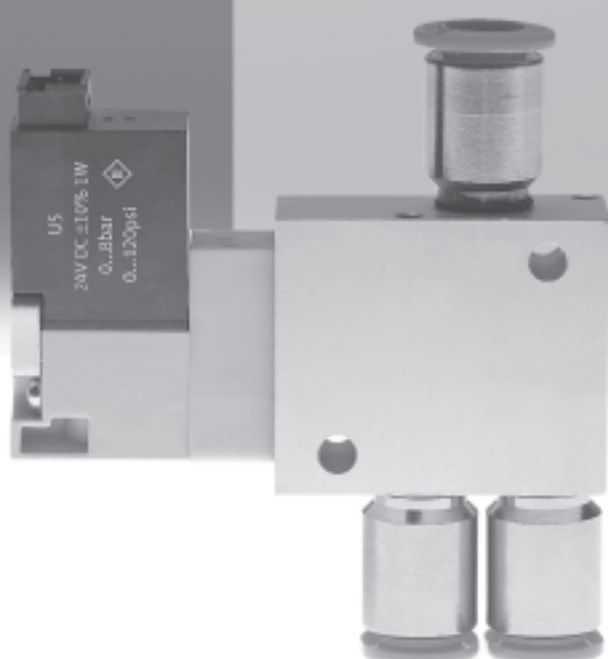


Valve series VOVG

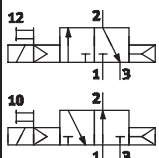
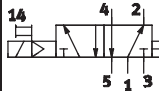
FESTO

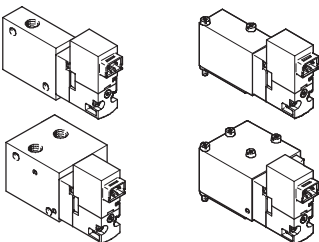
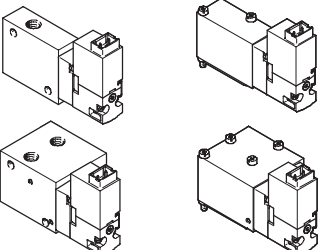


Solenoid valves VOVG

Product range overview

FESTO

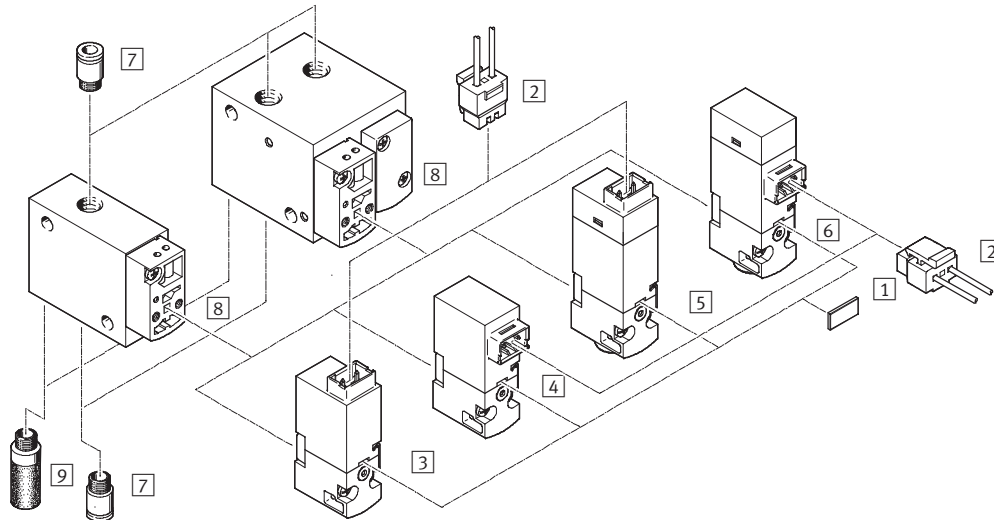
Function	Symbol	Version	Normally		Voltage [V DC]			→ Page/ Internet
			open	closed	5	12	24	
3/2-way valve		In-line valve	■	■	■	■	■	8/vovg
		Semi in-line valve	■	■	■	■	■	
		Sub-base valve	■	■	■	■	■	
5/2-way valve		In-line valve	–	–	■	■	■	
		Semi in-line valve	–	–	■	■	■	
		Sub-base valve	–	–	■	■	■	

Mounting options					
Voltage [V DC]		5	12	24	
Signal status display		None	None	None	Via LED
Horizontal plug connection (H2)					
	Direct mounting				
	Manifold assembly				
Vertical plug connection (H3)					
	Direct mounting				
	Manifold assembly				

Solenoid valves VOVG

Peripherals overview

In-line valve



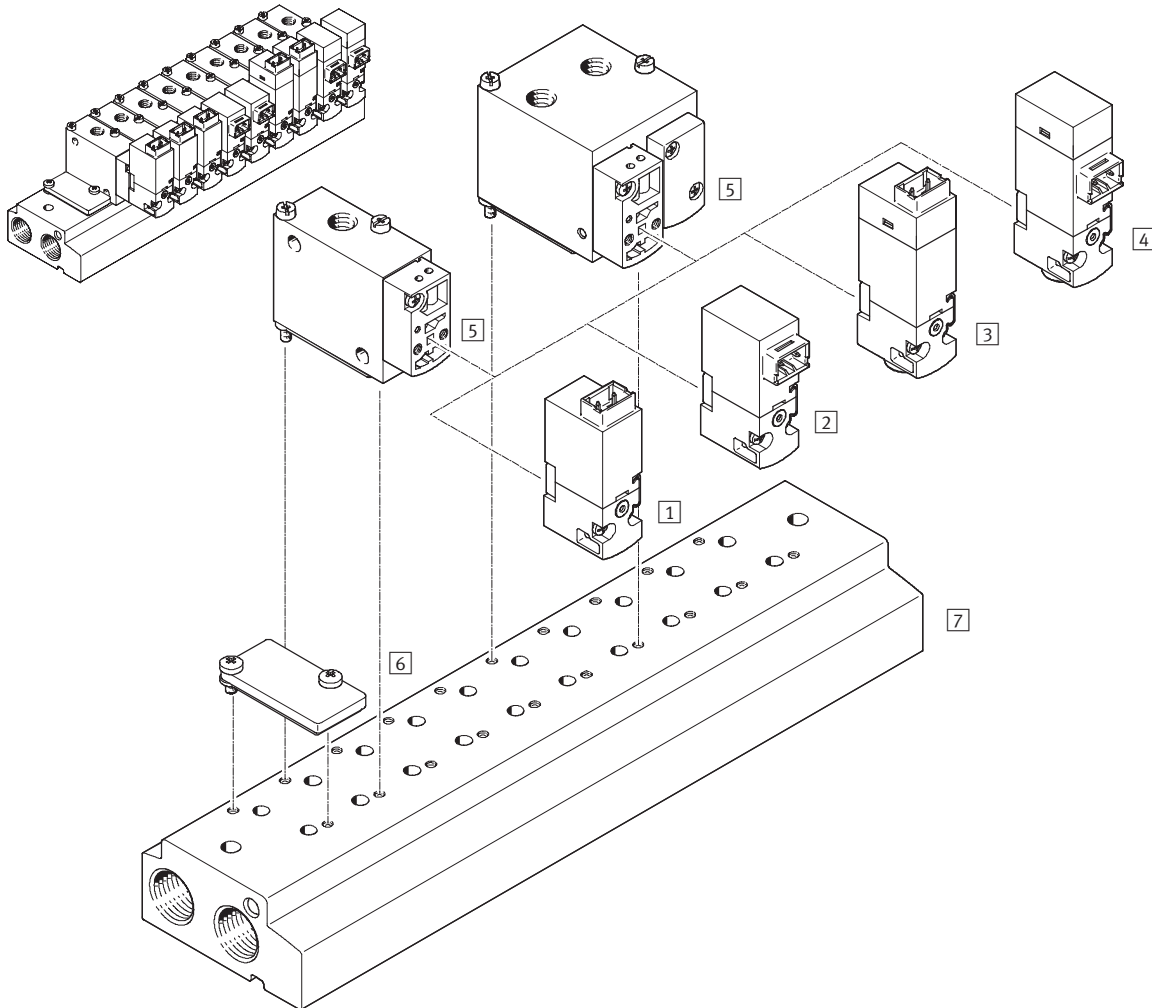
Component parts				
	Type	Brief description	➔ Page/ Internet	
1	Inscription label	MH-BZ-80X	For identifying the solenoid valves	19
2	Plug socket with cable	KMH	For solenoid coils	19
3	Pilot valve	–	Sub-assembly of the solenoid valve VOVG with vertical plug connection	8
4	Pilot valve	–	Sub-assembly of the solenoid valve VOVG with horizontal plug connection	
5	Pilot valve	–	Sub-assembly of the solenoid valve VOVG with vertical plug connection and LED	
6	Pilot valve	–	Sub-assembly of the solenoid valve VOVG with horizontal plug connection and LED	
7	Push-in fitting	QS/QSM	For standard O.D. tubing	18
8	Basic valves	–	Sub-assemblies of the solenoid valves VOVG	8
9	Silencer	U	For fitting on exhaust ports	18

Solenoid valves VOVG

System overview

FESTO

Manifold assembly – Semi in-line valves



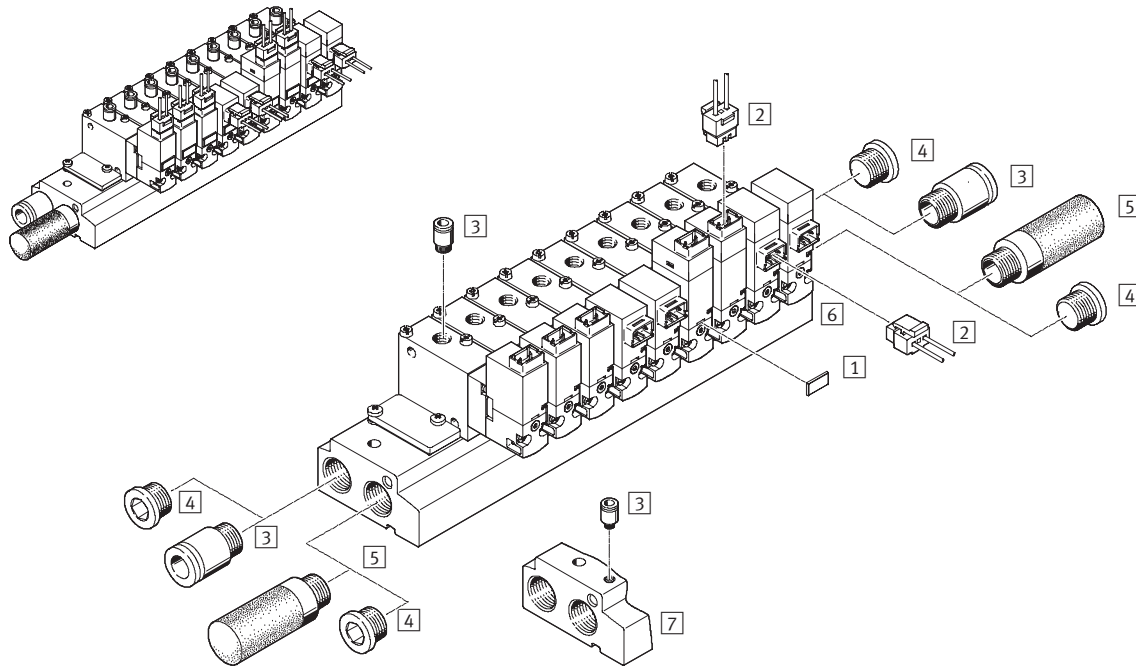
Component parts			
	Type	Brief description	→ Page/ Internet
1	–	Sub-assembly of the solenoid valve VOVG with vertical plug connection	8
2	–	Sub-assembly of the solenoid valve VOVG with horizontal plug connection	
3	–	Sub-assembly of the solenoid valve VOVG with vertical plug connection and LED	
4	–	Sub-assembly of the solenoid valve VOVG with horizontal plug connection and LED	
5	–	Sub-assemblies of the solenoid valves VOVG	
6	VABB-C7-12-W	For vacant positions	18
7	VABM-C7-...	For semi in-line valves	16

Solenoid valves VOVG

Peripherals overview

FESTO

Manifold assembly – Semi in-line valves with accessories



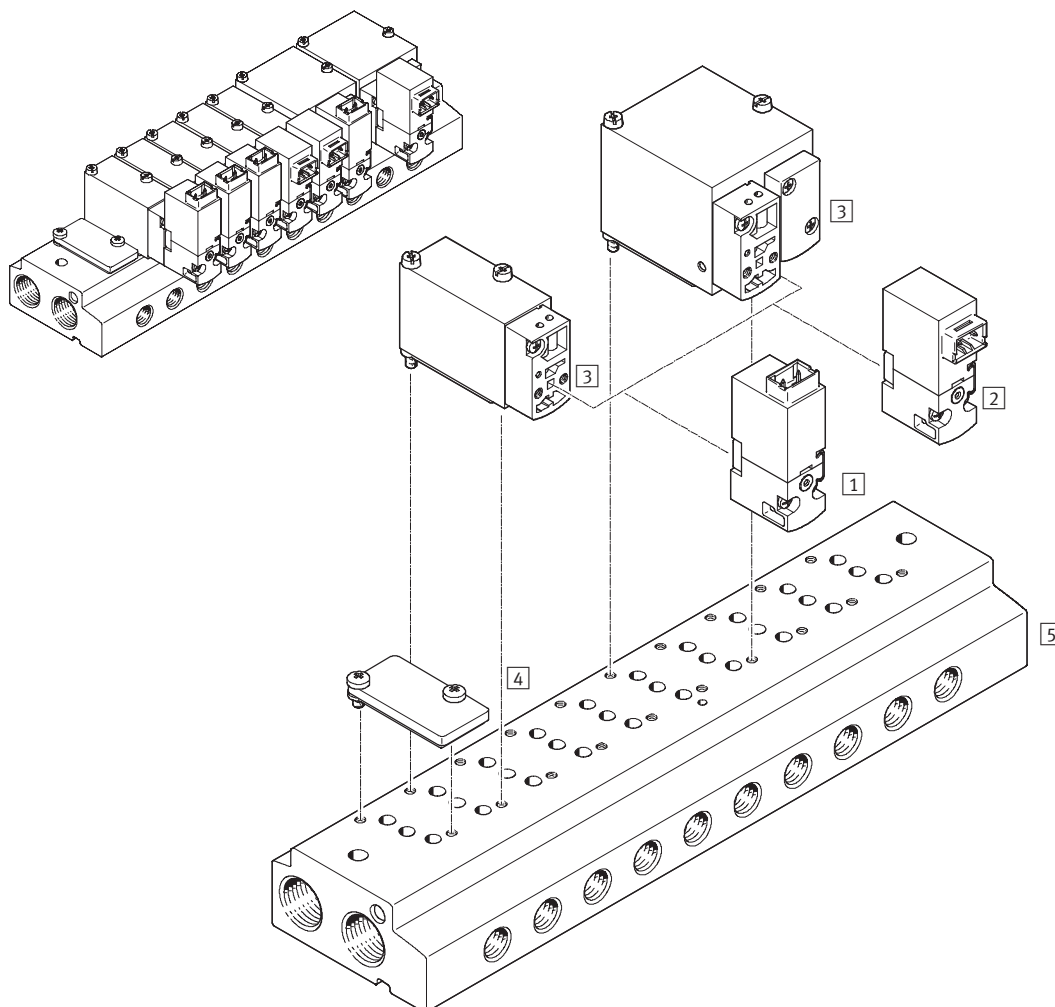
Component parts				
		Type	Brief description	➔ Page/ Internet
1	Inscription label	MH-BZ-80X	For identifying the solenoid valves	19
2	Plug socket with cable	KMH	For solenoid coils	19
3	Push-in fitting	QS/QSM	For standard O.D. tubing	18
4	Blanking plug	B	For sealing unused ports	18
5	Silencer	U	For fitting on exhaust ports	18
6	Manifold rail	VABM-...-P...	Without port for external pilot air for valves with internal pilot air supply	16
7	Manifold rail	VABM-...-G...	With port for external pilot air	16

Solenoid valves VOVG

System overview

FESTO

Manifold assembly – Sub-base valves



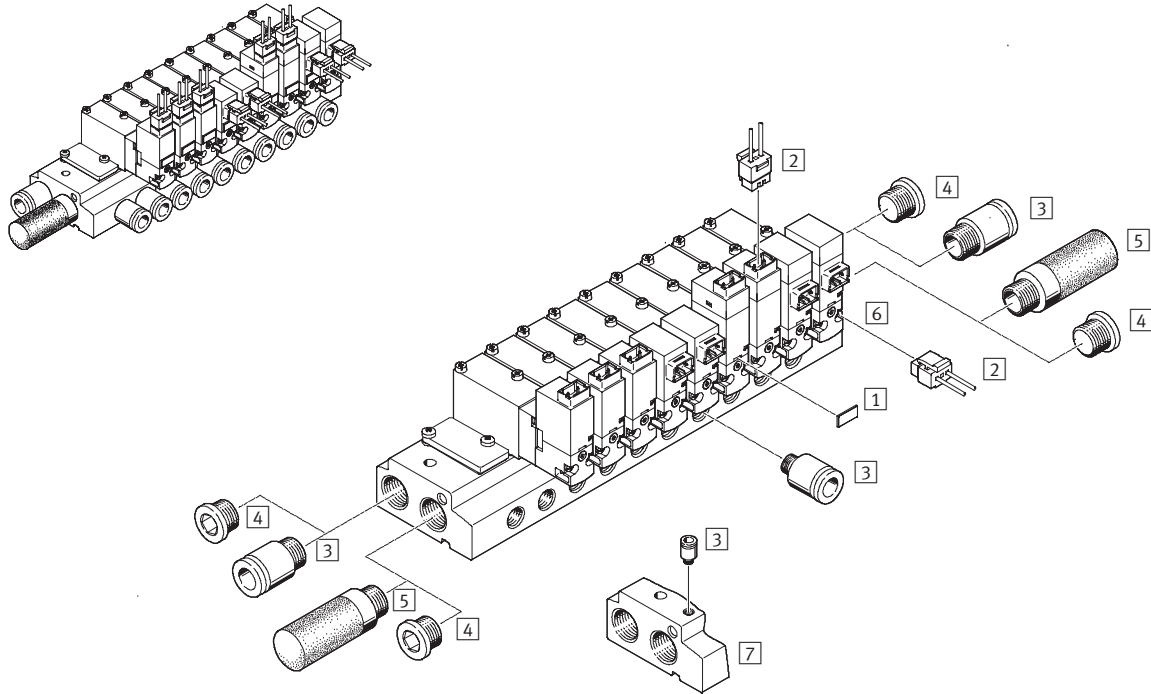
Component parts				
	Type	Brief description	➔ Page/ Internet	
1	Pilot valve	–	8	
2	Pilot valve	–		
3	Basic valves	–		
4	Blanking plate	VABB-C7-12-W	For vacant positions	18
5	Manifold rail	VABM-C7-...	For sub-base valves	17

Solenoid valves VOVG

Peripherals overview

FESTO

Manifold assembly – Sub-base valves with accessories



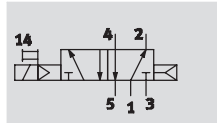
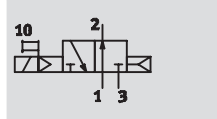
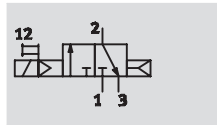
Component parts				
		Type	Brief description	➔ Page/ Internet
1	Inscription label	MH-BZ-80X	For identifying the solenoid valves	19
2	Plug socket with cable	KMH	For solenoid coils	19
3	Push-in fitting	QS/QSM	For standard O.D. tubing	18
4	Blanking plug	B	For sealing unused ports	18
5	Silencer	U	For fitting on exhaust ports	18
6	Manifold rail	VABM-...-M...	Without port for external pilot air for valves with internal pilot air supply	17
7	Manifold rail	VABM-...-W...	With port for external pilot air	17

Solenoid valves VOVG

Technical data

FESTO

Function



Voltage

5, 12, 24 V DC

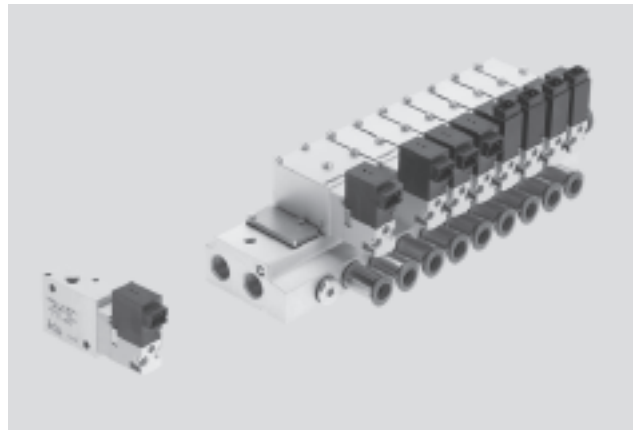


Pressure

–0.9 ... +8 bar

Temperature range

–5 ... +50 °C



General technical data							
Design	In-line valve		Semi in-line valve		Sub-base valve		
Valve function	3/2	5/2	3/2	5/2	3/2	5/2	
Memory stability	Single						
Constructional design	Piston spool						
Sealing principle	Soft						
Actuation type	Electrical						
Reset method	Pneumatic spring						
Type of control	Piloted						
Direction of flow	Non-reversible						
Exhaust function	Flow control						
Manual override	Non-detenting/detenting		Non-detenting				
Type of mounting	Via through-holes		On sub-base or manifold, via through-holes				
Mounting position	Any						
Nominal size	[mm]	2.1					
Standard nominal flow rate	[l/min]	200	180	180			
Width	[mm]	10/12	25	12	25	12	25
Switching time on/off	[ms]	12/10	15/18	12/10	15/18	12/10	15/18
Pneumatic connection	M5		Sub-base				

Operating and environmental conditions		
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm	
Operating pressure with internal pilot air supply	[bar]	2 ... 8
Operating pressure with external pilot air supply ¹⁾	[bar]	–0.9 ... 8
Pilot pressure	[bar]	3 ... 8
Ambient temperature	[°C]	–5 ... +50
Temperature of medium	[°C]	–5 ... +50

1) Vacuum operation possible with special connection method

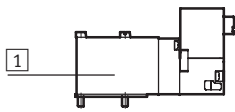
Solenoid valves VOVG

Technical data

FESTO

Electrical data		
Operating voltage	[V DC]	5 ±10%, 12 ±10% or 24 ±10%
Type of connection		Plug connection
Power consumption	[W]	1
Duty cycle	[%]	100
Protection class to EN 60529		
With plug socket with cable KMH		IP40

Materials



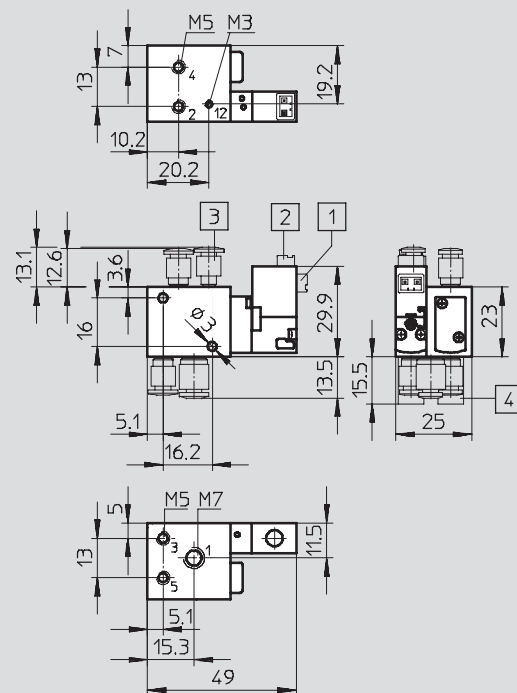
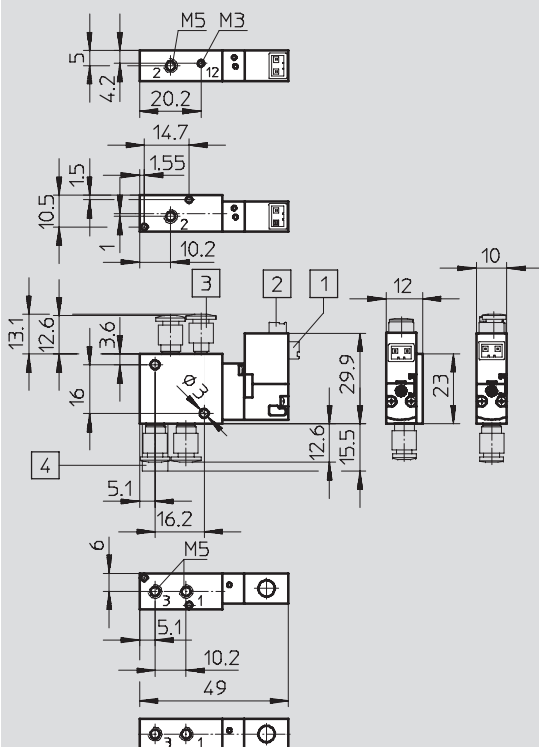
1	Housing	Aluminium
-	Seals	Fluoro elastomer, hydrogenated nitrile rubber, nitrile rubber

Dimensions – Valve

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

3/2-way in-line valve

5/2-way in-line valve



1 Electrical connection at rear

2 Electrical connection on top

3 Pilot air supply

4 Silencer

Solenoid valves VOVG

Technical data

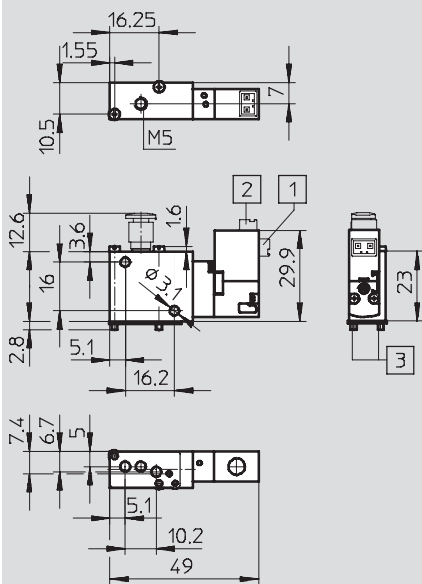
FESTO

Dimensions – Valve

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

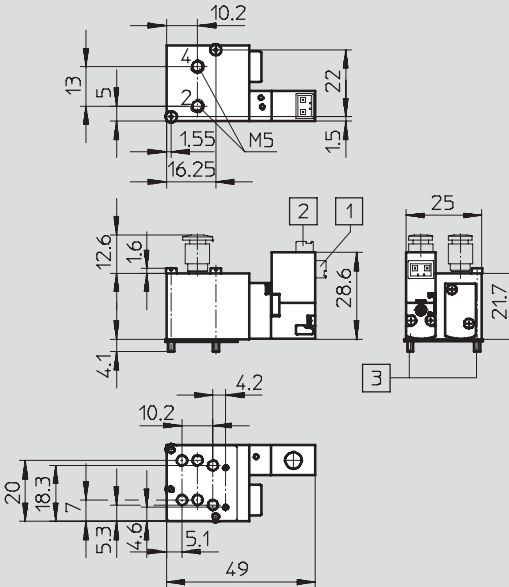
3/2-way semi in-line valve

5/2-way semi in-line valve



1 Electrical connection at rear

2 Electrical connection on top



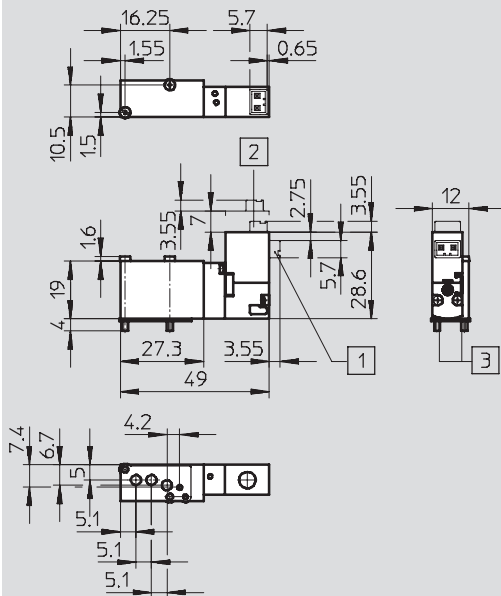
3 Mounting screws M2x25

Dimensions – Valve

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

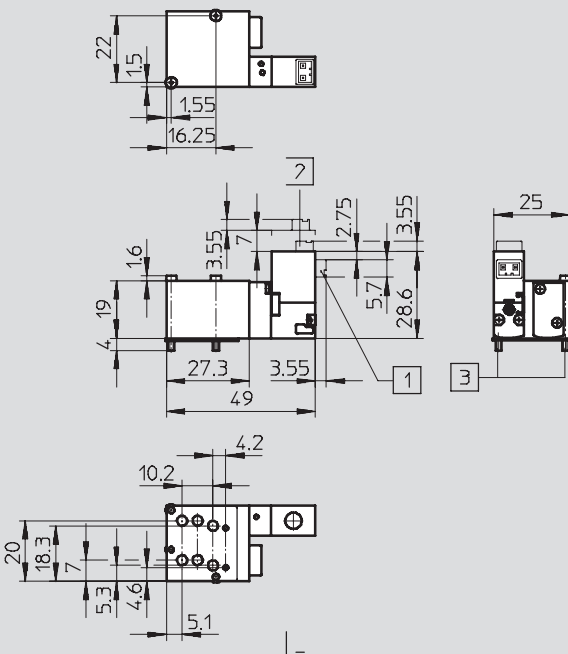
3/2-way sub-base valve

5/2-way sub-base valve



1 Electrical connection at rear

2 Electrical connection on top



3 Mounting screws M2x25

Solenoid valves VOVG

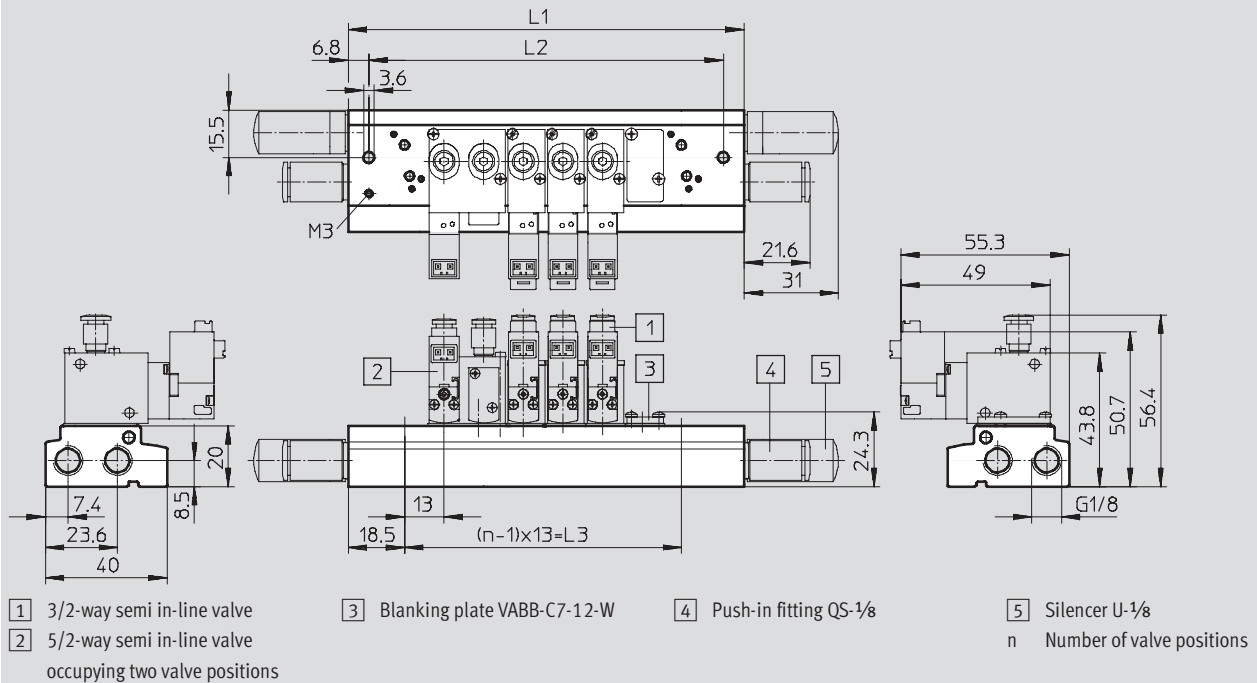
Technical data

FESTO

Dimensions – Manifold assembly

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

Semi in-line valve



Number of valve positions n	L1	L2 (-0/+0.4)	L3
2	52	38.4	13
3	65	51.4	26
4	78	64.4	39
5	91	77.4	52
6	104	90.4	65
7	117	103.4	78
8	130	116.4	91
9	143	129.4	104
10	156	142.4	117

Solenoid valves VOVG

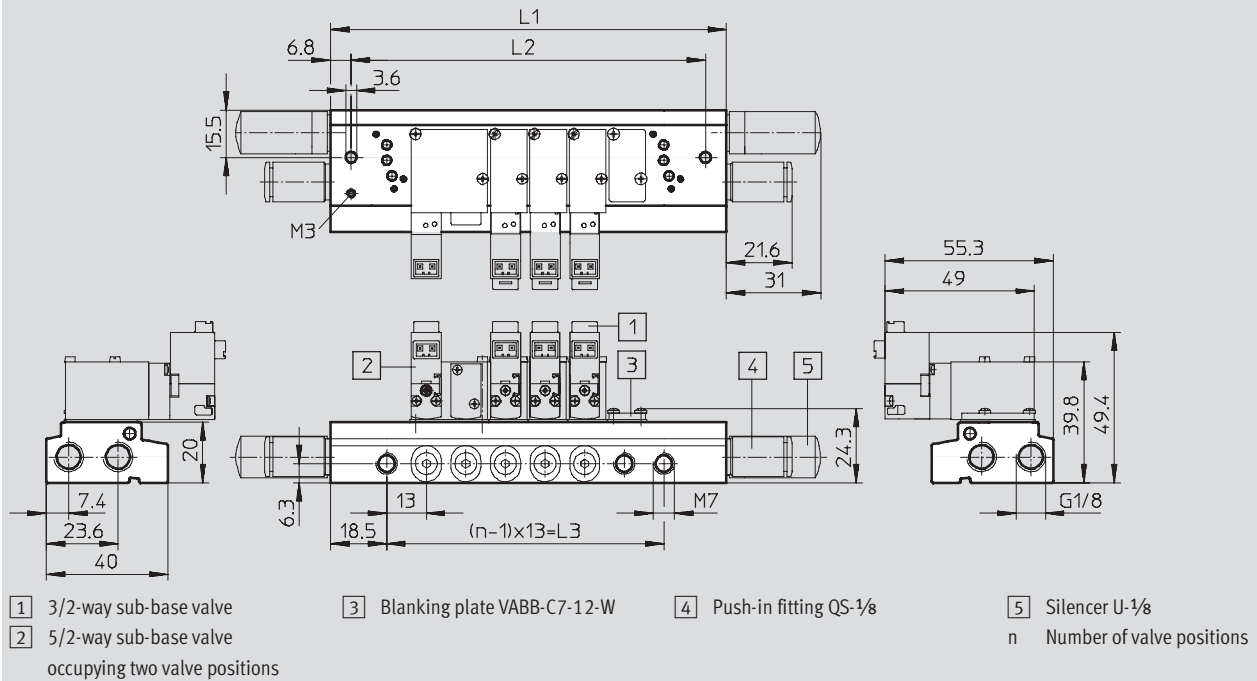
Technical data

FESTO

Dimensions – Manifold assembly

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

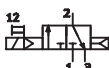
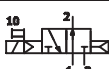
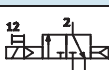
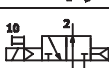
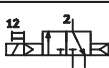
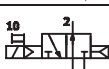
Sub-base valve



Number of valve positions n	L1	L2 (-0/+0.4)	L3
2	52	38.4	13
3	65	51.4	26
4	78	64.4	39
5	91	77.4	52
6	104	90.4	65
7	117	103.4	78
8	130	116.4	91
9	143	129.4	104
10	156	142.4	117

Solenoid valves VOVG

Ordering data

Ordering data							
Circuit symbol	Function	Normal position	Plug direction	Pilot air supply	Voltage ¹⁾	Part No.	Type
In-line valve							
	3/2-way, single solenoid	Closed	Horizontal	Internal	24 V DC	560 697	VOVG-L10-M32C-AH-M5-1H2
			Vertical			560 698	VOVG-L10-M32C-AH-M5-1H3
		Open	Horizontal			560 699	VOVG-L10-M32U-AH-M5-1H2
			Vertical			560 700	VOVG-L10-M32U-AH-M5-1H3
	5/2-way, single solenoid	–	Horizontal			560 701	VOVG-L12-M52Q-AH-M5-1H2
			Vertical			560 702	VOVG-L12-M52Q-AH-M5-1H3
Semi in-line valve							
	3/2-way, single solenoid	Closed	Horizontal	Internal	24 V DC	560 703	VOVG-S12-M32C-AH-M5-1H2
			Vertical			560 704	VOVG-S12-M32C-AH-M5-1H3
		Open	Horizontal			560 705	VOVG-S12-M32U-AH-M5-1H2
			Vertical			560 706	VOVG-S12-M32U-AH-M5-1H3
	5/2-way, single solenoid	–	Horizontal			560 707	VOVG-S12-M52Q-AH-M5-1H2
			Vertical			560 708	VOVG-L12-M52Q-AH-M5-1H3
Sub-base valve							
	3/2-way, single solenoid	Closed	Horizontal	Internal	24 V DC	560 709	VOVG-B12-M32C-AH-F-1H2
			Vertical			560 710	VOVG-B12-M32C-AH-F-1H3
		Open	Horizontal			560 711	VOVG-B12-M32U-AH-F-1H2
			Vertical			560 712	VOVG-B12-M32U-AH-F-1H3
	5/2-way, single solenoid	–	Horizontal			560 713	VOVG-B12-M52Q-AH-F-1H2
			Vertical			560 714	VOVG-B12-M52Q-AH-F-1H3

1) See modular system for other voltages

Solenoid valves VOVG

Ordering data – Modular products

FESTO

Mandatory data						Options
Module No.	Valve	Valve type	Size	Valve function	Reset method	Pilot air supply
549 438	VOVG	B S L	10 12	M32C M32U M52Q	A	– Z
Order example						
549 438	VOVG	– S	12	– M32U	– A	

Ordering table				Condition s	Code	Enter code
M	Module No.	549 438				
	Valve	Solenoid valve			VOVG	VOVG
	Valve type	Sub-base valve			-B	
		Semi in-line valve			-S	
		In-line valve			-L	
	Size	10 (200 l/min)	1		10	
		12 (200 l/min)			12	
	Valve function	3/2-way valve, single solenoid, normally closed			-M32C	
		3/2-way valve, single solenoid, normally open			-M32U	
		5/2-way valve, single solenoid, 2 valve positions	8		-M52Q	
	Reset method	Pneumatic spring			-A	-A
O	Pilot air supply	Internal pilot air supply				
↓		External pilot air supply	9		Z	

1 10, D, U Not with valve type B, S

8 Z Not in combination with size 10

9 Z Not in combination with valve type L and size 12

Transfer order code

549 438	VOVG	–		–		–	A	
---------	------	---	--	---	--	---	---	--

Solenoid valves VOVG

Ordering data – Modular products

FESTO

Options				Mandatory data			
Manual override	Pneumatic connection	Exhaust	Pilot exhaust	Nominal operating voltage	Electrical connection	Display	Electrical accessories
H D	F M5 Q3 Q4 Q6	– U	–	1 4 5	H2 H3	– L	W1, W2, W3, W4
H	– Q3	U		– 4	H3		+ W1

Ordering table				Condition s	Code	Enter code
M	Manual override	Pushing			H	
		Pushing/detenting	1 2		D	
	Pneumatic connection	Flange/sub-base	3		-F	
		Metric thread M5	4		-M5	
		Push-in connectors 3 mm	4		-Q3	
		Push-in connectors 4 mm	4		-Q4	
		Push-in connectors 6 mm	4		-Q6	
O	Exhaust	Ducted				
		Silencer	1 5		U	
	Pilot exhaust	Unducted				
M	Nominal operating voltage [V DC]	24			-1	
		5			-4	
		12			-5	
	Electrical connection	Horizontal plug			H2	
		Vertical plug			H3	
O	Display	None				
		LED signal display	7		L	
	Electrical accessories				+	+
	Connecting cable	Without sheath, 0.5 m			W1	
		Without sheath, 1 m			W2	
		Without sheath, 2.5 m			W3	
		Without sheath, 5 m			W4	

- 1 10, D, U Not with valve type B, S
 2 D Not with nominal operating voltage 5 V DC, 12 V DC
 3 F Not with valve type L, S

- 4 M5, Q3, Q4, Q6 Not with valve type B
 5 U Not with pneumatic connection F, M5
 7 L Not with nominal operating voltage 5 V DC, 12 V DC

Transfer order code

	–				–				+	
--	---	--	--	--	---	--	--	--	---	--

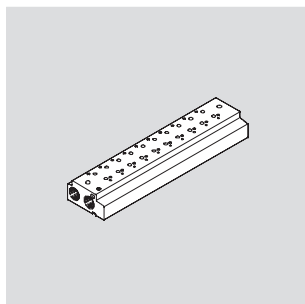
Solenoid valves VOVG

Technical data – Manifold rail

FESTO

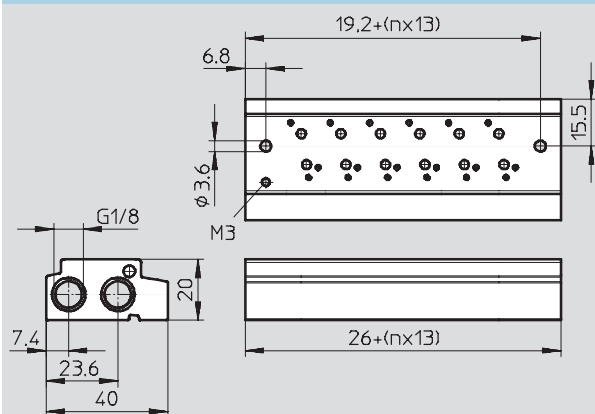
**Manifold rail VABM-C7
for semi in-line valves**

Material:
Wrought aluminium alloy



Dimensions – Manifold rails for semi in-line valves

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



n Number of valve positions

Ordering data – Manifold rails for semi in-line valves

Valve positions n	Weight [g]	CRC	Part No.	Type
For valves with internal pilot air				
2	84	2 ¹⁾	552 652	VABM-C7-12P-G18-2
3	105		552 653	VABM-C7-12P-G18-3
4	126		552 654	VABM-C7-12P-G18-4
5	147		552 655	VABM-C7-12P-G18-5
6	168		552 656	VABM-C7-12P-G18-6
7	189		552 657	VABM-C7-12P-G18-7
8	210		552 658	VABM-C7-12P-G18-8
9	231		552 659	VABM-C7-12P-G18-9
10	252		552 660	VABM-C7-12P-G18-10
For valves with external pilot air				
2	84	2 ¹⁾	552 661	VABM-C7-12G-G18-2
3	105		552 662	VABM-C7-12G-G18-3
4	126		552 663	VABM-C7-12G-G18-4
5	147		552 664	VABM-C7-12G-G18-5
6	168		552 665	VABM-C7-12G-G18-6
7	189		552 666	VABM-C7-12G-G18-7
8	210		552 667	VABM-C7-12G-G18-8
9	231		552 668	VABM-C7-12G-G18-9
10	252		552 669	VABM-C7-12G-G18-10

1) Corrosion resistance class 2 as per Festo standard 940 070

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

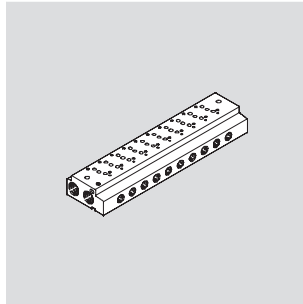
Solenoid valves VOVG

Technical data – Manifold rail

FESTO

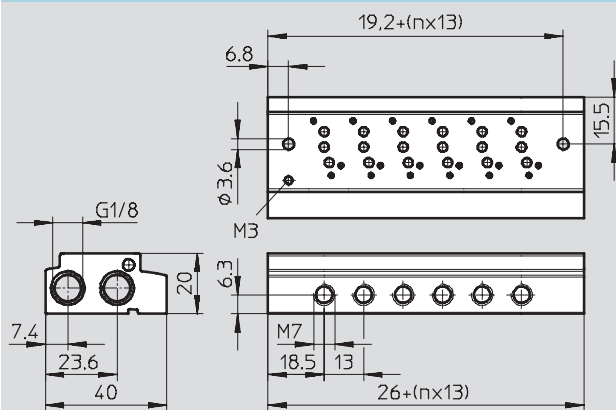
Manifold rail VABM-C7 for sub-base valves

Material:
Wrought aluminium alloy



Dimensions – Manifold rails for sub-base valves

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



n Number of valve positions

Ordering data – Manifold rails for sub-base valves

Valve positions	Weight [g]	CRC	Part No.	Type
For valves with internal pilot air				
2	82	2 ¹⁾	549 639	VABM-C7-12M-G18-2
3	102		549 640	VABM-C7-12M-G18-3
4	122		549 641	VABM-C7-12M-G18-4
5	142		549 642	VABM-C7-12M-G18-5
6	162		549 643	VABM-C7-12M-G18-6
7	182		549 644	VABM-C7-12M-G18-7
8	202		549 645	VABM-C7-12M-G18-8
9	222		549 646	VABM-C7-12M-G18-9
10	242		549 647	VABM-C7-12M-G18-10
For valves with external pilot air				
2	82	2 ¹⁾	549 648	VABM-C7-12W-G18-2
3	102		549 649	VABM-C7-12W-G18-3
4	122		549 650	VABM-C7-12W-G18-4
5	142		549 651	VABM-C7-12W-G18-5
6	162		549 652	VABM-C7-12W-G18-6
7	182		549 653	VABM-C7-12W-G18-7
8	202		549 654	VABM-C7-12W-G18-8
9	222		549 655	VABM-C7-12W-G18-9
10	242		549 656	VABM-C7-12W-G18-10

1) Corrosion resistance class 2 as per Festo standard 940 070

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

Solenoid valves VOVG

Accessories

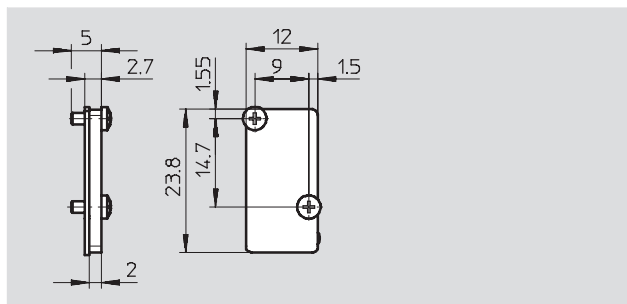
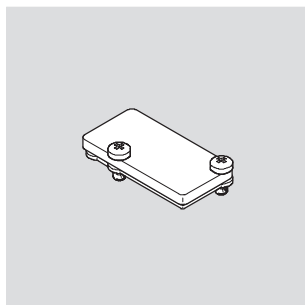
FESTO

Blanking plate VABB-C7

Material:

Blanking plate: Steel

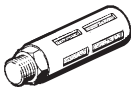
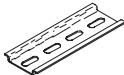
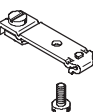
Seal: Nitrile rubber



Ordering data				
	Weight [g]	CRC	Part No.	Type
Blanking plate for vacant positions	6	2 ¹⁾	552 651	VABB-C7-12-W

1) Corrosion resistance class 2 as per Festo standard 940 070

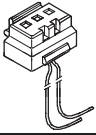
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Ordering data – Accessories				
Designation			Part No.	Type
Silencer				
	Connecting thread G1/8		2 307	U-1/8
			6 841	U-1/8-B
Blanking plug				
	Thread G1/8	10 pieces	3 568	B-1/8
Push-in fitting				
 	Connecting thread G1/8 for tubing O.D.	6 mm (10 pieces)	153 002	QS-1/8-6
		8 mm (10 pieces)	153 004	QS-1/8-8
	Connecting thread M3 for tubing O.D.	3 mm (10 pieces)	153 312	QSM-M3-3-I
		4 mm (10 pieces)	153 313	QSM-M3-4-I
	Connecting thread M5 for tubing O.D.	3 mm (10 pieces)	153 315	QSM-M5-3-I
		4 mm (10 pieces)	153 317	QSM-M5-4-I
	Connecting thread M7 for tubing O.D.	3 mm (10 pieces)	153 319	QSM-M7-3-I
		4 mm (10 pieces)	153 321	QSM-M7-4-I
H-rail				
			35 430	NRH-35-2000
Mounting				
	For H-rail		527 392	CPASC1-BG-NRH

Solenoid valves VOVG

Accessories

FESTO

Ordering data – Accessories			
Designation		Part No.	Type
Inscription label			
	For solenoid valve	80 pieces	197 259 MH-BZ-80X
Plug socket with cable			
	For 1 coil, 2-wire	0.5 m	197 263 KMH-0,5
		1 m	197 264 KMH-1
		2.5 m	527 400 KMH-2,5
		5 m	527 401 KMH-5

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.



© Copyright 2008, Festo Corporation. While every effort is made to ensure that all dimensions and specifications are correct, Festo cannot guarantee that publications are completely free of any error, in particular typing or printing errors. Accordingly, Festo cannot be held responsible for the same. For Liability and Warranty conditions, refer to our "Terms and Conditions of Sale", available from your local Festo office. All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, electronic, mechanical, photocopying or otherwise, without the prior written permission of Festo. All technical data subject to change according to technical update.



Printed on recycled paper at New Horizon Graphic, Inc., FSC certified as an environmentally friendly printing plant.

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)

Email: product.support@us.festo.com

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



Festo Worldwide

Argentina Australia Austria Belarus Belgium Brazil Bulgaria Canada Chile China Colombia Croatia Czech Republic Denmark
Estonia Finland France Germany Great Britain Greece Hong Kong Hungary India Indonesia Iran Ireland Israel Italy Japan Latvia
Lithuania Malaysia Mexico Netherlands New Zealand Norway Peru Philippines Poland Romania Russia Serbia Singapore
Slovakia Slovenia South Africa South Korea Spain Sweden Switzerland Taiwan Thailand Turkey Ukraine United States Venezuela

www.festo.com