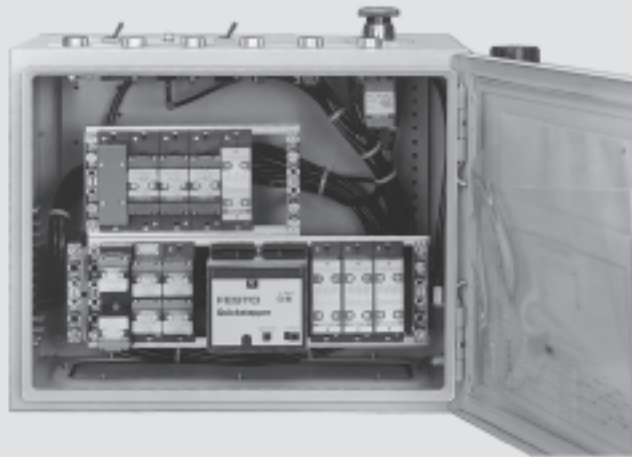


M5 Compact System

Key features

FESTO



Flow rate
100 l/min

- Forms the basis for compact pneumatic control systems
- M5 elements with 2n sub-bases
- Control cabinet installation
- Easy mounting
- Fast replacement of components
- Barbed fitting connection for 3 mm plastic tubing

The M5 Compact System is a complete system offering control components with all the functions required for pneumatic sequence controls. These all feature 2n sub-bases and barbed fitting connections for 3 mm plastic tubing.

For basic valves and actuators for panel mounting for use as signal components for basic functions such as START, STOP, etc.

➔ Internet: sv

M5 Compact System

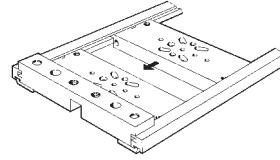
Key features

FESTO

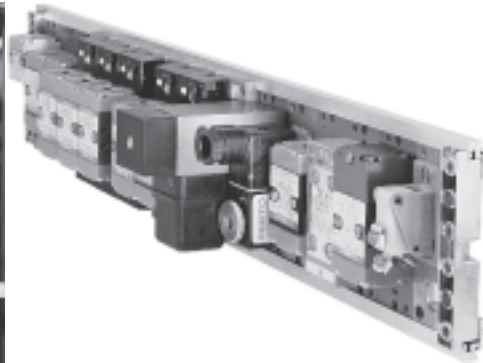
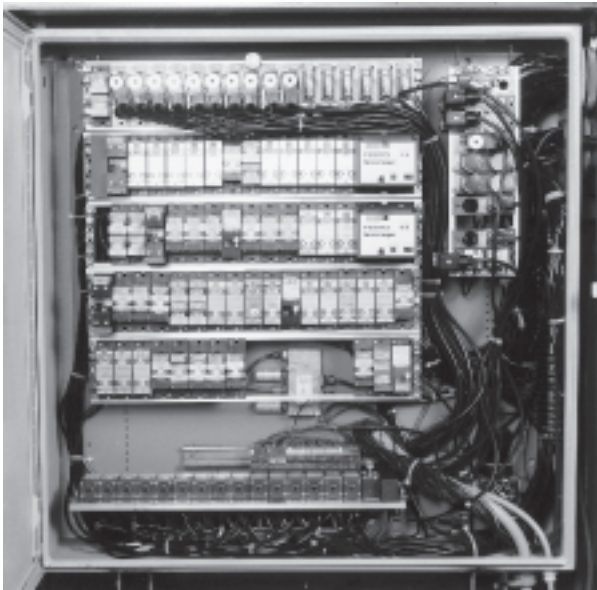
Mounting the components

Each mounting frame can be used to mount up to 16 components of the M5 Compact System using 2N sub-bases. The frames are 480 mm long and have been designed for use with 19" housings to DIN 41 488. The rails can be shortened to allow for other types of installation.

Components are attached by sliding their sub-bases or mounting plates into the guide slot of the profile rails. The sub-bases or plates are then clamped between the cross bars.



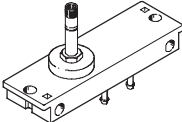
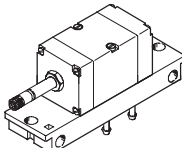
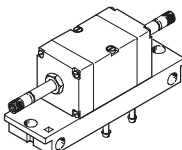
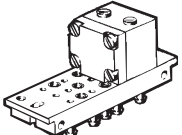
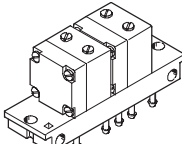
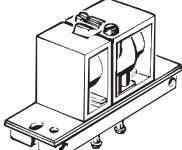
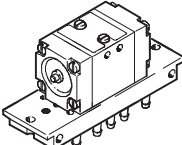
They can also be placed onto the frame and screwed down individually.



M5 Compact System

Product range overview

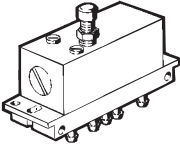
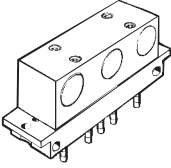
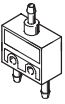
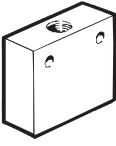
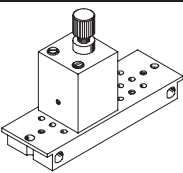
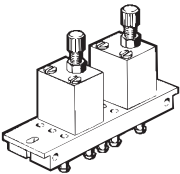
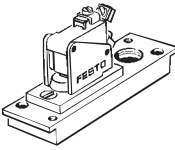
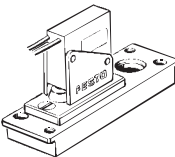
FESTO

Function	Version	Type	Brief description	Operating pressure [bar]	→ Page/Internet
Solenoid valves	3/2-way valves				
		MUFH-3-PK-3	Mechanical spring return for mounting frame 2N	0 ... 8	6
	5/2-way valves				
		MFH-5-PK-3	Mechanical spring return for mounting frame 2N	3 ... 8	6
		MFH-5-PK-3-L	Pneumatic spring return for mounting frame 2N	1.5 ... 8	6
		JMFH-5-PK-3	Double solenoid valve for mounting frame 2N	2 ... 8	6
Pneumatic valves	3/2-way valves				
		VL/O-3-PK-3	Mechanical spring return for mounting frame 2N	0 ... 8	9
		VL/O-3-PK-3x2	2 pneumatic valves on one sub-base Mechanical spring return for mounting frame 2N	0 ... 8	9
		J-3-PK-3	Double pilot valve for mounting frame 2N	-0.9 ... 8	9
	5/2-way valves				
		VL-5-PK-3	Mechanical spring return for mounting frame 2N	0 ... 8	9
		J-5-PK-3	Double pilot valve for mounting frame 2N	1 ... 8	9
		JD-5-PK-3	Double pilot valve with dominating signal at 14 for mounting frame 2N	1 ... 8	9

M5 Compact System

Product range overview

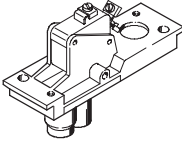
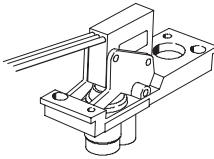
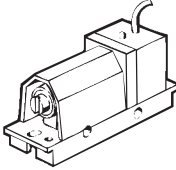
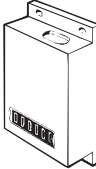
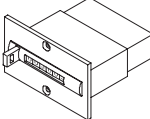
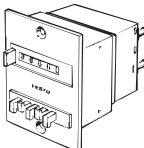
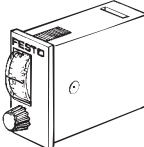
FESTO

Function	Version	Type	Brief description	Operating pressure [bar]	→ Page/Internet
Time delay valves	Time delay valves				
		VZ-3-PK-3	With switch-on delay for mounting frame 2N	2.5 ... 8	12
		VZO-3-PK-3	With switch-off delay for mounting frame 2N	2.5 ... 8	12
Logic components	AND/OR blocks				
		OS-PK-3-6/3	3 OR gates for mounting frame 2N	1.6 ... 8	14
		ZK-PK-3-6/3	3 AND gates for mounting frame 2N	1.6 ... 8	14
		OS-PK-3	OR gate	1.6 ... 8	22
		ZK-PK-3	AND gate	1.6 ... 8	22
		OS-1/8-B	OR gate	1 ... 10	22
		ZK-1/8-B	AND gate	1 ... 10	22
		OS-1/4-B	OR gate	1 ... 10	22
One-way flow control valves	One-way flow control valves				
		GRF-PK-3	For mounting frame 2N	0.5 ... 8	15
		GRF-PK-3x2	2 one-way flow control valves on one sub-base for mounting frame 2N	0.5 ... 8	15
Pressure switches	Pneumatic/electrical pressure transducers				
		PE-1/8-2N	For mounting frame 2N	0 ... 8	16
		PE-1/8-2N-SW	Splash proof design for mounting frame 2N	0 ... 8	16

M5 Compact System

Product range overview

FESTO

Function	Version	Type	Brief description	Operating pressure [bar]	→ Page/Internet
Pressure switches	Pneumatic/electrical pressure transducers				
		VPE-1/8-2N	Vacuum switch for mounting frame 2N	-0.95 ... 0	16
		VPE-1/8-2N-SW	Vacuum switch splash proof design for mounting frame 2N	-0.95 ... 0	16
	Pneumatic/electrical differential pressure switch				
		PEN-M5	Vacuum switch for mounting frame 2N	-0.95 ... 8	19
Pneumatic counters	Adding counters				
		PZA-A-B	Base mounting	2 ... 8	24
		PZA-E-C	Panel mounting	2 ... 8	24
	Predetermining counter				
		PZV-E-C	Panel mounting	2 ... 8	24
Pneumatic timer	Pneumatic timer				
		PZVT-3-C PZVT-30-C PZVT-12-C PZVT-300-C	Clamping frame	2 ... 6	30
		PZVT-AUT	Automatic reset module	2 ... 6	30

Solenoid valves MUFH/MFH/JMFH, for mounting frame 2N

FESTO

Technical data

General technical data					
		3/2-way valves	5/2-way valves		
		MUFH-3-PK-3	MFH-5-PK-3	MFH-5-PK-3-L	JMFH-5-PK-3
Constructional design		Poppet valve			
Type of mounting		Through-holes in sub-base or on mounting frame			
Operating medium		Filtered compressed air, lubricated or unlubricated			
Pneumatic connection		1, 2: 3 mm; 3: M5	Barbed fitting for 3 mm tubing		
Nominal size	[mm]	1.3	2.5		
Standard nominal flow rate 1 > 4	[l/min]	50	105		
Response time at 6 bar	On	[ms]	15	10	14
	Off	[ms]	22	22	22
	Change over	[ms]	–	–	–
					13
Materials		Housing: Anodised aluminium			
		Sub-base: Blue anodised aluminium			
		Seals: Perbunan			
Weight	[g]	120	270	270	380

Operating and environmental conditions					
		3/2-way valves	5/2-way valves		
		MUFH-3-PK-3	MFH-5-PK-3	MFH-5-PK-3-L	JMFH-5-PK-3
Operating pressure	[bar]	0 ... 8	3 ... 8	1.5 ... 8	2 ... 8
Ambient temperature	[°C]	–5 ... +40	–5 ... +40	–5 ... +40	0 ... +40
Temperature of medium	[°C]	–10 ... +60	–10 ... +60	–10 ... +60	0 ... +60

Electrical data					
		3/2-way valves	5/2-way valves		
		MUFH-3-PK-3	MFH-5-PK-3	MFH-5-PK-3-L	JMFH-5-PK-3
D.C. voltage					
Standard voltages	[V]	12, 24			Solenoid coils ➔ Internet: msf
Special voltage	[V]	12 ... 220			
A.C. voltage					
Standard voltages	[V]	24, 42, 110, 220 at 50 Hz or 50 and 60 Hz			Solenoid coils ➔ Internet: msf
Special voltage	[V]	12 ... 240 at 50 or 60 Hz			
Power consumption					
D.C. voltage	[W]	4.5			
A.C. voltage	[VA]	Hold:	6		
		Pull:	7.5		
Duty cycle		100%			
Protection class to EN 60 529		IP65 with plug socket			

Solenoid valves MUFH/MFH/JMFH, for mounting frame 2N

FESTO

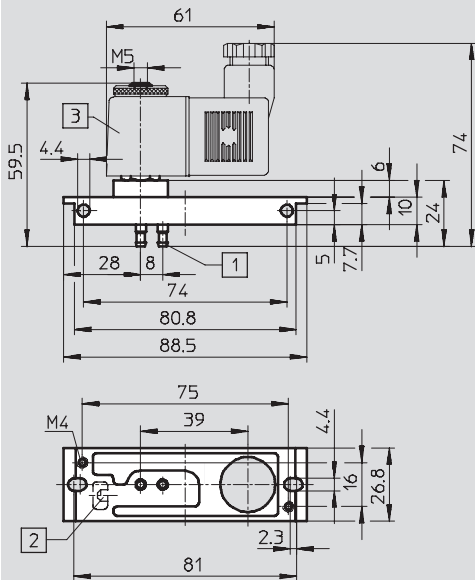
Technical data

Dimensions

Download CAD Data → www.festo.com/us/cad

3/2-way valves

MUFH-3-PK-3

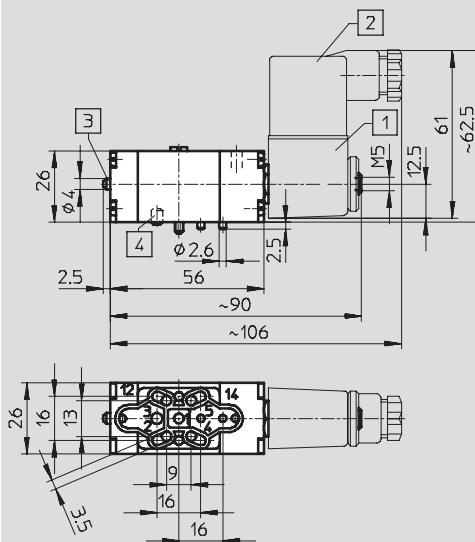


- 1 Barbed fitting for 3 mm plastic tubing
- 2 Manual override
- 3 Solenoid coil can be turned 360°

5/2-way valves

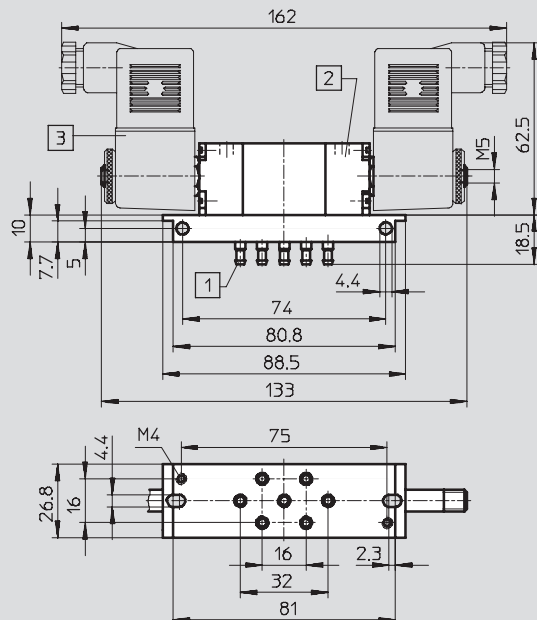
MFH-5-PK-3

MFH-5-PK-3-L



- 1 Rotatable solenoid coil
- 2 Plug can be repositioned by 180°
- 3 Manual override
- 4 Dowel pin

JMFH-5-PK-3

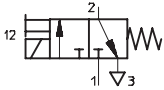
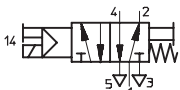
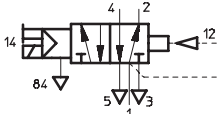
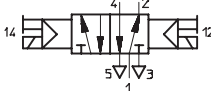


- 1 Barbed fitting for 3 mm plastic tubing
- 2 Manual override
- 3 Solenoid coil can be turned 360°

Solenoid valves MUFH/MFH/JMFH, for mounting frame 2N

FESTO

Technical data

Ordering data		Part No.	Type
3/2-way valves			
Solenoid valve mechanical spring return		6 705	MUFH-3-PK-3
5/2-way valves			
Solenoid valve mechanical spring return		4 448	MFH-5-PK-3
Solenoid valve pneumatic spring return		11 546	MFH-5-PK-3-L
Double solenoid valve		4 447	JMFH-5-PK-3
Accessories			
Solenoid coils		➔ Internet: msf	

Pneumatic valves VL/J, for mounting frame 2N

FESTO

Technical data

General technical data						
		3/2-way valves		5/2-way valves		
		VL/O-3-PK-3	J-3-PK-3	VL-5-PK-3	J-5-PK-3	JD-5-PK-3
		VL/O-3-PK-3x2				
Constructional design		Poppet valve	Piston spool valve	Poppet valve		
Type of mounting		2 through-holes in sub-base or on mounting frame				
Operating medium		Filtered compressed air, lubricated or unlubricated				
Pneumatic connection		Barbed fitting for 3 mm plastic tubing				
Nominal size [mm]		2.5				
Standard nominal flow rate 1 > 2 [l/min]		100		105		
Response time at 6 bar	On [ms]	VL 10	–	15	–	–
		VLO 13				
	Off [ms]	50	–	22	–	–
	Change over [ms]	–	with 10: 6	–	9	with 14: 9
			with 12: 8			with 12: 25
	Materials		Housing: Die-cast zinc, plastic			
Sub-base: Plastic, brass						
Seals: Perbunan						
Weights [g]						
1 valve on sub-base		110	75	130	130	130
2 valves on sub-base		180	–	–		

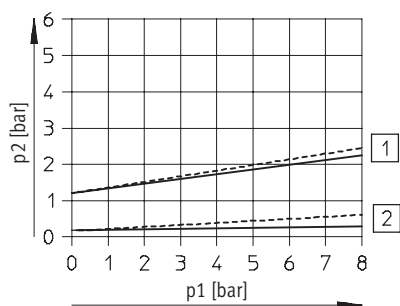
Operating and environmental conditions						
		3/2-way valves		5/2-way valves		
		VL/O-3-PK-3 VL/O-3-PK-3x2	J-3-PK-3	VL-5-PK-3	J-5-PK-3	JD-5-PK-3
Operating pressure [bar]		0 ... 8	–0.9 ... +8	0 ... 8	1 ... 8	
Pilot pressure [bar]		See graph		See graph		
Ambient temperature [°C]		–10 ... +60		–10 ... +60	0 ... +60	

Minimum pilot pressure p2 as a function of the operating pressure p1

3/2-way valves

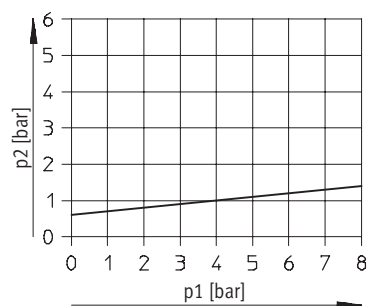
VL/O-3-PK-3

VL/O-3-PK-3x2



- 1 No flow when not actuated VL
2 Flow when not actuated VLO

J-3-PK-3



Pneumatic valves VL/J, for mounting frame 2N

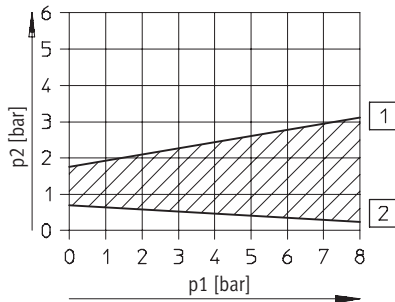
FESTO

Technical data

Minimum pilot pressure p_2 as a function of the operating pressure p_1

5/2-way valves

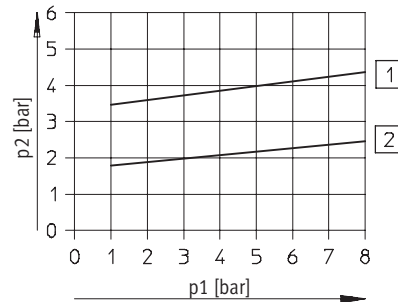
VL-5-PK-3



- 1 Switch-on pressure
- 2 Switch-off pressure

J-5-PK-3

JD-5-PK-3



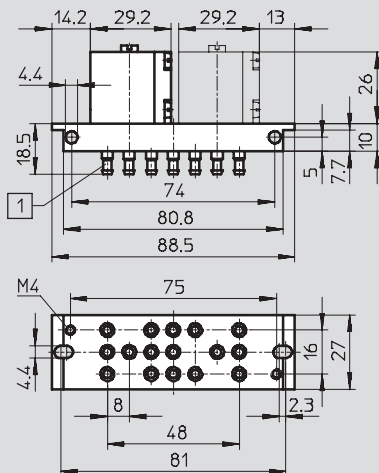
- 1 JD-5-PK-3
- 2 J-5-PK-3

Dimensions

3/2-way valves

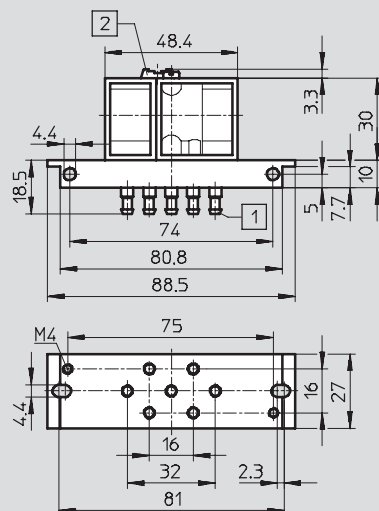
VL/O-3-PK-3

VL/O-3-PK-3x2



- 1 Barbed fitting for 3 mm plastic tubing

J-3-PK-3



- 1 Barbed fitting for 3 mm plastic tubing
- 2 Manual override

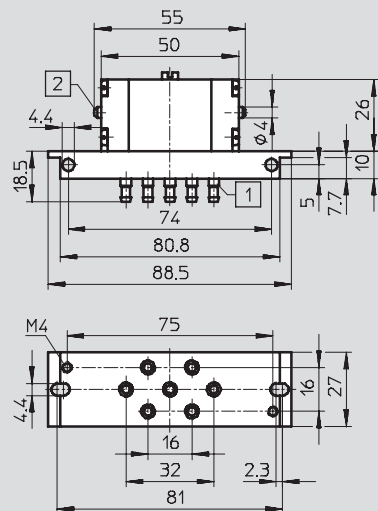
Download CAD Data → www.festo.com/us/cad

5/2-way valves

VL-5-PK-3

J-5-PK-3

JD-5-PK-3

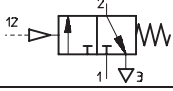
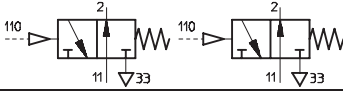
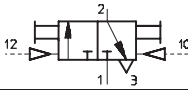
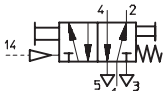
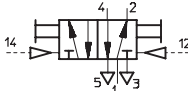
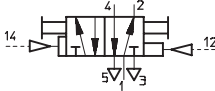


- 1 Barbed fitting for 3 mm plastic tubing
- 2 Manual override

Pneumatic valves VL/J, for mounting frame 2N

FESTO

Technical data

Ordering data		Part No.	Type
3/2-way valves			
Pneumatic valve mechanical spring return		4 233	VL/O-3-PK-3
2 pneumatic valves on one sub-base mechanical spring return		4 245	VL/O-3-PK-3x2
Double pilot valve		10 772	J-3-PK-3
5/2-way valves			
Pneumatic valve mechanical spring return		4 504	VL-5-PK-3
Double pilot valve		4 503	J-5-PK-3
Double pilot valve with dominating signal at 14		4 901	JD-5-PK-3

Time delay valves VZ/VZO, for mounting frame 2N

FESTO

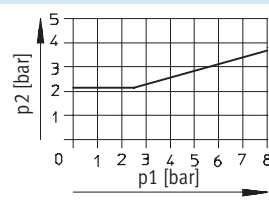
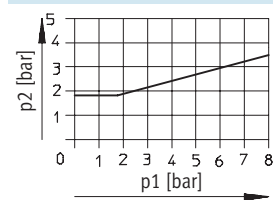
Technical data

General technical data		
	With switch-on delay VZ-3-PK-3	With switch-off delay VZO-3-PK-3
Pneumatic connection	PK-3	
Design	Poppet valve with spring return	
Actuation type	Pneumatic	
Type of mounting	Front panel mounting On mounting frame	
Nominal size [mm]	2	
Standard nominal flow rate 1 > 2 [l/min]	90	60
Adjustable delay time ¹⁾ [s]	0.25 ... 5	
Pause period for reset [ms]	≥ 55	≥ 50
Repetition accuracy of time setting [s]	±0.5	
Housing material	Die-cast zinc	
Weight [g]	150	

- 1) To achieve delay times longer than 5 s, remove the end cap from connection fitting 6 and connect an additional reservoir to this. An increase in reservoir size of 10 cm³ will increase the delay time by approx. 5 s.
Air reservoir VZS → Internet: vzs

Operating and environmental conditions		
Operating pressure [bar]	2.5 ... 8	
Operating medium	Filtered, unlubricated compressed air, grade of filtration 40 µm	
Ambient temperature [°C]	-10 ... +60	

Minimum pilot pressure p₂ as a function of operating pressure p₁



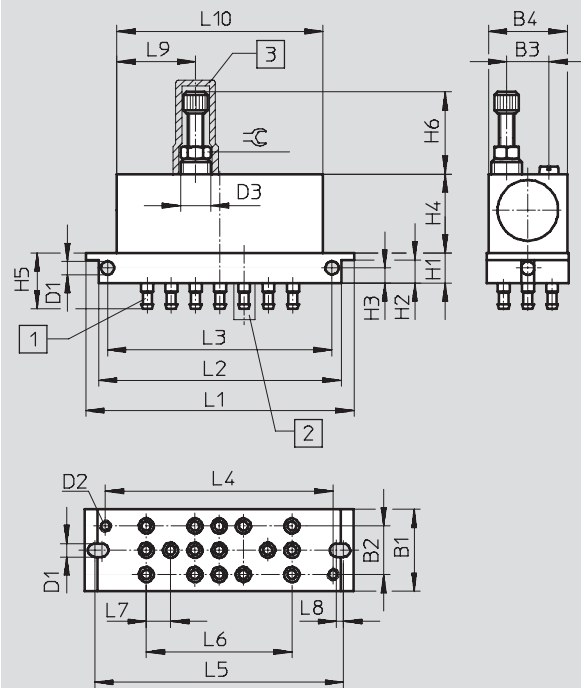
Time delay valves VZ/VZO, for mounting frame 2N

Technical data

FESTO

Dimensions

Download CAD Data → www.festo.com/us/cad



- 1 Barbed connector for plastic tubing PK-3
- 2 Port 6 with end cap for additional reservoir
- 3 Tamper-proof cap

B1	B2	B3	B4	D1 Ø	D2	D3	H1	H2	H3	H4	H5
27	16	14	26	4.4	M4	M10x1	10	7.7	5	26	18.5

H6 min.	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	≅
27	88.5	80.8	74	75	81	48	8	2.3	26	68	8

Ordering data

	Part No.	Type
Switch-on delay	5755	VZ-3-PK-3
Switch-off delay	5754	VZO-3-PK-3
Accessories		
Tamper-proof cap	6436	GRK-M5

AND/OR blocks OS/ZK, for mounting frame 2N

FESTO

Technical data

General technical data		
	OR block OS-PK-3-6/3	AND block ZK-PK-3-6/3
Type of mounting	2 through-holes in sub-base or on mounting frame	
Operating medium	Filtered compressed air, lubricated or unlubricated	
Pneumatic connection	[mm]	Barbed fitting for 3 mm plastic tubing
Nominal size	[mm]	2.5
Standard nominal flow rate	[l/min]	100
Materials	Housing: Plastic	
	Sub-base: Plastic	
	Seals: Perbunan	
Weight	[g]	90
		85

Operating and environmental conditions		
Operating pressure	[bar]	1.6 ... 8
Ambient temperature	[°C]	−10 ... +60

Dimensions

1 Barbed fitting for 3 mm plastic tubing

[Download CAD Data → www.festo.com/us/cad](http://www.festo.com/us/cad)

Ordering data		Part No.	Type
OR block (3 OR gates)		4 232	OS-PK-3-6/3
AND block (3 AND gates)		4 204	ZK-PK-3-6/3

One-way flow control valves GRF, for mounting frame 2N

FESTO

Technical data

General technical data		
	GRF-PK-3	GRF-PK-3x2
Type of mounting	Through-holes in sub-base or on mounting frame	
Operating medium	Filtered compressed air, lubricated or unlubricated	
Pneumatic connection	[mm]	Barbed fitting for 3 mm plastic tubing
Nominal size	[mm]	
in direction of flow control	1.5	
against the direction of flow control	2	
Standard nominal flow rate	[l/min]	
in direction of flow control	0 ... 45	
against the direction of flow control	45	
Materials	Housing: Aluminium	
	Sub-base: Plastic	
	Seals: Perbunan	
Weight	[g]	90
		145

Operating and environmental conditions		
Operating pressure	[bar]	0.5 ... 8
Ambient temperature	[°C]	-10 ... +60

Dimensions

1 Barbed fitting for 3 mm plastic tubing

[Download CAD Data → www.festo.com/us/cad](http://www.festo.com/us/cad)

Ordering data		Part No.	Type
One-way flow control valve		4 565	GRF-PK-3
2 one-way flow control valves on one sub-base		4 566	GRF-PK-3x2

PE converters PE/VPE, for mounting frame 2N

FESTO

Technical data

General technical data					
	PE converter		Vacuum switch		
	PE-1/8-2N	PE-1/8-2N-SW	VPE-1/8-2N	VPE-1/8-2N-SW	
Constructional design	Pneumatically actuated electrical micro switch to EN 60 947-5-1				
Type of mounting	On mounting frame 2N				
	Via through-holes				
Operating medium	Compressed air, filtered (lubricated or unlubricated) or vacuum				
Pneumatic connection	G1/8				
Electrical connection	Screw connector	3 separate sheathed connector wires, moulded, 0.5 m long	Screw connector	3 separate sheathed connector wires, moulded, 0.5 m long	
Materials	Housing: Die-cast aluminium, polyamide				
	Diaphragm: Polyurethane				
Weight	[g]	55	65	32	45

Note: This product conforms to ISO 1179-1 and to ISO 228-1

Operating and environmental conditions				
	PE converter		Vacuum switch	
	PE-1/8-2N	PE-1/8-2N-SW	VPE-1/8-2N	VPE-1/8-2N-SW
Operating pressure [bar]	0 ... 8		0 ... -0.95	
Switch-on pressure [bar]	2		-0.25 ... ±0.05	
Switch-off pressure [bar]	0.5		≤ 0.1	
Ambient temperature [°C]	-10 ... +60			0 ... +40

Electrical data				
	PE converter		Vacuum switch	
	PE-1/8-2N	PE-1/8-2N-SW	VPE-1/8-2N	VPE-1/8-2N-SW
Rated operating voltage [V AC]	250			
Rated operating voltage [V DC]	250			
Switching capacity	See separate table			
Utilisation category	AC 12/DC 12 (ohmic load)			
	AC 14/DC 13 (inductive load)			
CE marking symbol (see conformity declaration)	As per EU low voltage directive			
Certification	CCC			
Protection class to EN 60 529	IP00	IP67	IP00	IP67

Test symbols for PE, VPE-1/8-2N: VDE, SEMKO, ÖVE, SEV, UL, CSA, (CEE).

Max. permissible electrical load					
D.C. voltage			A.C. voltage		
Voltage [V DC]	Resistive load [A]	Inductive load [A]	Voltage [V AC]	Resistive load [A]	Inductive load [A]
PE/VPE-1/8-2N					
12	6	6	250	6	2
24	6	6			
60	1	0.5			
110	0.5	0.2			
220	0.25	0.1			
PE/VPE-1/8-2N-SW					
15	10	10	125	5	5
30	5	3	250	5	2
50	1	1			
75	0.75	0.25			
124	0.5	0.03			
250	0.25	0.02			

PE converters PE/VPE, for mounting frame 2N

FESTO

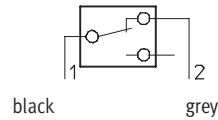
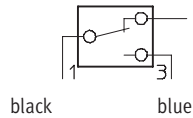
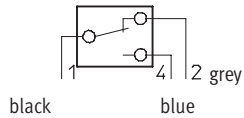
Technical data

Terminal allocation

Changeover switch

Normally open contact

Normally closed contact



Dimensions

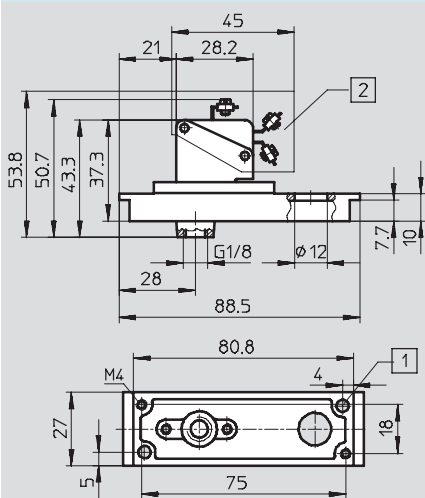
Download CAD Data → www.festo.com/us/cad

PE converter

PE-1/8-2N

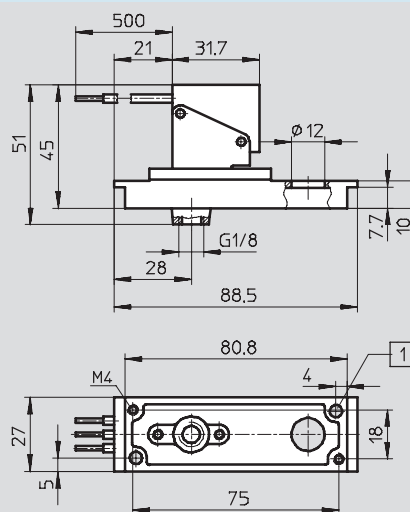
PE-1/8-2N-SW

splash proof design



- 1 For M4 thread
- 2 Protective cap SPE-B

Note: This product conforms to ISO 1179-1 and to ISO 228-1



- 1 For M4 thread

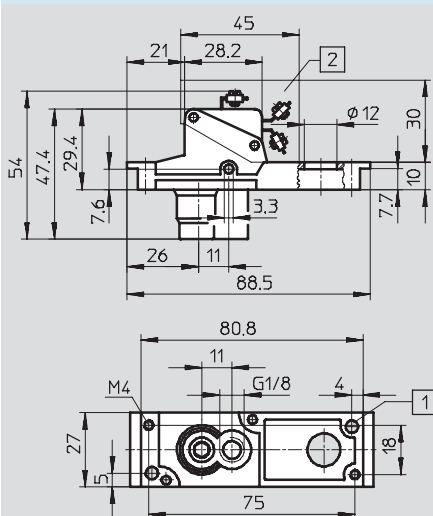
Note: This product conforms to ISO 1179-1 and to ISO 228-1

Vacuum switch

VPE-1/8-2N

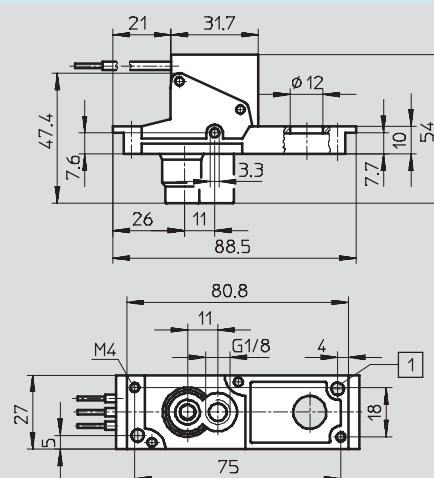
VPE-1/8-2N-SW

splash proof design



- 1 For M4 thread
- 2 Protective cap SPE-B

Note: This product conforms to ISO 1179-1 and to ISO 228-1



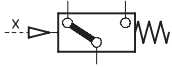
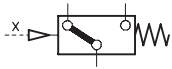
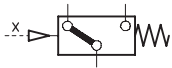
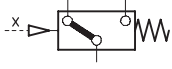
- 1 For M4 thread

Note: This product conforms to ISO 1179-1 and to ISO 228-1

PE converters PE/VPE, for mounting frame 2N

FESTO

Technical data

Ordering data		Part No.	Type
PE converter		7 860	PE-1/8-2N
PE converter splash proof design		7 862	PE-1/8-2N-SW
Vacuum switch		12 594	VPE-1/8-2N
Vacuum switch splash proof design		12 595	VPE-1/8-2N-SW
Accessories			
Protective cap for protection against accidental contact		165 614	SPE-B

PE converters PEN-M5, for mounting frame 2N

Technical data

FESTO

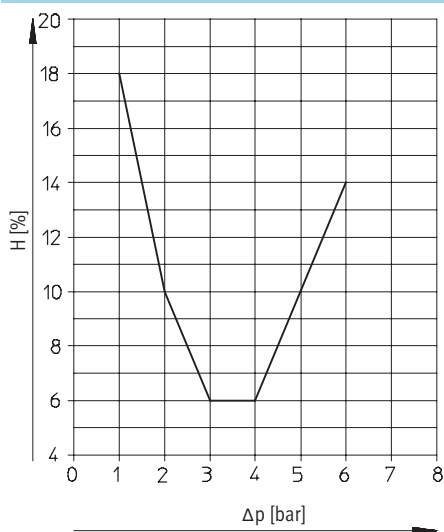
General technical data	
Constructional design	Pneumatic/electrical differential pressure switch
Type of mounting	On mounting frame 2N
	Via through-holes
Operating medium	Compressed air, filtered (lubricated or unlubricated) or vacuum
Pneumatic connection	M5
Electrical connection	2.5 m cable 3x0.14 mm ²
Switch output	Contactless switching output (normally open function)
Max. switching frequency [Hz]	70
Materials	Housing: Die-cast zinc
Note on material	Free of copper, PTFE and silicone
Weight [g]	240

Operating and environmental conditions	
Operating pressure [bar]	−0.95 ... +8 bar
Threshold value setting range [bar]	−0.8 ... +8 bar
Ambient temperature [bar]	−20 ... +60 °C

Electrical data	
Operating voltage range [V DC]	12 ... 30
Switching status display	Yes
Adjustable hysteresis	→ Graph 19
Max. output current [mA]	350
Protection against short circuit	Yes
Protection against polarity reversal	Yes
CE mark (see declaration of conformity) ¹⁾	To EU EMC Directive
Certification	C-Tick
Protection class to EN 60 529	IP67

- 1) 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.

Hysteresis H as a function of the differential pressure Δp



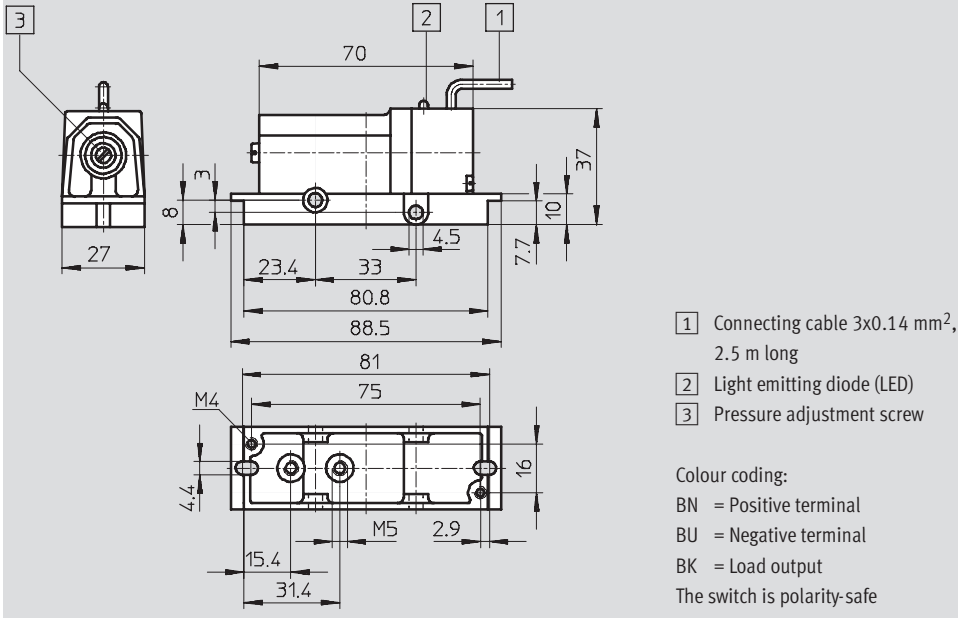
PE converters PEN-M5, for mounting frame 2N

Technical data

FESTO

Dimensions

Download CAD Data → www.festo.com/us/cad



Ordering data

	Part No.	Type
PE converter	8 625	PEN-M5
Accessories		
Mounting bracket for mounting sub-bases on the frame	11 571	NRW-9/1,5-B
Socket head screw (2 included in scope of delivery)	204 021	DIN 84-M4X12-4.8

Mounting frames 2N

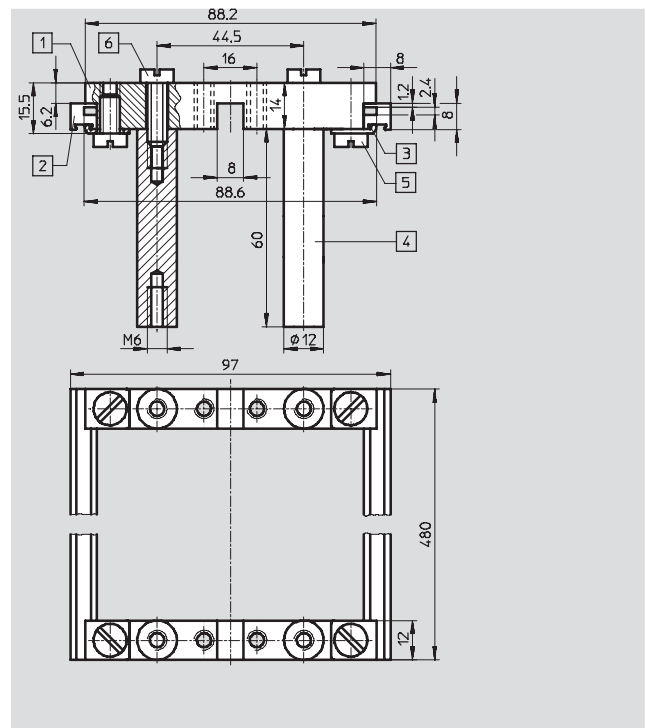
Accessories

FESTO

Mounting frame NRRQ-2N

Scope of delivery

- 2 x connecting piece NRV-2N
- 2 x mounting rail NRQ-8-480
- 4 x mounting bracket NRW-12/3
- 4 x threaded spacer NRB-12/60
- 4 x slotted head screw
DIN 84-M6X18-4.8
- 4 x slotted head screw
DIN 84-M6X12-4.8
- 4 x mounting bracket NRW-9/1,5-B
- 4 x slotted head screw
DIN 84-M4X10-4.8



- 1 Connecting piece NRV-2N
- 2 Mounting rail NRQ-8-480
- 3 Mounting bracket NRW-12/3
- 4 Threaded spacer NRB-12/60
- 5 Slotted head screw
DIN 84-M6X18-4.8
- 6 Slotted head screw
DIN 84-M6X12-4.8

Mounting frame	Part No.	Type
Mounting frame 2N complete for 16 components	9 365	NRRQ-2N
Accessories		
Mounting bracket for mounting sub-bases on the frame	11 571	NRW-9/1,5-B
Slotted head screw (2 included in scope of delivery)	204 021	DIN 84-M4X12-4.8

AND/OR blocks OS/ZK

Key features

FESTO



OS-PK-3
ZK-PK-3



OS-1/8-B
ZK-1/8-B



OS-1/4-B

Flow rate
120 ... 1170 l/min

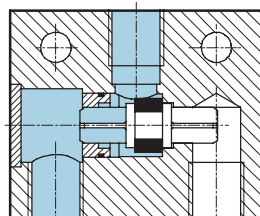
- Barbed fitting for 3 mm tubing
- G $\frac{1}{8}$, G $\frac{1}{4}$
- OR function
- AND function

OR function

The OR gate has two inputs (X and Y) and one output (A). The valve automatically blocks the input which is not pressurised. If both inputs are pressurised simultaneously at different levels, the higher pressure is fed to the output A.

An OR valve (or shuttle valve) is used to allow a function to be executed from either of 2 different places. An output signal is present whenever at least one of 2 signal inputs is activated.

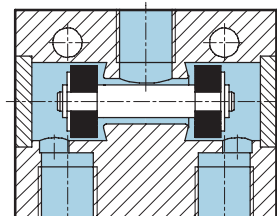
OS-1/4-B



AND function

The AND gate has two inputs (X and Y) and one output (A), which is pressurised only as long as pressure is present at both inputs. If different pressures are present at the inputs, the lower pressure is fed to output A. An AND valve (or dual-pressure valve) is used in cases where at least 2 signals are required to be present before a function is executed. A signal is present at output A only when both signal inputs are activated.

ZK-1/8-B



AND/OR blocks OS/ZK

Technical data

FESTO

General technical data						
Type		OR gate			AND gate	
		OS-PK-3	OS-1/8-B	OS-1/4-B	ZK-PK-3	ZK-1/8-B
Type of mounting		2 through-holes in housing				
Operating medium		Filtered compressed air, lubricated or unlubricated				
Pneumatic connection		Barbed fitting for 3 mm tubing	G1/8	G1/4	Barbed fitting for 3 mm tubing	G1/8
Nominal size [mm]		2.4	4	6.5	2.4	4.5
Standard nominal flow rate [l/min]		120	500	1170	120	500
Weight [g]		10	45	110	10	45
Materials	Housing	Plastic, brass	Blue anodised aluminium	Blue anodised aluminium	Plastic, brass	Blue anodised aluminium
	Seals	Nitrile rubber			Nitrile rubber	
Note on material		Free of copper, PTFE and silicone ➔ Ordering data			–	

Note: This product conforms to ISO 1179-1 and to ISO 228-1

Operating and environmental conditions						
Type	OR gate			AND gate		
	OS-PK-3	OS-1/8-B	OS-1/4-B	ZK-PK-3	ZK-1/8-B	
Operating pressure [bar]	1.6 ... 8	1 ... 10			1.6 ... 8	1 ... 10
Ambient temperature [°C]	-10 ... +60			0 ... +60		

Dimensions			Download CAD Data → www.festo.com/us/cad
OS-PK-3	OS-1/8-B	OS-1/4-B	
ZK-PK-3	ZK-1/8-B		

1 Barbed fitting for 3 mm plastic tubing

Note: This product conforms to ISO 1179-1 and to ISO 228-1

Note: This product conforms to ISO 1179-1 and to ISO 228-1

Ordering data					
		Connection	Part No.	Type	
OR gate		Barbed fitting for 3 mm tubing	6 684	OS-PK-3	
		G1/8	6 681	OS-1/8-B	
			165 694	OS-1/8-B-CT ¹⁾	
		G1/4	6 682	OS-1/4-B	
			165 693	OS-1/4-B-CT ¹⁾	
AND gate		Barbed fitting for 3 mm tubing	6 685	ZK-PK-3	
		G1/8	6 680	ZK-1/8-B	

1) Free of copper, PTFE and silicone

Counters PZA/PZV

Key features

FESTO



Adding counter

- Surface mounting
- Panel mounting

Adding counters have 6-digit displays and count upwards, i.e. incoming signals are added. When the counter is reset, 000 000 appears.

A pneumatic signal increments the counter by a half step, and the first half of the digit appears. After completion of the signal, the second half-step increment occurs and the digit becomes fully visible.

The counter can be reset manually by means of a button. It can also be reset by means of a pneumatic signal. A counting signal may not arrive or be present during the resetting procedure.

Predetermining counter

- Subtracting counting mode
- Manual and pneumatic reset
- Protective cover

Predetermining counters count pneumatic signals backwards from a preset number. When zero is reached, the counter generates a pneumatic output signal. This output signal persists until the counter is reset. The counter is preset by pressing the reset button and simultaneously keying in the preset value. This value is retained when the counter is reset.

Counters PZA/PZV

Technical data

FESTO

General technical data				
Type		Adding counter		Predetermining counter
		PZA-A-B	PZA-E-C	PZV-E-C
Constructional design		Mechanical counter with pneumatic drive		
Type of mounting		3 through-holes in housing	Panel mounting	
Operating medium		Compressed air, filtered, unlubricated		
Pneumatic connection		M5		
Display ¹⁾		6-digit	6-digit	5-digit
Reset		Pushbutton or pneumatic signal		
Response pressure				
Drive	[bar]	0.6 ±0.2	> 0.8	0.6 ±0.2
Reset	[bar]	0.6 ±0.2	2	–
Drop-off pressure				
Drive	[bar]	0.2 ±0.1	< 0.15	0.2 ±0.1
Reset	[bar]	0.15 ±0.1	< 0.15	0.15 ±0.1
Min. pulse length				
Drive	[ms]	10	8	10
Reset	[ms]	180	150	180
Min. pause period				
Drive	[ms]	15	10	15
Reset	[ms]	50	50	50
Materials		Housing: Plastic		
		Seals: Chloroprene		
Weight	[g]	155	70	150

1) Digit size 4.5 mm

Operating and environmental conditions				
Type	Adding counter			Predetermining counter
	PZA-A-B	PZA-E-C	PZA-E-C	PZV-E-C
Operating pressure	[bar]	2 ... 8		
Min. reset pressure	[bar]	2	–	–
Ambient temperature	[°C]	–10 ... +60	0 ... +60	

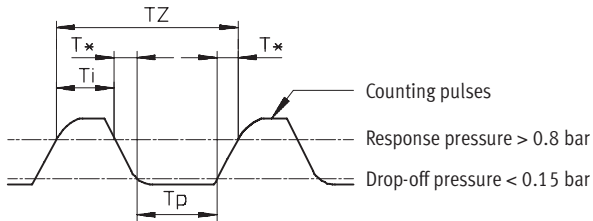
Counters PZA/PZV

Technical data

FESTO

Counting rate

Adding counter PZA-E-C



$$\text{Max. pulse rate} = \frac{1}{T_Z}$$

$$T_Z = T_i + T_p + T^*$$

$$T_Z = T_i + T^*$$

T_i = Min. pulse length

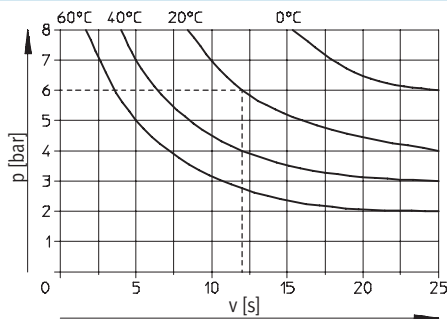
T_p = Min. pulse duration

T_Z = Time for counting pulse

T^* = Depends on pressure and tubing length (values must be determined empirically)

Counting speed v as a function of the operating pressure p

Predetermining counter PZV-E-C



Intermittent operation

The counter operates non-continuously. The counting rate is constant right down to zero contact (high rate possible). A reset then follows.

Continuous operation

The counter operates continuously at a constant rate. The interval between 2 counting signals is longer than the required reset time.

Counters PZA/PZV

Technical data

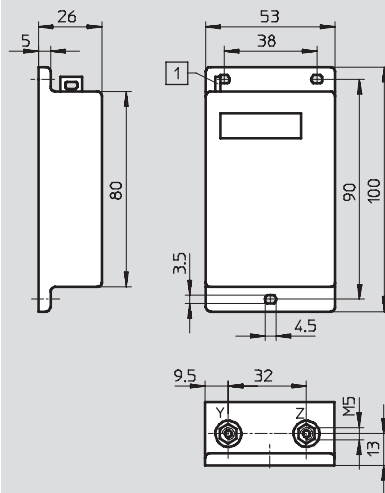
FESTO

Dimensions

Download CAD Data → www.festo.com/us/cad

Adding counter

Surface mounting PZA-A-B

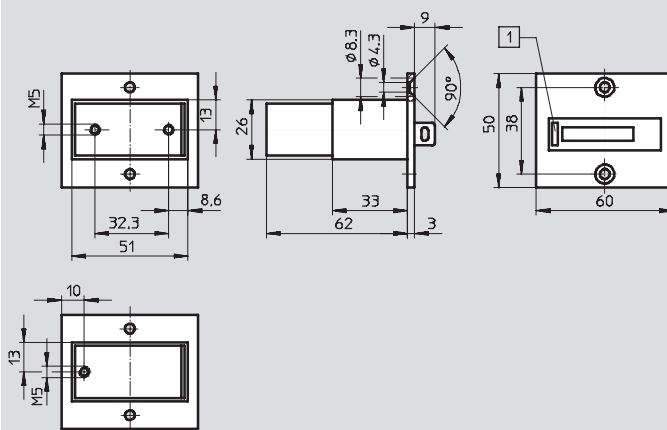


1 Reset button

Z = Counting signal

Y = Reset signal

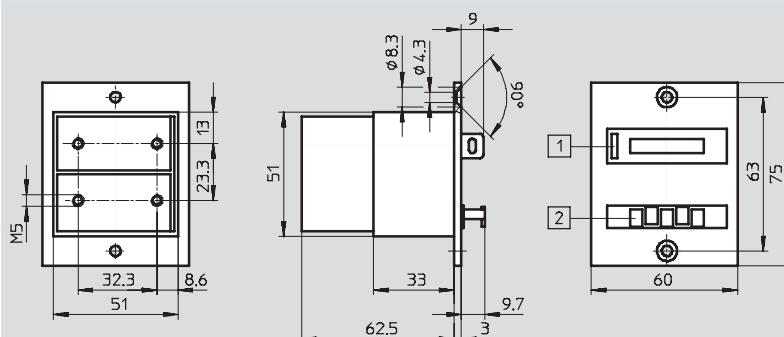
Panel mounting PZA-E-C



1 Reset button

Predetermining counter

Surface mounting PZV-E-C



1 Reset button

2 Preselect buttons

The preset number is restored using the reset button or by a pneumatic signal to the reset port.

Note


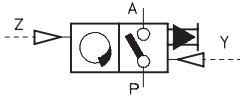
The output signal must not be used to reset the counter. No counting

signal may arrive or be present during the resetting procedure.

Counters PZA/PZV

Technical data

FESTO

Ordering data			Part No.	Type
Adding counter	Surface mounting		14 992	PZA-A-B
	Panel mounting		8 606	PZA-E-C
Predetermining counter	Surface mounting		15 608	PZV-E-C

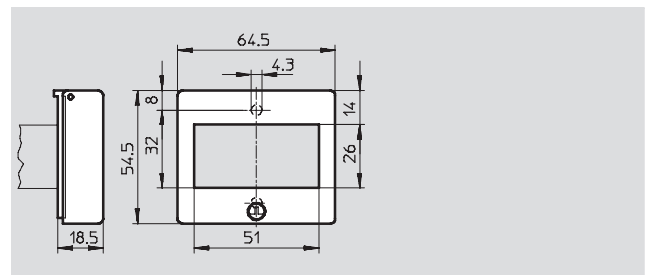
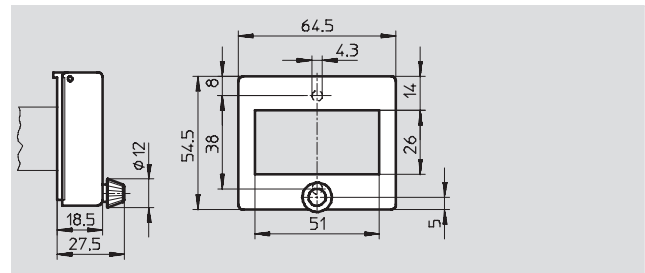
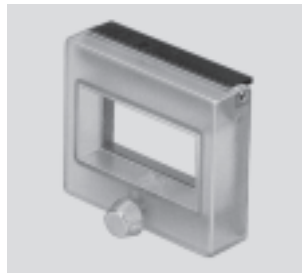
Counters PZA/PZV

Accessories

FESTO

Protective cover with rotary knob PZ-SK-1 with lock PZ-SS-1

Protective cover for adding counter to protect against entry of dirt and water on the front panel

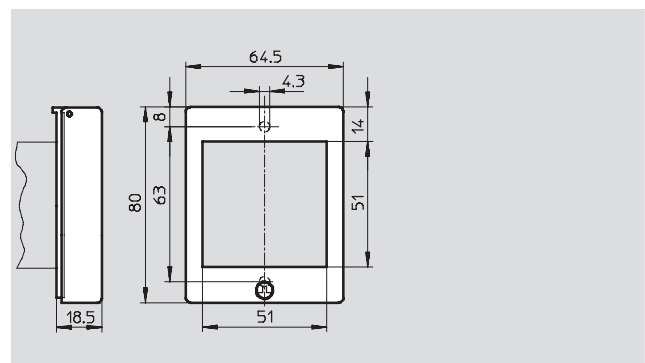
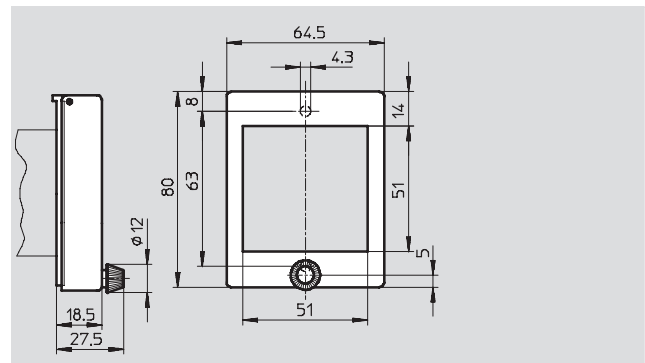


Ordering data

	Part No.	Type
Protective cover with rotary knob	14 662	PZ-SK-1
Protective cover with lock	13 965	PZ-SS-1

Protective cover with rotary knob PZ-SK-2 with lock PZ-SS-2

Protective cover for predetermining counter to protect against entry of dirt and water on the front panel



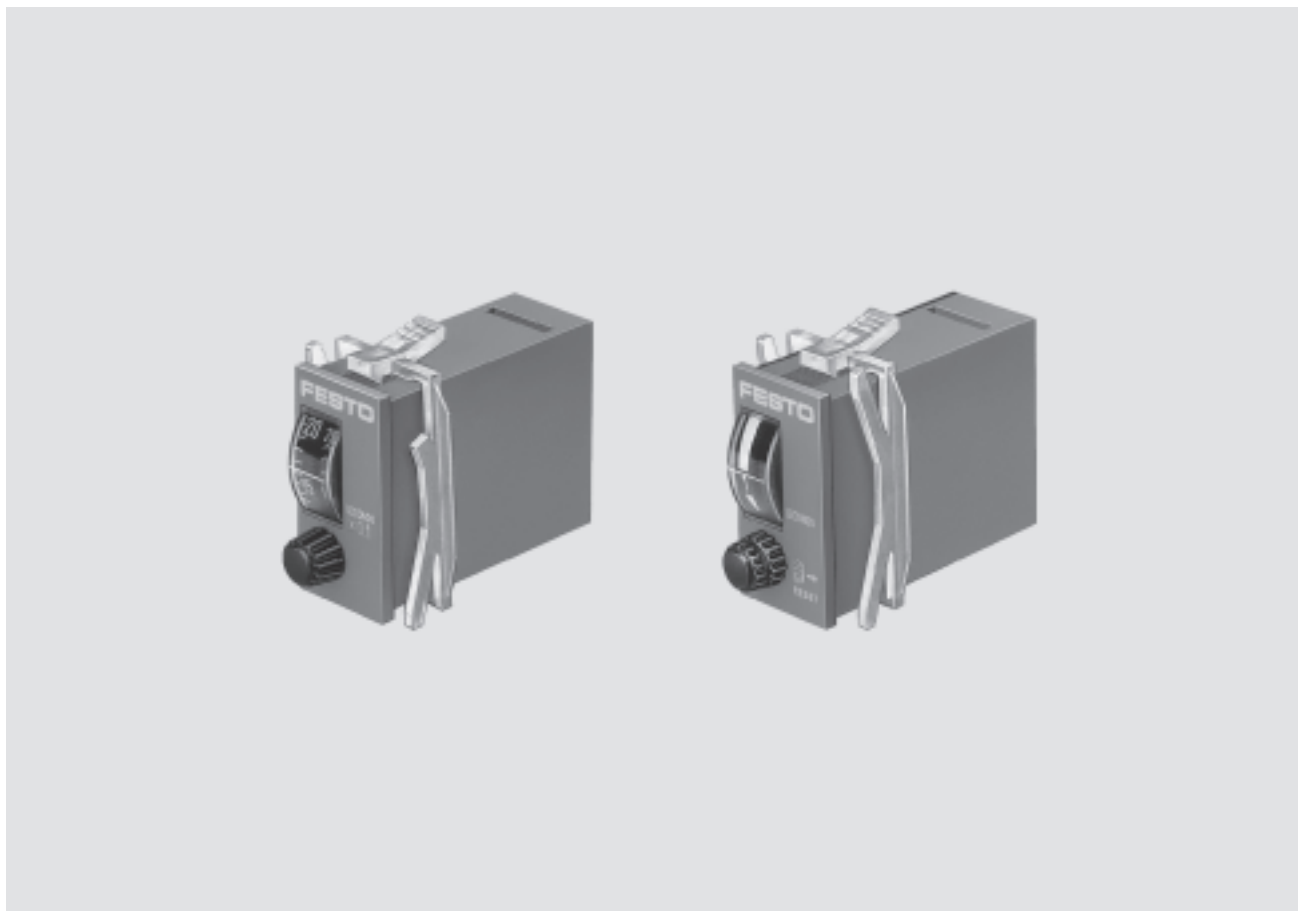
Ordering data

	Part No.	Type
Protective cover with rotary knob	14 663	PZ-SK-2
Protective cover with lock	13 966	PZ-SS-2

Timers PZVT

Key features

FESTO



		Pneumatic timer PZVT	Automatic reset module PZVT-AUT
<ul style="list-style-type: none"> Adjustable delay times <ul style="list-style-type: none"> – 0.2 ... 3 s – 2 ... 30 s – 8 ... 120 s – 20 ... 300 s 	<ul style="list-style-type: none"> Panel mounting 	<p>The timer switches input pressure applied to port 1 through to port 2 after the preset delay time has expired.</p>	<p>The reset module is used to automatically reset timers of type PZVT-...-SEC at the end of a preset time and to generate an output signal of defined duration for control system purposes.</p> <p>The timer can be reset manually by pulling the setting knob on the reset module. This allows the simple creation of pneumatic timer controls with automatically repeating time intervals.</p>
	<ul style="list-style-type: none"> Mounting on <ul style="list-style-type: none"> – G-rail to EN 50 035 – H-rail to EN 60715 Protective cover 		

Timers PZVT

Technical data

FESTO

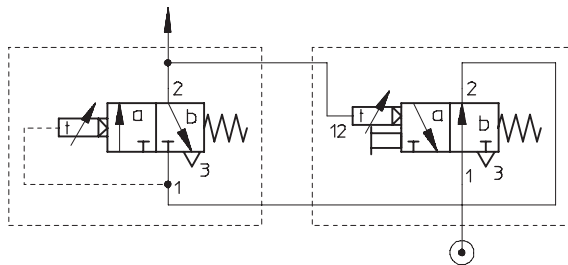
General technical data					
Type	Timer				Reset module
	PZVT-3-SEC	PZVT-30-SEC	PZVT-120-SEC	PZVT-300-SEC	PZVT-AUT
Constructional design	Mechanical sequence counter with pneumatic drive				
Type of mounting	Panel mounting				
Operating medium	Filtered compressed air (unlubricated) ($\leq 40 \mu\text{m}$)				
Pneumatic connection	Female thread M5				
Standard nominal flow rate [l/min]	50				
Adjustable delay times [s]	0.2 ... 3	2 ... 30	8 ... 120	20 ... 300	0.2 ... 2
Repetition accuracy [s]	± 0.1	± 0.3	± 1.2	± 3	± 0.3
Setting accuracy [s]	± 0.3	± 0.6	± 3	± 6	–
Pause period for reset [ms]	≥ 200				
Protection class	IP54 to IEC 60529 with protective cover and panel frame				
Weight [g]	45				50
Material of housing	ABS				
Note on materials	RoHS-compliant				

Operating and environmental conditions					
Type	PZVT-3-SEC	PZVT-30-SEC	PZVT-120-SEC	PZVT-300-SEC	PZVT-AUT
Operating pressure [bar]	2 ... 6				
Switch-on pressure [bar]	≥ 1.6				
Switch-off pressure [bar]	≤ 0.1				≤ 0.3
Ambient temperature [°C]	–10 ... +60				–15 ... +60

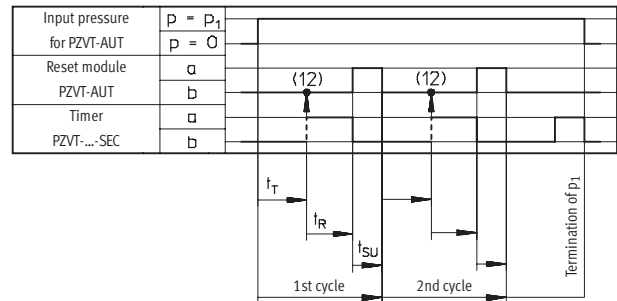
Example of application

PZVT-...-SEC

PZVT-AUT



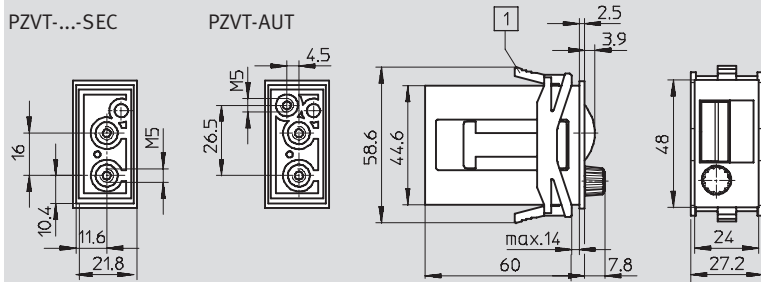
- 1 = Supply port
- 2 = Working or outlet line
- 3 = Exhausts
- 12 = Pilot line



- t_T = Time preset range for timer type PZVT-...-SEC
- t_R = Switching delay time for reset module PZVT-AUT (0.2 ... 2 s)
- t_{SU} = Signal interruption period for reset module PZVT-AUT (≥ 300 ms)

Dimensions

Download CAD Data → www.festo.com/us/cad



- 1 Clamping frame included in scope of delivery

Timers PZVT

Technical data



Ordering data			Part No.	Type
Timer	0.2 ... 3 s		158 495	PZVT-3-SEC
	2 ... 30 s		150 238	PZVT-30-SEC
	8 ... 120 s		177 616	PZVT-120-SEC
	20 ... 300 s		150 239	PZVT-300-SEC
Reset module	0.2 ... 2 s		158 496	PZVT-AUT

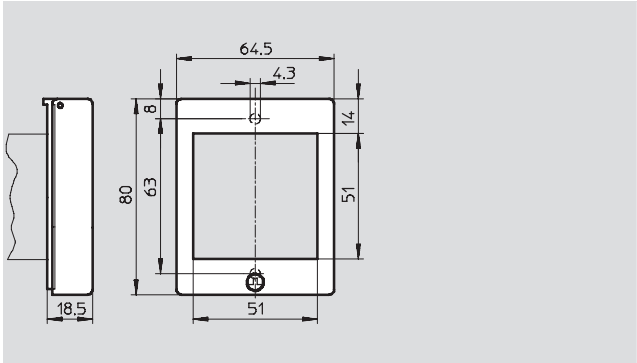
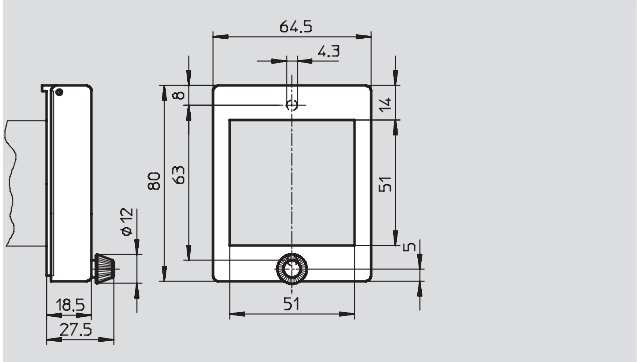
Timers PZVT

Accessories



Protective cover with rotary knob PZ-SK-2 with lock PZ-SS-2

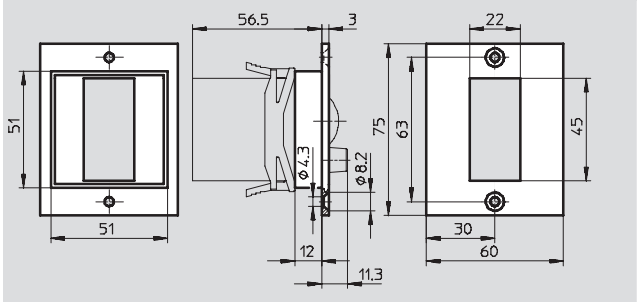
Protective cover for timers to protect
against entry of dirt and water on the
front panel



Ordering data		
	Part No.	Type
Protective cover with rotary knob	14 663	PZ-SK-2
Protective cover with lock	13 966	PZ-SS-2

Panel frame PZVT-FR for panel mounting

Note on materials: RoHS-compliant



Ordering data		
	Part No.	Type
Panel frame	150 241	PZVT-FR

Timers PZVT

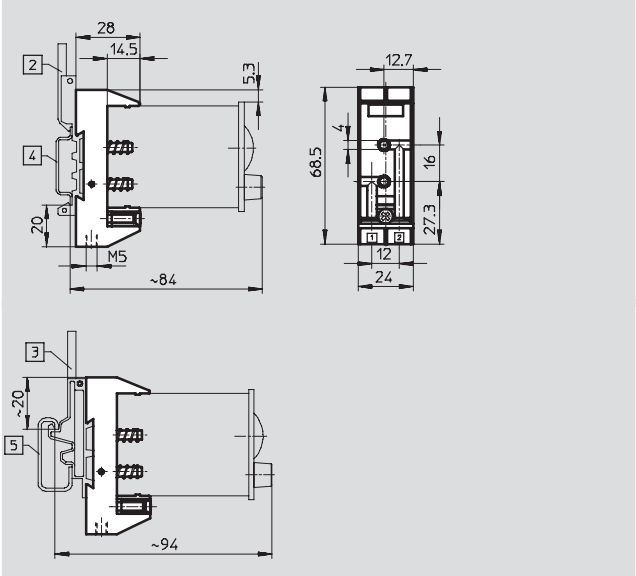
Accessories



Base PZVT-S-DIN
for mounting on G-rail to EN 50 035
or H-rail on EN 60715



- 2 Mounting plate
MPL-MUS/PZ-H
- 3 Mounting plate
MPL-MUS/PZ-G
- 4 H-rail to EN 60715
- 5 G-rail to EN 50 035



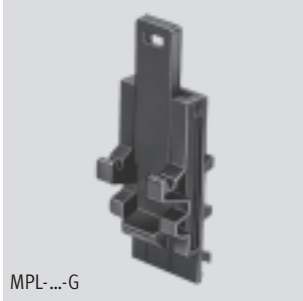
Note

The base PZVT-S-DIN cannot be used
for the reset module PZVT-AUT.

Ordering data		
	Part No.	Type
Base	150 240	PZVT-S-DIN

Mounting plate MPL-MUS/PZ-G
for G-rail to EN 50 035

Mounting plate MPL-MUS/PZ-H
for H-rail to EN 60715



MPL-...-G



MPL-...-H

Ordering data		
	Part No.	Type
Mounting plate for G-rail	19 134	MPL-MUS/PZ-G
Mounting plate for H-rail	19 135	MPL-MUS/PZ-H

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Festo North America

Festo Regional Contact Center

5300 Explorer Drive
Mississauga, Ontario L4W 5G4
Canada

USA Customers:

For ordering assistance,

Call: 1.800.99.FESTO (1.800.993.3786)

Fax: 1.800.96.FESTO (1.800.963.3786)

Email: customer.service@us.festo.com

For technical support,

Call: 1.866.GO.FESTO (1.866.463.3786)

Fax: 1.800.96.FESTO (1.800.963.3786)

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Canadian Customers:

Call: 1.877.GO.FESTO (1.877.463.3786)

Fax: 1.877.FX.FESTO (1.877.393.3786)

Email: festo.canada@ca.festo.com

USA Headquarters

Festo Corporation
395 Moreland Road
P.O. Box 18023
Hauppauge, NY 11788, USA
www.festo.com/us

USA Sales Offices

Appleton

North 922 Tower View Drive, Suite N
Greenville, WI 54942, USA

Boston

120 Presidential Way, Suite 330
Woburn, MA 01801, USA

Chicago

1441 East Business Center Drive
Mt. Prospect, IL 60056, USA

Dallas

1825 Lakeway Drive, Suite 600
Lewisville, TX 75057, USA

Detroit – Automotive Engineering Center

2601 Cambridge Court, Suite 320
Auburn Hills, MI 48326, USA

New York

395 Moreland Road
Hauppauge, NY 11788, USA

Silicon Valley

4935 Southfront Road, Suite F
Livermore, CA 94550, USA

United States



USA Headquarters, East: Festo Corp., 395 Moreland Road, Hauppauge, NY 11788
Phone: 1.631.435.0800; Fax: 1.631.435.8026;
Email: info@festo-usa.com www.festo.com/us

Canada



Headquarters: Festo Inc., 5300 Explorer Drive, Mississauga, Ontario L4W 5G4
Phone: 1.905.624.9000; Fax: 1.905.624.9001;
Email: festo.canada@ca.festo.com www.festo.ca

Mexico



Headquarters: Festo Pneumatic, S.A., Av. Ceylán 3, Col. Tequesquahuac,
54020 Tlalneapantla, Edo. de México
Phone: 011 52 [55] 53 21 66 00; Fax: 011 52 [55] 53 21 66 65;
Email: festo.mexico@mx.festo.com www.festo.com/mx

Central USA

Festo Corporation
1441 East Business
Center Drive
Mt. Prospect, IL 60056, USA
Phone: 1.847.759.2600
Fax: 1.847.768.9480



Western USA

Festo Corporation
4935 Southfront Road,
Suite F
Livermore, CA 94550, USA
Phone: 1.925.371.1099
Fax: 1.925.245.1286



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