







Linear drives DGCI, with displacement encoder



Cylinders with displacement encoder

Product range overview

Function	Type	Description
Drives	Rodless	
	DDLI 	<ul style="list-style-type: none"> • Without guide • With contactless measuring displacement encoder • Based on linear drive DGC-K • Supply ports on end face • System product for handling and assembly technology
	DGCI 	<ul style="list-style-type: none"> • With guide • With contactless measuring displacement encoder • Based on linear drive DGC • Supply ports optionally on end face or front • System product for handling and assembly technology
	With piston rod	
	DNCI 	<ul style="list-style-type: none"> • With contactless measuring displacement encoder • Various piston rod variants • Standards-based cylinder to ISO 15552 <p>ISO DIN VDMA</p>
	DDPC 	<ul style="list-style-type: none"> • With contactless measuring displacement encoder • Various piston rod variants • Standards-based cylinder to ISO 15552 <p>ISO DIN VDMA</p>
	DNC/DSBC 	<ul style="list-style-type: none"> • With attached potentiometer MLO-LWG • Various piston rod variants • Standards-based cylinder to ISO 15552 <p>ISO DIN VDMA</p>
Swivel modules	Swivel modules	
	DSMI 	<ul style="list-style-type: none"> • Based on swivel modules DSM • Integrated rotary potentiometer • Compact design • Wide range of mounting options

Cylinders with displacement encoder

Product range overview



Piston Ø	Stroke/swivel angle [mm/°]	Suitable				
		for positioning with		for end-position controller		for use as a measuring cylinder
		CPX-CMAX	CPX-CMPX	SPC11		
Rodless						
25, 32, 40, 63	100, 160, 225, 300, 360, 450, 500, 600, 750, 850, 1000, 1250, 1500, 1750, 2000	■	■	■	■	
18, 25, 32, 40, 63	100, 160, 225, 300, 360, 450, 500, 600, 750, 850, 1000, 1250, 1500, 1750, 2000	■	■	■	■	
With piston rod						
32, 40, 50, 63	10 ... 2000	-	-	-	■	
	100 ... 750	■	■	■	-	
80, 100	10 ... 2000	-	-	-	■	
	100 ... 750	■	■	■	-	
32, 40, 50, 63, 80	100, 150, 225, 300, 360, 450, 600, 750	■	■	■	■	
Swivel modules						
25, 40, 63	270	■	■	■	■	

Cylinders with displacement encoder

Features



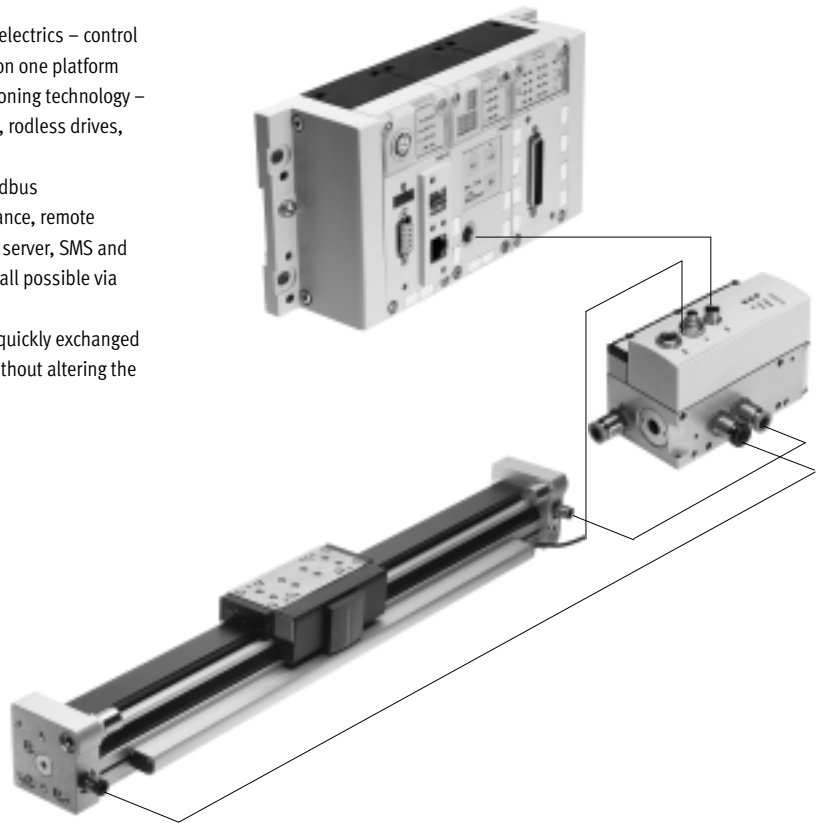
Servopneumatic drive technology

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 alerts 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 with the axis controller CPX-CMAX.

All stations are recognised as: the auto-identification function identifies each participant 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

Features

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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 control of downtime. 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 of 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, 1400 and 2000 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 that 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

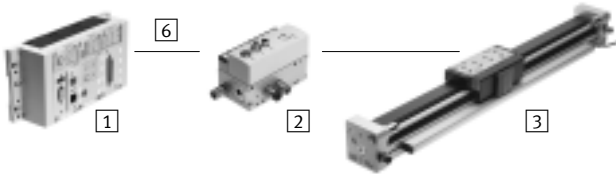
Cylinders with displacement encoder

Drive options

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System with linear drive DDLI, DGCI

Technical data → Internet: [ddli](#) or [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-...

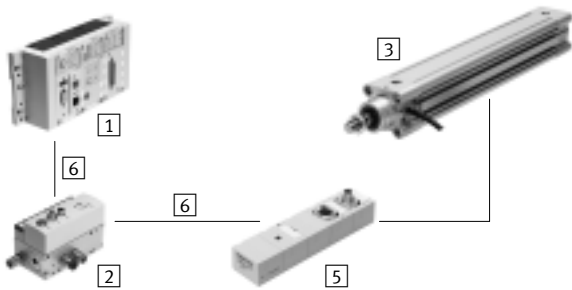
- Pneumatic rodless linear drive with displacement encoder, with or without recirculating ball bearing guide
- Displacement encoder with absolute and contactless measurement
- Diameters:
 - DGCI: 18 ... 63 mm
 - DDLI: 25 ... 63 mm
- Stroke: 100 ... 2000 mm in fixed lengths
- Range of applications: Soft 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 standard cylinder DNCI, DDPC

Technical data → Internet: [dncl](#)



- 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 up to ± 0.5 mm (only with axis controller CPX-CMAX)

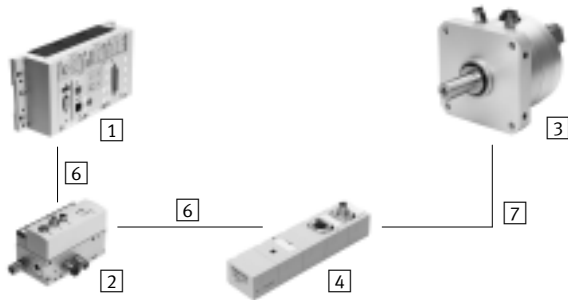
Cylinders with displacement encoder

Drive options

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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

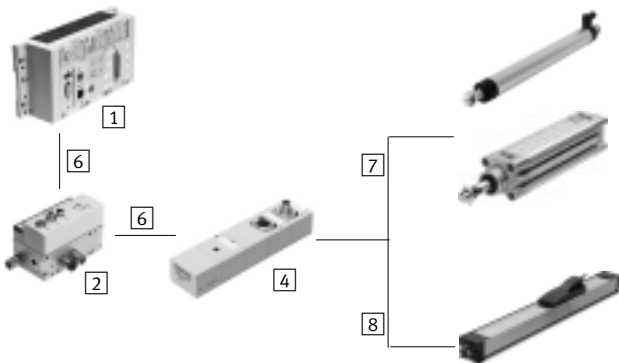
- Swivel module DSMI with integrated displacement encoder
- Identical design to pneumatic swivel module DSM
- Absolute displacement encoder based on a potentiometer
- Swivel range of 0 ... 270°
- Size: 25, 40, 63
- Max. torque: 5 ... 40 Nm
- Range of applications: Soft Stop and pneumatic positioning
- Mass moments of inertia from 15 ... 6000 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:
Connecting rod: 100 ... 750 mm
Moment compensator: 225 ... 2000 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 ambient conditions
- Variety of drives: CPX-CMPX and CPX-CMAX also support cylinders with external displacement encoder

Cylinders with displacement encoder

Drive options

System components for Soft Stop systems with end-position controller CPX-CMPX						
	Linear drive	Standard cylinder	Swivel module	Displacement encoder		→ Page/ Internet
	DDLI/DGCI	DNCI, DDPC	DSMI	MLO-LWG/-TLF	MME-MTS	
End-position controller CPX-CMPX	■	■	■	■	■	cmpx
Prop. directional control valve VPWP	■	■	■	■	■	vpwp
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-...	-	-	-	-	■	vpwp

System components for pneumatic positioning systems with axis controller CPX-CMAX						
	Linear drive	Standard cylinder	Swivel module	Displacement encoder		→ Page/ Internet
	DDLI/DGCI	DNCI, DDPC	DSMI	MLO-LWG/-TLF	MME-MTS	
Axis controller CPX-CMAX	■	■	■	■	■	cmax
Prop. directional control valve VPWP	■	■	■	■	■	vpwp
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-...	-	-	-	-	■	vpwp

System components for measuring cylinders with measuring module CPX-CMIX						
	Linear drive	Standard cylinder	Swivel module	Displacement encoder		→ Page/ Internet
	DDLI/DGCI	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-...	(■) ¹⁾	■	■	■	(■)	kvi
Connecting cable NEBC-P1W4-...	-	-	■	■ / -	-	nebc
Connecting cable NEBC-A1W3-...	-	-	-	- / ■	-	nebc
Connecting cable NEBP-M16W6-...	-	-	-	-	■	vpwp

1) As an extension

Cylinders with displacement encoder

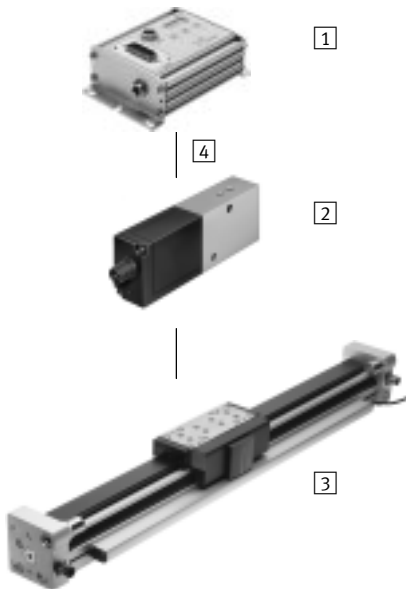
Overview

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Individual components for positioning

With end-position controller SPC11

→ Internet: [spc11](#)

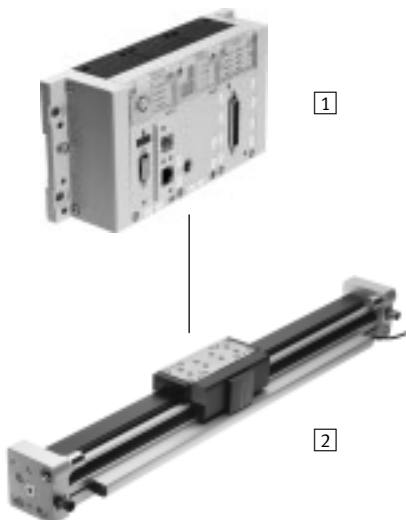


- 1 End-position controller SPC11-MTS-AIF-2
- 2 Proportional directional control valve MPYE
- 3 Linear drive DGCI
- 4 Connecting cable KMPYE-AIF-...

Individual components for use as a measuring cylinder

With measuring module CPX-CMIX

→ Internet: [cmix](#)



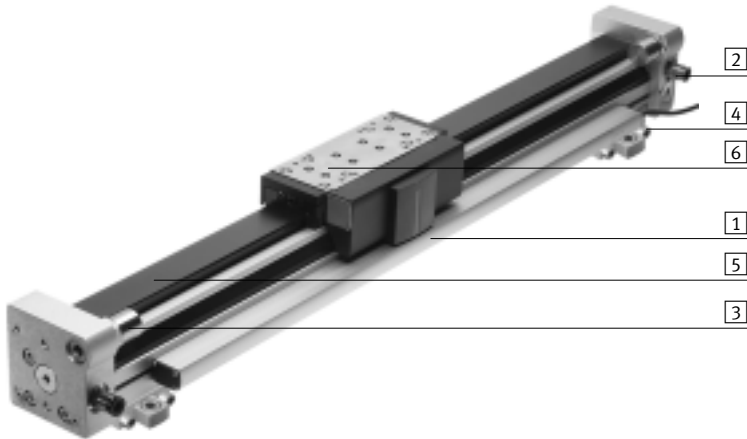
- 1 Measuring module CPX-CMIX
- 2 Linear drive DGCI

Linear drives DGCI, with displacement encoder

Key features

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At a glance



1 Displacement encoder → page 18

- High degree of protection IP67
- Non-contacting
- Measures absolute values

2 Supply ports → page 35

- Optionally on two sides (on the end face or at the front)
- Optionally with different coloured push-in fittings for simple and error-free tubing connections

3 End stops → page 24

- Metal fixed stop
- Shock absorber, precisely adjustable

4 Profile mounting → page 22

- Profile mountings remain on the base plate after the drive is dismantled. This saves time during assembly and removal

5 Recirculating ball bearing guide → page 16

- Piston \varnothing 18 ... 63 mm
- Stroke lengths 100 ... 2000 mm
- Guide backlash = 0 mm
- For medium and large loads
- Precision mounting interface with stainless steel slide
- Operating behaviour under torque load = very good

6 Recirculating ball bearing guide with protected guide → page 16

- Piston \varnothing 18 ... 40 mm
- Stroke lengths 100 ... 2000 mm
- Guide backlash = 0 mm
- The protected guide cleans the guide rail and protects the recirculating ball bearing guide by means of an additional wiper seal and lubrication unit

– Passive guide axis DGC-FA → dgc-fa

- Without drive
- Piston \varnothing 8 ... 63 mm
- Stroke lengths 1 ... 5000 mm
- Guide backlash = 0 mm
- Precision guide, suitable for DGCI. Can be used as a machine component or as a twin guide with DGCI

– Passive guide axis with protected guide DGC-FA-GP → dgc-fa

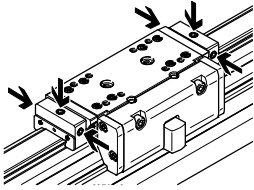
- Without drive
- Piston \varnothing 18 ... 63 mm
- Stroke lengths 1 ... 5000 mm
- Guide backlash = 0 mm
- The protected guide cleans the guide rail and protects the recirculating ball bearing guide by means of an additional wiper seal and lubrication unit

Linear drives DGCI, with displacement encoder

Key features

Options

Central lubrication

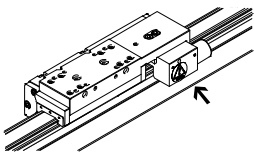


The lubrication adapter enables the guide of the linear drive DGCI to be permanently lubricated in applications in humid or wet ambient conditions using semi or fully automatic relubrication devices. The adapters are suitable for oils and greases.

- For piston \varnothing 25, 32, 40, 63 mm
- Connections:
 - On both sides of the slide
 - In three places (front, top, rear) on each side

Technical data → page 23

Clamping unit – 1H-PN

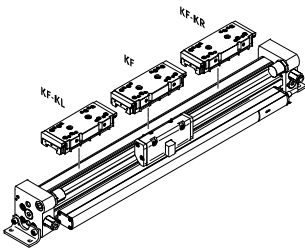


- 1-channel design, for holding loads
- Reliable holding is guaranteed since the forces act directly on the slide
- A limited number of emergency braking operations are permissible with the size 40
- No stroke reduction; the drive is extended by the length of the clamping unit

- For piston \varnothing 25, 32, 40 mm

Technical data → page 21

Additional slide – KL/KR



- Additional slide, either to the right or left of the main slide
- To increase the torques

- For piston \varnothing 18, 25, 32, 40, 63 mm

Technical data → page 34

NSF-H1 lubricant for the food industry – H1

The linear drive is of limited food-safe.

Additional information


www.festo.com/sp → Certificates.

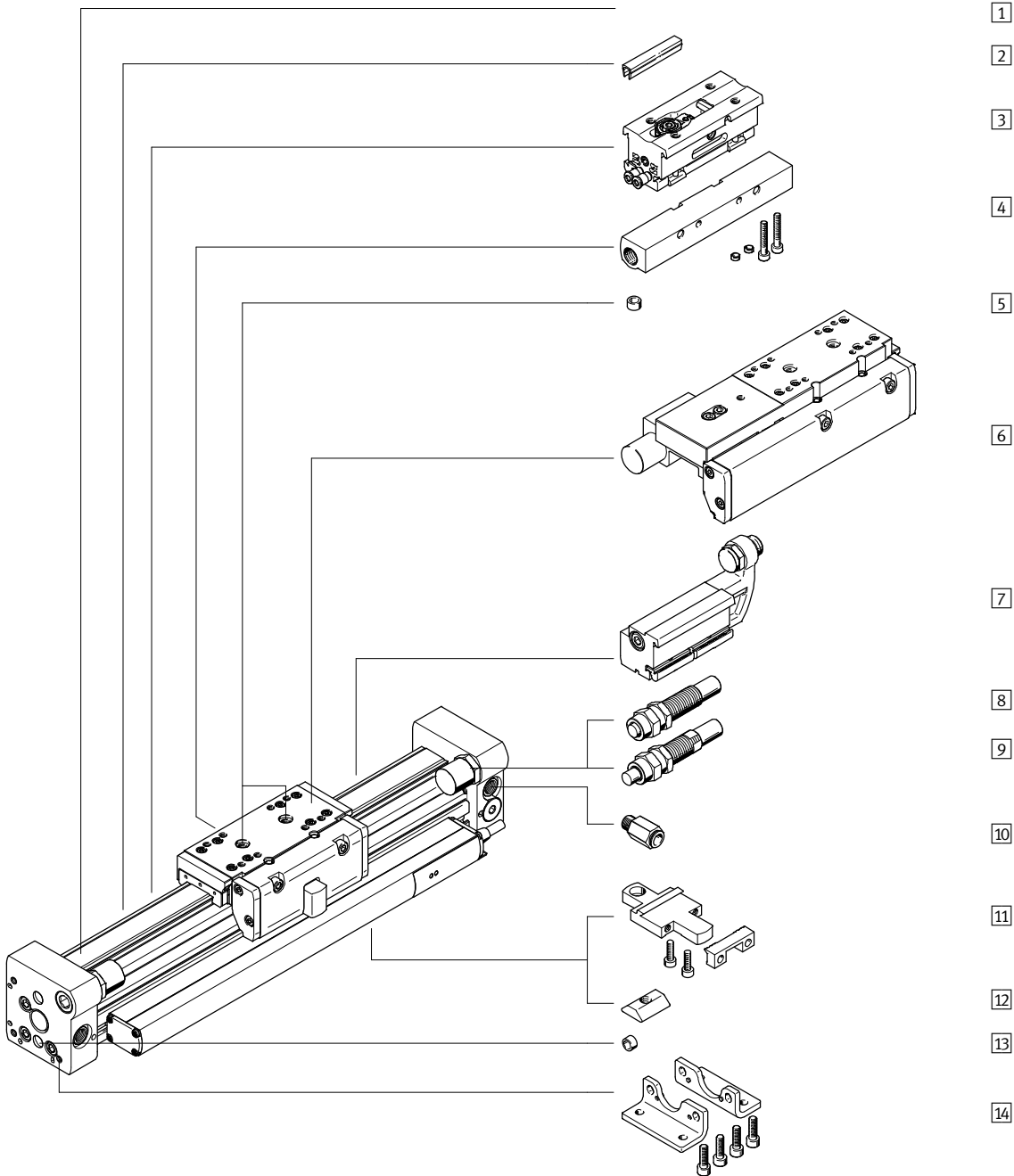
Not approved for use in the food industry:

- DGCI-...-GP (protected version)
- DGCI-... with integrated shock absorbers

Linear drives DGCI, with displacement encoder

Peripherals overview

-  - Note
Drive must not be operated without end stops or shock absorbers.




Linear drives DGCI, with displacement encoder

Peripherals overview

Variants and accessories			
Type/Order code	For piston Ø	Description	→ Page/Internet
1 Linear drive DGCI-KF	18 ... 63	Linear drive without accessories, with recirculating ball bearing guide.	16
2 Slot cover ABP-S	18 ... 63	For protecting against the ingress of dirt and securing proximity sensor cables.	44
3 Intermediate position module DADM-DGC	25, 32	Facilitates intermediate positions with metal fixed stop. The module can be attached.	42
4 Shock absorber retainer DADP-DGC	18 ... 63	For variable end-position adjustment in combination with the stop KYC.	40
5 Centring pin/sleeve ¹⁾ ZBS/ZBH	18 ... 63	For centring loads and attachments on the slide.	44
6 Clamping unit 1H-PN	25, 32, 40	For holding loads.	21
7 Stop KYC	18 ... 63	For variable end-position adjustment in combination with the shock absorber retainer DADP-DGC.	40
8 Shock absorber YSR	18 ... 63	Self-adjusting hydraulic shock absorber with spring return and linear cushioning characteristics.	36
9 Shock absorber YSRW	18 ... 63	Self-adjusting hydraulic shock absorber with spring return and progressive cushioning characteristics.	36
10 Push-in fitting QS	18 ... 63	For connecting compressed air tubing with standard O.D.	35
11 Profile mounting MUC	18 ... 63	Simple and precise mounting option via dovetail connection.	39
12 Slot nut HMBN	25 ... 63	For mounting attachments.	44
13 Centring pin/sleeve ¹⁾ ZBS/ZBH	18 ... 63	For centring the drive without foot mountings (user-specific).	44
14 Foot mounting HPC	18 ... 63	For mounting on the end cap.	38
– Proportional directional control valve VPWP	18 ... 63	Regulates the compressed air and therefore the position of the slide.	44

1) Included in the scope of delivery of the drive

 - Note
Allocation table of drives and associated proportional directional control valves → page 44

Linear drives DGCI, with displacement encoder

Type codes

DGCI – 25 – 1000 – KF – – – – – – – – – – – – – – – – – –

Type	
DGCI	Linear drive with displacement encoder

Piston Ø [mm]	
	25

Stroke [mm]	
	1000

Guide	
KF	Recirculating ball bearing guide

Alternative supply port	
–	Push-in fitting at both ends, front
QD	Push-in fitting at both ends, end face
QR	Push-in fitting at one end, end face, right side
Q	Threaded connection, end face open, front sealed

Slide	
GP	Protected recirculating ball bearing guide

Lubrication	
–	Standard
H1	Lubrication approved for use in food applications

Lubrication function	
–	Standard
C	Lubrication adapter

Additional slide	
KL	Additional slide on left
KR	Additional slide on right

Clamping unit	
–	None
1H	1-channel

Actuation type	
–	None
PN	Pneumatically actuated

Cushioning	
–	Adjustable mechanical stop without cushioning
YSR	Self-adjusting shock absorber
YSRW	Self-adjusting shock absorber, progressive

EU certification	
EX2	II 3GD

Linear drives DGCI, with displacement encoder

Type codes



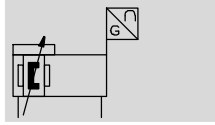
	ZUB	F		2B	
Accessories					
ZUB	Accessories enclosed separately				
Type of mounting					
F	Foot mounting				
M	Profile mounting				
Slot cover					
...L	For sensor slot				
Slot nut					
...B	For mounting slot				
Operating instructions					
0	Express waiver – no operating instructions to be included				

Linear drives DGCI, with displacement encoder

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Technical data

Function



- - Diameter
18 ... 63 mm
- - Stroke length
100 ... 2000 mm

General technical data					
Piston \varnothing	18	25	32	40	63
Design	Rodless linear drive with displacement encoder				
Mode of operation	Double-acting				
Moment compensator principle	Slotted cylinder, mechanically coupled				
Guide	External recirculating ball bearing guide				
Mounting position	Any				
Type of mounting	Profile mounting				
	Foot mounting				
	Direct mounting				
Cushioning → page 21	Via metal fixed stop				
	Via shock absorber, self-adjusting at both ends				
Position sensing	Via attached displacement encoder				
Measuring principle (displacement encoder)	Digital, magnetostrictive, non-contacting and absolute measurement				
Pneumatic connection ¹⁾	M5	G1/8	G1/4	G3/8	
Stroke ²⁾	[mm] 100; 160; 225; 300; 360; 450; 500; 600; 750; 850; 1000; 1250; 1500; 1750; 2000				
Protected version	Optional				-
Max. speed ³⁾	[m/s] 5				
Stroke tolerance	[mm] 0 ... 2.5				

- 1) Recommended push-in fittings → page 44
With pre-assembled push-in fittings, the tubing diameters apply → page 22
- 2) Note stroke reduction in combination with CPX-CMAX
- 3) Only applies to applications with end-position controller CPX-CMPX, SPC11 and axis controller CPX-CMAX. Otherwise a maximum speed of 3 m/s is permitted.

Operating and environmental conditions					
Piston \varnothing	18	25	32	40	63
Operating pressure	[bar]	2 ... 8		1.5 ... 8	
Operating pressure ¹⁾	[bar]	4 ... 8			
Operating medium ²⁾	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/medium temperature				
Ambient temperature	[°C]	-10 ... +60			
Vibration resistance to DIN/IEC 68, Part 2-6	At 10 ... 58 Hz: 0.15 mm				
	At 58 ... 150 Hz: 2G				
Continuous shock resistance to DIN/IEC 68, Part 2-27	Half sine 15 g, 11 ms				
CE mark (see declaration of conformity ³⁾)	To EU EMC Directive				
Certification	C-Tick				
Food-safe ⁴⁾	See supplementary material information				
Corrosion resistance class CRC ⁵⁾	1				

- 1) Only applies to applications with end-position controller CPX-CMPX, SPC11 and axis controller CPX-CMAX
- 2) The proportional directional control valve VPWP, MPYE requires these characteristic values
- 3) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.
- 4) Additional information www.festo.com/sp → Certificates.
- 5) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Linear drives DGCI, with displacement encoder

Technical data

ATEX ¹⁾	
Explosion-proof temperature rating	0°C ≤ Ta ≤ +50°C
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)
ATEX category for gas	II 3G
Explosion ignition protection type for gas	Ex nA IIC T4 X Gc
ATEX category for dust	II 3D
Explosion ignition protection type for dust	Ex tc IIIC T120°C X Dc IP65

1) Make sure that the accessories are suited for ATEX application.

Forces [N] and impact energy [Nm]					
Piston Ø	18	25	32	40	63
Theoretical force at 6 bar	153	295	483	754	1870
Impact energy in the end positions					
With fixed stop	0.4	0.5	0.7	0.7	0.7
With shock absorber YSR/YSRW	→ page 21				

Positioning characteristics with axis controller CPX-CMAX					
Piston Ø	18	25	32	40	63
Mounting position	Any				
Resolution [mm]	0.01				
Repetition accuracy [mm]	→ page 19				
Minimum load, horizontal ¹⁾ [kg]	1	2	3	5	12
Maximum load, horizontal ¹⁾ [kg]	15	30	50	75	180
Minimum load, vertical ¹⁾ [kg]	1	2	3	5	12
Maximum load, vertical ¹⁾ [kg]	5	10	15	25	60
Minimum travel speed [m/s]	0.05				
Maximum travel speed [m/s]					3
Typical positioning time, long stroke ²⁾ [s]	0.75/1.15	0.65/1.00	0.65/1.05	0.70/1.05	1.05/1.20
Typical positioning time, short stroke ³⁾ [s]	0.38/0.65	0.38/0.60	0.38/0.60	0.38/0.60	0.65/0.65
Minimum positioning stroke ⁴⁾ [%]	≤ 3				
Stroke reduction ⁵⁾ [mm]	20	25	25	35	35
Recommended proportional directional control valve					
For CPX-CMAX	→ page 44				

- 1) Load = effective load + mass of all moving parts on the drive
- 2) At 6 bar, horizontal mounting position, DGCI-XX-1000, 800 mm travel at min./max. load
- 3) At 6 bar, horizontal mounting position, DGCI-XX-1000, 100 mm travel at min./max. load
- 4) Referred to the maximum stroke of the drive, but never more than 20 mm
- 5) The stroke reduction is to be maintained on each side of the drive, the max. positionable stroke is therefore: stroke – 2x stroke reduction

Force control characteristics with axis controller CPX-CMAX					
Piston Ø	18	25	32	40	63
Mounting position	Any				
Maximum controllable force ¹⁾ [N]	138	266	435	679	1683
Typical friction forces ²⁾ [N]	40	60	40	50	70
Repetition accuracy of pressure control ³⁾⁴⁾ [%]	< ±2				

- 1) Advancing/retracting at 6 bar
- 2) These values can fluctuate greatly from cylinder to cylinder and are not guaranteed. These friction forces must also be taken into consideration when using an external guide or when the cylinder is moving other components subject to friction
- 3) This value defines the repetition accuracy with which the internal differential pressure in the cylinder is controlled and refers to the maximum controllable force (the internal differential pressure corresponds to the prescribed force setpoint value)
- 4) The effective force at the workpiece and its accuracy depends largely on the friction in the system as well as the repetition accuracy of the internal control system. Note that friction forces always work against the direction of movement of the piston. The following formula can be used as a rule of thumb for the force F at the workpiece:

$$F = F_{\text{setpoint}} \pm F_{\text{friction forces}} \pm \text{repetition accuracy of pressure control}$$

Linear drives DGCI, with displacement encoder

Technical data

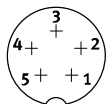
Positioning characteristics with Soft Stop end-position controller CPX-CMPX, SPC11						
Piston \varnothing		18	25	32	40	63
Mounting position		Any				
Repetition accuracy ¹⁾	[mm]	±2				
Minimum load, horizontal ²⁾	[kg]	1	2	3	5	12
Maximum load, horizontal ²⁾	[kg]	15	30	50	75	180
Minimum load, vertical ²⁾	[kg]	1	2	3	5	12
Maximum load, vertical ²⁾	[kg]	5	10	15	25	60
Travel time	[s]	→ SoftStop sizing software: → www.festo.com				
Recommended proportional directional control valve						
For CPX-CMPX		→ page 45				
For SPC11		→ page 46				

- 1) One intermediate position. The accuracy in the end positions depends solely on the design of the end stops
 2) Load = effective load + mass of all moving parts on the drive

Electrical data – Displacement encoder	
Output signal	Digital
Linearity error ¹⁾	[%] < ±0.02, min. ±50 µm
Maximum travel speed	[m/s] 5
Protection class	IP67
CE marking (see declaration of conformity)	To EU EMC Directive ²⁾
Power supply	[V DC] 24 (±25%)
Current consumption	[mA] Typically 100
Maximum temperature coefficient	[ppm/°K] 15
Electrical connection	Cable with 5-pin plug, round type M9
Cable length	[m] 1.5
Cable quality	Suitable for use with energy chains

- 1) Always refers to max. stroke
 2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → Certificates.
 If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Pin allocation of plug



Pin	Function	Pin	Function
1	24 V	4	CAN_H
2	-	5	CAN_L
3	0 V	-	Screened

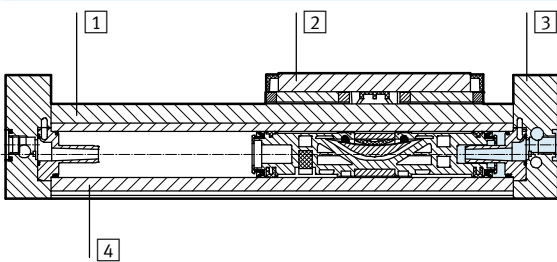
Linear drives DGCI, with displacement encoder

Technical data

Weight [g]					
Piston Ø	18	25	32	40	63
DGCI-...					
Basic weight with 0 mm stroke	1200	2400	3100	7300	22500
Additional weight per 10 mm stroke	38	56	81	124	243
Moving load	360	770	1170	2360	8200
Moving load on additional slide	300	650	950	2000	5600
DGCI-...-1H-PN – With clamping unit					
Basic weight with 0 mm stroke	-	3436	4582	12386	-
Additional weight per 10 mm stroke	-	0.056	0.081	0.124	-
Moving load	-	1430	2084	5519	-

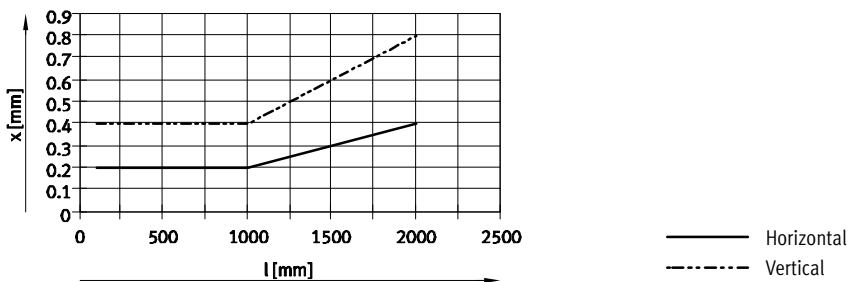
Materials

Sectional view



Linear drives		
1	Guide rail	High-alloy steel
2	Slide	High-alloy steel
3	End cap	Anodised aluminium
4	Cylinder profile, housing	Anodised aluminium
-	Seals, sealing band	Polyurethane
-	Guide band, dirt wiper, reversing roller	Polyacetal
-	Cover	Polyacetal, polyamide, powder-coated aluminium
-	Displacement encoder	Anodised aluminium, glass-fibre reinforced polyphthalamide
-	Cable	Polyurethane
-	Note on materials	Free of copper and PTFE

Repetition accuracy x as a function of stroke l



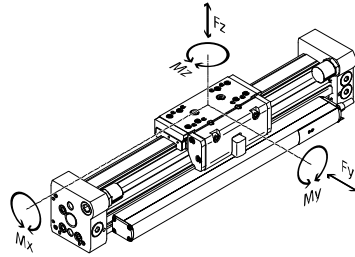
Linear drives DGCI, with displacement encoder

Technical data

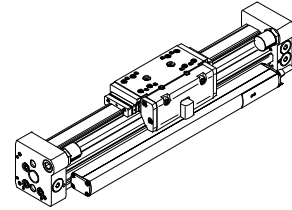
Characteristic load values for linear drive with recirculating ball bearing guide and guide

The indicated forces and torques refer to the slide surface and the centre of the slide.

These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration phase.



GP – Protected guide



If the drive is simultaneously subjected to several of the forces and torques listed below, the following equation 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						
Piston Ø		18	25	32	40	63
F _{y_{max.}}	[N]	1850	3050	3310	6890	15200
F _{z_{max.}}	[N]	1850	3050	3310	6890	15200
M _{x_{max.}}	[Nm]	16	36	54	144	529
M _{y_{max.}}	[Nm]	51	97	150	380	1157
M _{z_{max.}}	[Nm]	51	97	150	380	1157

 Note

To avoid distortion in the slide, the bearing surfaces of the attachments must maintain a flatness of 0.01 mm.

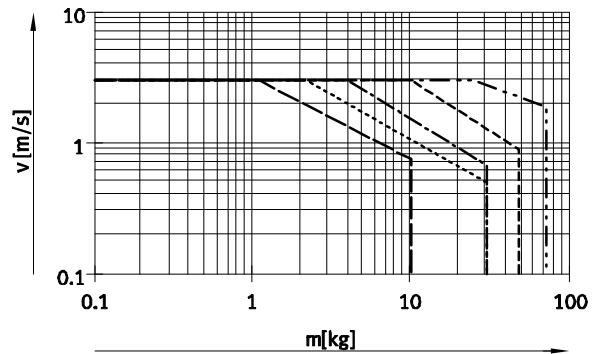
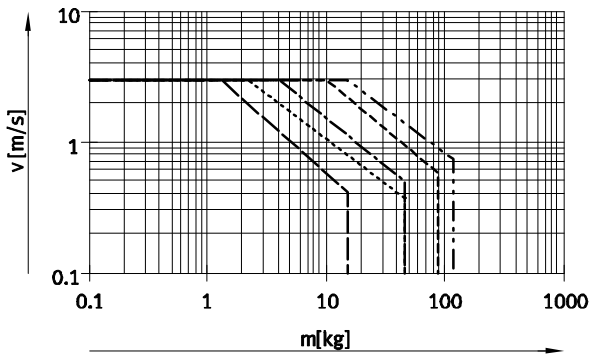
Linear drives DGCI, with displacement encoder

Technical data

Maximum permissible piston speed with shock absorber v as a function of effective load m

Piston \varnothing 18 ... 63 with YSR cushioning

Piston \varnothing 18 ... 63 with YSRW cushioning



- \varnothing 18
- - - \varnothing 25
- · - \varnothing 32
- · - \varnothing 40
- - - \varnothing 63

Note

This data represents the maximum values that can be achieved. In practice, values fluctuate relative to the size of the effective load.

Technical data – Clamping unit		Dimensions → 32		
Size		25	32	40
Pneumatic connection		M5	M5	M5
Clamping type		Clamping via spring force, released via compressed air		
Static holding force	[N]	320	500	1200
Max. number of emergency braking operations ¹⁾ at reference energy	[]	–	–	750 35
Number of clamping operations under nominal load	[million switching cycles]	0.45	0.55	0.05

1) Emergency braking refers to braking the effective load if the drive axis loses power.

Operating and environmental conditions – Clamping unit	
Operating medium	Compressed air according to ISO 8573-1:2010 [7:4:4]
Operating pressure	
Clamping unit opened	[bar] 4.5 ... 8
Clamping unit closed	[bar] Pressureless
Ambient temperature	[°C] –10 ... +60

Note

No stroke reduction in combination with the clamping unit; the drive is extended by the length of the clamping unit.

Linear drives DGCI, with displacement encoder

Technical data

Number of profile mountings MUC as a function of overall length

Excessive distances between the profile mountings can reduce the positioning accuracy. The following table shows the required minimum number of profile and foot mountings.

Stroke [mm]	Number of mounting attachments		
	Order code M		Order code F
	Profile mounting	Foot mounting + profile mounting	
100 ... 400	2	2	0
401 ... 600	2	2	1
601 ... 1200	3	2	1
1201 ... 1400	3	2	2
1401 ... 2000	4	2	2

Tubing diameter with pre-assembled push-in fittings					
Size	Stroke [mm]	Ø in [mm]			
		6	8	10	12
DGCI-18	100 ... 2000	■	-	-	-
DGCI-25	100 ... 160	■	-	-	-
	225 ... 2000	-	■	-	-
DGCI-32	100 ... 2000	-	■	-	-
DGCI-40	100 ... 750	-	■	-	-
	850 ... 2000	-	-	■	-
DGCI-63	100 ... 300	-	■	-	-
	360 ... 750	-	-	■	-
	850 ... 2000	-	-	-	■

Linear drives DGCI, with displacement encoder

Technical data

Central lubrication

The lubrication adapter enables the guide of the linear drive DGCI to be permanently lubricated in applications in humid or wet ambient conditions using semi or fully automatic relubrication devices.

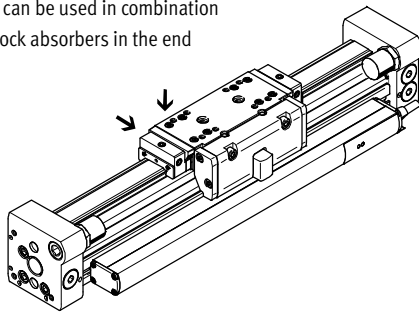
- For piston \varnothing 25, 32, 40, 63
- The modules are suitable for oils and greases
- The dimensions of the linear drive DGCI are the same with and without central lubrication modules
- Both lubrication adapters must be connected
- There are three connection options on each side
- Can be used in combination with:
 - Standard slide GK
 - Additional slide KL, KR
- Cannot be used in combination with:
 - Protected recirculating ball bearing guide GP

Slide dimensions
→ page 30

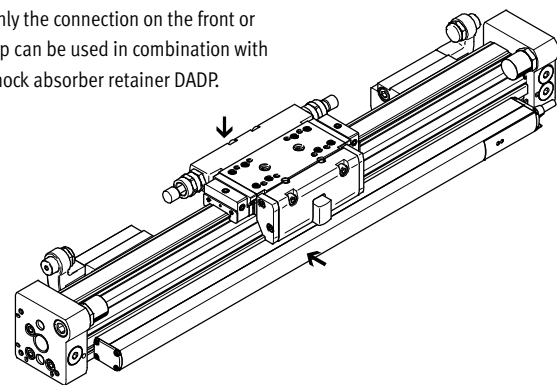
Order code C in the modular product system → page 37

Connection options

Only the connection at the rear or on the top can be used in combination with shock absorbers in the end caps.

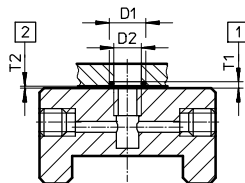


Only the connection on the front or top can be used in combination with shock absorber retainer DADP.



Connection option for customer design

The drawing opposite shows the connection option on the top lubrication interface using a customer design.



- D1 8^{+0.2} mm
- D2 6 mm
- T1 0.6^{-0.05} mm
- T2 0.1^{+0.2} mm
- O-ring \varnothing 6x1 mm (DIN3771)

- 1 Slot depth for O-ring
- 2 Required air gap

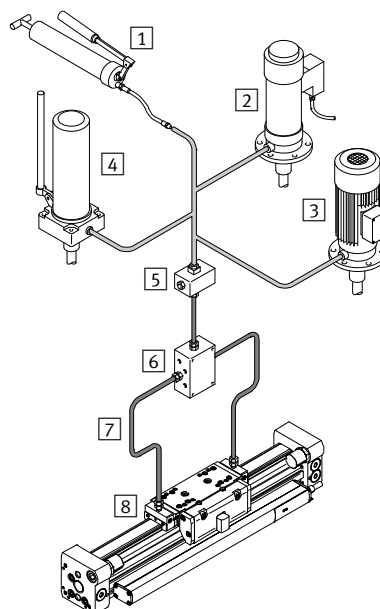
Additional dimensions → page 30

Structure of a central lubrication system

A central lubrication system requires various additional components. The illustration shows different options (using a hand pump, pneumatic container pump or electric container pump) required as a minimum for designing a central lubrication system. Festo does not sell these additional components; however, they can be obtained from the following companies:

- Lincoln
- Bielomatik
- SKF (Vogel)

Festo recommends these companies because they can supply all the necessary components.



- 1 Hand pump
- 2 Pneumatic container pump
- 3 Electric container pump
- 4 Manually operated container pump
- 5 Nipple block
- 6 Distributor block
- 7 Tubing or piping
- 8 Fittings

Linear drives DGCI, with displacement encoder

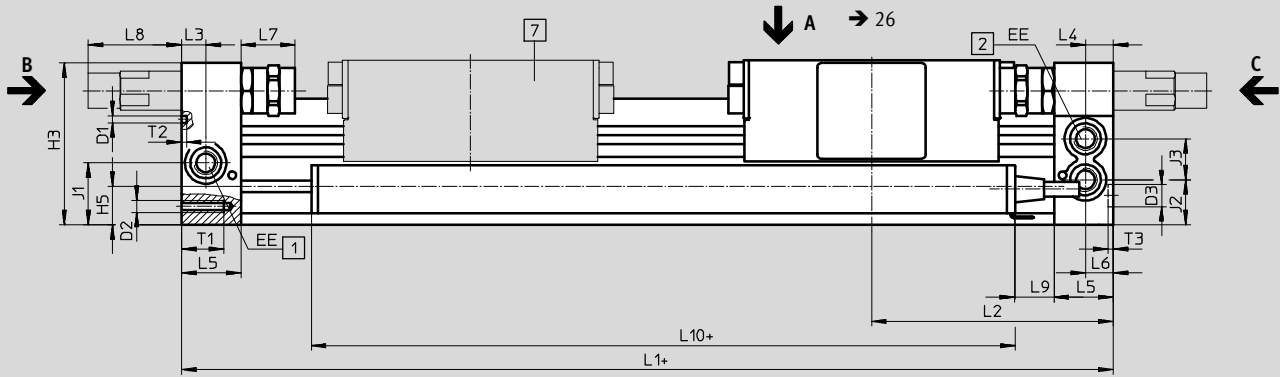
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com

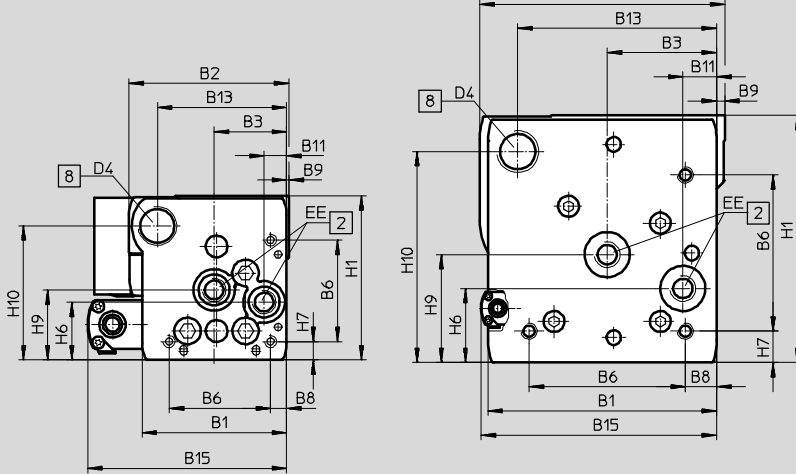
Ø 18 ... 63



View C

Ø 18 ... 40

Ø 63



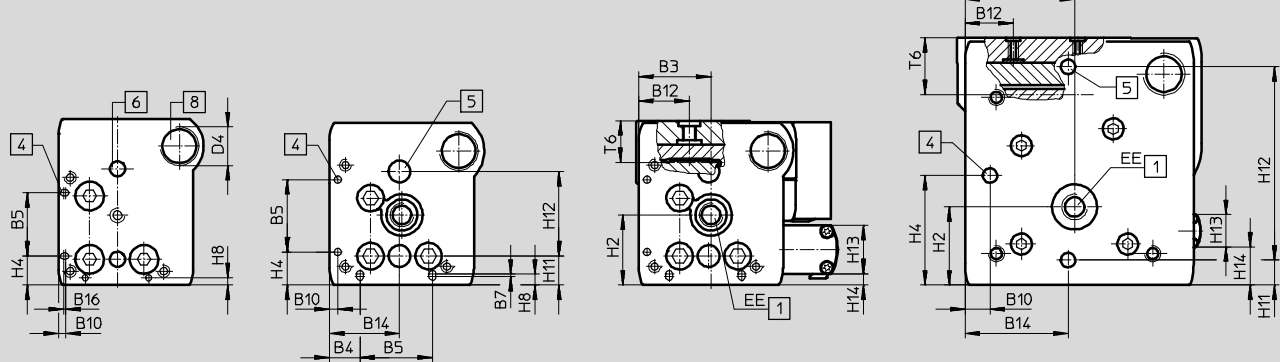
View B

Ø 18

Ø 25 ... 40

Ø 18 ... 40

Ø 63



+ plus stroke length

1 Supply port options on 2 sides (on the end face or at the front)

2 Supply port options on 2 sides, for supply port at one end (on the end face or at the front)

4 Mounting hole for foot mounting HPC

5 Hole for centring pin ZBS

6 Hole for centring sleeve ZBH

7 Additional slide

8 Thread for end stop

Linear drives DGCI, with displacement encoder

Technical data


∅	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
[mm]				±0.1	±0.05			±0.1				
18	44.5	49.9	19.5	8.8	21	31	–	3.8	1	2.4	5.5	15.5
25	59.8	66	30	12.65	30	42	1	6.65	1	3.5	9.3	21
32	73	79	38.5	5.7	63.1	57.5	–	8.5	1.5	14	14.9	18
40	91	98.5	45	17.2	55	65	–	12.2	2	8	16.5	24.8
63	142	149	68	–	–	97	–	19.5	5	15.5	21	30

∅	B13	B14	B15	B16	D1	D2	D3	D4	EE	H1	H2	H3
[mm]		±0.05			∅		∅					
18	39	19.5	68.3	0.8	2±0.05	M4	5	M12x1	M5	56.3	23.1	55
25	53	29	82.4	–	3±0.05	M5	9	M16x1	G1/8	68	29	67
32	65	38.5	97.8	–	3±0.05	M6	9	M16x1	G1/8	78.5	30	77
40	80.5	45	110.3	–	4±0.05	M6	9	M22x1.5	G1/4	99.5	41.5	97.5
63	123.5	68	146.3	–	9 ^{H7}	M10	9	M26x1.5	G3/8	153.5	48.5	151

∅	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	J1	J2	J3
[mm]	±0.1								±0.05					
18	9.6	13.4	20	4.6	2.4	25.2	46	8.5±0.15	30	20	2.3	20	16.5	11
25	13.65	15.8	24	7.65	4.5	29	55.5	12±0.15	35	20	4.7	26.1	18.6	17
32	5.7	17	27.7	8.5	14	35.2	63.8	11.45±0.15	50	20	5.9	30	22	18.5
40	17.2	25	36.5	12.2	8	44	81.5	15±0.15	60	20	13.9	35	26	26
63	68	34.8	46	19.5	–	67	131	15.5±0.2	120	20	23.7	41.5	39.5	31.5

∅	L1			L2			L3	L4	L5	L6	L7			
	KF	KF-GP	1H-PN	KF	KF-GP	1H-PN					KF	KF-GP	KF-YSR(W)	
[mm]														
18	150	157	–	74.5	78	–	5.7	5.8	15	5.5	14.5 ... 16.5	18 ... 20	14.5 ... 34.5	
25	200	205	271	100	102.5	100	10.5	10.6	24.5	10.6	22.5 ... 26.5	25 ... 29	22.5 ... 47.5	
32	250	250	320.5	124.8	124.8	124.8	14.5	14.5	30.5	14.5	27.3 ... 32.3	27.3 ... 32.3	27.3 ... 52.3	
40	300	312	458	150	156	150	14.6	14.6	33.5	14.6	31 ... 36	37 ... 42	31 ... 56	
63	400	–	–	200	–	–	20	20	44	20	41 ... 46	–	41 ... 76	

∅	L8		L9		L10	T1	T2	T3	T6	Stroke tolerance
	YSR	YSRW	KF	KF-GP						
[mm]			±0.2	±0.2	max.			+0.2		
18	29.9	32.6	–	3.5	119	9	2	3.1	15	0 ... 2.5
25	35.6	38.6	16.5	19	119	17.5	2	2.1	17.3	
32	19.5	28	35.3	35.3	119	15	2	2.1	20	
40	38.5	43.5	17	23	119	20	2	2.1	25.7	
63	38.3	48.3	97	–	119	27.5	2.1 ^{+0.2}	2.1	36.1	

 Note
 For reasons of functional safety of the displacement encoder and stability of the linear drive DGCI, the distance L7 must not fall below the values in the table.

Linear drives DGCI, with displacement encoder

Technical data

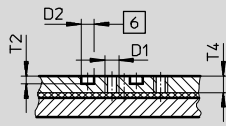
FESTO

Dimensions

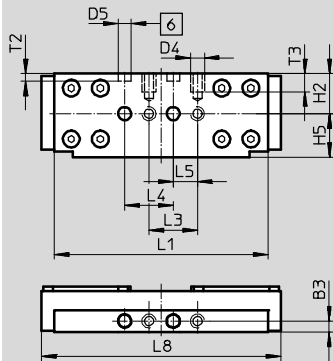
Download CAD data → www.festo.com

Slide

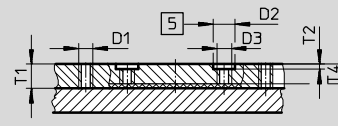
Ø 18



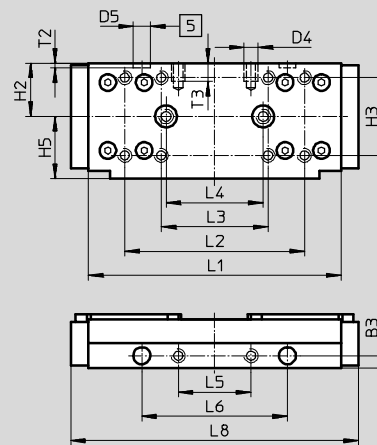
View A



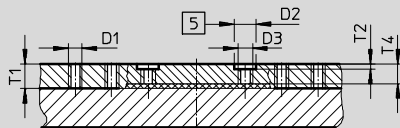
Ø 25



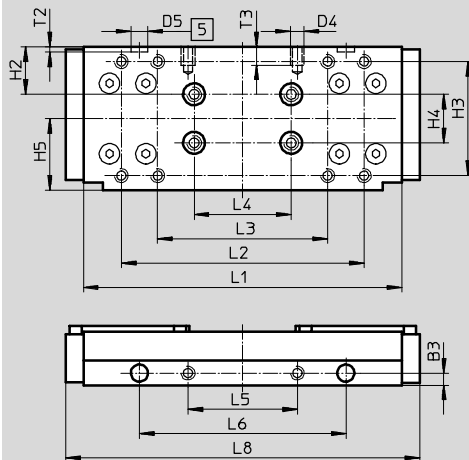
View A



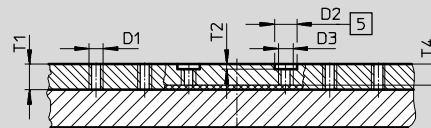
Ø 32



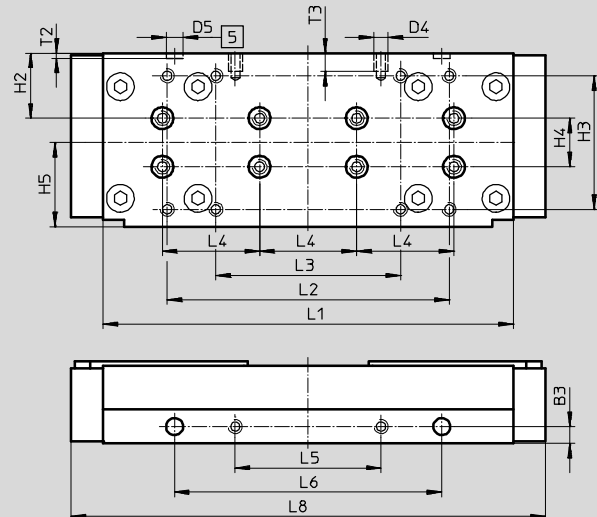
View A



Ø 40



View A



5 Hole for centring sleeve ZBH

6 Hole for centring pin ZBS

Linear drives DGCI, with displacement encoder

Technical data

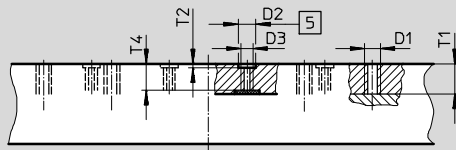
FESTO

Dimensions

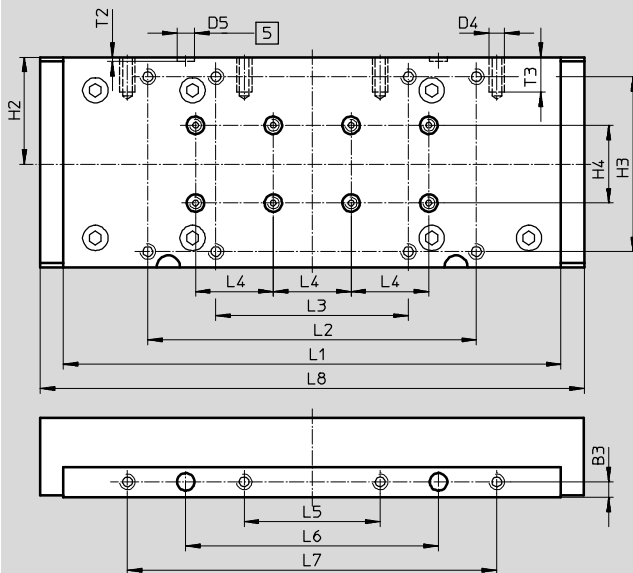
Download CAD data → www.festo.com

Slide

∅ 63



View A



5 Hole for centring sleeve ZBH

6 Hole for centring pin ZBS

∅	B3	D1	D2	D3	D4	D5	H2	H3	H4	H5	L1
[mm]	±0.05		∅ H7			∅ H7			±0.03	±0.1	
18	4.5	M5	5	–	M5	5	16.5	–	–	18	88±0.1
25	5	M5	9	M6	M5	7	22	32±0.2	–	25.5	104±0.2
32	5	M5	9	M6	M5	7	19.5	47±0.2	20	29.5	131±0.2
40	7	M5	9	M6	M6	7	26.8	55±0.2	20	34.7	169±0.2
63	8	M8	9	M6	M8	9	55	90±0.3	40	–	256±0.1

∅	L2	L3	L4	L5	L6	L7	L8	T1	T2	T3	T4
[mm]	±0.2		±0.03	±0.1	±0.05	±0.1					
18	–	20±0.1	20	10	–	–	99	–	3.1±0.1	7.5	6.7
25	74	44±0.2	40	30	60	–	118.5	10	2.1±0.2	7.5	8
32	100	70±0.2	40	45	85	–	145.7	10	2.1±0.2	7.5	8
40	116	76±0.2	40	60	110	–	195.4	10.5	2.1±0.2	7.5	8.5
63	169	99±0.2	40	70	130	190	280	15.5	2.1±0.2	18	13.6

Linear drives DGCI, with displacement encoder

Technical data

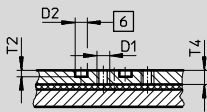
FESTO

Dimensions

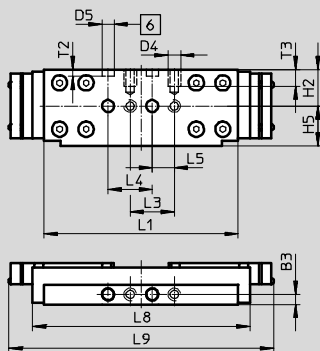
Download CAD data → www.festo.com

Slide, variant GP – Protected recirculating ball bearing guide

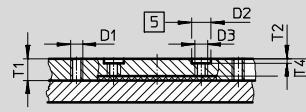
Ø 18



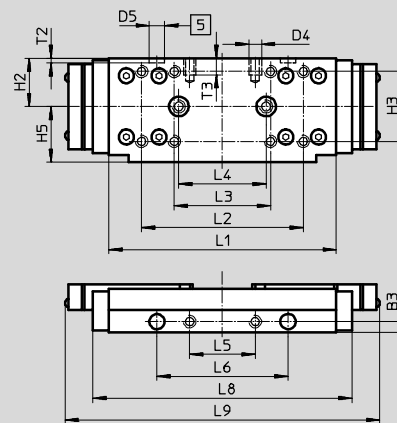
View A



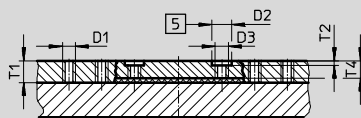
Ø 25



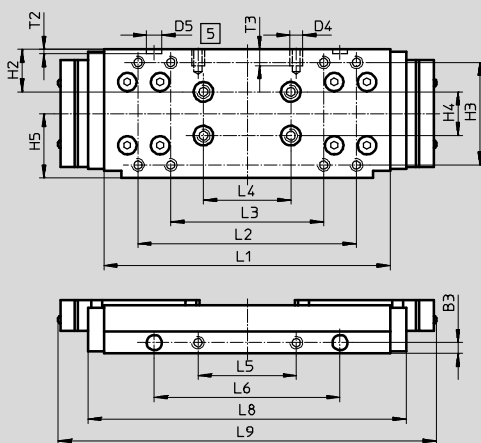
View A



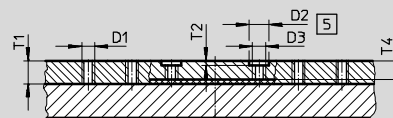
Ø 32



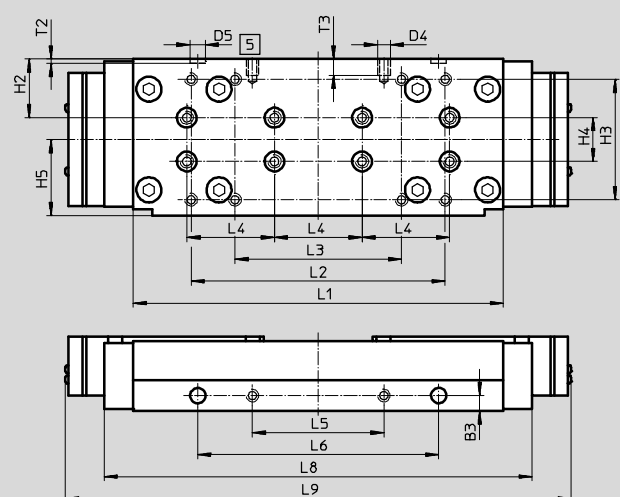
View A



Ø 40



View A



5 Hole for centring sleeve ZBH

6 Hole for centring pin ZBS

Linear drives DGCI, with displacement encoder

Technical data

∅ [mm]	B3 ±0.05	D1	D2 ∅ H7	D3	D4	D5 ∅ H7	H2	H3
18	4.5	M5	5	–	M5	5	16.5	–
25	5	M5	9	M6	M5	7	22	32±0.2
32	5	M5	9	M6	M5	7	19.5	47±0.2
40	7	M5	9	M6	M6	7	26.8	55±0.2

∅ [mm]	H4 ±0.03	H5 ±0.1	L1	L2 ±0.2	L3	L4 ±0.03	L5 ±0.1	L6 ±0.05
18	–	18	88±0.1	–	20±0.1	20	10	–
25	–	25.5	104±0.2	74	44±0.2	40	30	60
32	20	29.5	131±0.2	100	70±0.2	40	45	85
40	20	34.7	169±0.2	116	76±0.2	40	60	110

∅ [mm]	L8	L9	T1	T2	T3	T4
18	99	120	–	3.1±0.1	7.5	6.7
25	118.5	144	10	2.1±0.2	7.5	8
32	145.7	173	10	2.1±0.2	7.5	8
40	195.4	231	10.5	2.1±0.2	7.5	8.5

Linear drives DGCI, with displacement encoder

Technical data

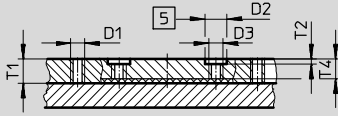
FESTO

Dimensions

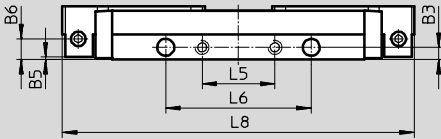
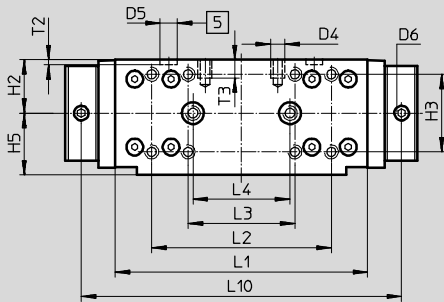
Download CAD data → www.festo.com

Slide, variant C – Lubrication adapter

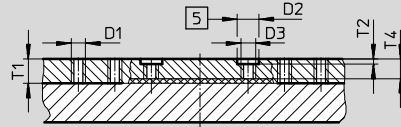
Ø 25



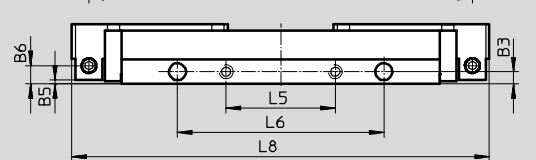
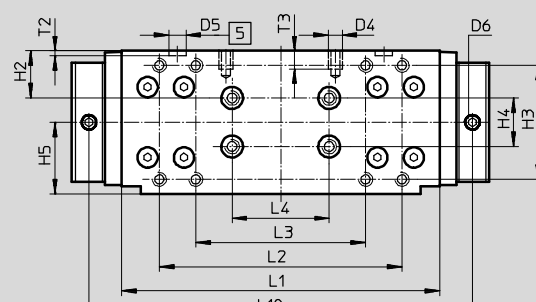
View A



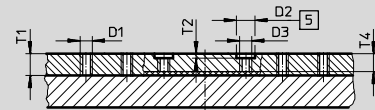
Ø 32



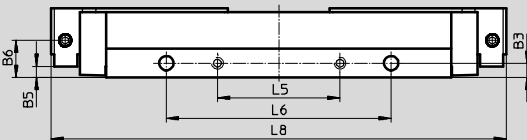
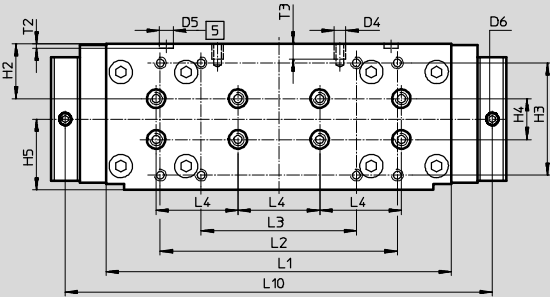
View A



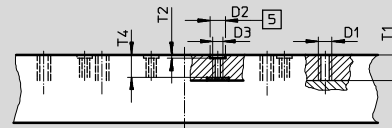
Ø 40



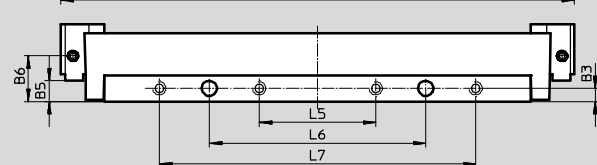
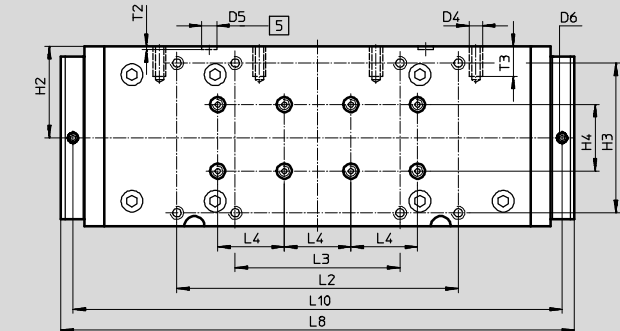
View A



Ø 63



View A



5 Hole for centring sleeve ZBH

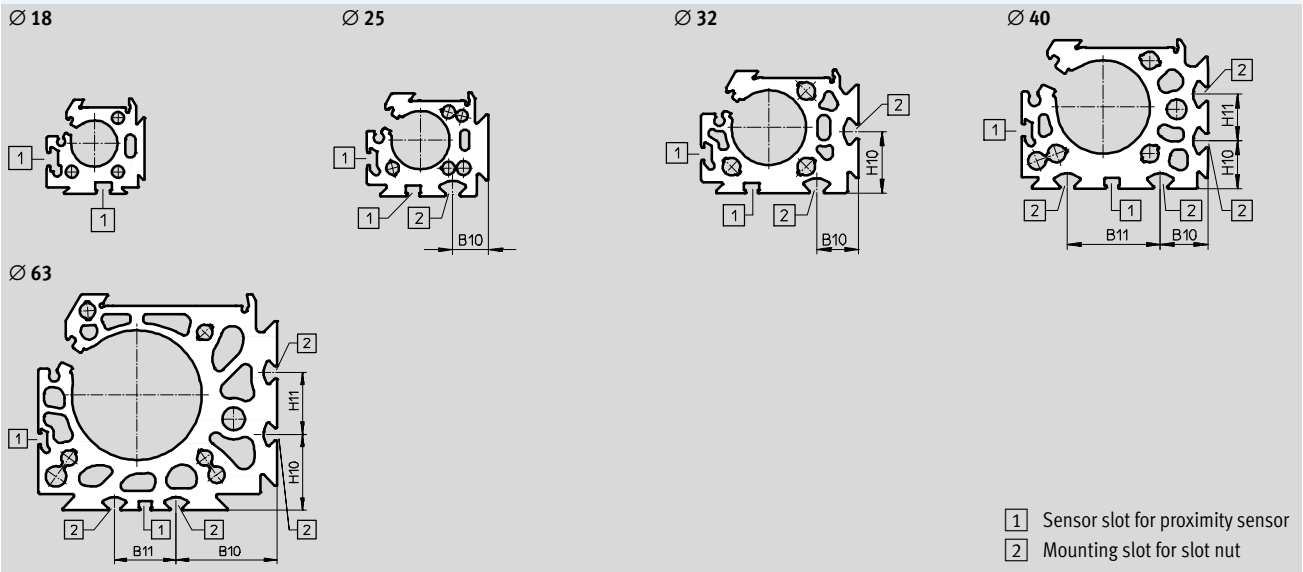
Linear drives DGCI, with displacement encoder

Technical data

∅	B3	B5	B6	D1	D2	D3	D4	D5	D6	H2	H3	H4	H5
[mm]	±0.05	±0.05			∅ H7			∅ H7				±0.03	±0.1
25	5	1	8.5	M5	9	M6	M5	7	M6x1	22	32±0.2	-	25.5
32	5	1.5	7.5	M5	9	M6	M5	7	M6x1	19.5	47±0.2	20	29.5
40	7	18.2	18.2	M5	9	M6	M6	7	M6x1	26.8	55±0.2	20	34.7
63	8	12.5	27.5	M8	9	M6	M8	9	M6x1	55	90±0.3	40	-

∅	L1	L2	L3	L4	L5	L6	L7	L8	L10	T1	T2	T3	T4
[mm]		±0.2	±0.2	±0.03	±0.1	±0.05	±0.1				+0.2		
25	104±0.2	74	44	40	30	60	-	145	132	10	2.1	7.5	8
32	131±0.2	100	70	40	45	85	-	172	158	10	2.1	7.5	8
40	169±0.2	116	76	40	60	110	-	223	209	10.5	2.1	7.5	8.5
63	256±0.1	169	99	40	70	130	190	308.4	293.8	15.5	2.1	18	13.6

Profile barrel



∅	B10	B11	H10	H11
[mm]				
25	15.23	-	-	-
32	18	-	26.5	-
40	20.5	40	20.5	20
63	49	30	37	30

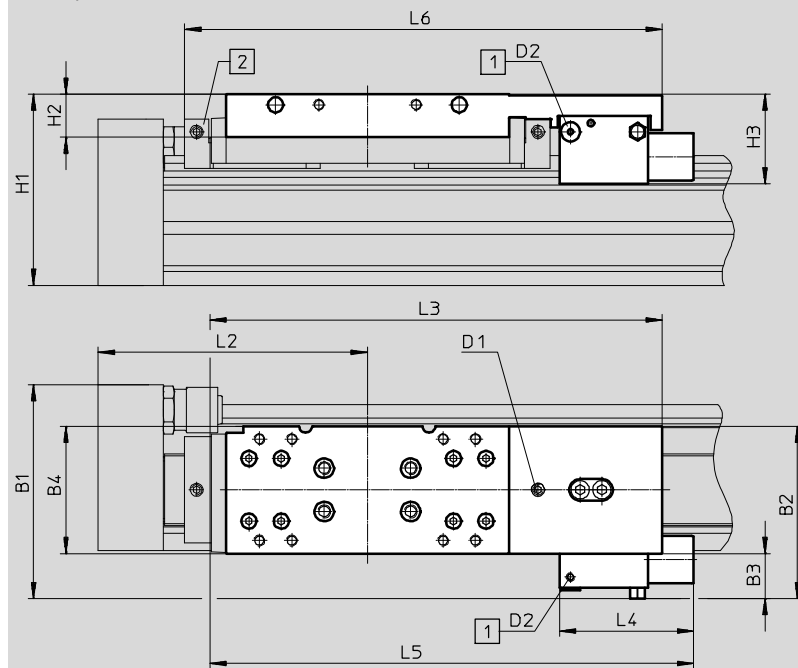
Linear drives DGCI, with displacement encoder

Technical data

Dimensions Download CAD data → www.festo.com

1H – With clamping unit

Size 25/32



- Note

Total length L1 with stroke = 0 mm → page 25

In case of subsequent installation/modification, note that the dimension H1 is bigger on a linear drive with clamping unit.

- 1 Supply port
- 2 Lubrication adapter

Type	B1	B2	B3	B4	H1	H2	H3	D1	D2	L2	L3	L4	L5	L6
DGCI-25-...-1H-PN	83.6	64.9	17.6	47.5	79	21	39.5	M6	M5	100	182.3	63	198	-
DGCI-25-...-C-1H-PN														193.8
DGCI-32-...-1H-PN	99.9	79.9	20.9	59	88.5	20	41.5	M6	M5	124.8	209.4	62	223.9	-
DGCI-32-...-C-1H-PN														221

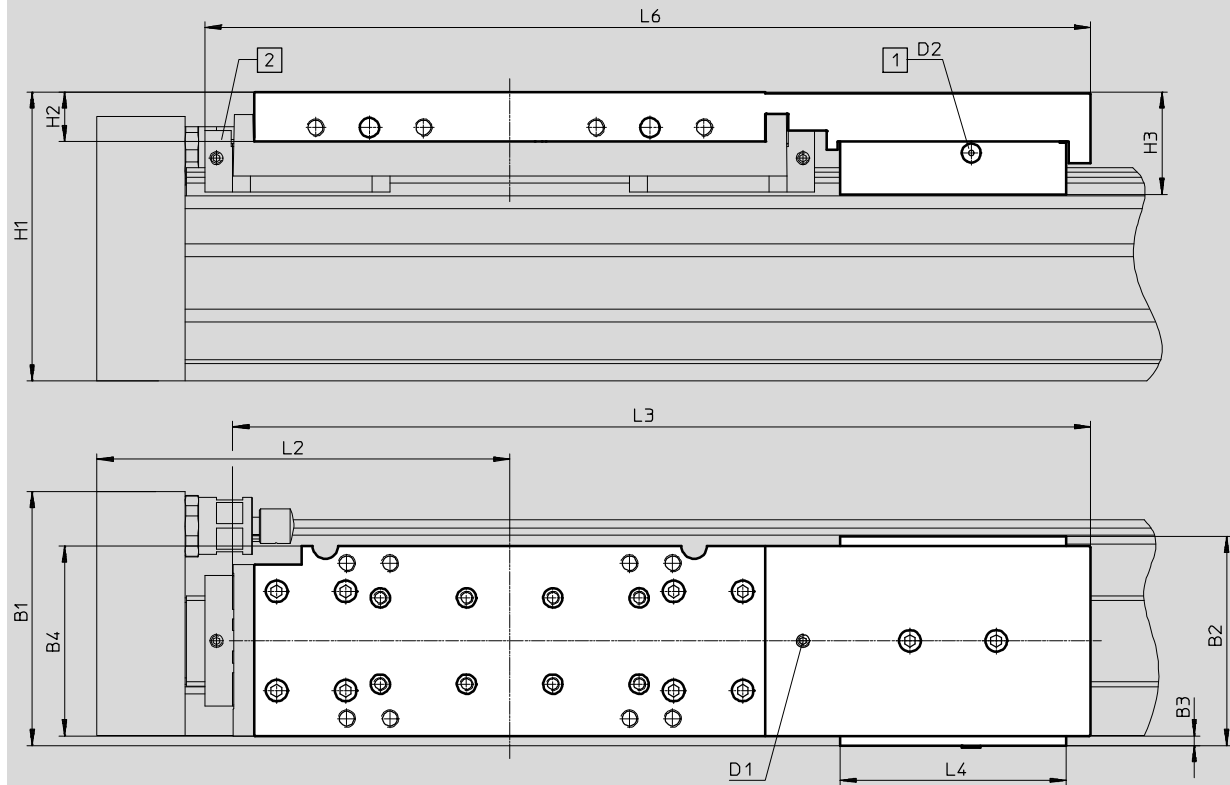
Linear drives DGCI, with displacement encoder

Technical data

Dimensions Download CAD data → www.festo.com

1H – With clamping unit

Size 40



- Note

Total length L1 with stroke = 0 mm → page 25

In case of subsequent installation/modification, note that the dimension

H1 is bigger on a linear drive with clamping unit.

1 Supply port

2 Lubrication adapter

Type	B1	B2	B3	B4	H1	H2	H3	D1	D2	L2	L3	L4	L6
DGCI-40-...-1H-PN	109.9	97	11.7	69.4	113.5	28	48.9	M6	M5	150	331.2	105	-
DGCI-40-...-C-1H-PN													345.7

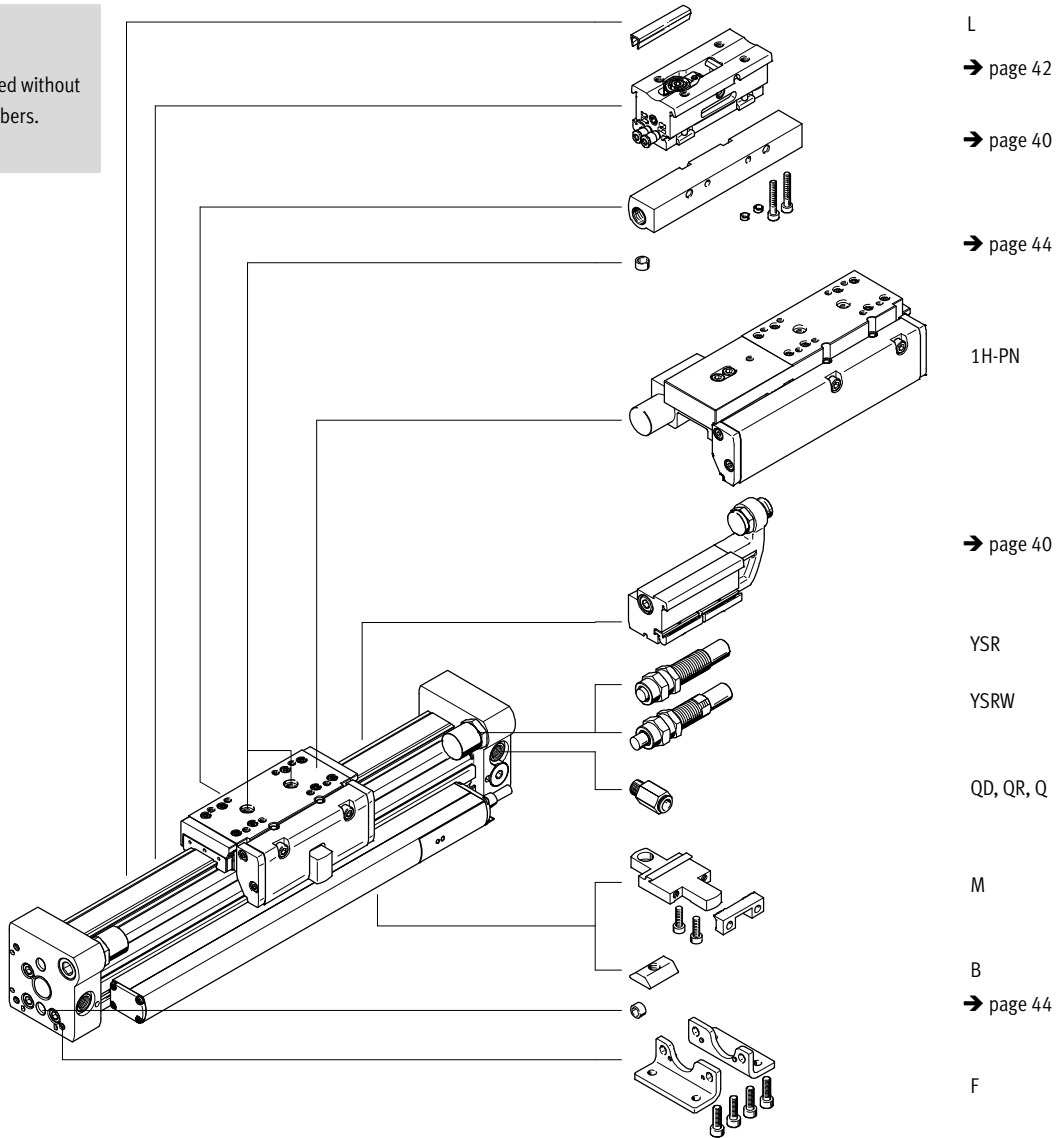
Linear drives DGCI, with displacement encoder

Ordering data – Modular products

Order code

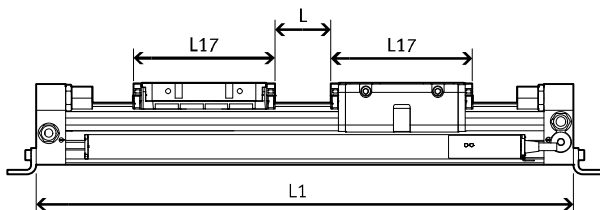
-  - Note

Drive must not be operated without end stops or shock absorbers.



Effective stroke reduction when ordering an additional slide KL or KR

For a linear drive DGCI with additional slide, the effective stroke is reduced by the length of the additional slide and the distance between both slides.



Ø [mm]	L17	
	DGCI-...-KF	DGCI-...-KF-...-GP
18	99	120
25	118.5	144
32	145.7	173
40	195.4	231
63	280	-

Given:
DGCI-18-500-...
L = 20 mm
L17= 99 mm

The effective stroke is reduced to
381 mm = 500 mm – 20 mm – 99 mm

Linear drives DGCI, with displacement encoder

Ordering data – Modular product

Order code – Alternative supply port

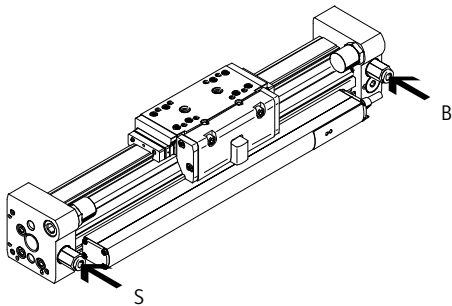
Four different supply port options (see below) can be selected when ordering the linear drive.

To make commissioning easier, the linear drive is supplied with different

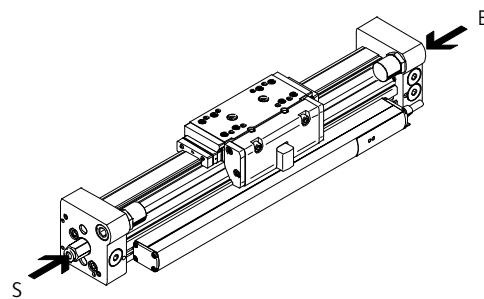
coloured push-in fittings (black or blue release ring) and without push-in

fittings in the case of the variant DGCI-...Q.

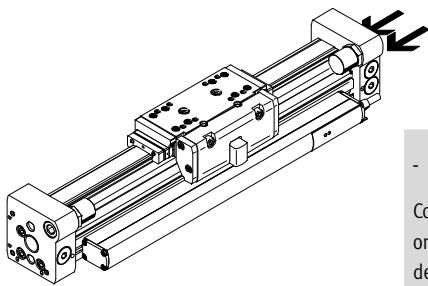
Push-in fitting at both ends, front (standard)
DGCI-...



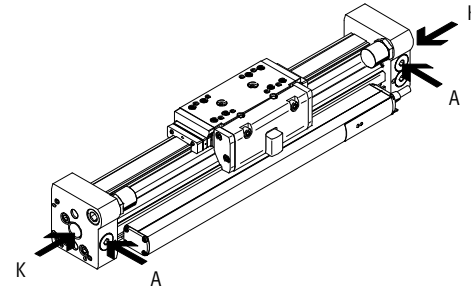
Push-in fitting at both ends, end face
DGCI-...-QD




Push-in fitting at one end, end face
DGCI-...-QR



No push-in fitting, end face open
DGCI-...Q



-  - Note
Compressed air supply at one end is only recommended for strokes up to 600 mm.

Direction of movement of the slide:

S To the right:
Fitting with black release ring

B To the left:
Fitting with blue release ring

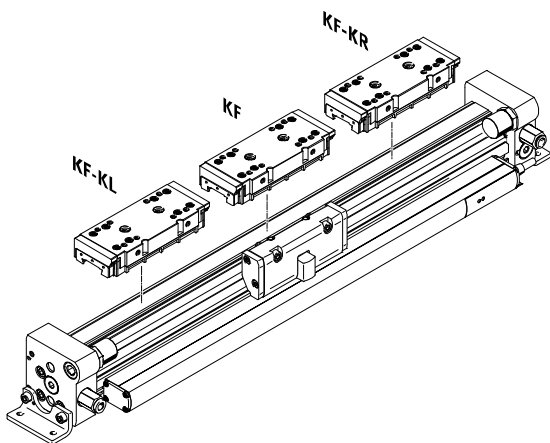
Alternative port option

K Supply ports open


A Supply ports sealed

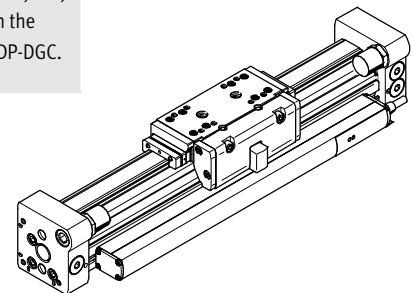
Order code

KL/KR – With additional slide



GP – With protected recirculating ball bearing guide

-  - Note
In the case of the variant with GP, only fixed stops may be used in the end caps. Shock absorbers may only be used in combination with the shock absorber retainer DADP-DGC.



Linear drives DGCI, with displacement encoder

Ordering data – Modular product

Ordering table								
Size	18	25	32	40	63	Condi- tions	Code	Enter code
M Module No.	544425	544426	544427	544428	544429			
Function	Linear drive with displacement encoder						DGCI	DGCI
Piston Ø [mm]	18	25	32	40	63		-...	
Stroke [mm]	100; 160; 225; 300; 360; 450; 500; 600; 750; 850; 1000; 1250; 1500; 1750; 2000						-...	
Guide	Recirculating ball bearing guide						-KF	-KF
O Alternative supply port	Push-in fitting at both ends, front face (standard)							
	Push-in fitting at both ends, end face						-QD	
	Push-in fitting at one end, end face, right side					1	-QR	
	Threaded connection (end face open, front face sealed)						-Q	
↓	M5	G1/8	G1/8	G1/4	G3/8			

1 QR Only for stroke 100 ... 600 mm

- M** Mandatory data
- O** Options

Transfer order code

Linear drives DGCI, with displacement encoder

Ordering data – Modular product

Ordering table									
Size	18	25	32	40	63	Condi- tions	Code	Enter code	
↓ Slide	Protected recirculating ball bearing guide					-	2	-GP	
0 Lubrication	Standard								
	Lubrication approved for use in food applications						3	-H1	
Lubrication function	Standard								
	-	Lubrication adapter						-C	
Additional slide on left	Additional slide, standard, on left						4	-KL	
Additional slide on right	Additional slide, standard, on right						4	-KR	
Clamping unit	-		None			-			
	-		1-channel			-	5	-1H	
Actuation type	-		None			-			
	-		Pneumatically actuated			-	5	-PN	
Cushioning	Adjustable mechanical stop without cushioning (standard)								
	Shock absorber, self-adjusting							-YSR	
	Shock absorber, self-adjusting, progressive							-YSRW	
EU certification	II 3GD						7	-EX2	
Accessories								ZUB-	ZUB-
Type of mounting	Foot mounting (includes 0 ... 2 profile mountings depending on the stroke)						8	F	
	Profile mounting (2 ... 4 depending on the stroke)						8	M	
Slot cover for sensor slot	1 ... 9							...L	
Slot nut for mounting slot	-		1 ... 9					...B	
User documentation	Express waiver - no operating instructions to be included (already available) (operating instructions in PDF format are available free of charge on our website at http://www.festo.com)							O	

- 2 GP Not with YSR, YSRW and lubrication adapter C
- 3 H1 Not with protected version GP; cushioning YSR, YSRW or clamping unit 1H
- 4 KL, KR For a linear drive DGCI with additional slide (KL, KR), the effective stroke per additional slide is reduced by the dimension in the table → page 34 plus the distance between the slides
- 5 1H, PN Not with protected version GP; additional slide KL, KR or lubrication H1
Only with cushioning YSRW
1H only with PN
- 7 EX2 Not with protected version GP and lubrication adapter C, clamping unit 1H-PN
- 8 F, M Allocation table → page 22

- M Mandatory data
- O Options

Transfer order code

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

Linear drives DGCI, with displacement encoder

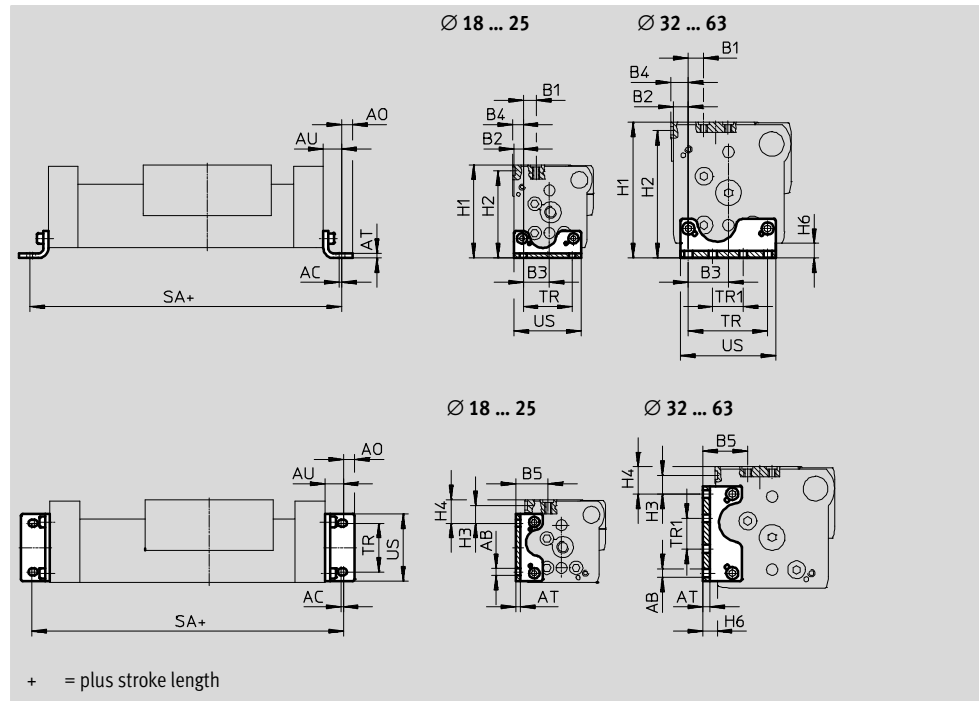
Accessories

FESTO

Foot mounting HPC
(order code: F)

Material:
Galvanised steel

Note
Additional profile mountings MUC
are required for strokes above
400 mm → page 22.



Dimensions and ordering data

For Ø [mm]	AB Ø	AC	AO	AT	AU	B1	B2	B3
18	5.5	2	6.75	3	13.25	11.2	4.3	15.2
25	5.5	2	9	4	15	13.35	7.65	22.35
32	6.6	2	10	5	19	9	9	29.5
40	6.6	2	10	6	20	12.6	12.2	32.8
63	11	3	13.5	8	28	17.5	12.5	55.5

For Ø [mm]	B4	B5	H1	H2	H3	H4
18	5.3	23.2	64	59.5	16	21.5
25	8.65	29.5	76.5	71.5	14.35	19.35
32	10.5	27	87.5	82.5	8	13
40	14.2	36.8	111.5	104.5	15.3	22.3
63	17.5	49	172.5	164.5	22	30

For Ø [mm]	H6	SA	TR	TR1	US	Weight [g]	Part No.	Type ¹⁾
18	7.7	176.5	30	–	38.6	58	533667	HPC-18
25	8.5	230	40	–	55	131	533668	HPC-25
32	9	288	56.5	19.5	68	239	533669	HPC-32
40	12	340	65	25	78	348	533670	HPC-40
63	19	456	111	39	133	1245	545237	HPC-63

1) Suitable for ATEX areas

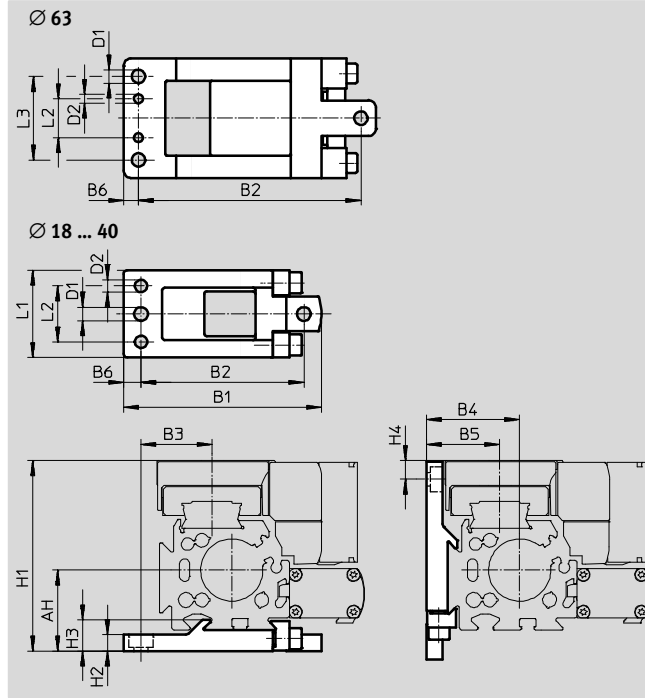
Linear drives DGCI, with displacement encoder

Accessories



Profile mounting MUC (order code: M)

Material:
High-alloy steel



The profile mounting can only be mounted underneath in combination with the clamping unit, shock absorber retainer DADP and intermediate position module DADM.
Area of application
→ page 22

Dimensions and ordering data									
For Ø	AH	B1	B2	B3	B4	B5	B6	D1	D2
[mm]			±0.2					Ø H13	Ø H7
18	27.2	67.8±0.2	56±0.15	28.7	27.2	23.2	5.7	5.5	5
25	32.5	79.5±0.2	65.5±0.15	28.5	37.5	29.5	7	5.5	5
32	37.5	94±0.2	80±0.15	35	47.5	37	7	5.5	5
40	47	110.5±0.2	96±0.15	43	57	46.8	7	6.5	6
63	75	169±0.5	149±0.2	72.5	87	69	10	9	6

For Ø	H1	H2	H3	H4	L1	L2	L3	Weight	Part No.	Type ¹⁾
[mm]						±0.05	±0.2	[g]		
18	64	5.7 _{-0.2}	9.9±0.1	6.4	33±0.1	20.5	–	78	531752	MUC-18
25	76.5	6.5 _{-0.2}	12.5±0.1	7.43	35±0.1	22.5	–	113	531753	MUC-25
32	87.5	6.5 _{-0.2}	13±0.1	4	45±0.1	30	–	174	531754	MUC-32
40	111.5	8.5 _{-0.2}	16±0.1	11.3	60±0.1	44	–	346	531755	MUC-40
63	172.5	11	25.5	15	80±0.4	26	56	1080	531757	MUC-63

1) Suitable for ATEX areas

Linear drives DGCI, with displacement encoder

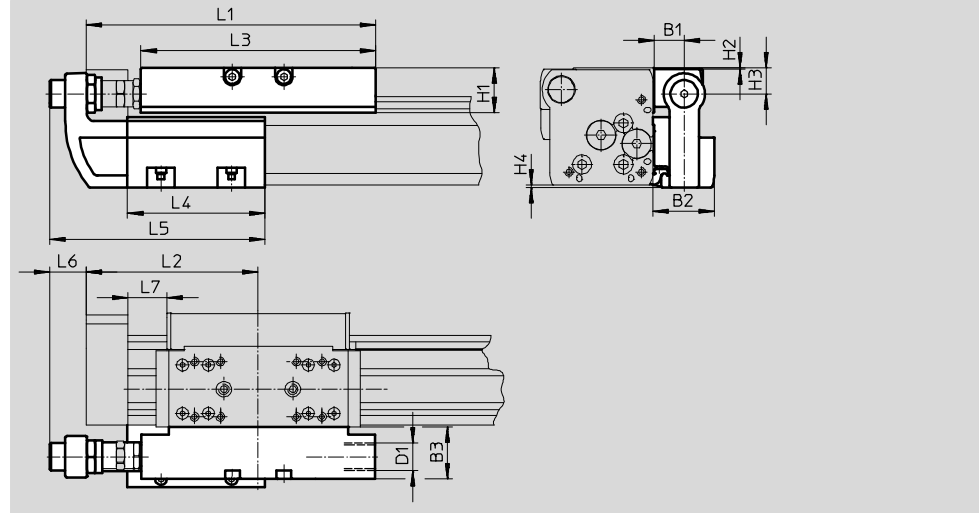
Accessories



Shock absorber retainer DADP-DGC Stop KYC

Materials: Stop
Housing: Anodised aluminium
Stop bracket: Stainless steel casting
Bracket: High-alloy steel
Free of copper and PTFE

Materials: Shock absorber retainer
Housing: Anodised aluminium
Free of copper and PTFE



Note
Shock absorbers are not included in the scope of delivery. Existing stop elements can be removed from the end caps of the linear drive and installed in the shock absorber retainer.

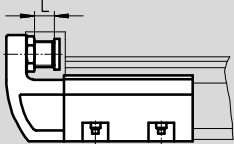

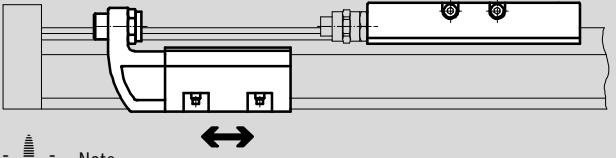

Dimensions									
For \varnothing	B1	B2	B3	D1	H1	H2	H3	H4	L1
[mm]									
18	16	34.5	29	M12x1	20.7	0.2	12.5	0.7	128
25	16.5	35	30	M16x1	25.5	0.5	15	1.4	168
32	16.5	35	30	M16x1	25.5	0.5	15	1.7	206.8
40	16	35.7	35	M22x1.5	37	0.5	21.5	2	255
63	25	50	40	M26x1.5	51.5	1.5	33	0	328

For \varnothing	L2	L3	L4	L5	L6	L7		
						KF	KF-GP	KF-YSR(W)
[mm]								
18	74.5	107	80	118.5	23.5	≥ 14.5	≥ 18	≥ 14.5
25	100	136	80	125	20.5	≥ 22.5	≥ 25	≥ 22.5
32	124.8	164	120	165	14.5	≥ 27.3	≥ 27.3	≥ 27.3
40	150	210	156	220.5	31	≥ 31	≥ 37	≥ 31
63	200	256	200	268	24	≥ 41	-	≥ 41

Note
For reasons of functional safety of the displacement encoder and stability of the linear drive DGCI, the distance L7 must not fall below the values in the table.

Linear drives DGCI, with displacement encoder

Accessories


Technical data and ordering data	Installation example
<p>Precision adjustment</p>  <p>-  - Note</p> <p>The stop KYC can be used in both directions.</p>	<p>Installation example</p>  <p>-  - Note</p> <ul style="list-style-type: none"> The stop KYC can be mounted at any position along the stroke. Note dimension L7 → page 40

For Ø [mm]	Max. impact force [N]	Ambient temperature [°C]	CRC ¹⁾	Weight [g]	Part No.	Type ²⁾
Shock absorber retainer DADP-DGC						
18	1100	-10 ... +80	2	130	541729	DADP-DGC-18-KF
25	1400			180	541730	DADP-DGC-25-KF
32	1700			215	541731	DADP-DGC-32-KF
40	3500			460	541732	DADP-DGC-40-KF
63	4300			1080	545245	DADP-DGC-63

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
- 2) Suitable for ATEX areas

For Ø [mm]	Precision adjustment L [mm]	Ambient temperature [°C]	CRC ¹⁾	Weight [g]	Part No.	Type ²⁾
Stop KYC						
18	10	-10 ... +80	2	400	541691	KYC-18
25	10			560	541692	KYC-25
32	10			790	541693	KYC-32
40	15			1525	541694	KYC-40
63	15			2950	545243	KYC-63

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
- 2) Suitable for ATEX areas

-  - Note

Permissible impact energy
→ page 17

Linear drives DGCI, with displacement encoder

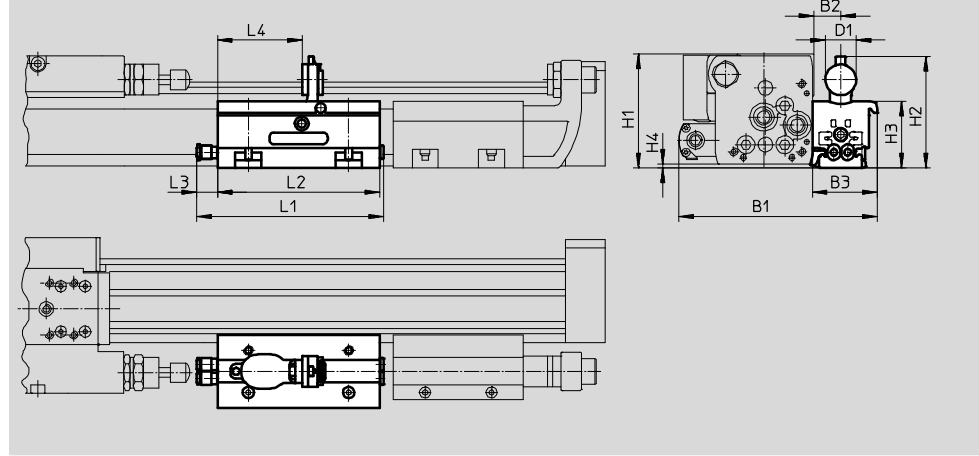
Accessories



Intermediate position module DADM-DGC

Materials:
Housing: Anodised aluminium
Stop screw, nut: Galvanised steel

Bracket, lever:
High-alloy steel
Free of copper and PTFE



Note

- Shock absorbers are not included in the scope of delivery. Existing shock absorbers can be removed from the end caps of the linear drive and installed in the shock absorber retainer. Under no circumstances may the linear drive and the intermediate position module be operated without a shock absorber.
- A shock absorber retainer DADP-DGC and a stop KYC are additionally needed when using an intermediate position module.
- The projection (dimension H4) must be observed when using the drive in combination with the intermediate position module DADM-DGC. Mounting via foot mountings HPC or profile mountings MUC is recommended in this case.

Dimensions							
For \varnothing [mm]	B1	B2	B3	D1	H1	H2	
25	122.5	16.5	40	19	69.4	68.6	
32	138	16.5	40	19	80.2	79.7	

For \varnothing [mm]	H3	H4	L1	L2	L3	L4	
25	41	1.4	116	100	13.4	52.2	
32	52	1.7	116	100	13.4	52.2	

Note

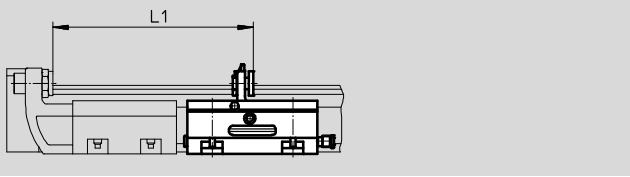
Permissible impact energy
→ page 17

Linear drives DGCI, with displacement encoder

Accessories

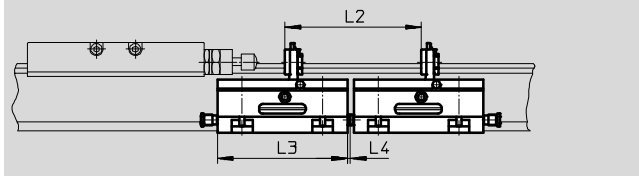
Minimum distance

Between end stop and intermediate position



∅	L1
25	145.3
32	185.3

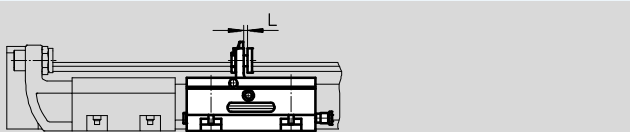
Between two intermediate positions



∅	L2	L3	L4
25	105	100	2.5
32	105	100	2.5

Technical data and ordering data

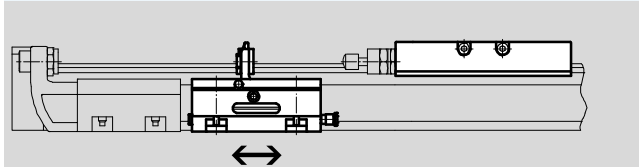
Precision adjustment L



-  - Note

The intermediate position module DADM-DGC can be used in both directions. A shock absorber retainer DADP-DGC and a stop KYC are additionally needed when using an intermediate position module.

Installation example



-  - Note

The intermediate position module DADM-DGC can be mounted at any position along the stroke.

For ∅	Operating pressure	Impact velocity	Swivel time	Repetition accuracy	Pneumatic connection	Precision adjustment L
[mm]	[bar]	[m/s]	[ms]	[mm]		[mm]
25	2.5 ... 8	→ page 21	<100	0.02	QS-4	2
32						

For ∅	Ambient temperature	CRC ¹⁾	Mounting position	Position sensing	Weight	Part No.	Type ²⁾
[mm]	[°C]				[g]		
25	-10 ... +60	2	Any	For proximity sensor SME/SMT-10	430	541700	DADM-DGC-25-A
32					530	541701	DADM-DGC-32-A

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Linear drives DGCI, with displacement encoder

Accessories



Ordering data						
	For Ø	Comment	Order code	Part No.	Type	PU ¹⁾
Slot nut HMBN ²⁾ Technical data → Internet: hmbn						
	25 ... 40	For mounting slot	B	547264	HMBN-5-1M5	10
	63			186566	HMBN-5-2M5	
Centring pin/sleeve ZBS, ZBH ²⁾ Technical data → Internet: zbs, zbh						
	18	For slide	-	150928	ZBS-5	10
	25 ... 63			150927	ZBH-9	
	18	For end cap		150928	ZBS-5	
	25 ... 63			150927	ZBH-9	
Slot cover ABP-S Technical data → Internet: abp						
	18 ... 63	For sensor slot Every 0.5 m	L	151680	ABP-5-S	2
Shock absorber YSRW ²⁾ Technical data → Internet: ysrw						
	18		YSRW	540347	YSRW-DGC-18-KF	1
	25			540349	YSRW-DGC-25-KF	
	32			540351	YSRW-DGC-32-KF	
	40			1232870	YSRW-DGC-40/50-B	
	63			543069	YSRW-DGC-63	

- 1) Packaging unit
2) Suitable for ATEX areas

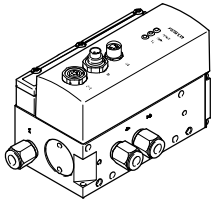
Ordering data – Proportional directional control valves and push-in fittings							
	For Ø [mm]	Stroke [mm]	Proportional directional control valve Technical data → Internet: vpwp		Push-in fitting for DGCI Technical data → Internet: qs		PU ¹⁾
			Part No.	Type ²⁾	Part No.	Type	
	For applications with axis controller CPX-CMAX						
	18	100 ... 2000	550170	VPWP-4-L-5-Q6-10-E-...	153306	QSM-M5-6	10
	25	100 ... 160	550170	VPWP-4-L-5-Q6-10-E-...	186096	QS-G1/8-6	
		225 ... 600	550170	VPWP-4-L-5-Q8-10-E-...	186098	QS-G1/8-8	
		750 ... 2000	550171	VPWP-6-L-5-Q8-10-E-...	186098	QS-G1/8-8	
	32	100 ... 400	550170	VPWP-4-L-5-Q8-10-E-...	186098	QS-G1/8-8	
		450 ... 2000	550171	VPWP-6-L-5-Q8-10-E-...	186098	QS-G1/8-8	
	40	100 ... 300	550170	VPWP-4-L-5-Q8-10-E-...	186099	QS-G1/4-8	
		360 ... 750	550171	VPWP-6-L-5-Q8-10-E-...	186099	QS-G1/4-8	
		850 ... 2000	550172	VPWP-8-L-5-Q10-10-E-...	186101	QS-G1/4-10	
	63	100 ... 300	550171	VPWP-6-L-5-Q8-10-E-...	186100	QS-G3/8-8	
		360 ... 750	550172	VPWP-8-L-5-Q10-10-E-...	186102	QS-G3/8-10	
850 ... 2000		1552544	VPWP-10-L-5-Q-10-E-G-EX1	186103	QS-G3/8-12		

- 1) Packaging unit
2) Suitable for ATEX areas

Linear drives DGCI, with displacement encoder

Accessories

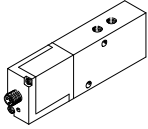
Ordering data – Proportional directional control valves and push-in fittings							
For Ø [mm]	Stroke [mm]	Proportional directional control valve Technical data → Internet: vpwp			Push-in fitting for DGCI Technical data → Internet: qs		
		Part No.	Type ²⁾	Part No.	Type	PU ¹⁾	
For applications with Soft Stop end-position controller CPX-CMPX, horizontal							
18	100 ... 1750	550170	VPWP-4-L-5-Q6-10-E-...	153306	QSM-M5-6	10	
	2000	550171	VPWP-6-L-5-Q-10-E-...	153306	QSM-M5-6		
25	100 ... 160	550170	VPWP-4-L-5-Q6-10-E-...	186096	QS-G1/8-6		
	225 ... 300	550170	VPWP-4-L-5-Q8-10-E-...	186098	QS-G1/8-8		
	360 ... 2000	550171	VPWP-6-L-5-Q8-10-E-...	186098	QS-G1/8-8		
32	100	550170	VPWP-4-L-5-Q6-10-E-...	186096	QS-G1/8-6		
	160 ... 1000	550171	VPWP-6-L-5-Q8-10-E-...	186098	QS-G1/8-8		
	1250 ... 2000	550172	VPWP-8-L-5-Q-10-E-...	186098	QS-G1/8-8		
40	100 ... 500	550171	VPWP-6-L-5-Q8-10-E-...	186099	QS-G1/4-8		
	600 ... 750	550172	VPWP-8-L-5-Q-10-E-...	186099	QS-G1/4-8		
	850 ... 2000	550172	VPWP-8-L-5-Q10-10-E-...	186101	QS-G1/4-10		
63	100 ... 160	550170	VPWP-4-L-5-Q8-10-E-...	186100	QS-G3/8-8		
	225 ... 300	550171	VPWP-6-L-5-Q8-10-E-...	186100	QS-G3/8-8		
	360 ... 450	550172	VPWP-8-L-5-Q10-10-E-...	186102	QS-G3/8-10		
	500 ... 2000	1552544	VPWP-10-L-5-Q-10-E-G-EX1	186103	QS-G3/8-12		
For applications with Soft Stop end-position controller CPX-CMPX, vertical							
18	100 ... 1750	550170	VPWP-4-L-5-Q6-10-E-...	153306	QSM-M5-6	10	
	2000	550171	VPWP-6-L-5-Q-10-E-...	153306	QSM-M5-6		
25	100 ... 160	550170	VPWP-4-L-5-Q6-10-E-...	186096	QS-G1/8-6		
	225 ... 750	550170	VPWP-4-L-5-Q8-10-E-...	186098	QS-G1/8-8		
	850 ... 2000	550171	VPWP-6-L-5-Q8-10-E-...	186098	QS-G1/8-8		
32	100	550170	VPWP-4-L-5-Q6-10-E-...	186096	QS-G1/8-6		
	160 ... 300	550170	VPWP-4-L-5-Q8-10-E-...	186098	QS-G1/8-8		
	360 ... 1750	550171	VPWP-6-L-5-Q8-10-E-...	186098	QS-G1/8-8		
	2000	550172	VPWP-8-L-5-Q-10-E-...	186098	QS-G1/8-8		
40	100 ... 225	550170	VPWP-4-L-5-Q8-10-E-...	186099	QS-G1/4-8		
	300 ... 750	550171	VPWP-6-L-5-Q8-10-E-...	186099	QS-G1/4-8		
	850 ... 1000	550171	VPWP-6-L-5-Q-10-E-...	186101	QS-G1/4-10		
	1250 ... 2000	550172	VPWP-8-L-5-Q10-10-E-...	186101	QS-G1/4-10		
63	100 ... 160	550170	VPWP-4-L-5-Q8-10-E-...	186100	QS-G3/8-8		
	225 ... 300	550171	VPWP-6-L-5-Q8-10-E-...	186100	QS-G3/8-8		
	360 ... 450	550172	VPWP-8-L-5-Q10-10-E-...	186102	QS-G3/8-10		
	500 ... 2000	1552544	VPWP-10-L-5-Q-10-E-G-EX1	186103	QS-G3/8-12		



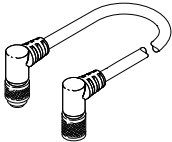
1) Packaging unit
2) Suitable for ATEX areas

Linear drives DGCI, with displacement encoder

Accessories

Ordering data – Proportional directional control valves and push-in fittings								
	For \varnothing [mm]	Stroke [mm]	Proportional directional control valve		Push-in fitting for DGCI			
			Technical data → Internet: mpye		Technical data → Internet: qs			
			Part No.	Type	Part No.	Type	PU ¹⁾	
	For applications with Soft Stop end-position controller SPC11-MTS-AIF-2, horizontal							
	18	100 ... 300	154200	MPYE-5-M5-010-B	153306	QSM-M5-6	10	
		360 ... 1750	151692	MPYE-5-1/8-LF-010-B	153306	QSM-M5-6		
		2000	151693	MPYE-5-1/8-HF-010-B	153306	QSM-M5-6		
	25	100 ... 160	151692	MPYE-5-1/8-LF-010-B	186096	QS-G1/8-6		
		225 ... 300	151692	MPYE-5-1/8-LF-010-B	186098	QS-G1/8-8		
		360 ... 2000	151693	MPYE-5-1/8-HF-010-B	186098	QS-G1/8-8		
	32	100	151692	MPYE-5-1/8-LF-010-B	186096	QS-G1/8-6		
		160 ... 1000	151693	MPYE-5-1/8-HF-010-B	186098	QS-G1/8-8		
		1250 ... 2000	151694	MPYE-5-1/4-010-B	186098	QS-G1/8-8		
	40	100 ... 500	151693	MPYE-5-1/8-HF-010-B	186099	QS-G1/4-8		
		600 ... 750	151694	MPYE-5-1/4-010-B	186099	QS-G1/4-8		
		850 ... 2000	151694	MPYE-5-1/4-010-B	186101	QS-G1/4-10		
	63	100 ... 160	151692	MPYE-5-1/8-LF-010-B	186100	QS-G3/8-8		
		225 ... 300	151693	MPYE-5-1/8-HF-010-B	186100	QS-G3/8-8		
		360 ... 450	151694	MPYE-5-1/4-010-B	186102	QS-G3/8-10		
		500 ... 2000	151695	MPYE-5-3/8-010-B	186103	QS-G3/8-12		
	For applications with Soft Stop end-position controller SPC11-MTS-AIF-2, vertical							
	18	100 ... 300	154200	MPYE-5-M5-010-B	153306	QSM-M5-6	10	
		360 ... 1750	151692	MPYE-5-1/8-LF-010-B	153306	QSM-M5-6		
		2000	151693	MPYE-5-1/8-HF-010-B	153306	QSM-M5-6		
	25	100 ... 160	151692	MPYE-5-1/8-LF-010-B	186096	QS-G1/8-6		
		225 ... 750	151692	MPYE-5-1/8-LF-010-B	186098	QS-G1/8-8		
		850 ... 2000	151693	MPYE-5-1/8-HF-010-B	186098	QS-G1/8-8		
32	100	151692	MPYE-5-1/8-LF-010-B	186096	QS-G1/8-6			
	160 ... 300	151692	MPYE-5-1/8-LF-010-B	186098	QS-G1/8-8			
	360 ... 1750	151693	MPYE-5-1/8-HF-010-B	186098	QS-G1/8-8			
	2000	151694	MPYE-5-1/4-010-B	186098	QS-G1/8-8			
40	100 ... 225	151692	MPYE-5-1/8-LF-010-B	186099	QS-G1/4-8			
	300 ... 750	151693	MPYE-5-1/8-HF-010-B	186099	QS-G1/4-8			
	850 ... 1000	151693	MPYE-5-1/8-HF-010-B	186101	QS-G1/4-10			
	1250 ... 2000	151694	MPYE-5-1/4-010-B	186101	QS-G1/4-10			
63	100 ... 160	151692	MPYE-5-1/8-LF-010-B	186100	QS-G3/8-8			
	225 ... 300	151693	MPYE-5-1/8-HF-010-B	186100	QS-G3/8-8			
	360 ... 450	151694	MPYE-5-1/4-010-B	186102	QS-G3/8-10			
	500 ... 2000	151695	MPYE-5-3/8-010-B	186103	QS-G3/8-12			

1) Packaging unit

Ordering data – Connecting cables				
	Description	Cable length [m]	Part No. Type ¹⁾	
			Part No.	Type ¹⁾
Connection between axis controller CPX-CMAX/end-position controller CPX-CMPX and proportional directional control valve VPWP				
	Angled plug and angled socket	0.25	540327	KVI-CP-3-WS-WD-0,25
		0.5	540328	KVI-CP-3-WS-WD-0,5
		2	540329	KVI-CP-3-WS-WD-2
		5	540330	KVI-CP-3-WS-WD-5
		8	540331	KVI-CP-3-WS-WD-8
	Straight plug and straight socket	2	540332	KVI-CP-3-GS-GD-2
		5	540333	KVI-CP-3-GS-GD-5
		8	540334	KVI-CP-3-GS-GD-8

1) Suitable for ATEX areas