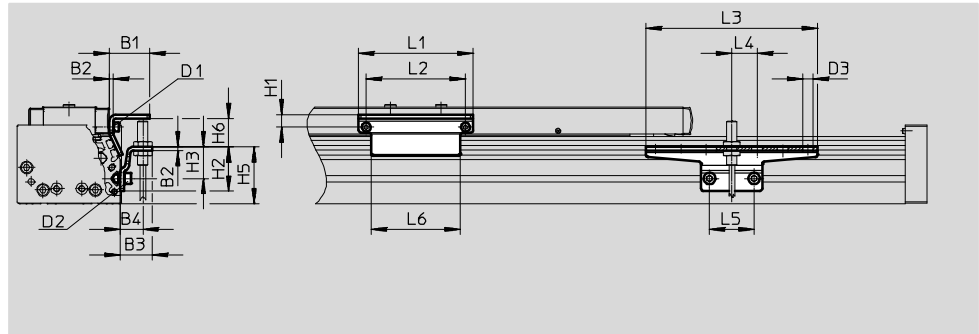
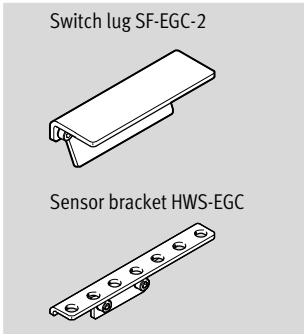
Dimensions and ordering data									
For size	B2	D1	H1	L1	L2	L6	Weight [g]	Part No.	Type
70	3	M4	4.65	70	56	50	50	558047	SF-EGC-1-70
80	3	M4	4.65	90	78	70	60	558048	SF-EGC-1-80

Switch lug SF-EGC-2
For sensing via proximity sensor
SIEN-M8B/SIES-8M

Material:
Galvanised steel
RoHS-compliant

Sensor bracket HWS-EGC
For proximity sensor SIEN-M8B

Material:
Galvanised steel
RoHS-compliant



Dimensions and ordering data									
For size	B1	B2	B3	B4	D1	D2	D3	H1	H2
70	31.5	3	25.5	18	M4	M5	8.4	9.5	35
80	31.5	3	25.5	18	M4	M5	8.4	9.5	35






For size	H3	H5	H6 max.	L1	L2	L3	L4	L5	L6
70	25	45	13.5	70	56	135	20	35	50
80	25	45	23.5	90	78	135	20	35	70

For size	Weight [g]	Part No.	Type
Switch lug			
70	100	558052	SF-EGC-2-70
80	130	558053	SF-EGC-2-80

For size	Weight [g]	Part No.	Type
Sensor bracket			
70	110	558057	HWS-EGC-M5
80	110	558057	HWS-EGC-M5

Passive guide axes ELFA-RF, without drive, with roller bearing guide

Accessories

Ordering data					
	For size	Comment	Part No.	Type	PU ¹⁾
Slot nut NST					
	70, 80	For mounting slot	150914	NST-5-M5	1
Centring sleeve ZBH²⁾					
	70, 80	For slide	150927	ZBH-9	10
Slot cover ABP					
	70, 80	<ul style="list-style-type: none"> • For mounting slot • Every 0.5 m 	151681	ABP-5	2
Slot cover ABP-S					
	70, 80	<ul style="list-style-type: none"> • For sensor slot • Every 0.5 m 	563360	ABP-5-S1	2
Clip SMBK					
	70, 80	For sensor slot, for attaching the proximity sensor cables	534254	SMBK-8	10

1) Packaging unit

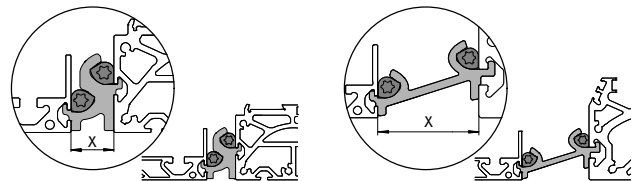
2) 2 centring sleeves included in the scope of delivery of the axis



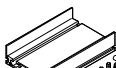
Mounting options between axis and support profile

Depending on the adapter kit, the spacing between the axis and the support profile is:
 $x = 20 \text{ mm}$ or 50 mm

The support profile must be mounted using at least 2 adapter kits. For longer strokes, an adapter kit must be used every 500 mm.

Example:



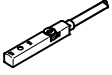
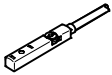
Ordering data					
	For size	Comment	Part No.	Type	PU ¹⁾
Adapter kit DHAM					
	80	<ul style="list-style-type: none"> • For mounting the support profile on the axis • Spacing between axis and profile is 20 mm 	562241	DHAM-ME-N1-CL	1
	70, 80	<ul style="list-style-type: none"> • For mounting the support profile on the axis • Spacing between axis and profile is 50 mm 	574560	DHAM-ME-N1-50-CL	1
Support profile HMIA					
	70, 80	For guiding an energy chain	539379	HMIA-E07-	1





1) Packaging unit



Passive guide axes ELFA-RF, without drive, with roller bearing guide

FESTO

Accessories

Ordering data – Proximity sensor for T-slot, inductive						Technical data → 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 connector 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 connector 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 connector 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 connector M8x1, 3-pin		0.3	551402	SIES-8M-NO-24V-K-0,3-M8D

Ordering data – Proximity sensor M8 (round design), inductive						Technical data → Internet: sien
	Electrical connection	LED	Switching output	Cable length [m]	Part No.	Type
N/O contact						
	Cable, 3-wire	■	PNP	2.5	150386	SIEN-M8B-PS-K-L
	Plug connector M8x1, 3-pin	■	PNP	–	150387	SIEN-M8B-PS-S-L
N/C contact						
	Cable, 3-wire	■	PNP	2.5	150390	SIEN-M8B-PO-K-L
	Plug connector M8x1, 3-pin	■	PNP	–	150391	SIEN-M8B-PO-S-L

Ordering data – Connecting cables					Technical data → Internet: nebu
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	159420	SIM-M8-3GD-2,5-PU
			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

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