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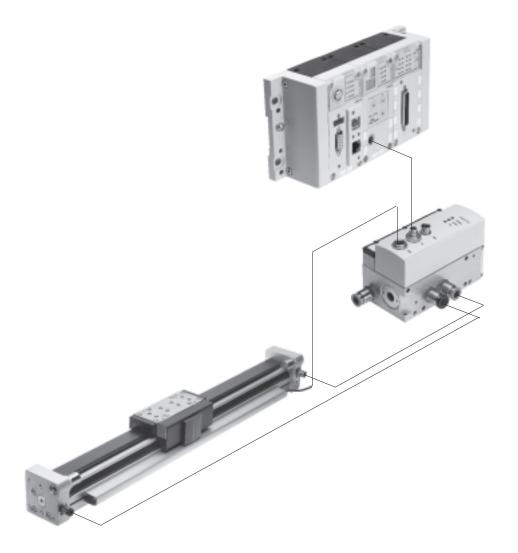
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Overviev

Servo-pneumatic 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.

- 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



Key features



Axis controllers 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.

Everything is recognisable: 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 7 modules (max. 7 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
- Clear installation and fast commissioning
- Cost-effective
- You program the system in your PLC environment

End-position controllers 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 component 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
- Clear 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 and 8. Flow rate of 350, 700 and 1,400 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 → 7

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

Drive options



System with linear drive DGCI



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

- Pneumatic rodless linear drive with displacement encoder and recirculating ball bearing guide
- Displacement encoder with absolute and contactless measuring
- Identical construction as pneumatic linear drive DGC
- Diameter: 18 ... 40 and 63 mm
- Stroke: 100 ... 2,000 mm in fixed lengths
- Range of application of Soft Stop and pneumatic positioning of loads from 1 ... 180 kg
- No sensor interface required

Technical data → Internet: dgci

Advantages:

- Finished drive unit, precision guide
- 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



- 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

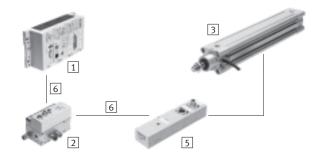
- Pneumatic rodless linear drive with displacement encoder, with or without recirculating ball bearing guide
- Displacement encoder with absolute and contactless measuring
- Diameter: 25 ... 63 mm
- Stroke: 225 ... 2,000 mm in fixed lengths
- Range of application of Soft Stop and pneumatic positioning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

Technical data → Internet: dgpi

Advantages:

- Finished drive unit
- Excellent running characteristics
- For fast and accurate positioning down to ±0.2 mm (only with axis controller CPX-CMAX)

System with standard cylinder DNCI



- 1 Controller module CPX-CMPX or CPX-CMAX
- 2 Proportional directional control valve VPWP
- 3 Standard cylinder DNCI 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
- \bullet Diameter: \varnothing 32 ... 63 mm
- Stroke: 100 ... 750 mm
- Range of application of Soft Stop and pneumatic positioning: loads from 3 ... 180 kg and the matching sensor interface CASM-S-D3-R7
- Pre-assembled cables guarantee faultless and fast electrical connection

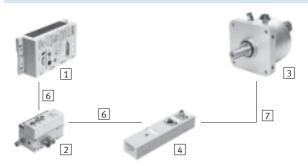
Technical data → Internet: dnci

- Compact drive unit
- Universal applications
- · Also with guide unit
- For fast and accurate positioning down to ±0.3 mm (only with axis controller CPX-CMAX)

Drive option:



System with swivel module 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

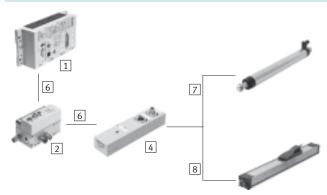
- Swivel module DSMI with integrated displacement encoder
- Identical construction as pneumatic swivel module DSM
- Absolute displacement encoder on basis of potentiometer
- Swivel range from 0 ... 270°
- Size: 25, 40, 63
- Max. torque: 5 ... 40 Nm
- Range of application of Soft Stop and pneumatic positioning: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

Technical data → Internet: dsmi

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



- 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 application of Soft Stop and pneumatic positioning with cylinder Ø 18 ... 80 mm, loads from 1 ... 300 kg

Technical data → Internet: casm

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

Proportional directional control valves VPWPDrive options

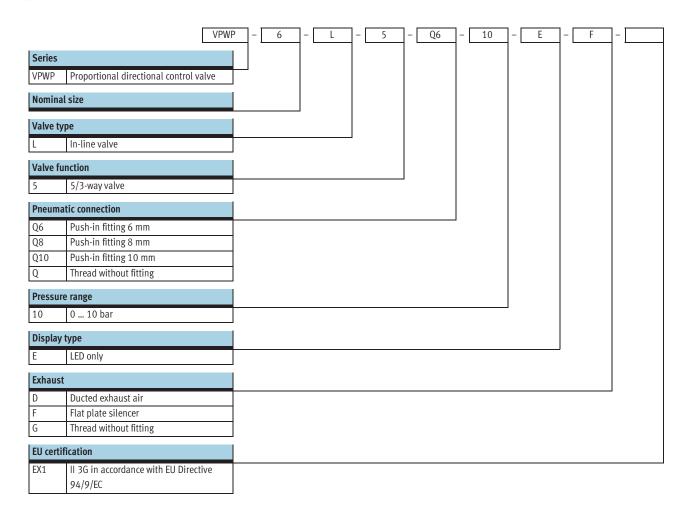


Syste	m components for Soft Stop sys	stems with end-po	sition controller CP	X-CMPX					
3		Linear drive		Standard Swivel module cylinder	Displacement encoder	Potentio	meter	→ Page/ Internet	
		DGCI	DGPI, DGPIL	DNCI	DSMI	MME	LWG	TLF	
1	End-position controller CPX-CMPX	-	-	-	-	•	•	•	cpx-cmpx
2	Proportional directional control valve VPWP	•	•	•	•	•	•	•	7
4	Sensor interface CASM-S-D2-R3	-	_	-	•	-	•	•	casm
5	Sensor interface CASM-S-D3-R7	-	-	•	-	-	-	-	casm
6	Connecting cable KVI-CP-3	•	•	-	•	•	•	•	15
7	Connecting cable NEBC-P1W4	-	_	-	•	-	•	-	nebc
8	Connecting cable NEBC-A1W3	-	_	_	-	-	-	•	nebc
9	Connecting cable NEBP-M16W6	-	-	_	-	-	-	-	15

	m components for pneumatic រុ		iis with axis control	Standard	10	In. 1	In		→ Page/
3		Linear drive	Linear drive		Swivel module Displacement	Potentio	Potentiometer		
					cylinder encoder			Internet	
		DGCI	DGPI, DGPIL	DNCI	DSMI	MME	LWG	TLF	
1	Axis controller								
	CPX-CMAX	-	_	-	_	_		-	cpx-cmax
2	Proportional directional								
	control valve					-		-	7
	VPWP								
4	Sensor interface				•				caem
	CASM-S-D2-R3	_	_	_	_	_	-	-	casm
5	Sensor interface								caem
	CASM-S-D3-R7	_	_	_	_	_	_	_	casm
6	Connecting cable	•	•						15
	KVI-CP-3	_	_	_	_	_	-	-	15
7	Connecting cable				•			_	nebc
	NEBC-P1W4	_	_	_	_	_	-	_	Перс
8	Connecting cable						_		nebc
	NEBC-A1W3	_	_	_	_	_	_	_	lienc
9	Connecting cable		•						15
	NEBP-M16W6	_	•	_	_	•	_	_	10

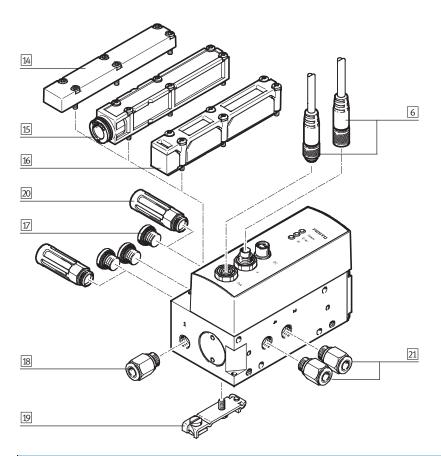


Type codes



Proportional directional control valves VPWP Peripherals overview

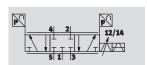




Acce	essories			
		For nominal size	Brief description	→ Page/Internet
6	Connecting cable KVI-CP-3	4, 6, 8, 10	For connecting proportional directional control valve VPWP to the end-position controller CPX-CMPX/axis controller CPX-CMAX or to the sensor interface CASM	15
14	Blanking plate VABB-P3-1	4, 6, 8	For using the connections on the cover plate	15
15	Plate VMPA-AP	4, 6, 8	For ducted exhaust air	15
16	Plate VMPA-APU	4, 6, 8	With flat plate silencer	15
17	Blanking plug B	4, 6, 8	For sealing the exhaust ports on the cover plate	blanking plug
18	Push-in fitting QS	4, 6, 8	Push-in fittings for easy and error-free tubing connections can be ordered using the ordering data in the modular product system	14
19	Mounting CPASC1-BG, CPV10/14-VI-BG	4, 6, 8	For mounting on an H-rail	15
20	Silencer U	4, 6, 8, 10	 Silencers can be used as an alternative to the plates 15 and 16 with the nominal sizes 4, 6 and 8 Silencers must be used for the exhaust air with the nominal size 10 	silencer
21	Push-in fitting QS	4, 6, 8	Different coloured push-in fittings for easy and error-free tubing connections can be ordered using the ordering data in the modular product system For connecting compressed air tubing with standard O.D.	14
		10	 Push-in fittings must be ordered separately For connecting compressed air tubing with standard O.D. 	16



Function



Voltage

Flow rate

350 ... 2,000 l/min

Pressure

0 ... 10 bar



General technical data							
Nominal size		4	6	8	10		
Pneumatic connection		G½8		G1/4	G3/8		
Nominal size	[mm]	4	6	8	10		
Standard nominal flow rate	[l/min]	350	700	1,400	2,000		
Valve function		5/3-way proport	tional directional control	valve, closed			
Design		Piston spool wit	h integrated pressure se	nsors			
Sealing principle		Hard					
Actuation type		Electric					
Reset method		Magnetic spring					
Type of control		Direct					
Direction of flow		Non-reversible					
Type of mounting		Direct mounting	via through-holes				
		Via H-rail			-		
Mounting position ¹⁾		Preferably horiz	ontal (display elements f	facing upwards)	<u>'</u>		
Product weight	[g]	776	776	1,060	1,010		
Pressure sensors					<u>.</u>		
Repetition accuracy FS	[%]	< 1					
Pressure resolution	[bar]	0.01					
Linearity error FS ²⁾	[%]	< 1.5					
Diagnostics							
LED displays	Green	Nominal operati	ing voltage				
	Red	Error					
	Yellow	Load voltage					
Device-specific diagnostics		 Undervoltage 	with operating and load	voltage			
via control interface		- Temperature monitoring					
		- Valve sticking					
		- Short-circuit monitoring					
		 Device data 					
Control interface							
Data		CAN bus with Fe	sto protocol				
		Digital					
		Integrated termi	nating resistor				
Electrical connection		5-pin					
		M9					
		Plug					

If the proportional directional control valve moves during operation, it must be mounted at right angles to the direction of movement
 Based on 6 bar



Electrical data		
Load supply		
Operating voltage range	[V DC]	18 30
Nominal operating voltage	[V DC]	24
Load voltage range	[V DC]	18 30
Nominal load voltage	[V DC]	24
Residual ripple	[Vss]	4
Max. current consumption	[A]	0.15
(logic)		
Max. current consumption	[A]	1.2
(valve drive)		
Power supply requirement		PELV (Protective Extra-Low Voltage)
Safety note		The valve assumes the closed mid-position if there is a problem with the control interface
Digital output (plug D0, PIN2)		
Supply voltage	[V DC]	24 (coming from load voltage)
Max. load current	[mA]	500
Properties		- Positive logic (PNP) to IEC 61131-2
		- No galvanic isolation
		- Protected against short circuits
		- Reverse supply with no damage
Voltage output (plug DO, PIN4)		
Supply voltage	[V DC]	24 (coming from load voltage)
Max. load current	[mA]	500
Properties		- Positive logic (PNP) to IEC 61131-2
		- No galvanic isolation
		- Protected against short circuits
		- Reverse supply with no damage

Operating and environmental conditions						
Nominal size	4	6	8	10		
Operating medium	Compressed air in accord	ance with ISO 8573-1:201	0 [6:4:4]			
Note on operating/pilot medium	Operation with lubricated	l medium not possible				
Operating pressure [bar]	0 10					
Nominal operating pressure [bar]	6					
Operating pressure for positioning/Soft Stop [bar]	4 8					
Ambient temperature [°C]	0 50					
Temperature of medium [°C]	0 50					
Storage temperature [°C]	-20 +70					
CE marking (see declaration of conformity)	To EU EMC Directive					
Protection class ¹⁾	IP65					
Vibration resistance to DIN/IEC 68, Part 2-6	With wall mounting: teste	ed to severity level 2				
	With H-rail mounting: test	ted to severity level 1		-		
Continuous shock resistance to DIN/IEC 68, Part 2-27	With wall mounting: teste	ed to severity level 2				
	With H-rail mounting: tested to severity level 1 -					
Corrosion resistance class CRC ²⁾	1					
Certification	C-Tick					

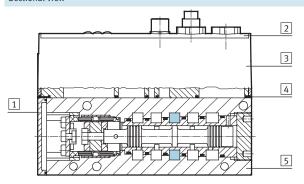
In assembled state, with plug, at nominal pressure and with tubing connected
 Corrosion resistance class 1 according to Festo standard 940 070

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.

ATEX	
ATEX category for gas	II 3G
Explosion ignition protection type for gas	Ex nA IIC T5 X Gc
Explosion-proof temperature rating	0 °C ≤ Ta ≤ +50 °C
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

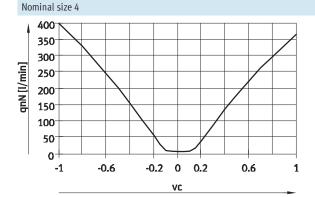


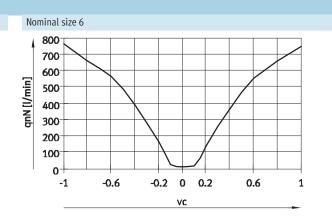
Materials Sectional view



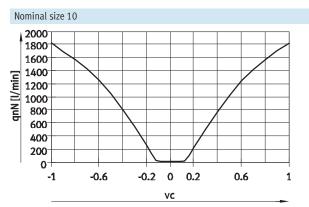
Prop	Proportional directional control valve				
1 Cover Reinforced polyamide					
2	Inscription panel	Polyester			
3	Electronics housing	Reinforced polyamide			
4	Seals	Nitrile rubber			
5	Valve housing	Anodised wrought aluminium alloy			
-	Note on materials	RoHS-compliant			

Flow rate qnN as a function of digital actuation v_{c} * [100%]

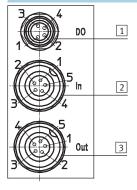




Nominal size 8 1400 1200 1000 800 600 400 200 0--0.6 -0.2 0 0.2 0.6 -1 VC



Pin allocation



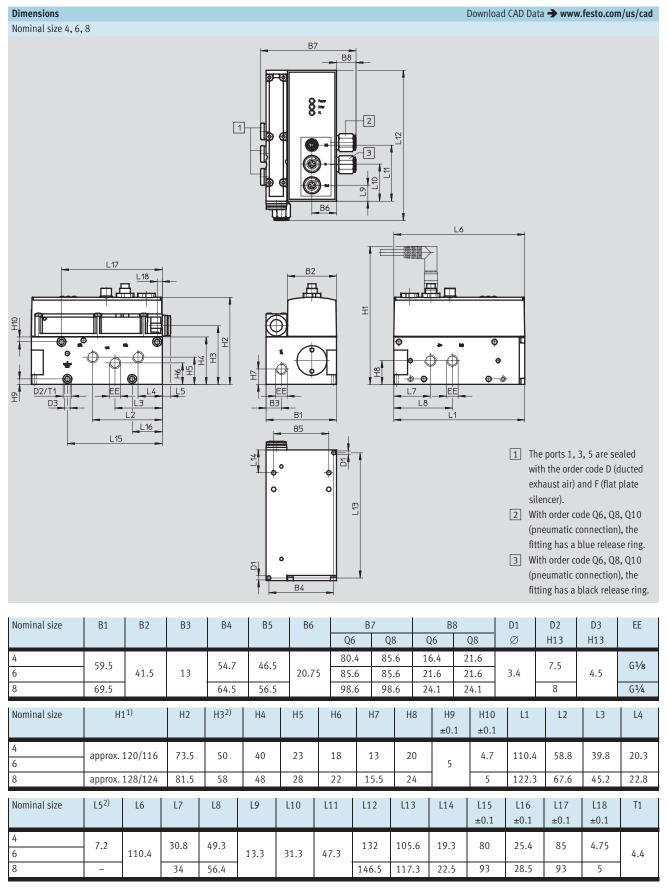
1 DO	, 4-pin M8 socket
Pin	Function
1	-
2	Digital output
3	0 V
4	24 V voltage output
-	
-	

2 IN	, 5-pin M9 plug
Pin	Function
1	24 V operating voltage
4	24 V load voltage
3	0 V
4	CAN_H
5	CAN_L
-	FE

300	T, 5-pin M9 socket
Pin	Function
1	24 V operating voltage
2	24 V load voltage
3	0 V
4	CAN_H
5	CAN_L
-	FE

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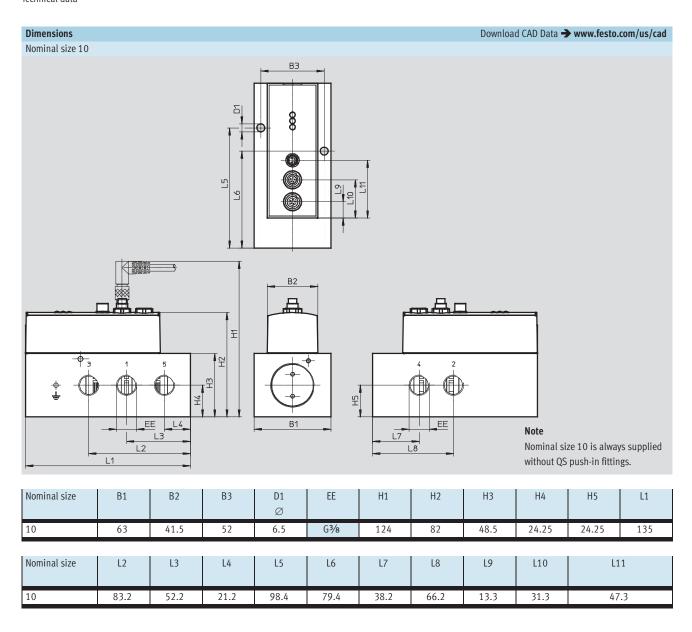
Technical data



Angled plug/straight plug

²⁾ Only with variant D

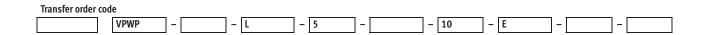




Proportional directional control valves VPWP Ordering data – Modular products



iize	4	6	8	Condition s	Code	Enter code
Module No.	550170	550171	550172			
Series	Proportional directional of	control valve			VPWP	VPWP
Nominal size	4	-	-		-4	
	-	6	-		-6	
	-	-	8		-8	
Valve type	In-line valve				-L	-L
Valve function	5/3-way valve	5/3-way valve				-5
Pneumatic connection	Push-in fitting 6 mm	-	-		-Q6	
	Push-in fitting 8 mm				-Q8	
	-	-	Push-in fitting 10 mm		-Q10	
	Thread without fitting				-Q	
	G1/8	G1/8	G ¹ / ₄			
Pressure range	0 10 bar		·		-10	-10
Display type	LED only				-E	-E
Exhaust	Ducted exhaust air				-D	
	QSIK-S-10	QSIK-S-10	QSIK-S-10			
	Flat plate silencer				-F	
	Thread without fitting				-G	
	G1/8	G1/8	G ¹ / ₄			
EU certification	II 3G in accordance with E	EU Directive 94/9/EC	'		-EX1	



Ordering data		
Nominal size 10	Part No.	Туре
	1552544	VPWP-10-L-5-Q-10-E-G-EX1

Proportional directional control valves VPWP Accessories



15

Ordering data – Connecting cables					
	Brief description	Cable length [m]	Part No.	Туре	
Connection between axis controller CPX-CMAX/end-position controller CPX-CMPX and proportional directional control valve VPWP					
or between proportional directional control valve VPWP and sensor interface CASM					
	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	
	Connector for control cabinet through-feed	-	543252	KVI-CP-3-SSD	
Connection between linear drive DGPI, DGPIL or displacement encoder MME and proportional directional control valve VPWP					
	For linear drive DGPI, DGPIL	2	575898	NEBP-M16W6-K-2-M9W5	

Ordering data – Mountings				
	Brief description	Part No.	Туре	
	For nominal size 4 and 6	527392	CPASC1-BG-NRH	
	For nominal size 8	162556	CPV10/14-VI-BG-NRH-35	
\$2 B				

Ordering data – Exhaust variants			
	Brief description	Part No.	Туре
	Plate with flat plate silencer for nominal size 4, 6, 8	533374	VMPA-APU
	Plate for ducted exhaust air for nominal size 4, 6, 8	533375	VMPA-AP
	Blanking plate, for using the connections on the valve block directly, for example for a silencer for nominal size 4, 6, 8	563896	VABB-P3-1

Proportional directional control valves VPWP Accessories



Ordering data – Push-in fittings				
	Nominal size	Part No.	Туре	
	Ports 2 and 4			
	4	186096	QS-G ¹ /8-6	
	4, 6	186098	QS-G ¹ / ₈ -8	
	8	186101	QS-G ¹ / ₄ -10	
	10	186103	QS-G3/8-12	
	Port 1			
	4, 6	186098	QS-G ¹ / ₈ -8	
	8	186101	QS-G ¹ / ₄ -10	
	10	186103	QS-G ³ / ₈ -12	

Product Range and Company Overview

A Complete Suite of Automation Services

Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.



Custom Automation Components Complete custom engineered solutions



Custom Control Cabinets Comprehensive engineering support and on-site services



Complete Systems Shipment, stocking and storage services

The Broadest Range of Automation Components

With a comprehensive line of more than 30,000 automation components, Festo is capable of solving the most complex automation requirements.



Electromechanical Electromechanical actuators, motors, controllers & drives



Pneumatics Pneumatic linear and rotary actuators, valves, and air supply



PLCs and I/O Devices PLC's, operator interfaces, sensors and I/O devices

Supporting Advanced Automation... As No One Else Can!

Festo is a leading global manufacturer of pneumatic and electromechanical systems, components and controls for industrial automation, with more than 12,000 employees in 56 national headquarters serving more than 180 countries. For more than 80 years, Festo has continuously elevated the state of manufacturing with innovations and optimized motion control solutions that deliver higher performing, more profitable automated manufacturing and processing equipment. Our dedication to the advancement of automation extends beyond technology to the education and development of current and future automation and robotics designers with simulation tools, teaching programs, and on-site services.

Quality Assurance, ISO 9001 and ISO 14001 Certifications

Festo Corporation is committed to supply all Festo products and services that will meet or exceed our customers' requirements in product quality, delivery, customer service and satisfaction.

To meet this commitment, we strive to ensure a consistent, integrated, and systematic approach to management that will meet or exceed the requirements of the ISO 9001 standard for Quality Management and the ISO 14001 standard for Environmental Management.



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