

Passive guide axes FDG, without drive



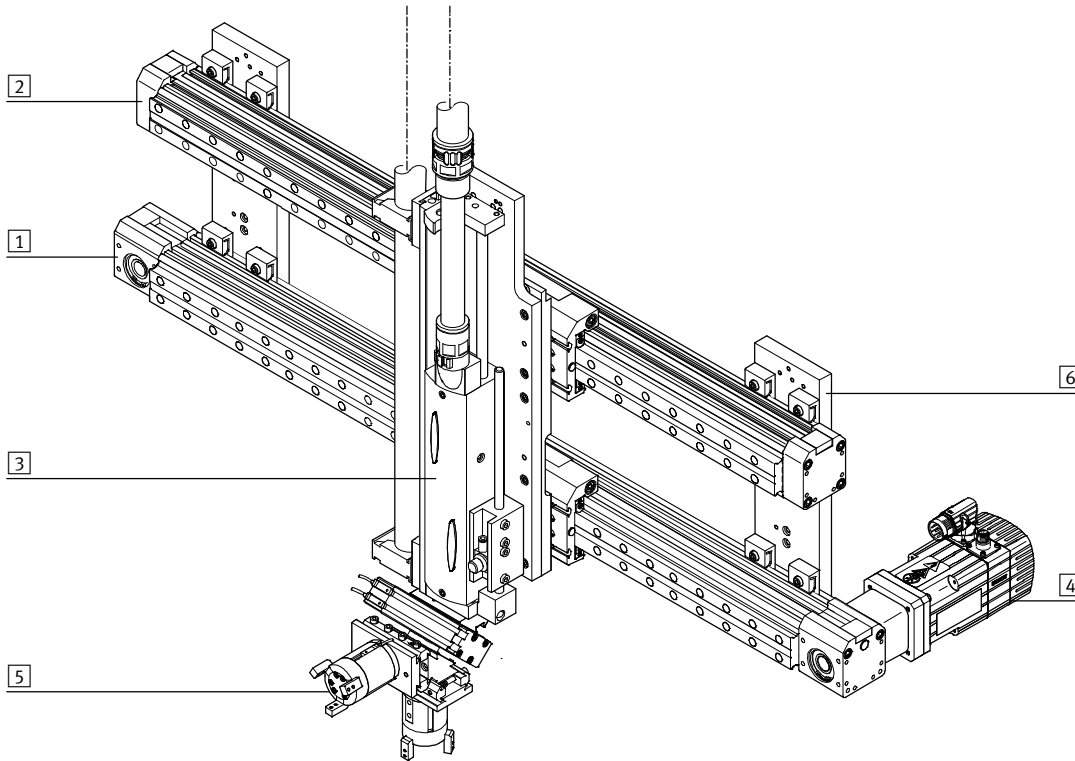
# Passive guide axes FDG, without drive

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

	Description	→ Page/Internet
1	Axes	axis
2	Passive guide axes	guide axis
3	Drives	drive
4	Motors	motor
5	Grippers	gripper
6	Adapters	adapter kit

# Passive guide axes FDG, without drive

Key features

## 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 ... 63
- 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

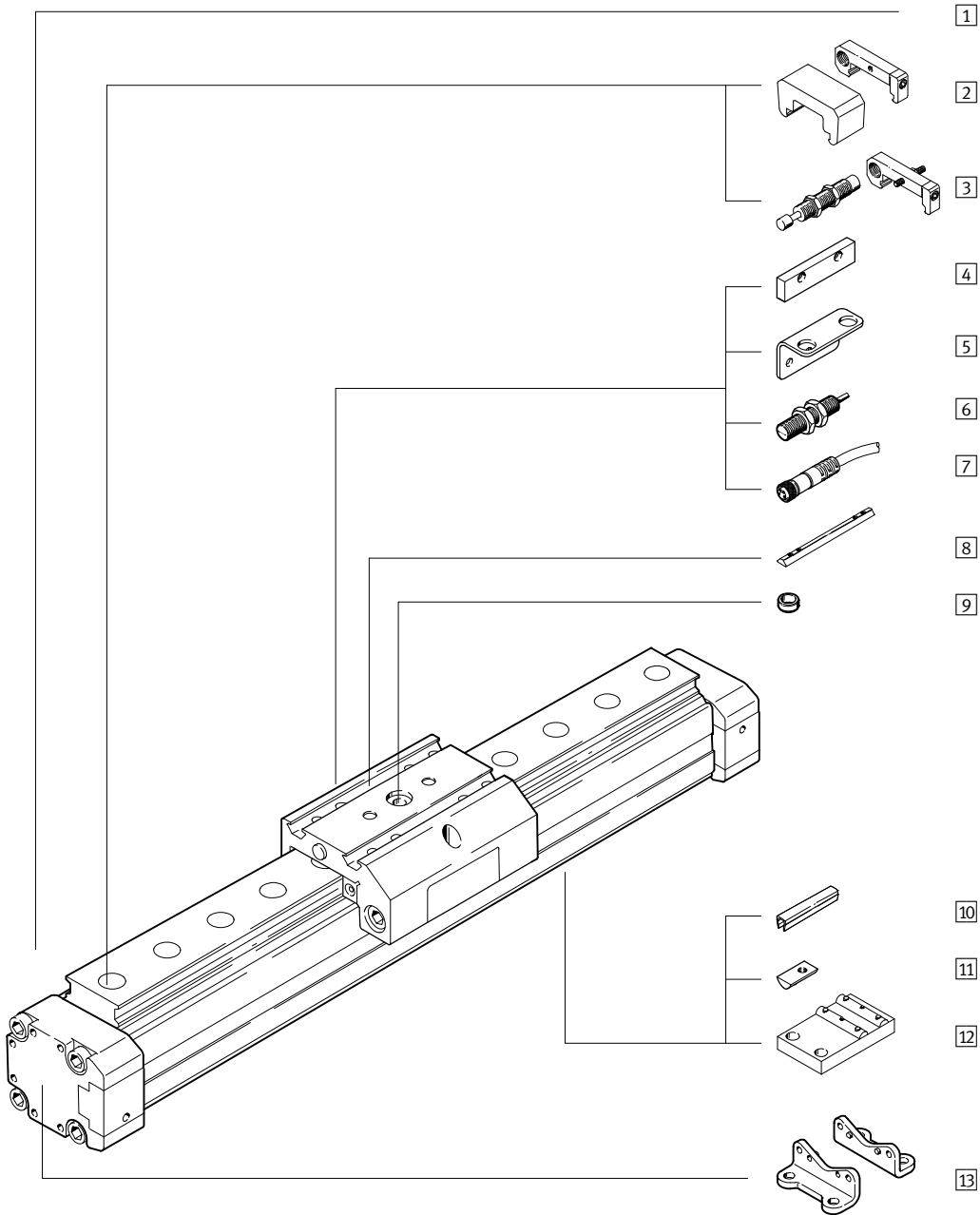
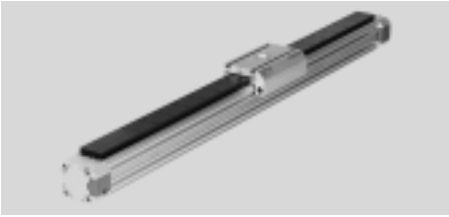
### Passive guide axis FDG-ZR-SP



- 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

# Passive guide axes FDG, without drive

Peripherals overview



## Passive guide axes FDG, without drive

Peripherals overview

Variants and accessories		
Type	Description	→ Page/Internet
1 Passive guide axis FDG	Guide without drive	6
2 Emergency buffer with retainer A	Absorbs the energy created by the movement of the slide when it reaches the end position	22
3 Shock absorber kits C/E	Absorbs the energy created by the movement of the slide when it reaches the end position	21
4 Switching lug L	For sensing the slide position	23
5 Sensor bracket T	Adapter for mounting the SIEN proximity sensor on the axis	23
6 Proximity sensors O/P/R/W	For providing a proximity signal or safety check	25
7 Cable with socket V	For proximity sensor	25
8 Slot nut for slide X	For mounting loads and attachments on the slide	24
9 Centring sleeve Z	For centring loads and attachments on the slide	24
10 Slot cover B/S	To protect against the ingress of dirt	24
11 Slot nut for mounting slot Y	For mounting attachments	24
12 Central support M	To mount the axis	20
13 Foot mounting F	To mount the axis	20

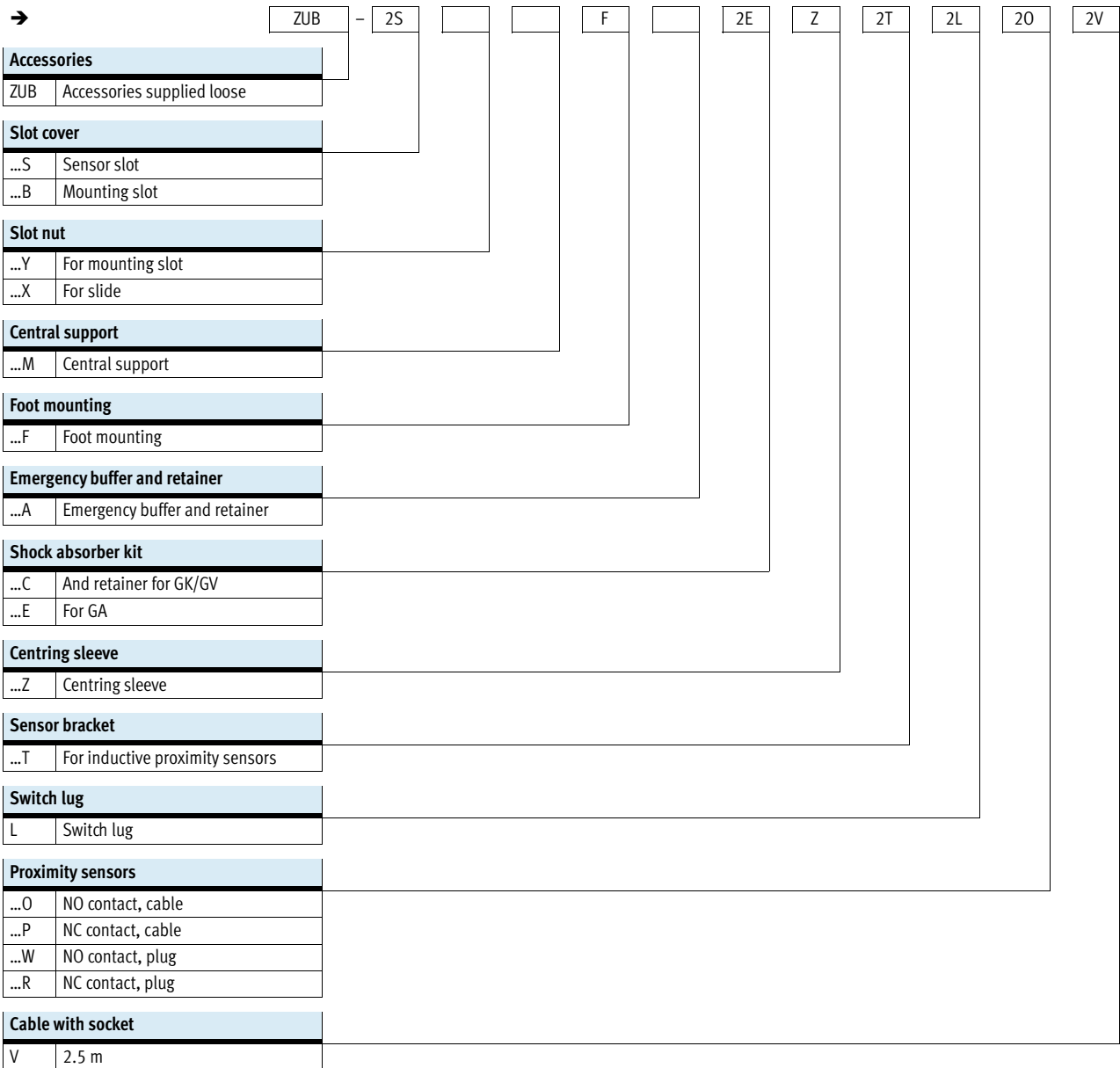
# Passive guide axes FDG, without drive

Type codes

		FDG	-	25	-	500	-	ZR	-	KF	-	GK	-	
<b>Type</b>														
FDG	Guide unit without drive													
<b>Size</b>														
<b>Stroke [mm]</b>														
<b>Passive guide axis</b>														
ZR	For toothed belt axis DGE-ZR-KF													
SP	For spindle drive DGE-SP-KF													
<b>Guide</b>														
KF	Recirculating ball bearing guide													
<b>Slide</b>														
GK	Standard slide													
GV	Extended slide													
GA	Protected version													
<b>Additional slide</b>														
KL	Left													
KR	Right													

# Passive guide axes FDG, without drive

Type codes

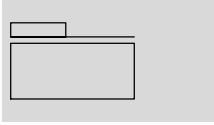





# Passive guide axes FDG, without drive

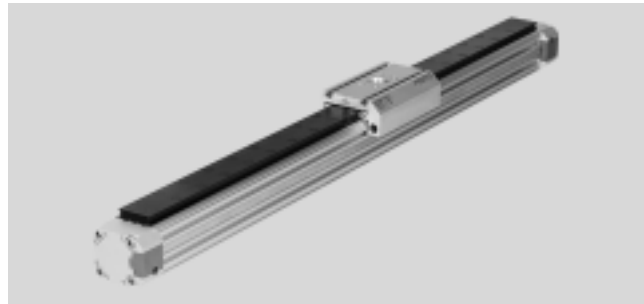
Technical data

FESTO

Function



-  - Size  
18 ... 63
-  - Stroke length  
100 ... 5100 mm
-  - [www.festo.com](http://www.festo.com)



General technical data						
Size			18	25	40	63
Max. stroke	FDG-ZR	[mm]	1 ... 1000	1 ... 5100	1 ... 4900	1 ... 4700
	FDG-SP	[mm]	1 ... 500	1 ... 1000	1 ... 1500	1 ... 2000
Design	Driveless linear guide unit with slide					
Guide	External recirculating ball bearing guide					
Fitting position	Any					
Cushioning	Not adjustable at either end					
	Self-adjusting at both ends					
Type of mounting	Profile mounting					
	Foot mounting					
	Direct mounting					
Increase in no-load drive torque	for DGE-...-ZR by	[Nm]	0.005	0.02	0.03	0.085
	for DGE-SP by	[Nm]	0.04	0.1	0.15	0.45
Thrust <sup>1)</sup>		[N]	5	10	9	16
Ambient temperature		[°C]	-10 ... +60			

1) Measured at FDG-18 = 0.05 m/s; FDG-25... 63 = 0.2m/s

Weights [kg]						
Size			18	25	40	63
FDG-ZR						
Basic weight at 0 mm stroke	GK		0.879	2.022	6.055	21.493
	GV		1.341	2.927	7.939	31.464
	GA		-	2.931	8.128	-
Additional weight per 100 mm stroke	GK		0.274	0.479	0.968	2.423
	GV		0.274	0.479	0.968	2.423
	GA		-	0.570	1.092	-
FDG-SP						
Basic weight at 0 mm stroke	GK		0.743	1.482	4.296	13.454
	GV		1.232	2.530	7.678	25.847
	GA		-	2.459	6.798	-
Additional weight per 100 mm stroke	GK		0.274	0.479	0.968	2.423
	GV		0.274	0.479	0.968	2.423
	GA		-	0.570	1.092	-

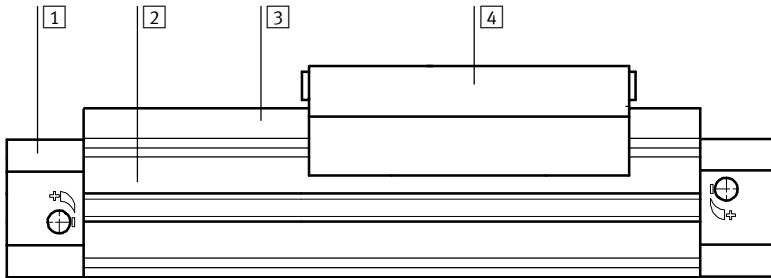


# Passive guide axes FDG, without drive

Technical data

## Materials

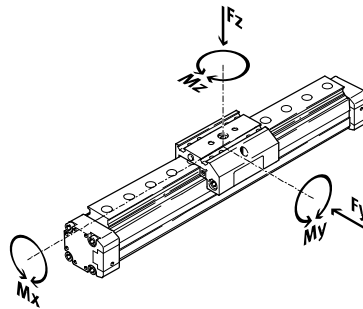
Sectional view



Axis		
1	End cap	Anodised aluminium
2	Profile	Anodised aluminium
3	Guide rail	∅ 18
		∅ 25 ... 63
		Hardened steel
		Hardened steel with corrosion resistant coating
4	Slide	Anodised aluminium
Note on material		Free of copper and PTFE

## Characteristic load values

The forces and torques specified refer to the centre of the guide rails. They must not be exceeded during dynamic operation. Special attention must be paid to the cushioning phase.



If the axis is simultaneously subjected to several of the forces and torques listed below, 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		18	25	40	63
GK/GA – standard slide/protected slide					
F <sub>y</sub> <sub>max.</sub>	[N]	930	380	7300	14050
F <sub>z</sub> <sub>max.</sub>	[N]	930	3080	7300	14050
M <sub>x</sub> <sub>max.</sub>	[Nm]	7	45	170	580
M <sub>y</sub> <sub>max.</sub>	[Nm]	23	85	330	910
M <sub>z</sub> <sub>max.</sub>	[Nm]	23	85	330	910
GV – extended slide					
F <sub>y</sub> <sub>max.</sub>	[N]	930	3080	7300	14050
F <sub>z</sub> <sub>max.</sub>	[N]	930	3080	7300	14050
M <sub>x</sub> <sub>max.</sub>	[Nm]	7	45	170	580
M <sub>y</sub> <sub>max.</sub>	[Nm]	45	170	660	1820
M <sub>z</sub> <sub>max.</sub>	[Nm]	45	170	660	1820

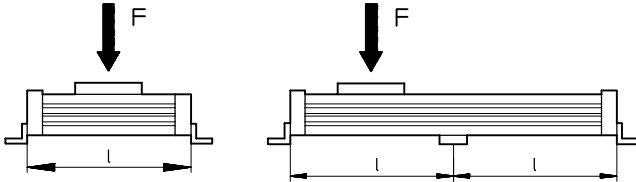
# Passive guide axes FDG, without drive

Technical data

## Maximum permissible support span $l$ as a function of the force $F$

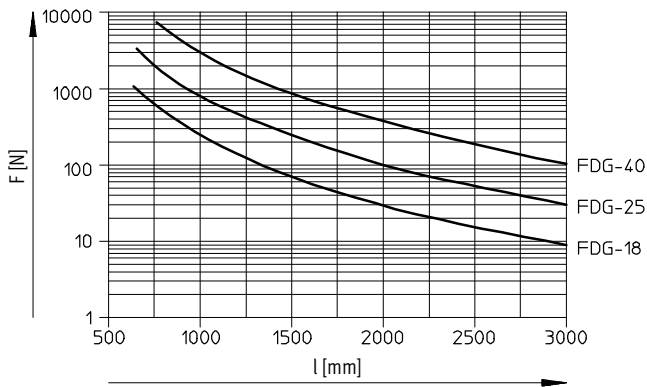
The axis may need to be supported with central supports MUP in order to limit deflection in the case of large strokes. The following diagrams serve to determine the maximum permissible support span  $l$  as a function of the force  $F$ .

### Force on the surface of the slide

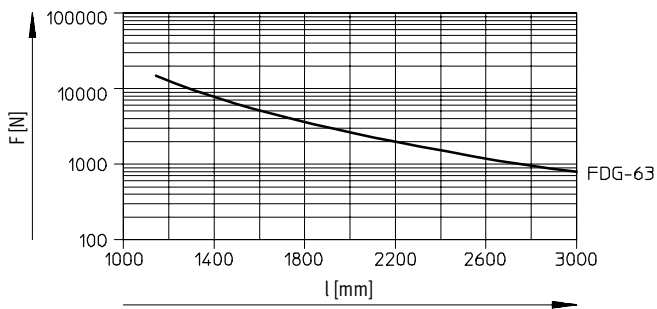


## Maximum permissible support span $l$ (without central support) as a function of the force $F$

Size 18...40



Size 63



# Passive guide axes FDG, without drive

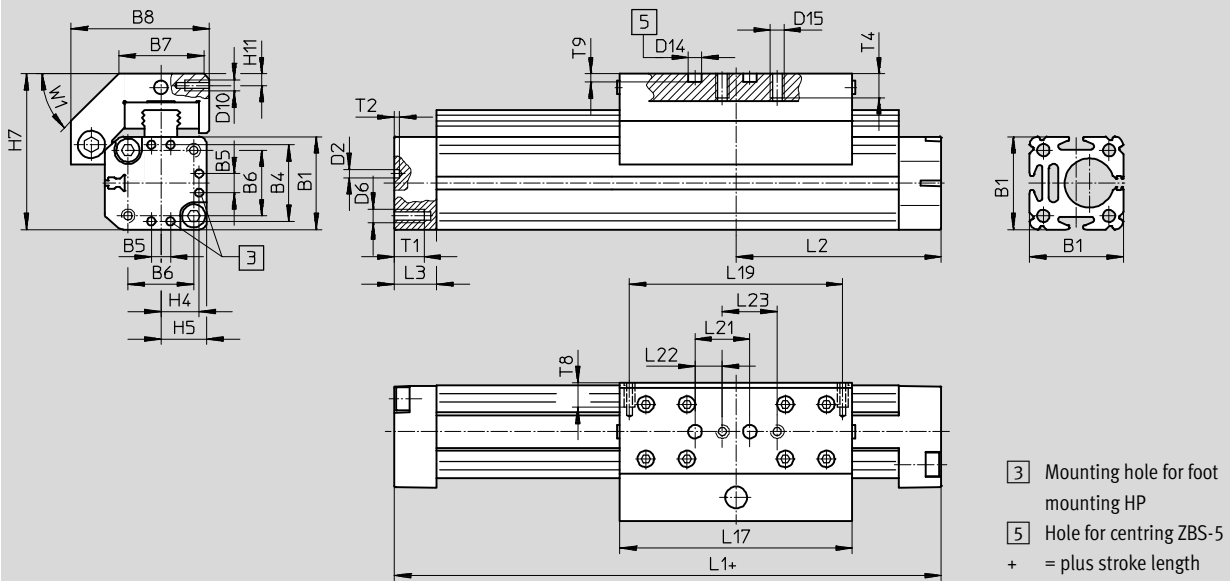
Technical data

## Dimensions

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

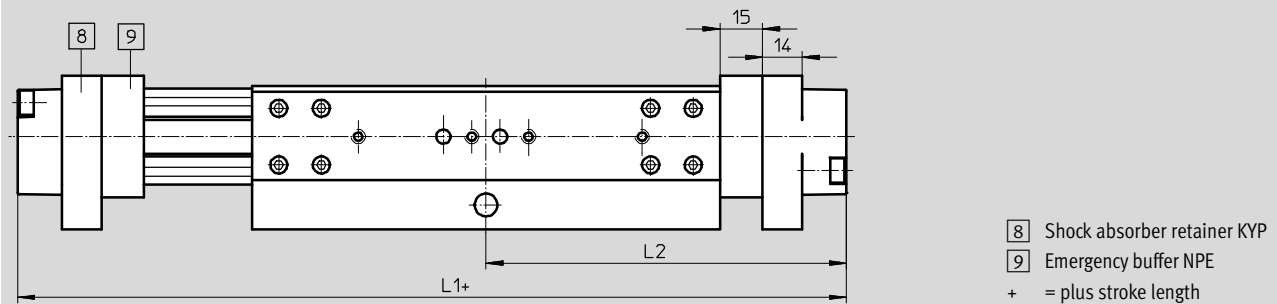
Standard slide GK

Size 18



Extended slide GV

Size 18



Size	B1	B4	B5	B6	B7	B8	D2 ∅	D6	D10
18	34	28	7	24	32	50,5	3	M5	M4

Size	D14 ∅ H7	D15	H4	H5	H7	H11	L3	L17	L19 ±0,1
18	5	M5	14	17	57	4,3	15,5	85	78

Size	L21 ±0,03	L22 ±0,1	L23 ±0,1	T1	T2	T4 max.	T8	T9	W1
18	20	10	20	11	2	14	9	3	45 °

Type	L1		L2	
	GK	GV	GK	GV
FDG-18-...-ZR-...	221	301	110.5	150.5
FDG-18-...-SP-...	171	261	92	132

# Passive guide axes FDG, without drive

Technical data

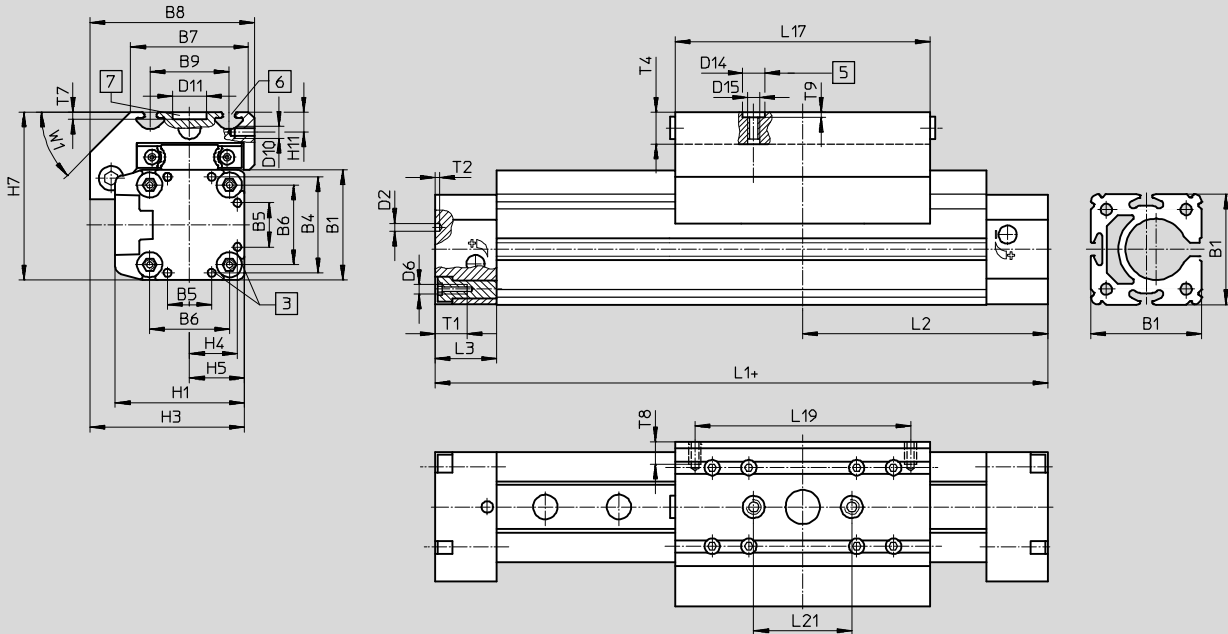
FESTO

## Dimensions

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

Standard slide GK

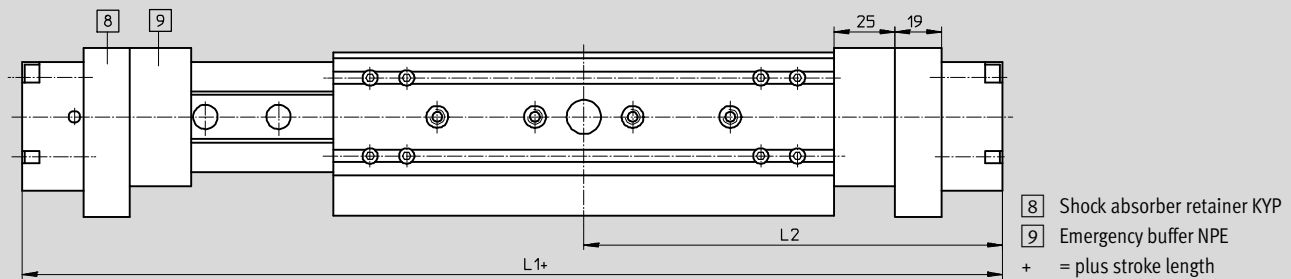
Size 25



- 3 Mounting hole for foot mounting HP
  - 5 Hole for centring sleeve ZBH-9
  - 6 Mounting slot for slot nut NSTL
  - 7 Drilled hole for central mounting SLZZ
- + = plus stroke length

## Extended slide GV

Size 25



- 8 Shock absorber retainer KYP
  - 9 Emergency buffer NPE
- + = plus stroke length

# Passive guide axes FDG, without drive

Technical data

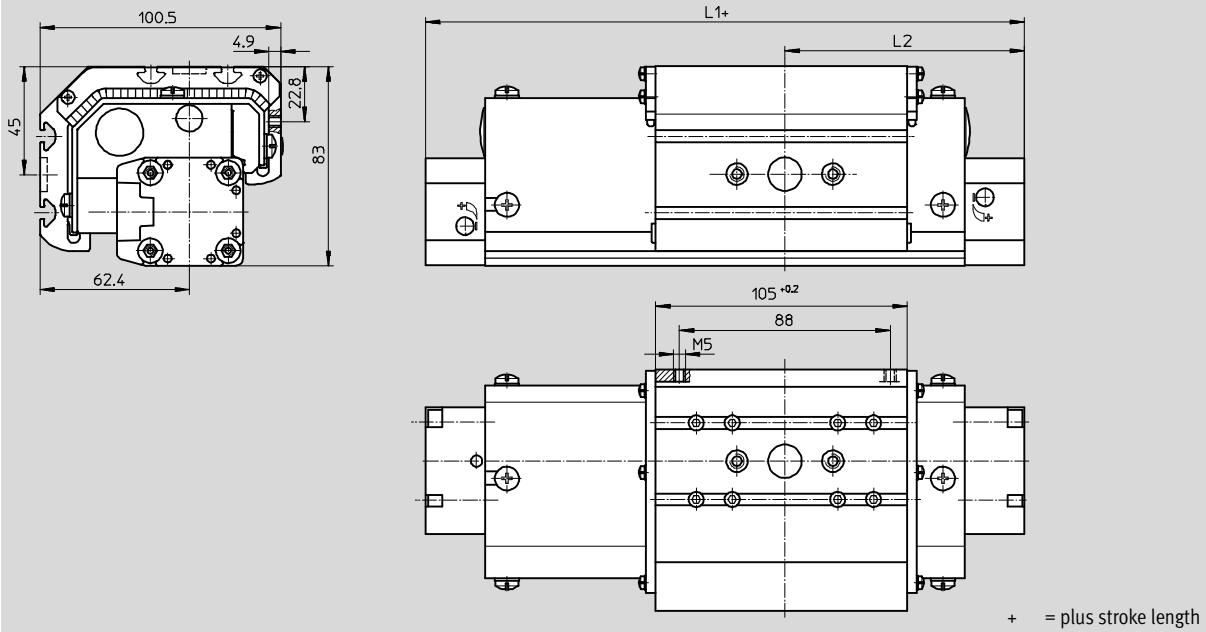
FESTO

## Dimensions

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

Protected version GA

Size 25



Size	B1	B4	B5	B6	B7	B8	B9 ±0,2	D2 ∅	D6	D10
25	45	39,1	18	32,5	48	67	32	3,3	M4	M5

Size	D11 ∅ G7	D14 ∅ H7	D15	H1	H3	H4	H5	H7	H11	L3
25	14	9	M6	52,8	63	19,5	22,5	68,5	8,2	25

Size	L17 ±0,2	L19 ±0,1	L21 ±0,1	T1 ±0,03	T2	T4 max.	T7	T8	T9 ±0,1	W1
25	105	88	40	13	2	12,5	3	8,5	2,1	45 °

Type	L1			L2		
	GK	GV	GA	GK	GV	GA
FDG-25-...-ZR-...	326	426	326	163	213	163
FDG-25-...-SP-...	213	343	243	101.5	171.5	121.5

# Passive guide axes FDG, without drive

Technical data

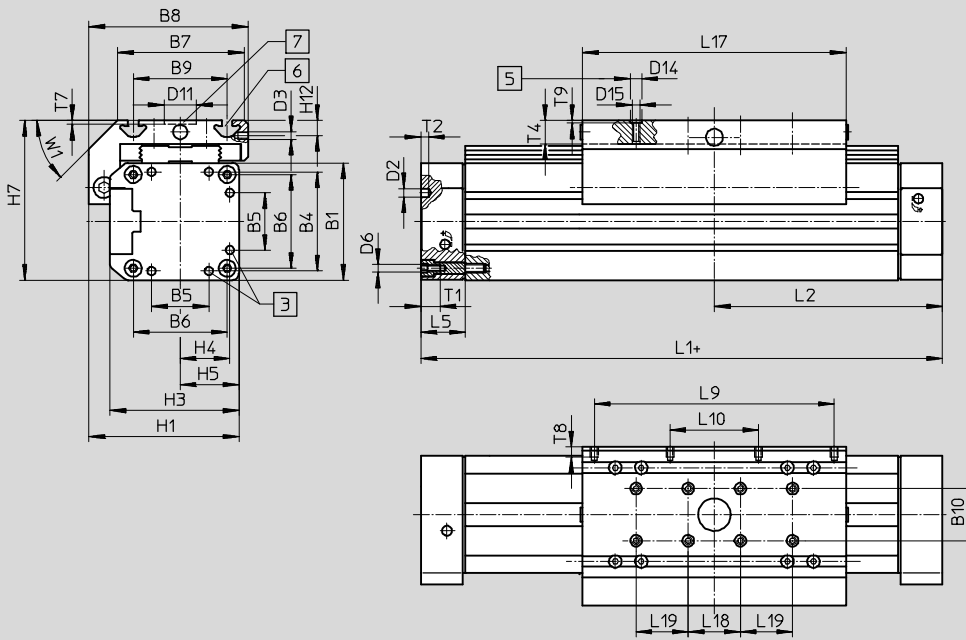
FESTO

## Dimensions

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

Standard slide GK

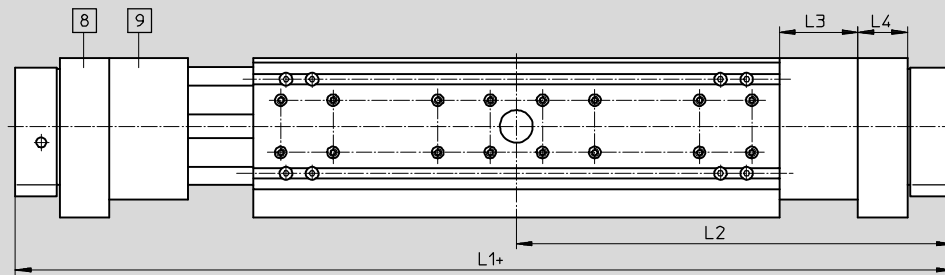
Size 40, 63



- 3 Mounting hole for foot mounting HP
- 5 Hole for centring sleeve ZBH-9
- 6 Mounting slot for slot nut NSTL
- 7 Drilled hole for central mounting SLZZ
- + = plus stroke length

Extended slide GV

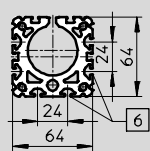
Size 40, 63



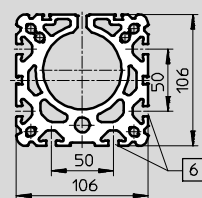
- 8 Shock absorber retainer KYP
- 9 Emergency buffer NPE
- + = plus stroke length

Profile barrel

Size 40



Size 63



- 6 Mounting slot for slot nut NST

# Passive guide axes FDG, without drive

Technical data

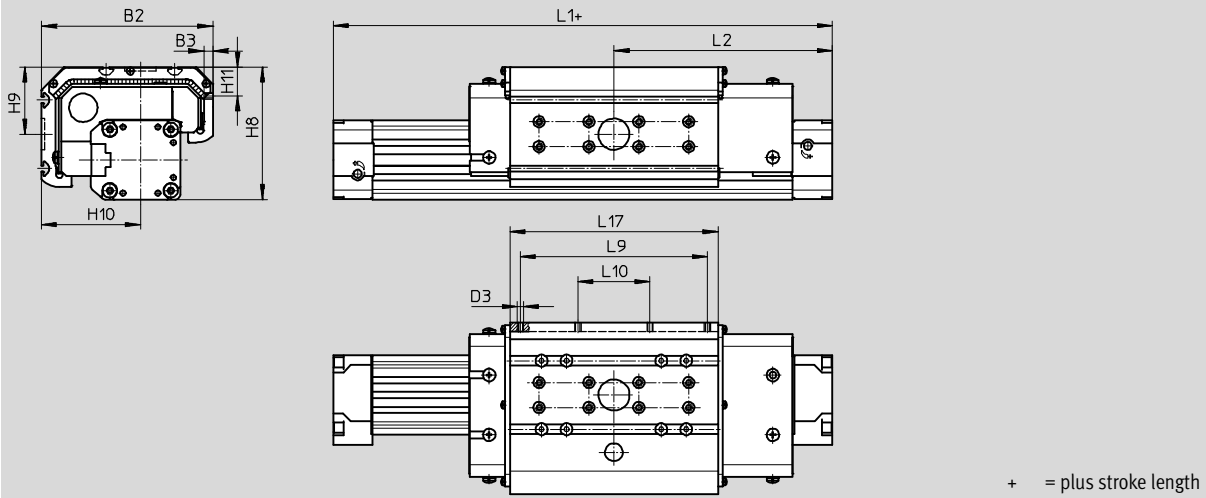
FESTO

## Dimensions

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

Protected version GA

Size 40



Size	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B13
									±0,2		
40	64	137,6	7	53	28	49	78,5	96,5	55	20	24
63	106	-	-	89	44	83	121	142	90	40	50

Size	D2 ∅	D3	D6	D11 G7	D14 H7	D15	H1	H2	H3	H4	H5
40	4,3	M5	M5	25	9	M6	86	78	71,8	26,5	32
63	6,3	M8	M8	25	9	M6	131	122	115	44,5	53

Size	H7	H8	H9	H10	H11	H12	L3	L4	L5	L9	L10
										±0,1	±0,1
40	90,5	106,6	54	79,6	23,1	7	40	32	31	150	58
63	144,5	-	-	-	-	12,5	63	44	34	200	72

Size	L17	L18	L19	L20	L21	T1	T2	T4	T7	T8	T9	W1
	±0,2	±0,03	±0,03		±0,1			max.			±0,1	
40	167	40	40	337	40	13,2	4	12,5	3	8,5	2,1	45°
63	230	40	40	480	120	21,2	6	20,5	3	10,5	2,1	45°

Type	L1			L2		
	GK	GV	GA	GK	GV	GA
FDG-40-...-ZR-...-	497	667	497	248.5	333.5	248.5
FDG-63-...-ZR-...-	738	988	-	369	494	-
FDG-40-...-SP-...-	315	545	375	153	271.5	186.5
FDG-63-...-SP-...-	406	756	-	198	378	-

# Passive guide axes FDG, without drive

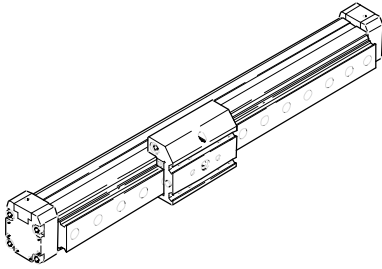
Ordering data – Modular product system



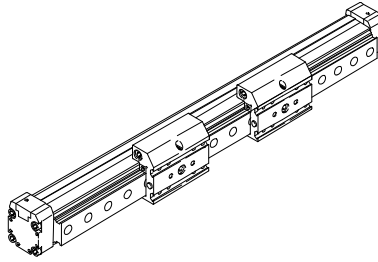
## Order code

Mandatory data/Options

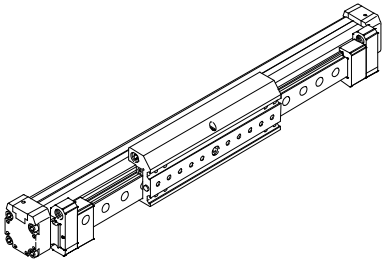
Standard slide GK



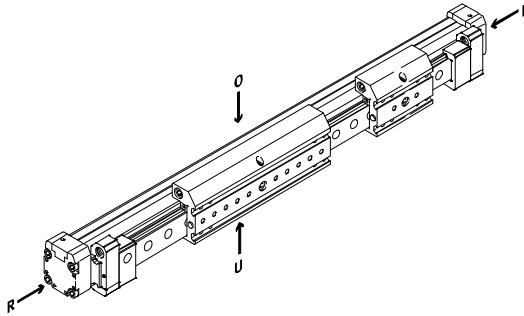
Standard slide plus additional slide GK-KL/-KR



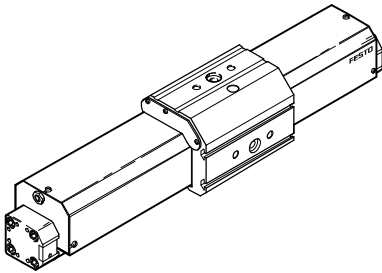
Extended slide GV



Extended slide plus additional slide GK-KL/-KR



Dust-proof version GA



-  - Note

O = top

R = right

U = underneath

L = left

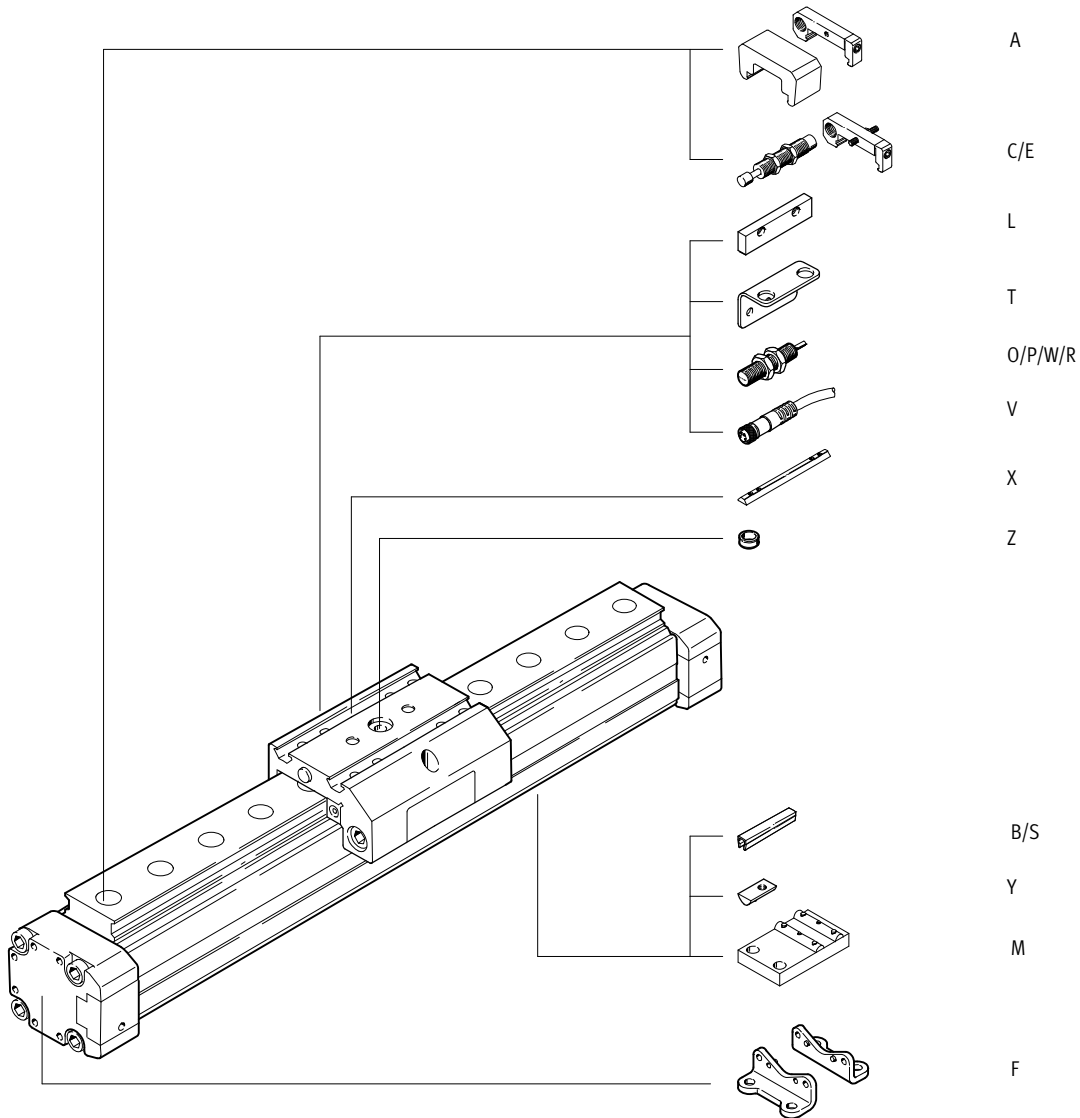


# Passive guide axes FDG, without drive

Ordering data – Modular product system

Order code

Options



# Passive guide axes FDG, without drive

Ordering data – Modular product system



Ordering table							
Size	18	25	40	63	Condi- tions	Code	Enter code
<b>M</b> Module No.	<b>192850</b>	<b>192851</b>	<b>192853</b>	<b>192855</b>			
Drive function	Guide unit without drive					<b>FDG</b>	FDG
Size	18	25	40	63		-...	
Stroke [mm] with ZR (as for corresponding drive axis)	1 ... 1700	1 ... 5100	1 ... 4900	1 ... 4700		-...	
	with SP 1 ... 500	1 ... 1000	1 ... 1500	1 ... 2000			
Passive guide axis	for DGE-ZR	DGE-ZR	DGE-ZR	DGE-ZR		<b>-ZR</b>	
	for DGE-SP	DGE-SP	DGE-SP	DGE-SP		<b>-SP</b>	
Guide	Recirculating ball bearing guide					<b>-KF</b>	-KF
Slide	Standard					<b>-GK</b>	
	Extended					<b>-GV</b>	
	Maximum stroke [mm]						
	with ZR	(920)	(5000)	(4730)	(4450)		
	with SP	(410)	(870)	(1270)	(1650)		
		Protected version			-	<b>1</b>	<b>-GA</b>
	Maximum stroke [mm]						
with ZR	-	(1800)	(1800)	-			
with SP	-	(970)	(1440)	-			
<b>O</b> Additional slide	Standard slide left				<b>2</b>	<b>-KL</b>	
<b>↓</b>	Standard slide right				<b>2</b>	<b>-KR</b>	

**1 GA** Not with accessories T, L, O, P, W, R.

**2 KL, KR** Only with slide GK or GV.

**M** Mandatory data

**O** Options

Transfer order code

# Passive guide axes FDG, without drive

Ordering data – Modular product system

Ordering table									
Size		18	25	40	63	Condi- tions	Code	Enter code	
↓	Accessories	Supplied separately						ZUB-	ZUB-
⓪	Slot cover	Sensor slot	1 ... 10				...S		
		Mounting slot	–	–	1 ... 10		...B		
	Slot nut	for mounting slot	1 ... 10				...Y		
		for slide	–	1 ... 10			...X		
	Central support	1 ... 10					...M		
	Foot mounting (kit)	1 ... 10					...F		
	Emergency buffer and retainer	1 ... 2	1 ... 2	1 ... 2	1 ... 2	3	...A		
		Effective stroke reduction [mm] with emergency buffer at both ends (10)      (30)      (60)      (100)							
	Shock absorber and retainer	1 ... 2				4	...C		
		for dust-proof version	–	1 ... 2				5	...E
	Centring sleeve (pack of 10)	10, 20, 30, 40, 50, 60, 70, 80, 90					...Z		
	Sensor bracket	1 ... 5		1 ... 5	1 ... 5		...T		
	Switching lug	1		1	1		L		
	Inductive proximity sensor	NO contact, cable	1 ... 5		1 ... 5	1 ... 5	...O		
		NC contact, cable	1 ... 5		1 ... 5	1 ... 5	...P		
		NO contact, plug	1 ... 5		1 ... 5	1 ... 5	...W		
		NC contact, plug	1 ... 5		1 ... 5	1 ... 5	...R		
	Cable with socket, 2.5 m	1 ... 5		1 ... 5	1 ... 5		...V		

3 A Mounted as standard for slides GV, GA.  
4 C Only with slides GK and GV.

5 E Only with slide GA

- M Mandatory data
- ⓪ Options

**Transfer order code**

ZUB  –

# Passive guide axes FDG, without drive

Accessories



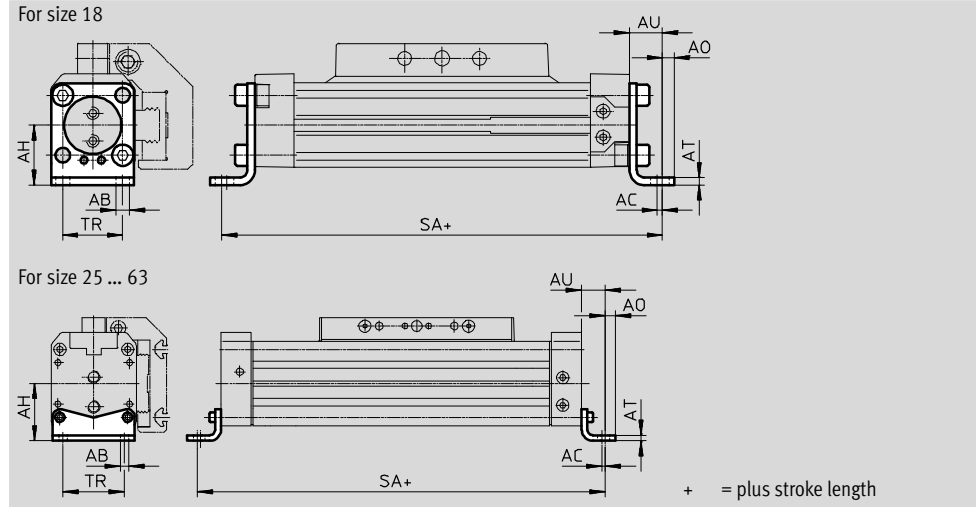
## Foot mounting HP (Order code: F)

Material:  
Galvanised steel

Free of copper and PTFE



HP-25

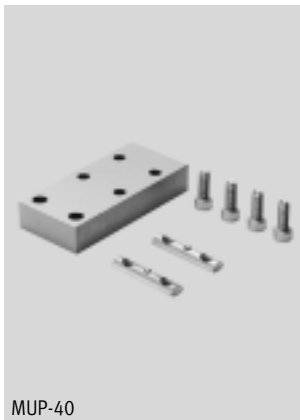


Dimensions and ordering data												
For size	AB ∅	AC	AH	AO	AT	AU	SA	TR	Weight [g]	Part No.	Type	
18	5.5	2	24	4.8	3	13.2	176	24	70	158472	HP-18	
25	5.5	2	29.5	6	3	13	226	32.5	61	150731	HP-25	
40	6.6	2	46	8.5	5	17.5	335	45	188	150733	HP-40	
63	11	3	69	13.5	6	28	456	75	305	150735	HP-63	

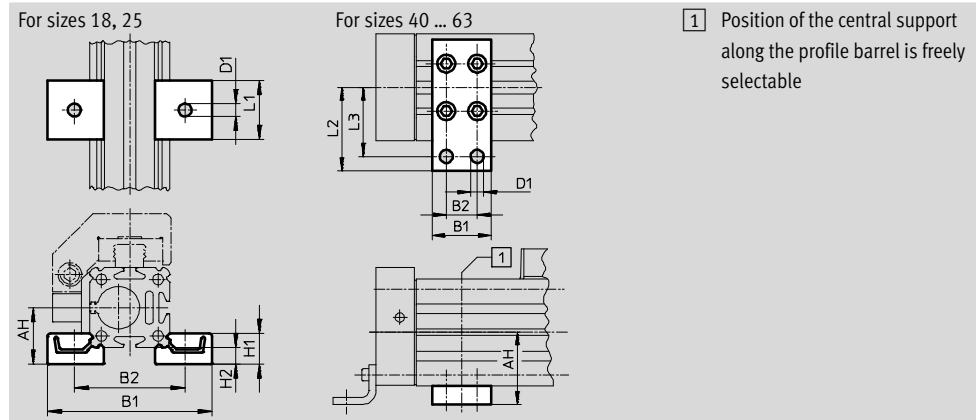
## Central support MUP (Order code: M)

Material:  
Anodised aluminium

Free of copper and PTFE



MUP-40



Dimensions and ordering data												
For size	AH	B1	B2	D1 ∅	H1	H2	L1	L2	L3	Weight [g]	Part No.	Type
18	24	70.5	47	5.5	13	7	25	-	-	33	150736	MUP-18/25
25	29.5	81	58	5.5	13	7	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, without drive

Accessories

## Shock absorber YSR-...-C (Order code: C)

Material:  
Housing: Galvanised steel; piston rod:  
high-alloy steel,  
Seals: NBR, PUR  
Free of copper and PTFE

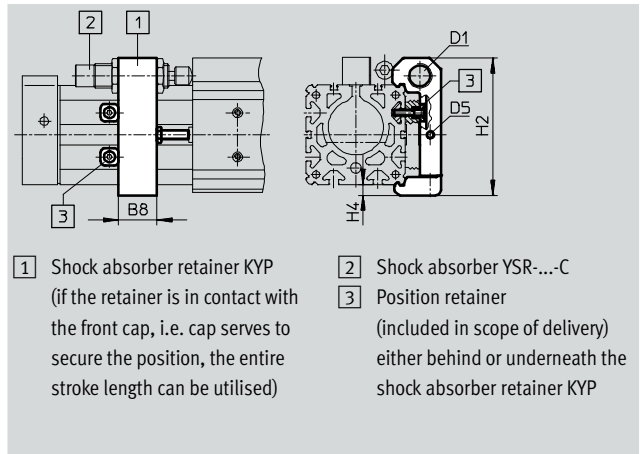


Note  
Shock absorber YSRW with  
progressive characteristic  
→ Internet: ysrw

Ordering data		Part No.	Type
For size	Weight [g]		
18	30	34571	YSR-8-8-C
25	70	34572	YSR-12-12-C
40	140	34573	YSR-16-20-C
63	240	34574	YSR-20-25-C

## Shock absorber retainer KYP (Order code: C)

Material:  
Retainer: Aluminium  
Sleeve: Steel, corrosion resistant



Dimensions and ordering data							
For size	B8	D1	D5	H2	H4	Weight [g]	Part No. Type
18	14	M12x1	M4	50.5	4.5	66	158907 KYP-18
25	19	M16x1	M5	69.5	6	95	158908 KYP-25
40	32	M22x1.5	M5	102	8	209	158910 KYP-40
63	44	M26x1.5	M10	152.5	11.5	609	158912 KYP-63

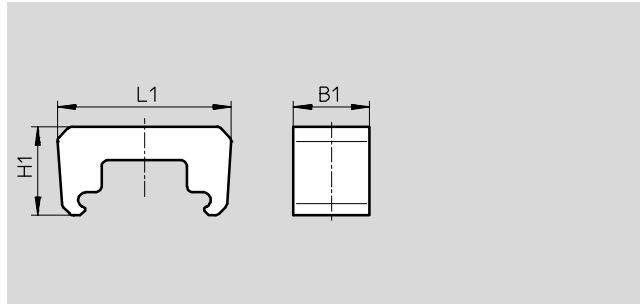
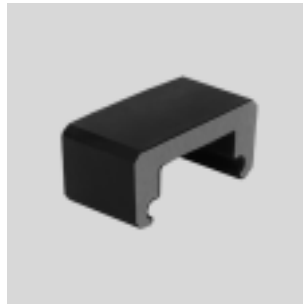
# Passive guide axes FDG, without drive

Accessories




## Emergency buffer NPE (Order code: A)

Material:  
PUR



Dimensions and ordering data						
For size	B1	L1	H1	Weight [g]	Part No.	Type
18	15	43.1	28.5	6	193901	NPE-18
25	25	57	29	12	193902	NPE-25
40	40	80.5	36	41	193904	NPE-40
63	60	128.6	55	152	193906	NPE-63

 Note  
The emergency buffer can only be used in conjunction with shock absorber retainer KYP. → 21  
(A threaded pin and nut are not required.)

## Shock absorber DG-GA for protected version GA (Order code: E)

Material:  
Housing: Galvanised steel; piston rod: high-alloy steel  
Seals: NBR, PUR  
Free of copper and PTFE



Ordering data			
For size	Weight [g]	Part No.	Type
25	70	192875	DG-GA-25-YSR
40	140	192877	DG-GA-40-YSR

# Passive guide axes FDG, without drive

Accessories

## Sensor bracket HWS

For inductive proximity sensors

(Order code: T)

Material:

Galvanised steel

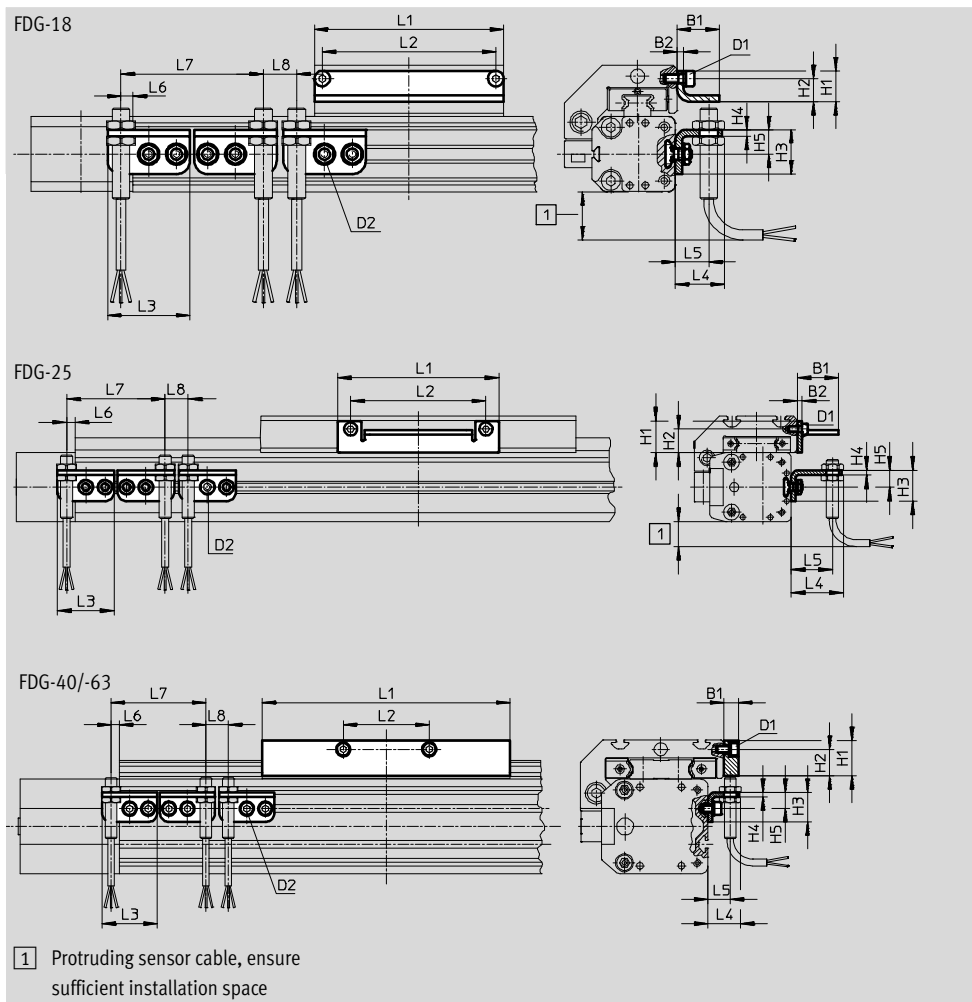


## Switching lug SF

(Order code: L)

Material:

Galvanised steel




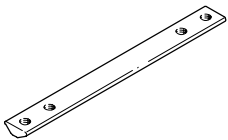

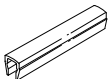
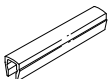
Dimensions and ordering data											
For size	D1	D2	B1	B2	H1	H2	H3	H4	H5	L1	L2
18	M4	M5	19	3	14	10.5	20	3	11	85	78
25	M5	M5	27	3	20.5	15.3	20	3	11	105	88
40	M5	M5	10	-	24	18	20	3	11	167	58
63	M8	M5	10	-	35	25	20	3	11	230	72

For size	L3	L4	L5	L6 max.	L7 min.	L8 min.	Weight [g]	Part No.	Type
18	37	22.5	15	5.5	64	15	30	188968	HWS-18/25-M8
							60	188964	SF-18
25	37	34.5	27	5.5	64	15	30	540780	HWS-25-MAB-M8
							80	540430	SF-25-MAB
40	37	22.5	15	5.5	64	15	40	188969	HWS-40-M8
							310	188966	SF-40
63	37	22.5	15	5.5	64	15	40	188970	HWS-63-M8
							630	188967	SF-63

# Passive guide axes FDG, without drive

Accessories

**FESTO**





Ordering data						
	For size	Remarks	Order code	Part No.	Type	PU <sup>1)</sup>
Slot nut NST <span style="float: right;">Technical data → Internet: nst</span>						
	18, 25	For mounting slot	Y	<b>526091</b>	<b>NST-HMV-M4</b>	10
	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 ZBS/ZBH <span style="float: right;">Technical data → Internet: zbs, zbh</span>						
	18	For slide	Z	<b>150928</b>	<b>ZBS-5</b>	10
	25 ... 63			<b>150927</b>	<b>ZBH-9</b>	10
Slot cover ABP <span style="float: right;">Technical data → Internet: abp</span>						
	40	For mounting slot	B	<b>151681</b>	<b>ABP-5</b>	2
	63	0.5 m each		<b>151682</b>	<b>ABP-8</b>	
Slot cover ABP-S <span style="float: right;">Technical data → Internet: abp</span>						
	18 ... 63	For sensor slot 0.5 m each	S	<b>151680</b>	<b>ABP-5-S</b>	2



1) Packaging unit quantity



# Passive guide axes FDG, without drive

Accessories

Ordering data – Inductive proximity sensors M8						Technical data → Internet: sien	
	Electrical connection		Switch output	LED	Cable length [m]	Part No.	Type
	Cables	M8 plug					
<b>NO contact</b>							
	3-wire	–	PNP	■	2.5	150386	SIEN-M8B-PS-K-L
	–	3-pin	PNP	■	–	150387	SIEN-M8B-PS-S-L
<b>NC contact</b>							
	3-wire	–	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			
					5.0	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
					5.0	541341	NEBU-M8W3-K-5-LE3