Swivel modules DSMI-B, with integrated angular displacement encoder

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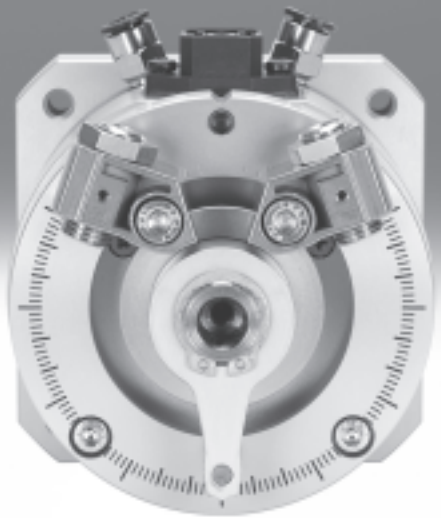

Cylinders with displacement encoder

Product range overview

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Function	Type	Brief description
Drives	**Rodless**	
	DDLI 	• Without guide • With contactless displacement encoder • Based on linear drive DGC-K • Supply ports optionally on end face or front • System product for handling and assembly technology
	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 ISO DIN VDMA
	DDPC 	• With contactless displacement encoder • Various piston rod variants • Standards-based cylinder to ISO 15552 ISO DIN VDMA
	DNC/DSBC 	• With attached potentiometer MLO-LWG • Various piston rod variants • Standards-based cylinder to ISO 15552 ISO DIN VDMA
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

Piston ∅	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						
25, 32	100; 160; 225; 300; 360; 450; 500; 600; 750; 850; 1,000; 1,250; 1,500; 1,750; 2,000	■	■	■	■	■
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

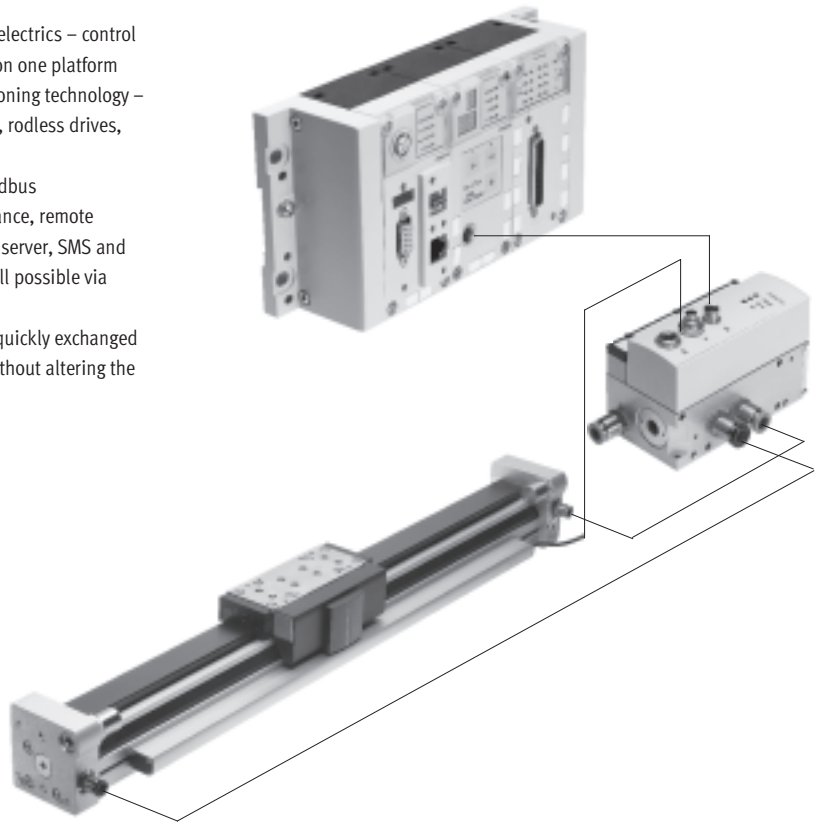
Key features

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

Technical data ➔ Internet: 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.

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

End-position controller CPX-CMPX

Technical data ➔ Internet: 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.

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

Technical data ➔ Internet: 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.

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

Technical data ➔ Internet: 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.

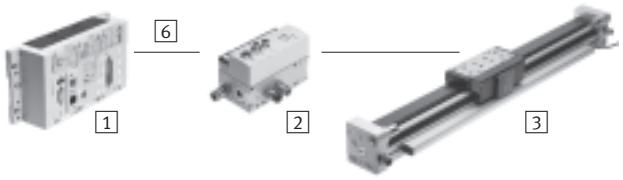
Advantages:
- All process steps can be documented, which improves quality
- An adjustable contact force (via pressure regulator) increases the precision of the "displacement sensor"
- With displacement encoders for measuring absolute values, the actual position is immediately available after the system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

Cylinders with displacement encoder

Drive options

System with linear drive DDLI, DGCI

Technical data ➔ Internet: dgci



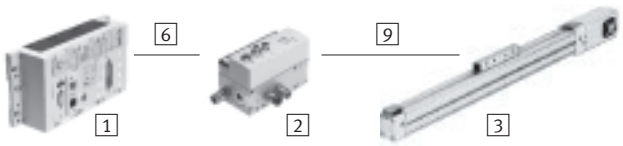
1 Controller module CPX-CMPX or CPX-CMAX
2 Proportional directional control valve VPWP
3 Linear drive DDLI, DGCI with displacement encoder
6 Connecting cable KVI-CP-3-...

- 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, DGPIL or displacement encoder MME-MTS

Technical data ➔ Internet: dgpi



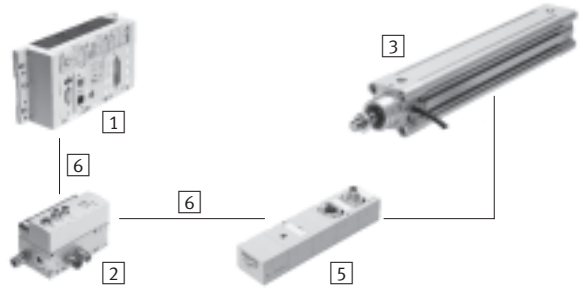
1 Controller module CPX-CMPX or CPX-CMAX
2 Proportional directional control valve VPWP
3 Linear drive DGPI, DGPIL with displacement encoder
6 Connecting cable KVI-CP-3-...
9 NEBP-M16W6-K-2-M9W5

- 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

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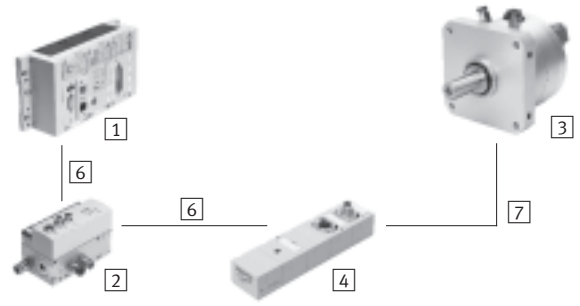
System with swivel module DSMI

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

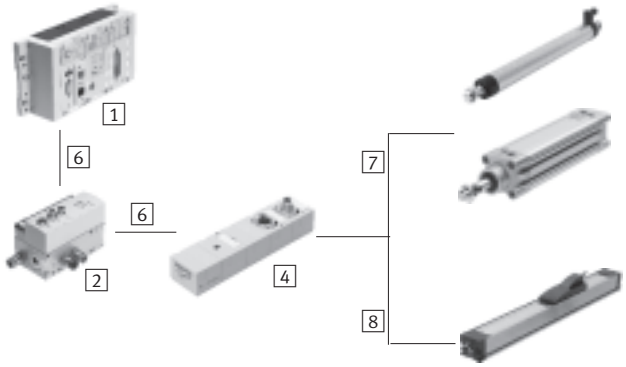
- Swivel module DSMI with integrated displacement encoder
- Identical design to pneumatic swivel module DSM
- Absolute displacement encoder on basis of potentiometer
- Swivel range from 0 ... 270°
- Size: 25, 40, 63
- Max. torque: 5 ... 40 Nm
- Range of applications: Soft Stop and pneumatic positioning
- Mass moments of inertia from 15 ... 6,000 kgcm^2 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 ∅ 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

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System components for Soft Stop systems with end-position controller CPX-CMPX							
3	Linear drive		Standard cylinder	Swivel module	Displacement encoder		→ Page/ Internet
	DDLI/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

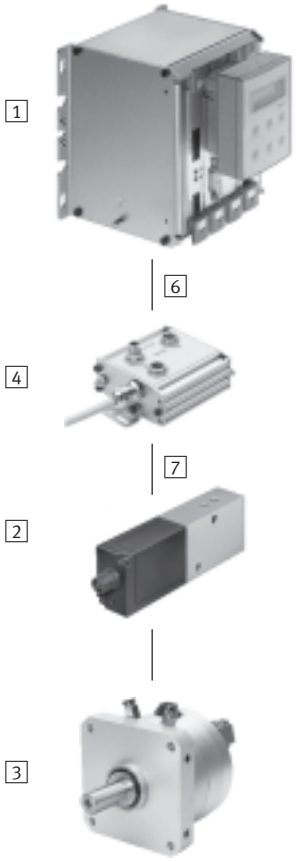
System components for pneumatic positioning systems with axis controller CPX-CMAX							
3	Linear drive		Standard cylinder	Swivel module	Displacement encoder		→ Page/ Internet
	DDLI/DGCI	DGPI	DNCI, DDPC	DSMI	MLO-LWG/-TLF	MME-MTS	
1 Axis controller CPX-CMAX	■	■	■	■	■	■	cmax
2 Prop. directional control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

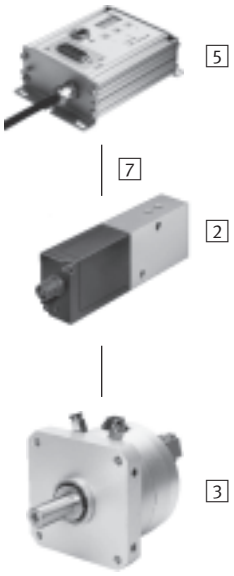
Overview

Individual components for positioning
With axis controller SPC200
➔ Internet: spc200



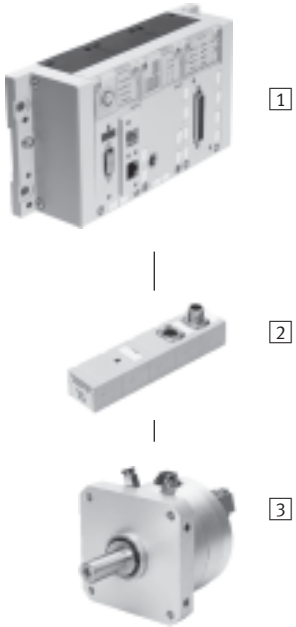
1 Axis controller SPC200
2 Proportional directional control valve MPYE
3 Swivel module DSMI
4 Axis interface SPC-AIF-POT-LWG
6 Connecting cable KSPC-AIF-...
7 Connecting cable KMPYE-AIF-...

With end-position controller SPC11
➔ Internet: spc11



2 Proportional directional control valve MPYE
3 Swivel module DSMI
5 End-position controller SPC11-POT-LWG
7 Connecting cable KMPYE-AIF-...

Individual components for use as a measuring cylinder
With measuring module CPX-CMIX
➔ Internet: cmix

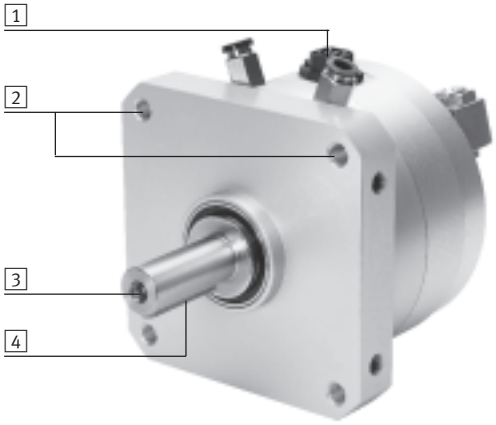


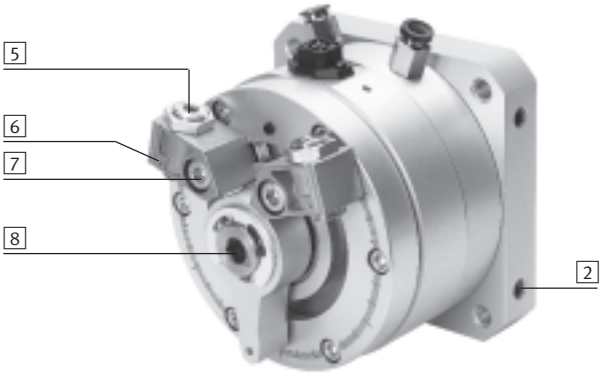
1 Measuring module CPX-CMIX
2 Sensor interface CASM-S-D2-R3
3 Swivel module DSMI

Swivel modules DSMI-B, with integrated angular displacement encoder

Key features

At a glance

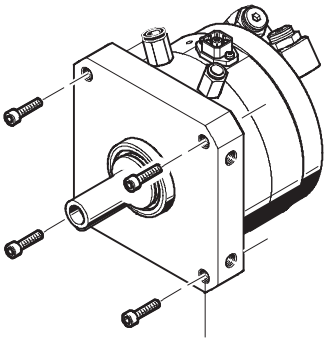




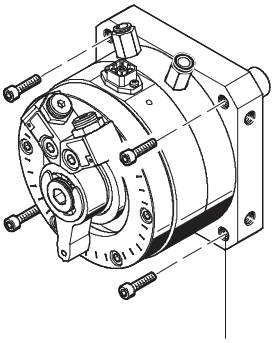
1 Connector plug for displacement encoder
2 Wide range of integrated mounting options
3 Option for mounting on the drive shaft by the user
4 Feather key
5 Fixed stop with precision adjustment of the swivel angle
6 Mounting facility for proximity sensors using sensor bracket, for contactless position sensing
7 Fixed stop can be set at any point within the swivel angle
8 Manual operation via internal hexagon socket in the drive shaft

A female thread is already integrated for attachment of an additional drive shaft by the user.

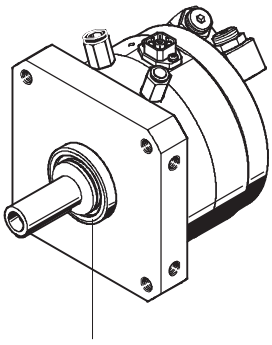
Mounting options



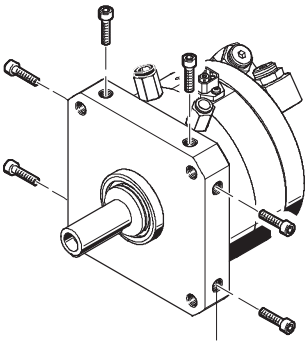
Threaded through-hole



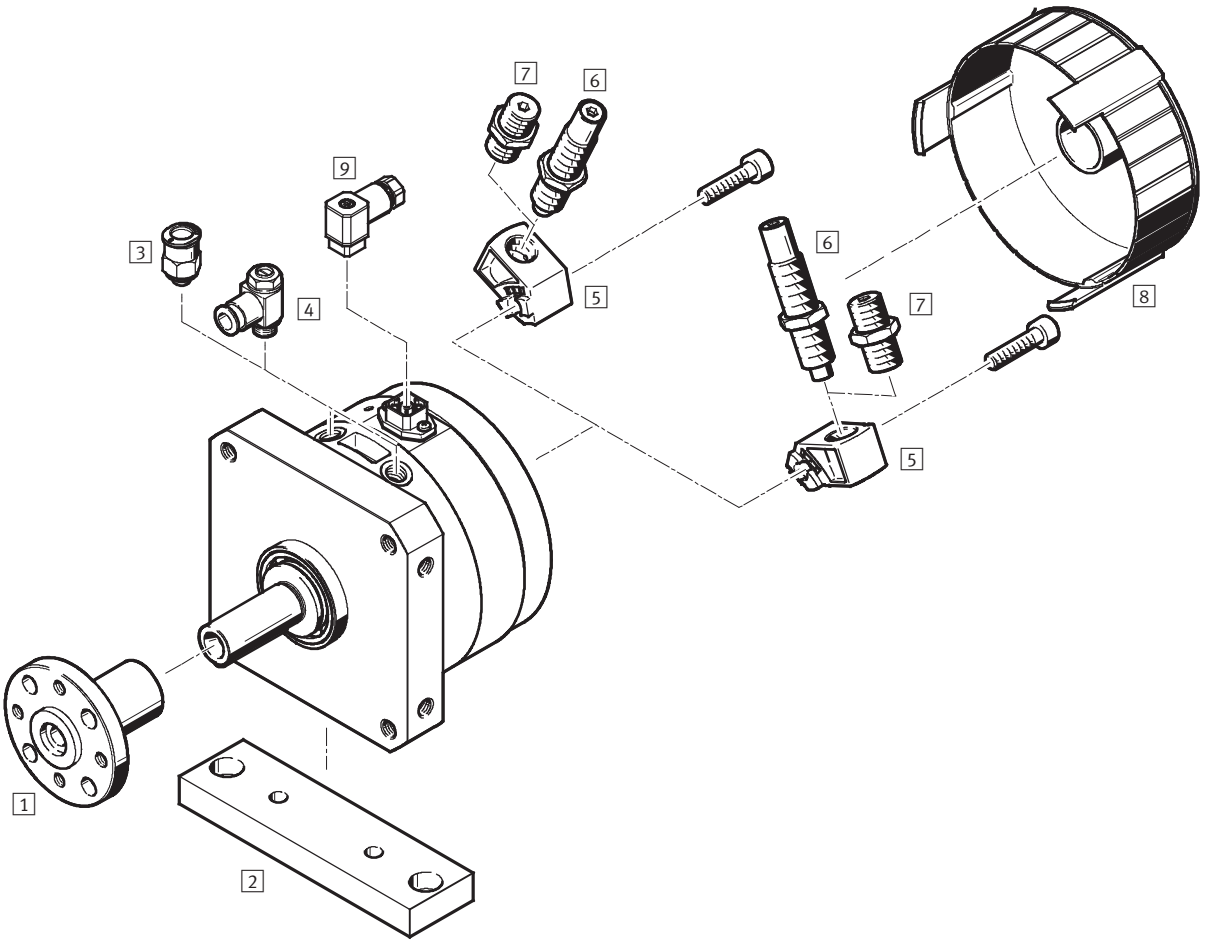
Threaded through-hole



Centring collar



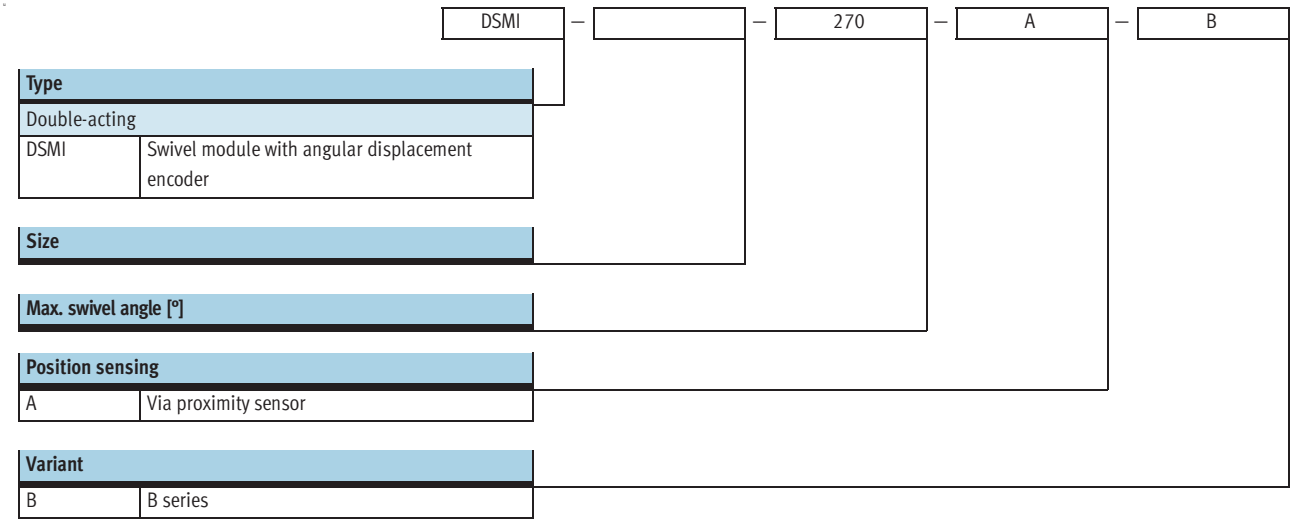
Basic thread



Accessories			
	For size	Brief description	➔ Page/Internet
1 Push-on flange FWSR	25, 40	For mounting attachments	18
2 Mounting plate HSM	25, 40	Adapter plate for mounting the drive	18
3 Push-in fitting QS	25, 40, 63	For connecting compressed air tubing with standard O.D. (push-in fittings are included in the scope of delivery of the drive)	quick star
4 One-way flow control valve GRLA	25, 40, 63	For regulating speed (is recommended when using the DSMI as a measuring cylinder)	20
5 Cushioning mount DSM-B	25, 40, 63	• For elastic cushioning components • For shock absorbers • As a mechanical stop in Soft Stop applications	19
6 Shock absorber DYSC	25, 40, 63	Self-adjusting shock absorbers with fixed stop (is recommended when using the DSMI as a measuring cylinder)	19
7 Cushioning kit DSM-...-P-B	25, 40, 63	Elastic cushioning components with fixed stop	19
8 Cover cap AKM	25, 40	Reduces the risk of injury in the swivel range of the stop lever	19
9 Plug socket SD	25, 40, 63	For connecting the displacement encoder	20

Swivel modules DSMI-B, with integrated angular displacement encoder

Type codes



Swivel modules DSMI-B, with integrated angular displacement encoder

Technical data

FESTO

25 ... 63

5 ... 40 Nm

General technical data				
Size		25	40	63
Design		Rotary vane		
		Drive shaft, fitted with ball bearings		
Mode of operation		Double-acting		
Type of mounting		Via female thread		
Position sensing		Via integrated angular displacement encoder		
		Via proximity sensor[1]		
Measuring principle (angular displacement encoder)		Analogue with conductive plastic potentiometer		
Min. travel speed	[°/s]	50		
Max. travel speed	[°/s]	2,000		
Max. swivel angle[2]	[°]	272		
Adjustment range of swivel angle	[°]	0 ... 270		
Pneumatic connection		M5	G⅛	G¼
Push-in fitting used		QSM-M5-6	QS-G⅛-8-I	QS-G¼-8-I
Compressed air tubing O.D.	[mm]	6	8	8

1) Not included in the scope of delivery, can be ordered as an option
2) Note stroke reduction in combination with axis controller CPX-CMAX, SPC200

Operating and environmental conditions		
Operating pressure	[bar]	2 ... 10
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[3]	[°C]	–10 ... +60
Vibration resistance to DIN/IEC 68, Part 2 - 6		Severity level 2
Continuous shock resistance to DIN/IEC 68, Part 2 - 82		Severity level 2
CE marking (see declaration of conformity)[4]		To EU EMC Directive
Corrosion resistance class CRC[5]		1

1) Only applies to applications with end-position controller CPX-CMPX, SPC11 and axis controller CPX-CMAX, SPC200
2) The proportional directional control valve VPWP, MPYE requires these characteristic values
3) Note operating range of proximity sensors
4) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com ➔ Support ➔ User documentation.
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.
5) Corrosion resistance class 1 according to Festo standard 940 070
Components subject to low corrosion stress. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Weight				
Size		25	40	63
DSMI	[g]	1,080	3,950	6,900

Swivel modules DSMI-B, with integrated angular displacement encoder

Technical data

Torque [Nm]			
Size	25	40	63
Torque[1]	5	20	40

1) Theoretical values, calculated at 6 bar

Permissible forces on the drive shaft				
Size		25	40	63
Max. radial force	[N]	120	350	500
Max. axial force	[N]	50	120	500
Max. swivel frequency[1]	[Hz]	2		1

1) At max. permissible mass moment of inertia, operating pressure of 6 bar and a swivel angle of 270°

Note

More technical data

➔ Internet: dsm

Positioning characteristics with axis controller CPX-CMAX, SPC200				
Size		25	40	63
Mounting position		Any		
Resolution	[°]	0.1		
Repetition accuracy	[°]	≤ ±0.3		
Min. mass moment of inertia, horizontal[1]	[kgm^2]	15 x 10^{-4}	60 x 10^{-4}	300 x 10^{-4}
Max. mass moment of inertia, horizontal[1]	[kgm^2]	300 x 10^{-4}	1,200 x 10^{-4}	6,000 x 10^{-4}
Min. mass moment of inertia, vertical[2]	[kgm^2]	15 x 10^{-4}	60 x 10^{-4}	300 x 10^{-4}
Max. mass moment of inertia, vertical[2]	[kgm^2]	300 x 10^{-4}	1,200 x 10^{-4}	6,000 x 10^{-4}
Min. travel speed	[°/s]	50		
Max. travel speed	[°/s]	2,000		
Typical positioning time, long stroke[3]	[s]	0.35/0.60	0.30/0.55	0.64/1
Typical positioning time, short stroke[4]	[s]	0.15/0.25	0.25/0.25	0.30/0.35
Min. positioning stroke	[°]	5		
Max. swivel stroke[5]	[°]	260		
Recommended proportional directional control valve				
For CPX-CMAX		VPWP-4-L-5-Q6-10-E-F	VPWP-4-L-5-Q8-10-E-F	
For SPC200		MPYE-5-M5-010-B	MPYE-5-1⁄8-LF-010-B	

1) Must not change during the movement, but may be outside the centre of gravity
2) Must not change during the movement, must act at the centre of gravity
3) At 6 bar, vertical mounting position, 260° positioning angle at min./max. mass moment of inertia
4) At 6 bar, vertical mounting position, 15° positioning angle at min./max. mass moment of inertia
5) A stroke reduction of 5° on both sides must be observed

Swivel modules DSMI-B, with integrated angular displacement encoder

Technical data

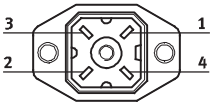
Positioning characteristics with Soft Stop end-position controller CPX-CMPX, SPC11					
Size			25	40	63
Mounting position			Horizontal		
End-position repetition accuracy[1]		[°]	< ±0.2		
Intermediate-position repetition accuracy		[°]	±2		
Cushioning[2]			Electronically controlled		
Min. mass moment of inertia, horizontal[3]		[kgm^2]	15 x 10^{-4}	60 x 10^{-4}	300 x 10^{-4}
Max. mass moment of inertia, horizontal[3]		[kgm^2]	300 x 10^{-4}	1,200 x 10^{-4}	6,000 x 10^{-4}
Min. swivel stroke		[°]	15		
Recommended proportional directional control valve					
For CPX-CMPX			VPWP-4-L-5-Q6-10-E-F	VPWP-4-L-5-Q8-10-E-F	
For SPC11			MPYE-5-M5-010-B	MPYE-5-1/8-LF-010-B	

1) When using the DSMI stops
2) The cushioning pad on the stop lever must be removed for applications with Soft Stop. The stop lever must not swivel to the end stop at too great a speed as this could damage the swivel module
3) Must not change during the movement, but may be outside the centre of gravity

Electrical data – Displacement encoder			
Output signal			Analogue
Linearity error[1]		[%]	< ±0.25
Power supply[2]		[V DC]	10
Max. current consumption		[mA]	4
Wiper current	Recommended	[µA]	< 1
	Maximum[3]	[mA]	10
Connection resistance		[kΩ]	5
Connection resistance tolerance		[%]	±20
Protection class			IP65
CE marking (see declaration of conformity)			To EU EMC Directive[4]
Electrical connection			4-pin plug, □ 16, DIN 45 322

1) Refers to max. swivel angle
2) Stabilised power supply is recommended, max. 42 V DC permissible
3) Only permissible in the short term in the event of a fault
4) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com → Support → User documentation.
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



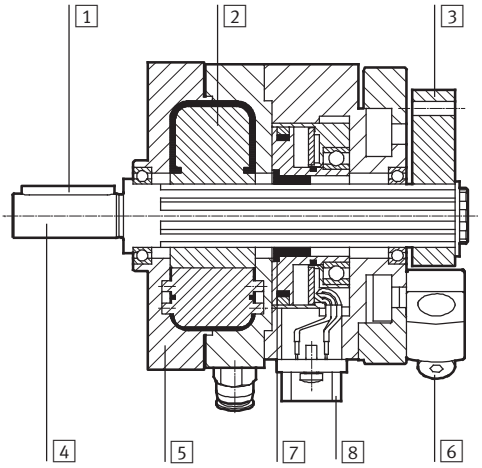
Pin	Function	
1	24 V	Power supply
2	Sig	Signal
3	0 V	GND
4	PE	Screening

Swivel modules DSMI-B, with integrated angular displacement encoder

Technical data

Materials

Sectional view

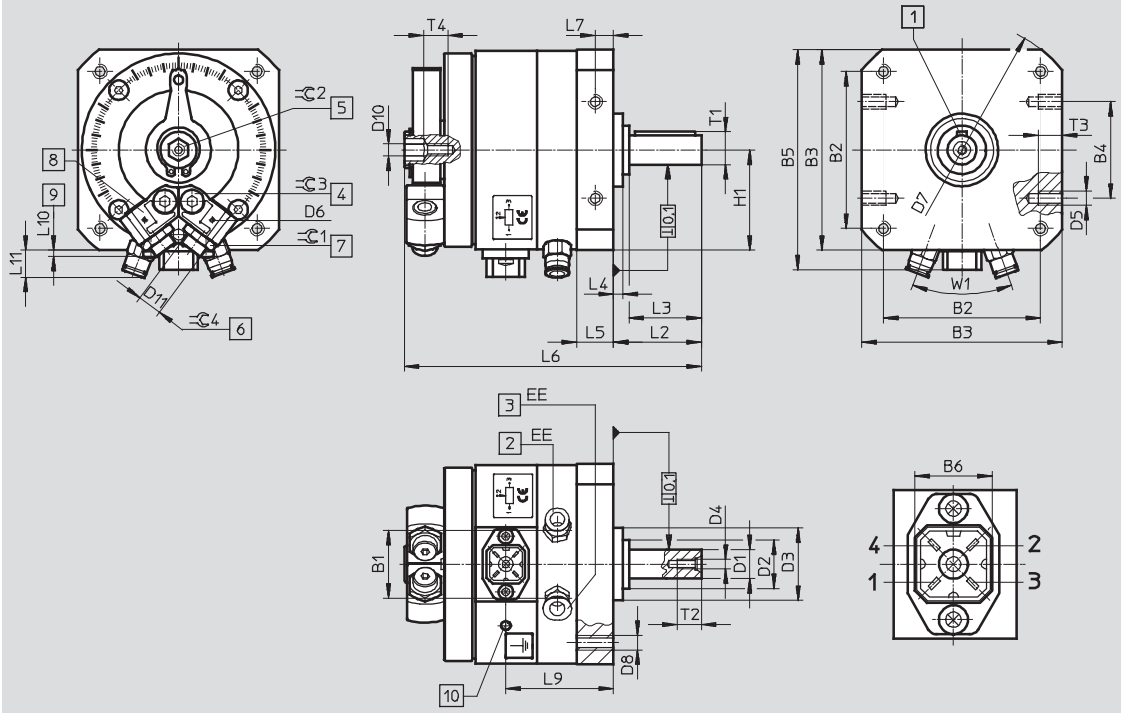


Cylinder/displacement encoder		
Cylinder		
1	Feather key	Steel
2	Rotary vane	Glass fibre-reinforced plastic
3	Stop lever	Anodised wrought aluminium alloy
4	Drive shaft	Nickel-plated steel
5	Housing	Anodised wrought aluminium alloy
6	Fixed stop/screw	Steel
	Note on materials	Free of copper and PTFE
		RoHS-compliant
Displacement encoder		
7	Coupling	Polyurethane
8	Housing	Anodised aluminium

Swivel modules DSMI-B, with integrated angular displacement encoder

Technical data

Dimensions Download CAD data ➔ **www.festo.com**



1 Feather key position at 0°
2 Blue release ring for supply port
3 Black release ring for supply port
4 Locking screw for clamping the stop
5 Manual override (internal hex)
6 End-position adjustment
7 Lock nut for end-position adjustment
8 Infinitely adjustable stops
9 Projection for end-position adjustment
10 Earth terminal for self-tapping M4x8 screw

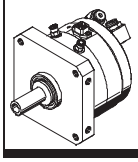
Size	B1	B2	B3	B4	B5	B6	D1 g7	D2	D3 f8	D4	D5	D6	D7
[mm]	±0.5						∅	∅	∅				∅
25	28	65±0.3	83±0.3	40±0.2	91	16	12	20–0.3	30	M4	M6	M2	106±0.3
40	43.8	105±0.3	130±0.5	80±0.3	139	16	20	36–0.4	52	M6	M10	M2	168±0.5
63	55	125±0.5	152±0.5	80±0.3	157	16	25	40±0.3	70	M10	M10	M3	200±0.5

Size	D8	D10	D11	EE	H1	L2	L3	L4	L5	L6	L7	L9	L10
[mm]					±0.2	+0.6/–0.7	±0.2	±0.4	+0.2/–0.3		±0.2	±1	
25	M6	M5	M10x1	M5	41.5	36.5	30	4	15.2	123±0.5	7.5	44.5	2.9
40	M10	M6	M16x1	G⅛	65	62	50	8	23.7	184±0.6	12	64.5	3.4
63	M12	M6	M22x1.5	G¼	76	75.5	60	10.5	28.5	235±0.6	14	80.5	6

Size	L11	T1	T2	T3	T4	W1	⫧ 1	⫧ 2	⫧ 3	⫧ 4	Feather key to DIN 6885
[mm]	±2	max.	+2	±0.2							
25	12	13.5	10	10	10	40°	13	8	4	3	A4x4x25
40	16	22.5	16	15	10	40°	19	10	8	5	A6x6x45
63	20	28	22	16	20	40°	27	10	8	5	A8x7x50

Swivel modules DSMI-B, with integrated angular displacement encoder

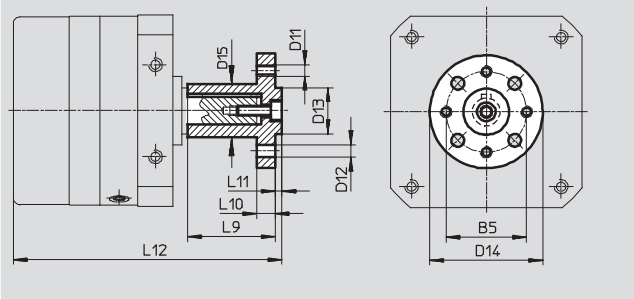
Accessories

Ordering data				
	Size	Swivel angle [°]	Part No.	Type
	25	270	**561690**	**DSMI-25-270-A-B**
	40		**561691**	**DSMI-40-270-A-B**
	63		**1202485**	**DSMI-63-270-A-B**

Accessories

Push-on flange FWSR

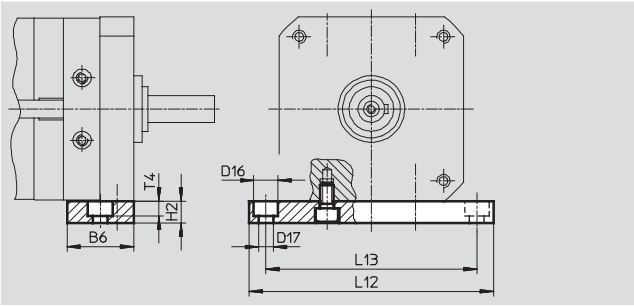
Material:
Anodised aluminium
Free of copper, PTFE and silicone



Dimensions and ordering data													
For size [mm]	B5	D11	D12 ∅ H13	D13 ∅ g7	D14 ∅	D15 ∅	L9	L10	L11	L12	Weight [g]	Part No.	Type
25	35	M5	5.5	20	50	23	38	8	3	116.5	68	**13240**	**FWSR-25**
40	54	M8	9	36	70	38	60	11	5	186.5	240	**14656**	**FWSR-40**

Mounting plate HSM

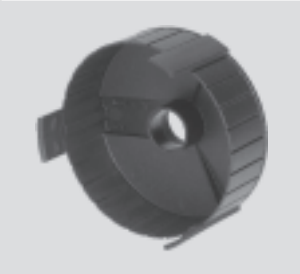
Material:
Anodised aluminium
Free of copper, PTFE and silicone

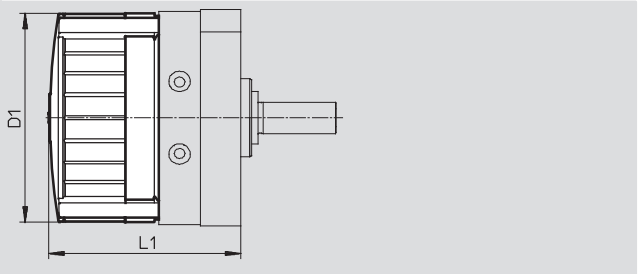


Dimensions and ordering data										
For size [mm]	B6	D16 ∅	D17 ∅	H2	L12	L13	T4	Weight [g]	Part No.	Type
25	30	11	6.6	10	110	95	6.8	94	**165573**	**HSM-25**
40	45	18	11	20	180	155	11	459	**165575**	**HSM-40**

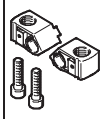
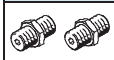
Cover cap AKM

Material:
Polyamide





Dimensions and ordering data				
For size [mm]	D1 ∅	L1	Part No.	Type
25	83	98.5±1.2	**549196**	**AKM-25**
40	130	135.5±1.5	**549198**	**AKM-40**

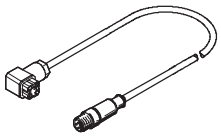
Ordering data					
	For size	Brief description	Part No.	Type	PU[1]
Cushioning mount					
	25	• For elastic cushioning components • For shock absorbers	**547902**	**DSM-25-B**	2
	40		**547904**	**DSM-40-B**	
	63		**552085**	**DSM-63-B**	
Cushioning kit					
	25	For cushioning mount DSMI-...-B	**550658**	**DSM-16/25-P-B**	2
	40		**550660**	**DSM-40-P-B**	
	63		**552086**	**DSM-63-P-B**	
Shock absorber					
	25	For cushioning mount DSMI-...-B	**548012**	**DYSC-7-5-Y1F**	1
	40		**548014**	**DYSC-12-12-Y1F**	
	63		**553593**	**DYSC-16-18-Y1F**	

1) Packaging unit

Ordering data – One-way flow control valves — Technical data ➔ Internet: grla

	For size	Connection		Material	Part No.	Type
		Thread	For tubing O.D.			
For exhaust air						
	25	M5	3	Metal design	**193137**	**GRLA-M5-QS-3-D**
			4		**193138**	**GRLA-M5-QS-4-D**
			6		**193139**	**GRLA-M5-QS-6-D**
	40	G1/8	3		**193142**	**GRLA-1/8-QS-3-D**
			4		**193143**	**GRLA-1/8-QS-4-D**
			6		**193144**	**GRLA-1/8-QS-6-D**
			8		**193145**	**GRLA-1/8-QS-8-D**
	63	G1/4	10		**193148**	**GRLA-1/4-QS-10-D**

Ordering data – Connecting cable

	Brief description	Part No.	Type
	Between sensor interface CASM and displacement encoder	**549293**	**NEBC-P1W4-K-0.3-N-M12G5**

Ordering data – Plug sockets

	Brief description	Part No.	Type
	For displacement encoder connection	**194332**	**SD-4-WD-7**

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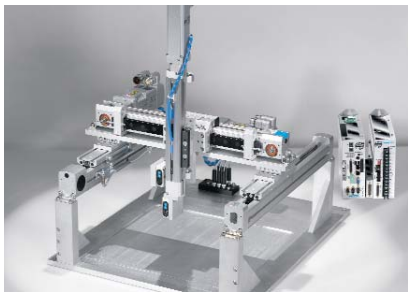

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