

Passive guide axes FDG-ZR-RF, without drive



# Passive guide axes FDG-ZR-RF, without drive

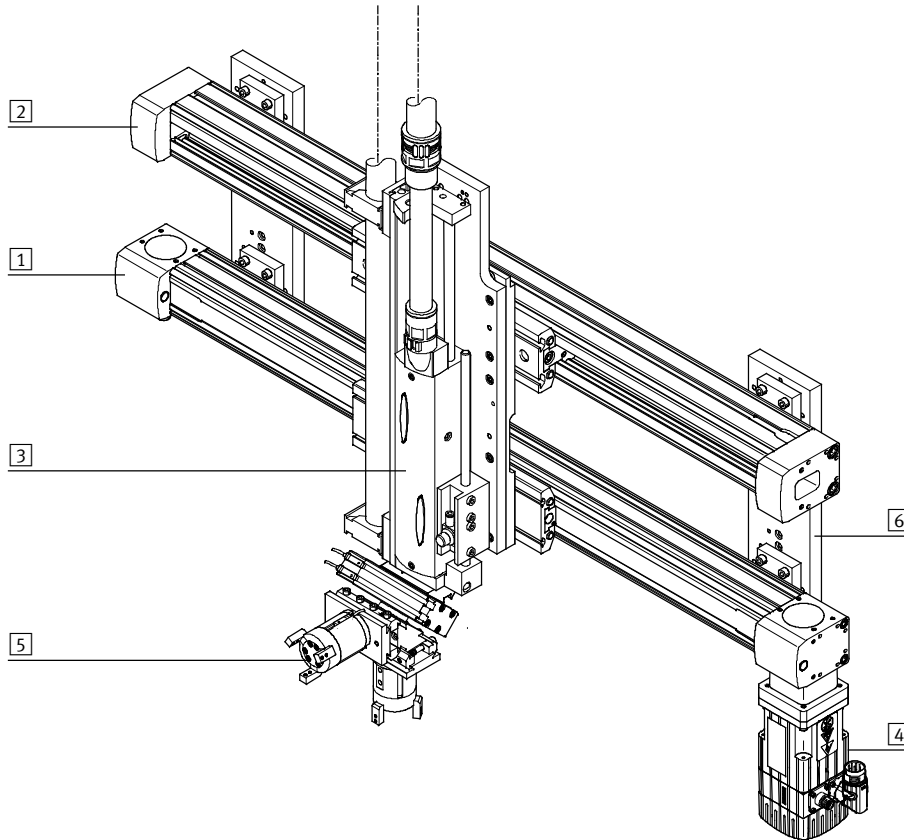
Key features



## 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

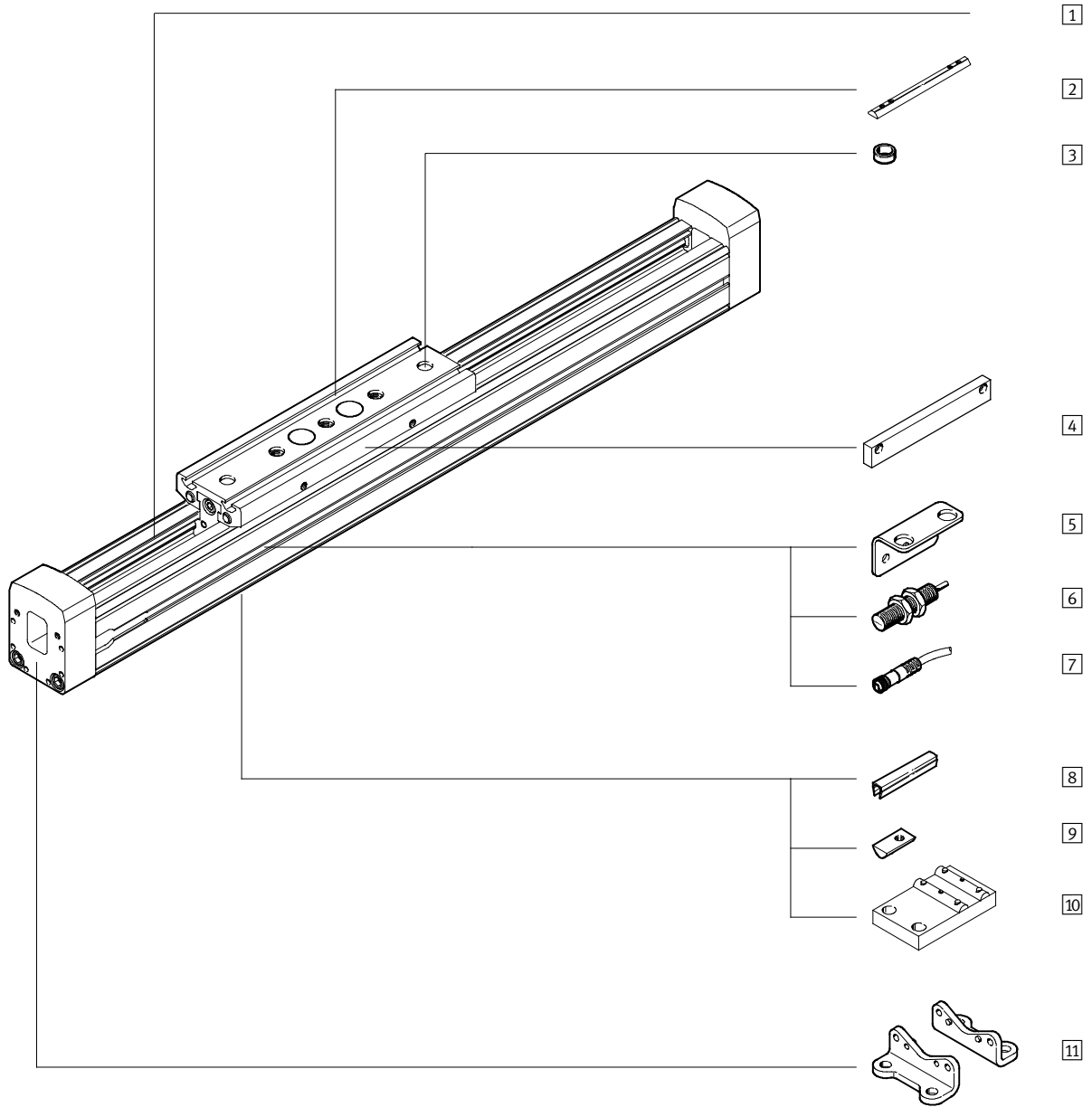
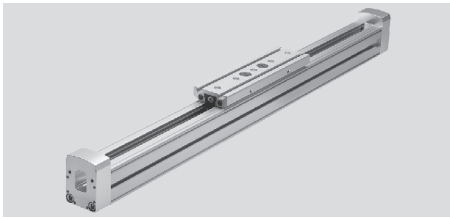
### Passive guide axis FDG-P/-ZR/-SP



- 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

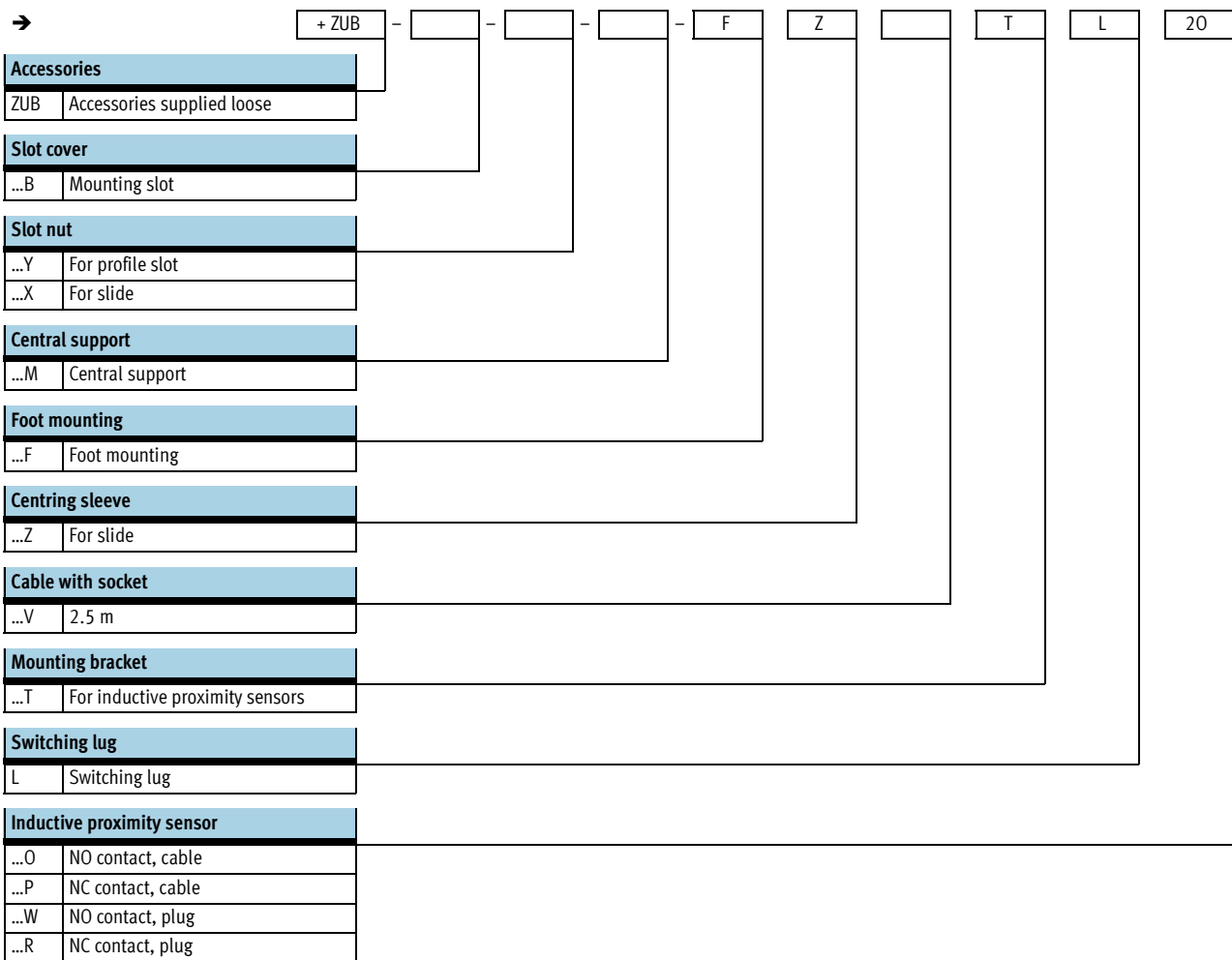
# Passive guide axes FDG-ZR-RF, without drive

Type codes

		FDG	-	25	-	500	-	ZR	-	RF	-	GK
<b>Type</b>												
FDG	Guide unit without drive											
<b>Size</b>												
<b>Stroke [mm]</b>												
<b>Guide axis</b>												
ZR	For toothed belt axis DGE-ZR-RF											
<b>Guide</b>												
RF	Roller guide											
<b>Slide</b>												
GK	Standard slide											
GV	Extended slide											

# Passive guide axes FDG-ZR-RF, without drive

Type codes

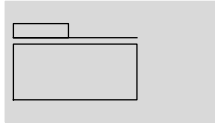




# Passive guide axes FDG-ZR-RF, without drive

FESTO

Technical data

Function



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



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

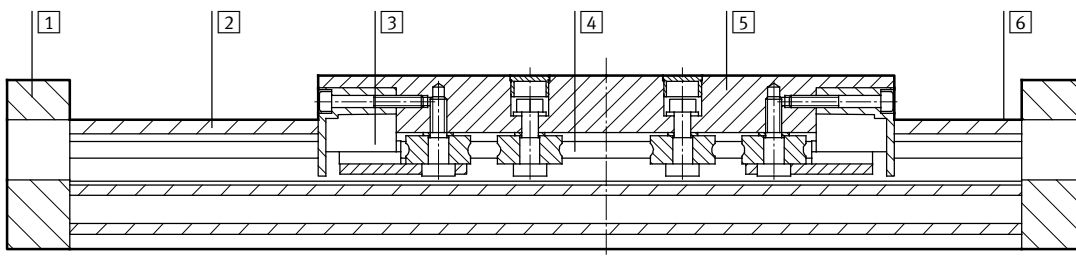
1) Total stroke = working stroke + 2x stroke reserve

2) The max. working stroke for the variant with extended slide (GV) is 4,800 mm.

Weights [kg]						
Size	25		40		63	
	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



# Passive guide axes FDG-ZR-RF, without drive

Technical data

## Stroke reserve

L9 The stroke reserve is a safety distance available on both sides of the axis in addition to the stroke.

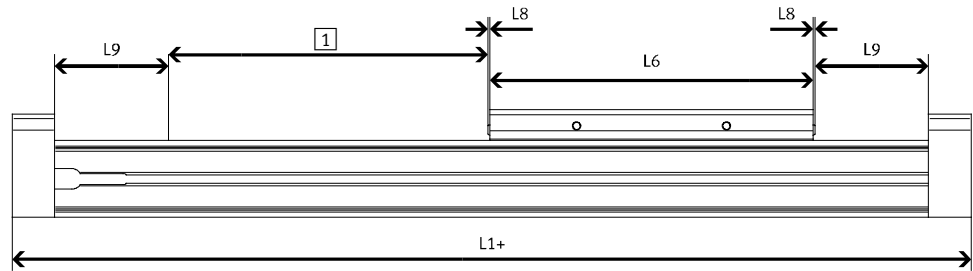
The indicated values only apply in combination with the toothed belt axis DGE-ZR-RF.

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

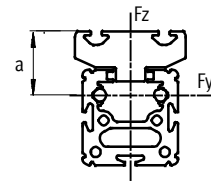
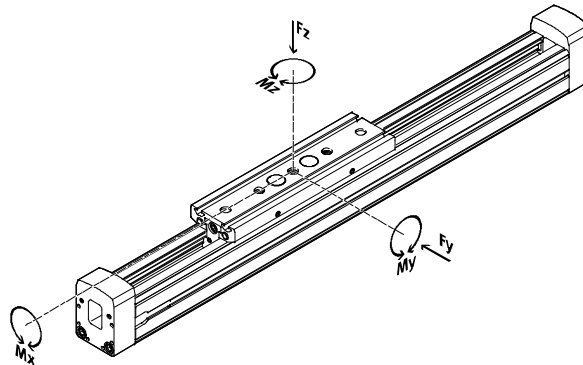
Size	25	40	63
L9 per end position [mm]	86	136	244

# 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

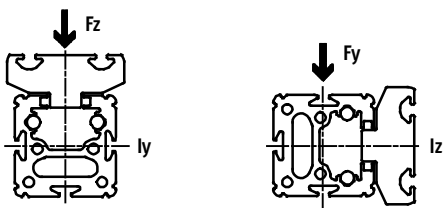
If the drive is subjected to more than two of the indicated forces and torques simultaneously, the following equations must be satisfied in addition to the indicated maximum loads:

$$\frac{F_y}{F_{y_{max}}} + \frac{F_z}{F_{z_{max}}} + \frac{M_x}{M_{x_{max}}} + \frac{M_y}{M_{y_{max}}} + \frac{M_z}{M_{z_{max}}} \leq 1$$

## Permissible forces and torques

Size	25		40		63	
	GK	GV	GK	GV	GK	GV
F <sub>y</sub> <sub>max.</sub> [N]	150		300		600	
F <sub>z</sub> <sub>max.</sub> [N]	150		300		600	
M <sub>x</sub> <sub>max.</sub> [Nm]	7		18		65	
M <sub>y</sub> <sub>max.</sub> [Nm]	15	30	60	120	170	340
M <sub>z</sub> <sub>max.</sub> [Nm]	15	30	90	180	300	600

## 2nd moment of area



Size	25	40	63
ly [mm <sup>4</sup> ]	5.947x10 <sup>5</sup>	2.479x10 <sup>6</sup>	1.664x10 <sup>7</sup>
lz [mm <sup>4</sup> ]	2.372x10 <sup>5</sup>	9.463x10 <sup>5</sup>	5.997x10 <sup>6</sup>

# Passive guide axes FDG-ZR-RF, without drive

Technical data

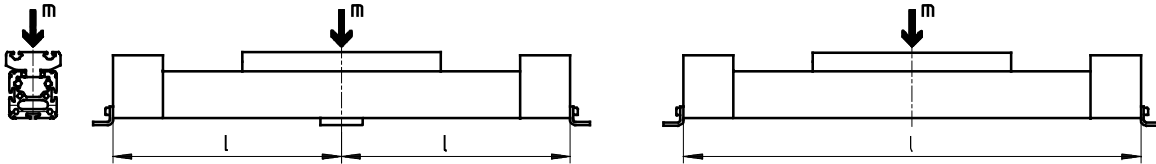
## Maximum permissible support span $l$ as a function of the applied load $m$

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

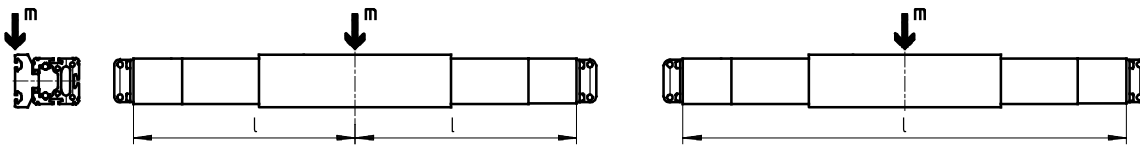
to determine the maximum permissible support span as a function of the applied load acting upon the axis.

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

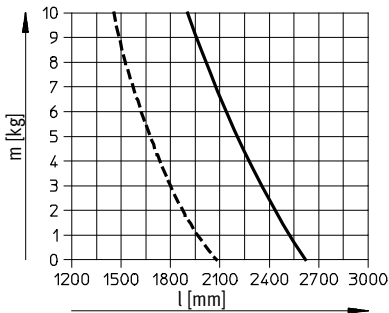


### 2 Load on the front of the slide

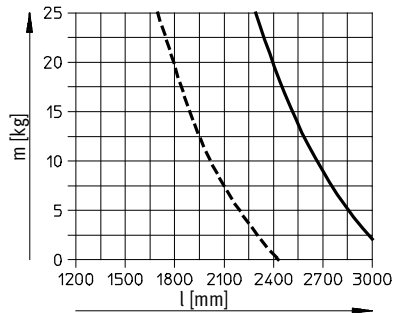


## Maximum support span $l$ (without central support) as a function of the applied load $m$

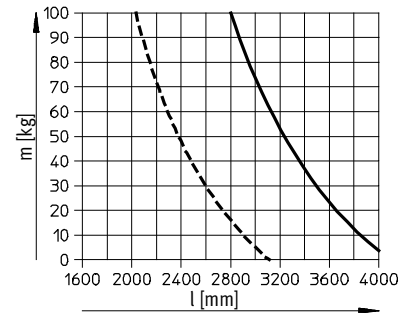
FDG-25



FDG-40



FDG-63



- 1
- - - 2

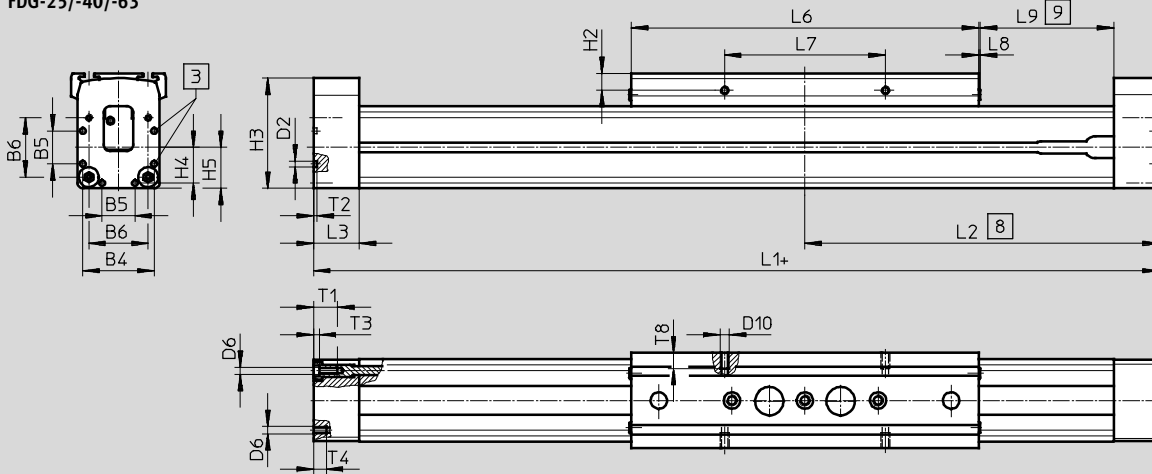
# Passive guide axes FDG-ZR-RF, without drive

Technical data

## Dimensions

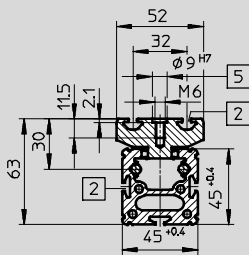
Download CAD data → [www.festo.com](http://www.festo.com)

### FDG-25/-40/-63



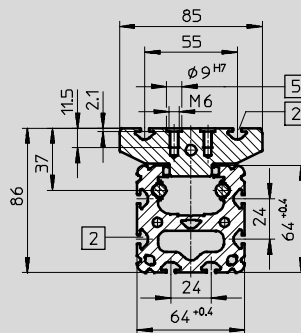
- 3 Centring hole for foot mounting
- 8 Driver in end position of the working stroke (including L9)
- 9 Recommended stroke reserve  
+ = plus stroke length

### FDG-25

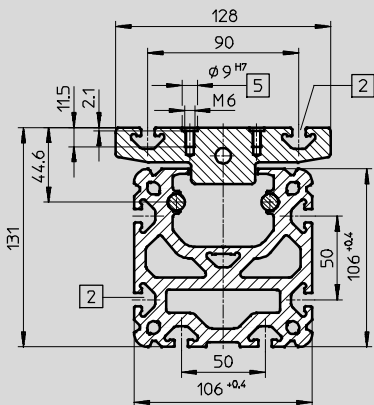


- 2 Slot for slot nuts
- 5 Hole for centring sleeve ZBH-9 and mounting thread

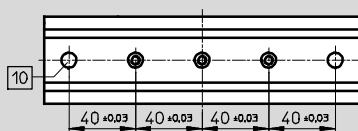
### FDG-40



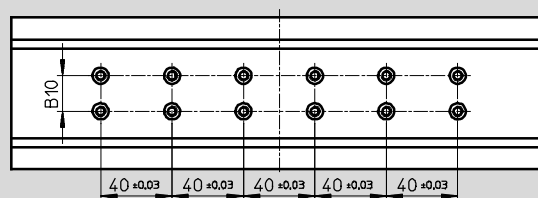
### FDG-63



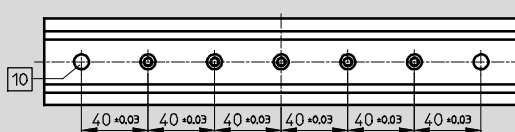
### FDG-25-GK



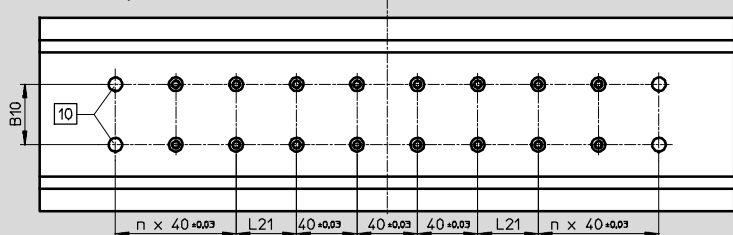
### FDG-40-GK



### FDG-25-GV



### FDG-40-GV, FDG-63-GK

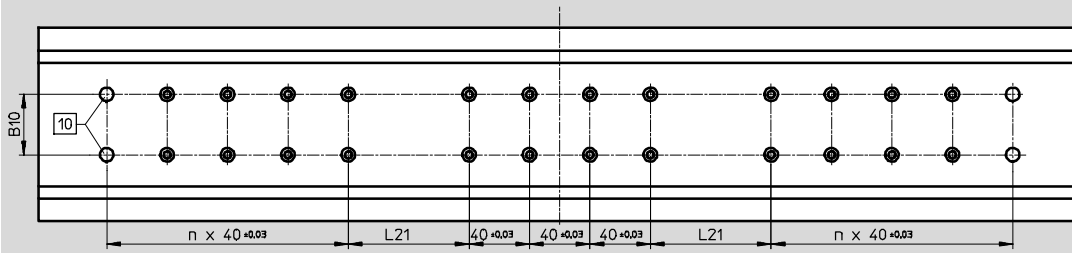


- 10 Hole for centring sleeve ZBH-9

# 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 <sub>+0.1</sub>	M4	M5	9.3	60.4
	GV									
40	GK	53	28	49	20	4.4 <sub>H13</sub>	M5	M5	9.5	83.8
	GV									
63	GK	89	44	83	40	6.4 <sub>+0.1</sub>	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 <sub>±0.2</sub>	1
	GV			509	254.5		285		
40	GK	26.5	32	638	319	31	300	58 <sub>±0.1</sub>	2
	GV			778	389		440		
63	GK	44.5	52.8	1020	510	34	460	72 <sub>±0.1</sub>	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			2					
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

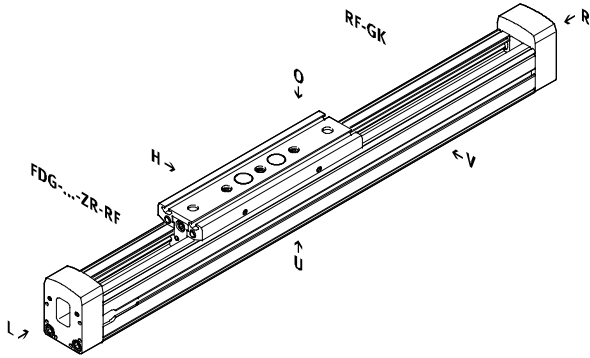
Ordering data – Modular products



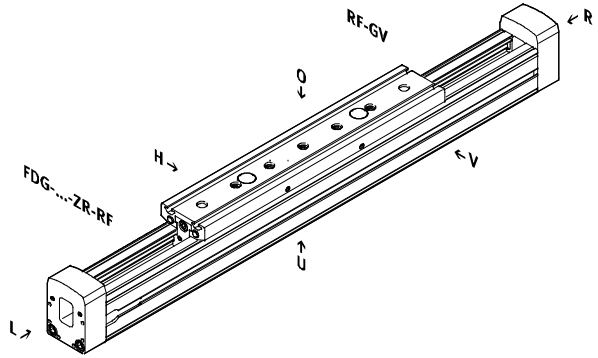
## Ordering code

### Mandatory data

GK Standard slide

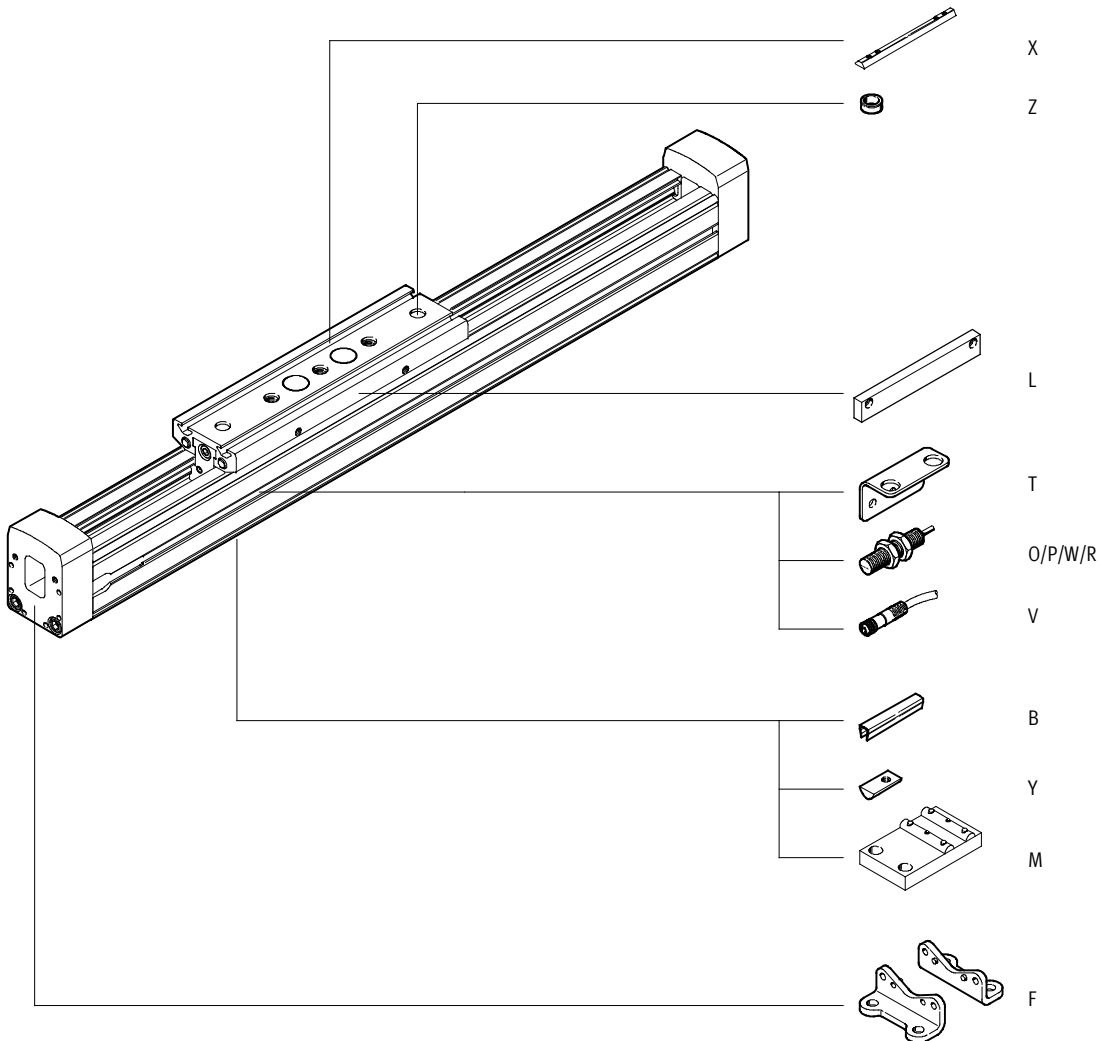


GV Extended slide



## Ordering code

### Options



# Passive guide axes FDG-ZR-RF, without drive

Ordering data – Modular products

M Mandatory data							O Options	
Module No.	Function	Size	Stroke	Guide axis	Guide	Slide	Accessories	
538791	FDG	25	1 ... 5 000	ZR	RF	GK	...B, ...Y, ...X, ...M, ...F, ...Z, ...V, ...T, L, ...O, ...P, ...W, ...R	
538792		40				GV		
538793		63						
<b>Ordering example</b>								
538791	FDG	- 25	- 300	- ZR	- RF	- GK	- ZUB	- 2B

Ordering table							
Size	25	40	63	Condi- tions	Code	Enter code	
M Module No.	538791	538792	538793				
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

# Passive guide axes FDG-ZR-RF, without drive

Accessories

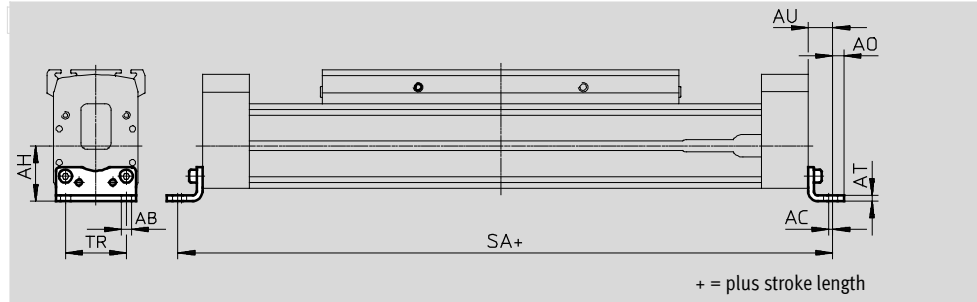


**Foot mounting HP**  
(order code: F)

Material:  
Galvanised steel  
Free of copper, PTFE and silicone



HP-25



Dimensions and ordering data						
For size	AB ∅	AC	AH	AO	AT	AU
25	5.5	2	29.5	6	3	13
40	6.6	2	46	8.5	5	17.5
63	11	3	69	13.5	6	28

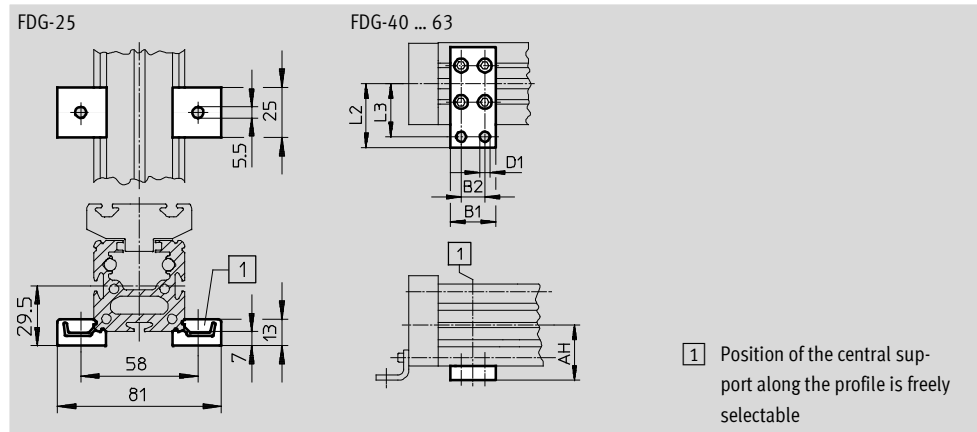
For size	SA		TR	Weight [g]	Part No.	Type
	GK	GV				
25	440	535	32.5	61	150731	HP-25
40	673	813	45	188	150733	HP-40
63	1076	1306	75	305	150735	HP-63

**Central support MUP**  
(order code: M)

Material:  
Galvanised steel  
Free of copper, PTFE and silicone



MUP-40


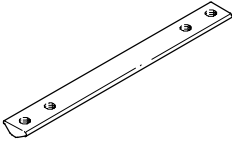

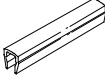
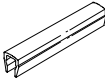


Dimensions and ordering data									
For size	AH	B1	B2	D1 ∅	L2	L3	Weight [g]	Part No.	Type
25	-	-	-	-	-	-	33	150736	MUP-18/25
40	46	35	22	6.6	47	40	126	150738	MUP-40
63	69	50	26	11	77	65	340	150800	MUP-63



# Passive guide axes FDG-ZR-RF, without drive

Accessories

Ordering data						
	For size	Remarks	Ordering code	Part No.	Type	PU <sup>1)</sup>
Slot nut NST <span style="float: right;">Technical data → Internet: nst</span>						
	25	For mounting slot/profile slot	Y	<b>526091</b>	<b>NST-HMV-M4</b>	1
	40			<b>150914</b>	<b>NST-5-M5</b>	1
	63			<b>150915</b>	<b>NST-8-M6</b>	1
Slot nut NSTL <span style="float: right;">Technical data → Internet: nstl</span>						
	25	For slide	X	<b>158410</b>	<b>NSTL-25</b>	1
	40			<b>158412</b>	<b>NSTL-40</b>	1
	63			<b>158414</b>	<b>NSTL-63</b>	1
Centring pin/sleeve ZBH <span style="float: right;">Technical data → Internet: zbh</span>						
	25, 40, 63	For slide	Z	<b>150927</b>	<b>ZBH-9</b>	10
Slot cover ABP-S <span style="float: right;">Technical data → Internet: abp</span>						
	25	For mounting slot every 0.5 m	B	<b>151680</b>	<b>ABP-5-S</b>	2
Slot cover ABP <span style="float: right;">Technical data → Internet: abp</span>						
	40	For mounting slot every 0.5 m	B	<b>151681</b>	<b>ABP-5</b>	2
	63			<b>151682</b>	<b>ABP-8</b>	

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

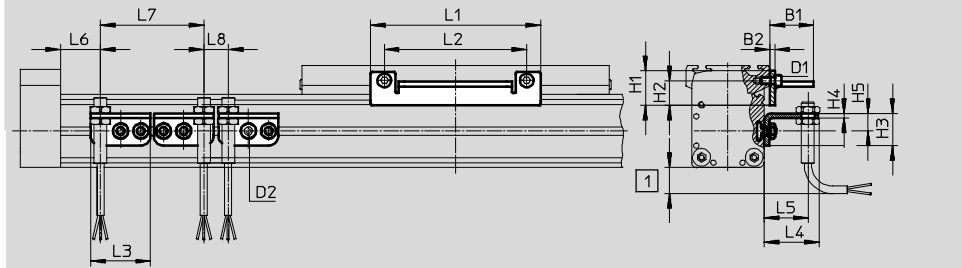
(order code: L)

Material:

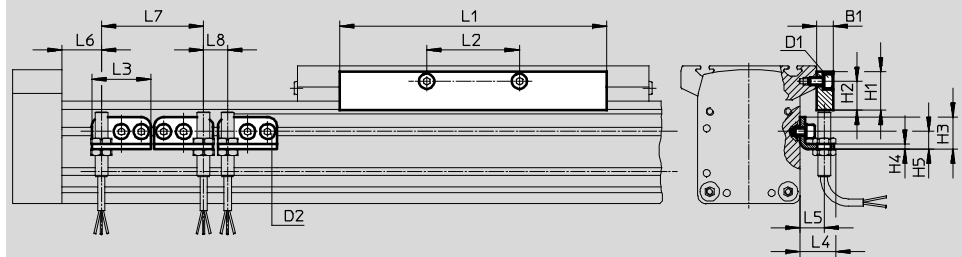
Galvanised steel



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 [g]	Part No.	Type
	GK	GV	min.	min.			
25	43.5	91	64	15	30	540780	HWS-25-MAB-M8
					80	540430	SF-25-MAB
40	68.5	138.5	64	15	40	188969	HWS-40-M8
					310	188966	SF-40
63	117	232	64	15	40	188970	HWS-63-M8
					630	188967	SF-63

# Passive guide axes FDG-ZR-RF, without drive

Accessories

**FESTO**

Ordering data – Inductive proximity sensors M8						Technical data → Internet: sien	
	Electrical connection		Switch output	LED	Cable length [m]	Part No.	Type
	Cable	Plug M8					
<b>NO contact</b>							
	3-core	–	PNP	■	2.5	150386	SIEN-M8B-PS-K-L
	–	3-pin	PNP	■	–	150387	SIEN-M8B-PS-S-L
<b>NC contact</b>							
	3-core	–	PNP	■	2.5	150390	SIEN-M8B-PO-K-L
	–	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			
					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