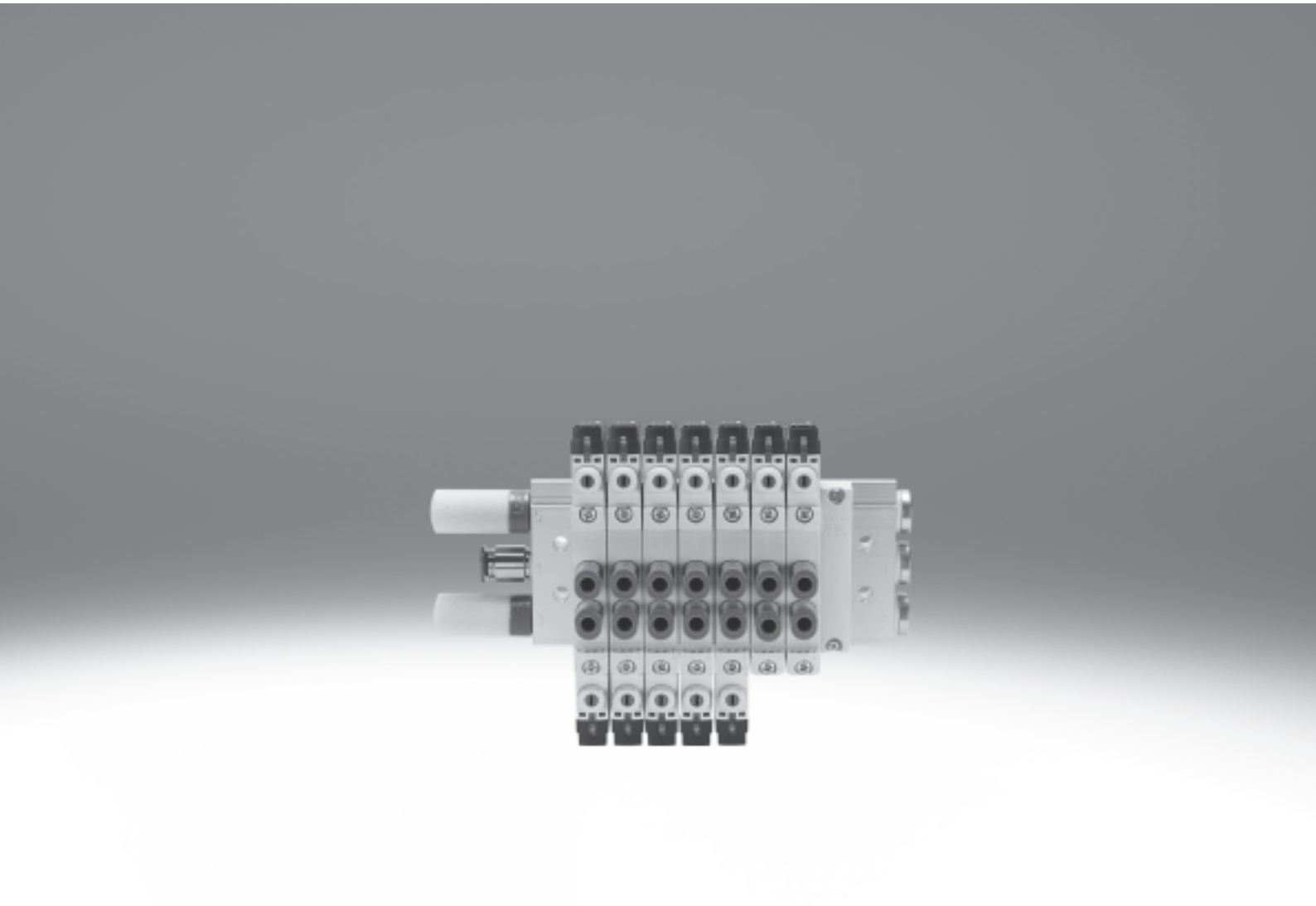
Solenoid valves VUVG/valve terminal type 26 VTUG

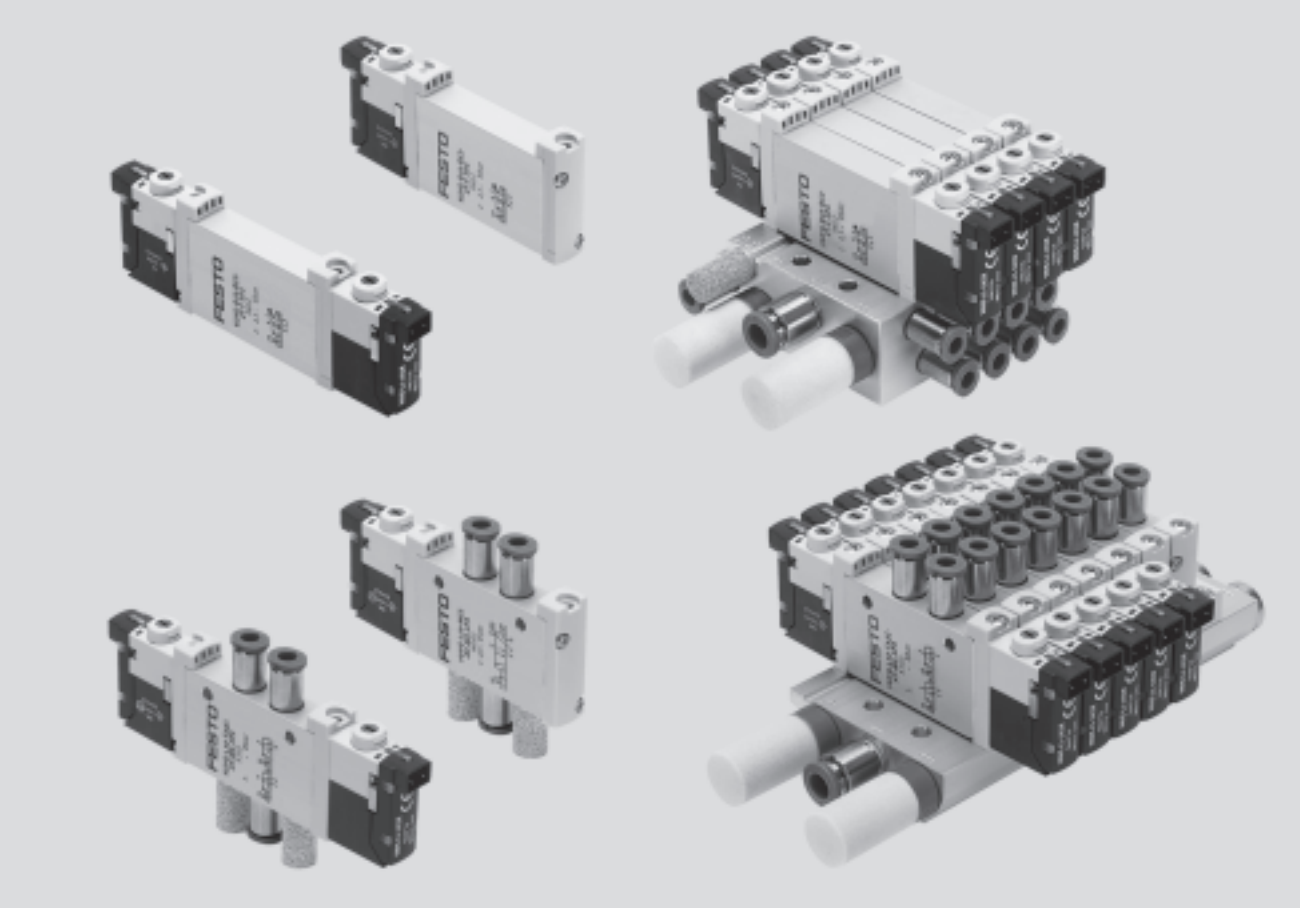
FESTO



New
VUVG

Solenoid valves VUVG/valve terminal type 26 VTUG

Key features



Innovative

- Both internal and external pilot air supply can be used for manifolds with sub-base valves
- Connection technology easy to change via the E-box
- Max. pressure 10 bar

Versatile

- Wide range of valve functions
- Choice of quick plug connectors
- In-line valves can be used as individual valves or manifold valves
- M5 and M7 in-line valves can be combined on one manifold
- Identical sub-base valves for M5 or M7 manifold rail
- Manifolds with pressure zones
- IP40, IP65

Reliable

- Sturdy and durable metal components
  - Valves
  - Manifold rails
- Fast troubleshooting thanks to 360° LED display
- Convenient servicing thanks to valves that can be replaced quickly and easily
- Choice of manual override: non-detenting, detenting or covered

Easy to mount

- Secure mounting on wall or H-rail
- Easy mounting thanks to captive screws and seal
- Connection technology easy to change via the E-box
- Inscription label holder for labelling

Valve terminal configurator

Download CAD data ➔ **www.festo.com**

A valve terminal configurator is available to help you select a suitable valve terminal VTUG, which makes it much easier to order the right product. Valve terminals type 26 VTUG are ordered via an ident. code.

All valve terminals are supplied fully assembled and individually tested. This reduces assembly and installation time to a minimum.

Ordering system for valve terminal type 26 VTUG

- Individual electrical connection

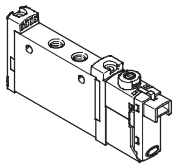
➔ Internet: vtug

Solenoid valves VUVG/valve terminal type 26 VTUG

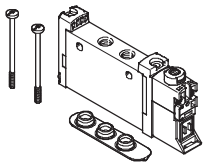
Key features – Pneumatic components

FESTO

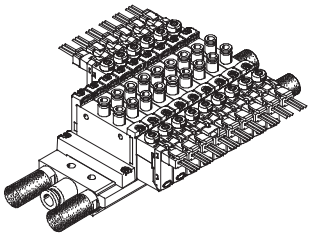
Individual valves and valve manifolds



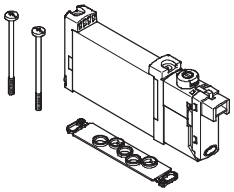
VUVG-L in-line valve as individual valve



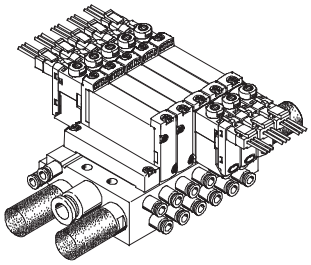
VUVG-S in-line valve for manifold assembly



VUVG-S valve manifold consisting of in-line valves

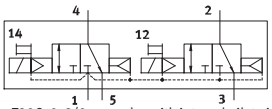


VUVG-B sub-base valve for manifold assembly

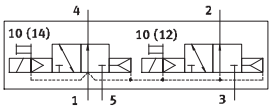


VUVG-B valve manifold consisting of sub-base valves

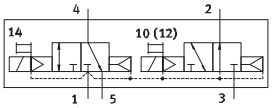
In-line valve functions



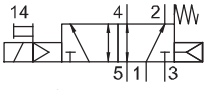
T32C: 2x3/2-way valve with internal pilot air supply, 2x normally closed



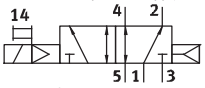
T32U: 2x3/2-way valve with internal pilot air supply, 2x normally open



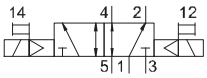
T32H: 2x3/2-way valve with internal pilot air supply, 1x normally closed, 1x normally open



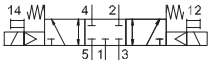
M52: 5/2-way single solenoid valve with internal pilot air supply, width 10



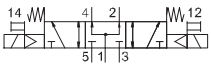
M52: 5/2-way single solenoid valve with internal pilot air supply, width 14



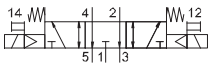
B52: 5/2-way double solenoid valve with internal pilot air supply



P53C: 5/3-way valve with internal pilot air supply, mid-position closed

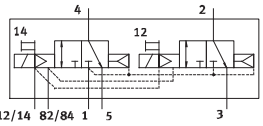


P53U: 5/3-way valve with internal pilot air supply, mid-position pressurised

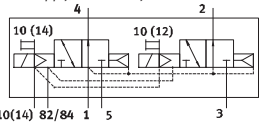


P53E: 5/3-way valve with internal pilot air supply, mid-position exhausted

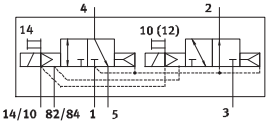
Sub-base valve functions



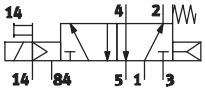
T32C: 2x3/2-way valve with external pilot air supply, 2x normally closed



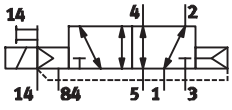
T32U: 2x3/2-way valve with external pilot air supply, 2x normally open



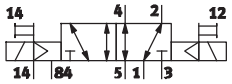
T32H: 2x3/2-way valve with external pilot air supply, 1x normally closed, 1x normally open



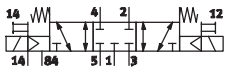
M52: 5/2-way single solenoid valve with external pilot air supply, width 10



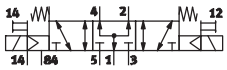
M52: 5/2-way single solenoid valve with external pilot air supply, width 14



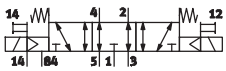
B52: 5/2-way double solenoid valve with external pilot air supply



P53C: 5/3-way valve with external pilot air supply, mid-position closed



P53U: 5/3-way valve with external pilot air supply, mid-position pressurised



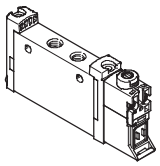
P53E: 5/3-way valve with external pilot air supply, mid-position exhausted

New
VUVG

Solenoid valves VUVG/valve terminal type 26 VTUG

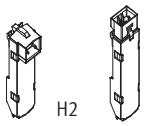
Key features – Pneumatic components

VUVG basic valves



- Width 10 mm and 14 mm
- In-line valves
- Sub-base valves
- 2x3/2-way, 5/2-way and 5/3-way valves

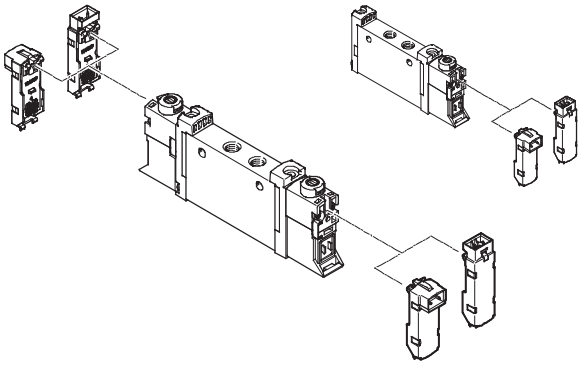
E-boxes

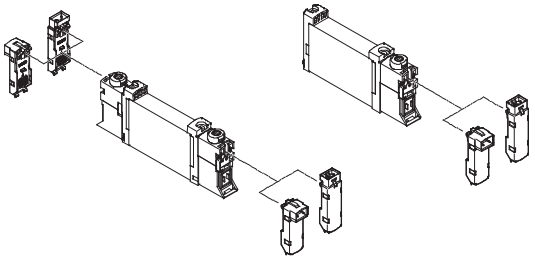


H2 H3

- 5, 12 and 24 V DC
- With or without holding current reduction
- LED

Basic valve and E-box combinations

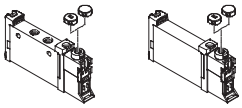




Note

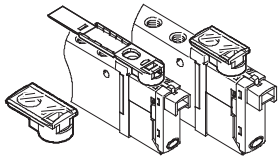
Additional E-boxes ➔ page 51

Cover caps for manual override



- Closed cover cap for covering the manual override
- Slotted cover cap for enabling only non-detenting operation of the manual override

Inscription label holder



- The inscription label holder can be used in place of the slotted cover cap
- The hinged inscription label holder covers the mounting screw and the manual override

Valve terminal configurator

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Ordering system for valve terminal type 26 VTUG

- Individual electrical connection
- Electrical multi-pin plug connection

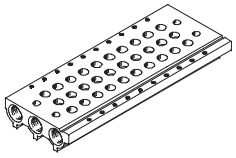
➔ Internet: vtug

Solenoid valves VUVG/valve terminal type 26 VTUG

Key features – Pneumatic components

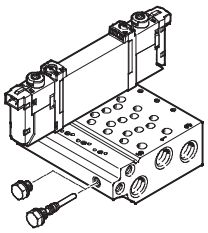
FESTO

Manifold rail for in-line valves



- For in-line valves M3, M5, M7 and G ⅛, width 10
- For 2x3/2-way, 5/2-way and 5/3-way valves
- 2 to 10 and 12, 14, 16 valve positions

Manifold rail for sub-base valves

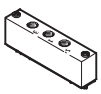


- For sub-base valves 10, 10A and 14, width 10
- Manifold rail with M5 or M7 working lines
- For 2x3/2-way, 5/2-way and 5/3-way valves
- 2 to 10, 12, 14 and 16 valve positions
- The sub-base valves always have external pilot air. The pilot air is set via the manifold rail. A short and a long blanking plug are included with the manifold rail for this purpose
- The manifold can optionally be operated with internal or external pilot air supply by inserting different separator elements

Blanking plate for vacant position

- Vacant position cover

Supply plate



- For additional air supply and exhaust via a valve position

Separator for pressure zones

- For creating multiple pressure zones in a valve manifold

Solenoid valves VUVG/valve terminal type 26 VTUG

Key features – Pneumatic components

Creating pressure zones and separating exhaust air

Compressed air is supplied and exhausted via the manifold rail and via supply plates.
The position of the supply plates and duct separations can be freely selected with the VUVG.

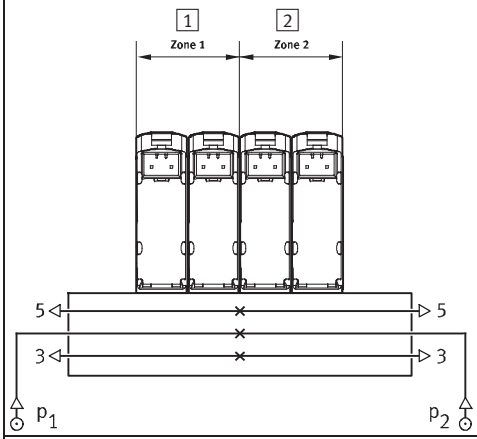
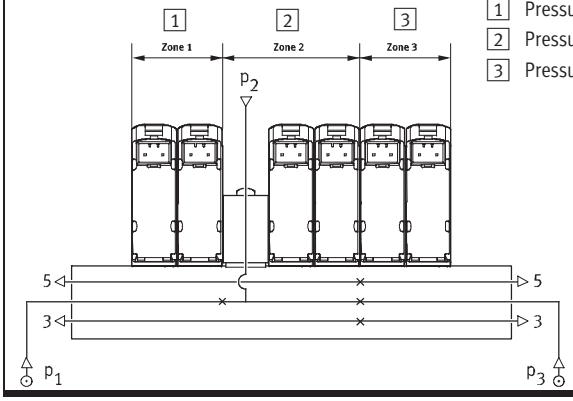
Pressure zones are created by isolating the internal supply ducts between the manifold sub-bases by means of appropriate duct separation.

Pressure zone separation can be used for the following ducts:
- Duct 1
- Duct 3
- Duct 5

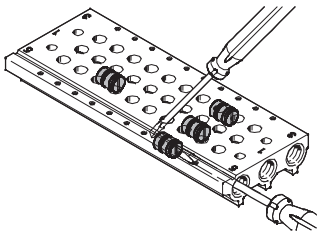
Note

- Use a separator if the exhaust air pressures are high
- Use at least one supply plate/ supply for each pressure zone
- Pressure zone separation is not possible with pilot air supply (duct 12/14)

Duct separation

	Description
 1 Pressure zone 1 2 Pressure zone 2	The pressure zones can be freely configured with the VUVG. The following duct separations are possible: • Duct 1 closed • Duct 3 closed • Duct 5 closed • Duct 1/3 closed • Duct 1/3/5 closed • Duct 3/5 closed
 1 Pressure zone 1 2 Pressure zone 2 3 Pressure zone 3	The number of pressure zones with the VUVG is only limited by the number of valve positions on the manifold rail. Note that each supply plate occupies one valve position.

Separator VABD



Note

As the separators are mounted from only one side using a slotted screwdriver, several pressure zones can be created in one profile.

Solenoid valves VUVG/valve terminal type 26 VTUG

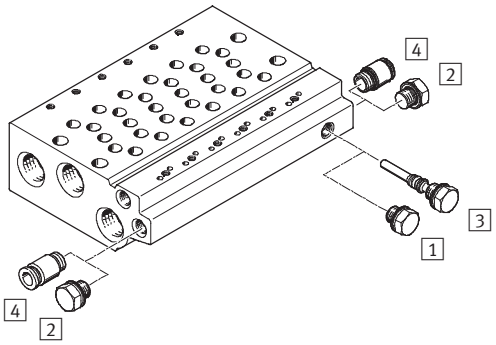
Key features – Pneumatic components

FESTO

Pilot air supply

	Internal pilot air supply	External pilot air supply	Pilot exhaust air
When using sub-base valves, pilot air supply can be set via the manifold rail (see below). Both in-line and semi in-line valves are available with internal and external pilot air supply.	Internal pilot air supply can be selected if the working pressure is between 1.5-3 (depending on the valve) and 8 bar. The pilot air supply is branched from the compressed air supply 1 using an internal connection.	External pilot air supply is required for vacuum operation. The port for external pilot air supply is located on the valve in the case of in-line valves and on the manifold rail in the case of sub-base valves.	With sub-base valves, the pilot air is exhausted via duct 82/84 of the manifold rail. With in-line valves, the pilot exhaust air is discharged via exhaust holes.

Pilot air supply with sub-base valves



1 Blanking plug, short, with internal pilot air
2 Blanking plug for duct 12/14 with internal pilot air
3 Blanking plug, long, with external pilot air
4 QS fitting for duct 12/14 with external pilot air

The manifold rails for sub-base valves have an internal conduit between duct 12/14 and duct 1. Internal or external pilot air supply is selected by inserting a blanking plug into this conduit.

Solenoid valves VUVG/valve terminal type 26 VTUG

Key features – Pneumatic components

Operation with different pressures

Vacuum operation

Points to note with 3/2-way valves
The 3/2-way valves are available in a design with two valves in one valve body and with pneumatic spring return. With these valves, the energy for the return movement is obtained from port 1.

Vacuum operation is therefore only possible at port 3 and 5, not at port 1.

With external pilot air supply, vacuum can be connected at port 1, 3, 5 with the 5/2-way and 5/3-way valves.

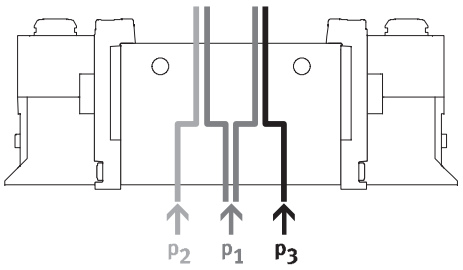
Reverse operation

The 3/2-way valves with pneumatic spring are not suitable for reverse operation, since at least the minimum pilot pressure must be present in duct 1.

Note

Pressure must be present at port 1.

Pressure deflector (internal pilot air)



- If two different pressures are required.
- Different pressures can be supplied at duct 1, 3 and 5.

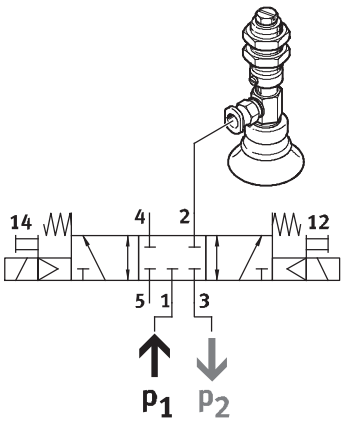
Note

- With internal pilot air, the minimum pilot pressure must be adhered to in duct 1
- With 2x3/2-way valves without spring return, the minimum pilot pressure must always be adhered to in duct 1

Benefits

- Any pressure or vacuum can be connected at duct 3 and 5 both with external and internal pilot air

Vacuum, ejector pulse and normal position

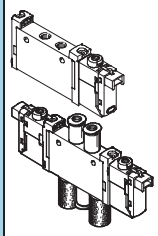
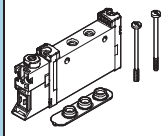


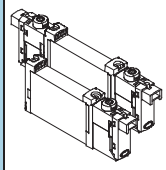
Vacuum, ejector pulse and normal position with internal pilot air can be achieved by connecting vacuum at duct 3 and pressure for the ejector pulse at duct 1.

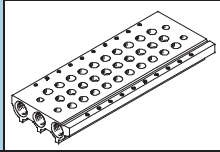
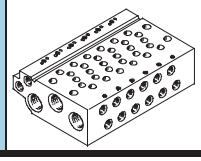
Solenoid valves VUVG/valve terminal type 26 VTUG

FESTO

Product range overview

Design		Working line	Type code	Functions and flow rate [l/min]								➔ Page/ Internet
				T32C	T32U	T32H	M52	B52	P53C	P53U	P53E	
In-line valve as individual valve	Solenoid valve VUVG-L											
		M3	10A	–	–	–	■ 100	■ 100	■ 90	■ 90	■ 90	12
		M5	10	■ 150	■ 150	■ 150	■ 220	■ 220	■ 210	■ 210	■ 210	19
		M7	10	■ 190	■ 190	■ 190	■ 380	■ 380	■ 320	■ 320	■ 320	21
		G1⁄8	14	■ 650	■ 600	■ 650	■ 780	■ 780	■ 650	■ 600	■ 600	27
In-line valve for manifold assembly	Solenoid valve VUVG-S											
		M3	10A	–	–	–	■ 100	■ 100	■ 90	■ 90	■ 90	12
		M5	10	■ 150	■ 150	■ 150	■ 220	■ 220	■ 210	■ 210	■ 210	19
		M7	10	■ 170	■ 170	■ 170	■ 340	■ 340	■ 300	■ 300	■ 300	21
		G1⁄8	14	■ 580	■ 580	■ 580	■ 700	■ 700	■ 600	■ 600	■ 600	27

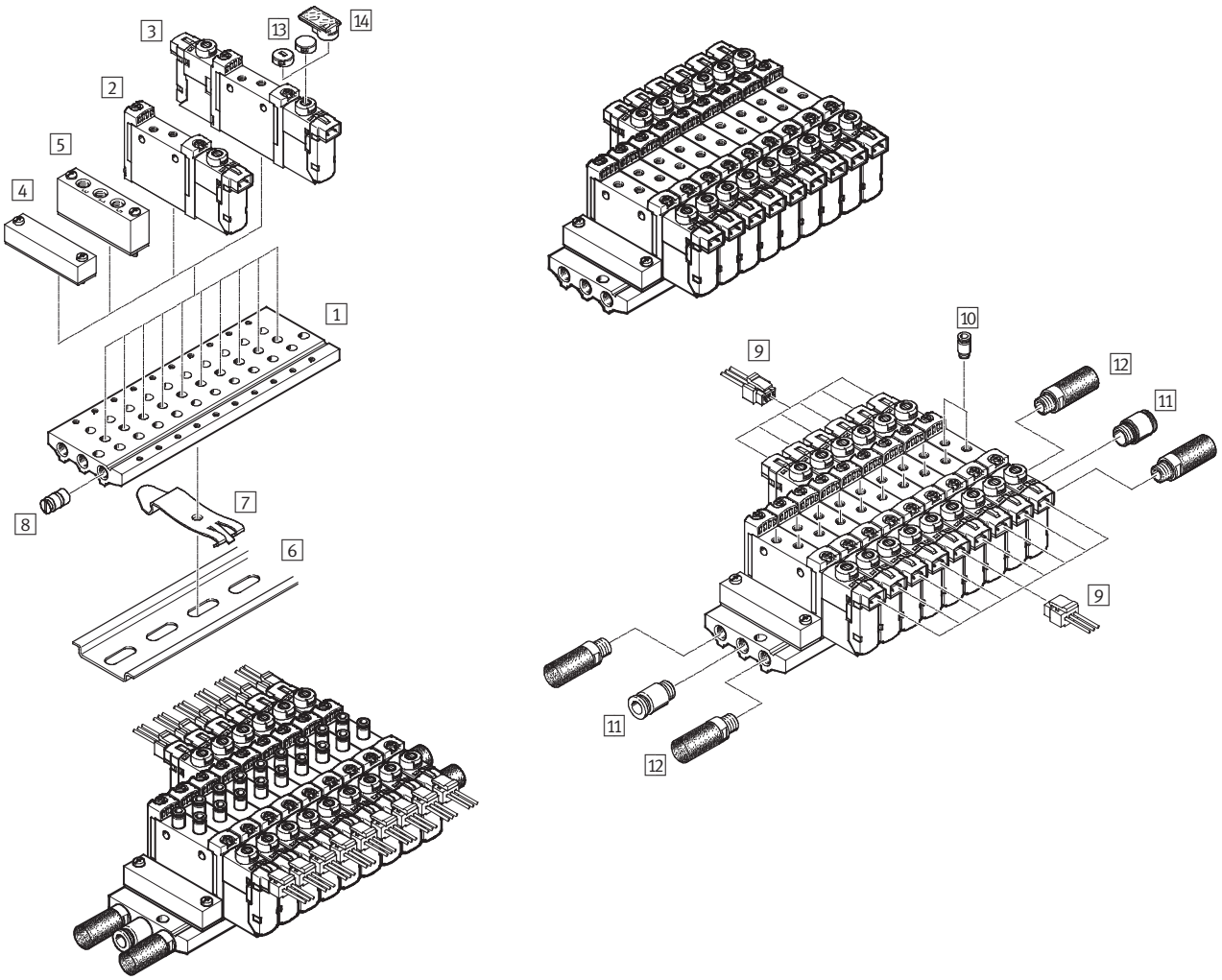
Design		Working line	Type code	Functions and flow rate [l/min]								➔ Page/ Internet
				T32C	T32U	T32H	M52	B52	P53C	P53U	P53E	
Sub-base valve	Solenoid valve VUVG-B											
		–	10A	–	–	–	■ 100	■ 100	■ 90	■ 90	■ 90	32
		–	10	■ 150	■ 150	■ 150	■ 210	■ 210	■ 200	■ 200	■ 200	39
		–	10	■ 160	■ 160	■ 160	■ 270	■ 270	■ 250	■ 250	■ 250	39
		–	14	■ 510	■ 510	■ 510	■ 580	■ 580	■ 540	■ 540	■ 540	45

Design		Working line	Type code	Description	➔ Page/ Internet
Manifold rail	Manifold rail VABM- ... -S- ..., for in-line valves (manifold assembly)				
		–	–	Valve size M3, M5, M7, G1⁄8	vabm
Manifold rail	Manifold rail VABM, for sub-base valves				
		–	10AW	Connection size M3	vabm
		–	10W	Connection size M5	
		–	10HW	Connection size M7	
		–	14W	Connection size G1⁄8	

Solenoid valves VUVG-L10A and VUVG-S10A, in-line valves M3

System overview

Manifold assembly



Manifold assembly and accessories

		Type	Brief description	→ Page/Internet
1	Manifold rail	VABM-L1-10AS-M5-...	For 2 to 10, 12, 14 and 16 valve positions	16
2	Solenoid valve	VUVG- ...	In-line valve, 5/2-way single solenoid	11
3	Solenoid valve	VUVG-B ...	In-line valve, 5/2-way double solenoid and 5/3-way single solenoid	11
4	Blanking plate	VABB-L1-10-S	For covering an unused valve position	16
5	Supply plate	VABF-L1-10-P3A4- ...	For air supply port 1 and outlet port 3 and 5	16
6	H-rail	NRH-35-2000	For mounting the valve manifold	53
7	H-rail mounting	VAME-T-M4	2 pieces for fitting the valve manifold on an H-rail	53
8	Separator element	VABD-8-B	For creating pressure zones	16
9	Plug socket with cable	NEBV-H1G2-KN-...-LE2	For E-box H2 and H3	53
10	Push-in fitting	QS...	Push-in fitting for outlet port 2 and 4	53
11	Push-in fitting	QS...	Push-in fitting for air supply port 1	quick star
12	Silencer	U...	For outlet port 3 and 5	53
13	Cover cap	VMPA-HB...-B	For manual override	53
14	Inscription label holder	ASLR-D	For labelling the valves, covering the mounting screw and the manual override	55

Solenoid valves VUVG-L10A and VUVG-S10A, in-line valves M3

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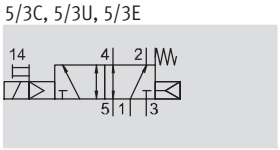
Technical data

Function
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E



E.g. 5/2-way valve with internal pilot air supply and combined mechanical plus pneumatic spring return

Width 10 mm

Flow rate
90 ... 100 l/min

Voltage
5, 12 and 24 V DC

General technical data						
Valve function		5/2-way		5/3-way		
Normal position		–	–	C[1]	U[2]	E[3]
Memory stability		Single solenoid	Double solenoid	Single solenoid		
Pneumatic spring reset method		Yes[5]	–	No		
Mechanical spring reset method		Yes[5]	–	Yes		
Vacuum operation at port 1		Only with external pilot air supply				
Design		Piston spool valve				
Sealing principle		Soft				
Actuation type		Electric				
Type of control		Piloted				
Pilot air supply		Internal or external				
Exhaust function		Flow control				
Manual override		Choice of non-detenting, detenting or covered				
Type of mounting		Optionally via through-holes[7] or on manifold rail				
Mounting position		Any				
Nominal size	[mm]	2				
Standard nominal flow rate	[l/min]	100		90		
Flow rate on manifold rail	[l/min]	100		90		
Switching time on/off	[ms]	7/15	–	8/25		
Changeover time	[ms]	–	5	14		
Width	[mm]	10				
Connection 1, 2, 3, 4, 5; 14		M3				
Product weight	[g]	38	49			
Corrosion resistance class	CRC	2[6]				

1) C = Normally closed
2) U = Normally open
3) E = Normally exhausted
5) Combined reset method
6) Corrosion resistance class 2 according to 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.
7) If several valves are to be screwed together via the through-holes to form a block, a minimum gap of 0.3 mm must be ensured by placing spacer discs between them.

Solenoid valves VUVG-L10A and VUVG-S10A, in-line valves M3

FESTO

Technical data

Operating and environmental conditions					
Valve function			5/2-way, single solenoid	5/2-way, double solenoid	5/3-way
Operating medium			Filtered compressed air, grade of filtration 40 µm, lubricated or unlubricated		
Operating pressure at port 1 with pilot air supply	Internal	[bar]	2.5 ... 8	1.5 ... 8	3 ... 8
	External	[bar]	–0.9 ... 10		
Operating pressure at port 3 or 5 with pilot air supply	Internal or external	[bar]	–0.9 ... 10		
Pilot pressure		[bar]	2.5 ... 8	1.5 ... 8	3 ... 8
Ambient temperature		[°C]	–5 ... +50, –5 ... +60 with holding current reduction		
Temperature of medium		[°C]	–5 ... +50, –5 ... +60 with holding current reduction		

Electrical data		
Electrical connection		Via E-box
Operating voltage	[V DC]	5, 12 and 24 ±10%
Power	[W]	1, reduced to 0.35 with holding current reduction
Duty cycle	[%]	100
Protection class to EN 60529		IP40 (with plug socket), IP65 (with M8)

Note on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

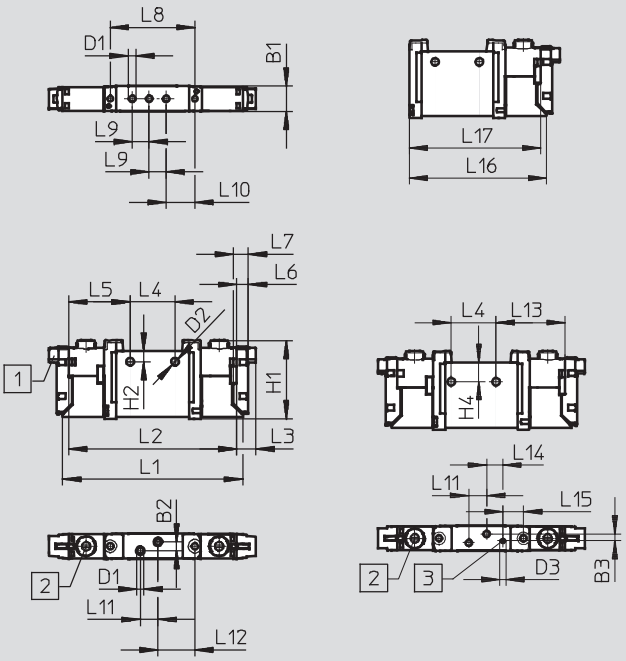
Solenoid valves VUVG-L10A and VUVG-S10A, in-line valves M3

Technical data

FESTO

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

5/2-way and 5/3-way valve



- Note

Additional dimensions
E-boxes
➔ Page 49

1 Horizontal electrical connection

2 Manual override

3 Port for external pilot air supply

Type												
VUVG-L-10 -...-M3 ...	B1	B2	B3	D1	D2	H1	H2	L1	L2	L3	L4	L5
VUVG-S-10 -...-M3 ...	10.2	3.6	2.83	M3	3.2	32.5	4.4	74.3	69.3	8	18.5	25.4
	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L17
	4.85	6.15	34.9	7	11.9	7.3	15.25	28.5	6.7	8.54	57.06	54.56

Solenoid valves VUVG-L10A and VUVG-S10A, in-line valves M3

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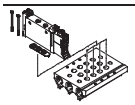
Order code

VUVG	–		10A	–		–				–		–					L	–	

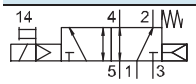
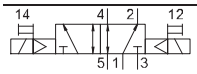
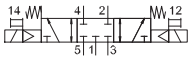
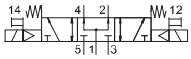
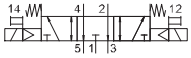
Valve design

 In-line, individual valve	L
 In-line, manifold valve incl. seal and screws	S

Width

10 mm	10A

Valve functions[5]

	M52
	B52
	P53C
	P53U
	P53E

Reset method

Pneu./mech. spring for M52	R
With B52 and P53	–

Pilot air supply

Internal	–
External	Z

Manual override

	Non-detenting	H
	Covered	S
–	Non-detenting, detenting	T

Exhausting with VUVG-L

QN	QS if QS[3]
U	Silencer
–	M3

Pneumatic connection

		Flow rate [l/min][4]
M3	Thread M3	100
Q3	Push-in connector 3 mm/M3	80
Q4	Push-in connector 4 mm/M3	100

Operating voltage

1	24 V DC
5	12 V DC
4	5 V DC

E-box

H2	Connection pattern H, horizontal plug	
H3	Connection pattern H, vertical plug	
S2	Connection pattern S, horizontal plug	
S3	Connection pattern S, vertical plug	
L1...4	With 2x flying leads L: 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m	
R1	Individual plug M8, 4-pin, only without HCR	
R8	Individual plug M8, 3-pin, only without HCR	
P3	Without E-box	

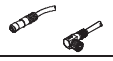
Protective circuit

		Power [W]
–	Without holding current reduction (HCR)	1
R[2]	With holding current reduction (HCR)	1 to 0.35

Display

L	LED

Connecting cable

W1...4[1]	Not sheathed	for H 
C1...4[1]	Sheathed	
WS1...4[1]	Not sheathed	for S 
S1...4[1]	Sheathed	
N1...4[6]	M8x1, 3-pin	
N5...8[6]	M8x1, 4-pin	

1) W1/C1/S1/WS1 = 0.5 m, W2/C2/S2/WS2 = 1 m, W3/C3/S3/WS3 = 2.5 m, W4/C4/S4/WS4 = 5 m
2) At 24 V DC
3) If Q... is chosen for the pneumatic connection, this also applies to the exhaust ports 3 and 5
4) Flow rate applies to 5/2-way individual valve
5) Circuit symbol for internal pilot air supply
6) Straight: N1/N5 = 2.5 m, N2/N6 = 5 m
Angled: N3/N7 = 2.5 m, N4/N8 = 5 m

Solenoid valves VUVG-S10A, in-line valves M3

Manifold assembly

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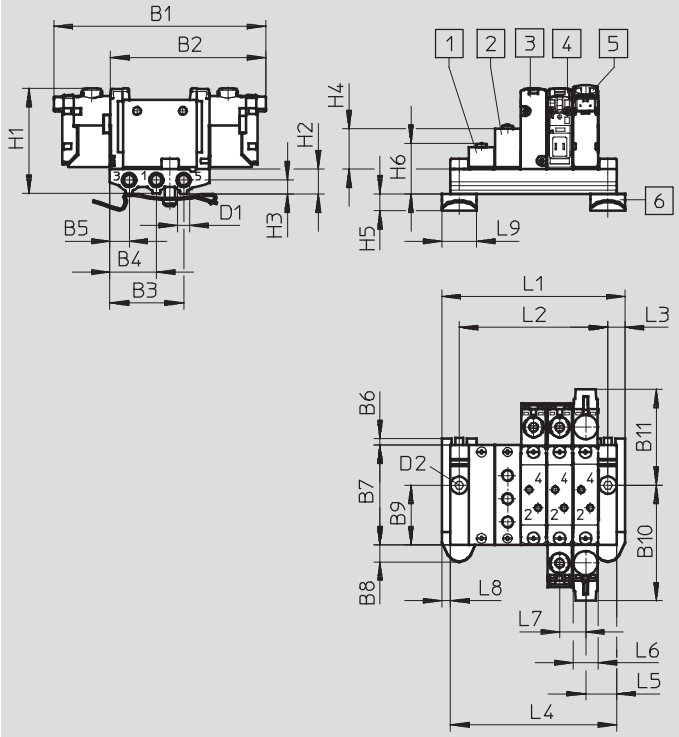
In-line valves for manifold assembly

Dimensions

Download CAD data ➔ **www.festo.com**



- Note

Additional dimensions E-boxes
➔ Page 49

1 Blanking plate VABB-L1-10A-S
2 Supply plate VABF-L1-10A-P3A4-M3
3 Single solenoid valve, without E-box
4 Double solenoid valve, without E-box
5 Solenoid valve, vertical electrical connection
6 H-rail mounting (two M4x16 screws to DIN 912 are required for mounting)

Type												
VUVG-S10A -...-M3 ...	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	D1
	85.3	62.6	29.7	18.7	7.7	3	40.3	6.8	24.2	46.7	38.6	M5
	D2	H1	H2	H3	H4	H5	H6	L3	L5	L6	L7	L8
	ø4.5	43.8	10	5.5	16.2	6.8	20.3	7	12.5	10.3	10.5	3.5
	L9											
	14											

Valve positions	2	3	4	5	6	7	8	9	10	12	14	16
L1 [mm]	42.5	53	63.5	74	84.5	95	105.5	116	126.5	147.5	168.5	189.5
L2 [mm]	28.5	39	49.5	60	70.5	81	91.5	102	112.5	133.5	154.5	175.5
L4 [mm]	35.5	46	56.5	67	77.5	88	98.5	109	119.5	140.5	161.5	182.5
VABM weight [g]	26	34	42	50	58	66	74	82	90	106	122	138

Solenoid valves VUVG-S10A, in-line valves M3

Ordering data

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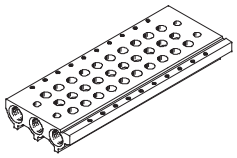
Technical data – Manifold rails

	Connection	CRC	Material[2]	Operating pressure	Max. tightening torque for assembly [Nm]		
	1, 3, 5			[bar]	Valve	H-rail	Wall
	M5	2[1]	Wrought aluminium alloy	–0.9 ... 10	0.45	1.5	3

1) Corrosion resistance class 2 according to 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
2) Note on materials: RoHS-compliant

Order code – Manifold rails

VABM	–	L1	–	10A	S	–	M5	–	

Manifold assembly parts
Manifold rail **VABM**

Valve series
VUVG **L1**

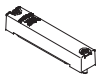
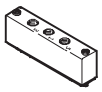
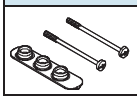
Valve width
10 mm **10A**

Manifold rail with ports 1, 3, 5
For M3 in-line valves **S**

Number of valve positions
2 to 10, 12, 14 and 16

Ports 1, 3 and 5
M5 M5

Ordering data – Accessories

			Type
Blanking plate			Technical data ➔ Internet: vabb
	For manifold rail for M3 in-line valves	Incl. screws and seal	**VABB-L1-10A**
Separator element			Technical data ➔ Internet: vabd
	For manifold rail for M3 in-line valves	Separator for pressure zones	**VABD-4.2-B**
Supply plate			Technical data ➔ Internet: vabf
	For manifold rail for M3 in-line valves	Incl. screws and seal	**VABF-L1-10A-P3A4-M5**
Seals for in-line valves			Technical data ➔ Internet: vabd
	M3	10 seals and 20 screws	**VABD-L1-10AX-S-M3**

Solenoid valves VUVG-L10 and VUVG-S10, in-line valves M5/M7

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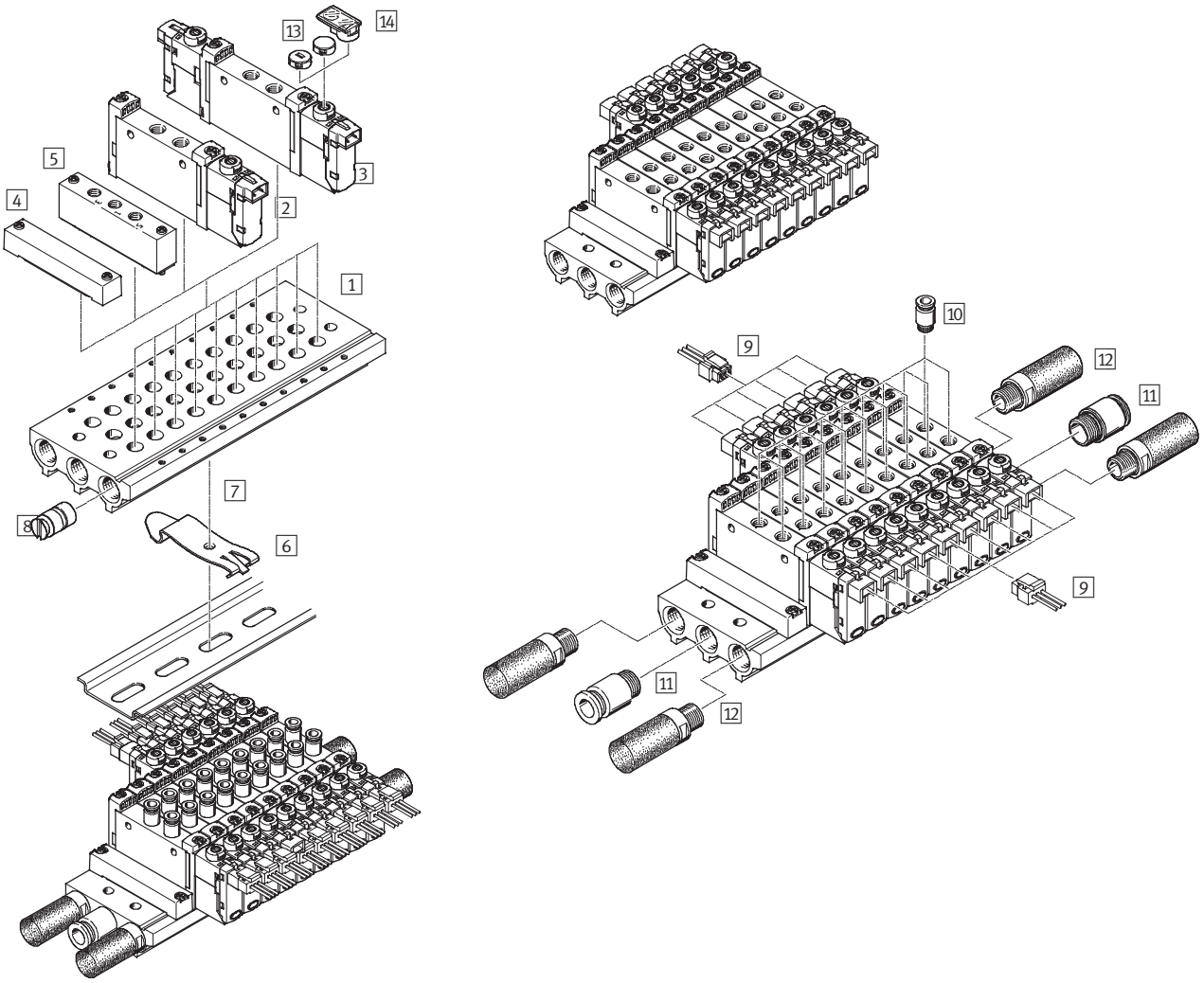
System overview

Manifold assembly



Manifold assembly and accessories

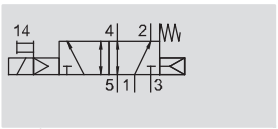
	Type	Brief description	➔ Page/Internet
1 Manifold rail	VABM-L1-10S-G18-...	For 2 to 10, 12, 14 and 16 valve positions	24
2 Solenoid valve	VUVG- ...	In-line valve, 5/2-way single solenoid	18
3 Solenoid valve	VUVG- ...	In-line valve, 2x3/2-way, 5/2-way double solenoid and 5/3-way single solenoid	18
4 Blanking plate	VABB-L1-10-S	For covering an unused valve position	24
5 Supply plate	VABF-L1-10-P3A4- ...	For air supply port 1 and outlet port 3 and 5	24
6 H-rail	NRH-35-2000	For mounting the valve manifold	53
7 H-rail mounting	VAME-T-M4	2 pieces for fitting the valve manifold on an H-rail	53
8 Separator element	VABD-8-B	For creating pressure zones	24
9 Plug socket with cable	NEBV-H1G2-KN-...-LE2	For E-box H2 and H3	53
10 Push-in fitting	QS...	Push-in fitting for outlet port 2 and 4	53
11 Push-in fitting	QS...	Push-in fitting for air supply port 1	quick star
12 Silencer	U...	For outlet port 3 and 5	53
13 Cover cap	VMPA-HB...-B	For manual override	53
14 Inscription label holder	ASLR-D	For labelling the valves, covering the mounting screw and the manual override	55

Solenoid valves VUVG-L10 and VUVG-S10, in-line valves M5

Technical data

FESTO

Function
2x3/2C, 2x3/2U, 2x3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

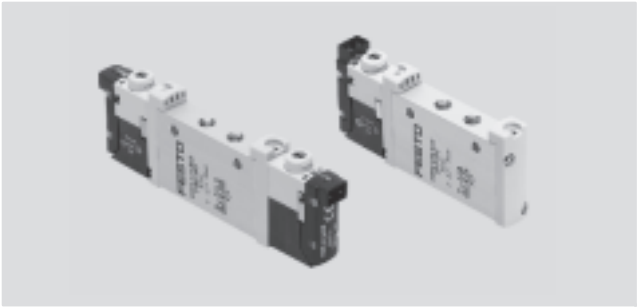


E.g. 5/2-way valve with internal pilot air supply and combined mechanical plus pneumatic spring return

Width 10 mm

Flow rate
150 ... 220 l/min

Voltage
5, 12 and 24 V DC



General technical data										
Valve function			2x3/2-way			5/2-way		5/3-way		
Normal position			C[1]	U[2]	H[4]	–	–	C[1]	U[2]	E[3]
Memory stability			Single solenoid				Double solenoid	Single solenoid		
Pneumatic spring reset method			Yes			Yes[5]	–	No		
Mechanical spring reset method			No			Yes[5]	–	Yes		
Vacuum operation at port 1			No			Only with external pilot air supply				
Design			Piston spool valve							
Sealing principle			Soft							
Actuation type			Electric							
Type of control			Piloted							
Pilot air supply			Internal or external							
Exhaust function			Flow control							
Manual override			Choice of non-detenting, detenting or covered							
Type of mounting			Optionally via through-holes[7] or on manifold rail							
Mounting position			Any							
Nominal size		[mm]	2.7			3.2				
Standard nominal flow rate		[l/min]	150			220		210		
Flow rate on manifold rail		[l/min]	150			220		210		
Switching time on/off		[ms]	6/16			7/19	–	10/30		
Changeover time		[ms]	–				7	16		
Width		[mm]	10							
Connection	1, 2, 3, 4, 5		M5							
	12, 14		M3							
Product weight		[g]	55			45	55			
Corrosion resistance class		CRC	2[6]							

1) C = Normally closed
2) U = Normally open
3) E = Normally exhausted
4) H = 2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
5) Combined reset method
6) Corrosion resistance class 2 according to 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.
7) If several valves are to be screwed together via the through-holes to form a block, a minimum gap of 0.3 mm must be ensured by placing spacer discs between them.

Solenoid valves VUVG-L10 and VUVG-S10, in-line valves M5

Technical data

FESTO

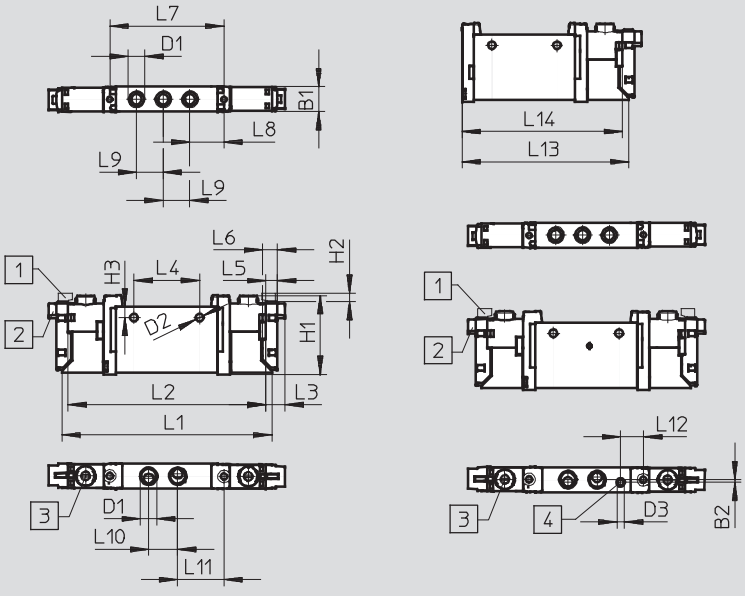
Operating and environmental conditions						
Valve function			2x3/2-way	5/2-way, single solenoid	5/2-way, double solenoid	5/3-way
Operating medium			Filtered compressed air, grade of filtration 40 µm, lubricated or unlubricated			
Operating pressure at port 1 with pilot air supply	Internal	[bar]	1.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8
	External	[bar]	1.5 ... 10	-0.9 ... 10		
Operating pressure at port 3 or 5 with pilot air supply	Internal or external	[bar]	-0.9 ... 10			
Ambient temperature		[°C]	–5 ... +50, –5 ... +60 with holding current reduction			
Temperature of medium		[°C]	–5 ... +50, –5 ... +60 with holding current reduction			

Electrical data		
Electrical connection		Via E-box
Operating voltage	[V DC]	5, 12 and 24 ±10%
Power	[W]	1, reduced to 0.35 with holding current reduction
Duty cycle	[%]	100
Protection class to EN 60529		IP40 (with plug socket), IP65 (with M8)

Note on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

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

2x3/2-way, 5/2-way and 5/3-way valve



- Note

Additional dimensions
E-boxes
➔ Page 49

1 Vertical electrical connection

2 Horizontal electrical connection

3 Manual override

4 Port for external pilot air supply

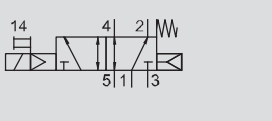
Type												
VUVG-L-10 -...-M5 ...	B1	B2	D1	D2	D3	H1	H2	H3	L1	L2	L3	L4
VUVG-S-10 -...-M5 ...	10.2	–	M5	3.2	M3	32.5	3.6	4.4	86.5	81.5	8	27
	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14		
	4.85	6.15	47	14	11	12	19	–	69.2	66.7		

Solenoid valves VUVG-L10 and VUVG-S10, in-line valves M7

Technical data

FESTO

Function
2x3/2C, 2x3/2U, 2x3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

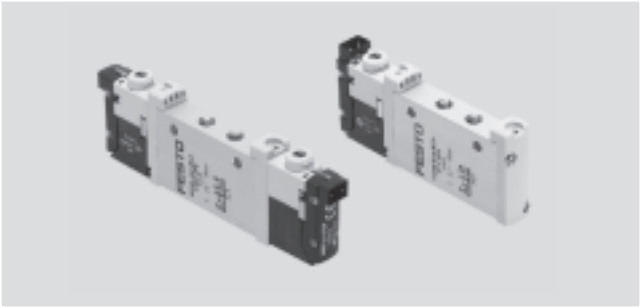


E.g. 5/2-way valve with internal pilot air supply and combined mechanical plus pneumatic spring return

Width 10 mm

Flow rate
190 ... 380 l/min

Voltage
5, 12 and 24 V DC



General technical data										
Valve function			2x3/2-way			5/2-way		5/3-way		
Normal position			C[1]	U[2]	H[4]	–	–	C[1]	U[2]	E[3]
Memory stability			Single solenoid				Double solenoid	Single solenoid		
Pneumatic spring reset method			Yes			Yes[5]	–	No		
Mechanical spring reset method			No			Yes[5]	–	Yes		
Vacuum operation at port 1			No			Only with external pilot air supply				
Design			Piston spool valve							
Sealing principle			Soft							
Actuation type			Electric							
Type of control			Piloted							
Pilot air supply			Internal or external							
Exhaust function			Flow control							
Manual override			Choice of non-detenting, detenting or covered							
Type of mounting			Optionally via through-holes[7] or on manifold rail							
Mounting position			Any							
Nominal size		[mm]	2.7			4.0		3.5		
Standard nominal flow rate		[l/min]	190			380		320		
Flow rate on manifold rail		[l/min]	170			340		300		
Switching time on/off		[ms]	6/16			7/19	–	10/30		
Changeover time		[ms]	–				7	16		
Width		[mm]	10							
Connection	1, 2, 3, 4, 5		M7							
	12, 14		M3							
Product weight		[g]	55			45	55			
Corrosion resistance class		CRC	2[6]							

1) C = Normally closed
2) U = Normally open
3) E = Normally exhausted
4) H = 2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
5) Combined reset method
6) Corrosion resistance class 2 according to 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.
7) If several valves are to be screwed together via the through-holes to form a block, a minimum gap of 0.3 mm must be ensured by placing spacer discs between them.

Solenoid valves VUVG-L10 and VUVG-S10, in-line valves M7

Technical data

FESTO

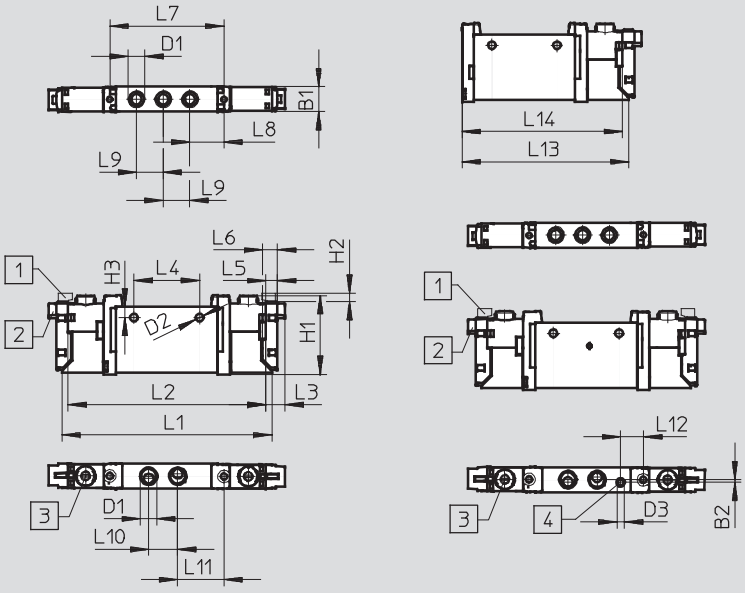
Operating and environmental conditions						
Valve function			2x3/2-way	5/2-way, single solenoid	5/2-way, double solenoid	5/3-way
Operating medium			Filtered compressed air, grade of filtration 40 µm, lubricated or unlubricated			
Operating pressure at port 1 with pilot air supply	Internal	[bar]	1.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8
	External	[bar]	1.5 ... 10	-0.9 ... 10		
Operating pressure at port 3 or 5 with pilot air supply	Internal or external	[bar]	-0.9 ... 10			
Ambient temperature		[°C]	–5 ... +50, –5 ... +60 with holding current reduction			
Temperature of medium		[°C]	–5 ... +50, –5 ... +60 with holding current reduction			

Electrical data		
Electrical connection		Via E-box
Operating voltage	[V DC]	5, 12, 24 ±10%
Power	[W]	1, reduced to 0.35 with holding current reduction
Duty cycle	[%]	100
Protection class to EN 60529		IP40 (with plug socket), IP65 (with M8)

Note on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

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

2x3/2-way, 5/2-way and 5/3-way valve



Note

Additional dimensions E-boxes

➔ Page 49

1 Vertical electrical connection

2 Horizontal electrical connection

3 Manual override

4 Port for external pilot air supply

Type												
VUVG-L-10 -...-M7 ...	B1	B2	D1	D2	D3	H1	H2	H3	L1	L2	L3	L4
VUVG-S-10 -...-M7 ...	10.2	–	M7	3.2	M3	32.5	3.6	4.4	86.5	81.5	8	27
	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14		
	4.85	6.15	47	14	11	12	19	–	69.2	66.7		

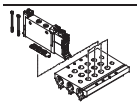
Solenoid valves VUVG-L10 and VUVG-S10, in-line valves M5/M7

FESTO

Order code

VUVG	–		10	–		–				–		–		–			L	–	

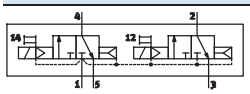
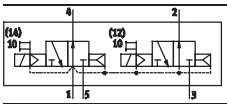
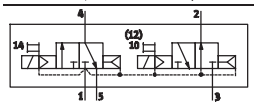
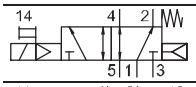
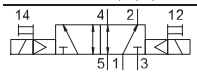
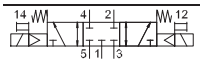
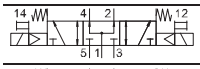
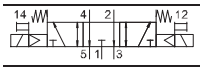
Valve design

 In-line, individual valve	L
 In-line, manifold valve incl. seal and screws	S

Width

10 mm	10

Valve functions[5]

	T32C
	T32U
	T32H
	M52
	B52
	P53C
	P53U
	P53E

Reset method

Pneumatic spring for T32	A
Pneu./mech. spring for M52	R
With B52 and P53	–

Pilot air supply

Internal	–
External	Z

Manual override

	Non-detenting	H
	Covered	S
–	Non-detenting, detenting	T

Pneumatic connection

		Flow rate [l/min][4]
M5	Thread M5	220
Q3	Push-in connector 3 mm/M5	100
Q4	Push-in connector 4 mm/M5	200
Q6	Push-in connector 6 mm/M5	220
M7	Thread M7	380
Q4H	Push-in connector 4 mm/M7	220
Q6H	Push-in connector 6 mm/M7	330

Exhausting with VUVG-L

QN	QS if QS[3]
U	Silencer
–	M5 or M7

Operating voltage

1	24 V DC
5	12 V DC
4	5 V DC

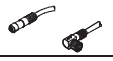
Protective circuit

		Power [W]
–	Without holding current reduction (HCR)	1
R[2]	With holding current reduction (HCR)	1 to 0.35

E-box

H2	Connection pattern H, horizontal plug	
H3	Connection pattern H, vertical plug	
S2	Connection pattern S, horizontal plug	
S3	Connection pattern S, vertical plug	
L1...4	With 2x flying leads L: 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m	
R1	Individual plug M8, 4-pin, only without HCR	
R8	Individual plug M8, 3-pin, only without HCR	
P3	Without E-box	

Connecting cable

W1...4[1]	Not sheathed	for H 
C1...4[1]	Sheathed	
WS1...4[1]	Not sheathed	for S 
S1...4[1]	Sheathed	
N1...4[6]	M8x1, 3-pin	
N5...8[6]	M8x1, 4-pin	

Display

L	LED

1) W1/C1/S1/WS1 = 0.5 m, W2/C2/S2/WS2 = 1 m, W3/C3/S3/WS3 = 2.5 m, W4/C4/S4/WS4 = 5 m
2) At 24 V DC, not in combination with P3
3) If Q... is chosen for the pneumatic connection, this also applies to the exhaust ports 3 and 5
4) Flow rate applies to 5/2-way individual valve
5) Circuit symbol for internal pilot air supply
6) Straight: N1/N5 = 2.5 m, N2/N6 = 5 m
Angled: N3/N7 = 2.5 m, N4/N8 = 5 m

Solenoid valves VUVG-S10, in-line valves M5/M7

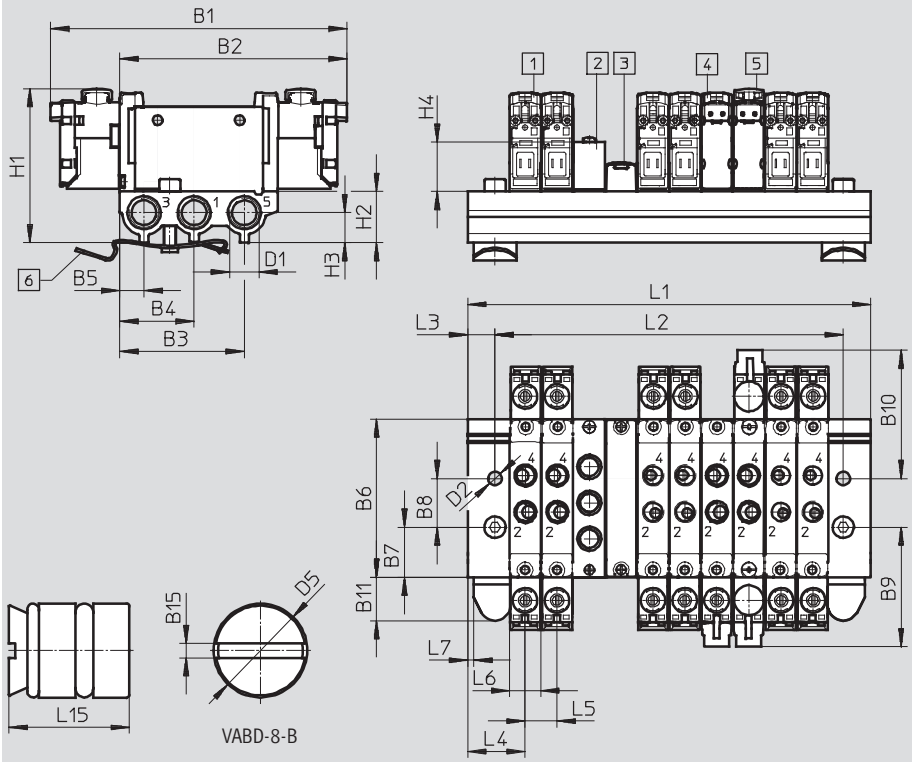
Manifold assembly

FESTO

In-line valves for manifold assembly

Dimensions

Download CAD data ➔ **www.festo.com**



Note

Additional dimensions E-boxes

➔ Page 49

1 Solenoid valve, vertical electrical connection

2 Supply plate M5 or M7 for 1, 3, 5

3 Blanking plate VABB-L1-10-S

4 Solenoid valve, horizontal electrical connection

5 Cover cap for manual override

6 H-rail mounting (two M4x20 screws to DIN 912 are required)

Type												
VUVG-S10 -...-M5 ...	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B15
	97.5	74.8	41	24.5	8	52	16.5	16	39.2	42.3	14.45	1
	D1	D2	D5	H1	H2	H3	H4	L3	L4	L5	L6	L7
	G⅛	4.5	Ø8	50.6	16.8	7	16.2	9	19	10.5	10.2	2
	L15											
	10											

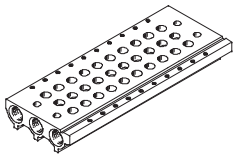
Valve positions	2	3	4	5	6	7	8	9	10	12	14	16
L1 [mm]	48.5	59	69.5	80	90.5	101	111.5	122	132.5	153.5	174.5	195.5
L2 [mm]	30.5	41	51.5	62	72.5	83	93.5	104	114.5	135.5	156.5	177.5
VABM weight [g]	66	81	96	111	126	141	156	171	186	216	246	276

Solenoid valves VUVG-S10, in-line valves M5/M7

Ordering data

FESTO

Technical data – Manifold rails

	Connection	CRC	Material[2]	Operating pressure	Max. tightening torque for assembly [Nm]		
	1, 3, 5			[bar]	Valve	H-rail	Wall
	G1⁄8	2[1]	Wrought aluminium alloy	–0.9 ... 10	0.45	1.5	3

1) Corrosion resistance class 2 according to 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.
2) Note on materials: RoHS-compliant

Order code – Manifold rails

VABM	–	L1	–	10	S	–	G18	–	

Manifold assembly parts
Manifold rail **VABM**

Valve series
VUVG **L1**

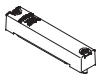
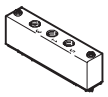
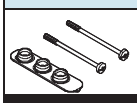
Valve width
10 mm **10**

Manifold rail with ports 1, 3, 5
For M5 and M7 in-line valves **S**

Number of valve positions
2 to 10, 12, 14 and 16

Ports 1, 3 and 5
G18 G1⁄8

Ordering data – Accessories

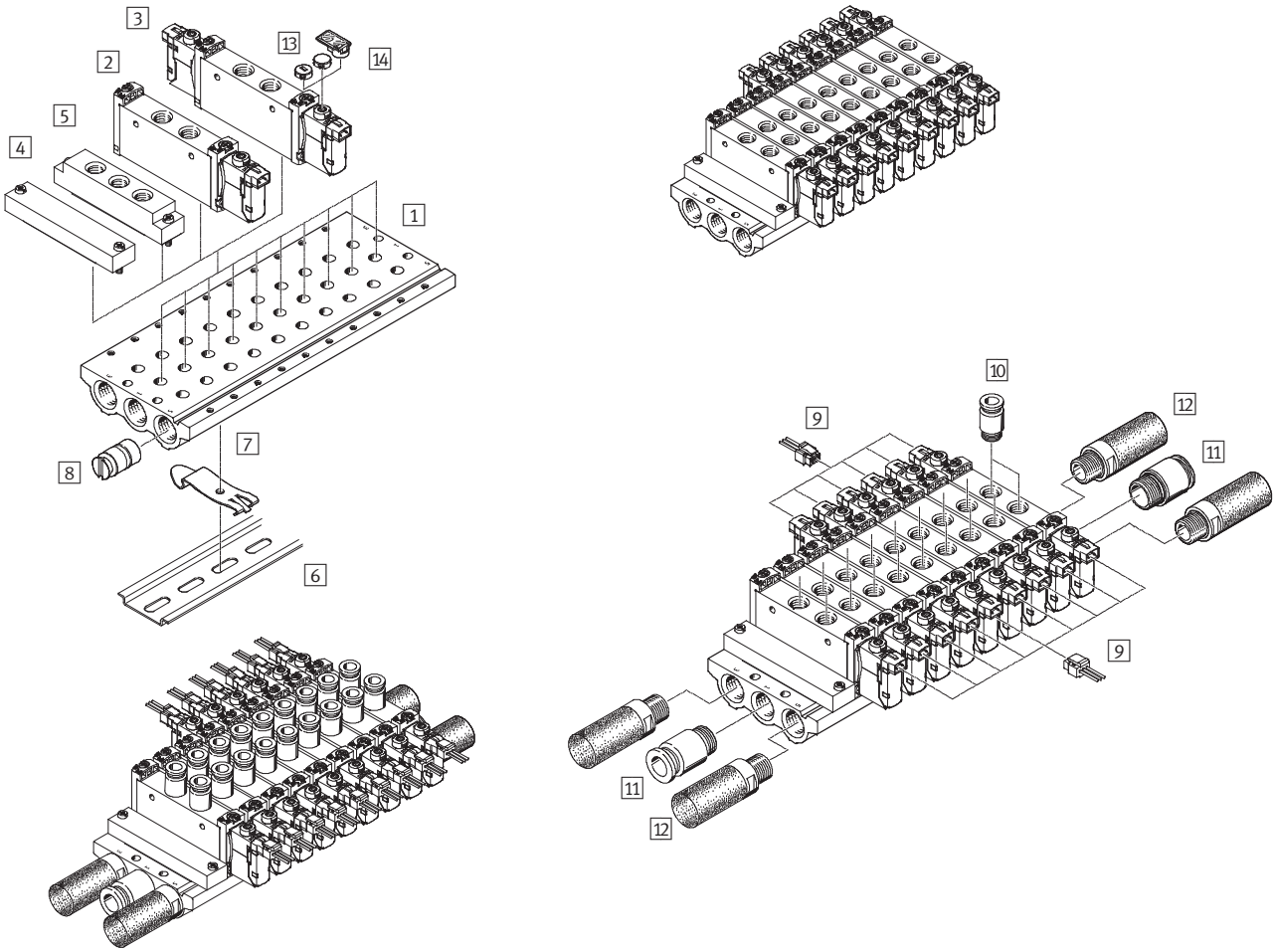
			Type
Blanking plate			Technical data ➔ Internet: vabb
	For manifold rail for M5/M7 in-line valves	Incl. screws and seal	**VABB-L1-10-S**
Separator element			Technical data ➔ Internet: vabd
	For manifold rail for M5/M7 in-line valves	Separator for pressure zones	**VABD-8-B**
Supply plate			Technical data ➔ Internet: vabf
	For manifold rail for M5 in-line valves	Incl. screws and seal	**VABF-L1-10-P3A4-M5**
	For manifold rail for M7 in-line valves		**VABF-L1-10-P3A4-M7**
Seals for in-line valves			Technical data ➔ Internet: vabd
	M5	10 seals and 20 screws	**VABD-L1-10X-S-M5**
	M7		**VABD-L1-10X-S-M7**

Solenoid valves VUVG-L14 and VUVG-S14, in-line valves G1⁄8

System overview

FESTO

Manifold assembly



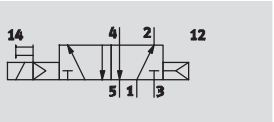
Manifold assembly and accessories			
	Type	Brief description	➔ Page/Internet
1 Manifold rail	VABM-L1-14S-G14-...	For 2 to 10, 12, 14 and 16 valve positions	30
2 Solenoid valve	VUVG- ...	In-line valve, 5/2-way single solenoid	26
3 Solenoid valve	VUVG- ...14	In-line valve, 2x3/2-way, 5/2-way double solenoid and 5/3-way single solenoid	26
4 Blanking plate	VABB-L1-14-S	For covering an unused valve position	30
5 Supply plate	VABF-L1-14-P3A4- ...	For air supply port 1 and outlet port 3 and 5	30
6 H-rail	NRH-35-2000	For mounting the valve manifold	54
7 H-rail mounting	VAME-T-M4	2 pieces for fitting the valve manifold on an H-rail	54
8 Separator element	VABD-10-B	For creating pressure zones	30
9 Plug socket with cable	NEBV-H1G2-KN-...-LE2	For E-box H2 and H3	53
10 Push-in fitting	QS...	Push-in fitting for outlet port 2 and 4	53
11 Push-in fitting	QS...	Push-in fitting for air supply port 1	quick star
12 Silencer	U...	For outlet port 3 and 5	53
13 Cover cap	VMPA-HB...-B	For manual override	53
14 Inscription label holder	ASLR-D	For labelling the valves, covering the mounting screw and the manual override	55

Solenoid valves VUVG-L14 and VUVG-S14, in-line valves G1⁄8

Technical data

FESTO

Function
2x3/2C, 2x3/2U, 2x3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E



E.g. 5/2-way valve with internal pilot air supply and pneumatic spring return

Width 14 mm

Flow rate
580 ... 780 l/min

Voltage
5, 12 and 24 V DC

General technical data										
Valve function			2x3/2-way			5/2-way		5/3-way		
Normal position			C[1]	U[2]	H[4]	–	–	C[1]	U[2]	E[3]
Memory stability			Single solenoid				Double solenoid	Single solenoid		
Pneumatic spring reset method			Yes				–	No		
Mechanical spring reset method			No				–	Yes		
Vacuum operation at port 1			No			Only with external pilot air supply				
Design			Piston spool valve							
Sealing principle			Soft							
Actuation type			Electric							
Type of control			Piloted							
Pilot air supply			Internal or external							
Exhaust function			Flow control							
Manual override			Choice of non-detenting, detenting or covered							
Type of mounting			Optionally via through-holes[7] or on manifold rail							
Mounting position			Any							
Nominal size		[mm]	4.6			5.6				
Standard nominal flow rate		[l/min]	650	600	650	780		650	600	
Flow rate on manifold rail		[l/min]	580			700		600		
Switching time on/off		[ms]	8/23			14/28	–	12/40		
Changeover time		[ms]	–				8	20		
Width		[mm]	14							
Connection	1, 2, 3, 4, 5		G1⁄8							
	14		M5							
Product weight		[g]	89			78	89			
Corrosion resistance class		CRC	2[6]							

1) C = Normally closed
2) U = Normally open
3) E = Normally exhausted
4) H = 2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
6) Corrosion resistance class 2 according to 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 VUVG-L14 and VUVG-S14, in-line valves G1⁄8

FESTO

Technical data

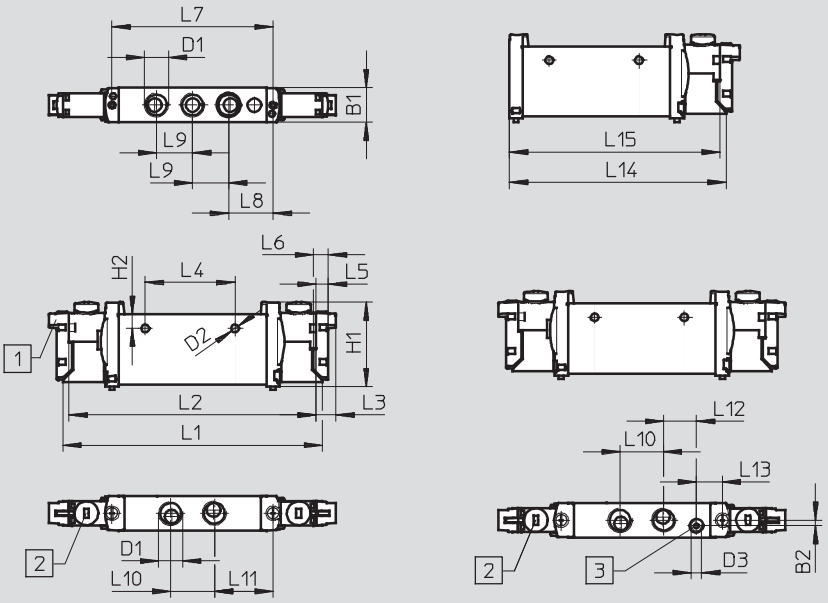
Operating and environmental conditions						
Valve function			2x3/2-way	5/2-way, single solenoid	5/2-way, double solenoid	5/3-way
Operating medium			Filtered compressed air, grade of filtration 40 µm, lubricated or unlubricated			
Operating pressure at port 1 with pilot air supply	Internal	[bar]	1.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8
	External	[bar]	1.5... 10	-0.9... 10		
Operating pressure at port 3 or 5 with pilot air supply	Internal or external	[bar]	-0.9... 10			
Pilot pressure		[bar]	1.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8
Ambient temperature		[°C]	–5 ... +50, –5 ... +60 with holding current reduction			
Temperature of medium		[°C]	–5 ... +50, –5 ... +60 with holding current reduction			

Electrical data		
Electrical connection		Via E-box
Operating voltage	[V DC]	5, 12 and 24 ±10%
Power	[W]	1, reduced to 0.35 with holding current reduction
Duty cycle	[%]	100
Protection class to EN 60529		IP40 (with plug socket), IP65 (with M8)

Note on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

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

2x3/2-way, 5/2-way and 5/3-way valve



- Note

Additional dimensions E-boxes

➔ Page 49

1 Horizontal electrical connection

2 Manual override

3 Port for external pilot air supply

Type													
VUVG-L-14 -...-G18 ...	B1	B2	D1	D2	D3	H1	H2	L1	L2	L3	L4	L5	L6
VUVG-S-14 -...-G18 ...	14.4	2.3	G1⁄8	Ø3.2	M5	34.8	5.8	107	102	8	37	4.85	6.15
	L7	L8	L9	L10	L11	L12	L13	L14	L15				
	66.5	18.35	14.9	18	24.25	13.45	10.8	89.4	86.95				

Solenoid valves VUVG-L14 and VUVG-S14, in-line valves G1⁄8

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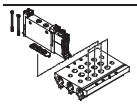
Order code

VUVG	–		14	–		–				–		–				–			L	–	

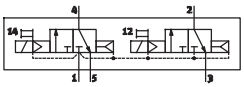
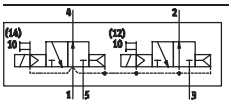
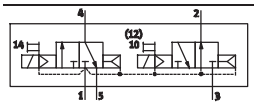
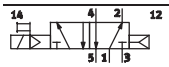
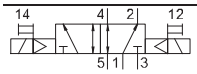
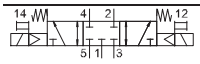
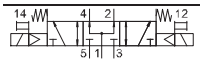
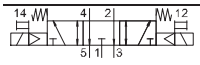
Valve design

 In-line, individual valve	L
 In-line, manifold valve incl. seal and screws	S

Width

14 mm	14

Valve functions[5]

	T32C
	T32U
	T32H
	M52
	B52
	P53C
	P53U
	P53E

Reset method

Pneumatic spring for T32 and M52	A
With B52 and P53	–

Pilot air supply

Internal	–
External	Z

Manual override

	Non-detenting	H
	Covered	S
–	Non-detenting, detenting	T

Pneumatic connection

		Flow rate [l/min][4]
G18	Thread G1⁄8	780
Q4	Push-in connector 4 mm/G1⁄8	250
Q6	Push-in connector 6 mm/G1⁄8	500
Q8	Push-in connector 8 mm/G1⁄8	700

Exhausting with VUVG-L

QN	QS if QS[3]
U	Silencer
–	G1⁄8

Operating voltage

1	24 V DC
5	12 V DC
4	5 V DC

E-box

H2	Connection pattern H, horizontal plug	
H3	Connection pattern H, vertical plug	
S2	Connection pattern S, horizontal plug	
S3	Connection pattern S, vertical plug	
L1...4	With 2x flying leads L: 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m	
R1	Individual plug M8, 4-pin, only without HCR	
R8	Individual plug M8, 3-pin, only without HCR	
P3	Without E-box	

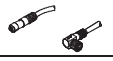
Protective circuit

		Power [W]
–	Without holding current reduction (HCR)	1
R[2]	With holding current reduction (HCR)	1 to 0.35

Display

L	LED

Connecting cable

W1...4[1]	Not sheathed	for H 
C1...4[1]	Sheathed	
WS1...4[1]	Not sheathed	for S 
S1...4[1]	Sheathed	
N1...4[6]	M8x1, 3-pin	
N5...8[6]	M8x1, 4-pin	

1) W1/C1/S1/WS1 = 0.5 m, W2/C2/S2/WS2 = 1 m, W3/C3/S3/WS3 = 2.5 m, W4/C4/S4/WS4 = 5 m
2) At 24 V DC
3) If Q... is chosen for the pneumatic connection, this also applies to the exhaust ports 3 and 5
4) Flow rate applies to 5/2-way individual valve
5) Circuit symbol for internal pilot air supply
6) Straight: N1/N5 = 2.5 m, N2/N6 = 5 m
Angled: N3/N7 = 2.5 m, N4/N8 = 5 m

Solenoid valves VUVG-S14, in-line valves G1⁄8

Manifold assembly

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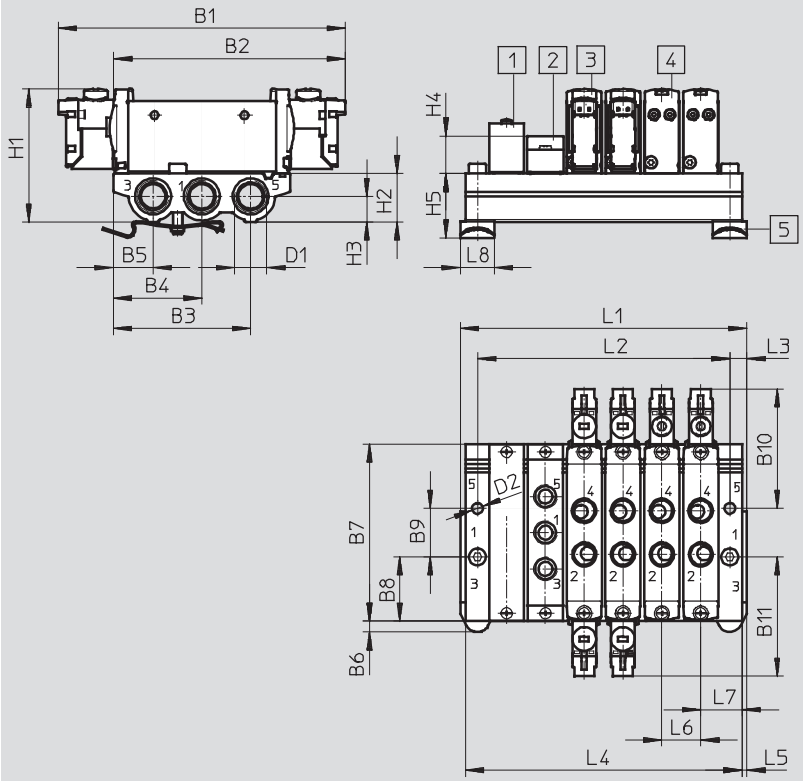
In-line valves for manifold assembly

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



- Note

Additional dimensions E-boxes
➔ Page 49

1 Blanking plate VABB-L1-14

2 Supply plate VABF-L1-14-P3A4-G18

3 Double solenoid valve

4 Single solenoid valve

5 H-rail mounting (two M4x25 screws to DIN 912 are required for mounting)

Type												
VUVG-S14 -...-G18 ...	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	D1
	118.3	95.1	56.55	36.45	16.35	4.5	72.9	26.45	20	49.15	49.15	G1⁄4
	D2	H1	H2	H3	H4	H5	L3	L5	L6[1)]	L7		
	Ø4.5	54.8	20	10.6	15.4	26.4	7	2	16	17		

Valve positions	2	3	4	5	6	7	8	9	10	12	14	16
L1 [mm]	54	70	86	98	118	134	150	166	182	214	246	278
L2 [mm]	40	56	72	88	104	120	136	152	168	200	232	264
L4 [mm]	50	66	82	98	114	130	146	162	178	210	242	274
VABM weight [g]	118	159	200	241	282	323	364	405	446	528	610	692

1) Grid dimension

Solenoid valves VUVG-S14, in-line valves G1⁄8

Ordering data

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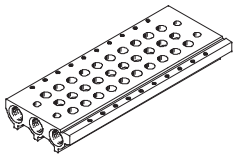
Technical data – Manifold rails

	Connection	CRC	Material[2]	Operating pressure	Max. tightening torque for assembly [Nm]		
	1, 3, 5			[bar]	Valve	H-rail	Wall
	G1⁄4	2[1]	Wrought aluminium alloy	–0.9 ... 10	0.65	1.5	3

1) Corrosion resistance class 2 according to 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.
2) Note on materials: RoHS-compliant

Order code – Manifold rails

VABM	–	L1	–	14	S	–	G14	–	

Manifold assembly parts
Manifold rail **VABM**

Valve series
VUVG **L1**

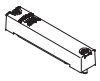
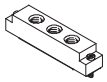
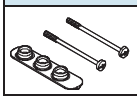
Valve width
14 mm **14**

Manifold rail with ports 1, 3, 5
For G 1⁄8 in-line valves **S**

Number of valve positions
2 to 10, 12, 14 and 16

Ports 1, 3 and 5
G14 G1⁄4

Ordering data – Accessories

			Type
Blanking plate			Technical data ➔ Internet: vabb
	For manifold rail for M5/M7 in-line valves	Incl. screws and seal	**VABB-L1-14**
Separator element			Technical data ➔ Internet: vabd
	For manifold rail for G 1⁄8 in-line valves	Separator for pressure zones	**VABD-10-B**
Supply plate			Technical data ➔ Internet: vabf
	For manifold rail for G 1⁄8 in-line valves	Incl. screws and seal	**VABF-L1-14-P3A4-G18**
Seals for in-line valves			Technical data ➔ Internet: vabd
	G1⁄8	10 seals and 20 screws	**VABD-L1-14X-S-G18**

Solenoid valves VUVG-B10A, sub-base valves

System overview

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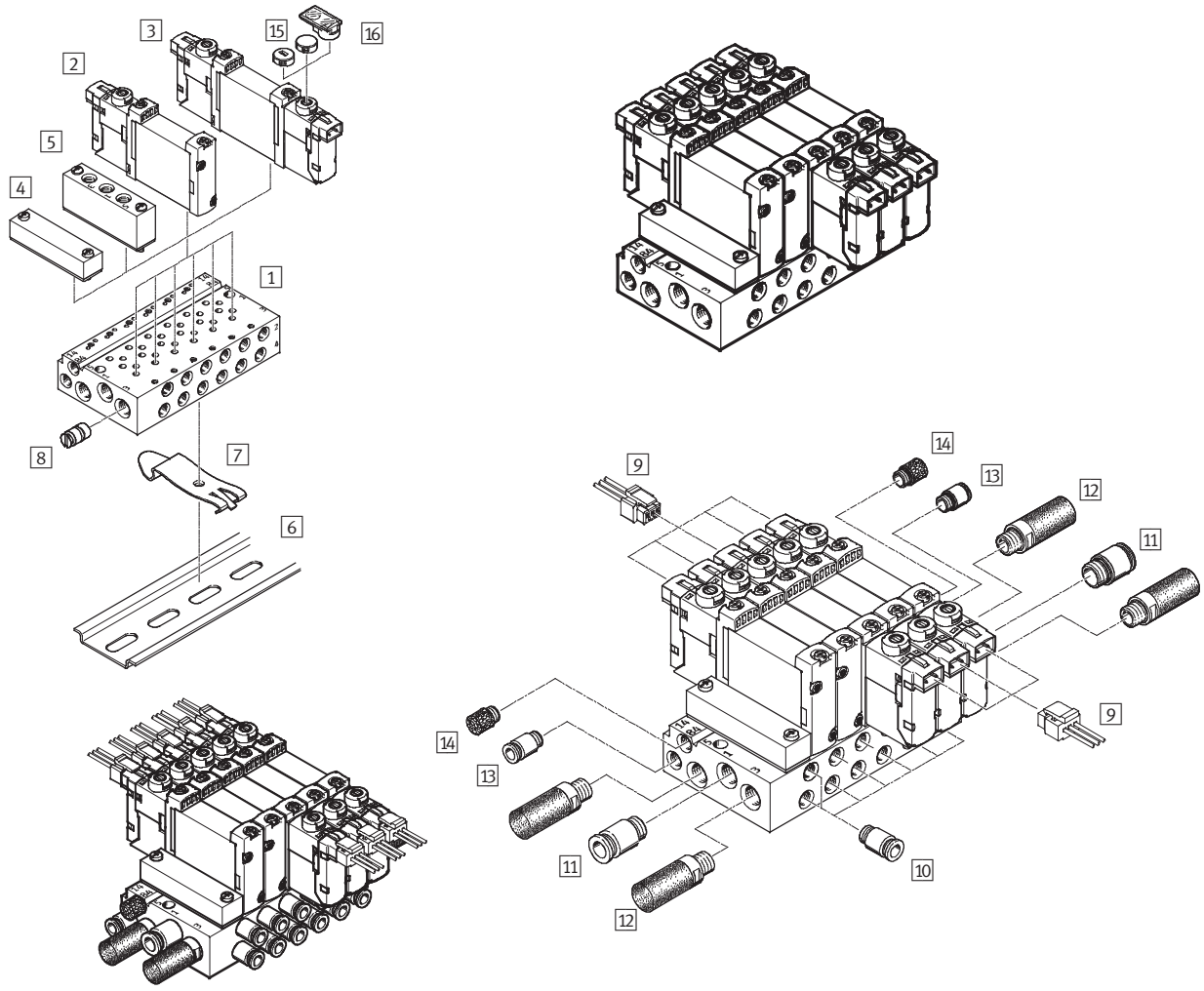
Manifold assembly



Manifold assembly and accessories

		Type	Brief description	➔ Page/Internet
1	Manifold rail	VABM-L1-10 ...-M7- ...	For 2 to 10, 12, 14 and 16 valve positions	36
2	Solenoid valve	VUVG- ...	Sub-base valve, 5/2-way single solenoid	32
3	Solenoid valve	VUVG- ...	Sub-base valve, 5/2-way double solenoid and 5/3-way single solenoid	32
4	Blanking plate	VABB-L1-10-S	For covering an unused valve position	36
5	Supply plate	VABF-L1-10-P3A4- ...	For air supply port 1 and outlet port 3 and 5	36
6	H-rail	NRH-35-2000	For mounting the valve manifold	53
7	H-rail mounting	VAME-T-M4	2 pieces for fitting the valve manifold on an H-rail	54
8	Separator element	VABD- ...	For creating pressure zones	30
9	Plug socket with cable	NEBV-H1G2-KN-...-LE2	For E-box H2 and H3	53
10	Push-in fitting	QS...	Push-in fitting for outlet port 2 and 4	quick star
11	Push-in fitting	QS...	Push-in fitting for air supply port 1	quick star
12	Silencer	U...	For outlet port 3 and 5	53
13	Push-in fitting	QS...	Push-in fitting for pilot air supply port 12/14	quick star
14	Silencer	U...	Silencer for pilot air outlet 82/84	quick star
15	Cover cap	VMPA-HB...-B	For manual override	53
16	Inscription label holder	ASLR-D	For labelling the valves, covering the mounting screw and the manual override	55

Solenoid valves VUVG-B10A, sub-base valves

Technical data

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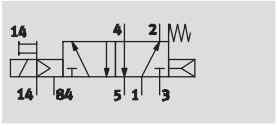
Function
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

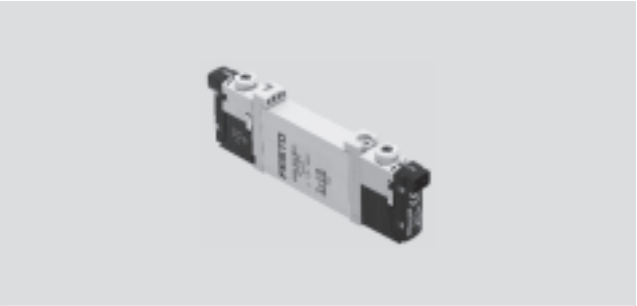


E.g. 5/2-way valve with internal pilot air supply and combined mechanical plus pneumatic spring return

Width 10 mm

Flow rate
90 ... 100 l/min

Voltage
5, 12 and 24 V DC



General technical data							
Valve function			5/2-way		5/3-way		
Normal position			–	–	C[1]	U[2]	E[3]
Memory stability			Single solenoid	Double solenoid	Single solenoid		
Pneumatic spring reset method			Yes[5]	–	No		
Mechanical spring reset method			Yes[5]	–	Yes		
Vacuum operation at port 1			Only with external pilot air supply				
Design			Piston spool valve				
Sealing principle			Soft				
Actuation type			Electric				
Type of control			Piloted				
Pilot air supply			External, internal; can be selected via sub-base				
Exhaust function			Flow control				
Manual override			Choice of non-detenting, detenting or covered				
Type of mounting			On manifold rail				
Mounting position			Any				
Nominal size		[mm]	2				
Standard nominal flow rate		[l/min]	100		90		
Flow rate on manifold rail M3		[l/min]	100		90		
Switching time on/off		[ms]	7/15	–	8/25		
Changeover time		[ms]	–	5	14		
Width		[mm]	10				
Connection	1, 3, 5		M7 in manifold rail				
	2, 4		M5 in manifold rail				
	12/14, 82/84		M5 in manifold rail				
Product weight		[g]	38	49			
Corrosion resistance class		CRC	2[6]				

1) C = Normally closed
2) U = Normally open
3) E = Normally exhausted
5) Combined reset method
6) Corrosion resistance class 2 according to 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 VUVG-B10A, sub-base valves

FESTO

Technical data

Operating and environmental conditions					
Valve function			5/2-way, single solenoid	5/2-way, double solenoid	5/3-way
Operating medium			Filtered compressed air, grade of filtration 40 µm, lubricated or unlubricated		
Operating pressure at port 1 with pilot air supply	Internal	[bar]	2.5 ... 8	1.5 ... 8	3 ... 8
	External	[bar]	–0.9 ... 10		
Operating pressure at port 3 or 5 with pilot air supply	Internal or external	[bar]	–0.9 ... 10		
Pilot pressure[1)]		[bar]	2.5 ... 8	1.5 ... 8	3 ... 8
Ambient temperature		[°C]	–5 ... +50, –5 ... +60 with holding current reduction		
Temperature of medium		[°C]	–5 ... +50, –5 ... +60 with holding current reduction		

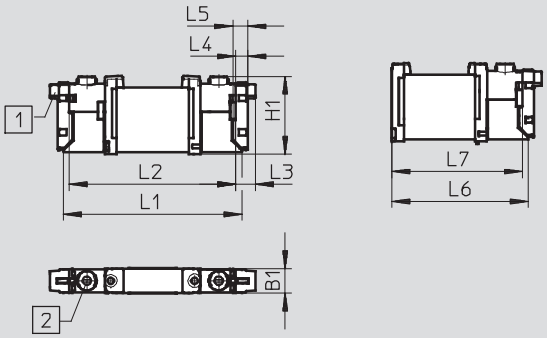
1) Minimum pilot pressure 50% of operating pressure

Electrical data		
Electrical connection		Via E-box
Operating voltage	[V DC]	5, 12 and 24 ±10%
Power	[W]	1, reduced to 0.35 with holding current reduction
Duty cycle	[%]	100
Protection class to EN 60529		IP40 (with plug socket), IP65 (with M8)

Note on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

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

5/2-way and 5/3-way valve



1 Vertical electrical connection 2 Manual override

Note

Additional dimensions
E-boxes
➔ Page 49

Type									
VUVG-B10A -...-F ...	B1	H1	L1	L2	L3	L4	L5	L6	L7
	10.2	32.5	73.9	68.9	8	4.85	6.15	56.9	54.4

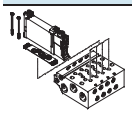
Solenoid valves VUVG-B10A, sub-base valves

FESTO

Order code

VUVG	–	B	10A	–		–		Z		–	F	–				L	–	

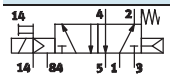
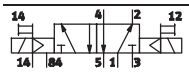
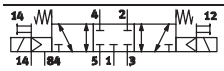
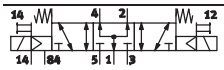
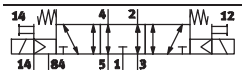
Valve design

 Sub-base, manifold valve incl. seal and screws	B

Width

10 mm	10A

Valve functions

	M52
	B52
	P53C
	P53U
	P53E

Reset method

Pneu./mech. spring for M52	R
With B52 and P53	–

Pilot air supply

External	Z

Manual override

	Non-detenting	H
	Covered	S
–	Non-detenting, detenting	T

Pneumatic connection

F	In the manifold rail

Operating voltage

1	24 V DC
5	12 V DC
4	5 V DC

Protective circuit

		Power [W]
–	Without holding current reduction (HCR)	1
R[2]	With holding current reduction (HCR)	1 to 0.35

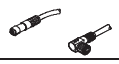
E-box

H2	Connection pattern H, horizontal plug	
H3	Connection pattern H, vertical plug	
S2	Connection pattern S, horizontal plug	
S3	Connection pattern S, vertical plug	
L1...4	With 2x flying leads L: 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m	
R1	Individual plug M8, 4-pin, only without HCR	
R8	Individual plug M8, 3-pin, only without HCR	
P3	Without E-box	

Display

L	LED

Connecting cable

W1...4[1]	Not sheathed	for H 
C1...4[1]	Sheathed	
WS1...4[1]	Not sheathed	for S 
S1...4[1]	Sheathed	
N1...4[6]	M8x1, 3-pin	
N5...8[6]	M8x1, 4-pin	

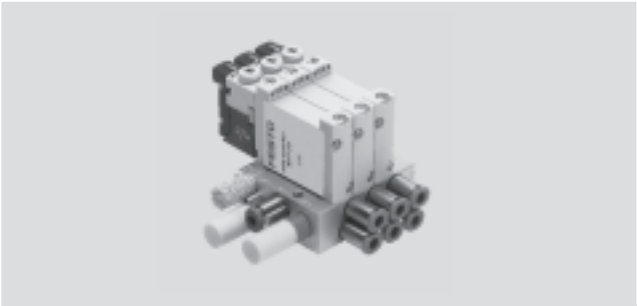
1) W1/C1/S1/WS1 = 0.5 m, W2/C2/S2/WS2 = 1 m, W3/C3/S3/WS3 = 2.5 m, W4/C4/S4/WS4 = 5 m
2) At 24 V DC
3) If Q... is chosen for the pneumatic connection, this also applies to the exhaust ports 3 and 5
6) Straight: N1/N5 = 2.5 m, N2/N6 = 5 m
Angled: N3/N7 = 2.5 m, N4/N8 = 5 m

Solenoid valves VUVG-B10A, sub-base valves

Manifold assembly

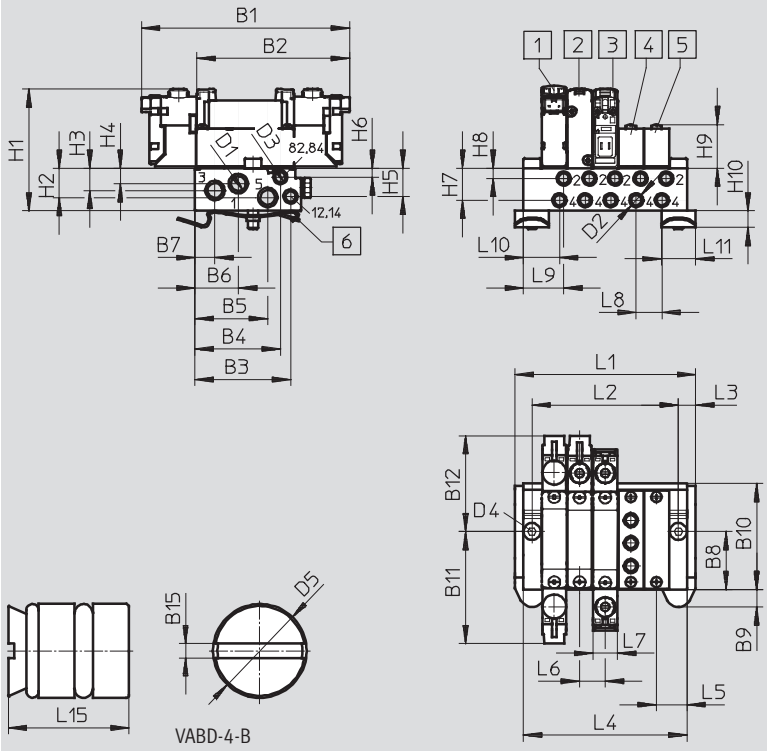
FESTO

Sub-base valve for manifold assembly
M5 connection



Dimensions

Download CAD data ➔ **www.festo.com**



- Note

Additional dimensions
E-boxes
➔ Page 49

1 Solenoid valve
2 Solenoid valve
3 Solenoid valve
4 Supply plate
5 Blanking plate
6 H-rail mounting (two M4x25 screws to DIN 912 are required)

Type												
VUVG-B10A -...-F- ...	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
	84.9	62.4	39.12	34.95	29.83	17.75	8.15	24	7.15	43.5	45.75	39.15
	B15	D1	D2	D3	D4	D5	H1	H2	H3	H4	H5	H6
	0.48	M7	M5	M5	Ø4.5	Ø4	53.1	12	9.1	6.3	11.57	3.6
	H7	H8	H9	H10	H15	L3	L5	L6	L7	L8	L9	L10
	13.1	4.2	16.2	6.8	1.9	7	12.5	10.5	10.2	10.5	16.5	14.7
	L11	L15										
	14	8.5										

Valve positions	2	3	4	5	6	7	8	9	10	12	14	16
L1 [mm]	42.5	53	63.5	74	84.5	96	106.5	116	126.5	147.5	168.5	189.5
L2 [mm]	28.5	39	49.5	60	70.5	81	91.5	102	112.5	133.5	154.5	175.5
L4 [mm]	35.5	46	56.5	67	77.5	89	99.5	109	119.5	140.5	161.5	182.5
VABM weight [g]	60	78	96	114	132	150	168	186	204	240	276	312

Solenoid valves VUVG-B10A, sub-base valves

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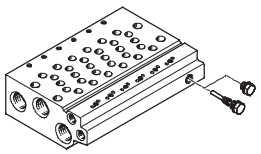
Ordering data

Technical data – Manifold rails[1)]

	Connection			CRC	Material[3)]	Operating pressure	Max. tightening torque for assembly [Nm]		
	2, 4	1, 3, 5	12/14, 82/84			[bar]	Valve	H-rail	Wall
	M5	M7	M5	2[2)]	Wrought aluminium alloy	–0.9 ... 10	0.45	1.5	1.5

1) Blanking plugs are included with the manifold rail.
2) Corrosion resistance class 2 according to 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.
3) Note on materials: RoHS-compliant

Order code – Manifold rails M3

VABM	–	L1	–	10A		–	M7	–	

Manifold assembly parts
Manifold rail **VABM**

Valve series
VUVG **L1**

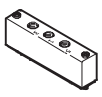
Valve width
10 mm **10A**

Rail with ports 1, 2, 3, 4, 5, 12/14, 82/84
Port 2 and 4 in M5 **W**

Number of valve positions
2 to 10, 12, 14 and 16

Ports 1, 3 and 5
M7 M7

Ordering data – Accessories

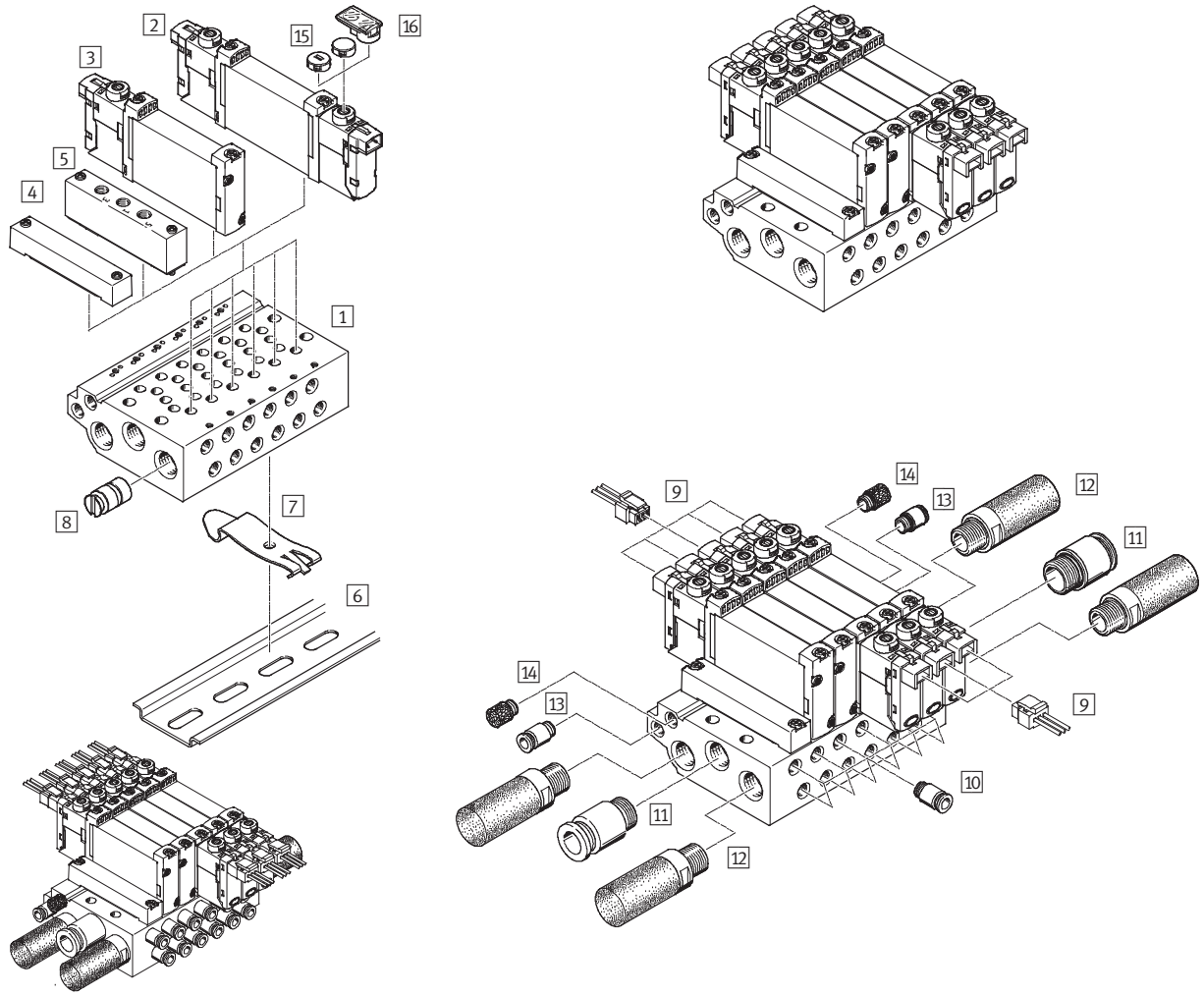
			Type
Blanking plate			Technical data ➔ Internet: vabb
	For manifold rail 10AW	Incl. screws and seal	**VABB-L1-10A**
Separator element			Technical data ➔ Internet: vabd
	For manifold rail 10AW	Separator for pressure zones	**VABD-4.2-B**
Supply plate			Technical data ➔ Internet: vabf
	For manifold rail 10AW	Incl. screws and seal	**VABF-L1-10A-P3A4-M5**
Seals			Technical data ➔ Internet: vabd
	For sub-base valves B10A	10 seals and 20 screws	**VABD-L1-10AB-S-M3**

Solenoid valves VUVG-B10, sub-base valves

System overview

FESTO

Manifold assembly



Manifold assembly and accessories

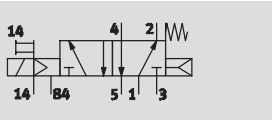
		Type	Brief description	➔ Page/Internet
1	Manifold rail	VABM-L1-10 ...-G18- ...	For 2 to 10, 12, 14 and 16 valve positions	42
2	Solenoid valve	VUVG- ...	Sub-base valve, 5/2-way single solenoid	38
3	Solenoid valve	VUVG- ...	Sub-base valve, 2x3/2-way, 5/2-way double solenoid and 5/3-way single solenoid	38
4	Blanking plate	VABB-L1-10-S	For covering an unused valve position	42
5	Supply plate	VABF-L1-10-P3A4- ...	For air supply port 1 and outlet port 3 and 5	42
6	H-rail	NRH-35-2000	For mounting the valve manifold	53
7	H-rail mounting	VAME-T-M4	2 pieces for fitting the valve manifold on an H-rail	53
8	Separator element	VABD- ...	For creating pressure zones	42
9	Plug socket with cable	NEBV-H1G2-KN-...-LE2	For E-box H2 and H3	53
10	Push-in fitting	QS...	Push-in fitting for outlet port 2 and 4	quick star
11	Push-in fitting	QS...	Push-in fitting for air supply port 1	quick star
12	Silencer	U...	For outlet port 3 and 5	53
13	Push-in fitting	QS...	Push-in fitting for pilot air supply port 12/14	quick star
14	Silencer	U...	Silencer for pilot air outlet 82/84	quick star
15	Cover cap	VMPA-HB...-B	For manual override	53
16	Inscription label holder	ASLR-D	For labelling the valves, covering the mounting screw and the manual override	55

Solenoid valves VUVG-B10, sub-base valves

Technical data

FESTO

Function
2x3/2C, 2x3/2U, 2x3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E

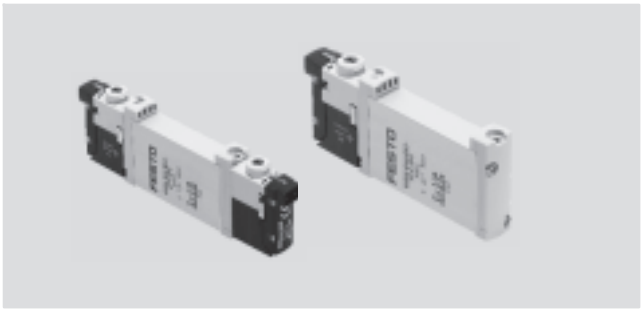


E.g. 5/2-way valve with internal pilot air supply and combined mechanical plus pneumatic spring return

Width 10 mm

Flow rate
160 ... 270 l/min

Voltage
5, 12 and 24 V DC



General technical data										
Valve function			2x3/2-way			5/2-way		5/3-way		
Normal position			C[1]	U[2]	H[4]	–	–	C[1]	U[2]	E[3]
Memory stability			Single solenoid				Double solenoid	Single solenoid		
Pneumatic spring reset method			Yes			Yes[5]	–	No		
Mechanical spring reset method			No			Yes[5]	–	Yes		
Vacuum operation at port 1			No			Only with external pilot air supply				
Design			Piston spool valve							
Sealing principle			Soft							
Actuation type			Electric							
Type of control			Piloted							
Pilot air supply			External, internal; can be selected via sub-base							
Exhaust function			Flow control							
Manual override			Choice of non-detenting, detenting or covered							
Type of mounting			On manifold rail							
Mounting position			Any							
Nominal size		[mm]	2.7			3.2				
Standard nominal flow rate		[l/min]	160			270		250		
Flow rate on manifold rail M5		[l/min]	150			210		200		
Flow rate on manifold rail M7		[l/min]	160			270		250		
Switching time on/off		[ms]	6/16			7/19	–	10/30		
Changeover time		[ms]	–				7	16		
Width		[mm]	10							
Connection	1, 3, 5		G1⁄8 in manifold rail							
	2, 4		M5 or M7 in manifold rail							
	12/14, 82/84		M5 in manifold rail							
Product weight		[g]	55			45	55			
Corrosion resistance class		CRC	2[6]							

1) C = Normally closed
2) U = Normally open
3) E = Normally exhausted
4) H = 2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
5) Combined reset method
6) Corrosion resistance class 2 according to 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 VUVG-B10, sub-base valves

Technical data

FESTO

Operating and environmental conditions						
Valve function			2x3/2-way	5/2-way, single solenoid	5/2-way, double solenoid	5/3-way
Operating medium			Filtered compressed air, grade of filtration 40 µm, lubricated or unlubricated			
Operating pressure at port 1 with pilot air supply	Internal	[bar]	1.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8
	External	[bar]	1.5 ... 10	–0.9 ... 10		
Operating pressure at port 3 or 5 with pilot air supply	Internal or external	[bar]	–0.9 ... 10			
Pilot pressure[1)]		[bar]	1.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8
Ambient temperature		[°C]	–5 ... +50, –5 ... +60 with holding current reduction			
Temperature of medium		[°C]	–5 ... +50, –5 ... +60 with holding current reduction			

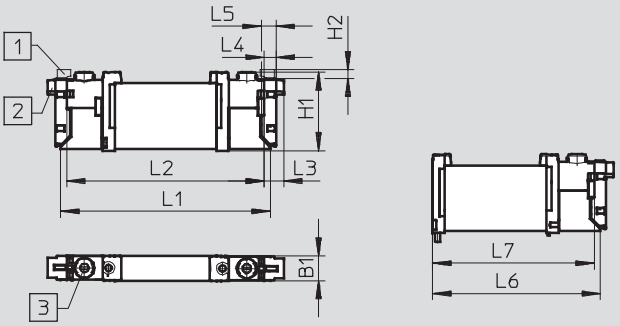
1) Minimum pilot pressure 50% of operating pressure

Electrical data		
Electrical connection		Via E-box
Operating voltage	[V DC]	5, 12 and 24 ±10%
Power	[W]	1, reduced to 0.35 with holding current reduction
Duty cycle	[%]	100
Protection class to EN 60529		IP40 (with plug socket)

Note on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

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

2x3/2-way, 5/2-way and 5/3-way valve



- Note

Additional dimensions E-boxes
➔ Page 49

1 Vertical electrical connection

2 Horizontal electrical connection

3 Manual override

Type											
VUVG-B10 -...-F ...	B1	H1	H2	L1	L2	L3	L4	L5	L6	L7	
	10.2	32.5	3.6	86.5	81.5	8	4.85	6.15	69.2	66.7	

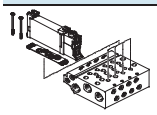
Solenoid valves VUVG-B10, sub-base valves

FESTO

Order code

VUVG	–	B	10	–		–		Z		–	F	–				L	–	

Valve design

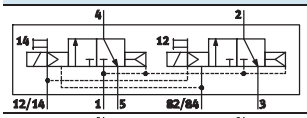
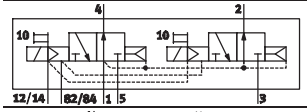
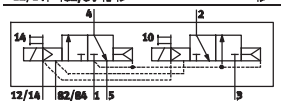
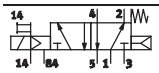
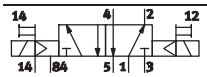
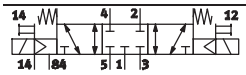
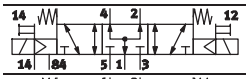
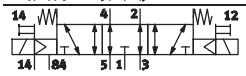


Sub-base, manifold valve incl. seal and screws	B

Width

10 mm	10

Valve functions

	T32C
	T32U
	T32H
	M52
	B52
	P53C
	P53U
	P53E

Reset method

Pneumatic spring for T32	A
Pneu./mech. spring for M52	R
With B52 and P53	–

Pilot air supply

External	Z

Manual override

	Non-detenting	H
	Covered	S
–	Non-detenting, detenting	T

Pneumatic connection

F	In the manifold rail

Operating voltage

1	24 V DC
5	12 V DC
4	5 V DC

E-box

H2	Connection pattern H, horizontal plug	
H3	Connection pattern H, vertical plug	
S2	Connection pattern S, horizontal plug	
S3	Connection pattern S, vertical plug	
L1...4	With 2x flying leads L: 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m	
R1	Individual plug M8, 4-pin, only without HCR	
R8	Individual plug M8, 3-pin, only without HCR	
P3	Without E-box	

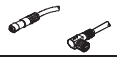
Protective circuit

		Power [W]
–	Without holding current reduction (HCR)	1
R[2]	With holding current reduction (HCR)	1 to 0.35

Display

L	LED

Connecting cable

W1...4[1]	Not sheathed	for H 
C1...4[1]	Sheathed	
WS1...4[1]	Not sheathed	for S 
S1...4[1]	Sheathed	
N1...4[6]	M8x1, 3-pin	
N5...8[6]	M8x1, 4-pin	

1) W1/C1/S1/WS1 = 0.5 m, W2/C2/S2/WS2 = 1 m, W3/C3/S3/WS3 = 2.5 m, W4/C4/S4/WS4 = 5 m

2) At 24 V DC

3) If Q... is chosen for the pneumatic connection, this also applies to the exhaust ports 3 and 5

6) Straight: N1/N5 = 2.5 m, N2/N6 = 5 m
Angled: N3/N7 = 2.5 m, N4/N8 = 5 m

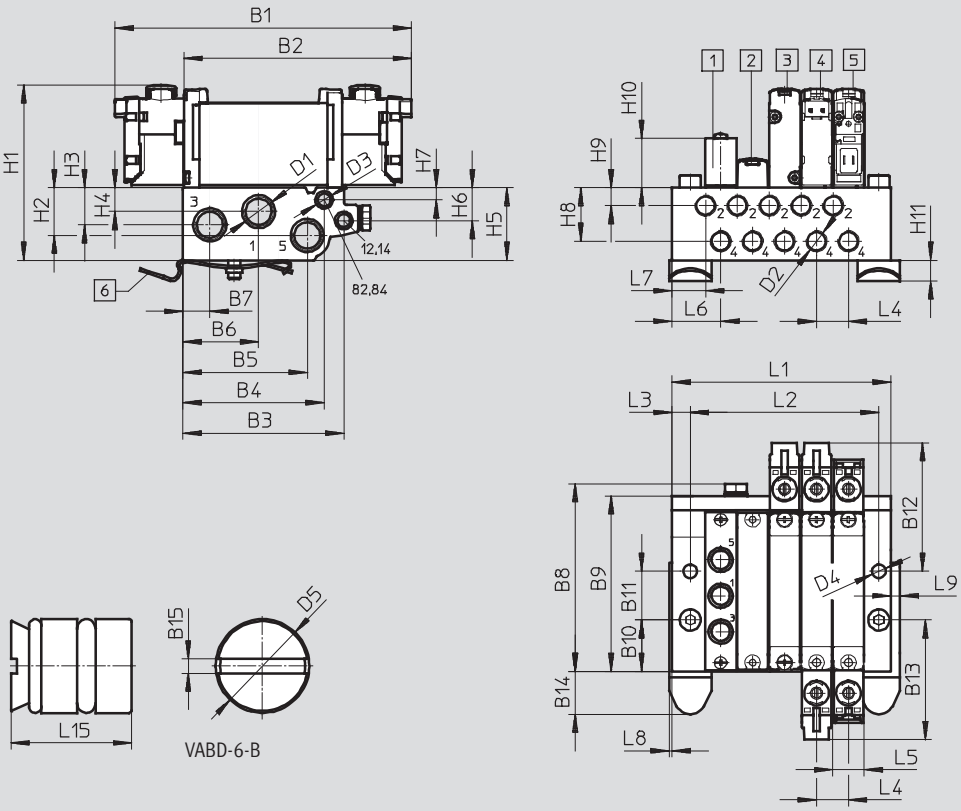
Solenoid valves VUVG-B10, sub-base valves

Manifold assembly

FESTO

Sub-base valve for manifold assembly
M5 or M7 connection

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



Note
Additional dimensions E-boxes
➔ Page 49

1 Supply plate
2 Blanking plate
3 Solenoid valve
4 Solenoid valve
5 Solenoid valve
6 H-rail mounting (2x M4x30 screws to DIN 912 are required)

Type												
VUVG-B10 -...-F- ...	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
	97.5	74.8	52.9	46.5	40.9	24.9	8.9	62	57.7	16.9	16	42.2
	B13	B14	B15	D1	D2	D3	D4	D5	H1	H2	H3	H4
	39.3	14.05	1.2	G⅛	M5/M7	M5	4.5	Ø6	56.4	15.7	12.17	7.87
	H5	H6	H7	H8	H9	H10	H11	L3	L4	L5	L6	L7
	23.9	10.8	4	17.6	5.9	16.2	6.8	4	10.5	10.2	16	11
	L8	L9	L15									
	1	3	10									

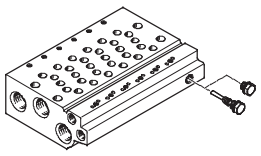
Valve positions	2	3	4	5	6	7	8	9	10	12	14	16
L1 [mm]	40.5	51	61.5	72	82.5	93	103.5	114	124.5	145.5	166.5	187.5
L2 [mm]	30.5	41	51.5	62	72.5	83	93.5	104	114.5	135.5	156.5	177.5
VABM weight [g]	107	135	163	191	219	247	275	303	331	387	415	471

Solenoid valves VUVG-B10, sub-base valves

FESTO

Ordering data

Technical data – Manifold rails[1)]

	Connection			CRC	Material[3)]	Operating pressure	Max. tightening torque for assembly [Nm]		
	2, 4	1, 3, 5	12/14, 82/84			[bar]	Valve	H-rail	Wall
	M5 or M7	G1⁄8	M5	2[2)]	Wrought aluminium alloy	–0.9 ... 10	0.45	1.5	3

1) Blanking plugs are included with the manifold rail.
2) Corrosion resistance class 2 according to 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.
3) Note on materials: RoHS-compliant

Order code – Manifold rails M5 and M7

VABM	–	L1	–	10		–	G18	–	

Manifold assembly parts
Manifold rail **VABM**

Valve series
VUVG **L1**

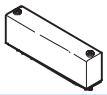
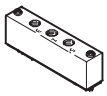
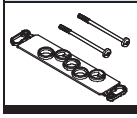
Valve width
10 mm **10**

Manifold rail with ports 1, 2, 3, 4, 5, 12/14, 82/84
Port 2 and 4 in M5 **W**
Port 2 and 4 in M7 **HW**

Number of valve positions
2 to 10, 12, 14 and 16

Ports 1, 3 and 5
G18 G1⁄8

Ordering data – Accessories

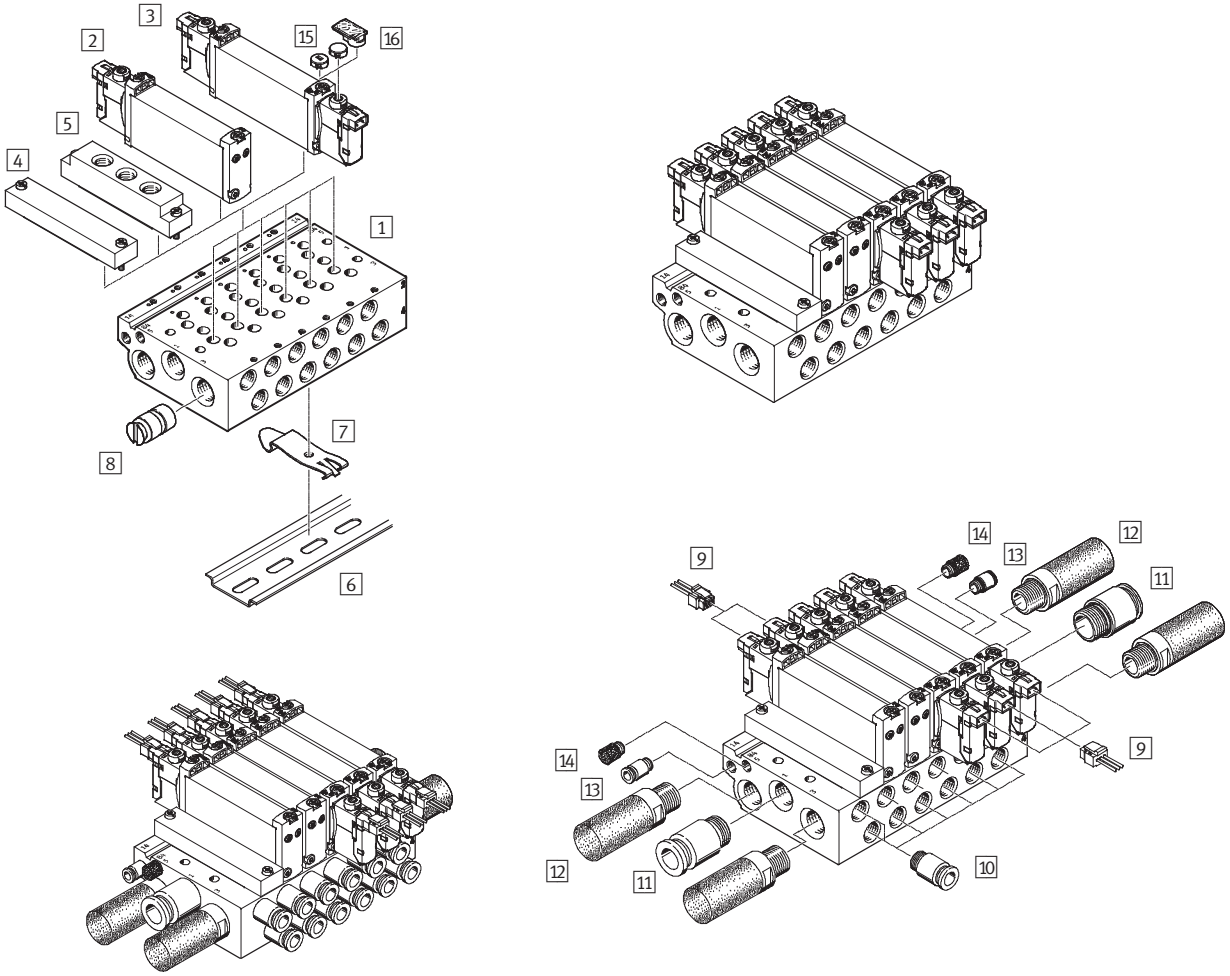
			Type
Blanking plate			Technical data ➔ Internet: vabb
	For manifold rail 10W/10HW, sub-base valves	Incl. screws and seal	**VABB-L1-10-W**
Separator element			Technical data ➔ Internet: vabd
	For manifold rail 10W and 10HW, sub-base valves	Separator for pressure zones	**VABD-6-B**
Supply plate			Technical data ➔ Internet: vabf
	For manifold rail 10W	Incl. screws and seal	**VABF-L1-10-P3A4-M5**
	For manifold rail 10HW		**VABF-L1-10-P3A4-M7**
Seals			Technical data ➔ Internet: vabd
	For sub-base valves B10	10 seals and 20 screws	**VABD-L1-10B-S-M7**

Solenoid valves VUVG-B14, sub-base valves

System overview

FESTO

Manifold assembly



Manifold assembly and accessories

		Type	Brief description	➔ Page/Internet
1	Manifold rail	VABM-L1-10 ...-G18- ...	For 2 to 10, 12, 14 and 16 valve positions	48
2	Solenoid valve	VUVG- ...	Sub-base valve, 5/2-way single solenoid	44
3	Solenoid valve	VUVG- ...	Sub-base valve, 2x3/2-way, 5/2-way double solenoid and 5/3-way single solenoid	44
4	Blanking plate	VABB-L1-10-S	For covering an unused valve position	48
5	Supply plate	VABF-L1-10-P3A4- ...	For air supply port 1 and outlet port 3 and 5	48
6	H-rail	NRH-35-2000	For mounting the valve manifold	53
7	H-rail mounting	VAME-T-M4	2 pieces for fitting the valve manifold on an H-rail	53
8	Separator element	VABD- ...	For creating pressure zones	48
9	Plug socket with cable	NEBV-H1G2-KN-...-LE2	For E-box H2 and H3	53
10	Push-in fitting	QS...	Push-in fitting for outlet port 2 and 4	quick star
11	Push-in fitting	QS...	Push-in fitting for air supply port 1	quick star
12	Silencer	U...	For outlet port 3 and 5	53
13	Push-in fitting	QS...	Push-in fitting for pilot air supply port 12/14	quick star
14	Silencer	U...	Silencer for pilot air outlet 82/84	quick star
15	Cover cap	VMPA-HB...-B	For manual override	53
16	Inscription label holder	ASLR-D	For labelling the valves, covering the mounting screw and the manual override	55

Solenoid valves VUVG-B14, sub-base valves

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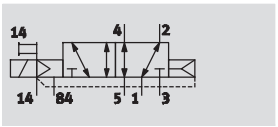
Technical data

Function
2x3/2C, 2x3/2U, 2x3/2H
5/2-way, single solenoid
5/2-way, double solenoid
5/3C, 5/3U, 5/3E



E.g. 5/2-way valve with internal pilot air supply and pneumatic spring return

- Width 14 mm
- Flow rate
  510 ... 700 l/min
- Voltage
  5, 12 and 24 V DC

General technical data										
Valve function			2x3/2-way			5/2-way		5/3-way		
Normal position			C[1]	U[2]	H[4]	–	–	C[1]	U[2]	E[3]
Memory stability			Single solenoid				Double solenoid	Single solenoid		
Pneumatic spring reset method			Yes				–	No		
Mechanical spring reset method			No				–	Yes		
Vacuum operation at port 1			No			Only with external pilot air supply				
Design			Piston spool valve							
Sealing principle			Soft							
Actuation type			Electric							
Type of control			Piloted							
Pilot air supply			External, internal; can be selected via sub-base							
Exhaust function			Flow control							
Manual override			Choice of non-detenting, detenting or covered							
Type of mounting			On manifold rail							
Mounting position			Any							
Nominal size		[mm]	4.6			5.6				
Standard nominal flow rate		[l/min]	580			700		600		
Flow rate on manifold rail G1/8		[l/min]	510			580		540		
Switching time on/off		[ms]	8/23			14/28	–	12/40		
Changeover time		[ms]	–				8	20		
Width		[mm]	14							
Connection	1, 3, 5		G1/4 in manifold rail							
	2, 4		G1/8 in manifold rail							
	12/14, 82/84		M5 in manifold rail							
Product weight		[g]	89			78	89			
Corrosion resistance class		CRC	2[6]							

1) C = Normally closed
2) U = Normally open
3) E = Normally exhausted
4) H = 2x 3/2-way valve in one housing with 1x normally closed and 1x normally open
6) Corrosion resistance class 2 according to 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 VUVG-B14, sub-base valves

Technical data

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Operating and environmental conditions						
Valve function			2x3/2-way	5/2-way, single solenoid	5/2-way, double solenoid	5/3-way
Operating medium			Filtered compressed air, grade of filtration 40 µm, lubricated or unlubricated			
Operating pressure at port 1 with pilot air supply	Internal	[bar]	1.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8
	External	[bar]	1.5 ... 10	–0.9 ... 10		
Operating pressure at port 3 or 5 with pilot air supply	Internal or external	[bar]	–0.9 ... 10			
Pilot pressure[1)]		[bar]	1.5 ... 8	2.5 ... 8	1.5 ... 8	3 ... 8
Ambient temperature		[°C]	–5 ... +50, –5 ... +60 with holding current reduction			
Temperature of medium		[°C]	–5 ... +50, –5 ... +60 with holding current reduction			

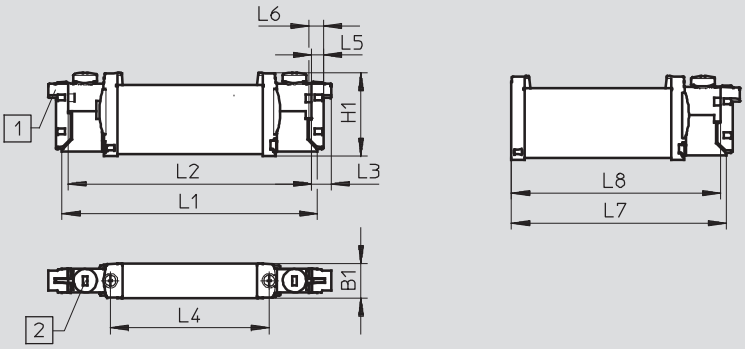
1) Minimum pilot pressure 50% of operating pressure

Electrical data		
Electrical connection		Via E-box
Operating voltage	[V DC]	5, 12 and 24 ±10%
Power	[W]	1, reduced to 0.35 with holding current reduction
Duty cycle	[%]	100
Protection class to EN 60529		IP40 (with plug socket)

Note on materials	
Housing	Wrought aluminium alloy
Seals	HNBR, NBR
Note on materials	RoHS-compliant

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

2x3/2-way, 5/2-way and 5/3-way valve



1 Horizontal electrical connection

2 Manual override

Note

Additional dimensions E-boxes

➔ Page 49

Type										
VUVG-B14 -...-F ...	B1	H1	L1	L2	L3	L4	L5	L6	L7	L8
	14.4	34.8	107	102	8	66.5	4.85	6.15	89.45	86.95

Solenoid valves VUVG-B14, sub-base valves

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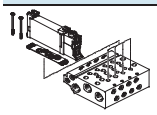
Order code

VUVG	–	B	14	–		–		Z		–	F	–				L	–	

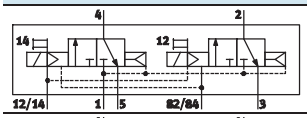
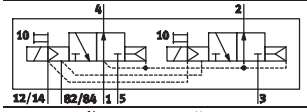
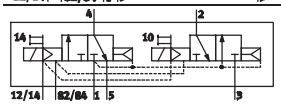
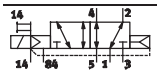
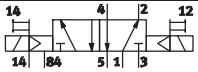
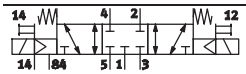
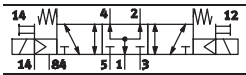
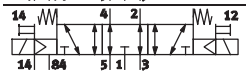
Valve design

 Sub-base, manifold valve incl. seal and screws	B

Width

14 mm	14

Valve functions

	T32C
	T32U
	T32H
	M52
	B52
	P53C
	P53U
	P53E

Reset method

Pneumatic spring for T32 and M52	A
With B52 and P53	–

Pilot air supply

External	Z

Manual override

	Non-detenting	H
	Covered	S
–	Non-detenting, detenting	T

Pneumatic connection

F	In the manifold rail

Operating voltage

1	24 V DC
5	12 V DC
4	5 V DC

E-box

H2	Connection pattern H, horizontal plug	
H3	Connection pattern H, vertical plug	
S2	Connection pattern S, horizontal plug	
S3	Connection pattern S, vertical plug	
L1...4	With 2x flying leads L: 1 = 0.5 m, 2 = 1 m, 3 = 2.5 m, 4 = 5 m	
R1	Individual plug M8, 4-pin, only without HCR	
R8	Individual plug M8, 3-pin, only without HCR	
P3	Without E-box	

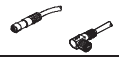
Protective circuit

		Power [W]
–	Without holding current reduction (HCR)	1
R[2)]	With holding current reduction (HCR)	1 to 0.35

Display

L	LED

Connecting cable

W1...4[1)]	Not sheathed	for H 
C1...4[1)]	Sheathed	
WS1...4[1)]	Not sheathed	for S 
S1...4[1)]	Sheathed	
N1...4[6)]	M8x1, 3-pin	
N5...8[6)]	M8x1, 4-pin	

1) W1/C1/S1/WS1 = 0.5 m, W2/C2/S2/WS2 = 1 m, W3/C3/S3/WS3 = 2.5 m, W4/C4/S4/WS4 = 5 m

2) At 24 V DC

3) If Q... is chosen for the pneumatic connection, this also applies to the exhaust ports 3 and 5

6) Straight: N1/N5 = 2.5 m, N2/N6 = 5 m
Angled: N3/N7 = 2.5 m, N4/N8 = 5 m

Solenoid valves VUVG-B14, sub-base valves

Manifold assembly

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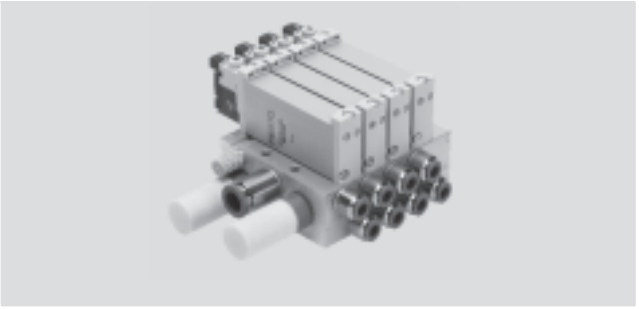
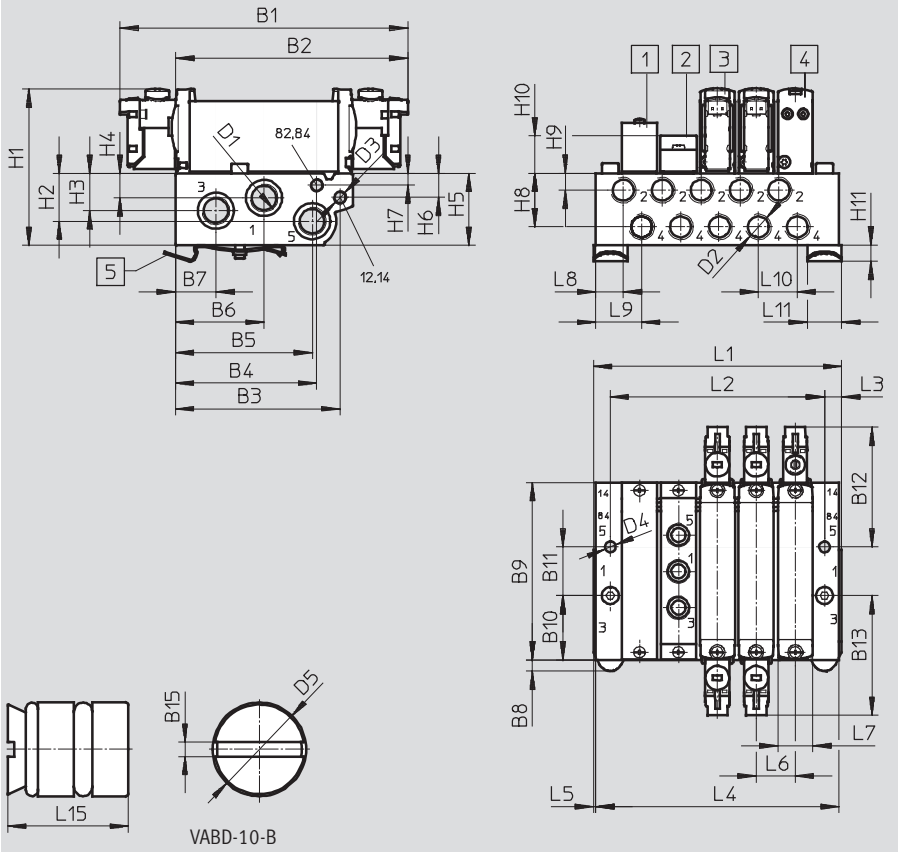
Sub-base valve for manifold assembly
G⅛ connection



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



- Note

Additional dimensions
E-boxes
➔ Page 49

1 Blanking plate VABB-L1-14
2 Supply plate VABF-L1-14-P3A4-G18
3 Double solenoid valve
4 Single solenoid valve
5 H-rail mounting (two M4x25 screws to DIN 912 are required)

Type												
VUVG-B14 -...-F- ...	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
	118.3	95.1	67.7	58.15	56.25	36.6	16.7	4.5	72.9	26.5	20	49.1
	B13	B15	D1	D2	D3	D4	D5	H1	H2	H3	H4	H5
	49.1	1.2	G¼	G⅛	M5	Ø4.5	Ø9.8	64.3	19.6	15.3	10.1	29.5
	H6	H7	H8	H9	H10	H11	L3	L5	L6	L7	L8	L9
	9.83	4.8	22.1	7	15.4	6.8	6	1	16	14.4	11.3	18.5
	L10	L11	L15									
	16	14	11									

Solenoid valves VUVG-B14, sub-base valves for G1⁄8

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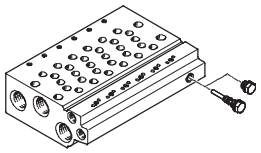
Ordering data

Valve positions	2	3	4	5	6	7	8	9	10	12	14	16
L1 [mm]	56.3	72.3	88.3	104.3	120.3	136.3	152.3	168.3	184.3	216.3	248.3	280.3
L2 [mm]	40	56	72	88	104	120	136	152	168	200	232	264
L4 [mm]	54.3	70.3	86.3	102.3	118.3	134.3	150.3	166.3	182.3	214.3	246.6	278.3
VABM weight [g]	232	306	380	454	528	602	676	750	824	972	1120	1268

Technical data – Manifold rails[1)]

	Connection			CRC	Material[3)]	Operating pressure	Max. tightening torque for assembly [Nm]		
	2, 4	1, 3, 5	12/14, 82/84			[bar]	Valve	H-rail	Wall
	G1⁄8	G1⁄4	M5	2[2)]	Wrought aluminium alloy	–0.9 ... 10	0.65	1.5	3

1) Blanking plugs are included with the manifold rail.
2) Corrosion resistance class 2 according to 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.
3) Note on materials: RoHS-compliant

Order code – Manifold rails G 1⁄8

VABM	–	L1	–	14	W	–	G14	–	

Manifold assembly parts	
Manifold rail	**VABM**

Valve series	
VUVG	**L1**

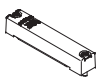
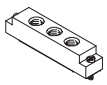
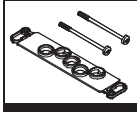
Valve width	
14 mm	**14**

Manifold rail with ports 1, 2, 3, 4, 5, 12/14, 82/84	
Port 2 and 4 in G 1⁄8	**W**

Ports 1, 3 and 5	
G14	G1⁄4

Number of valve positions	
	2 to 10, 12, 14 and 16

Ordering data – Accessories

			Type
Blanking plate			Technical data ➔ Internet: vabb
	For manifold rail 14W, sub-base valves	Incl. screws and seal	**VABB-L1-14**
Separator element			Technical data ➔ Internet: vabd
	For manifold rail 14W, sub-base valves	Separator for pressure zones	**VABD-10-B**
Supply plate			Technical data ➔ Internet: vabf
	For manifold rail 14W	Incl. screws and seal	**VABF-L1-14-P3A4-G18**
Seals			Technical data ➔ Internet: vabd
	For sub-base valves B14	10 seals and 20 screws	**VABD-L1-14B-S-G18**

Solenoid valves VUVG/valve terminal type 26 VTUG

E-boxes

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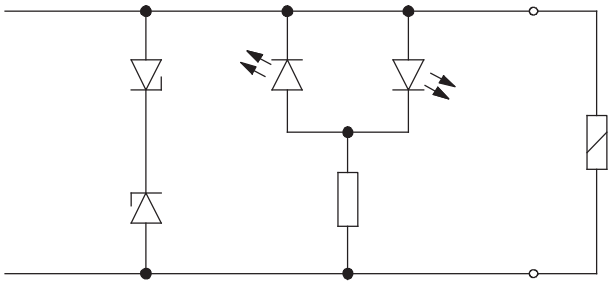
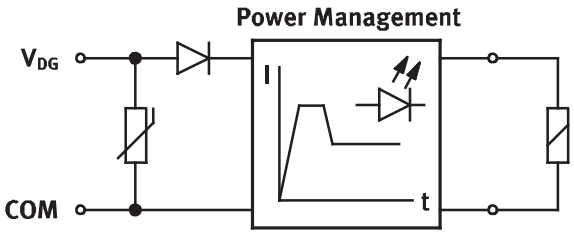
Protective circuit without holding current reduction

The solenoid coils (P type) of the 5, 12 and 24 V designs are equipped with a protective circuit to arrest sparks and protect against polarity reversal.

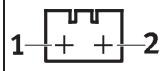
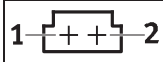
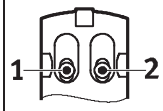


Protective circuit with holding current reduction

The 24 V DC design (R type) additionally features holding current reduction. This reduces the power from 1 W to 0.35 W.

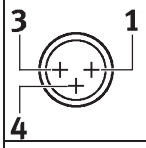
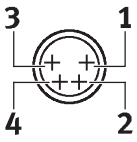


Pin allocation for E-box

	Pin		
Rectangular plug, pin spacing 4 mm, connection pattern H			
	VAVE-L1-1VH2-LP/VAVE-L1-1VH3-LP		
	1	+ or -	Without holding current reduction
	2	+ or -	
	VAVE-L1-1H2-LR/VAVE-L1-1H3-LR		
	1	-	With holding current reduction
	2	+	
Rectangular plug, pin spacing 2.5 mm, connection pattern S			
	VAVE-L1-1VS2-LP/VAVE-L1-1VS3-LP		
	1	+ or -	Without holding current reduction
	2	+ or -	
	VAVE-L1-1S2-LR/VAVE-L1-1S3-LR		
	1	-	With holding current reduction
	2	+	
Flying leads, 2-pin			
	VAVE-L1-1VL1...4- LP		
	1	+ or -	Without holding current reduction
	2	+ or -	
	VAVE-L1-1L1...4-LR		
	1	-	With holding current reduction
	2	+	

Solenoid valves VUVG/valve terminal type 26 VTUG

E-boxes

Pin allocation for E-box			
	Pin		
Round plug, M8, 3-pin			
	VAVE-L1-1VR8-LP		
	1	Not used	Without holding current reduction
	3	+ or -	
	4	+ or -	
Round plug, M8, 4-pin			
	VAVE-L1-1VR1-LP		
	1	Not used	Without holding current reduction
	2	Not used	
	3	+ or -	
	4	+ or -	

Solenoid valves VUVG/valve terminal type 26 VTUG

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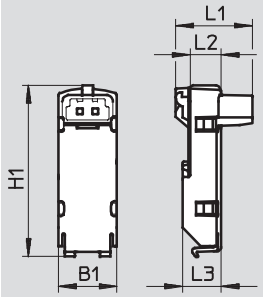
E-boxes

General technical data							
Variants	H2	H3	S2	S3	L-	R1	R8
Mounting position	Any						
Electrical connection	2-pin, socket				Flying leads	Individual plug M8, 4-pin	Individual plug M8, 3-pin
Protection class	IP40					IP65	
Switching position display	LED						
Type of mounting	Clip					Self-tapping screw	
Note on materials	RoHS-compliant						
Housing colour	Black						
Housing materials	PA						

Dimensions

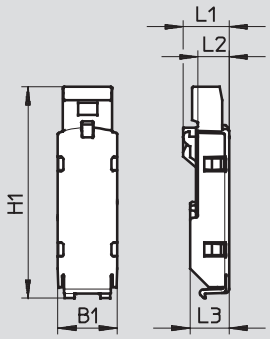
Download CAD data ➔ **www.festo.com**

E-boxes, S2/H2



Type	B1	H1	L1	L2	L3
VAVE-L1-1VS2-LP VAVE-L1-1S2-LR	9.8	28.8	12.9	5.2	6.5
VAVE-L1-1VH2-LP VAVE-L1-H2-LR			10.75		

E-boxes, S3/H3



Type	B1	H1 ± 0.5	L1	L2	L3
VAVE-L1-1VS3-LP VAVE-L1-1S3-LR	9.8	35	7.6	5.2	6.5
VAVE-L1-1VH3-LP VAVE-L1-1H3-LR			7.5		

Dimensions

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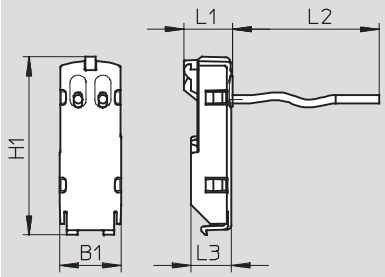
E-boxes, VL1...4



Type	B1	H1	L1	L2	L3
VAVE-L1-1VL1-LP VAVE-L1-1L1-LR	9.8	28.8	7.85	0.5	6.5
VAVE-L1-1VL2-LP VAVE-L1-1L2-LR				1	
VAVE-L1-1VL3-LP VAVE-L1-1L3-LR				2.5	
VAVE-L1-1VL4-LP VAVE-L1-1L4-LR				5	

Solenoid valves VUVG/valve terminal type 26 VTUG

E-boxes

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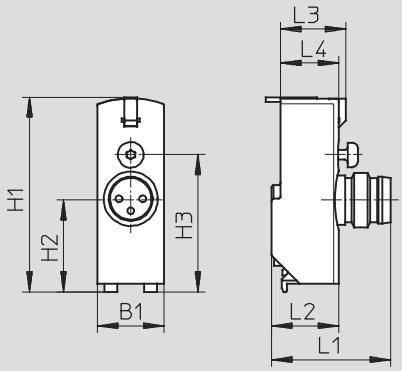
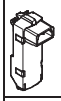
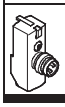
Dimensions Download CAD data ➔ **www.festo.com**

E-boxes, R8/R1



Type	B1	H1	H2	H3	L1	L2	L3	L4
VAVE-L1-1VR8-LP VAVE-L1-1VR1-LP	9.8	28.7	13.5	20.2	17.55	9.9	9.65	8.6

Ordering data – E-boxes

Design	Plug	Additional functions	Ambient temperature [°C]	Code	Power [W]	Voltage [V DC]	Type
	NEBV-H1 ...	Spark arresting, bipolar	–5 ... +50	H2	1	12/24	**VAVE-L1-1VH2-LP**
		Spark arresting, holding current reduction	–5 ... +60	H2R	1/0.35	24	**VAVE-L1-1H2-LR**
		Spark arresting, bipolar	–5 ... +50	H3	1	12/24	**VAVE-L1-1VH3-LP**
		Spark arresting, holding current reduction	–5 ... +60	H3R	1/0.35	24	**VAVE-L1-1H3-LR**
	NEBV-HS ...	Spark arresting, bipolar	–5 ... +50	S2	1	12/24	**VAVE-L1-1VS2-LP**
		Spark arresting, holding current reduction	–5 ... +60	S2R	1/0.35	24	**VAVE-L1-1S2-LR**
		Spark arresting, bipolar	–5 ... +50	S3	1	12/24	**VAVE-L1-1VS3-LP**
		Spark arresting, holding current reduction	–5 ... +60	S3R	1/0.35	24	**VAVE-L1-1S3-LR**
	Open cable end	Spark arresting, bipolar	–5 ... +50	L	1	12/24	**VAVE-L1-1VL1-LP**
		Spark arresting, bipolar	–5 ... +50	L	1	12/24	**VAVE-L1-1VL2-LP**
		Spark arresting, bipolar	–5 ... +50	L	1	12/24	**VAVE-L1-1VL3-LP**
		Spark arresting, bipolar	–5 ... +50	L	1	12/24	**VAVE-L1-1VL4-LP**
		Spark arresting, holding current reduction	–5 ... +60	LR	1/0.35	24	**VAVE-L1-1L1-LR**
		Spark arresting, holding current reduction	–5 ... +60	LR	1/0.35	24	**VAVE-L1-1L2-LR**
		Spark arresting, holding current reduction	–5 ... +60	LR	1/0.35	24	**VAVE-L1-1L3-LR**
		Spark arresting, holding current reduction	–5 ... +60	LR	1/0.35	24	**VAVE-L1-1L4-LR**
	NEBU-M8 ...	Spark arresting, bipolar	–5 ... +50	R8	1	12/24	**VAVE-L1-1VR8-LP**
		Spark arresting, bipolar	–5 ... +50	R1	1	12/24	**VAVE-L1-1VR1-LP**

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Accessories

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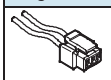
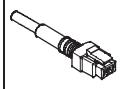
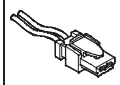
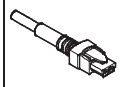
Ordering data				
	Voltage	Cable length [m]	Description	Type
Plug socket with cable, not sheathed, open end				Technical data → Internet: nebv
	5, 12 and 24 V DC	0.5	Socket, 2-pin, H2/H3	**NEBV-H1G2-KN-0.5-N-LE2**
		1		**NEBV-H1G2-KN-1-N-LE2**
		2.5		**NEBV-H1G2-KN-2.5-N-LE2**
		5		**NEBV-H1G2-KN-5-N-LE2**
Plug socket with cable, sheathed, open end				Technical data → Internet: nebv
	5, 12 and 24 V DC	0.5	Socket, 2-pin, H2/H3	**NEBV-H1G2-P-0.5-N-LE2**
		1		**NEBV-H1G2-P-1-N-LE2**
		2.5		**NEBV-H1G2-P-2.5-N-LE2**
		5		**NEBV-H1G2-P-5-N-LE2**
Plug socket with cable, not sheathed, open end				Technical data → Internet: nebv
	5, 12 and 24 V DC	0.5	Socket, 2-pin, S2/S3	**NEBV-HSG2-KN-0.5-N-LE2**
		1		**NEBV-HSG2-KN-1-N-LE2**
		2.5		**NEBV-HSG2-KN-2.5-N-LE2**
		5		**NEBV-HSG2-KN-5-N-LE2**
Plug socket with cable, sheathed, open end				Technical data → Internet: nebv
	5, 12 and 24 V DC	0.5	Socket, 2-pin, S2/S3	**NEBV-HSG2-P-0.5-N-LE2**
		1		**NEBV-HSG2-P-1-N-LE2**
		2.5		**NEBV-HSG2-P-2.5-N-LE2**
		5		**NEBV-HSG2-P-5-LE2**
Connecting cable, open end				Technical data → Internet: nebu
	5, 12 and 24 V DC	2.5	3-pin, straight socket, M8x1	**NEBU-M8G3-K-2.5-LE3**
		5		**NEBU-M8G3-K-5-LE3**
		2.5	4-pin, straight socket, M8x1	**NEBU-M8G4-K-2.5-LE4**
		5		**NEBU-M8G4-K-5-LE4**
Connecting cable, open end				Technical data → Internet: nebu
	5, 12 and 24 V DC	2.5	3-pin, angled socket, M8x1	**NEBU-M8W3-K-2.5-LE3**
		5		**NEBU-M8W3-K-5-LE3**
		2.5	4-pin, angled socket, M8x1	**NEBU-M8W4-K-2.5-LE4**
		5		**NEBU-M8W4-K-5-LE4**

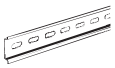
Solenoid valves VUVG/valve terminal type 26 VTUG

Accessories

Ordering data			
	Description		Type
Blanking plug			Technical data ➔ Internet: b
	For manifold rail and valve		**B-M5-B**
			B-M7
	For manifold rail		**B-1/8**
			B-1/4
Blanking plug			Technical data ➔ Internet: qs
	For valve		**QSC-F-G1/8-I**
Reducing nipple			
			**D-M5I-M7A-ISK**
Fittings			Technical data ➔ Internet: qsm
	For tubing dia. 3 mm	100 pieces	**QSM-M3-3-I-R-100**
	For tubing dia. 4 mm		**QSM-M3-4-I-R-100**
	For tubing dia. 3 mm		**QSM-M5-3-I-R100**
	For tubing dia. 4 mm		**QSM-M5-4-I-R100**
	For tubing dia. 6 mm		**QSM-M5-6-I-R100**
	For tubing dia. 6 mm		**QSM-M7-6-I-R100**
	For tubing dia. 3 mm	10 pieces	**QSM-M5-3-I**
	For tubing dia. 4 mm		**QSM-M5-4-I**
	For tubing dia. 6 mm		**QSM-M5-6-I**
	For tubing dia. 4 mm		**QSM-M7-4-I**
	For tubing dia. 6 mm		**QSM-M7-6-I**
	For tubing dia. 4 mm	10 pieces	**QS-G1/8-4-I**
	For tubing dia. 6 mm		**QS-G1/8-6-I**
	For tubing dia. 8 mm		**QS-G1/8-8-I**
	For tubing dia. 10 mm		**QS-G1/8-10-I**
	For tubing dia. 6 mm	10 pieces	**QS-G1/4-6-I**
	For tubing dia. 8 mm		**QS-G1/4-8-I**
	For tubing dia. 10 mm		**QS-G1/4-10-I**
Silencer			Technical data ➔ Internet: uc
	For thread M5		**U-M5**
	For thread M7		**UC-M7**
	For thread G1/8		**UC-1/8**
	For thread G1/4		**UC-1/4**

Solenoid valves VUVG/valve terminal type 26 VTUG

Accessories

Ordering data			
	Description		Type
H-rail			Technical data ➔ Internet: nrh
	To EN 60715, 35 x 7.5 (WxH)	2 m	**NRH-35-2000**
H-rail mounting			Technical data ➔ Internet: vame
	–	2 pieces	**VAME-T-M4**
Covers for manual override			Technical data ➔ Internet: vmpa
	Covered	10 pieces	**VMPA-HBV-B**
	Non-detenting		**VMPA-HBT-B**
Inscription label holder			Technical data ➔ Internet: aslr
	Holder for an inscription label and cover for mounting screw and manual override	10 pieces	**ASLR-D-L1**