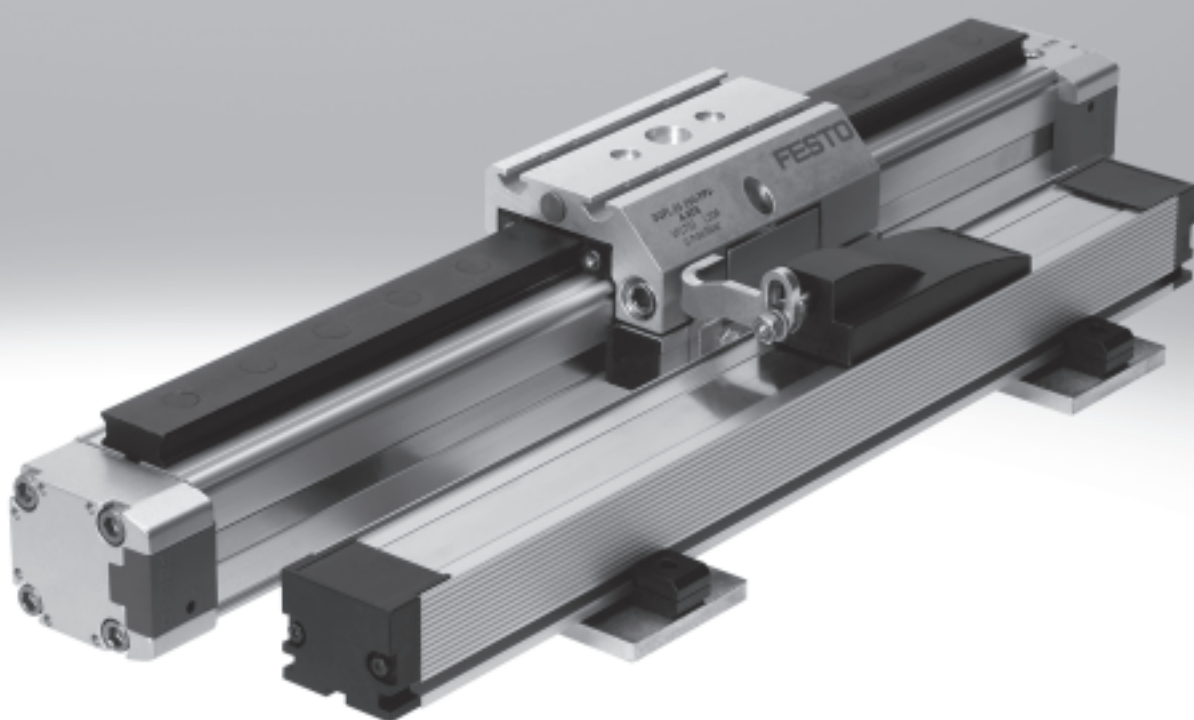


Linear drives DGPL, with external displacement encoder

FESTO



Cylinders with displacement encoder

Product range overview

FESTO

Function	Type	Brief description
Drives	Rodless	
	DGCI 	• With guide • With contactless displacement encoder • Based on linear drive DGC • Supply ports optionally on end face or front • System product for handling and assembly technology
	DGPI/DGPIL 	Do not use for new projects! • With or without guide • With contactless displacement encoder, integrated • Wide range of options for mounting on drives • System product for handling and assembly technology
	DGP/DGPL 	Do not use for new projects! • With or without guide • With potentiometer or contactless displacement encoder, attached • With clamping unit • Wide range of options for mounting on drives
	With piston rod	
	DNCI 	• With contactless displacement encoder • Various piston rod variants • Standards-based cylinder to ISO 15552   
	DDPC 	• With contactless displacement encoder • Various piston rod variants • Standards-based cylinder to ISO 15552   
	DNC/DSBC 	• With attached potentiometer MLO-LWG • Various piston rod variants • Standards-based cylinder to ISO 15552   
Swivel module	Swivel module	
	DSMI 	• Based on swivel module DSM • Integrated rotary encoder • Compact design • Wide range of mounting options

Cylinders with displacement encoder

Product range overview

FESTO

Piston Ø	Stroke/swivel angle [mm/°]	Suitable				
		For positioning with		For end-position controller		For use as a measuring cylinder
		CPX-CMAX	SPC200	CPX-CMPX	SPC11	
Rodless						
18, 25, 32, 40, 63	100; 160; 225; 300; 360; 450; 500; 600; 750; 850; 1,000; 1,250; 1,500; 1,750; 2,000	■	■	■	■	■
25, 32, 40, 50, 63	225; 300; 360; 450; 500; 600; 750; 1,000; 1,250; 1,500; 1,750; 2,000	■	■	■	■	■
25, 32, 40, 50, 63	225; 300; 360; 450; 500; 600; 750; 1,000; 1,250; 1,500; 1,750; 2,000	–	■	–	■	■
With piston rod						
32, 40, 50, 63	10 ... 2,000	–	–	–	–	■
	100 ... 750	■	■	■	■	–
80, 100	10 ... 2,000	–	–	–	–	■
	100 ... 750	■	■	■	■	–
32, 40, 50, 63, 80	100, 150, 225, 300, 360, 450, 600, 750	■	■	■	■	■
Swivel module						
25, 40, 63	270	■	■	■	■	■

Cylinders with displacement encoder

Key features

FESTO

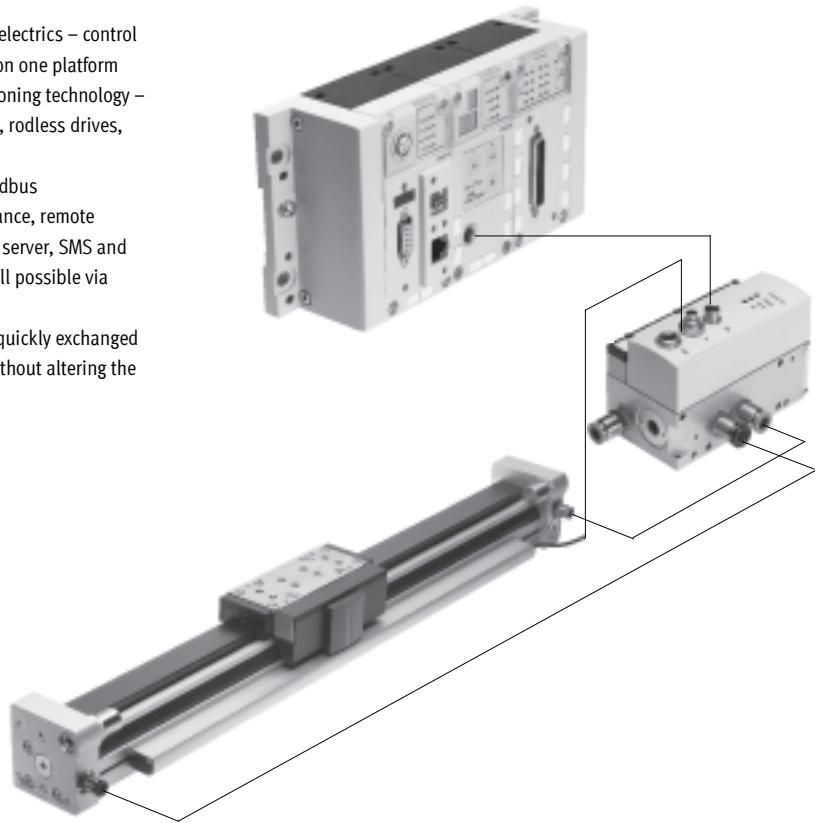
Servopneumatic drive technology

Positioning and Soft Stop applications as an integral component of the valve terminal CPX – the modular peripheral system for decentralised automation tasks.

The modular design means that valves, digital inputs and outputs, positioning modules and end-position controllers, as appropriate to the application, can be combined in almost any way on the CPX terminal.

Advantages:

- Pneumatics and electrics – control and positioning on one platform
- Innovative positioning technology – piston rod drives, rodless drives, rotary drives
- Actuation via fieldbus
- Remote maintenance, remote diagnostics, web server, SMS and e-mail alert are all possible via TCP/IP
- Modules can be quickly exchanged and expanded without altering the wiring



Axis controller CPX-CMAX



Free choice:

Position and force control, directly actuated or selected from one of 64 configurable position sets. If you are looking for something more: the configurable function for switching to the next set enables simple functional sequences to be realised in the axis controller CPX-CMAX.

All stations are recognised as the auto-identification function identifies each station with its device data on the controller CPX-CMAX.

Also included:

The functional scope of the controller CPX-CMAX includes actuation of a brake or clamping unit via the proportional directional control valve VPWP.

Up to 8 modules (max. 8 axes) can be operated in parallel and independently of each other. Commissioning via FCT (Festo configuration software) or via fieldbus: no programming, only configuration.

Technical data → Internet: cpx-cmax

Advantages:

- Greater flexibility
- OEM friendly – commissioning also via fieldbus
- Easy installation and fast commissioning
- Cost-effective
- You program the system in your PLC environment

Cylinders with displacement encoder

Key features

FESTO

End-position controller CPX-CMPX



Fast travel between the mechanical end stops of the cylinder, stopping gently and without impact in the end position.

Fast commissioning via control panel, fieldbus or handheld unit. Improved downtime control. Actuation of a brake or clamping unit via the proportional directional control valve VPWP is an integral part of the controller CMPX.

Depending on the fieldbus chosen, up to 9 end-position controllers can be actuated on the CPX terminal. All system data can be read and written via the fieldbus, including, for example, the mid positions.

Technical data → Internet: [cpx-cmpx](#)

Advantages:

- Greater flexibility
- OEM friendly – commissioning also via fieldbus
- Easy installation and fast commissioning
- Cost-effective
 - Up to 30% faster cycle rates
 - Significantly reduced system vibration
- Improved work ergonomics thanks to significantly reduced noise level
- The extended diagnostics help to reduce the service time for the machine

Proportional directional control valve VPWP



The 5/3-way proportional directional control valve for applications with Soft Stop and pneumatic positioning.

Fully digitalised – with integrated pressure sensors, with new diagnostic functions.

In sizes 4, 6, 8 and 10.

Flow rate of 350, 700, 1,400 and 2,000 l/min.

With switching output for actuating a brake.

Coloured supply ports.

Pre-assembled cables guarantee faultless and fast connection with the controllers CPX-CMPX and CPX-CMAX.

Technical data → Internet: [vpwp](#)

Advantages:

- Easy installation and fast commissioning
- Reduction of system downtimes thanks to the new diagnostic options
- With switching output for actuating a brake/clamping unit

Measuring module CPX-CMIX



Fully digital data acquisition and transmission means pneumatic cylinders can be used as sensors. With very high repetition accuracy and incorporating both analogue and digital measuring sensors.

Suitable for the linear drive DGCI with displacement encoder for measuring absolute values, for the piston rod drive DNCI/DDPC with incremental displacement encoder or even for a potentiometer of the type MLO.

Technical data → Internet: [cpx-cmix](#)

Advantages:

- All process steps can be documented, which improves quality
- An adjustable contact force (via pressure regulator) increases the precision of the "displacement sensor"
- With displacement encoders for measuring absolute values, the actual position is immediately available after the system is switched on

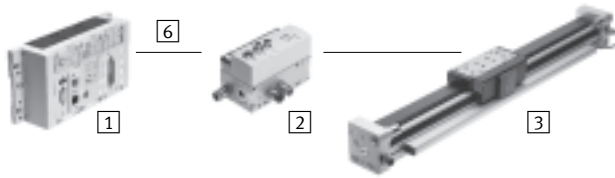
Cylinders with displacement encoder

Drive options

FESTO

System with linear drive DDLI, DGCI

Technical data → Internet: dgci



- 1 Controller module CPX-CMPX or CPX-CMAX
- 2 Proportional directional control valve VPWP
- 3 Linear drive DDLI, DGCI with displacement encoder
- 6 Connecting cable KVI-CP-3-...

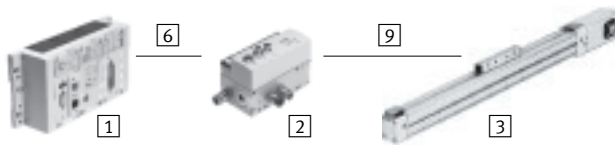
- Pneumatic rodless linear drive with displacement encoder, with or without recirculating ball bearing guide
- Displacement encoder with absolute and contactless measuring
- Identical design to pneumatic linear drive DGC
- Diameter: 18 ... 40 and 63 mm
- Stroke: 100 ... 2,000 mm in fixed lengths
- Range of applications: Soft Stop and pneumatic positioning
- Loads from 1 ... 180 kg
- No sensor interface required

Advantages:

- Complete drive unit
- DDLI for easy connection to customer's guide system
- Excellent running characteristics
- For fast and accurate positioning down to ± 0.2 mm (only with axis controller CPX-CMAX)

System with linear drive DGPI, DGPII or displacement encoder MME-MTS

Technical data → Internet: dgpi



- 1 Controller module CPX-CMPX or CPX-CMAX
- 2 Proportional directional control valve VPWP
- 3 Linear drive DGPI, DGPII with displacement encoder
- 6 Connecting cable KVI-CP-3-...
- 9 NEBP-M16W6-K-2-M9W5

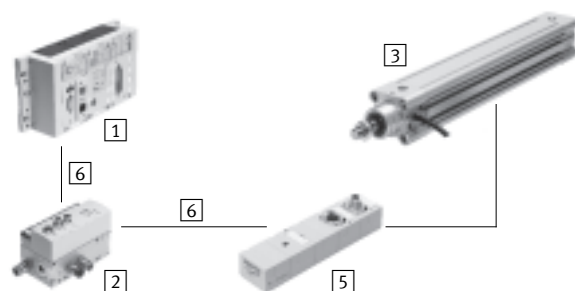
- Pneumatic rodless linear drive with displacement encoder, with or without recirculating ball bearing guide
- Displacement encoder with absolute and contactless measuring
- Diameter: 25 ... 63 mm
- Stroke: 225 ... 2,000 mm in fixed lengths
- Range of applications: Soft Stop and pneumatic positioning
- Loads from 2 ... 180 kg
- No sensor interface required

Advantages:

- Complete drive unit
- DGPI for easy connection to customer's guide system
- Excellent running characteristics
- For fast and accurate positioning down to ± 0.2 mm (only with axis controller CPX-CMAX)

System with standard cylinder DNCI, DDPC

Technical data → Internet: dnci



- 1 Controller module CPX-CMPX or CPX-CMAX
- 2 Proportional directional control valve VPWP
- 3 Standard cylinder DNCI, DDPC with displacement encoder
- 5 Sensor interface CASM-S-D3-R7
- 6 Connecting cable KVI-CP-3-...

- Standard cylinder with integrated displacement encoder, conforms to DIN ISO 6432, VDMA 24 562, NF E 49 003.1 and Uni 10 290
- Displacement encoder with contactless and incremental measuring
- Diameter: 32 ... 100 mm
- Stroke: 100 ... 750 mm
- Range of applications: Soft Stop and pneumatic positioning
- Loads from 3 ... 450 kg and a matching sensor interface CASM-S-D3-R7
- Pre-assembled cables guarantee faultless and fast electrical connection

Advantages:

- Compact drive unit
- Can be used universally
- Also with guide unit
- For fast and accurate positioning down to ± 0.5 mm (only with axis controller CPX-CMAX)

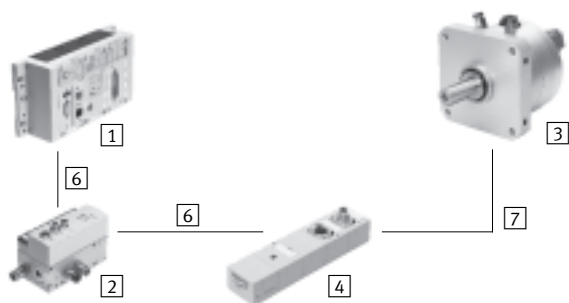
Cylinders with displacement encoder

Drive options

FESTO

System with swivel module DSMI

Technical data → Internet: [dsmi](#)



- 1 Controller module CPX-CMPX or CPX-CMAX
- 2 Proportional directional control valve VPWP
- 3 Swivel module DSMI with displacement encoder
- 4 Sensor interface CASM-S-D2-R3
- 6 Connecting cable KVI-CP-3-...
- 7 Connecting cable NEBC-P1W4-K-0,3-N-M12G5

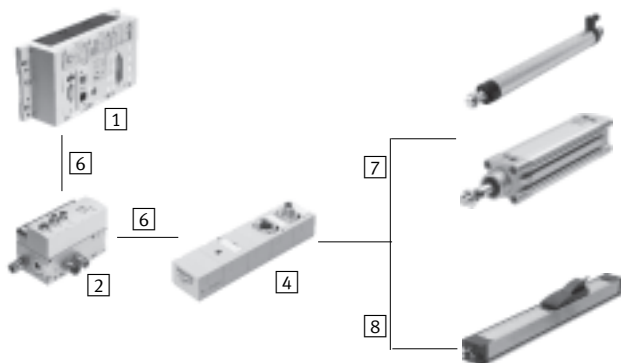
- Swivel module DSMI with integrated displacement encoder
- Identical design to pneumatic swivel module DSM
- Absolute displacement encoder on basis of potentiometer
- Swivel range from 0 ... 270°
- Size: 25, 40, 63
- Max. torque: 5 ... 40 Nm
- Range of applications: Soft Stop and pneumatic positioning
- Mass moments of inertia from 15 ... 6,000 kgcm² and a matching sensor interface CASM-S-D2-R3
- Pre-assembled cables guarantee faultless and fast connection with the proportional directional control valve VPWP

Advantages:

- Complete drive unit, compact, can be used immediately
- High angular acceleration
- With adjustable fixed stops
- For fast and accurate positioning down to ±0.2° (only with axis controller CPX-CMAX)

System with potentiometer

Technical data → Internet: [casm](#)



- 1 Controller module CPX-CMPX or CPX-CMAX
- 2 Proportional directional control valve VPWP
- 4 Sensor interface CASM-S-D2-R3
- 6 Connecting cable KVI-CP-3-...
- 7 Connecting cable NEBC-P1W4-K-0,3-N-M12G5
- 8 Connecting cable NEBC-A1W3-K-0,4-N-M12G5

- Attachable potentiometers with absolute measurement, with high degree of protection
- With connecting rod or moment compensator
- Measuring range: 100 ... 2,000 mm
- Pre-assembled cables guarantee faultless and fast connection with the sensor interface CASM
- Range of applications: Soft Stop and pneumatic positioning with cylinder Ø 25 ... 80 mm, e.g. DNC or DSBC
- Loads from 1 ... 300 kg

Advantages:

- Easy installation and fast commissioning
- Cost-effective
- Can also be used in harsh environmental conditions
- Variety of drives: CPX-CMPX and CPX-CMAX also support cylinders with external displacement encoder

Cylinders with displacement encoder

Drive options

FESTO

System components for Soft Stop systems with end-position controller CPX-CMPX							
3	Linear drive		Standard cylinder	Swivel module	Displacement encoder		→ Page/ Internet
	DDL/DGCI	DGPI	DNCI, DDPC	DSMI	MLO-LWG/-TLF	MME-MTS	
1	End-position controller CPX-CMPX	■	■	■	■	■	cmpx
2	Prop. directional control valve VPWP	■	■	■	■	■	vpwp
4	Sensor interface CASM-S-D2-R3	–	–	■	■	–	casm
5	Sensor interface CASM-S-D3-R7	–	–	■	–	–	casm
6	Connecting cable KVI-CP-3-...	■	■	■	■	■	kvi
7	Connecting cable NEBC-P1W4-...	–	–	■	■ / –	–	nebc
8	Connecting cable NEBC-A1W3-...	–	–	–	– / ■	–	nebc
9	Connecting cable NEBP-M16W6-...	–	■	–	–	■	nebp

System components for pneumatic positioning systems with axis controller CPX-CMAX							
3	Linear drive		Standard cylinder	Swivel module	Displacement encoder		→ Page/ Internet
	DDL/DGCI	DGPI	DNCI, DDPC	DSMI	MLO-LWG/-TLF	MME-MTS	
1	Axis controller CPX-CMAX	■	■	■	■	■	cmax
2	Prop. directional control valve VPWP	■	■	■	■	■	vpwp
4	Sensor interface CASM-S-D2-R3	–	–	■	■	–	casm
5	Sensor interface CASM-S-D3-R7	–	–	■	–	–	casm
6	Connecting cable KVI-CP-3-...	■	■	■	■	■	kvi
7	Connecting cable NEBC-P1W4-...	–	–	■	■ / –	–	nebc
8	Connecting cable NEBC-A1W3-...	–	–	–	– / ■	–	nebc
9	Connecting cable NEBP-M16W6-...	–	■	–	–	■	nebp

System components for measuring cylinders with measuring module CPX-CMIX							
	Linear drive		Standard cylinder	Swivel module	Displacement encoder		→ Page/ Internet
	DDL/DGCI	DGPI	DNCI, DDPC	DSMI	MLO-LWG/-TLF	MME-MTS	
Measuring module CPX-CMIX-M1-1	■	■	■	■	■	■	cmix
Sensor interface CASM-S-D2-R3	–	–	–	■	■	–	casm
Sensor interface CASM-S-D3-R7	–	–	■	–	–	–	casm
Connecting cable KVI-CP-3-...	(■)	(■)	■	■	■	(■)	kvi
Connecting cable NEBC-P1W4-...	–	–	–	■	■ / –	–	nebc
Connecting cable NEBC-A1W3-...	–	–	–	–	– / ■	–	nebc
Connecting cable NEBP-M16W6-...	–	■	–	–	–	■	nebp

Cylinders with displacement encoder

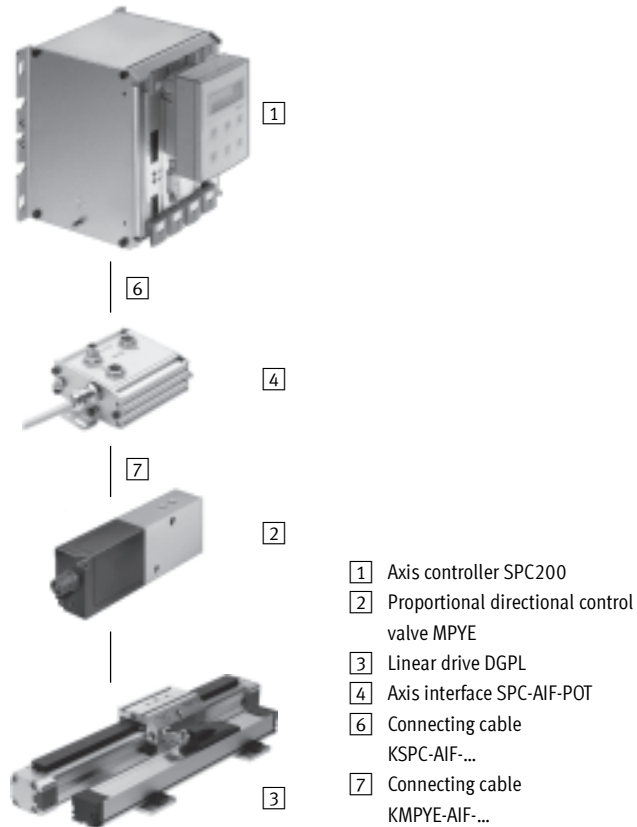
Overview

FESTO

Individual components for positioning

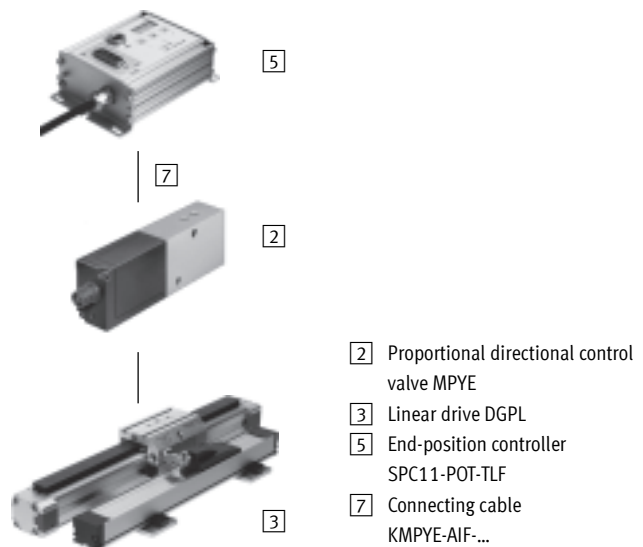
With axis controller SPC200

→ Internet: [spc200](#)



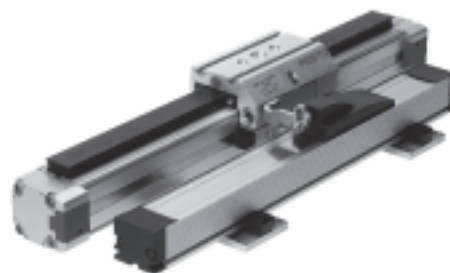
With end-position controller SPC11

→ Internet: [spc11](#)



DGPL, with recirculating ball bearing guide

- Piston $\varnothing$ 25 ... 63 mm
- Stroke 225 ... 2,000 mm
- Standard slide or extended slide
- High characteristic load values
- Supply ports on both sides



DGPL, with recirculating ball bearing guide and clamping unit

- Piston $\varnothing$ 25 ... 40 mm
- Stroke 225 ... 2,000 mm
- Standard slide or extended slide
- In the event of a loss of pressure, the slide can be fixed in vertical operation using the clamping unit
- High characteristic load values
- Supply ports on both sides



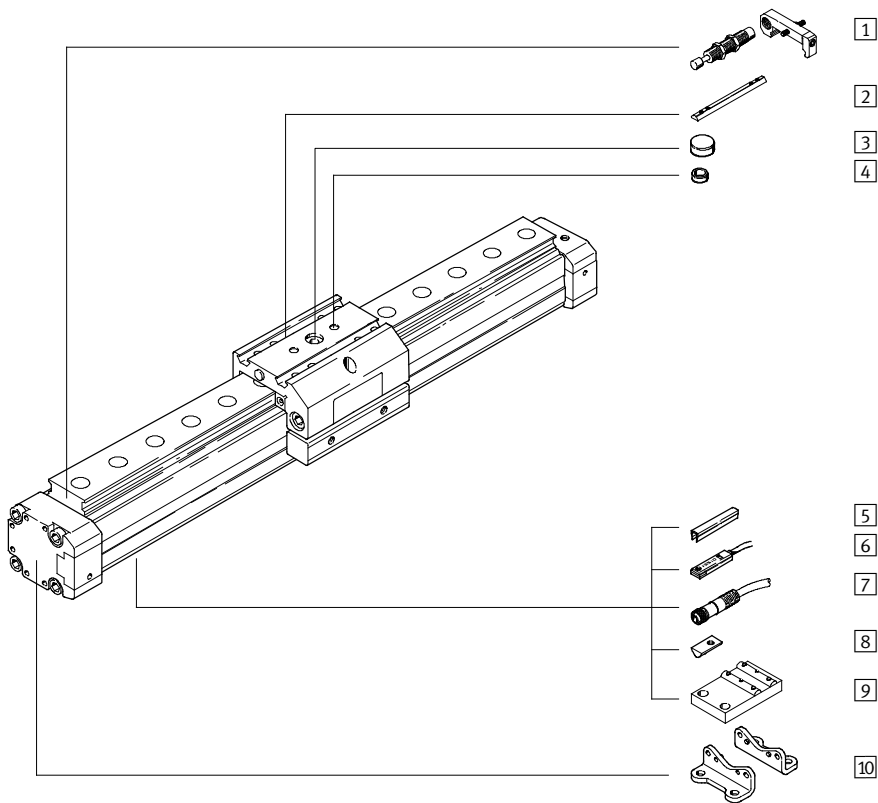
Do not use for new designs!

- 2 - Type discontinued

Linear drives DGPL, external displacement encoder

Peripherals overview

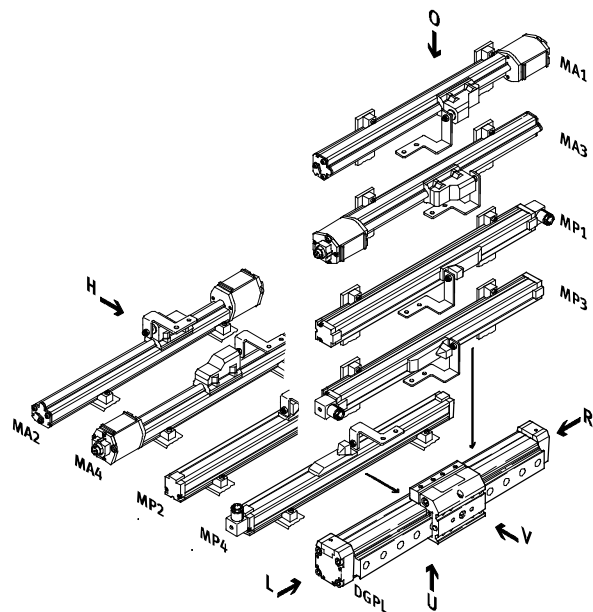
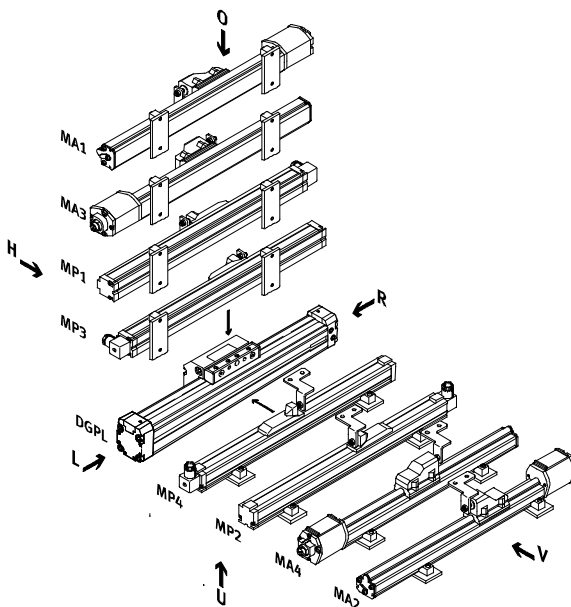
FESTO



Displacement encoder attachment position 11

Slide at rear (SH)

Slide at front (SV)



Do not use for new designs!

- 2 - Type discontinued

FESTO

Linear drives DGPL, external displacement encoder

Peripherals overview

Variants and accessories		
Type	Brief description	→ Page/Internet
1 Shock absorber kit C	For avoiding damage at the end stop in the event of malfunction	28
2 Slot nut for slide X	For mounting loads and attachments on the slide	29
3 Central mounting Q	For centring loads and attachments on the slide	29
4 Centring sleeves Z	For centring loads and attachments on the slide	29
5 Slot cover B/S	For protecting against the ingress of dirt	29
6 Proximity sensor G/H/I/J/N	For additional sensing of the piston position, can be ordered optionally, only in combination with the order code A in the modular products section for the drive	31
7 Connecting cable V	For proximity sensor	31
8 Slot nut for mounting slot Y	For mounting attachments	29
9 Central support M	For mounting the axis	26
10 Foot mounting F	For mounting the axis	26
11 Displacement encoder attachment position MA1 ... MA4/MP1 ... MP4	For drive position measurement	22

-  - **Type discontinued**

FESTO

		DGPL	-	25	-	500	-	PPV	-	A	-	B	-	KF	-	KU	-	GK	-	SV	-	D2	-	MP2
Type																								
DGPL	Linear drive																							
Piston Ø [mm]																								
Stroke [mm]																								
Cushioning																								
PPV	Pneumatic cushioning, adjustable at both ends																							
Position sensing																								
A	Via proximity sensor																							
Generation																								
B	B series																							
Guide																								
KF	Recirculating ball bearing guide																							
Clamping unit																								
KU	Clamping unit underneath																							
Basic design																								
GK	Standard slide																							
GV	Extended slide																							
Slide attachment position																								
SV	Slide at front																							
SH	Slide at rear																							
Supply port																								
D2	Supply port at both ends																							
Displacement encoder attachment position																								
MP1	Encoder, position 1, mounted																							
MP2	Encoder, position 2, mounted																							
MP3	Encoder, position 3, mounted																							
MP4	Encoder, position 4, mounted																							
MA1	Temposonic, position 1, mounted																							
MA2	Temposonic, position 2, mounted																							
MA3	Temposonic, position 3, mounted																							
MA4	Temposonic, position 4, mounted																							
MP0	Encoder, supplied separately																							
MA0	Temposonic, supplied separately																							

Do not use for new designs!

- 2 - Type discontinued

Linear drives DGPL, external displacement encoder

FESTO

Type codes

→	: ZUB	-	2S	2X	Z			F	2G		2C
Accessories											
ZUB	Accessories enclosed separately										
Slot cover											
...S	Sensor slot										
...B	Mounting slot										
Slot nut											
...X	For slide										
...Y	For profile barrel										
Centring sleeves											
...Z	For slide										
Central support											
...M	Central support										
Central mounting											
...Q	For slide										
Foot mounting											
...F	Foot mounting										
Proximity sensor											
...G	With cable, 2.5 m										
...H	With plug										
...I	Non-contacting with cable, 2.5 m										
...J	Non-contacting, with plug										
...N	N/C contact with cable, 2.5 m										
Connecting cable											
...V	2.5 m										
Shock absorber kit											
...C	Plus retainer for GK/GV										

Do not use for new designs!

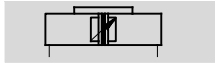
- 2 - Type discontinued

Linear drives DGPL, external displacement encoder

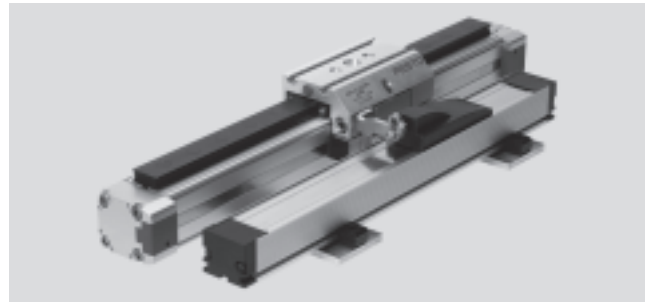
FESTO

Technical data

Function



- Ø - Diameter
25 ... 63 mm
- I - Stroke length
225 ... 2,000 mm



General technical data					
Piston Ø	25	32	40	50	63
Design	Piston				
	Moment compensator				
	Profile barrel				
Mode of operation	Double-acting				
Operating medium ¹⁾	Compressed air according to ISO 8573-1:2010 [6:4:4]				
Note about the operating/pilot medium	Lubricated operation not possible				
	Pressure dew point 10 °C below ambient temperature/temperature of medium				
Cushioning	Adjustable at both ends				
Cushioning length [mm]	18	20	30		
Position sensing	Displacement encoder, attached externally				
	Proximity sensor				
Measuring principle (displacement encoder)	➔ Internet: displacement encoder				
Type of mounting	Foot mounting				
Stroke ²⁾³⁾ [mm]	225; 300; 360; 450; 500; 600; 750; 1,000; 1,250; 1,500; 1,750; 2,000				
Protection against rotation/guide	Guide rail with slide				
	Recirculating ball bearing				
Clamping unit	➔ Internet: dgpl				
Pneumatic connection	G1/8		G1/4		G3/8
Electrical connection	➔ Internet: displacement encoder				

1) The proportional directional control valve MPYE used requires the characteristic values.

2) Note stroke reduction in combination with SPC200.

3) Supply of compressed air to each end of the cylinder (feature D2) is absolutely essential for Soft Stop SPC11 and axis controller SPC200 as of a length of 500 mm.

Forces [N] and impact energy [Nm]					
Piston Ø	25	32	40	50	63
Theoretical force at 6 bar	295	483	754	1,178	1,870
Max. impact energy in the end positions ¹⁾	0.1	0.2	0.4	0.8	0.8

1) Cushioning PPV must be completely open for applications with Soft Stop SPC11 and axis controller SPC200.

Permissible impact velocity:

$$v_{perm.} = \sqrt{\frac{2 \times E_{perm.}}{m_{dead} + m_{load}}}$$

$v_{perm.}$ Permissible impact velocity
 $E_{perm.}$ Max. impact energy
 m_{dead} Moving load (drive)
 m_{load} Moving effective load

Maximum permissible load:

$$m_{load} = \frac{2 \times E_{perm.}}{v^2} - m_{dead}$$

- - Note

These specifications represent the maximum values that can be achieved. Note the maximum permissible impact energy.

Linear drives DGPL, external displacement encoder

FESTO

Technical data

Positioning characteristics with axis controller SPC200					
Piston Ø	25	32	40	50	63
Repetition accuracy [mm]	➔ 16				
Mounting position	Any				
Minimum load, horizontal ¹⁾ [kg]	2	3	5	8	12
Maximum load, horizontal ¹⁾ [kg]	30	45	75	120	180
Minimum load, vertical ¹⁾ [kg]	2	3	5	8	12
Maximum load, vertical ¹⁾ [kg]	10	15	25	40	60
Minimum travel speed [m/s]	0.05				
Maximum travel speed [m/s]	3				
Typical positioning time, long stroke ²⁾ [s]	0.80/1.20	0.90/1.25	0.80/1.20	1.00/1.25	0.95/1.25
Typical positioning time, short stroke ³⁾ [s]	0.50/0.70	0.50/0.65	0.45/0.65	0.55/0.65	0.55/0.65
Minimum positioning stroke ⁴⁾ [%]	3				
Stroke reduction ⁵⁾ [mm]	25		35		
Recommended proportional directional control valve	➔ 30				

1) Load = effective load + mass of all moving parts on the drive

2) At 6 bar, horizontal mounting position, DGPL-XX-1250, 1,000 mm travel at min./max. load

3) At 6 bar, horizontal mounting position, DNCM-XX-1250, 100 mm travel at min./max. load

4) In relation to the maximum stroke of the drive, but never more than 20 mm

5) The stroke reduction must be maintained on each side of the drive, the max. positionable stroke is therefore: stroke – 2x stroke reduction

Positioning characteristics with end-position controller SPC11					
Piston Ø	25	32	40	50	63
Repetition accuracy of a mid-position ¹⁾ [mm]	±2				
Mounting position	Any				
Minimum load, horizontal ²⁾ [kg]	2	3	5	8	12
Maximum load, horizontal ²⁾ [kg]	30	45	75	120	180
Minimum load, vertical ²⁾ [kg]	2	3	5	8	12
Maximum load, vertical ²⁾ [kg]	10	15	25	40	60
Travel time [s]	→ SoftStop sizing software: → www.festo.com				
Recommended proportional directional control valve	→ 30				

1) In the stroke range from 225 ... 2,000 mm

2) Load = effective load + mass of all moving parts on the drive

Operating and environmental conditions					
Piston Ø	25	32	40	50	63
Operating pressure ¹⁾ [bar]	4 ... 8				
Ambient temperature ²⁾ [°C]	-10 ... +60				
Vibration resistance	To DIN/IEC 68 Parts 2 – 6, severity level 2				
Continuous shock resistance	To DIN/IEC 68 Parts 2 – 27, severity level 2				
CE mark (see declaration of conformity)	To EU EMC Directive				
Protection class (displacement encoder)	→ Internet: displacement encoder				

1) Only applies to applications with Soft Stop SPC11 and axis controller SPC200

2) Note operating range of proximity sensors

Do not use for new designs!

- 2 - Type discontinued

Linear drives DGPL, external displacement encoder

FESTO

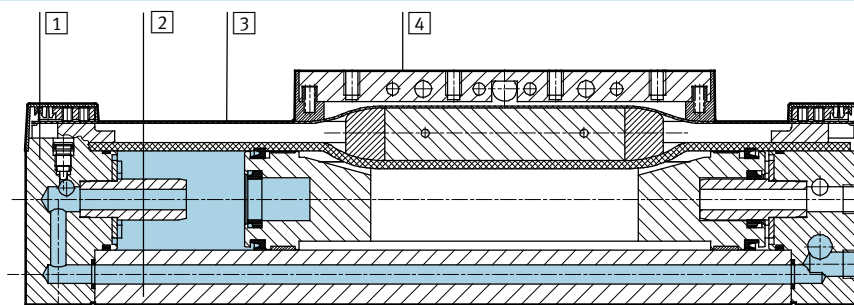
Technical data

Weights [g] without displacement encoder					
Piston Ø	25	32	40	50	63
Basic weight	1,520	2,720	4,480	9,600	15,370
Additional weight per 10 mm stroke	53	69	97	167	236
Clamping unit	714	1,100	1,694	–	–
Additional weight of clamping unit per 10 mm stroke	27	34	42	–	–
Moving load	Standard slide GK	605	895	1,700	3,000
	Extended slide GV	950	1,375	2,603	4,700
	Clamping unit	185	250	461	–

 Note		
Electrical data, displacement encoder:	Analogue displacement encoder (order code MP)	Digital displacement encoder (order code MA)
	→ Internet: displacement encoder	→ Internet: displacement encoder

Materials

Sectional view



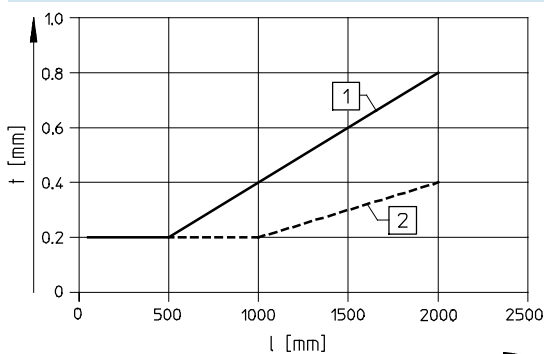
Displacement encoder materials
→ Internet: displacement encoder

Drive	
1 End cap	Anodised aluminium
2 Profile	Anodised aluminium
3 Cover strip	Corrosion-resistant steel
4 Moment compensator	Anodised aluminium
– Slide	Anodised aluminium
– Guide rail	Corrosion-resistant steel
– Seals	Nitrile rubber, polyurethane

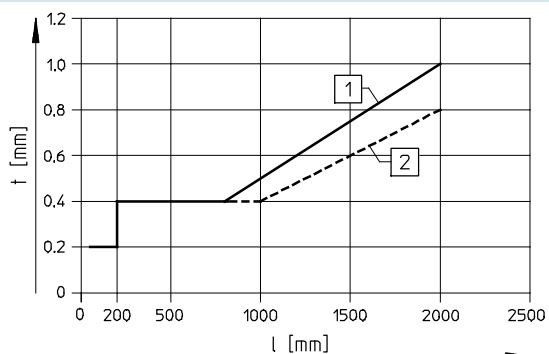
Repetition accuracy

Tolerance t [mm] as a function of stroke l [mm]

Horizontal



Vertical



1 With analogue displacement encoder

2 With digital displacement encoder

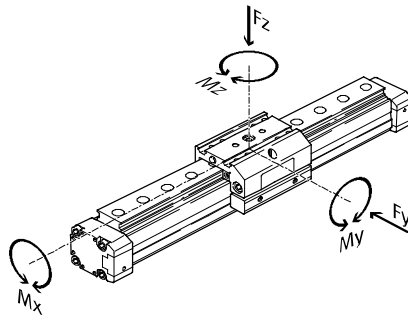
Linear drives DGPL, external displacement encoder

Technical data

FESTO

Characteristic load values

The indicated forces and torques refer to the centre line of the internal diameter of the profile barrel. These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration phase.



If the drive is simultaneously subjected to several of the indicated forces and torques, the following equation must be satisfied in addition to the indicated maximum loads:

$$0,4 \times \frac{F_z}{F_{z_{\max}}} + \frac{M_x}{M_{x_{\max}}} + \frac{M_y}{M_{y_{\max}}} + 0,2 \times \frac{M_z}{M_{z_{\max}}} \leq 1$$

$$\frac{F_z}{F_{z_{\max}}} \leq 1 \quad \frac{M_z}{M_{z_{\max}}} \leq 1$$

Permissible forces and torques

Piston Ø Variant	25		32		40		50		63	
	GK	GV	GK	GV	GK	GV	GK	GV	GK	GV
F _y max. [N]	3,080	3,080	3,080	3,080	7,300	7,300	7,300	7,300	14,050	14,050
F _z max. [N]	3,080	3,080	3,080	3,080	7,300	7,300	7,300	7,300	14,050	14,050
M _x max. [Nm]	45	45	63	63	170	170	240	240	580	580
M _y max. [Nm]	85	170	127	250	330	660	460	920	910	1,820
M _z max. [Nm]	85	170	127	250	330	660	460	920	910	1,820

Maximum permissible support span l as a function of force F

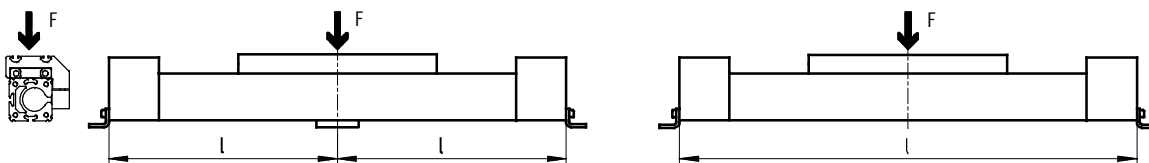
The axis may need to be supported with central supports MUP in order to

limit deflection in the case of large strokes. The following graphs can be

used to determine the maximum permissible support span l as a function

of force F acting on the axis.

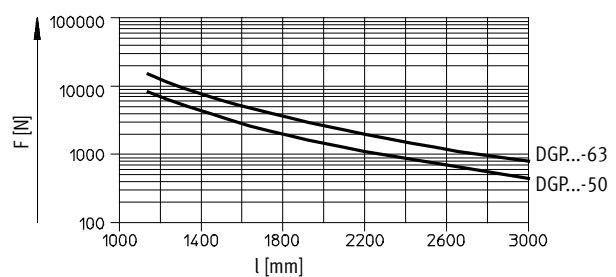
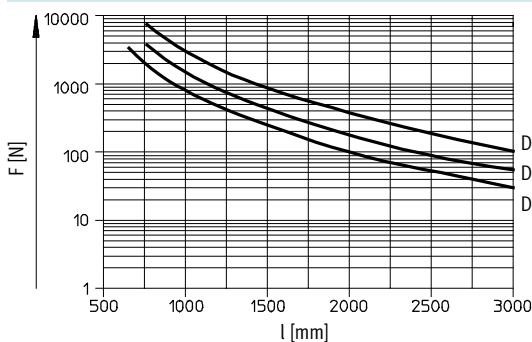
Force on the surface of the slide



Maximum support span l (without central support) as a function of force F

Piston Ø 25 ... 40

Piston Ø 50/63



Do not use for new designs!

- 1 - Type discontinued

Linear drives DGPL, external displacement encoder

Technical data

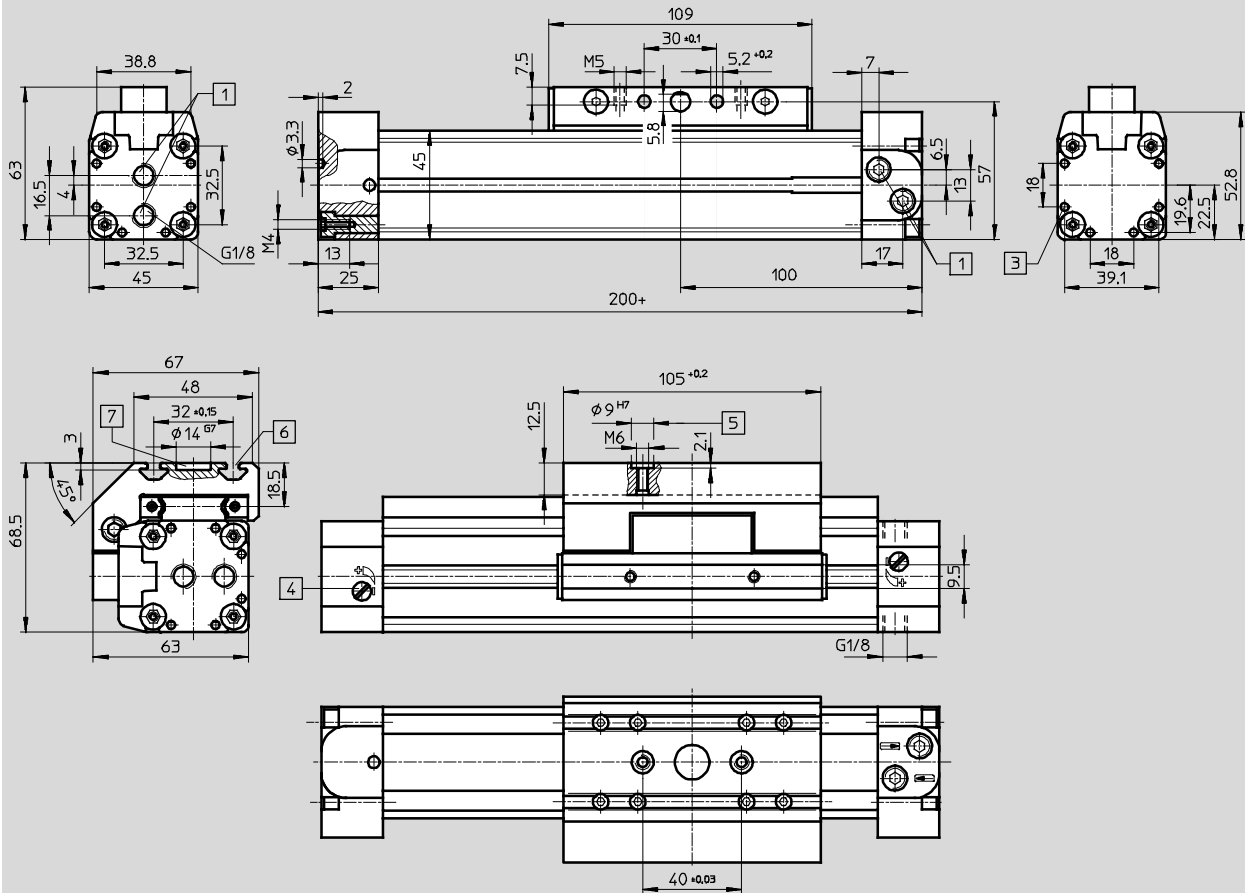
FESTO

Dimensions

Download CAD data → www.festo.com

Standard slide GK

Piston Ø 25



- | | | | |
|--|--|--|------------------------------|
| <p>1 Supply port at one end, optionally on three sides of an end cap (D2 variant: supply port at both ends, optionally on three sides per end cap)</p> | <p>3 Mounting hole for foot mounting HP</p> <p>4 Regulating screw for adjustable end-position cushioning</p> <p>5 Hole for centring sleeve ZBH-9</p> | <p>6 Mounting slot for slot nut NSTL</p> <p>7 Hole for central mounting SLZZ</p> | <p>+ =plus stroke length</p> |
|--|--|--|------------------------------|

Do not use for new designs!
- 2 - Type discontinued

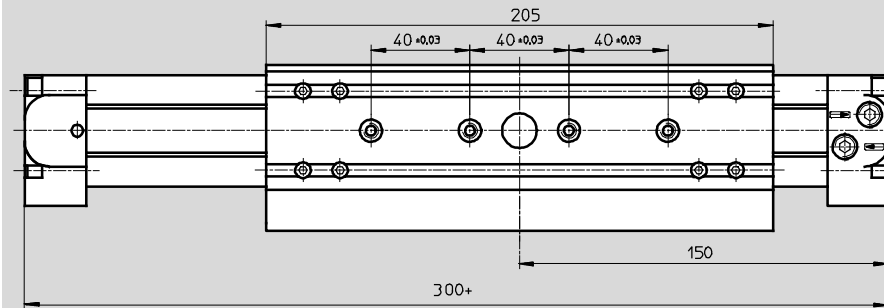
FESTO

Linear drives DGPL, external displacement encoder

Technical data

Extended slide GV

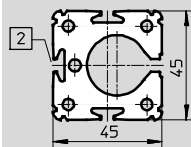
Piston Ø 25



+ = plus stroke length

Profile barrel

Piston Ø 25



2 Sensor slot for proximity sensor

-  - **Type discontinued**

FESTO

Do not use for new designs!

- 2 - Type discontinued

Linear drives DGPL, external displacement encoder

FESTO

Technical data

Ø [mm]	B1	B2	B3 +0.2	B4	B5	B6	B7	B8	B9	B10 ±0.03	B11	D2 Ø
32	54	35.8	19	46	21	40	63	79	47 ±0.15	20	9.5	4.3
40	64	45.7	21	53	28	49	78.5	96.5	55 ±0.2			
50	90	69.2	24	76	44	72	97	122	72 ±0.2	40	12	6.3
63	106	84.8		89		83	121	142	90 ±0.25			

Ø [mm]	D3 Ø +0.2	D4	D6	EE	H1	H2	H3	H4	H5	H6	H7	H8
32	5.2	M5	M5	G1/8	72	66	62	23	27	5.8	77.5	18.5
40	6.5	M6		G1/4	86	78	71.8	26.5	32	7.7	90.5	20
50	8.5	M8	M6		115	106	99	36	45	9.7	122.5	26
63			M8	G3/8	131	122	115	44.5	53		144.5	30

Ø [mm]	J1	J2	J3	J4	L1	L2	L3	L4	L5	L6	L7	L10 ±0.15
32	19	4.2	14	4.7	250	125	17	8.5	31	135	50 ±0.1	–
40	22	5	21	9.1	300	150	11.5	11.5		171	70 ±0.1	
50	31.8	6.8	29.3	6	350	175	14	14	34	206	80 ±0.1	
63	36	8	31	14	400	200				234	110 ±0.1	

Ø [mm]	L11 +0.9/-0.2	L12 +0.3/-0.6	L17	L18 ±0.03	L19 ±0.03	L20	L21 ±0.1	T1	T2	T3	T4 max.
32	380	190	131 ±0.2	40	–	261	40	13.2	3	7.5	12.5
40	470	235	167 ±0.2		40	337			4	10.5	
50	550	275	202 ±0.2			402	80	15.2	6	12.5	18.5
63	650	325	230 ±0.2			480	120	21.2			20.5

-  - Note

Accessories ➔ 26

Do not use for new designs!

- 2 - Type discontinued

Linear drives DGPL, external displacement encoder

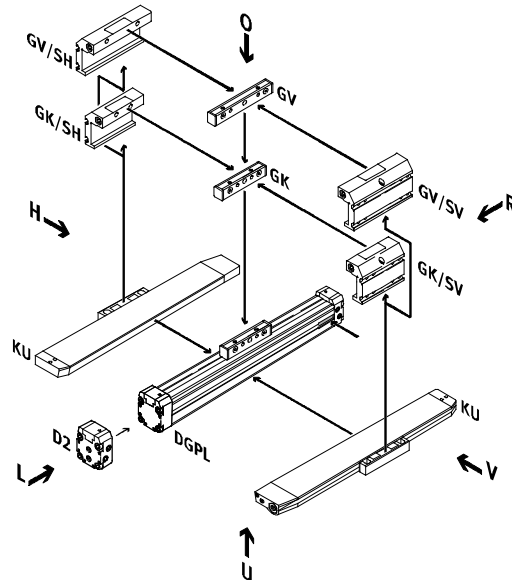
FESTO

Ordering data – Modular products

Order code

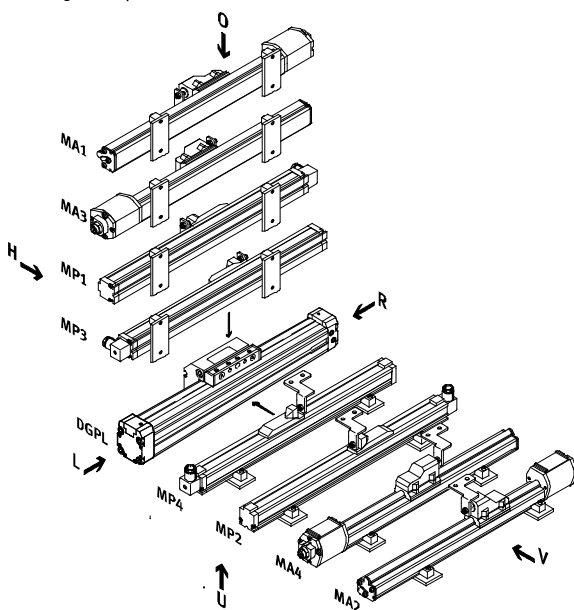
Mandatory data/options

- KU Clamping unit underneath
- GK Standard slide
- GV Extended slide
- SV Slide at front
- SH Slide at rear
- D2 Supply port at both ends

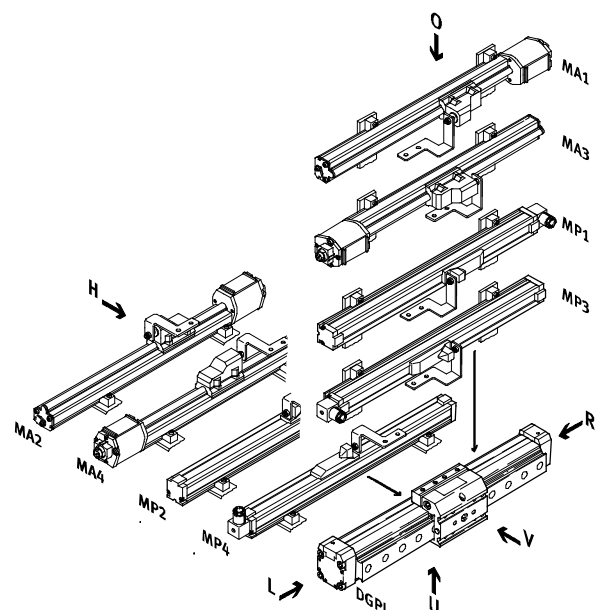


Attachment position for slide at rear (SH)

- MP Analogue displacement encoder
- MA Digital displacement encoder



Attachment position for slide at front (SV)



- Note

- O top
- U underneath
- R right
- L left
- V front
- H rear

Do not use for new designs!

- 2 - Type discontinued

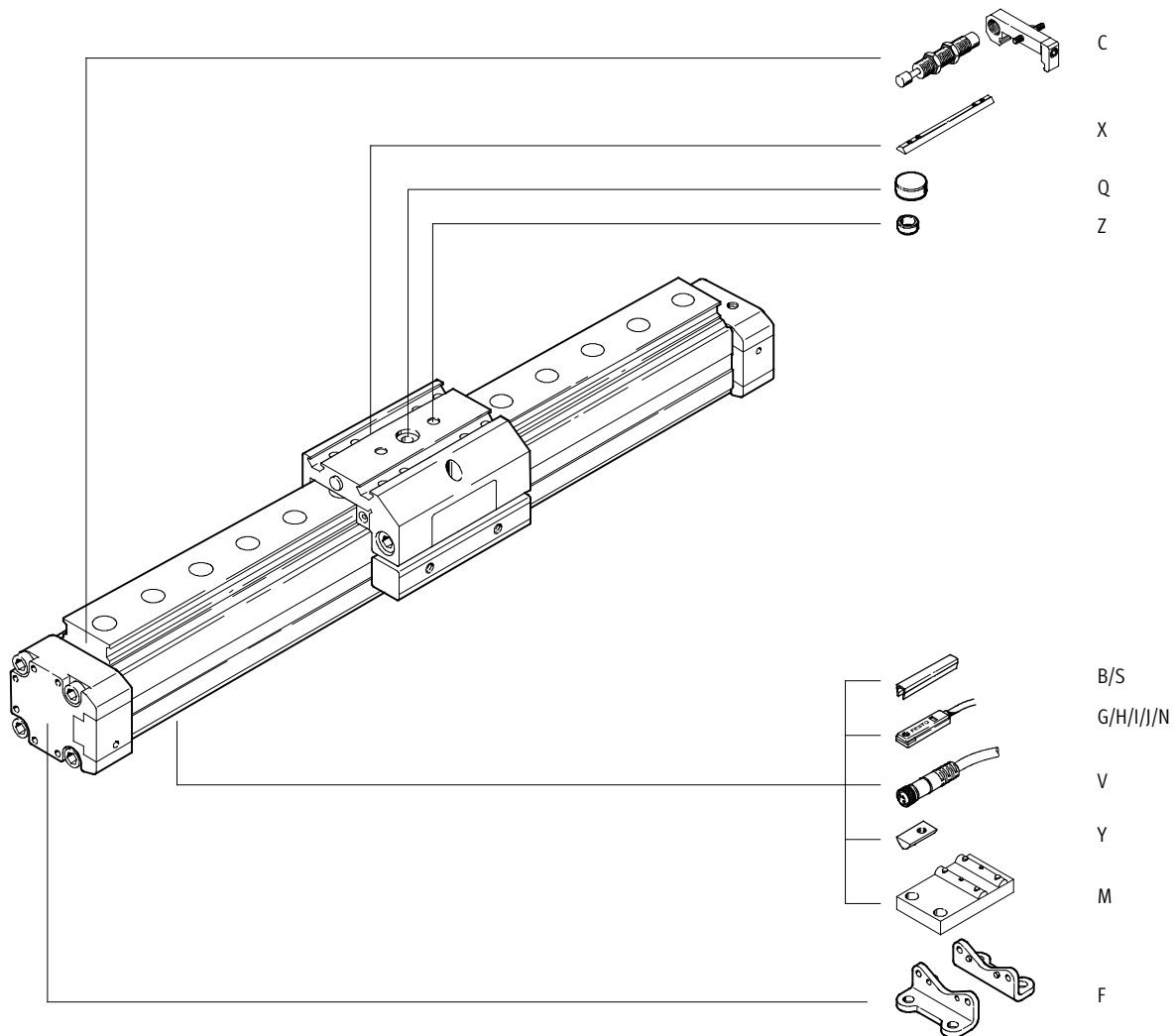
FESTO

Linear drives DGPL, external displacement encoder

Ordering data – Modular products

Order code

Options



Do not use for new designs!

- 2 - Type discontinued

Linear drives DGPL, external displacement encoder

FESTO

Ordering data – Modular products

Mandatory data								Options					
Module No.	Function	Size	Stroke	Cush- ioning	Posi- tion sensing	Gen- era- tion	Guide	Clamp- ing unit	Basic design	Slide attach- ment posi- tion	Supply port	Dis- place- ment encoder	
175 134	DGPL	25	225 ... 2,000	PPV	A	B	KF	KU	GK	SV	D2	MP1	
175 135		32							GV	SH		MP2	
175 136		40										MP3	
175 137		50										MP4	
175 138		63										MA1	
												MA2	
												MA3	
												MA4	
												MP0	
												MA0	
Order example													
175 136	DGPL	- 40	- 750	- PPV	- A	- B	- KF	-	- GV	- SH	- D2	- MA2	

Ordering table									
Size	25	32	40	50	63	Condi- tions	Code	Enter code	
M Module No.	175 134	175 135	175 136	175 137	175 138				
Function	Pneumatic linear drive with slide						DGPL		DGPL
Size	25	32	40	50	63		-...		
Stroke [mm]	225; 300; 360; 450; 500; 600; 750; 1,000; 1,250; 1,500; 1,750; 2,000						-...		
Cushioning	Pneumatic cushioning, adjustable at both ends						-PPV		-PPV
Position sensing	Via proximity sensor						-A		-A
Generation	B series						-B		-B
Guide	Recirculating ball bearing guide						-KF		-KF
O Clamping unit	Underneath						-KU		
Basic design	Standard piston/slide						-GK		
	Extended piston/slide						-GV		
Slide attachment position	Slide at front					1	-SV		
	Slide at rear						-SH		
Supply port	At both ends						-D2		
Displacement encoder	Encoder, position 1, mounted						-MP1		
	Encoder, position 2, mounted					2	-MP2		
	Encoder, position 3, mounted						-MP3		
	Encoder, position 4, mounted					2	-MP4		
	Temposonic with CAN axis interface, position 1, mounted						-MA1		
	Temposonic with CAN axis interface, position 2, mounted					2	-MA2		
	Temposonic with CAN axis interface, position 3, mounted						-MA3		
	Temposonic with CAN axis interface, position 4, mounted					2	-MA4		
	Encoder, enclosed separately						-MP0		
	Temposonic with CAN axis interface, enclosed separately						-MA0		

- 1 SV or SH Must be selected.
2 MP2, MP4, MA2, MA4 Not with clamping unit KU.

Transfer order code

DGPL - - PPV - A - B - KF - - - - -

Do not use for new designs!

- 2 - Type discontinued

Linear drives DGPL, external displacement encoder

Ordering data – Modular products

FESTO

Options

Accessories	Slot cover	Slot nut	Centring sleeve	Central support	Central mounting	Foot mounting	Proximity sensor, magnetic	Connecting cable	Shock absorber kit
ZUB	...S ...B	...X ...Y	...Z	...M	...Q	...F	...G ...H ...I ...J ...N	...V	...C
: ZUB	- 2S2B	2XY	Z		Q	F			2C

Ordering table

Size		25	32	40	50	63	Condi- tions	Code	Enter code	
↓	Accessories		Enclosed separately					:ZUB-	:ZUB-	
0	Slot cover, 2 pcs., 0.5 m	Sensor slot	1 ... 10					...S		
		Mounting slot	— 1 ... 10					...B		
	Slot nut	Slide	1 ... 10					...X		
		Mounting slot	— 1 ... 10					...Y		
	Centring sleeve (pack of 10)		10, 20, 30, 40, 50, 60, 70, 80, 90					...Z		
	Central support		1 ... 10					...M		
	Central mounting		1 ... 10					...Q		
	Foot mounting		1 ... 10					...F		
	Proximity sensor, magnetic	With cable, 2.5 m	1 ... 10					...G		
		With plug	1 ... 10					...H		
	Proximity sensor, magnetic, non- contacting	With cable, 2.5 m	1 ... 10					...I		
		With plug	1 ... 10					...J		
	Proximity sensor, magnetic		N/C con- tact with cable, 2.5 m	1 ... 10					...N	
	Connecting cable		2.5 m	1 ... 10					...V	
Shock absorber kit			1 ... 10					...C		

Transfer order code

: ZUB - [] [] [] [] [] [] [] [] [] []

Linear drives DGPL/DGPI/DGPIL

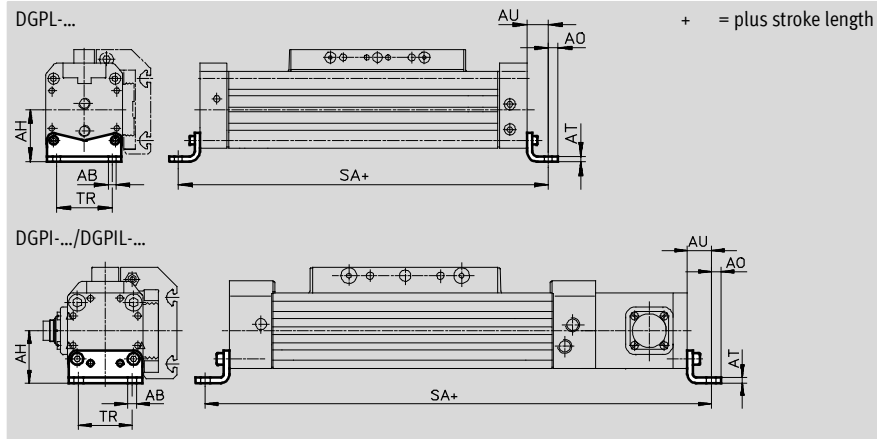
FESTO

Accessories

Foot mounting HP (order code: F)

Material:
Galvanised steel

Free of copper, PTFE and silicone

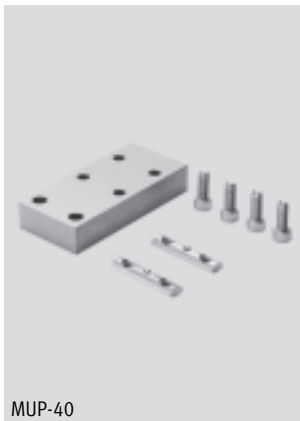


Dimensions and ordering data											
For Ø	AB	AH	AO	AT	AU	SA		TR	Weight	Part No.	Type
[mm]	Ø					DGPL	DGPI(L)		[g]		
25	5.5	29.5	6	3	13	226	327	32.5	61	150 731	HP-25
32	6.6	37	7	4	17	284	379	38	117	150 732	HP-32
40	6.6	46	8.5	5	17.5	335	432	45	188	150 733	HP-40
50	9	61	11	6	25	400	515	65	243	150 734	HP-50
63	11	69	13.5	6	28	456	569	75	305	150 735	HP-63

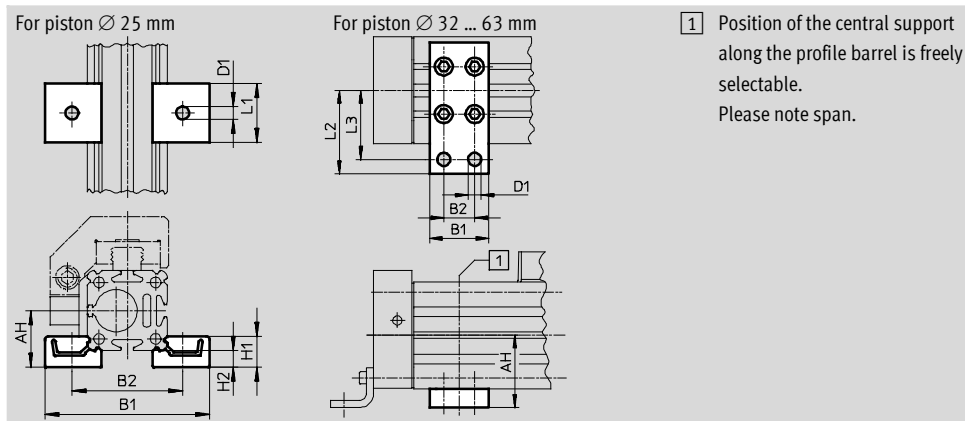
Central support MUP (order code: M)

Material:
Galvanised steel

Free of copper, PTFE and silicone



MUP-40



Dimensions and ordering data												
For Ø	AH	B1	B2	D1 Ø	H1	H2	L1	L2	L3	Weight	Part No.	Type
[mm]										[g]		
25	29.5	81	58	5.5	13	7	25	–	–	33	150 736	MUP-18/25
32	37	35	22	6.6	–	–	–	41.5	35	89	150 737	MUP-32
40	46	35	22	6.6	–	–	–	47	40	126	150 738	MUP-40
50	61	50	26	11	–	–	–	70	58	241	150 739	MUP-50
63	69	50	26	11	–	–	–	77	65	340	150 800	MUP-63

Linear drives DGPL/DGPI/DGPIL

FESTO

Accessories

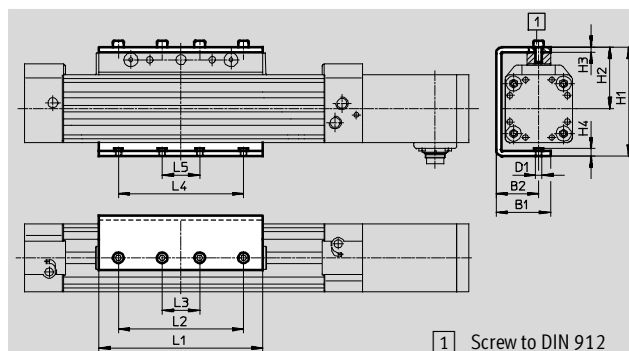
Load inverter bracket AK

for DGPI

(order code: AK)

Material:

Galvanised steel



Dimensions and ordering data									
For Ø	B1	B2	D1	H1	H2	H3	H4	L1	L2
[mm]									
25	39	29.5	M5	76.1	43.5	3	5	105	–
32	43.5	34	M5	87	49	4	6	131	100
40	50.5	40	M6	104	58	4	8.1	167	130
50	67	55	M8	138.5	75	5	10.5	202	150
63	77	65	M8	156.5	84	6	11.5	230	190

For Ø	L3	L4	L5	1	CRC ¹⁾	Weight	Part No.	Type
[mm]						[g]		
25	50	50	20	M5x10	2	380	196 106	AK-25
32	30	100	30	M5x12		690	196 107	AK-32
40	40	130	40	M6x14		1,050	196 108	AK-40
50	50	150	50	M8x16		2,080	196 109	AK-50
63	70	190	70	M8x18		2,820	196 110	AK-63

1) Corrosion resistance class 2 according to Festo standard 940 070

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Shock absorber DG-GA

for DGPIL

Protected version GA

(order code: E)

Materials:

Housing: Galvanised steel

Piston rod: high-alloy steel

Seals: NBR, PUR

Free of copper, PTFE and silicone



Ordering data			
For Ø	Weight	Part No.	Type
[mm]	[g]		
25	70	192 875	DG-GA-25-YSR
32	110	192 876	DG-GA-32-YSR
40	140	192 877	DG-GA-40-YSR

Linear drives DGPL/DGPI/DGPIL

Accessories

FESTO

Shock absorber YSR-...-C

for DGPL/DGPIL

(order code: C)

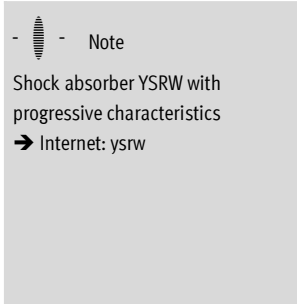
Materials:

Housing: Galvanised steel

Piston rod: high-alloy steel

Seals: NBR, PUR

Free of copper, PTFE and silicone



Ordering data		Part No.	Type
For Ø [mm]	Weight [g]		
25	70	34 572	YSR-12-12-C
32	70	34 572	YSR-12-12-C
40	140	34 573	YSR-16-20-C
50	140	34 573	YSR-16-20-C
63	240	34 574	YSR-20-25-C

Shock absorber retainer KYP

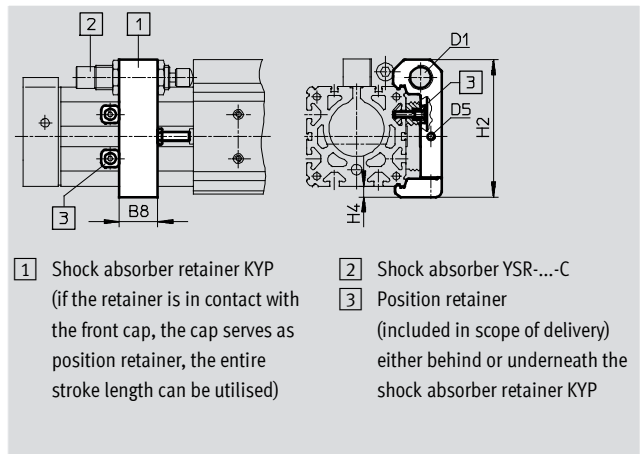
for DGPL/DGPIL

(order code: C)

Materials:

Retainer: Aluminium

Sleeve: Corrosion-resistant steel

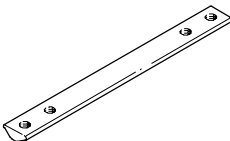
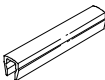
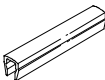


Dimensions and ordering data							Part No.	Type
For Ø [mm]	B8	D1	D5	H2	H4	Weight [g]		
25	19	M16x1	M5	69.5	6	95	158 908	KYP-25
32	25	M16x1	M5	80	8	130	158 909	KYP-32
40	32	M22x1.5	M5	102	8	209	158 910	KYP-40
50	35	M22x1.5	M8	124	10	415	158 911	KYP-50
63	44	M26x1.5	M10	152.5	11.5	609	158 912	KYP-63

Linear drives DGPI/DGPI/DGPIL

Accessories

FESTO

Ordering data			Technical data → Internet: mounting component			
	For Ø [mm]	Comment	Order code	Part No.	Type	PU ¹⁾
Slot nut NST						
	25	For mounting slot	Y	526 091	NST-HMV-M4	1
	32, 40			150 914	NST-5-M5	1
	50, 63			150 915	NST-8-M6	1
Slot nut NSTL						
	25	For slide	X	158 410	NSTL-25	1
	32			158 411	NSTL-32	1
	40			158 412	NSTL-40	1
	50			158 413	NSTL-50	1
	63			158 414	NSTL-63	1
Centring sleeve ZBH						
	25 ... 63	For slide	Z	150 927	ZBH-9	10
Central mounting SLZZ						
	25	For slide	Q	150 900	SLZZ-16/10	1
	32, 40			150 901	SLZZ-25/16	
	50, 63			150 904	SLZZ-50/40	1
Slot cover ABP						
	32, 40	For mounting slot Every 0.5 m	B	151 681	ABP-5	2
	50, 63			151 682	ABP-8	
Slot cover ABP-S						
	25 ... 63	For sensor slot Every 0.5 m	S	563 360	ABP-5-S1	2

1) Packaging unit

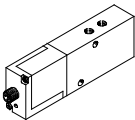
Ordering data – Push-in fittings			Technical data ➔ Internet: quick star		
	For Ø [mm]	Comment	Part No.	Type	PU ¹⁾
	25, 32	For connecting compressed air tubing with standard O.D.	186 098	QS-G ¹ / ₈ -8	10
	40, 50		186 099	QS-G ¹ / ₄ -8	
	63		186 101	QS-G ¹ / ₄ -10	10
			186 100	QS-G ³ / ₈ -8	10
			186 102	QS-G ³ / ₈ -10	
			186 103	QS-G ³ / ₈ -12	

1) Packaging unit

Linear drives DGPL/DGPI/DGPIL

Accessories

FESTO

Ordering data – Proportional directional control valves											Technical data → Internet: mpye				
Selection aid															
Application	For Ø [mm]	Stroke [mm]													
		225	300	360	450	500	600	750	1,000	1,250	1,500	1,750	2,000		
Horizontal/vertical	For applications with axis controller SPC200														
	25	1/1	1/1	1/1	1/1	1/1	1/1	1/1	2/2	2/2	2/2	2/2	2/2		
	32	1/1	1/1	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2		
	40	1/1	2/2	2/2	2/2	2/2	2/2	2/2	3/3	3/3	3/3	3/3	3/3		
	50	2/2	2/2	2/2	2/2	2/2	3/3	3/3	3/3	3/3	3/3	3/3	3/3		
	63	3/3	3/3	3/3	3/3	3/3	3/3	3/3	3/3	4/4	4/4	4/4	4/4		
	For applications with Soft Stop end-position controller SPC11														
	25	1 ¹⁾	1/1	2/1	2/1	2/1	2/2	2/2	2/3	2/3	2/3	2/3	2/3		
	32	1 ¹⁾	2/1	2/1	2/1	2/1	2/1	3/2	3/3	3/3	3/3	3/3	3/3		
	40	2/1	2/1	2/1	2/1	2/2	3/3	3/4	3/4	3/4	3/4	3/4	3/4		
	50	1/1	2/1	2/2	3/2	3/3	4/3	4/4	4/4	4/4	4/4	4/4	4/4		
	63	2/1	2/2	3/3	3/3	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4		
	Valve	Selection number								Part No.	Type				
	1								151 692	MPYE-5-1/8-LF-010-B					
	2								151 693	MPYE-5-1/8-HF-010-B					
	3								151 694	MPYE-5-1/4-010-B					
	4								151 695	MPYE-5-3/8-010-B					

1) On request



Note

The representation e.g. 2/1 in the columns means:

Selection number 2 for horizontal application	Selection number 1 for vertical application
151 693 MPYE-5-1/8-HF-010-B	151 692 MPYE-5-1/8-LF-010-B

Linear drives DGPL/DGPI/DGPIL

FESTO

Accessories

Ordering data – Proximity sensor for T-slot, magnetic reed					Technical data → Internet: sme	
	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	2.5	150 855	SME-8-K-LED-24
			Plug M8x1, 3-pin	0.3	150 857	SME-8-S-LED-24
N/C contact						
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	7.5	160 251	SME-8-O-K-LED-24

Ordering data – Proximity sensor for T-slot, magneto-resistive						Technical data → Internet: smt
	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-wire	2.5	574 335	SMT-8M-A-PS-24V-E-2,5-OE
N/C contact						
	Insertable in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-wire	7.5	574 340	SMT-8M-A-PO-24V-E-7,5-OE

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