Passive guide axes FDG-ZR-RF, without drive

FESTO

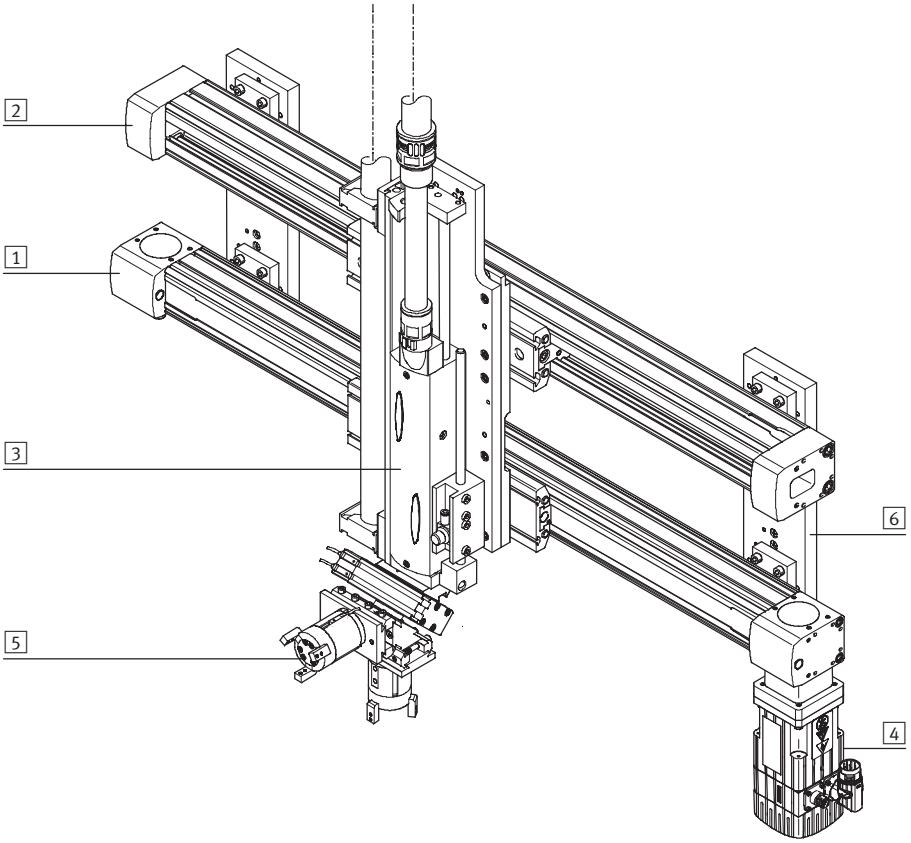
Passive guide axes FDG-ZR-RF, without drive

Key features

At a glance

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

System product for handling and assembly technology



System components and accessories		
	Brief description	**➔ Page/Internet**
1 Axes	Wide range of combinations possible within handling and assembly technology	axis
2 Passive guide axes	For increasing force and torque capacity in multi-axis applications	guide axis
3 Drives	Wide range of combinations possible within handling and assembly technology	drive
4 Motors	Servo and stepper motors, with or without gearing	motor
5 Grippers	Wide range of variations possible within handling and assembly technology	gripper
6 Adapters	For drive/drive and drive/gripper combinations	adapter kit

Passive guide axes FDG-ZR-RF, without drive

Key features

Guide axes and the corresponding drives

Passive guide axis DGC-FA

- Can be combined with:
  - Linear drive DGC-KF
- For size 8 ... 63
- Load capacity to max. 6,890 N or 380 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 to max. 15,200 N or 1,820 Nm

Passive guide axis FDG-ZR-RF

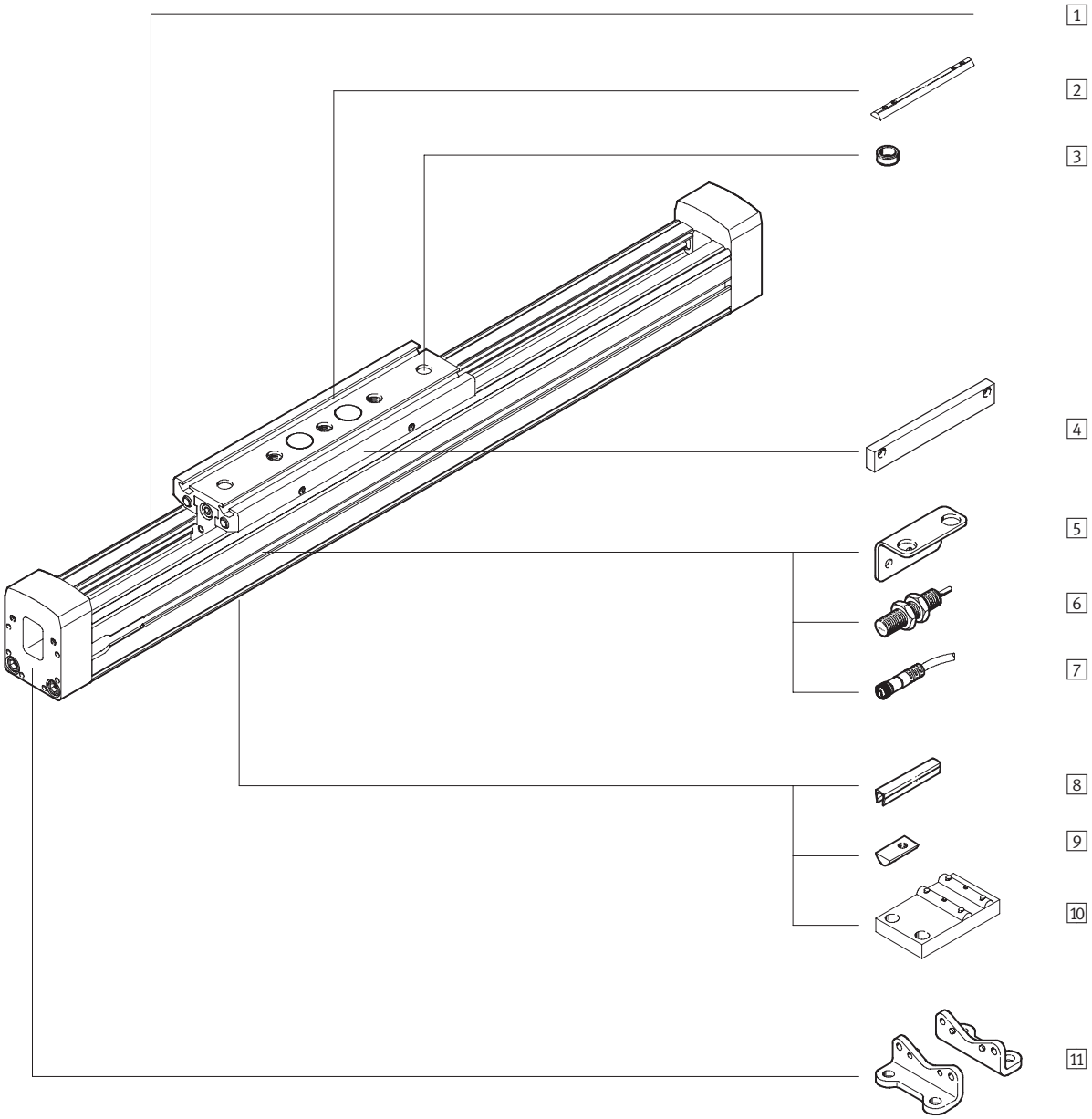
- Can be combined with:
  - Toothed belt axis DGE-ZR-RF
- For size 25 ... 63
- Load capacity to max. 1,500 N or 600 Nm

Passive guide axis FDG-P/-ZR/-SP

- Can be combined with:
  - Linear drive DGPL
  - Toothed belt axis DGE-ZR-KF
  - Spindle axis DGE-SP-KF
- For size 18 ... 63
- Load capacity to max. 14,050 N or 1,820 Nm

Passive guide axes FDG-ZR-RF, without drive

Peripherals overview



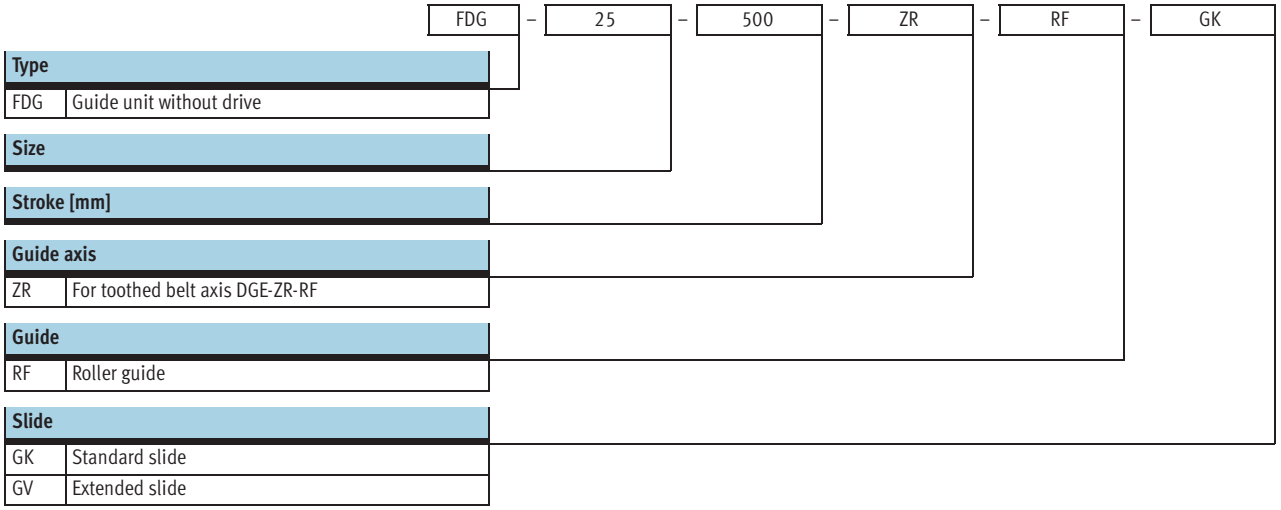
Passive guide axes FDG-ZR-RF, without drive

Peripherals overview

Variants and accessories			
	Type	**Brief description**	**➔ Page/Internet**
1	Passive guide axis FDG-ZR-RF	Guide without drive	8
2	Slot nut for slide X	For mounting loads and attachments on the slide	17
3	Centring sleeve Z	For centring loads and attachments on the slide	17
4	Switching lug L	For sensing the slide position	18
5	Mounting bracket T	Adapter for mounting the sensors on the axis	18
6	Inductive proximity sensor O/P/W/R	For use as a proximity signal and safety monitor	19
7	Cable with socket V	For proximity sensors	19
8	Slot cover B	For protecting against ingress of dirt	17
9	Slot nut for profile slot Y	For mounting attachments	17
10	Central support M	For mounting the axis	16
11	Foot mounting F	For mounting the axis	16

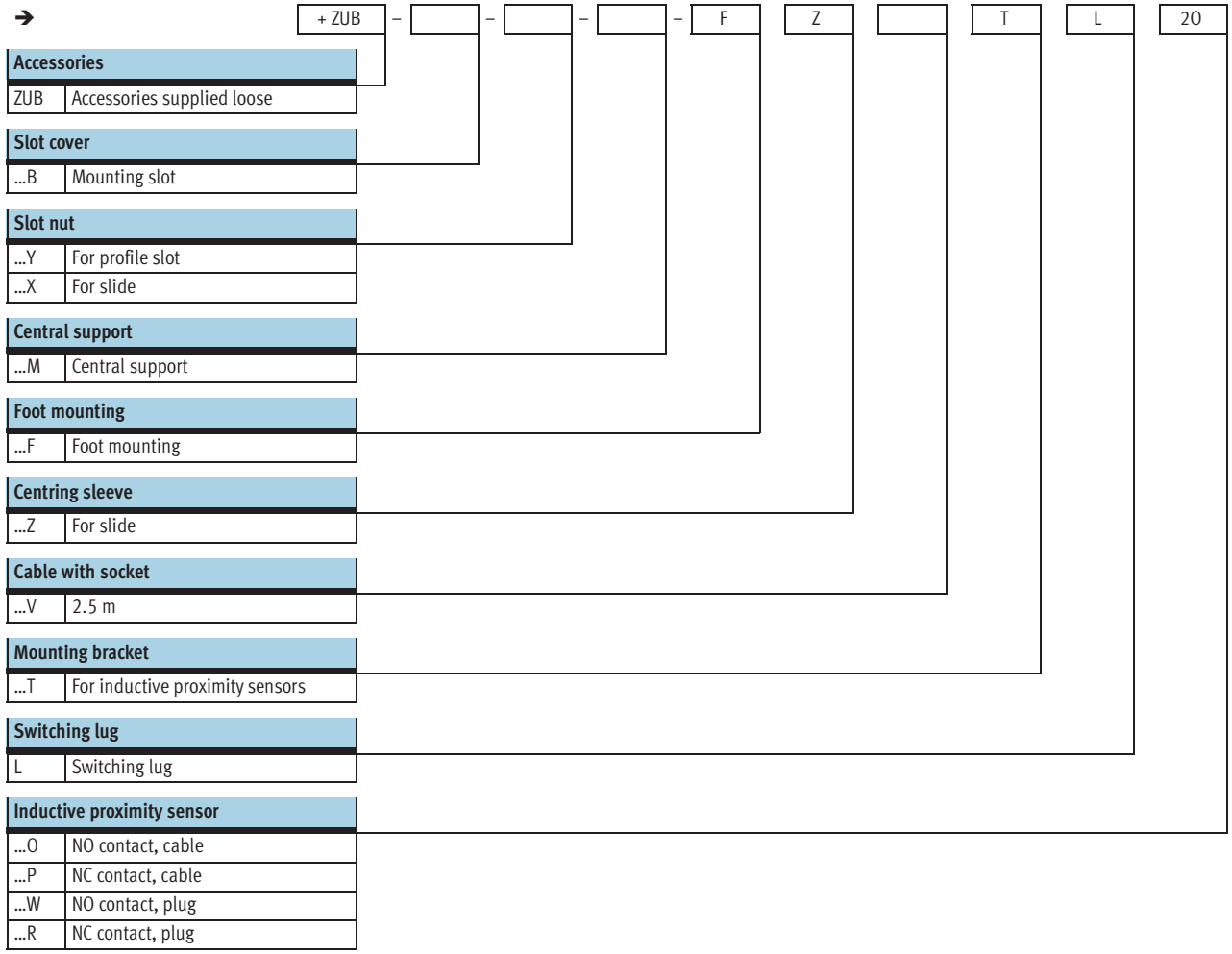
Passive guide axes FDG-ZR-RF, without drive

Type codes



Passive guide axes FDG-ZR-RF, without drive

Type codes



Passive guide axes FDG-ZR-RF, without drive

Technical data

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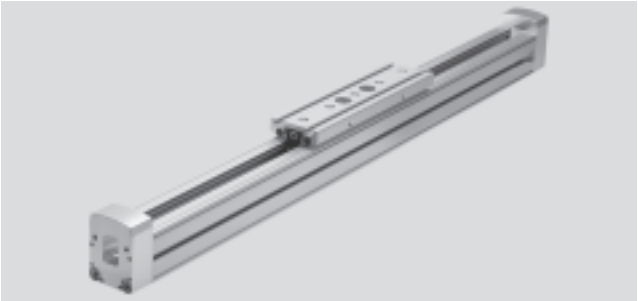
- Ø - Size
  25 ... 63
- | - Stroke length
  1 ... 5000 mm



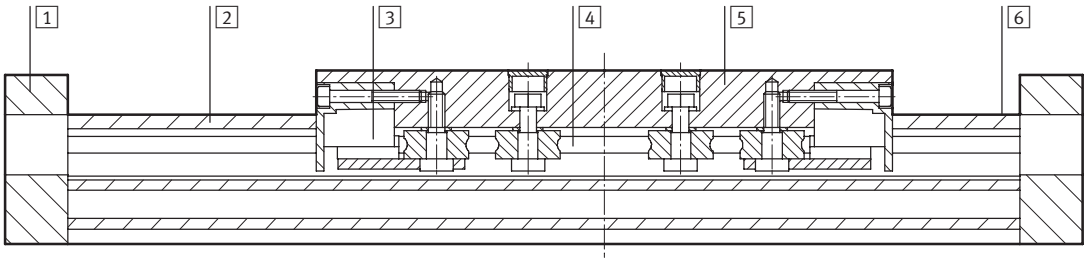
General technical data				
Size		25	40	63
Design		Guide unit without drive		
Guide		Internal roller guide		
Assembly position		Any		
Max. working stroke[1]	[mm]	1 ... 5000	1 ... 5000	1 ... 5000[2]
Max. working load	[kg]	15	30	60
Thrust	[N]	5 ... 12	5 ... 35	5 ... 30
Max. speed	[m/s]	10		
Max. acceleration	[m/s²]	50		
Ambient temperature	[°C]	0 ... +60		

1) Total stroke = working stroke + 2x stroke reserve
2) The max. working stroke for the variant with extended slide (GV) is 4,800 mm.

Weights [kg]						
Size	25		40		63	
Slide design	GK	GV	GK	GV	GK	GV
Basic weight with 0 mm stroke	2.0	2.5	6.1	7.6	20.4	25.4
Additional weight per 100 mm stroke	0.29		0.59		1.38	
Moving load	0.5	0.8	1.8	2.5	4.6	6.4

Materials

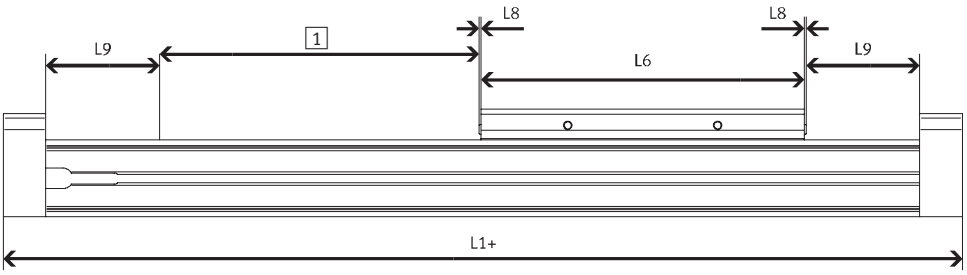
Sectional view



Axis		
1	End cap	Anodised aluminium
2	Housing	Anodised aluminium
3	Cover cap	Polyamide
4	Guide rail	Steel
5	Slide	Anodised aluminium
6	Guide element	Steel
–	Note on materials	Free of copper, PTFE and silicone

Stroke reserve

L9 The stroke reserve is a safety distance available on both sides of the axis in addition to the stroke.
The indicated values only apply in combination with the toothed belt axis DGE-ZR-RF.
L6 Slide length
L8 Stop element
L1+ Overall length of axis
1 Working stroke



Example:
Type FDG-25-500-ZR-RF

Working stroke = 500 mm
Stroke reserve = (2x 86 mm)
= 172 mm
Total stroke = 500 mm + 172 mm
= 672 mm

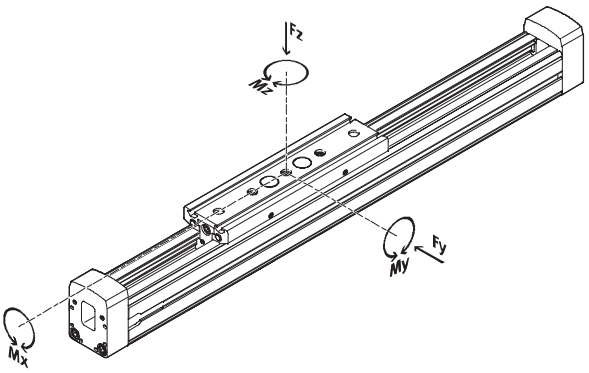
Size		25	40	63
L9 per end position	[mm]	86	136	244

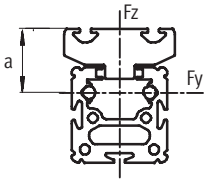
Passive guide axes FDG-ZR-RF, without drive

Technical data

Characteristic load values

The indicated forces and torques refer to the centre of the guide. They must not be exceeded in the dynamic range. Special attention must be paid to the cushioning phase.





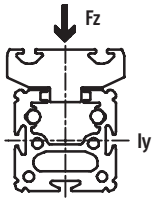
Size	a in [mm]
25	30
40	37
63	44.6

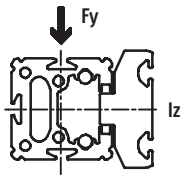
If the drive is subjected to more than two of the indicated forces and torques simultaneously, the following equations must be satisfied in addition to the indicated maximum loads:

$$\frac{Fy}{Fy_{max.}} + \frac{Fz}{Fz_{max.}} + \frac{Mx}{Mx_{max.}} + \frac{My}{My_{max.}} + \frac{Mz}{Mz_{max.}} \leq 1$$

Permissible forces and torques							
Size		25		40		63	
Slide design		GK	GV	GK	GV	GK	GV
$Fy_{max.}$	[N]	150		300		600	
$Fz_{max.}$	[N]	150		300		600	
$Mx_{max.}$	[Nm]	7		18		65	
$My_{max.}$	[Nm]	15	30	60	120	170	340
$Mz_{max.}$	[Nm]	15	30	90	180	300	600

2nd moment of area





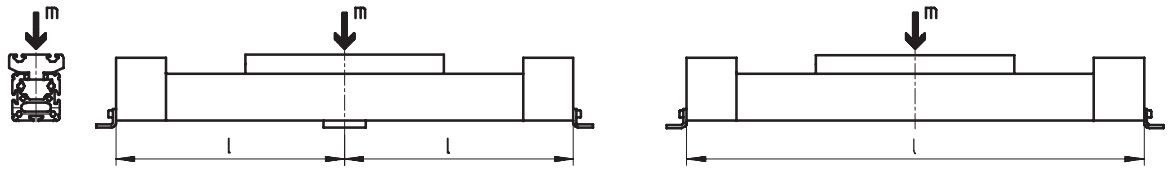
Size		25	40	63
Iy	[mm^4]	$5.947x10^5$	$2.479x10^6$	$1.664x10^7$
Iz	[mm^4]	$2.372x10^5$	$9.463x10^5$	$5.997x10^6$

Maximum permissible support span l as a function of the applied load m

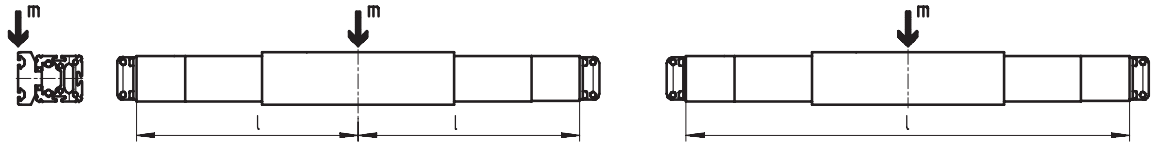
The axis may need to be supported with central supports MUP in order to limit deflection in the case of large strokes. The following diagrams serve to determine the maximum permissible support span as a function of the applied load acting upon the axis.

A distinction is made here between forces acting upon the surface of the slide and forces acting upon the front of the slide.

1 Load on the surface of the slide

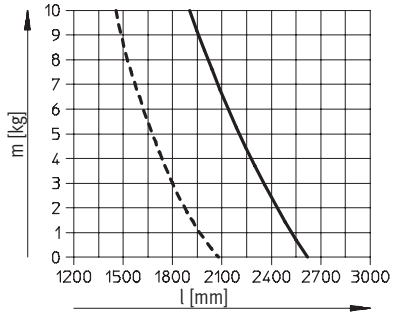


2 Load on the front of the slide

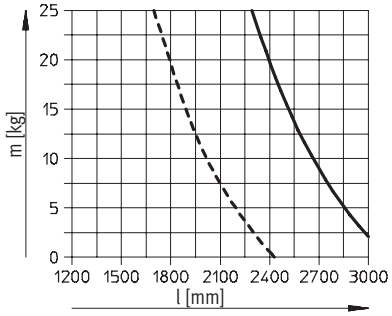


Maximum support span l (without central support) as a function of the applied load m

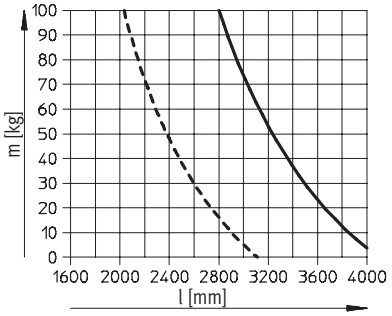
FDG-25



FDG-40



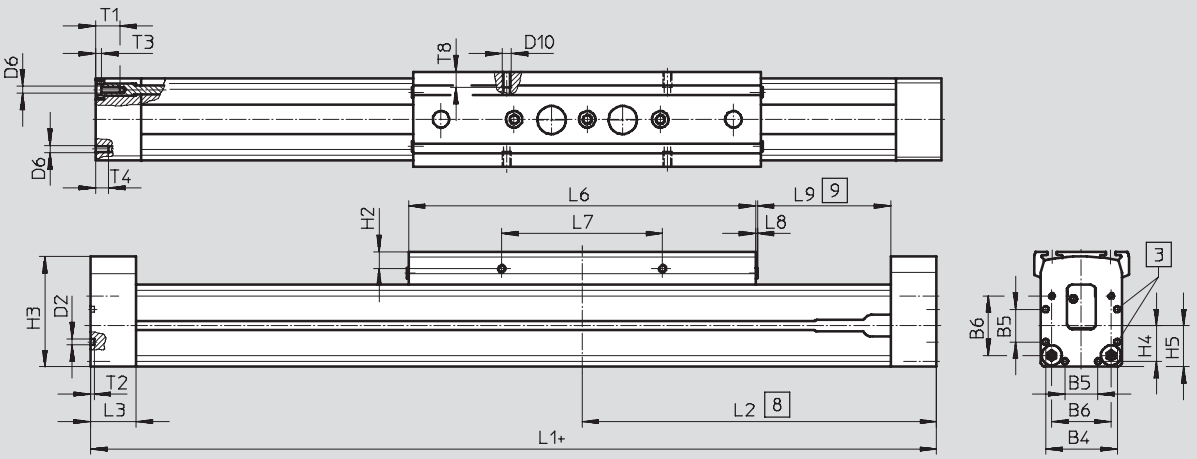
FDG-63



1
2

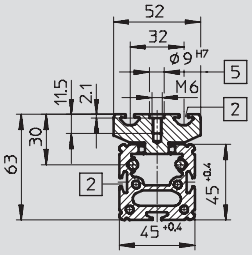
Dimensions Download CAD Data ➔ **www.festo.com/us/cad**

FDG-25/-40/-63

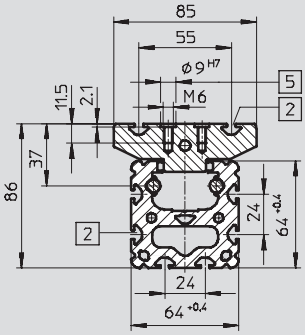


3 Centring hole for foot mounting
8 Driver in end position of the working stroke (including L9)
9 Recommended stroke reserve
+ = plus stroke length

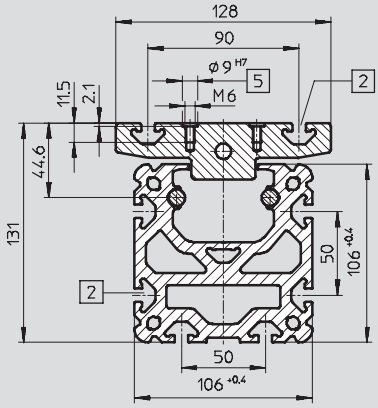
FDG-25



FDG-40

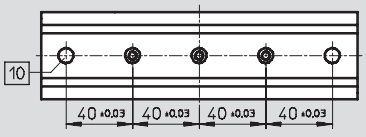


FDG-63

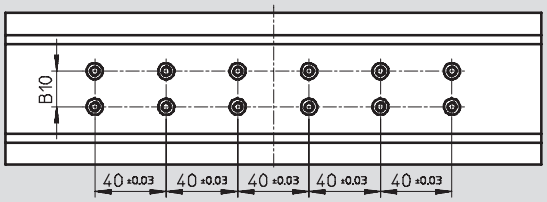


2 Slot for slot nuts
5 Hole for centring sleeve ZBH-9 and mounting thread

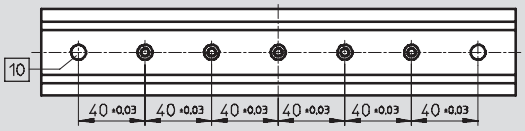
FDG-25-GK



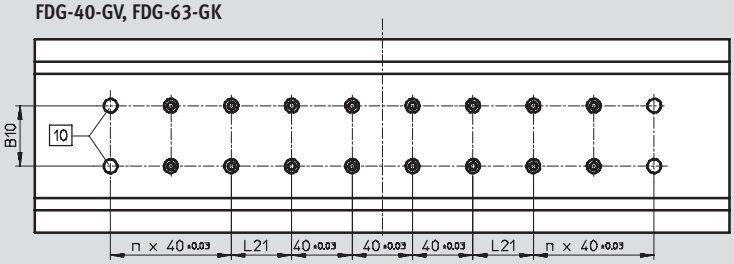
FDG-40-GK



FDG-25-GV



FDG-40-GV, FDG-63-GK

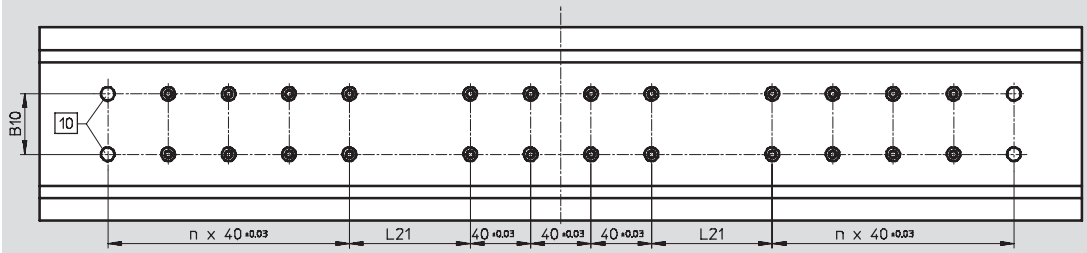


10 Hole for centring sleeve ZBH-9

Passive guide axes FDG-ZR-RF, without drive

Technical data

FDG-63-GV



Size		B4	B5	B6	B10 ±0.03	D2	D6	D10	H2	H3
25	GK	39.1	18	32.5	–	$3.3_{+0.1}$	M4	M5	9.3	60.4
	GV									
40	GK	53	28	49	20	4.4_{H13}	M5	M5	9.5	83.8
	GV									
63	GK	89	44	83	40	$6.4_{+0.1}$	M8	M8	10.5	129.3
	GV									

Size		H4	H5	L1	L2	L3	L6	L7	L8
25	GK	19.6	22.5	414	207	25	190	$88_{\pm 0.2}$	1
	GV			509	254.5		285		
40	GK	26.5	32	638	319	31	300	$58_{\pm 0.1}$	2
	GV			778	389		440		
63	GK	44.5	52.8	1020	510	34	460	$72_{\pm 0.1}$	2
	GV			1250	625		690		

Size		L9	L21 ±0.03	n	T1	T2	T3	T4	T8
25	GK	86	–	–	13	2	3	8	8.5
	GV								
40	GK	136	40	–	13	3	5	12	8.5
	GV			2					
63	GK	244	40	2	21	4	6	–	12
	GV		80	4					

Passive guide axes FDG-ZR-RF, without drive

Ordering data – Modular products

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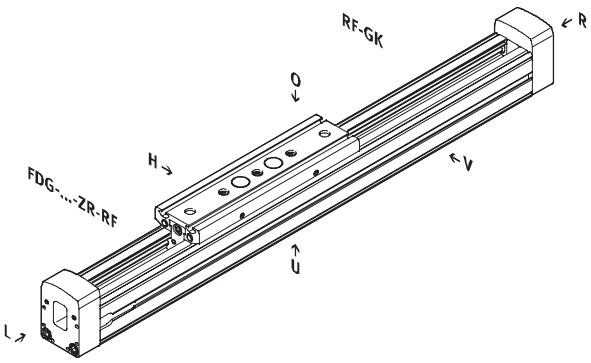
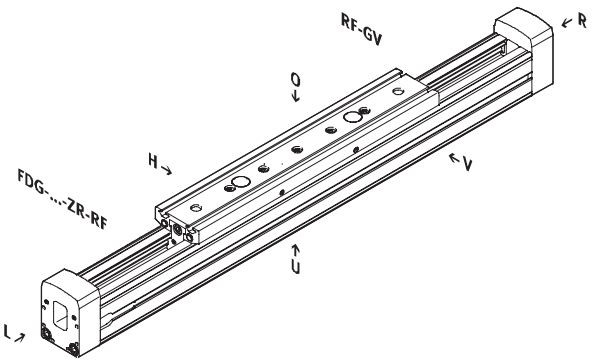
Ordering code
Mandatory data

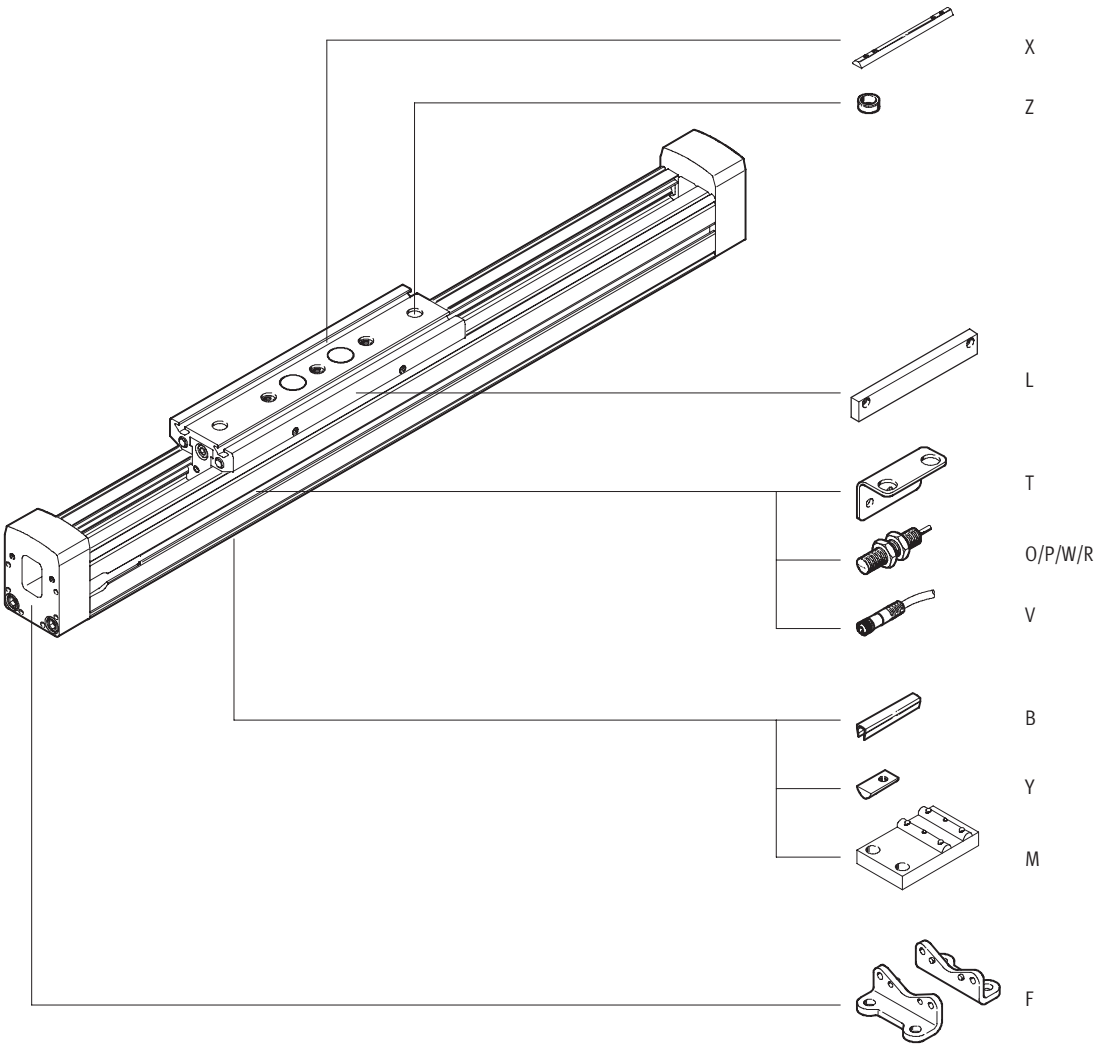
GK Standard slide



GV Extended slide



Ordering code
Options



Passive guide axes FDG-ZR-RF, without drive

Ordering data – Modular products

FESTO

M Mandatory data							O Options	
Module No.	**Function**	**Size**	**Stroke**	**Guide axis**	**Guide**	**Slide**	**Accessories**	
538 791 538 792 538 793	FDG	25 40 63	1 … 5 000	ZR	RF	GK GV		…B, …Y, …X, …M, …F, …Z, …V, …T, L, …O, …P, …W, …R
Ordering example								
538 791	**FDG**	**– 25**	**– 300**	**– ZR**	**– RF**	**– GK**	**– ZUB**	**– 2B**

Ordering table

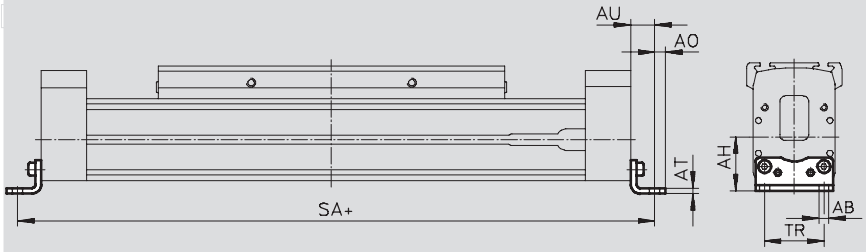
Size			25	40	63	Conditions	Code		Enter code
M	Module No.		538 791	538 792	538 793				
	Function		Guide axis without drive				**FDG**		FDG
	Size		25	40	63		**-...**		
	Stroke	[mm]	1 … 5 000				**-...**		
	Guide axis		for DGE-ZR-RF				**-ZR**		-ZR
	Guide		Roller guide				**-RF**		-RF
	Slide		Standard slide				**-GK**		
			Extended slide			1	**-GV**		
O	Accessories		Accessories supplied loose				**-ZUB-**		-ZUB-
	Slot cover for mounting slot		1 … 10				**…B**		
	Slot nut	Mounting slot	1 … 10				**…Y**		
		For slide	1 … 10				**…X**		
	Central support		1 … 10				**…M**		
	Foot mounting		1 … 10				**…F**		
	Centring sleeve (pack of 10)		10, 20, 30, 40, 50, 60, 70, 80, 90				**…Z**		
	Cable with socket, M8, 2.5 m		1 … 10				**…V**		
	Mounting bracket for inductive proximity sensors		1 … 5				**…T**		
	Switching lug		1				**L**		
	Inductive proximity sensor	NO contact, cable 2.5 m	1 … 5				**…O**		
		NC cable, cable 2.5 m	1 … 5				**…P**		
		NO contact, plug M8	1 … 5				**…W**		
		NC contact, plug M8	1 … 5				**…R**		

1 **GV** Maximum stroke Size 25: 4 905 mm
Size 40: 4 860 mm
Size 63: 4 770 mm

Foot mounting HP
(order code: F)

Material:
Galvanised steel
Free of copper, PTFE and silicone

HP-25



+ = plus stroke length

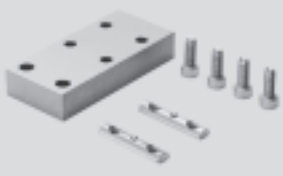
Dimensions and ordering data

For size	AB ∅	AH	AO	AT	AU
25	5.5	29.5	6	3	13
40	6.6	46	8.5	5	17.5
63	11	69	13.5	6	28

For size	SA		TR	Weight	Part No.	Type
	GK	GV		[g]		
25	440	535	32.5	61	**150 731**	**HP-25**
40	673	813	45	188	**150 733**	**HP-40**
63	1076	1306	75	305	**150 735**	**HP-63**

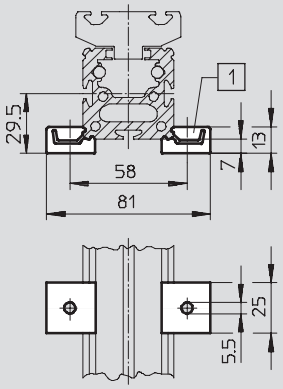
Central support MUP
(order code: M)

Material:
Galvanised steel
Free of copper, PTFE and silicone

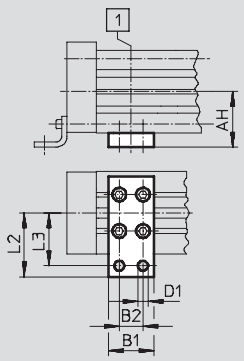


MUP-40

FDG-25



FDG-40 ... 63



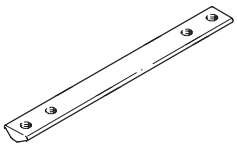
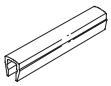
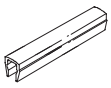
1 Position of the central support along the profile is freely selectable

Dimensions and ordering data

For size	AH	B1	B2	D1 ∅	L2	L3	Weight [g]	Part No.	Type
25	–	–	–	–	–	–	33	**150 736**	**MUP-18/25**
40	46	35	22	6.6	47	40	126	**150 738**	**MUP-40**
63	69	50	26	11	77	65	340	**150 800**	**MUP-63**

Passive guide axes FDG-ZR-RF, without drive

Accessories

Ordering data						
	For size	Remarks	Ordering code	Part No.	Type	PU[1]
Slot nut NST					Technical data ➔ Internet: nst	
	25	For mounting slot/profile slot	Y	**526 091**	**NST-HMV-M4**	1
	40			**150 914**	**NST-5-M5**	1
	63			**150 915**	**NST-8-M6**	1
Slot nut NSTL					Technical data ➔ Internet: nstl	
	25	For slide	X	**158 410**	**NSTL-25**	1
	40			**158 412**	**NSTL-40**	1
	63			**158 414**	**NSTL-63**	1
Centring pin/sleeve ZBH					Technical data ➔ Internet: zbh	
	25, 40, 63	For slide	Z	**150 927**	**ZBH-9**	10
Slot cover ABP-S					Technical data ➔ Internet: abp	
	25	For mounting slot every 0.5 m	B	**151 680**	**ABP-5-S**	2
Slot cover ABP					Technical data ➔ Internet: abp	
	40	For mounting slot every 0.5 m	B	**151 681**	**ABP-5**	2
	63			**151 682**	**ABP-8**	

1) Packaging unit quantity

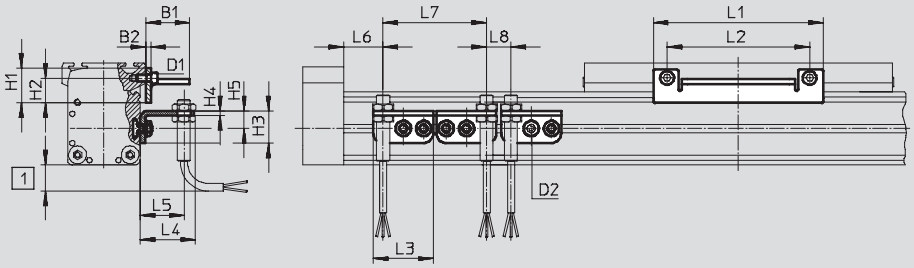
Passive guide axes FDG-ZR-RF, without drive

Accessories

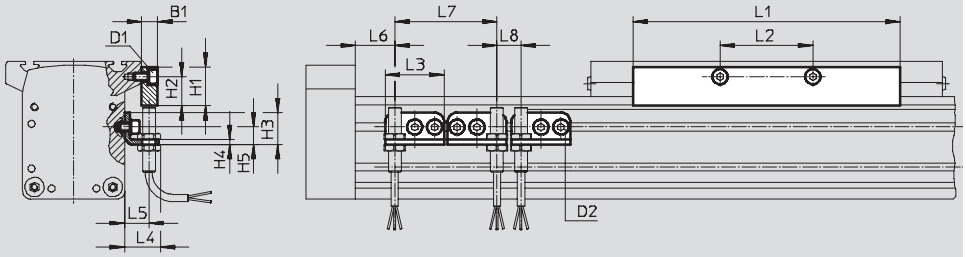
Sensor bracket HWS
for inductive proximity sensors
(order code: T)
Material:
Galvanised steel

Switching lug SF
(order code: L)
Material:
Galvanised steel

FDG-25



FDG-40 ... 63



1 Protruding sensor cable, ensure sufficient installation space

Dimensions and ordering data

For size	D1	D2	B1	B2	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5
25	M5	M5	27	3	20.5	15.3	20	3	11	105	88	37	34.5	27
40	M5	M5	10	–	24	18	20	3	11	167	58	37	22.5	15
63	M8	M5	10	–	35	25	20	3	11	230	72	37	22.5	15

For size	L6		L7	L8	Weight	Part No.	Type
	GK	GV	min.	min.	[g]		
25	43.5	91	64	15	30	**540 780**	**HWS-25-MAB-M8**
					80	**540 430**	**SF-25-MAB**
40	68.5	138.5	64	15	40	**188 969**	**HWS-40-M8**
					310	**188 966**	**SF-40**
63	117	232	64	15	40	**188 970**	**HWS-63-M8**
					630	**188 967**	**SF-63**

Ordering data – Inductive proximity sensors M8						Technical data ➔ Internet: sien	
	Electrical connection		Switch output	LED	Cable length [m]	Part No.	Type
	Cable	Plug M8					
NO contact							
	3-core	–	PNP	■	2.5	**150 386**	**SIEN-M8B-PS-K-L**
	–	3-pin	PNP	■	–	**150 387**	**SIEN-M8B-PS-S-L**
NC contact							
	3-core	–	PNP	■	2.5	**150 390**	**SIEN-M8B-PO-K-L**
	–	3-pin	PNP	■	–	**150 391**	**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	**541 333**	**NEBU-M8G3-K-2.5-LE3**
			5	**541 334**	**NEBU-M8G3-K-5-LE3**
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	**541 338**	**NEBU-M8W3-K-2.5-LE3**
			5	**541 341**	**NEBU-M8W3-K-5-LE3**

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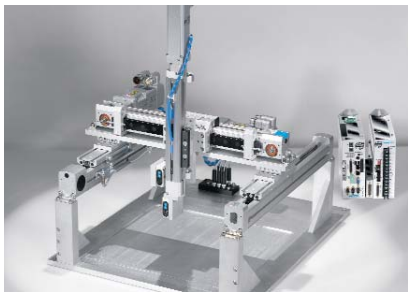

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